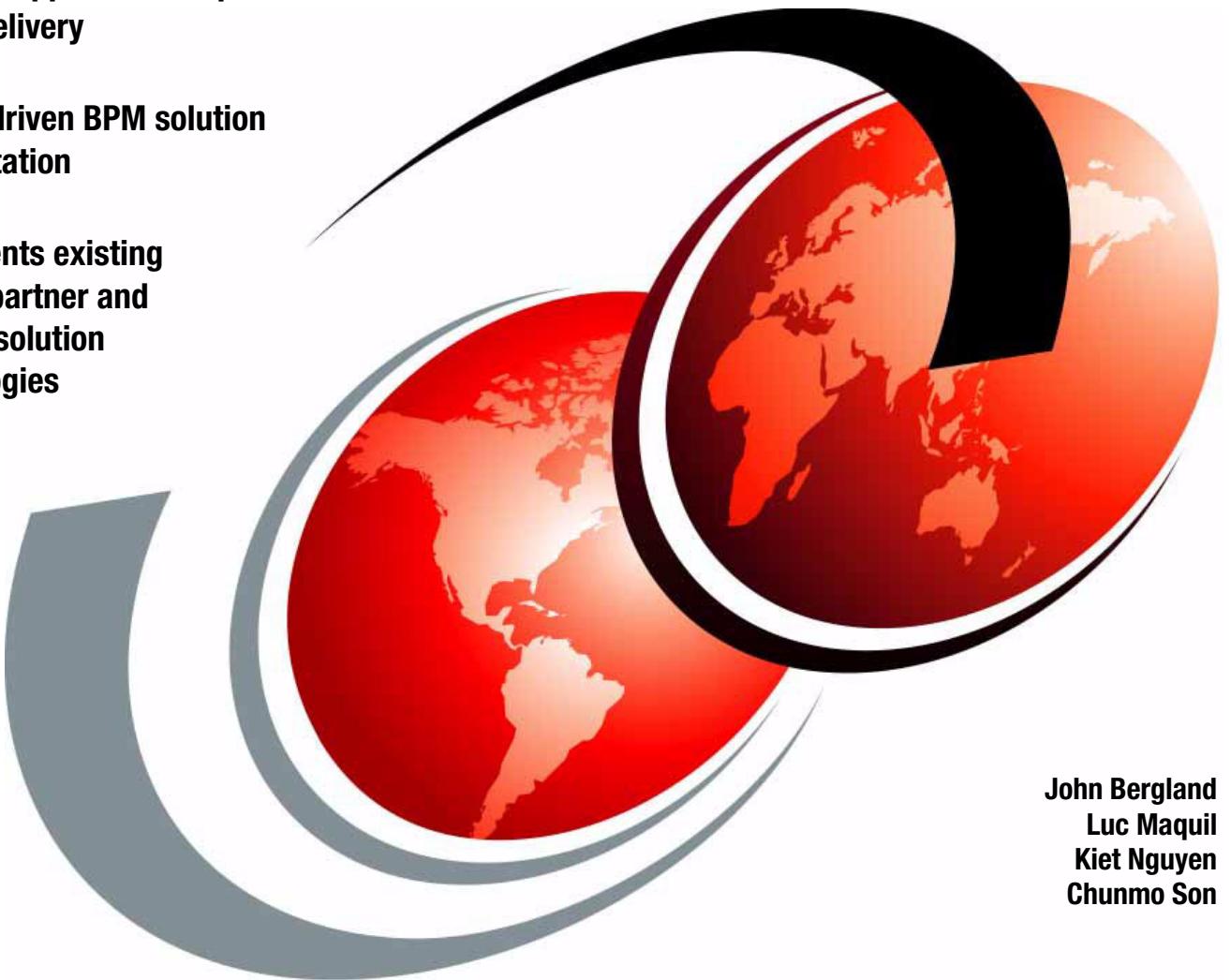


BPM Solution Implementation Guide

A Practical approach to rapid BPM
solution delivery

Business driven BPM solution
implementation

Complements existing
business partner and
customer solution
methodologies



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Redpaper



International Technical Support Organization

BPM Solution Implementation Guide

May 2009

Note: Before using this information and the product it supports, read the information in "Notices" on page ix.

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Preface

This IBM® Redpaper™ provides a practical bridge toward achieving successful BPM solution implementation within 60 days. It is based on an approach using phases and specific activities outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*. To provide a realistic context for the solution, we incorporate the process, business model and specific scenario from a health care provider. The context is based on a live code demo which consists of a fictitious application based on a customer scenario / requirements, using the approach in the *IBM Business Process Management Prescriptive Guide to Solution Implementation* to assemble the solution. This Redpaper discusses how to analyze, model and ultimately manage the processes within this realistic health care scenario.

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Introduction to the BPM Prescriptive Guide to Solution Implementation

The goal of Business Process Management is to improve your organizations' ability to model, assemble, deploy and manage your processes and improve your business. This IBM Redpaper provides a practical bridge toward achieving successful BPM solution implementation within 60 days. It is based on an approach using phases and specific activities outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*. To provide a realistic context for the solution, we incorporate the process, business model and specific scenario from a health care provider. The context is based on a live code demo which consists of a fictitious application based on a customer scenario / requirements, using the approach in the *IBM Business Process Management Prescriptive Guide to Solution Implementation* to assemble the solution. This Redpaper discusses how to analyze, model and ultimately manage the processes within this realistic health care scenario.

This chapter establishes a foundation for implementing a BPM Solution by introducing the key characteristics of a successful BPM initiative. It reviews the fundamental relationship between BPM and a Services-Oriented Architecture (SOA), while introducing IBM's formal BPM methodology, the IBM Business Process Management (BPM) Enabled by SOA Method. Finally, it introduces the key phases and activities from the *IBM Business Process Management Prescriptive Guide to Solution Implementation* which will be used to implement the health care scenario BPM solution.

1.1 Scope and focus of this Redpaper

The goal of the IBM Redpaper is to provide a definitive and practical guide to BPM Solution Development. As a starting point, we structure our approach using the IBM asset *IBM Business Process Management Prescriptive Guide to Solution Implementation* as a framework and specific reference point. We then proceed through the phases of building a BPM solution using a live, working demo based on a fictitious Health Care Insurance company to provide specific and practical context to the approach. By doing this we intend to make the *IBM Business Process Management Prescriptive Guide to Solution Implementation* more consumable, less complex and more practical. Accordingly, this Redpaper is not exclusively focused on only the detailed steps outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*, nor is it limited to only serving as a step-by-step guide on how to build the health care demo. It serves as a *practical bridge*, illustrating how to begin with the approach provided in the *Prescriptive Guide to Solution Implementation*, and apply this toward the practical solution demonstrated in demo for the Health Care Insurance Co.

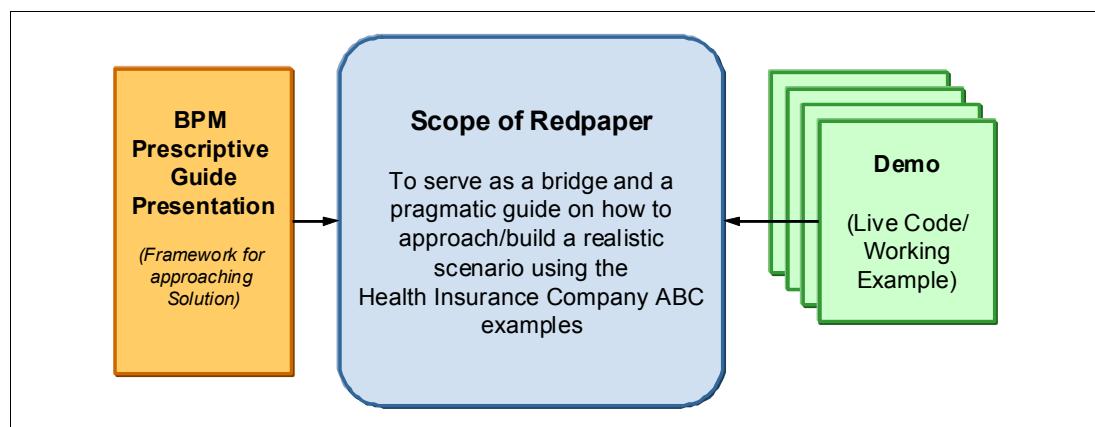


Figure 1-1 Visual positioning of this Redpaper

Objectives

The objectives within this Redpaper are as follows:

- ▶ Illustrate a *Business Driven* solution.
As we describe the approach for developing the solution in this Redpaper, we emphasize how your organizations' underlying business needs and processes are identified, mapped, analyzed and simulated. We discuss how IBM WebSphere BPM tools provide the capability for modeling, simulating and ultimately monitoring and managing the efficiency of your business solution, but it is the *business need* at the core of the strategic solution.

- ▶ Provide a *practical context* which guides you from theoretical, prescribed approach outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*, and implementing this into a realistic solution. (See section 1.3, "Introduction to the BPM Prescriptive Guide to Solution Implementation" on page 5 for more details on the focus and objectives of this prescriptive guide.)

This Redpaper describes which tools from the IBM BPM Toolsuite will be utilized and gives you the guidance *as a business analyst* on how you can use these tools to model and develop a solution. This is all done using a very realistic context from a fictitious health care company, and it is all based on a *working, live code* demo.

- ▶ Illustrate the *power and flexibility* of the core tools used from the IBM BPM suite

The IBM BPM tools which we highlight in this Redpaper demonstrate how you can discover, analyze, modify, and ultimately, manage your business process for continued improvement. We discuss specific capabilities in individual tools, but with the emphasis being placed on how the tools are extremely well integrated to allow you in driving toward a *comprehensive solution*. Finally - this is not a single step process, but one which allows for iterative improvements and adaptability as business needs change in the future.

Once the solution is modeled, you can simulate best case and worst case scenarios to determine the best path to greater ROI. As you model and simulate different scenarios, you can refine the process and monitor the results, *all before deploying the solution into a live production environment*. This allows for flexibility and a better understanding of the impact of process improvements, *without the cost and complexity* of making these changes in a production environment. Much of this initial simulation is demonstrated in Chapter 3, "Storyboarding" on page 33.

What is the role of IT in this scenario?

As mentioned above, this IBM Redpaper discusses a solution which is a *business driven* solution - designed and analyzed primarily by a business analyst and key business stakeholders, representing the line of business (LOB). The activities and steps demonstrated throughout this Redpaper are being performed primarily through the business analyst perspective.

This said, the reality is that IT is a critical partner in achieving a BPM solution today. They need to do the technical work of integrating the solution with the infrastructure. In many cases, they are actually participants in the *business-driven* design that was done earlier in the process.

For example, an enterprise architect may be needed to work with a business stakeholder and refine the process sufficiently for deployment.

IT absolutely does have development responsibilities, while working closely with the business analysts to realize the technical solution, based on the business needs. The IT Team would also be responsible for installing and configuring the underlying IBM BPM Suite tools as a foundation to begin working with the tools.

Additionally, in some specific tasks such as the IPD phase (direct deployment process) described in Chapter 4, "Experience" on page 77, or tasks related to the larger scale roll-out of the solution in Chapter 6, "Deployment" on page 183, we make it clear that this is primarily an IT responsibility.

This solution illustrates how the *business* is the primary driver, *supported* by IBM technology.

1.2 Introduction to Business Process Management

Business Process Management is most often associated with the life cycle of a business process. The process life cycle spans identifying and improving processes that deliver business capability to deploying and managing the process when it is operational. What is often forgotten about is managing process performance after a process is operational. In a way, this is probably the most important phase of the life cycle. After a business process is deployed, it must be managed, and, to manage the business process, you must have visibility into process performance. When a process is no longer meeting its performance goals, it is

time to jump back in the life cycle to assess the root cause of the performance problem and to look for additional improvement opportunities.

1.2.1 The BPM Vision

Dramatic increases in computing power are leading to new approaches and smarter solutions in which flexible, intelligent, and dynamic infrastructures can be applied to address current and future opportunities. Businesses can instrument activities so that they can be measured and improved, interconnect across silos, partners, and the broader value chain, and intelligently derive insight from an interconnected world of devices, systems, and businesses.

BPM manifests itself in numerous ways in business environments. Typical BPM solutions are all around us: supply chain processes for inventory management, self service portals for managing employee benefits, financial processes for compliance, and call center management reports for service organizations. Whether your business needs to document existing processes, define flexible policy options to handle a broad scope of business situations, facilitate human task flows, or gather operational details about how well the business is running, BPM is there.

As the pace of change and competition accelerates in today's challenging economic climate, enterprises are under tremendous pressure to improve the way they do business. Leaders from around the world are focused more than ever on the economic, social, and environmental changes driven by global integration, where free trade agreements, the Internet, and globalization are simultaneously making the world smaller, flatter and smarter.

These leaders have articulated the need to deliver products and services faster, raise the quality of what they deliver, rein in costs, grow revenues, have the agility to take advantage of market opportunities, have information on hand to react to unforeseen events, and be able to see long term trends. Business needs to be more agile, flexible, and responsive to market demands. Regardless of how well the enterprise runs, it needs to adapt and improve, or it will be outdone by competitors.

What's the downside of inflexible business models and siloed solutions? Production and service outages, backlogs and process bottlenecks, supply chain disruptions, stock outs, missed service level agreements, ineffective use of staff, poor customer satisfaction, operational reports that provide too little too late, and the list goes on. No one wants to be the next case study on enterprise failure.

By working smart, business achieve the agility to succeed. Overcome the restrictions of the past by moving to an agile business model, use Web 2.0 to build interactive ecosystems to meet the situational needs of knowledge workers, build dynamic processes that leverage reusable, service-based components, and embrace the Smart SOA approach that turns applications into reusable services.

1.2.2 Characteristics of BPM Success

The following section highlights the key characteristics of a holistic BPM infrastructure.

► **Choice**

Business dynamics change, regardless of how well plans are thought out. But how easy is it to modify an IT solution without a massive IT effort? The choices made today should not limit the choices that need to be made in the future.

► **Agility**

There are many decisions to make as processes run. The right decision is often influenced by various factors and cannot simply be expressed as a set of conditional if-then-else statements. The business needs to express a dynamic business policy in terms that IT infrastructure can effectively harness, and that the business can manage on the fly as that policy changes.

► **Flexibility**

Invariably, disparate departments in an enterprise often develop and grow their missions and capabilities isolated from other departments. As these departmental silos grow, so to do their IT systems, but at some point you realize that there is valuable information that should be shared across departments. Enabling departments to share information reveals business efficiencies (for example, by eliminating the need to enter duplicate data) and provide broader business insight across the organization. But can these disparate systems be enabled to work together without costly and risky rip-and-replace initiatives?

► **Speed**

Business no longer has the luxury of taking years to develop solutions. IT departments require the tools to assemble solutions based on reusable assets, minimal coding, robust integrated test facilities, and a straight forward deploy capability. Heterogeneous environments introduce the additional challenge of integrating various hardware and software platforms, which dare not slow down solution development.

► **Skills**

To effectively improve business processes, an organization cannot and should not rely solely on IT resources to design, collaborate, improve, build, deploy, and monitor those processes. The line of business (LOB) brings subject matter expertise and domain knowledge into the definition of what the business needs (requirements), why certain needs are prioritized higher than others (business goals), and how those needs are reflected in process definitions (models). LOB writes the specification for the business solution, whereas IT ensures it is implemented, tested, and deployed on a robust and scalable infrastructure. Striking the right balance across your organization to optimally leverage strengths and experiences across both IT and LOB departments facilitates the speed and agility that you need to succeed. LOB needs to take a much more active role in both defining business processes and seeing the business results in real time so they can react swiftly with business insight. LOB needs tools that can be easily tailored and used, tools that provide the necessary handoffs and integration points with the IT organization.

1.3 Introduction to the BPM Prescriptive Guide to Solution Implementation

The *IBM Business Process Management Prescriptive Guide to Solution Implementation* provides a detailed, phased approach for implementing a BPM Development Solution. It is not an actual methodology, but instead serves as an *approach* or *framework* giving step-by-step guidance for a prescribed set of activities to deliver an BPM solution into production for smaller scale, departmental class projects within 60 days. One of the core assumptions within the *Prescriptive Guide* is that it is *business driven*, namely the business leaders, analysts and users are a key part of the approach and continuously play a role. In fact the business analysts do a lot of the *development* in the human centric cases. Finally, the approach in the *IBM Business Process Management Prescriptive Guide to Solution Implementation* covers the core products within the IBM WebSphere BPM suite of products, including - Modeler, Publishing Server, Monitor, WPS, WID, WSRR-ALE.

Note: You can access the *IBM Business Process Management Prescriptive Guide to Solution Implementation* in either of the following ways:

Internal IBM via this URL:

<https://w3.tap.ibm.com/com.ibm.ram/assetDetail/generalDetails.faces?guid={699338B4-3441-CF1A-B87C-5FE235A39E66}&v=1.0&submission=false>

External to IBM, please refer to the Appendix A, “Additional material” on page 245 for instructions on how to download the Prescriptive Guide.

1.3.1 Understanding the goals, objectives and intended audience of the Prescriptive Guide to Solution Implementation

As mentioned in the earlier objectives of this Redpaper, the approach for solution implementation within this Redpaper is modeled on the *IBM Business Process Management Prescriptive Guide to Solution Implementation*. Accordingly, it is very important to understand the goals and objectives of the guide, together with an understanding of the intended audience.

What is it?

- ▶ Prescriptive guidance that is simple and usable on how to use BPM products to deliver a solution into production within 60 days
- ▶ Focused on departmental projects that are weighted towards interactive process design and human-centric processing scenarios
- ▶ Covers the core products within the IBM WebSphere BPM suite - Modeler, Publishing Server, Monitor, WPS, WID, WSRR-ALE
- ▶ Business Leaders, analysts and users are a key part of the method and continuously play a role. In fact the business analysts do a lot of the development in the human centric cases

Who are the intended users?

- ▶ IBM Tech Sales, Black belt in delivering customer departmental solutions
- ▶ ISSW delivering a departmental BPM solution
- ▶ Business Partners working on a BPM solution implementation
- ▶ Customers implementing BPM solutions

Ownership - How is this document going to be maintained?

- ▶ PLM and Development to own this document and update with every release

What the guide is not

- ▶ It is not intended to replace GBS, Business Partner or ISSW methodologies but rather to feed into those methodologies as best practices/prescribed guidance on product usage. For example, it builds upon many of the concepts in the formal BPM Enabled by SOA Methodology. For additional information on this methodology, please refer to the Redpaper on BPM Enabled by SOA Methodology available at <http://www.redbooks.ibm.com/abstracts/redp4495.html>
- ▶ It is not intended to replace product *how to* guides which go into a lot more detail on specific product usage.

Note: You can access the *IBM Business Process Management Prescriptive Guide to Solution Implementation* via this URL:

<https://w3.tap.ibm.com/com.ibm.ram/assetDetail/generalDetails.faces?guid={699338B4-3441-CF1A-B87C-5FE235A39E66}&v=1.0&submission=false>

At the core of *IBM Business Process Management Prescriptive Guide to Solution Implementation* are five phases - ultimately spanning the lifecycle of solution delivery. The phases are:

- ▶ Discovery
- ▶ Storyboarding
- ▶ Experience
- ▶ Manage
- ▶ Deploy

Figure 1-2 illustrates an iterative view of the first four phases, together with a view of which human task roles are involved during each of the phases.

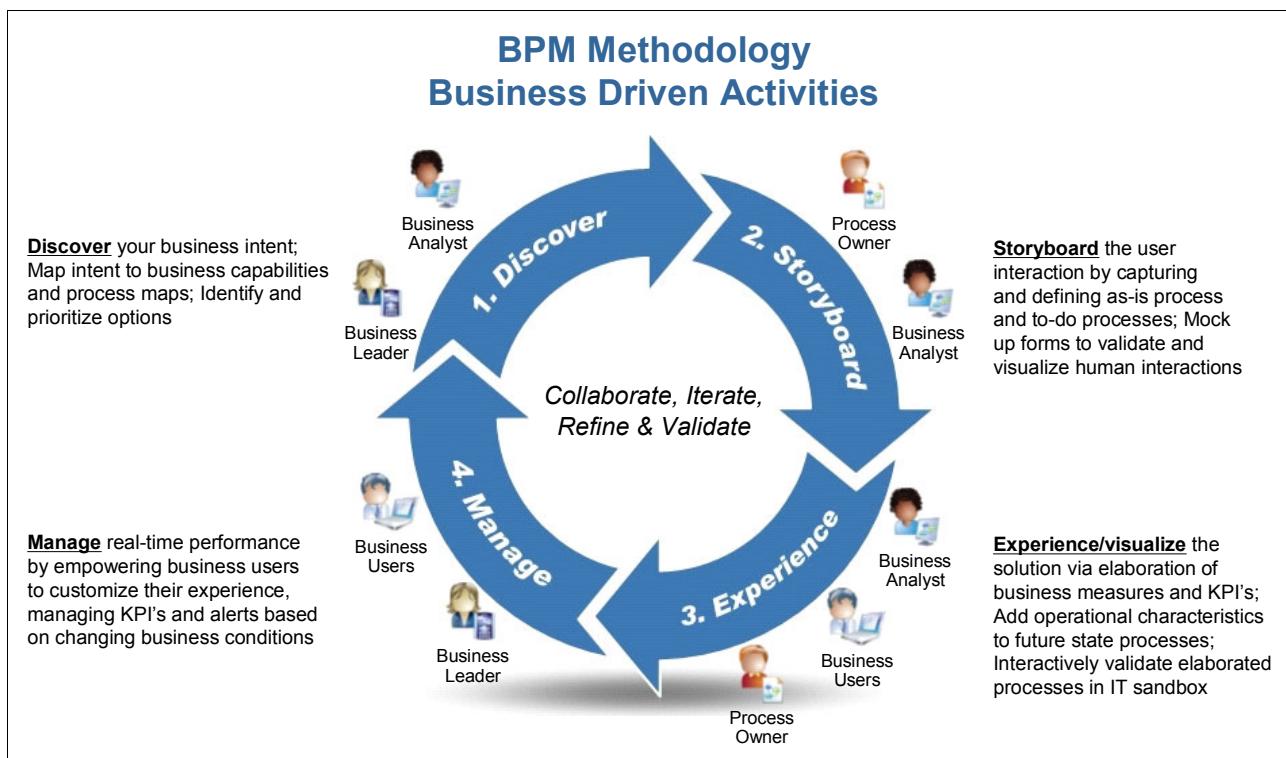


Figure 1-2 Overview of the phases within the IBM Business Process Management Prescriptive Guide to Solution Implementation

The high level objectives within each phase are as follows:

- ▶ **Discovery** - *Discover your business intent*
 - Capture Business Intent
 - Map Business Capabilities
 - Create High Level Process Maps

- Identify options/ Prioritization
- ▶ **Storyboarding** - *Story board the user interaction*
 - Capture/Refine Current State Process; Examine alternate ROI to determine best approach
 - Define Future State Process
 - Define inputs and outputs and mock up forms for human interactions
 - Validate and visualize human interactions
- ▶ **Experience** - *Experience/visualize the solution*
 - Elaboration of Business Measures and KPI's
 - Add operational characteristics to future state process
 - Refine Forms
 - Interactively validate elaborated process in IT sandbox
- ▶ **Management** - *Manage & Optimize performance*
 - Empower business users to customize end user experience
 - Assign access rights; Optimize work assignments; Govern change
 - Manage real time business performance, KPIs and Alerts based on changing business conditions
 - Take corrective actions against process instances
- ▶ **Production** - *Put solution into production*
 - Setup IT Environments
 - Prepare and Deploy Production Artifacts
 - Unit Test Solution
 - Monitor health of your solution to ensure process integrity

Note: The *Prescriptive Guide* is primarily aimed at an initial BPM Solution rollout based on a slightly smaller scale - for example, a departmental solution which can be achieved within a 60 day timeline. So, for the sake of this Redpaper effort, both the functional and non-functional requirements associated with a full scale, enterprise deployment into a Production environment are not covered in detail. The goal is to highlight some of the key steps and considerations which are associated with a production deployment in Chapter 6, "Deployment" on page 183, but then refer the reader to a more detailed source of information which is specifically focused on deployment steps and related activities.

Throughout the subsequent chapters in this Redpaper, we use the phases, goals and steps identified in the *IBM Business Process Management Prescriptive Guide to Solution Implementation* to approach developing the health care demo scenario.

1.4 Roles involved with the BPM Solution Implementation

Within the *IBM Business Process Management Prescriptive Guide to Solution Implementation*, specific roles are identified for performing tasks in the different phases of the solution implementation. The goal of this section is to better identify these roles and their supporting skill sets.

The primary roles referred to within the *IBM Business Process Management Prescriptive Guide to Solution Implementation* involve:

- ▶ Business Roles
 - Business Analyst/Business Leader
 - Subject Matter Expert (SME)
 - Business Executive
- ▶ IT Roles
 - IT Solution Developer
 - IT Administrator
 - IT Architect

The descriptions below help clarify the skills, goals and tasks commonly associated with each of these roles.

Business Personae Roles

Business Analyst

- ▶ Skills / Education
 - Business background with no technical background
 - Extremely knowledgeable of the business; usually have been with the company for many years and have a solid understanding of the business and its goals
 - Mostly senior folks (e.g. been around business for awhile)
 - Skilled at Office suite (e.g. PowerPoint?, Visio®)
- ▶ Goals
 - Build consensus from different stakeholders on as is and to be process model
 - Accurately communicate process details
 - Look for opportunities to improve current business
- ▶ Tasks
 - Conduct SME interviews (group or 1on1) for input into models (as is process) and validating to be processes
 - Define detailed business requirements, models business processes, gathers simulation data (resource costs etc.), assess process execution in production
 - Define & refine business metrics usually done outside of Modeler e.g. captured in MS Word or Excel®
 - Manage review and iteration of current model Sharing and publishing models with SMEs; generate PDF and JPEGs to distribute
 - Review models produced either on WebSphere Publisher Server or using the Business Leader Widgets available through
<http://www-01.ibm.com/software/solutions/smartwork/bpmblueworks/>
 - Provide input to test cases and training materials; may also act as a tester and/or trainer
 - Process analysis (e.g. metrics, cost benefit analysis)
 - Mock up application UI
- ▶ Tools
 - Skilled at Office suite (e.g. PowerPoint?, Visio)
 - Internet Explorer®

- NetMeeting?
- MS Outlook® or Lotus Notes

Business Executive

- ▶ Skills / Education
 - Extensive business background, MBA or similar
 - Has a good level of understanding of technology but will call the IT department right away if there is a problem
 - Extremely knowledgeable of the business; has a solid understanding of the business and its goals
 - Mostly senior folks (e.g. been around business for awhile)
 - Spends a large portion of the day away from the desktop
 - Device for information delivery is important – e.g. reports on a Blackberry device
 - Needs to be provided information on timely basis (regular or ad hoc)
 - Engages in light exploration and prefers to get details on demand
 - Uses dashboards and scorecards for at-a-glance view
 - Prefers any tool that understands patterns and can predict (and suggest) what the right information might be ahead of time
- ▶ Goals
 - Get the right information right now. Has no time to sift through information to find what is relevant. If it is more than one or two clicks away, it doesn't exist.
 - Direct the business unit. Needs to be able to detect trends, changes, and exceptions easily. Must communicate how they map to corporate strategy.
 - Keep context. Must be able to maintain information from various sources in one context (one place).
 - Improve over last quarter. Needs up-to-the minute, focussed information to measure how the organization is doing and understand how to increase performance going forward.
 - Keep up with the numbers. Insists on knowing what is going on around them. Keeps a very close watch on key numbers and metrics.
 - Monitor key clients. Needs to know what clients need and offer it to them. Prefers to offer them something they want before they know they want it.
 - Knowing what the team is doing. Has to keep track of what happens with information and who is accountable for what to make sure the company is getting maximum value for their investments
- ▶ Tasks
 - Monitor the company's results against targets through reports and dashboards.
 - Keep on top of what the company is doing relative to the competition.
 - Communicate strategy on an ongoing basis.
 - Attend regular meetings, prepared with a full set of information around a topic.
 - Communicate with customers directly to understand and help them with their issues
- ▶ Tools
 - Microsoft® Office, especially Outlook and PowerPoint?

- Internet Explorer
- Blackberry Email
- Report viewing tools

Subject Matter Expert (SME)

SMEs are the subject experts who know and provide the content of a specific business area. They understand the intricacies of a specific business area, know the terminology, and can help to explain how a specific process should work according to the business need.

- ▶ SMEs are responsible on how tasks, to include the order of performance steps, are to be performed
- ▶ SMEs are responsible for technical terminology and jargon.
- ▶ SMEs are responsible for determining acceptable performance levels.
- ▶ SMEs are responsible for providing the performance objectives.

Technical Personae roles

IT Administrator

- ▶ Skills / Education
 - Patience and courtesy
 - Trouble ticket triage
 - Detailed understanding of the process authoring lifecycle, including the tools, test server and deployment
 - WPS Administration
- ▶ Goals
 - Support the LOB when they want to author a process, need a new role, need a new service, or get confused
 - Work with a test and production environment which empowers the business user and is up 24/7
- ▶ Tasks
 - Install the D2D test server environment
 - Seed the D2D organizational role model
 - Create server config files, and distribute them to new process authors
 - Teach new process authors about the D2D lifecycle and the tools
 - Help new process authors connect to the test server environment, WSRR server, RAM servers, etc.
 - Provide first point of contact when process authors run into trouble, and handoff to the relevant IT expert
 - Manage the incoming requests for new roles and new services
 - Meet with Archie, the IT Architect, on a regular basis to determine which services should be implemented
 - Notify the LOB when new services and roles become available
 - Encourage centralization and sharing across the LOB
- ▶ Tools
 - Business Space, Websphere Process Server

- Email

IT Architect

- ▶ Skills / Education
 - Detailed understanding of overall technical goals of the business and the current hardware and software inventory
 - Detailed understanding of industry patterns and approaches related to the infrastructure for the business
 - Detailed understanding of solutions or technologies that map to company needs as well as prerequisites and hardware/software requirements
 - Detailed knowledge of the business and technology domains
 - Basic understanding of company's entire business and IT operations
 - Expert understanding of one or more particular solutions
 - Proficient communication
 - Proficient creating and communicating the overall vision for the software application
 - Proficient development activity leadership
 - Basic understanding of many technologies (in other words, a generalist rather than a specialist)
 - Proficient broad technical decision making
- ▶ Goals
 - Support the business to achieve their goals
 - Design and build the software function required while meeting performance, availability, and scalability requirements
- ▶ Tasks
 - Analyze, digest and prioritize the business and IT requirements for new software function
 - Design the high level architecture for the software function
 - Write the Software Architecture Document that describes the application's components and their interfaces within and outside of the software system, including clear specifications of functional and nonfunctional requirements for the solution
 - Define expected behaviors of service in terms of performance, service levels, and so on
 - Incorporate existing components and services into the design
 - Describe how the functionality of the system is distributed across physical nodes
 - Construct and assess architectural proof-of-concepts
 - Establish the structure in which the implementation will reside
 - Guide the development team, review detailed designs, and generally nudge the implementation towards the architectural vision
 - Define architectural patterns, key mechanisms, and modeling conventions for software development
- ▶ Tools
 - Microsoft Office
 - Websphere Integration Developer

- Rational® Software Architect
- Telelogic Software Architect

1.5 Tools from IBM BPM Suite of products used in this solution

The IBM BPM Suite contains a comprehensive set of role-based capabilities that enable customers to model, simulate, run, rapidly change, monitor and optimize core business processes. Within this Redpaper, we *do not* use or cover all of the products offered in the IBM WebSphere Dynamic Process Edition 6.2. For more complete information on the complete suite offered in IBM WebSphere Dynamic Process Edition 6.2, please refer to <http://www-01.ibm.com/software/integration/wdpe/>

Instead, the goal within this Redpaper is to highlight and focus on a subset of the BPM Toolsuite which align closely to the phases and tasks outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*. The specific IBM BPM tools we will discuss in detail include:

- ▶ Business Leader Widgets available through IBM's BPM Blueworks. (<http://www-01.ibm.com/software/solutions/smartzwork/bpmblueworks/>)
- ▶ WebSphere Business Modeler Publishing Server V6.2
- ▶ WebSphere Business Modeler V6.2
- ▶ WebSphere Business Monitor V6.2

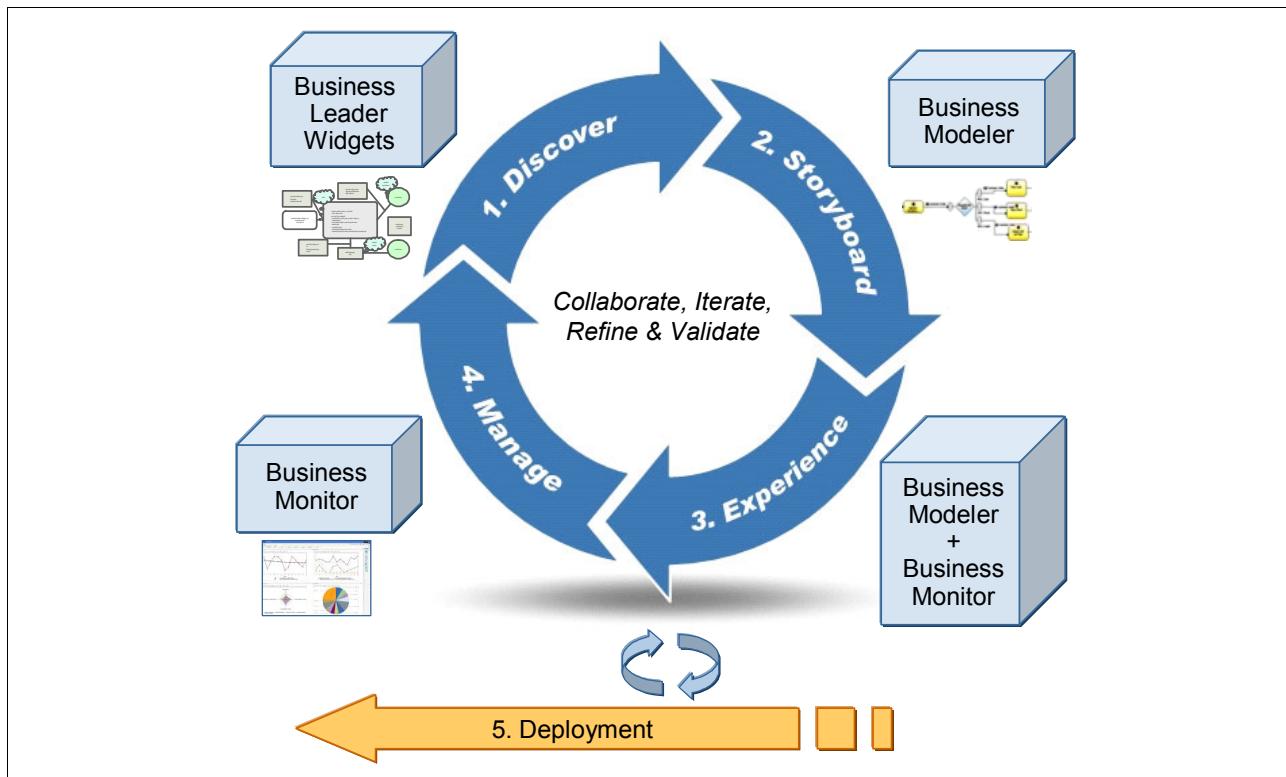


Figure 1-3 Mapping of WebSphere BPM Toolsuite products to phases within the Prescriptive Guide approach

1.5.1 Business Leader Widgets - WebSphere Business Publishing Server

The Business Leader Widgets, available as part of WebSphere Business Modeler Publishing Server v. 6.2, and also available through IBM BPM Blueworks, enable users to share process models and BPM assets via a Web browser. They allow users to validate BPM assets with subject matter experts to create best practice process models and optimize processes. They enable users to publish an array of BPM assets including process models, WebSphere Business Monitor dashboard designs, and user interface forms. Additionally, they provide enhanced process-model visuals to display labels and the latest WebSphere Business Modeler notation formats.

Within this Redpaper, WebSphere Business Publishing Server - specifically the Business Leader Widgets - are used to produce the high level strategy maps discussed and created in the Discovery phase, Chapter 2, "Discover" on page 23.

1.5.2 WebSphere Business Modeler

With WebSphere Business Modeler, a business analyst can fully visualize, understand, document, test and share business processes. You can simulate process runs to identify bottlenecks and inefficiencies, and define key performance indicators and business metrics for use in WebSphere Business Monitor. Then, you can leverage the real business results in WebSphere Business Modeler simulations for continuous process improvement. In addition, WebSphere Business Modeler can generate IT implementation artifacts for WebSphere Process Server and facilitate testing of human-centric processes in a process server environment.

Within this Redpaper, WebSphere Business Modeler is used to model, analyze and simulate the claim processing process for the Storyboarding phase, Chapter 3, "Storyboarding" on page 33, and, to some extent for visualizing and refining elements of the process, during the Experience phase, Chapter 4, "Experience" on page 77.

1.5.3 WebSphere Business Monitor

WebSphere Business Monitor is an integrated business activity monitoring (BAM) environment that provides end-to-end visibility of business activity on WebSphere Process Server, WebSphere MQ Workflow, FileNet® Business Process Manager, and other enterprise applications. Web-based and portal-based dashboards provide near real-time information so business leaders can make timely operational and strategic decisions. Fully configurable dashboards show you only what you need to see, and deliver alerts to e-mail, pagers, or PDAs. Monitoring results can be used in WebSphere Business Modeler simulations to complete the BPM feedback cycle, and the WebSphere Business Monitor development toolkit provides templates and a test environment to further accelerate time to value.

Within this Redpaper, WebSphere Business Monitor provides the view of the Business space, illustrating integrated Business Activity Monitoring and a view into key performance indicator (KPI) values for the health care claim scenario. In Chapter 5, "Manage" on page 131 we discuss these KPIs and show how to better analyze and manage these for further optimization of business processes.

1.6 Introduction to the health care demo scenario

This Redpaper builds upon the set of prescribed activities and phases outlined in the *Prescriptive Guide*, while using a specific IBM demo as the practical context for the solution. Within IBM, this demo has been built upon information from a fictitious health insurance company. It walks the audience through a health care claims processing scenario in a business audience-oriented way. The demo focuses on all the business user touchpoints, from how the process is captured, to an integrated end user interface, and then finally how business users can change and interact with live processes via interactive process design. This is a comprehensive demo that spans a wide range of our BPM capabilities in a truly integrated fashion.

Note: The goal of this section is only to provide an introduction the scenario. Subsequent chapters of the Redpaper will provide in-depth details on specific process modelling, process improvements and how KPI's were more efficiently monitored and managed.

1.6.1 High level business goals

The scenario for Health Care Insurance Co. ABC is based on the high level goals of reducing costs and improving claims processing times through automation of manual tasks and processes and integrating people with back-end systems. Additionally, they plan to improve customer satisfaction by more pro-actively addressing denied claims and working with the customer earlier in the cycle to correct an incorrectly submitted claim.

Note: For a more detailed listing of the specific business goals and objectives, please also see 2.2, "Reviewing the business challenges, goals and strategy for health care scenario" on page 26.

1.6.2 Overview of the overall claims process

Figure 1-4 illustrates an overview of the complete claim process. Once a claim is successfully received and approved into the system, it is then processed by a Claims Specialist who analyses the amount requested for the claim and determines the pending amount to be paid. With pricing set, the claim then proceeds to the adjudication sub-process, where it will be classified as either a dental, medical or mental health type of claim.

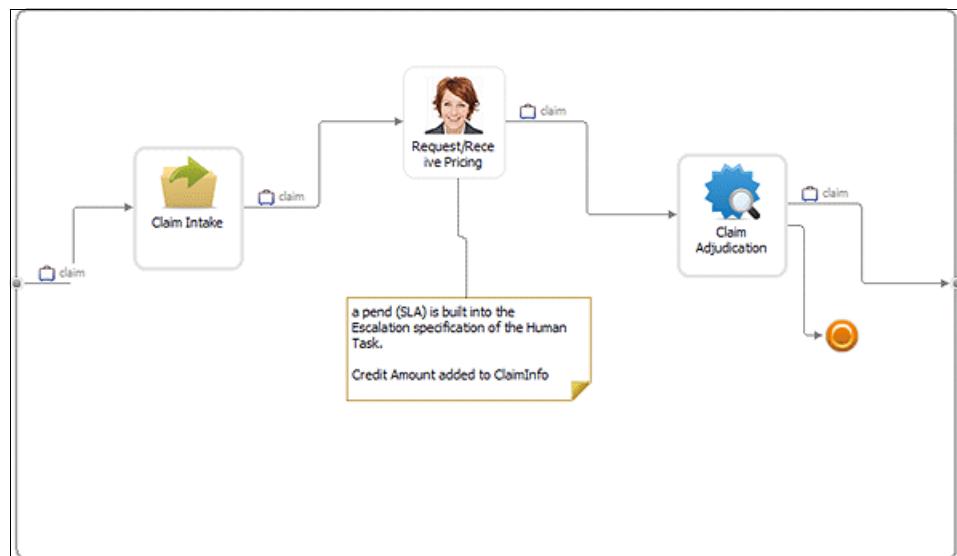


Figure 1-4 Overview of the complete claim handling process

Figure 1-5 illustrates one of the sub-processes for Claim intake. One of the tasks, Select Provider, is a human task and will be reviewed for ways in which automation can lower the cost and improve the efficiency of the process.

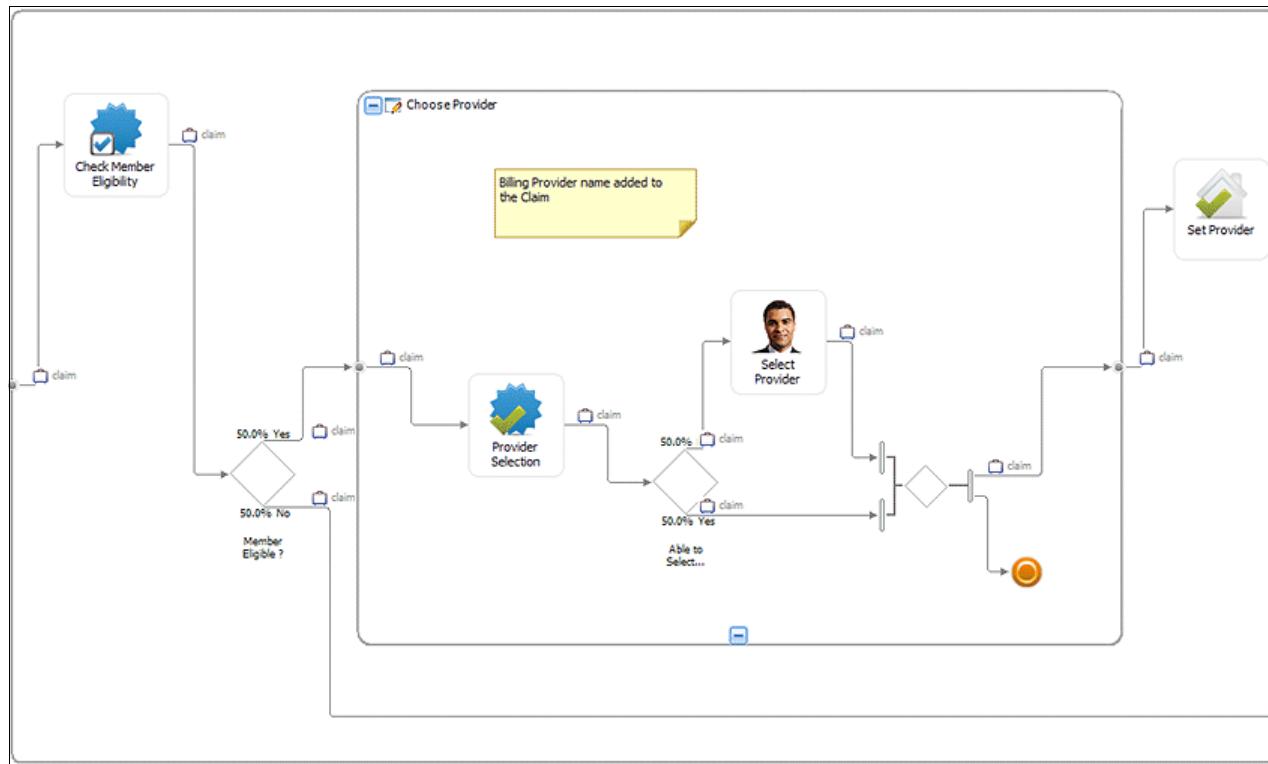


Figure 1-5 Overview of the claim intake sub process

Figure 1-6 on page 17 illustrates the adjudication sub-process. Currently, in the “as-is” state of the process, there are three automated tasks to assign the claim: Handle Medical, Handle Dental, Handle Mental. If a claim has been rejected, it simply bypasses this sub-process, remains in the denied state, and the customer is notified via mail approximately 30 - 60 days later. As we will discuss in Chapter 3, “Storyboarding” on page 33, a modification to this

process represents an opportunity to improve customer satisfaction. For example, if we add an additional task in this phase which would “inform customer of denial”, and automatically notify a customer of a potential claim rejection, this could provide a more a pro-active approach to correct the issue earlier and boost customer satisfaction.

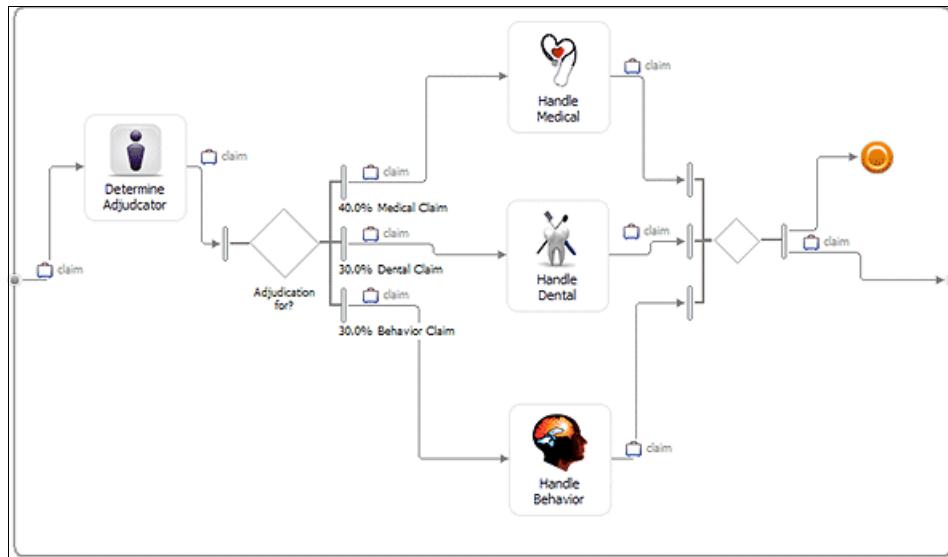


Figure 1-6 Overview of the claim adjudication sub-process

1.6.3 Interacting with the process through the business space

In this next section, we introduce the Business Space. The Business Space represents a single point of entry for end users, as well as other key process stakeholders to view the process and collaborate on process reviews and potential process improvements.

We now are seeing the process *through the perspective of the customer service representative* who enters in the claim information and begins the claim intake process. Figure 1-7 illustrates a form into which a customer service representative of the system enters information.

The screenshot shows the 'Submit New Claim' form within the 'Claims Processing Tasks' application. The 'Task Information' header includes 'Submit' and 'Save as Draft' buttons. The main form area has tabs for 'Member Details' and 'Claim Details'. Under 'Member Details', fields include 'Date of claim' (3/27/09), 'First name' (Alice), 'Last name' (Johnson), 'Member number' (87663), and 'Contact phone'. Under 'Claim Details', there are fields for 'Plan' and 'Contact address'. A sidebar on the left lists various tasks such as 'Approval', 'Inquiry', 'Review', 'To-do', 'Submit New Claim', 'Claim Intake', 'Claim Process', and 'Claim Adjudication'.

Figure 1-7 Claim intake form

As specific information is entered about the claim, the Claim Analyst works through a role specific form which supports custom views of data for different users of the system. The fields on the form provide data validation as information is entered and the process proceeds. (Figure 1-8 on page 18)

The screenshot shows the 'Verify Claim Pricing' form within the 'Claims Processing Tasks' application. The 'Task Information' header includes 'Submit' and 'Save' buttons. The main form area has tabs for 'Member' and 'Claim'. Under 'Claim', fields include 'Claim Info' (Claim Date: 27 Mar 2009, Claim No.: D-8766333-2009331-8, Reason Code: APQ, Name: Alice, Member Number: 8766333, Plan: Silver), 'Claim Type' (Dental), 'Claim Amount (\$)' (1,200), 'Cause of Claim' (Tooth), and 'Address' (2 Road). A 'Billing Provider' field is also present. In the background of the form, there is a stylized image of a brain with various regions labeled. The sidebar on the left shows a list of tasks related to claim pricing and provider selection.

Figure 1-8 Entering Claim information - the form is specific to the role of the user of the system

Figure 1-9 illustrates an overview of the tasks in progress from within the Business Space.(Chapter 5, “Manage” on page 131 provides in-depth coverage of the Business Space

and its capabilities.) This view represents a supervisors view into the system, allowing the supervisor to review the progress of work allocated across the team. If necessary, the Supervisor can re-allocate tasks amongst resources to more evenly distribute the workload.

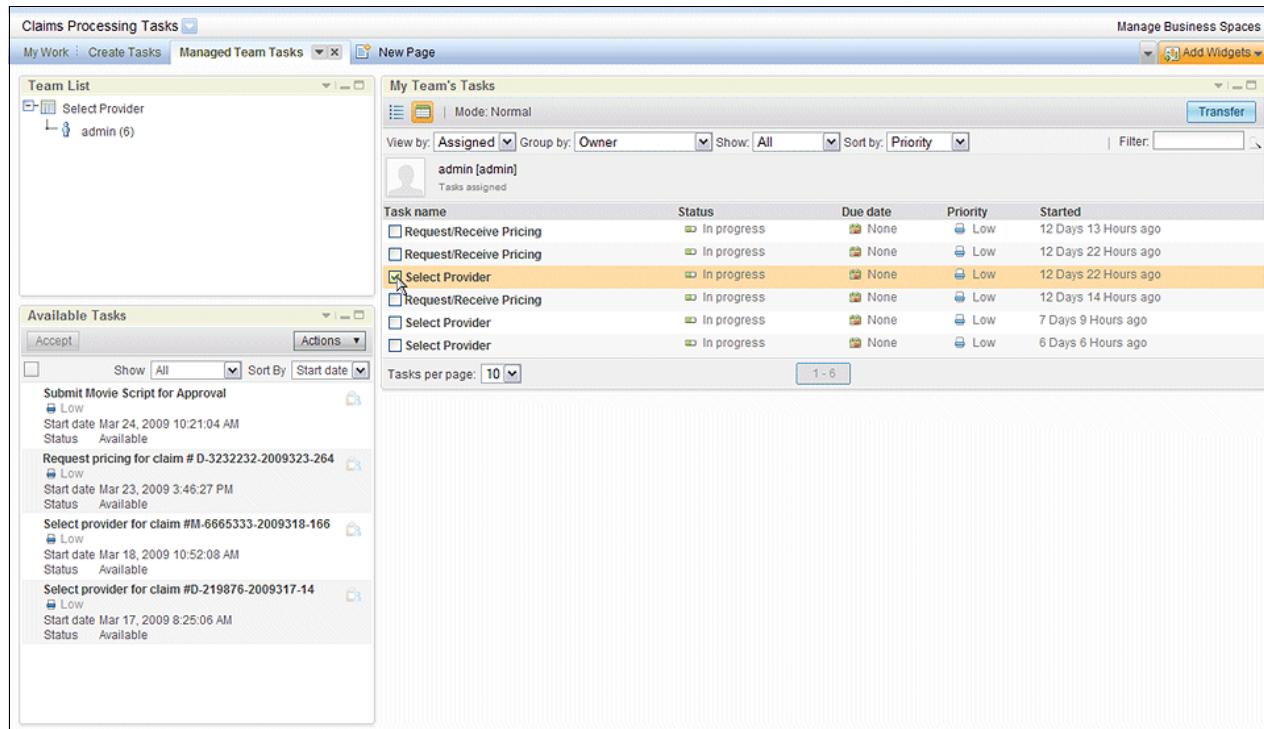


Figure 1-9 Overview of the Business Space - manager perspective

1.6.4 Monitoring and Managing the performance

Figure 1-10 provides a more in-depth view into the Business Space. The Business Space allows for users and managers to view what is happening in the process. It provides a quick and simple overview of:

- ▶ Number of claims processed
- ▶ Duration of the average claim processing time,
- ▶ Trends in claim processing over time

Using the Business Space, managers and analysts have an aggregate view of the Business Data they really need in a way that makes sense. They can drill down to find out more specific details for processes as needed.

Note: Chapter 5, “Manage” on page 131 provides in-depth coverage of the Business Space and its capabilities.

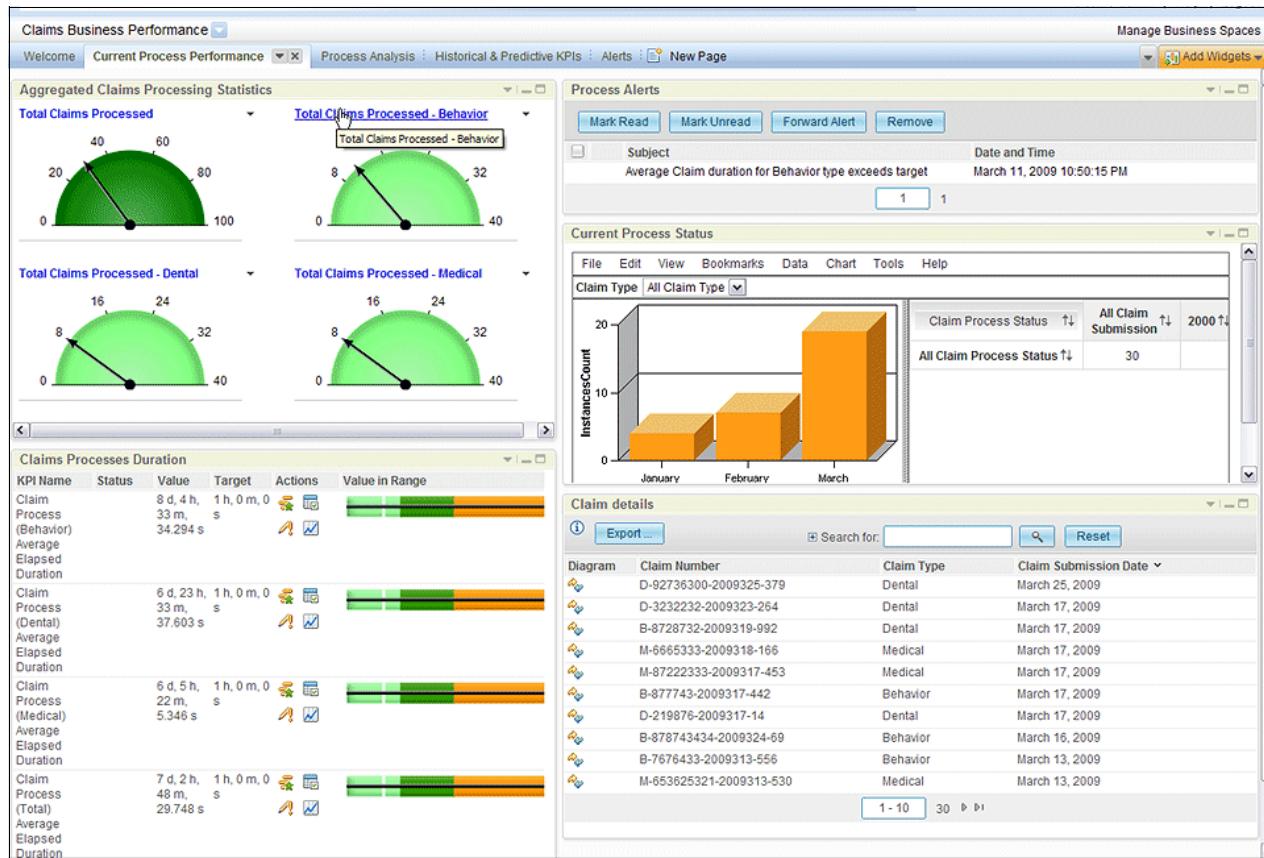


Figure 1-10 Using the Business Space to monitor and manage performance

1.6.5 Modifications to be made to the process to address business goals

In the following chapters, we will provide details on how the fictitious company in our scenario, Health Insurance Co. ABC, has modified their processes to improve their claim handling efficiency and reduce costs.

The modifications to the process we discuss in this Redpaper include:

► **Business Rule Modifications:**

Within the process, we illustrate how to make the following business rules which are aimed at reducing the number of claim rejections, thereby reducing costs and increasing customer satisfaction.

- Focusing on the Claim Intake subprocess, (see Figure 1-11 below), we perform an analysis in the Storyboarding phase which illustrates the potential cost savings if the number of claims handled automatically versus being routed to the manual task were increased to 90% from the current level of 50%. (See 3.4.5, “Issue 3: Cost of Service Intake” on page 58 for more details on this analysis.)

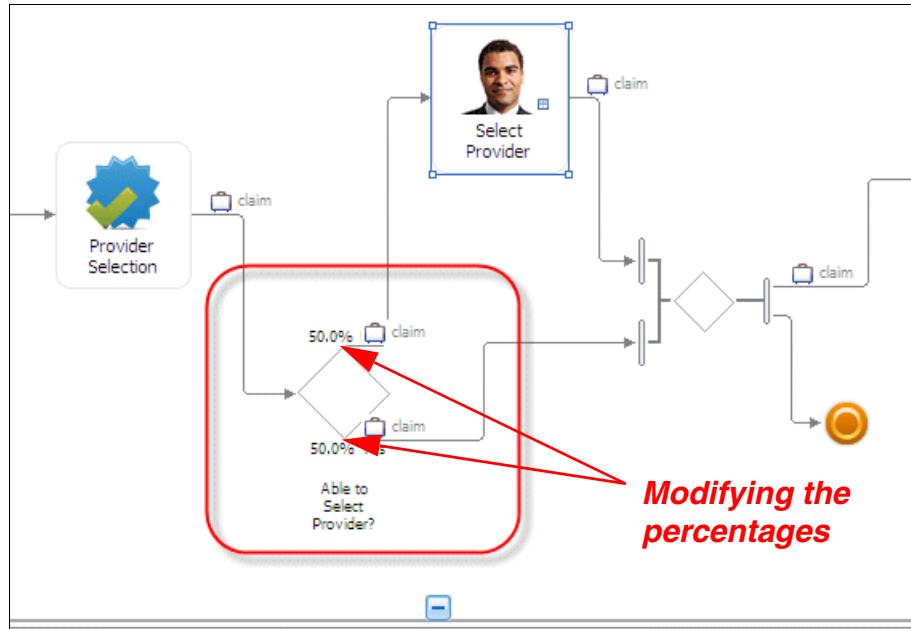


Figure 1-11 Modifying the percentages routed to the manual task of Select Provider

- Reduce the overall number of claim rejections by modifying claim eligibility and encouraging a greater number of claims to be handled automatically. This is going to be addressed by changing the efficiency of the tasks “Check Member Eligibility”, “Set Provider” and “Clean Claim Edits” to different ratios. See 3.4.6, “Issue 4: Cost of Claim Adjudication” on page 60.
- ▶ **Process Modification to the process:**
 - To more proactively address customer complaints that are not informed of their rejected claims in a timely manner, we propose adding a task within the adjudication process called “Notify Rejection to Customer”. In the existing as-is process, claim rejections are not proactively handled and the customer must often wait up to 60 days simply to be informed of a rejected claim. Figure 1-12 illustrates where we will add this task in the process. This is discussed in detail in 3.4.6, “Issue 4: Cost of Claim Adjudication” on page 60.

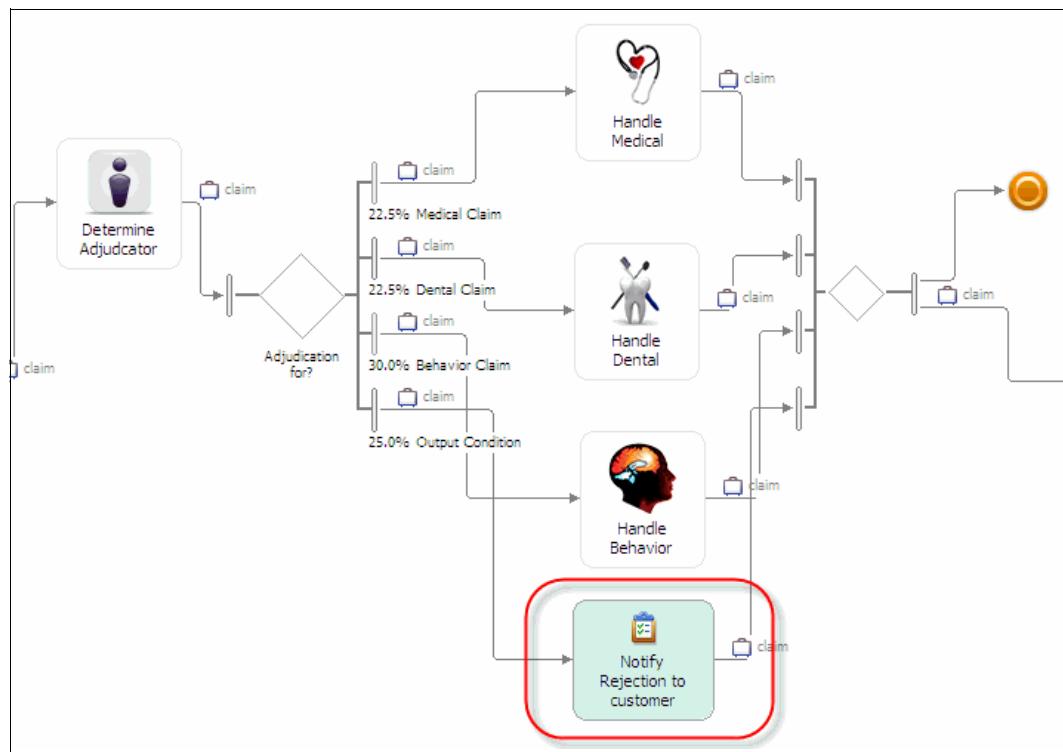


Figure 1-12 Adding a task to handle notification of rejections

- ▶ Finally, to address overall efficiency within the a Human Task - Select Provider, we add an operational characteristic to the task which results in escalation if the duration of a task is in a pending state beyond 1 hour. This escalation improves quality of service by reducing the number of claims unnecessarily waiting in a pending state. It also reduces cost by maximizing the efficiency of the human task. This is described in 4.4, “Add operational characteristics” on page 80.

1.7 Key Assumptions

Throughout the steps described in this Redpaper toward implementing the BPM Solution for the Health Care Services Provider, the effort is based on the following assumptions:

- ▶ Positioning of the *IBM Business Process Management Prescriptive Guide to Solution Implementation* is intended as a solution toward a smaller scale, initial deployment at, for example, a departmental level.

The *IBM Business Process Management Prescriptive Guide to Solution Implementation* is an approach based on a subset of tasks initially in accordance with the more formal IBM Business Process Management (BPM) Enabled by SOA Method. The Prescriptive Guide is most suited for an initial smaller scale implementation, since it does not formally address many of the non-functional requirements for an enterprise scale, production deployment.

- ▶ The testing approach used in this Redpaper is based on the IPD (Interactive Process Design) approach to initially deploying the model into a runtime environment. We do not cover a full scale deployment using WebSphere Integration Developer, (WID), WebSphere Process Server and other products which would typically be involved in a larger scale deployment.



2

Discover

This chapter introduces the “Discover” phase within the approach outlined in the *Prescriptive Guide*. This is the first phase in the approach with the goal of capturing the business intent through documenting and creating basic models for the business goals, objectives and strategy. Within the chapter, we review the steps of the Discover phase using the specific context from the Health Care Scenario introduced in 1.6, “Introduction to the health care demo scenario” on page 15.

2.1 Overview of steps in the Discover phase

Discover is the first phase in the approach described in *IBM Business Process Management Prescriptive Guide to Solution Implementation*. This is the phase in which the business goals, objectives and strategies are reviewed and agreed upon. From these goals, you can then use high level strategic maps to visualize the goals and begin review and better understand the process.

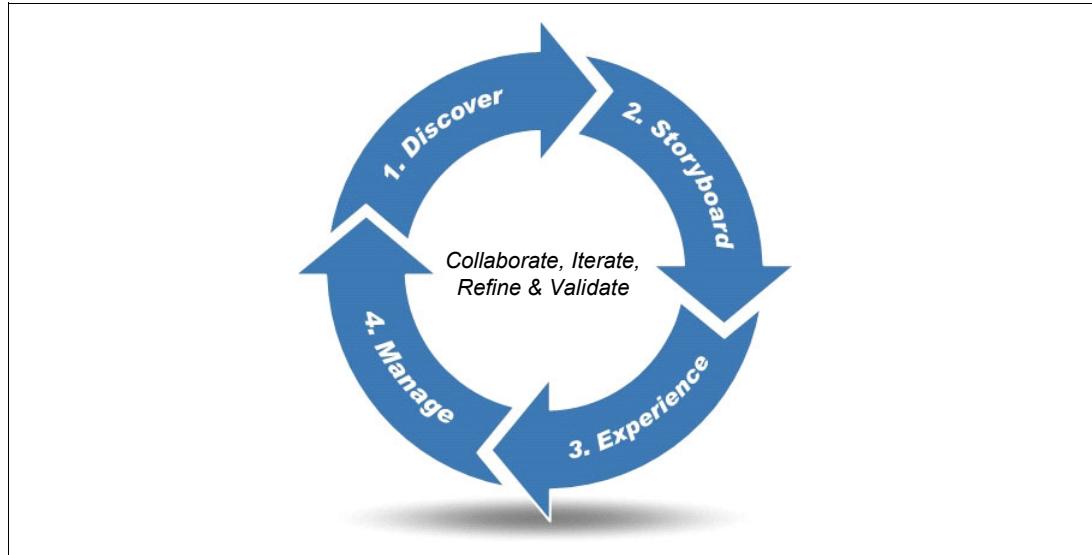


Figure 2-1 Business Activity Phases

The steps to be accomplished in this phase include:

1. Identify Business challenges
2. Strategize on solution
3. Define Business/Solution Goals
4. Define Business Measures
5. Create Business capability maps
6. Create high level processes for high priority business capabilities
7. Obtain executive sign-offs & approvals

Now that we have an understanding of the formal steps, let's bring this together into a more meaningful context and explain the rationale which binds these activities together.

For example, the business (Health Care Insurance Co. ABC.) defines a set of initiatives for the year to meet its financial and transformation targets. From there, they need to define the strategies, or the high level *what* they will do to accomplish those initiatives. Once they have defined those business measures, they then define measures to evaluate criteria for success and operational performance. Once we've defined the *what*, we then look to *who* in our organization (people / asset / capability / etc.) that will support the execution of the strategy. From there we map those organizations into a high level process, which represents the *how* of execution, that will realize and support those initiatives. Bringing all of these steps together and defining the *what*, the *how* and the *who*, this is what makes up the discover process.

Figure 2-2 illustrates an overview of these tasks from a visual model perspective.

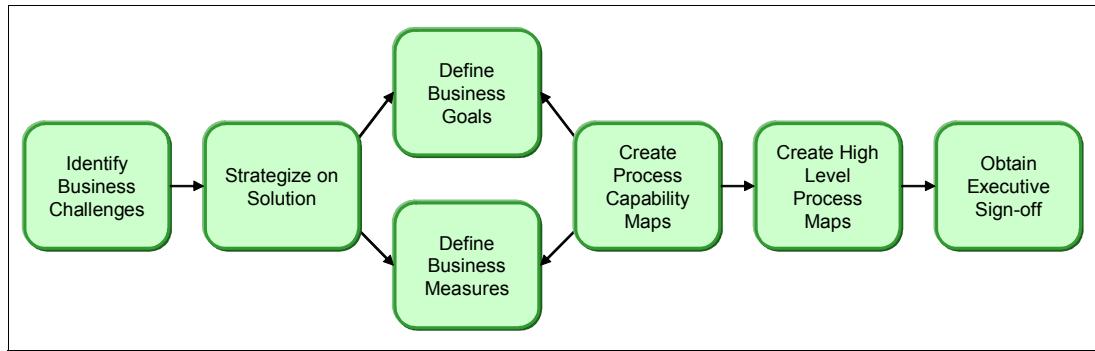


Figure 2-2 Visualization of the steps performed within the Discover phase

2.1.1 Activities within each task

This section provides more detail into the activities to be accomplished within each task. In a subsequent section, (2.2.2, “Defining Business Goals and Measurements” on page 27), we map these steps into the specific context of challenges, goals and strategy for Health Care Insurance Co. ABC.

1. Identify Business challenges
 - Work with business leaders to determine which business challenges may need to be addressed.
 - Prioritize and asses the challenges and document them
2. Strategize on the solution
 - Create strategies related to business challenges in order to determine their relationships to downstream goals and capabilities based on priorities
3. Define Business/Solution Goals
 - Identify specific, measurable goals to ensure that the solution is meeting the business needs
4. Define Business Measures
 - Based on the identified strategy and goals, define business measurements, such as KPI's, business SLA's, and metrics that can be tracked and monitored periodically to ensure solution is meeting the specific business goals identified.

Note: The first four steps above define the *what* aspect of what the organization will do. They understand the challenges and have identified a strategy containing goals and specific measurements for gauging their ability to reach that goal.

5. Create Business capability maps
 - Prioritize capabilities based on business challenges
6. Create high level processes for high priority business capabilities

Note: Steps 5. and 6. address the *who* and the *how* of the approach. Who is supported by specific business roles.

7. Obtain executive sign-offs & approvals

- Ensure that executive level sign off is achieved in order to proceed to the next set of phases.

2.1.2 Tooling used for mapping strategic objectives, capabilities and process maps

Within the Discover phase, strategic maps, capability maps and high level process maps can be created using one of several tooling options. For the purposes of this Redpaper, we will highlight the capabilities of the *Business Leader Widgets* which can be accessed and utilized collaboratively within the cloud.

- ▶ BPM Blueworks provides business users an easy on-ramp to BPM with cloud-based process and strategy tools.
 - Business Leaders and Business Analysts can create, share, and collaborate - leveraging pre-built BPM content and contributions from BPM experts and users around the world to move quickly from strategy mapping to process execution.
 - Users of BPM BlueWorks can:
 - Capture and collaborate on BPM Business Designs in the cloud including strategy maps, capability maps, and process maps - starting from scratch, leveraging prebuilt templates, or leveraging contributions from the community
 - Discover and contribute industry-specific BPM content that covers a full spectrum of BPM strategies, trends, capabilities, and best practices for making the smartest business decisions around BPM
 - Participate in the community by blogging, creating local Meetups, and chatting with BPM experts

Note: See

<http://www-01.ibm.com/software/solutions/smartzwork/bpmblueworks/index.html> to learn more about the capabilities and tooling provided with IBM BPM BlueWorks.

2.2 Reviewing the business challenges, goals and strategy for health care scenario

The following section discusses the underlying business challenges, goals and objectives identified during the Discover phase.

2.2.1 Identifying business challenges

Using the fictitious scenario for Health Care Insurance Co. ABC, the primary business challenge is how to compete effectively in an environment where:

- ▶ Costs are increasing dramatically and,
- ▶ Customers are becoming increasingly frustrated due to the complexity of the claim submission process and amount of repetitive paperwork required to submit a claim.
- ▶ Additionally, many of the manual tasks (e.g - tasks involving humans processing paperwork and manually entering information into a system) is slow, very error prone, and very costly in terms of the number of manual human steps required to complete the process.

In order to compete effectively and survive, Health Care Insurance Co. ABC must improve and automate their claim handling process.

2.2.2 Defining Business Goals and Measurements

After strategizing on how to best meet the business challenges presented above, the business leaders and analysts have identified the following business objectives for Health Care Insurance Co. ABC:

- ▶ Streamline™ and automate where possible manual processes,
- ▶ Reduce claim processing turn around time,
- ▶ Reduce manual processing costs
- ▶ Improve customer satisfaction

In terms of how they measure this success toward the goal, this is defined through:

- ▶ Number of claims processed. Claims will also be segmented by type of claims, namely medical, mental and dental,
- ▶ Average processing time for claim

Figure 2-3 on page 27 illustrates a high level strategy map, illustrating objectives and the measurements for success. This map was created using tooling from IBM's BPM Blueworks, Business Leader widgets. The creation of this map has also set the foundation for now defining specific business measures, such as Service level agreements (SLAs) and Key Performance Indicators (KPIs).

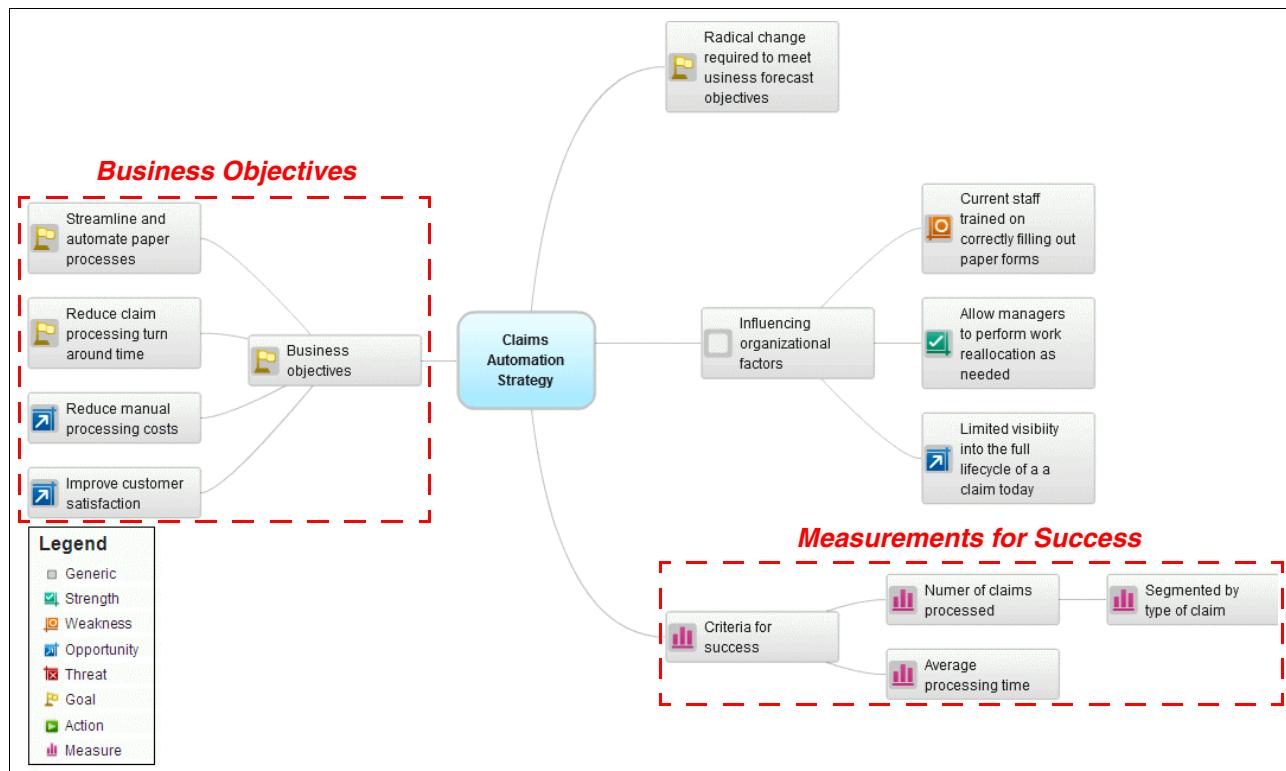


Figure 2-3 High level strategy map with objectives and basic measures

Establishing base KPIs

As the process is analyzed and refined, Health Care Insurance Co. ABC can now define metrics that can be tracked and monitored periodically to ensure the solution is meeting the specific business goals. Some of the base key performance indicators (KPIs) which will be used in the simulation model discussed in Chapter 3, “Storyboarding” on page 33, include:

- ▶ Number of claims handled on a daily basis,
- ▶ Number of claims rejected
- ▶ Percentage of claims routed to the manual, human task “Select Provider”.
- ▶ Duration required for the human task “Select Provider”.
 - This is a manual process which is time consuming and expensive, so the goal is to bring the duration of this task down.
- ▶ Maintaining the percentage of claim rejections to *below 25 percent* of overall submitted claims.
 - Accomplishing a reduction in rejected claims achieves two objectives: 1) It increases customer satisfaction, a primary goal, and 2) it reduces cost associated with handling rejected claims.

Note: See section 3.9, “Definition of Control Points to prepare Experience” on page 72 for details on how these KPIs are used during the modeling simulation.

Additionally, refer to section 5.6, “Manage in real-time using KPIs” on page 145 for details on monitoring and managing these KPIs during the Manage phase.

2.2.3 Creating high level capability maps

By creating a basic capability map, the goal is to make sure that the organizational capabilities can and will align with the strategic objectives. This can help to identify gaps between the organization’s existing capabilities and the strategic objective, prompting modification to the capabilities, goals or both.

Figure 2-4 illustrates the basic capability map in terms of organizational resources and IT resources, mapping these against the objective for Claims Processing and Handling. Note how it is possible from the high level capability map to drill down into more detailed models within the Organizational Resources and the IT Resources.

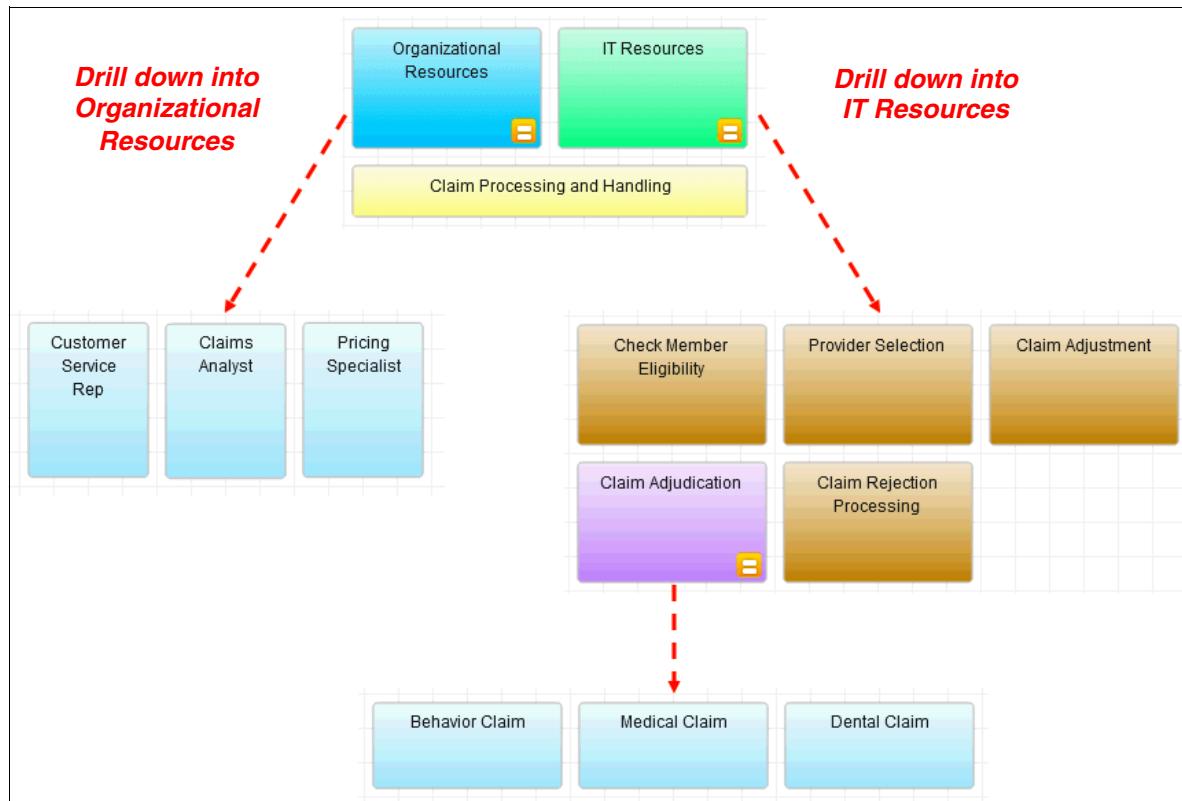


Figure 2-4 Example of a capability map

2.2.4 Creating high level process maps

The next step in the Discover phase is for Health Care Insurance Co. ABC to create high level process maps for the high priority business capabilities. Figure 2-5 illustrates an initial, high level process map.



Figure 2-5 High level process map

The top level processes and their immediate sub-processes consist of:

- ▶ Claim Intake
 - Determine Member eligibility
 - Choose provider
 - Clean up claim data
 - Approve or reject claim

Figure 2-6 illustrates the claim intake process.

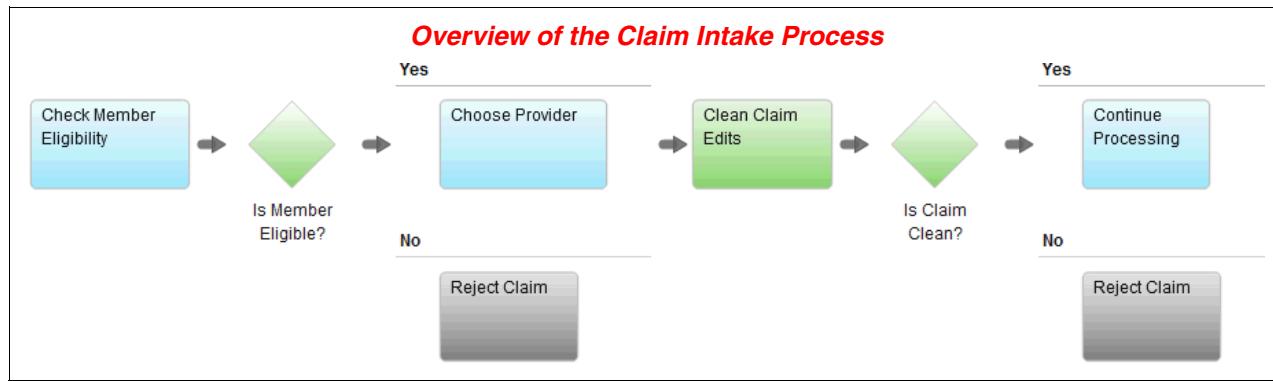


Figure 2-6 Overview of the Claim intake process

- ▶ Adjust Pricing
 - Determine payable amount based on plan membership eligibility
- ▶ Determine Adjudicator
 - Determine how to handle this claim,
 - Route to appropriate department, depending upon if this is a Medical, Dental or Mental Health Claim and perform claim adjudication

Figure 2-7 on page 30 illustrates an overview of the Claim Adjudication sub-process.

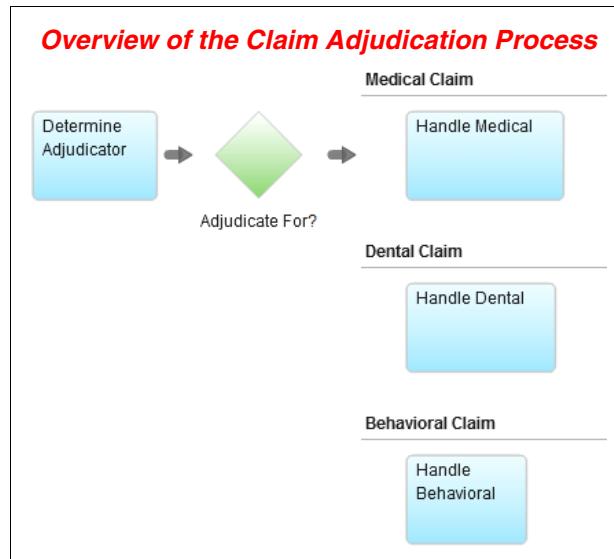


Figure 2-7 Claim adjudication process

Note: These process maps represent the initial, high level process maps. In Chapter 3, "Storyboarding" on page 33, we explain the process model in much greater detail, beginning with a more detailed model of the process, representative of what a customer might provide as their understanding of the documented 'as-is' business process.

2.3 Summary

In this chapter, we have provided the basic business context for the scenario based on Health Care Insurance Co. ABC. Using the steps outlined in the Discover phase in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*, we have analyzed and mapped the strategic business goals and objectives in a strategy map. We have also identified the base metrics and KPIs to ultimately monitor and manage our success toward reaching these goals. These metrics are just a foundation and will continue to be refined and simulated throughout the upcoming Storyboarding, Experience and Manage phases of the effort. Finally, we have created a high level capability map to confirm that the organization's capabilities are in alignment with the strategic objectives, while also beginning to map out the top level processes based on capability prioritization.

Before proceeding to the Storyboarding phase, we should have executive level sign-off approving the strategic objectives, goals and maps produced during this phase.



3

Storyboarding

The goal of storyboarding consists of assessing the current processes, process performance, and process enablers (technology, organization and knowledge) to develop the requirements for future processes. The considered processes and measures, which have been selected during the discovery phase, are first documented and assessed for potential issues and improvements. Then they are being explored for automatization, finally they are specified with measures, what could be described as control points.

This chapter provides documentation of the as-is situation, gap analysis and definition of future state of the process model and measures. It explains how to perform the following:

1. Capture the *as-is state* of the selected Business Process. The *as-is* state of the selected Business Process has been previously captured within the Business Leader Space of BPM Blueworks.
2. Simulate the captured Business Process through the simulation capabilities of WebSphere Business Modeler. Determination of the most expensive and the less efficient paths in the process.
3. Assess and discuss improvements in the Business Process by taking into consideration simulation results, but also strategy and goals of the company determined during the discovery phase.
4. Define the new “future” state of the Business Process Flow and Measures (KPI’s) based on strategy and discussions outcome.

Tools used in this chapter:

- ▶ WebSphere Business Modeler models the “as is” process, the “to be” process and its process measurement requirements.
<http://www-01.ibm.com/software/integration/wbimodeler/index.html>

3.1 Overview of steps in Storyboarding phase

Storyboarding is the second phase in the approach described in *IBM Business Process Management Prescriptive Guide to Solution Implementation*. This is the phase in which the user interactions and the accompanying business processes are reviewed and modeled. The goals are to capture and refine the *current state / as-is process*, so that you can then understand how enhancements can be incorporated to arrive at an improved *future state* process. During this phase you will also validate the inputs and outputs and review and validate human interactions with the system.

An overview of the tasks in this activity phase is as follows:

- ▶ Capture/Refine Current State Process
- ▶ Examine alternate ROI to determine best approach
- ▶ Define/Refine Future State Process
- ▶ Capture Roles
- ▶ Identify process steps as candidates for business rules
- ▶ Define task inputs and outputs and mock up forms for human interactions
- ▶ Validate and visualize human interactions.

Figure 3-1 illustrates a visualization of all the steps involved in the Storyboard phase.

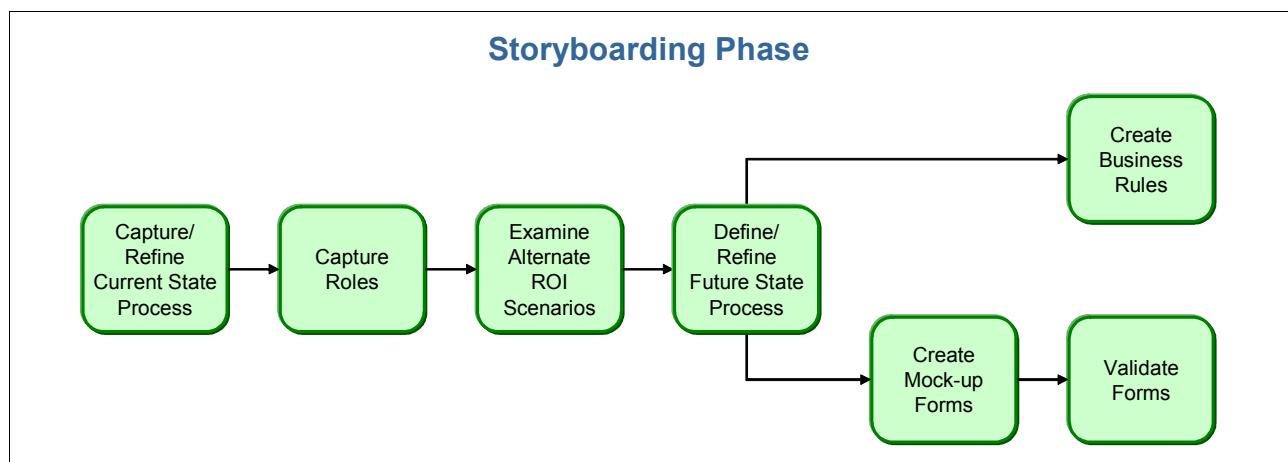


Figure 3-1 Steps involved in the Storyboard phase

Note: Throughout this chapter, we use the Health Care Insurance Co. ABC scenario demo for specific context. If you are not yet familiar with the Health Care Insurance Co. ABC scenario, please refer first to section 1.6, “Introduction to the health care demo scenario” on page 15.

3.2 Capture and refine the current state process

The first step of storyboarding is named “Capture/Refine current state process” as it can be seen in Figure 3-2 below.

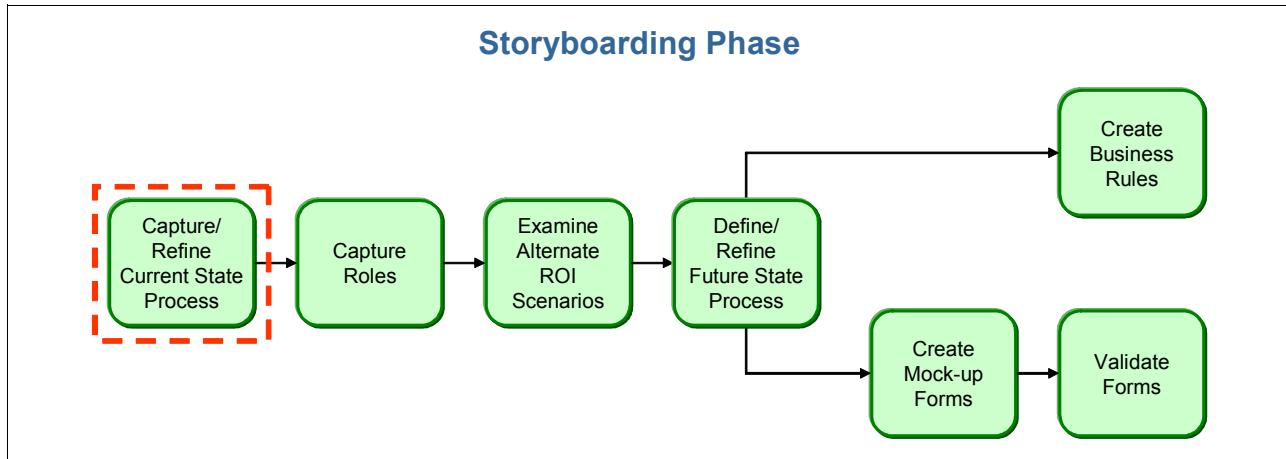


Figure 3-2 Capture and refine current state model

Capture of a Business Process means the translation of this Business Process into meta language named BPMN2.0. In reality these Business Processes either exist:

- ▶ in paper form
- ▶ as a high level diagram created within a software tool
- ▶ as intellectual capital of the employees.

Regardless of the form, assuming the knowledge about the processes has previously been documented, the result of the first step of storyboarding consists of standardizing the knowledge about this process and translating it into a common meta-language using an IT tool. This common meta language is BPMN.

Note: The value of standardizing Business Processes which existed previously in paper-form or, is simply known by the employees, is re-use, flexibility and ease to change. Standardized processes can be easily annotated with improvement suggestions, measure points, critical points, roles, costs and other important process information. These annotations happen within a collaboration space to enable easy exchange of information between Business Leaders and Business Analysts. Together this brings a fast time to market and high adaptation capabilities to change.

Based on the fictitious scenario, Health Care Insurance Co. ABC Claims process, we are going to show the business value of standardized and meta-language based modelization based on a real-life scenario.

More concretely the sub-sections of this current section explain the value of and how to:

- ▶ Import high level process diagrams
- ▶ Refine imported process model
- ▶ Add Business Item information

3.2.1 Import high level process diagrams

This Redpaper assumes that high level process diagrams have been created within BPM Blueworks or using the Business Leader Widgets from IBM WebSphere Publishing Server. We assume that 3 processes have been created based on the high level process diagrams, strategy maps and capability maps explained in Chapter 2, "Discover" on page 23.

- ▶ Claim Process
- ▶ Claim Intake
- ▶ Claim Adjudication

Figure 3-3 shows the repository of the three created processes. These processes can be visualized within a Web Browser on either BPM Blaworks or using the Business Leader Widgets.

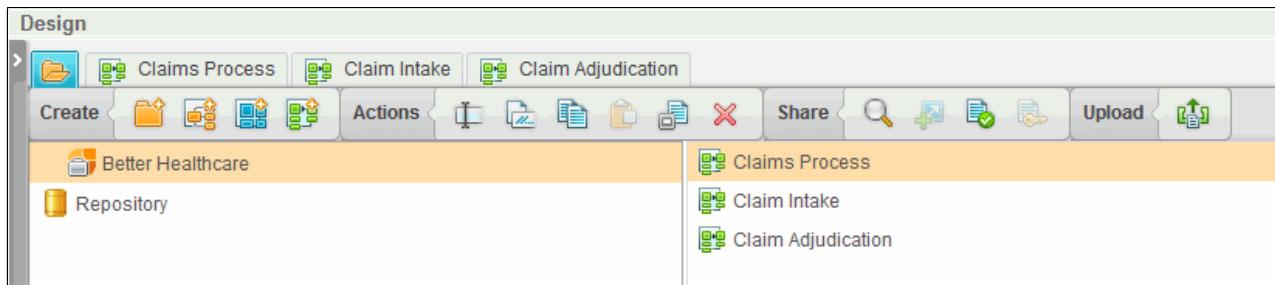


Figure 3-3 Health Care Insurance Co. ABC repository showing three created processes

The Business Leader widgets permit to share the artefacts easily within the Web Browser and collaborate on these processes.

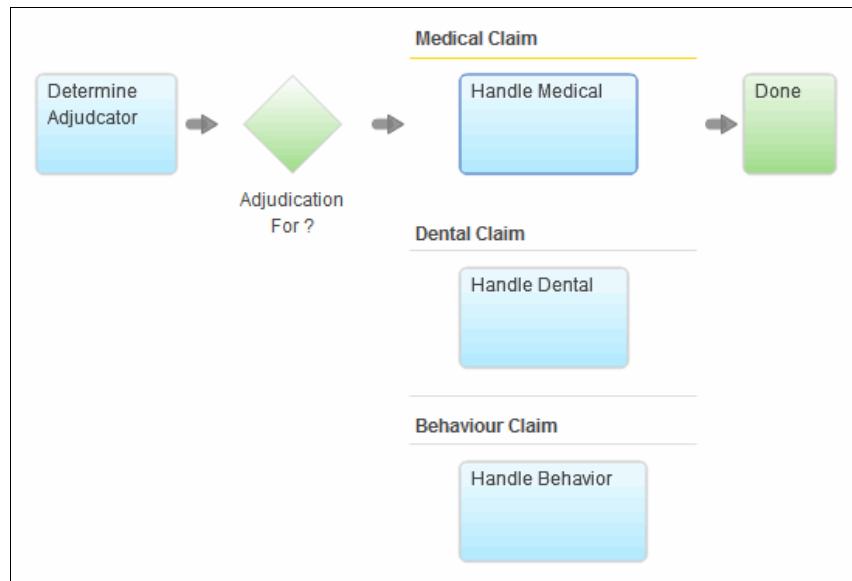


Figure 3-4 High level process diagram of Claim Adjudication

Figure 3-4 shows the high level process diagram of Claim Adjudication. Although that the diagram is high level, it already contains a lot of information including branch Activity name, branches and condition information. Further the user can link activities to documents, make comments and very important collaborate on this model with his peers. Collaboration occurs through the Web Browser.

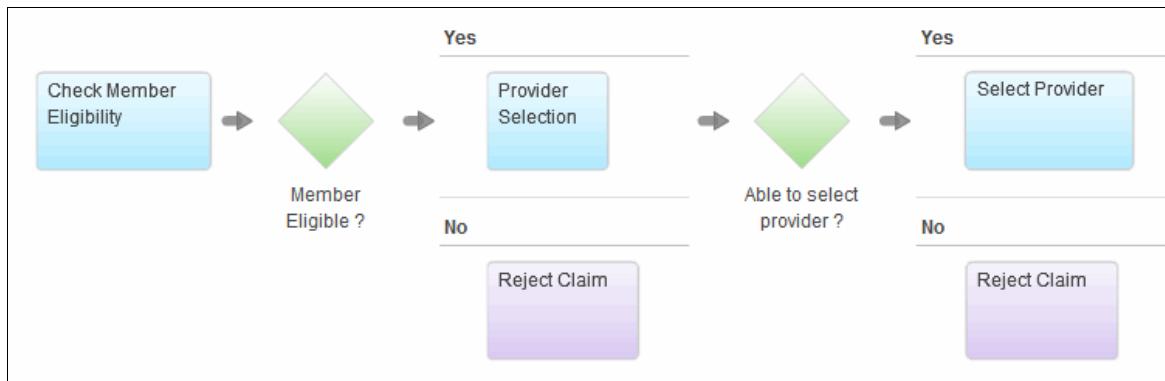


Figure 3-5 High level process diagram of Claim intake (Part 1)

Figure 3-5 and Figure 3-6 on page 37 show a high level process diagram of process “Claim intake”. Branches have been named and we added so-called “goto” activities pointing to Reject Claim. They permit the user to indicate that a particular task or activity is pointing to another task or activity (in this case Claim Rejection).



Figure 3-6 High level diagram of claim intake (Part 2)

The steps below go through the export of the processes towards the WebSphere Business Modeler.

1. As seen on Figure 3-7, click the Export button in the toolbar and wait for the export functionality to appear.

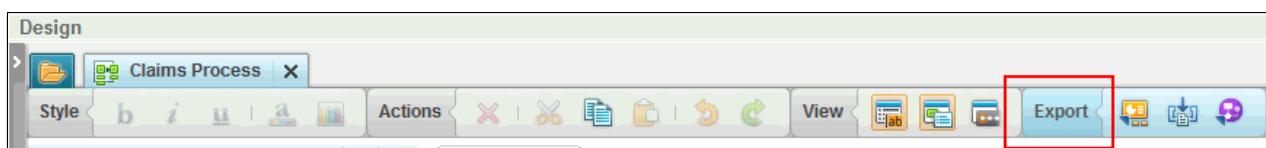


Figure 3-7 The export Button

2. Next select the WebSphere Business Modeler Icon from the toolbar. This is shown in Figure 3-8.

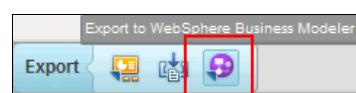


Figure 3-8 Business Modeler icon in Export toolbar

- Finally hit the OK later Download button to download the XML to your server. Repeat the steps with the three processes including “Claim Intake”, “Claim Process” and “Claim Adjudication”.

Note: As a separate download available as an Additional Material to this redpaper, we have an appendix material which shows how to import Business Process Flow from Third-Party tools. In that case we use an existing Business Process Flow diagram designed in Microsoft Powerpoint. In several cases Business Processes diagrams already exist in a Third-Party tool and you may want to import these diagrams into the Modeling tool WebSphere Business Modeler.

Please refer to Appendix A, “Additional material” on page 245 for information on how to download this additional information.

3.2.2 Refine process model after import

The steps below show the imported process model for “Process Intake”, “Process Adjudication” and “Claim Process”. Some of the information in these flows is not needed. We highlighted this information with red boxes. It is part of the capture process to standardize and refine the processes to make the processes as logical as possible.

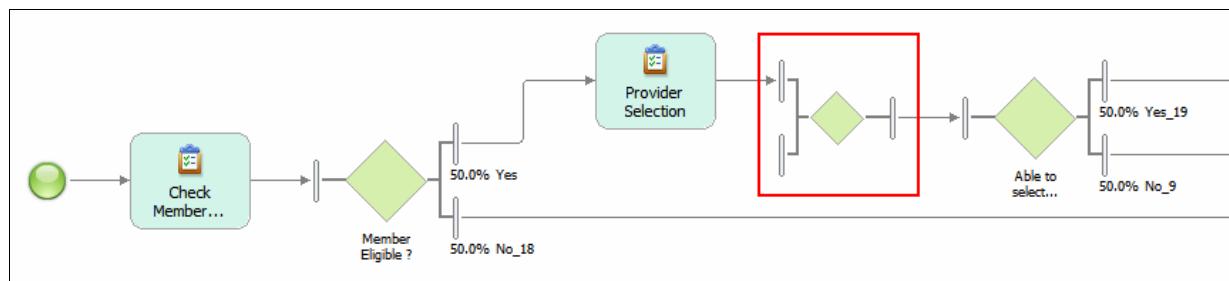


Figure 3-9 Claim Intake (Part 1)

- The merge activity is not needed. It can be deleted and Provider Selection can directly be wired to the next activity.

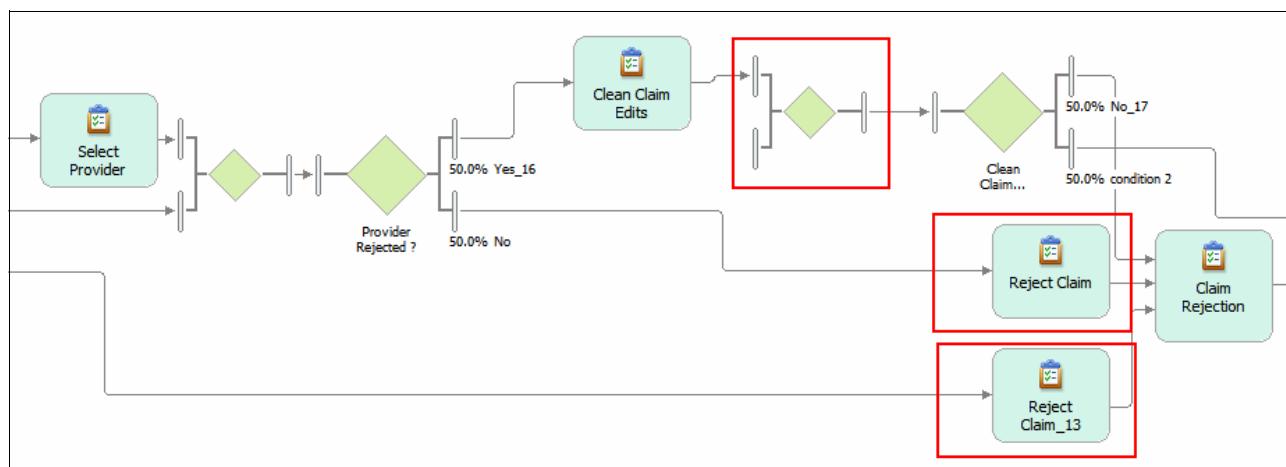


Figure 3-10 Claim Intake (Part 2)

- Another merge activity and duplicate “Reject Claim” activities are not needed. They can be deleted and wired directly to the next activity.

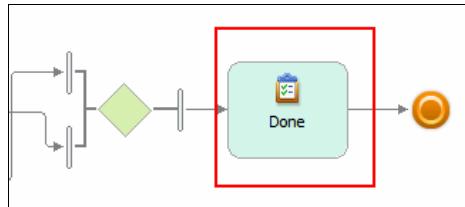


Figure 3-11 Claim Intake (Part 3)

- Now scroll to the end of the process. The “Done” activity is not needed. Please remove this activity and delete it from the process pane.

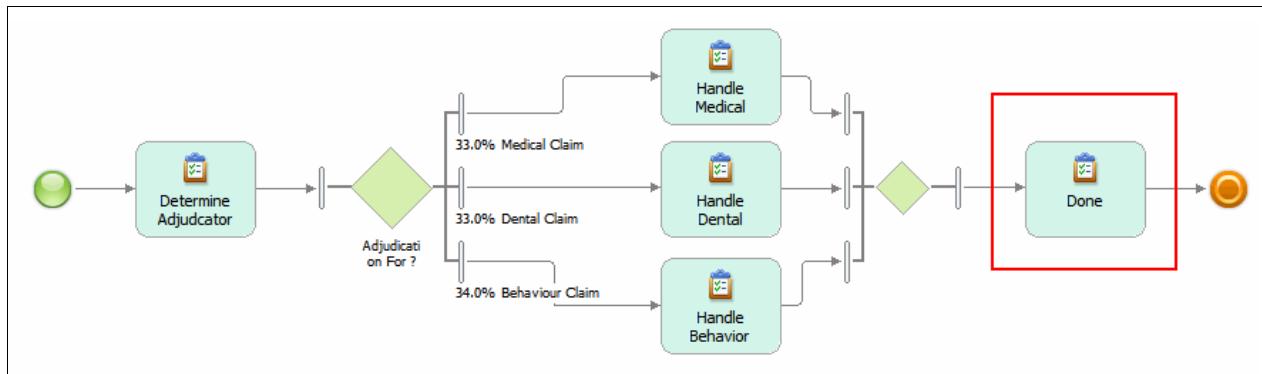


Figure 3-12 Claim Adjudication Process

- Now switch to process “Claim Adjudication”. The “Done” activity is not needed. Please remove the activity and rewire the process correctly.

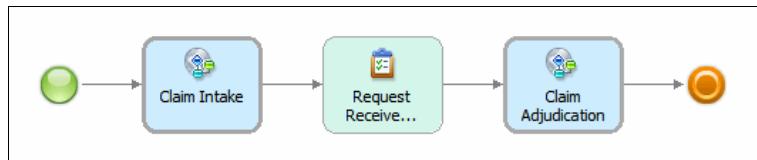


Figure 3-13 Main process “Claims Process”

At this point the three processes Claim Intake, Claim Adjudication and Claim Process will be successfully imported and adjusted. None of the processes is wired to its input node. Without having the input node correctly wired, it is not clear what type of data is needed to start the process. Also simulation would not run correctly

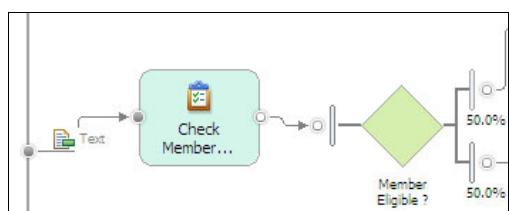


Figure 3-14 Wire input node of process

- Please wire “Check Member Eligibility” to the input node of the process. Figure 3-14 above shows a wire between the process input (bullet on left side of figure) and the next task named “Check Member Eligibility”.

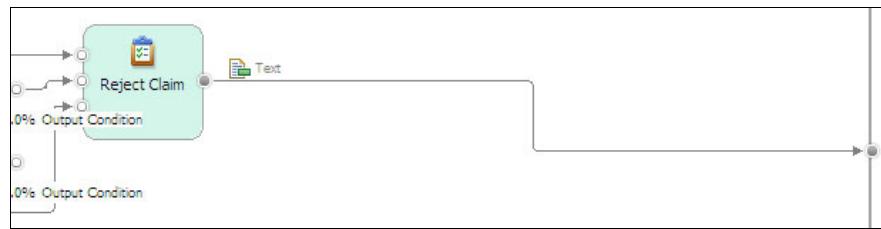


Figure 3-15 Wire output node of process.

- The last activity named “Reject Claim” to the process output. Figure 3-15 above shows the link between Reject Claim and the Business Process Output. This is necessary to correctly specify the output information of the process.

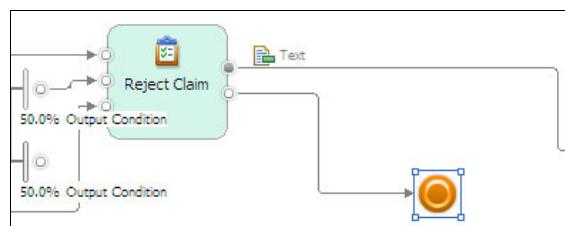


Figure 3-16

- Simulation requires that every process is finished with a terminate node. Figure 3-16 above shows the “Reject Claim” activity also linked to a terminate node.

Important: The “End” Node and “Terminate” Node look very similar. Make sure you created a “Terminate” Node and not an “End” Node.

- Repeat the steps above also for process “Claim Adjudication”. Wire the input node of the process to the first activity and wire the last activity to the output node. Also add a terminate node if none present. At this stage, you should have 3processes “Claim Intake” “Claim Adjudication” and “Claim Process” with linked inbound and outbound communication respectively an end Bullet.

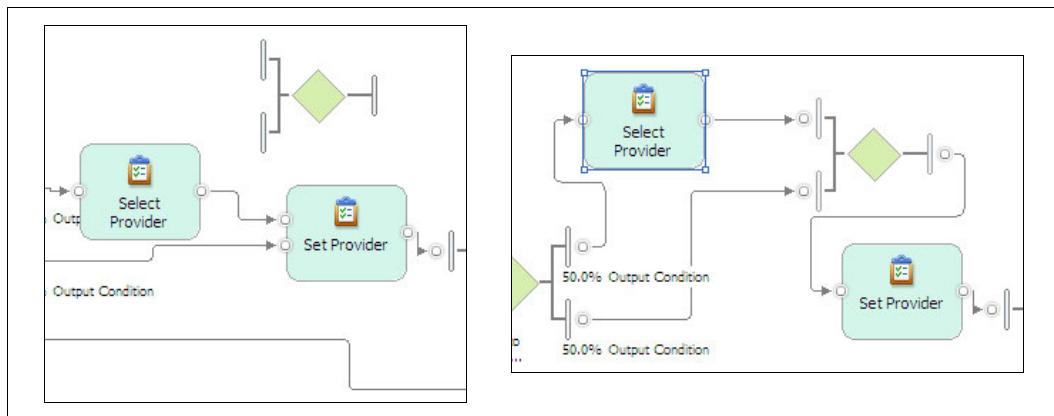


Figure 3-17

3.2.3 Add Business Item to Process Flow

Business items are business documents, work products, or commodities that are transformed in business operations. Examples of business items are manufacturing order, mother board, power supply, and memory chip (in a PC assembly process), itinerary and customer information record (in a trip reservation process), and passenger (in a transportation process).

The Business Item used within the claim process for Health Care Insurance Co. ABC is described as below.

Table 3-1 Business Item Description

Field Name	Type
FirstName	Text
LastName	Text
ClaimNumber	Text
ClaimType	Text
Amount	Integer
Plan	Text
BillingProvider	Text
MemberNumber	Text
ContactPhone	Text
ContactAddress	Text
ReasonCode	Text
Cause	Text
Date	Date
UsedAmbulance	Boolean

Note: Alternatively of using WebSphere Business Modeler to edit a Business Item, a Business Item could also be defined in a Third Party tool such as Excel and later imported into WebSphere Business Modeler. Please refer to the WebSphere Business Modeler Information Center for more details:
<http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp>.

The next steps are going to describe how the Business Item named claim has been imported into WebSphere Business Modeler.

1. Right-Click “Claims-Model” within the Project Tree view of WebSphere Business Modeler and select “Import” from the context menu. Figure 3-18 on page 42 appears.

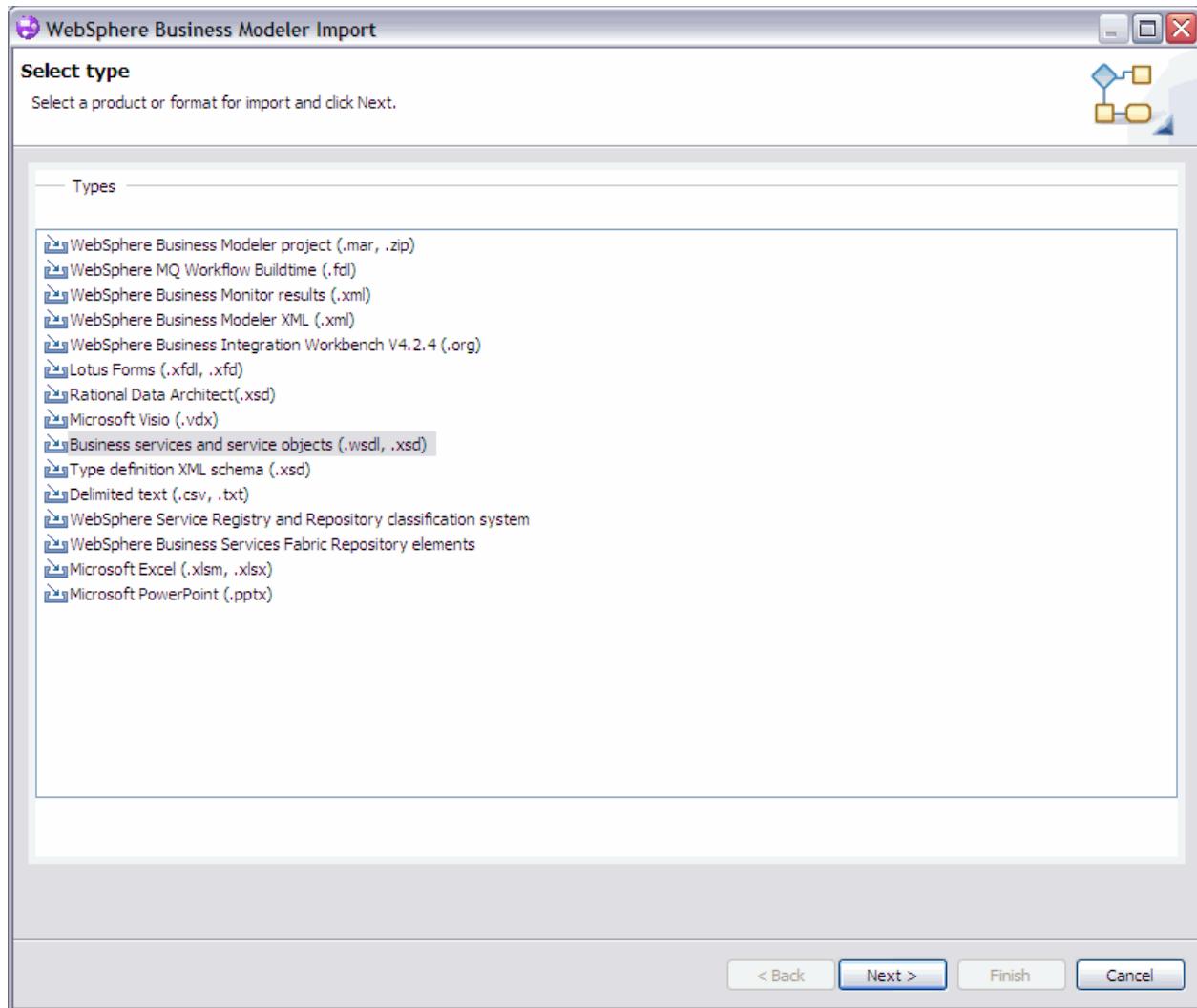


Figure 3-18

2. Click next and select the folder containing the Business Item XSD file.

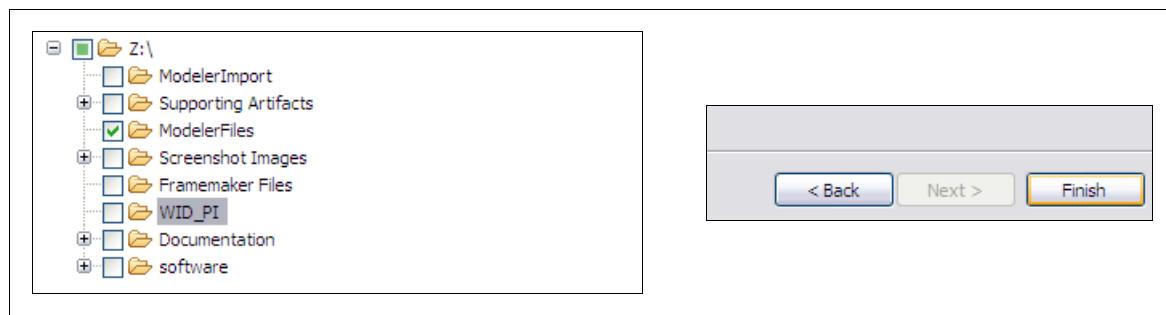


Figure 3-19

3. Click finish to complete.
4. Next, make sure that you are in the “Advanced Mode” of WebSphere Business Modeler. You can switch to the “Advanced Mode” by selecting **Modeling** → **Mode** → **Advanced** from the menu.

5. Next drag and drop the “Claim” Business Item to every path in you Business Process Flow Model. This needs to be done exactly on every link (path) within process “Claim Adjudication”, “Claim Intake” and “Claim Process”.

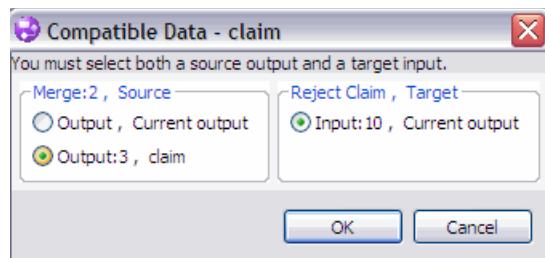


Figure 3-20 Specify correct input and output task during drag and drop of business item

6. While doing the “Drag and Drop” operation, you might be challenged by the dialog box Figure 3-20. Select always “Claim” in that dialog box.

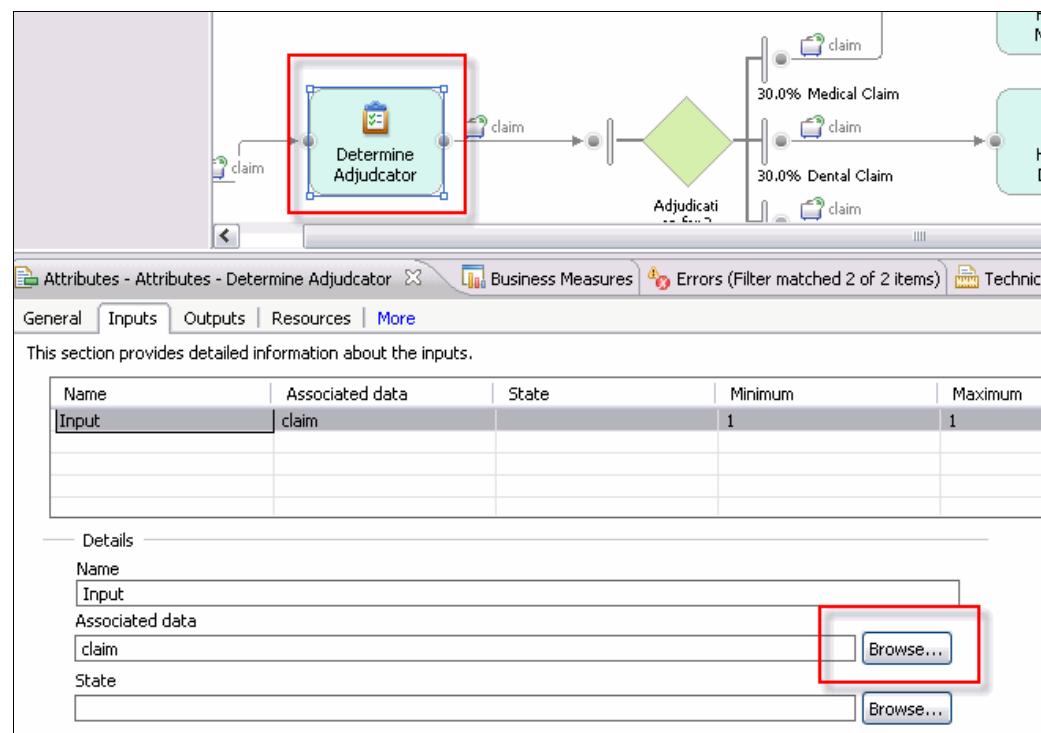


Figure 3-21 Change Input and Output type of tasks

7. Change type of “Input” and “Output” from tasks if needed.

Important: Make sure WebSphere Business Modeler changes existing inputs and outputs to “claim”. In some cases WebSphere Business Modeler might want to generate additional “inputs” and “outputs” instead of converting the existing “inputs” and “outputs”. If this happens, you can remove the superfluous inputs and outputs or change the existing datatype to “claim”. See Figure 3-21 above.

3.3 Add Roles and Cost to as-is process

The next step of storyboarding is named “Capture Roles, Create Human Tasks and add Roles to Human Tasks” as it can be seen on Figure 3-22 below.

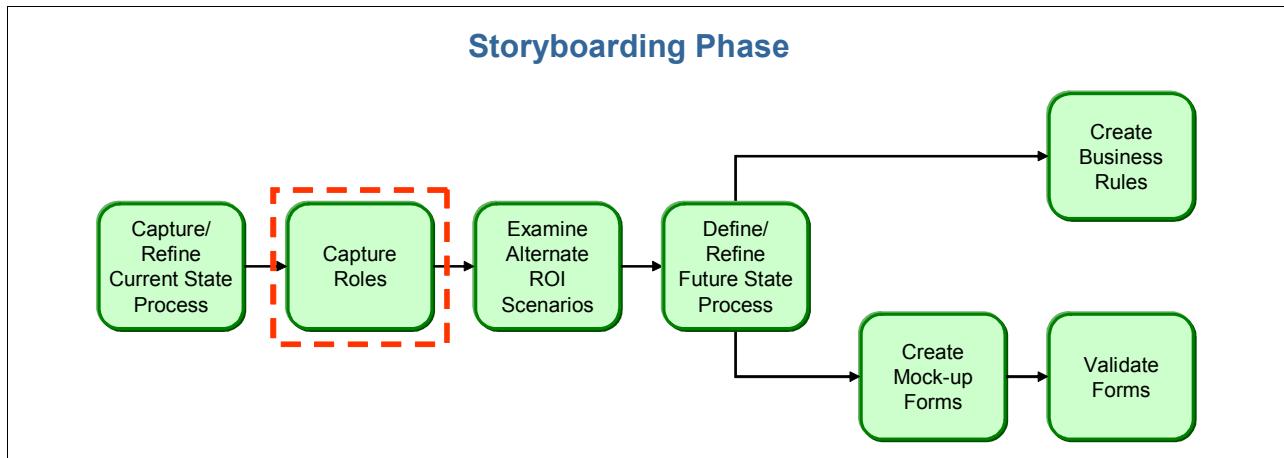


Figure 3-22 Capture roles, assign human tasks and add cost

This section concentrates on adding role and cost information to the Business Process Model. The initial Powerpoint describing the process flow does indeed not give that information thus making it very difficult to understand what is the most expensive path within the process and making it hardly impossible to optimize the process. Overall this is done through:

- ▶ Capturing all relevant human roles that perform steps in the process
- ▶ Capturing all cost and duration information and association of this information to the steps in the process.

Note: WebSphere Business Modeler gives possibilities to attribute roles to tasks. A role is an additional characteristic to a resource. An employee resource could have the role of Customer Service Representative for example.

3.3.1 Add roles to as-is process

Table 3-2 describes the roles which need to be defined for Health Care Insurance Co. ABC:

Table 3-2 Process Roles

Role Name	Description	Attributed to
Claims Analyst	The claims analyst is in charge to claim requests to determine an appropriate billing provider	Task “Select Provider”
Customer Service Rep	The Customer Service Representative processes claim information, either over the counter or via phone.	Not attributed.

Role Name	Description	Attributed to
Pricing Specialist	The Pricing Specialist looks at the claim information and adjusts the claim amount based on the nature of the claim	Task "Request Receive Pricing"

The steps below are going to describe how you can create the roles for Health Care Insurance Co. ABC:

1. Create roles as shown on Figure 3-23. Right-Click **Resources** → **New** → **Role**. The dialog box “Create a new role” appears. Name the new role to “Pricing Specialist” and give a meaningful description e.g.”The Pricing Specialist looks at the claim information and adjusts the claim amount based on the nature of the claim.” Create 2 more roles named Customer Service Rep and Claim Analyst. Describe the roles as indicated in Table 3-2 on page 44.

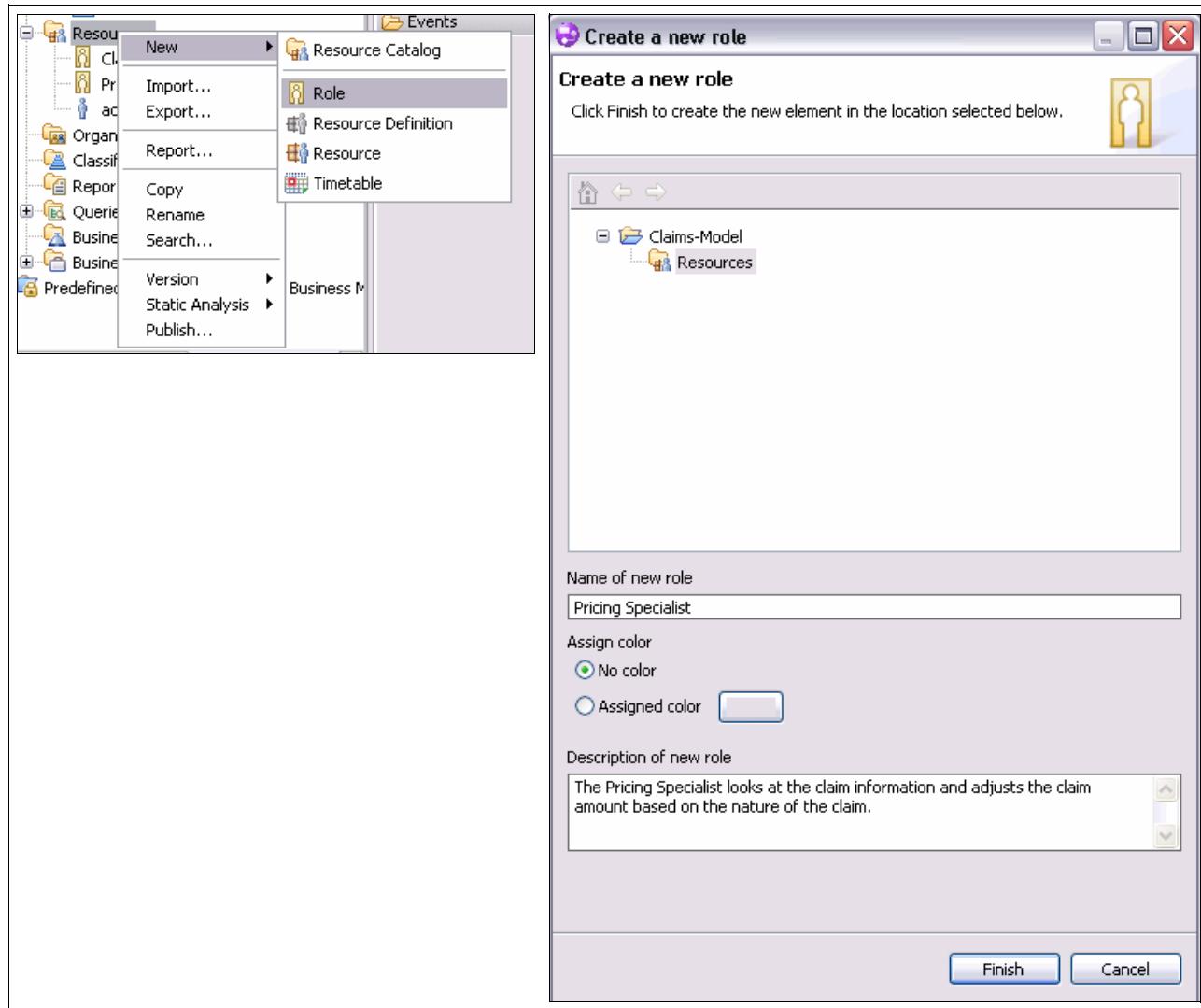


Figure 3-23 Create new role

2. In the same way, add Roles “Pricing Specialist” and “Customer Service Representative”.

Note: After having attributed a role to a resource, the Business Analyst could switch to the Swimlane layout. The swimlane layout rearranges elements in the diagram according to which organization unit, location, individual resource definition or role requirement they have. Using swimlane mode is a possibility to show exactly who is performing what in the process. Swimlane layout based on roles is activated through the following menu: **View → Switch to Swimlane Layout → Role.**

Note: Additionally the user could give clarity by changing the image of the various tasks of the process flow. WebSphere Business Modeler gives access to predefined images for tasks, making the model easier to read. Right-click task and select **Change Image → Custom Image** from the context menu.

3.3.2 Add cost information to As-Is Process

Every activity “task” within the claim process costs money to Health Care Insurance Co. ABC. In order to make simulation as accurate as possible, we will need to define costs as precisely as possible prior to start the simulation. Within WebSphere Business Modeler the following type of costs can be modeled:

- ▶ *One-time cost* - A one-time cost for a role or resource applies every time that the role or resource is associated with a task in the process.
- ▶ *Cost per time unit* - A cost per time unit is a cost that increases with the amount of time the process uses the resource. An example of a cost per day is the rental of a piece of equipment required for the process
- ▶ *Cost per quantity* - A cost per quantity is a cost that increases with the amount of the resource that the process requires. For example, hydro has a cost per kilowatt hour. You can associate costs per quantity unit with bulk resources.
- ▶ *Cost per quantity and time unit* - A cost per quantity and time unit is a cost that increases with both the amount of the resource and the time for which it is required. You can associate costs per quantity and time unit with bulk resources

The claims process from Health Care Insurance Co. ABC will mostly require One-Time Costs, Cost per time units and Cost per quantity and time unit. The as-is process is paper-based and includes the following types of cost:

1. Manual Tasks: Manual Tasks are tasks being purely executed on paper. Actually the person receives the claim through internal post, works on the claim and transfers it to his peer using the internal post. These pure manual tasks are most time intensive and purely executed by employees without the intervention of an IT system.
2. External Tasks: These tasks are executed by an external department. They are out of scope of the process.
3. Semi-Automatic Tasks: These tasks are executed by an IT-System. However the data required to process this task needs to be entered by an employee. The calculated cost is actually the time needed to enter that data and afterwards print the result for further processing.

Table 3-3 As -Is process Cost information

Resource description	Type of resource	Cost information
Claims Analyst	Role (Human Being)	\$20 per hour

Resource description	Type of resource	Cost information
Pricing Specialist	Role (Human Being)	\$25 per hour
Determine Adjudicator	Manual Task	1 hour by claims analyst
Handle Medical	External Task	\$100 per claim
Handle Dental	External Task	\$87 per claim
Handle Behavior	External Task	\$111 per claim
Check Member Eligibility	Manual Task	15 minutes by claims analyst
Provider Selection	Manual Task	15 minutes by claims analyst
Select Provider	Manual Task	1 hour by claims analyst
Set Provider	Semi-Automatic Task	10 minutes by claims analyst
Clean Claim Edits	Semi-Automatic Task	10 minutes by claims analyst
Reject Claim	Semi-Automatic Task	10 minutes by claims analyst
Request Receive Pricing	Manual Task	2 hours by Pricing Specialist

The steps below describe how to set the costs within the Processes of Health Care Insurance Co. ABC.

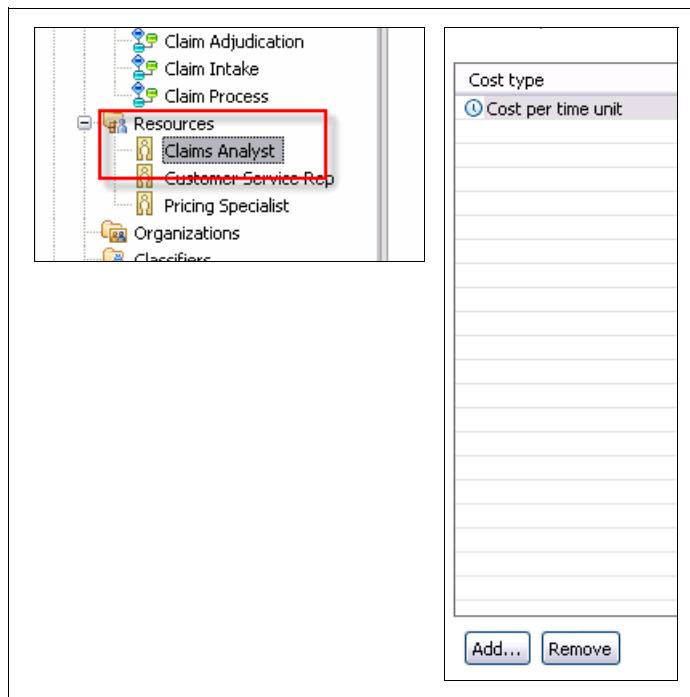


Figure 3-24 Add cost information to role

1. Double-Click Resources Claim Analyst within the project tree. The Dialog Box “Claims Analyst appears. Change to tab named “Costs” and click the Button “Add” to add new costs to the resource. See Figure 3-24 for more directions.



Figure 3-25 Specify type of cost

2. Select “Cost per time unit” as shown in Dialog Box Figure 3-25. Insert \$25 as a value and 1 hour as cost details. This means that the Resource “Price Analyst” is going to cost \$25 per hour

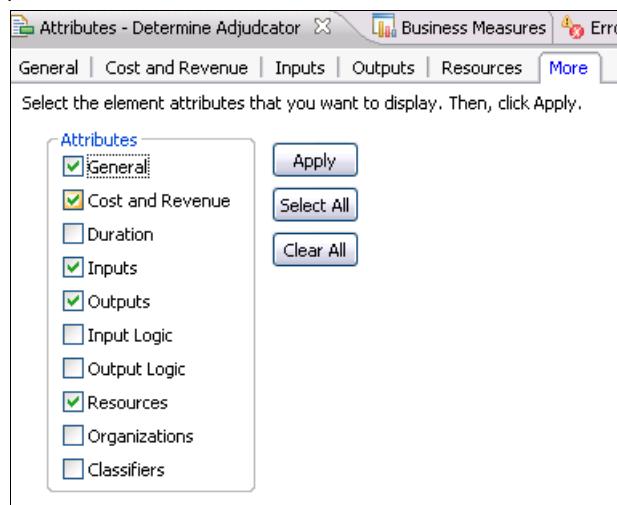


Figure 3-26 Add cost tab to attributes panel

3. Next select the task named “Handle Medical” within process “Claim Adjudication”. Select Cost and Revenue and add a Specific amount of 111 USD to the Task. Also add fixed cost information on tasks “Handle Dental” and “Handle Behavior”.

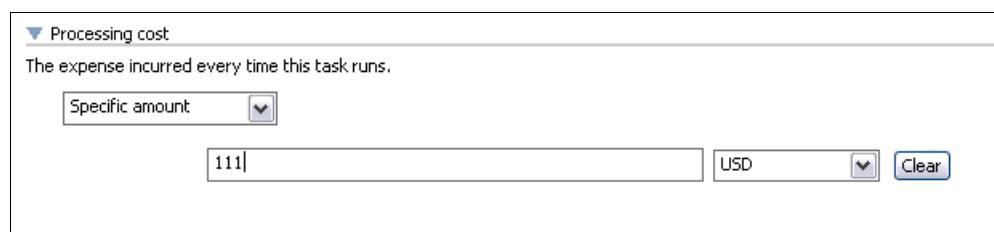


Figure 3-27 Specify fix cost on task

Note: If the menu does not give the possibility to select “Cost and Revenue”, then click “More” and add “Cost and Revenue” by selecting it as shown in Figure 3-26.

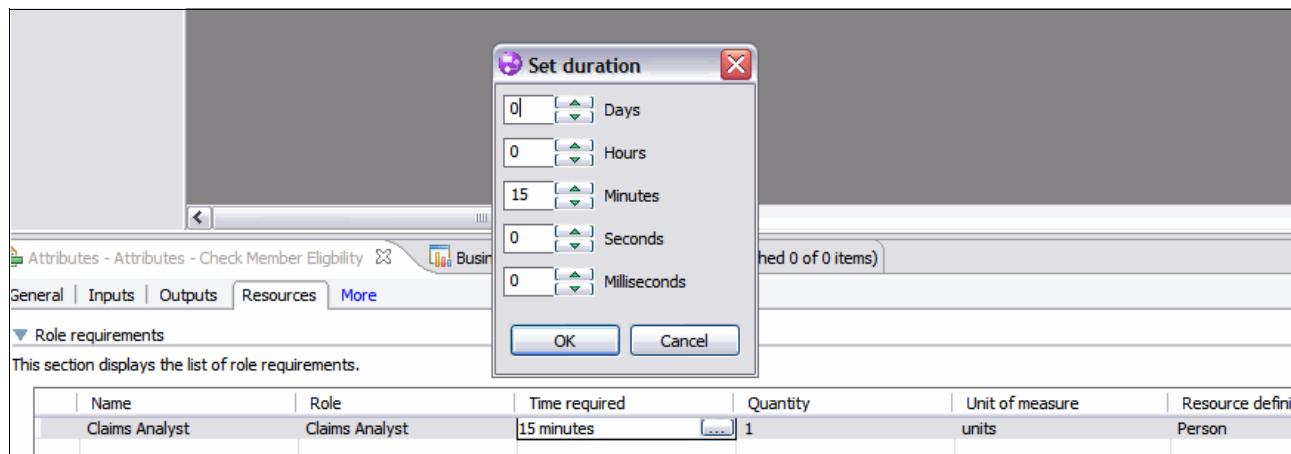


Figure 3-28 Add duration information to Tasks

4. Finally the following duration information needs to be added to the Manual Tasks “Request Receive Pricing”, “Check Member Eligibility”, “Provider Selection”, “Select Provider” and “Request Receive Pricing”. duration information needs to be added to the Manual Tasks “Request Receive Pricing” and “Select Provider”. Figure 3-28 above shows where to add duration information.
5. The table below summarizes all task durations.

Table 3-4 Duration information

Task	Role	Duration
Determine Adjudicator	Claims Analyst	1 hour
Check Member Eligibility	Claims Analyst	15 minutes
Provider Selection	Claims Analyst	15 minutes
Select Provider	Claims Analyst	1 hour
Set Provider	Claims Analyst	10 minutes
Clean Claim Edits	Claims Analyst	10 minutes
Reject Claim	Claims Analyst	10 minutes
Request Receive Pricing	Pricing Specialist	2 hours

3.4 Examine Alternate ROI Scenarios

The goal of this section is to leverage case analysis to determine which usage scenarios/use cases best fit the goals that were defined during discovery. The major goals determined in the discovery section was cost reduction. Simulation and analysis in the present chapter will therefore target cost reduction as a priority.

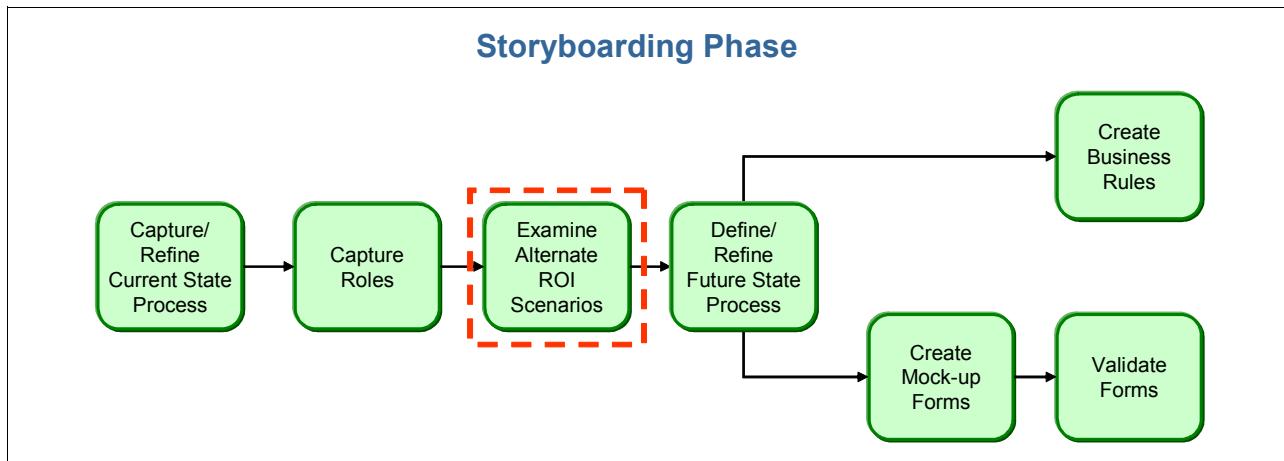


Figure 3-29 Determine most effective paths in process

3.4.1 Baseline Simulation

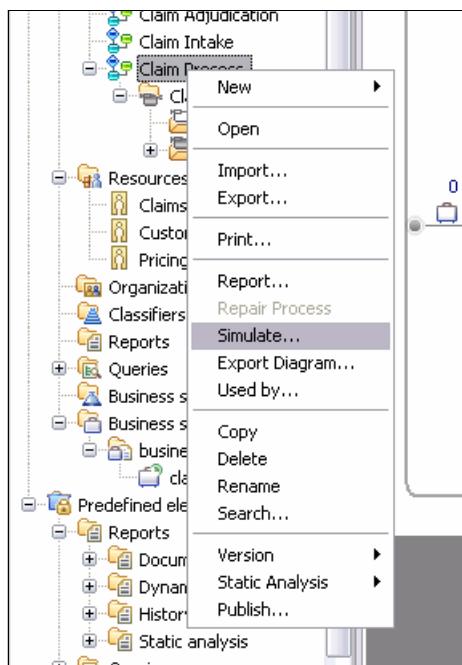


Figure 3-30 Select "Simulate" from the context menu

1. Right click the process "Claim Process" and select "Simulate" from the Context Menu. A simulation snapshot will be created. Wait until the creation completes

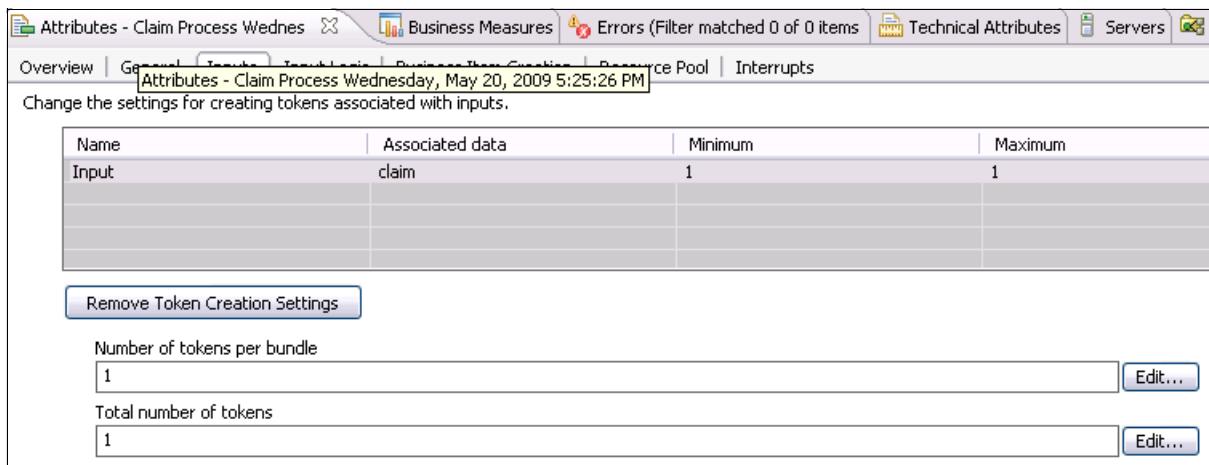


Figure 3-31 Specify a number of tokens to generate

2. Next, click the process background of the newly created simulation background. You will be able to select the Attributes Tab and configure the “Total Number of Tokens”. Hit the Button “Edit” next to the Field “Total Number of Tokens” which is set to “1” by default. “1” is a too small number to actually see relevant simulation data.

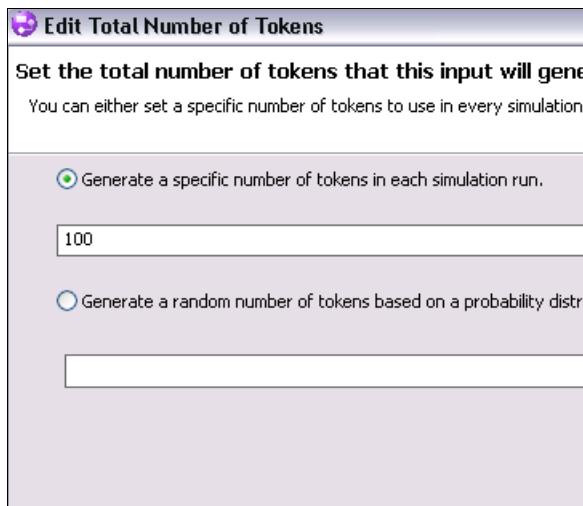


Figure 3-32

3. A dialog box named “Edit Total Number of Tokens” will appear. Select the radio box “Generate a specific number of tokens in each simulation run” and set the number to “100”.

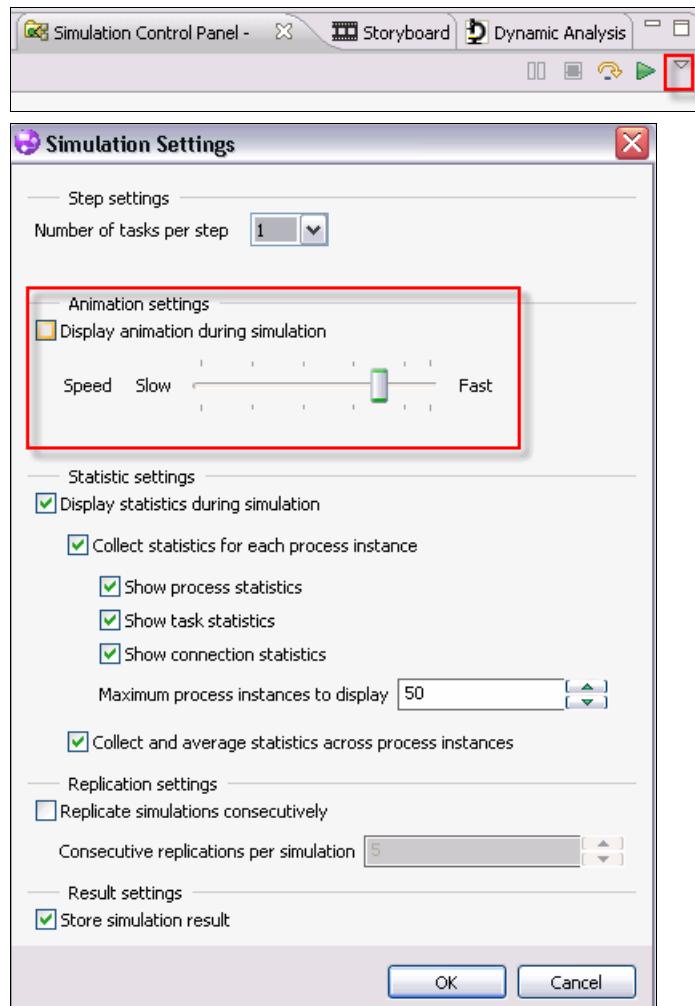


Figure 3-33 Specify Simulation settings

4. Select the tab named “Simulation Control Panel” and click the white triangle next to the “Play” Button. A new dialog box named “Simulation Settings” will appear. Uncheck “Display animation during simulation” and make sure the speed is set to a higher rate.



Figure 3-34 The “Play” Button

5. Next, hit the “Play” Button next to the “Settings” Button and the simulation will start.

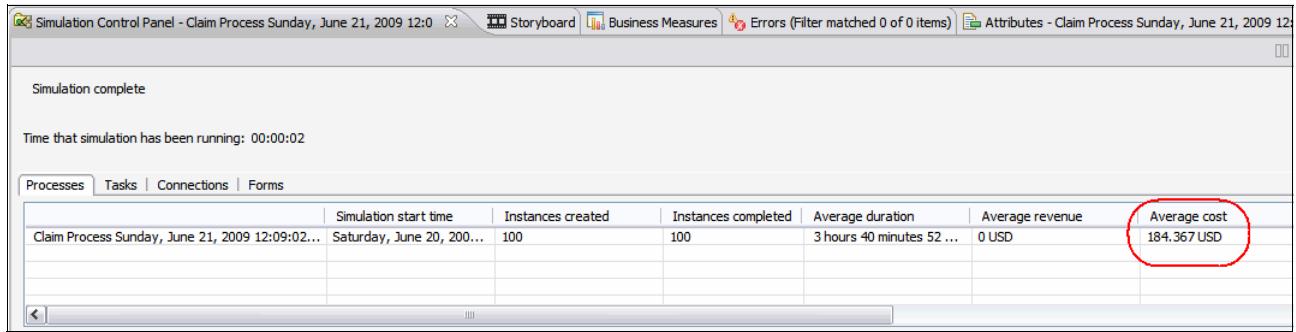


Figure 3-35 Initial simulation results

- Wait for the simulation to complete. Individual Cost information will appear. This is shown in Figure 3-35. The results above are showing a case by case execution of the Claims Process and highlighting the average cost of every case. It however only shows this analysis at a Parent Process Level giving less insight on the actual expensive paths of the process. Sections 3.4.5, "Issue 3: Cost of Service Intake" on page 58 and 3.4.6, "Issue 4: Cost of Claim Adjudication" on page 60 provide more detail on this. 100 instances processed have an average cost of \$184.367 USD.

3.4.2 Issue 1: Efficiency of Manual Tasks

Reducing paper and optimizing information flows have become key priorities. A traditional Manual task is processed as follows:

Every Employee participating in a workflow has an inbound mail basket and an outbound mail basket on his desk. Internal post would basically bring him new work, he would process this work and finally give it to his outbound mail basket. It would then finally be sent to another employee (e.g to the manager for approval).

This way of working has several issues:

- ▶ Quality of Service: It is only difficult to monitor the time the employee passes on processing the claim he needs to process. A claim may be lost or unattended for a long time having a negative on customer satisfaction and indirectly also on cost.
- ▶ Limited workflow capabilities: Even though the workflow exists on paper, there is no guarantee that employees actually follows the workflow. Unless there is severe control of every employee, the degree of freedom is big and a bypass or change may be decided without actually reflecting this as a change to the paper-based process.
- ▶ Escalation capabilities: It is very difficult to act on lost claims. Since it is difficult to monitor a paper-based process, it is also not very easy to act directly (real-time) on lost claims. A possible reaction could be the escalation to a manager.

A first possible action would be to implement Manual Tasks as automatized Human Tasks. In that case the automatized Workflow will handle inbox and outbox of the employee. If a given state in the process is reached, a workitem would simply appear in the ToDo list of the employee. This ToDo list is for example part of the corporate Intranet Site. Within the BPM suite of IBM, the Business Space would be the place where Users could work on Human Tasks.

A second possible action would be to implement Manual Tasks as fully automatized Business Rules. In that case the execution would be fully automatized and no human interaction is necessary anymore. This would be convenient if the rules to be applied to the claim can be defined as expressions in a Business Rule engine. This applies for example to rules based on

decision tables, such as e.g the decision to ask for approval if the amount of claimed money is bigger than USD 5000.

Note: Business Space powered by WebSphere enables business users to create an integrated and customized user experience so that they can access contextualized process information in a secure role-based environment. Using the single sign on, Web 2.0-based mashup environment, Business Space users can collaborate with colleagues and subject matter experts by sharing process content and working together to review BPM assets.

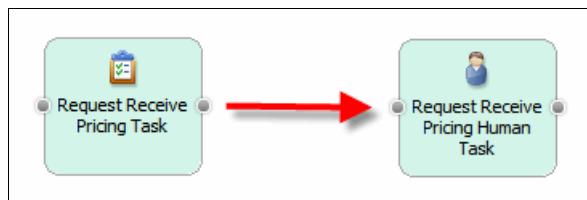


Figure 3-36 Manual task to human task

At this stage no changes should be done. The changes are indicated as “comment boxes” on the process and the cost changed so that the impact of a future change can be estimated. Before the definition of a future state we are still in the process of simulation and exploration of changes. No changes should be applied at this moment.

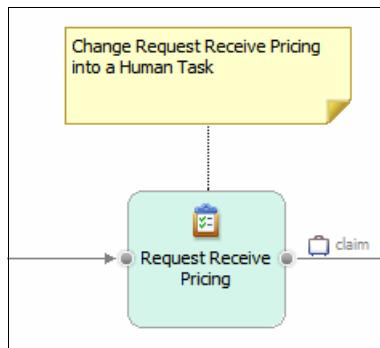


Figure 3-37 Annotation to mark future changes to process

Candidates for automation changes are as follows:

- ▶ Request Receive Pricing: Change to Human Task
- ▶ Check Member Eligibility: Change to Business Rule
- ▶ Provider Selection: Change to Business Rule
- ▶ Select Provider: Change to Human Task
- ▶ Determine Adjudicator: Change to Business Rule

Important: The action suggestions are assumptions which are tested during simulation. To reflect these assumptions, we are going to change the cost table in Table 3-5.

3.4.3 Issue 2: Efficiency of Semi-Automatic Tasks

In this Redpaper we named a “Semi-Automatic task” a moment in the process where the employee accesses an IT-System to work on a claim. The claim still is posted to the paper-based inbox to the employee, but the action on the claim is performed in a backend system, which most often contains additional state information on the to be processed claim. In the case of Clean Claim Edits for example, the employee accesses the corporate ERP system and cleans claim edits manually. This action requires the employee to connect to the ERP system, perform the changes and disconnect.

Issues in this way of working are:

- ▶ The procedure is very error-prone. The employee may make errors when copying information or simply clean the claim changes on the wrong claim. Consequences of such a human error are having a huge impact to the claim processing.
- ▶ Quality of service. There is no real-time monitoring and guarantee that the employee actually performs this changes. There are also limited capabilities in sending out an escalation event, if the action does not occur within a defined amount of time.

The recommended action to address this issue consists of accessing the backend ERP system automatically. Actually no manual login and data retrieval would be required. The action (e.g Clean Claim Edits) in the ERP system is executed automatically. An automatic access to a backend system is called “Internal WebService” and “External WebService”. If internal, the webservice will be in the scope of the Business Process. If external, the webservice is in charge on another department and implies cost.

Note: This however assumes that the backend systems such as ERP systems are accessible by the workflow. IT needs to guarantee that by doing the necessary steps which are exposed in Chapter “Deploy” of this paper. To be able to access backend systems directly, the systems need to be accessible as WebServices through for example an Enterprise Service Bus.

The following semi-automatic tasks should be implemented as Internal WebServices:

- ▶ Set Provider
- ▶ Clean Claim Edits
- ▶ Reject Claim

The following semi-automatic tasks should be implemented as External Web Services

- ▶ Handle Medical
- ▶ Handle Dental
- ▶ Handle Behavior

Important: At this stage the changes are not actually implemented. They will be assumed and reflected into the adapted cost table to be seen within Table 3-5. Actual changes will be performed within chapter “Experience”.

3.4.4 Changes to cost table and second simulation

At this point the cost table needs to be adapted to reflect changes given by sections 3.4.3, “Issue 2: Efficiency of Semi-Automatic Tasks” on page 55 and 3.4.2, “Issue 1: Efficiency of

Manual Tasks" on page 53. Internal Web Services and Business Rules are going to be treated automatically. This means that no cost will be involved. Table 3-5 shows the changes.

Table 3-5 Cost table based on Process Automatization Assumptions

Resource description	Type of resource	Cost information
Claims Analyst	Role (Human Being)	\$20 per hour
Pricing Specialist	Role (Human Being)	\$25 per hour
Determine Adjudicator	Business Rule	no cost involved
Handle Medical	External WebService	\$100 per claim
Handle Dental	External WebService	\$87 per claim
Handle Behaviour	External WebService	\$111 per claim
Check Member Eligibility	Business Rule	no cost involved
Provider Selection	Business Rule	no cost involved
Select Provider	Human Task	1 hour by claims analyst
Set Provider	Internal Web Service	no cost involved
Clean Claim Edits	Internal Web Service	no cost involved
Reject Claim	Internal Web Service	no cost involved
Request Receive Pricing	Human Task	2 hours by Pricing Specialist

Before stepping over to assessment of the improvements a second simulation needs to be performed. We are then going to compare the outcome of this simulation with the baseline results and highlight improvements made.

1. Execute a simulation by clicking **Claims Process → Simulate**. Make sure to run the simulation with 100 tokens and to deactivate "Animation" in the simulation settings.

Check for the following average cost to appear in the Processes tab of the simulation results.

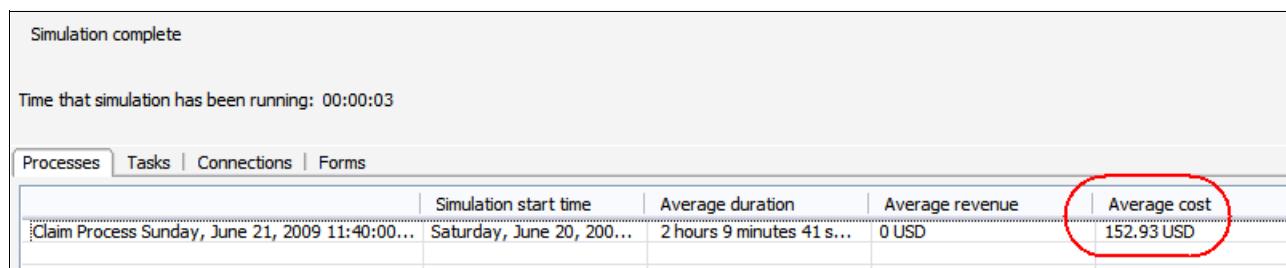


Figure 3-38 Second simulation results

Assessment is all about uncovering pathologies in existing processes. Doing that it the orientation to the initial goals of process improvement is very important. These goals have been identified in the "Discovery" chapter of this paper. Claim Process is a cost driven process. Healthcare Insurance ABC wants to reduce the cost of this process and looks out for improvements in the process. A secondary goal of the Process improvement at Health Care Insurance Co. ABC is customer satisfaction.

The steps below show how to generate a more meaningful Analysis Report from your simulation.

1. Right-Click your simulation result within the Project Tree. Select **Dynamic Analysis** → **Processes Comparison Analysis** → **Processes Cost Comparison** and wait for the report to generate.

	Simulation Result Name	Process Name	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Cost	Average Cost
	Simulation result Sun...	Claim Process	USD0.00	USD99.73	USD0.00	USD53.20	USD152.93
	Simulation result Sun...	Claim Process	USD0.00	USD100.75	USD0.00	USD83.62	USD184.37
Difference			USD0.00	(USD1.02)	USD0.00	(USD30.42)	(USD31.44)
Percent...			undefined	-1.02%	undefined	-57.17%	-20.56%

Figure 3-39 Second simulation cost comparison

2. Figure 3-39 shows the results and shows that from baseline up to now we could make an improvement of about 6.27%. This only through automatization of the tasks. Additionally customer satisfaction will be improved

At this point we would like to make a even deeper analysis and understand if we can improve the performance results of the current flow even further. It would therefore be interesting to look at the distribution of execution of the various activities in the Business Process. The following steps are going to describe a deeper analysis on Activity Cost.

Activity Name	Average Revenue	Average Run Cost	Average Delay Cost	Average Resource Cost	Average Cost	Average Profit
Claim Adjudication	USD0.00	USD99.73	USD0.00	USD0.00	USD99.73	(USD99.73)
Adjudication for ?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Determine Adjudicator	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Handle Behavior	USD0.00	USD111.00	USD0.00	USD0.00	USD111.00	(USD111.00)
Handle Dental	USD0.00	USD87.00	USD0.00	USD0.00	USD87.00	(USD87.00)
Handle Medical	USD0.00	USD100.00	USD0.00	USD0.00	USD100.00	(USD100.00)
Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Claim Intake	USD0.00	USD0.00	USD0.00	USD3.20	USD3.20	(USD3.20)
Able to select provider ?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Check Member Eligibility	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Claim Edits Clean ?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Clean Claim Edits	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Member Eligible ?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Merge	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Merge:2	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Merge:3	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Provider Rejected ?	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Provider Selection	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Reject Claim	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Select Provider	USD0.00	USD0.00	USD0.00	USD20.00	USD20.00	(USD20.00)
Set Provider	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00	USD0.00
Claim Process	USD0.00	USD99.73	USD0.00	USD53.20	USD152.93	(USD152.93)
Request Receive Pricing	USD0.00	USD0.00	USD0.00	USD50.00	USD50.00	(USD50.00)

Figure 3-40 Aggregated analysis of activity cost

1. Right-Click your Simulation result within the Project Tree. Select **Dynamic Analysis** → **Aggregated Analysis** → **Activity Cost** and wait for the report to generate. The report shown on Figure 3-39 will appear.
2. Note the cost of \$111, \$87, and \$100 which occurred on “Handle Behavior”, “Handle Dental” and “Handle Medical”. These services are outsourced from Health Care Insurance Co. ABC and cannot bring more cost gain. A message could be forwarded to the Business Leaders trying to negotiate a cost rebate or look out for another outsourced Service provider. Another idea would be to only try to call these services when needed.
3. Note the cost of \$20 which occurred on Provider Selection. This is basically the salary of the Claims Analyst which worked for 1 hour on that case. This may be a potential process

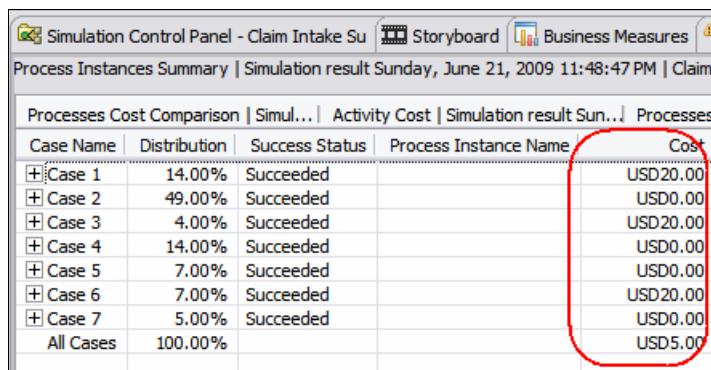
issue we might want to improve. It makes the actual average cost of Service Intake relatively high.

4. Finally note the average cost of \$152.93 we would like to reduce.

3.4.5 Issue 3: Cost of Service Intake

This section focuses on understanding why the cost of “Service Intake” is high and how it could be potentially improved.

1. First, execute a simulation snapshot on “Service Intake”. Make sure you generate 100 tokens and that visual simulation is switched off. Refer to Figure 3-33 on page 52 and Figure 3-32 on page 51 on how to do that.
2. Dynamic analysis on Service Intake. Right-Click the simulation result and select **Dynamic Analysis → Process Instances Summary** from the Context Menu. A new report will be generated. Now you may do case by case analysis and spot the reason why certain cases are taking \$20 of cost and others not. The reason is simply that we have a human intervention required within task named “Provider Selection”. See Figure 3-41 for a case to case analysis.



Case Name	Distribution	Success Status	Process Instance Name	Cost
+ Case 1	14.00%	Succeeded		USD20.00
+ Case 2	49.00%	Succeeded		USD0.00
+ Case 3	4.00%	Succeeded		USD20.00
+ Case 4	14.00%	Succeeded		USD0.00
+ Case 5	7.00%	Succeeded		USD0.00
+ Case 6	7.00%	Succeeded		USD20.00
+ Case 7	5.00%	Succeeded		USD0.00
All Cases	100.00%			USD5.00

Figure 3-41 Dynamic Analysis: Process Instances Summary

Note: When Highlighting a case, WebSphere Business Modeler actually displays in blue color the execution path of the process chosen in that case.

When analyzing these results we see that $14\% + 4\% + 7\% = 35\%$ cause cost of USD20.

When looking at the Business Process, we see that we assume a 50% to 50% ratio between ProviderSelection and Select Provider. Remember that ProviderSelection is planned to be a Business Rules task and Select Provider is planned to be a human task. This assumption is a bit too generous. We would at this point target the Business Rules Task to be implemented in a way that it permits to filter 90% of the cases and send only 10% of the cases to the Human Task. Figure 3-42 shows the 50% to 50% ratio on the split activity.

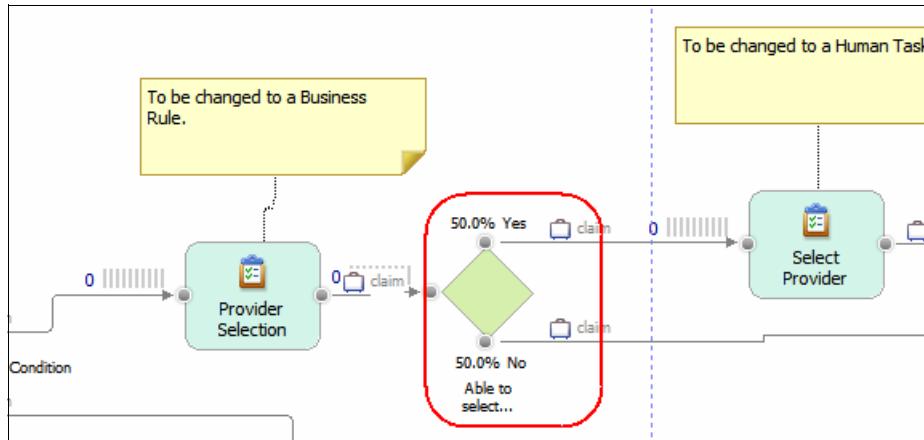


Figure 3-42 50% to 50% ration between Provider Selection and Select Provider

Important: The action would be to increase efficiency of the Business Rules engine task “Provider Selection” so that more claims can be processed automatically. Human Activity performed under “Select Provider” shall be reduced to 10% of the cases. It is also recommended to indicate this requirement with an Annotation. This will be very beneficial for collaboration. The same way of thinking counts for task “Check Member Eligibility”, The target filtering of this Business Rules engine is also targeted to be 10% rejected cases and 90% accepted cases.

A further improvement in the process can be seen when trying to focus on the rejected cases. The Dynamic Analysis on Process Instances gives this view. Actually when doing a case by case analysis we can determine that rejected cases are also sent to Claim Adjudication. This is very expensive as these claims will be processed and cause cost. Additionally it has a negative impact on customer satisfaction as the customer is not notified if his claim is rejected.

Figure 3-43 on page 59 shows that even if the claim is rejected, we do not stop process execution and we will execute “Claim Adjudication”. This ultimately will result in unnecessary costs within the process “Claim Adjudication”.

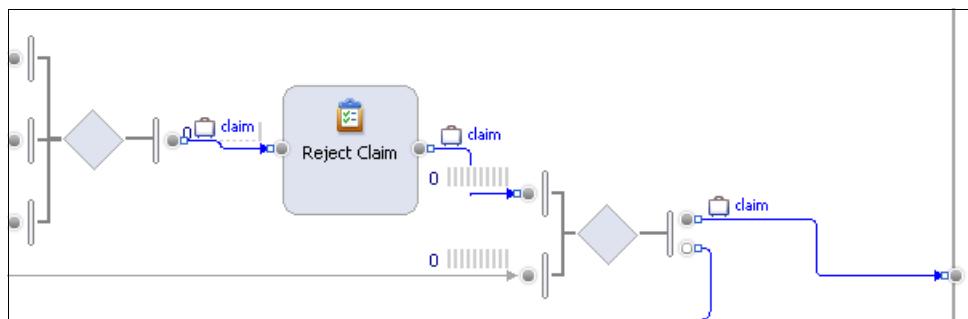


Figure 3-43

A potential cure to this issue would be to consider rejected cases, which according the Business Analysts are very high... Overall a total of 86%. This number can be identified when adding all the case rejection cases in the Analysis Table shown on Figure 3-41 on page 58.

Important: 2 Decisions are forwarded to the Business Leaders. Decision 1: A process improvement is suggested to actually reduce the amount of claim rejection. The question is very open: “Do we focus on the right customers”. Decision 2: Another process improvement is suggested to treat automatically rejected cases. This will be explained in section 3.4.6, “Issue 4: Cost of Claim Adjudication”.

3.4.6 Issue 4: Cost of Claim Adjudication

This section focuses on reducing the cost of “Claim Adjudication”. Again a simulation of Claim Adjudication shall be executed to see where the highest cost is occurring..

Figure 3-44 on page 60 shows that Rejection cases are either sent to “Handle Medical”, “Handle Dental” or “Handle Behavior”. We would like to avoid that claims are sent to an outsourced department and cause unnecessary costs. Additionally this is a big problem for customer satisfaction. Claims are basically rejected without that the customer is notified.

Important: A cure to this issue is to introduce an additional automatic task named “Notify Rejection to customer” which would treat the rejected claims.

At this point, no further improvements can be found. The sections below is going to apply the recommended changes and run a simulation for validation purposes.

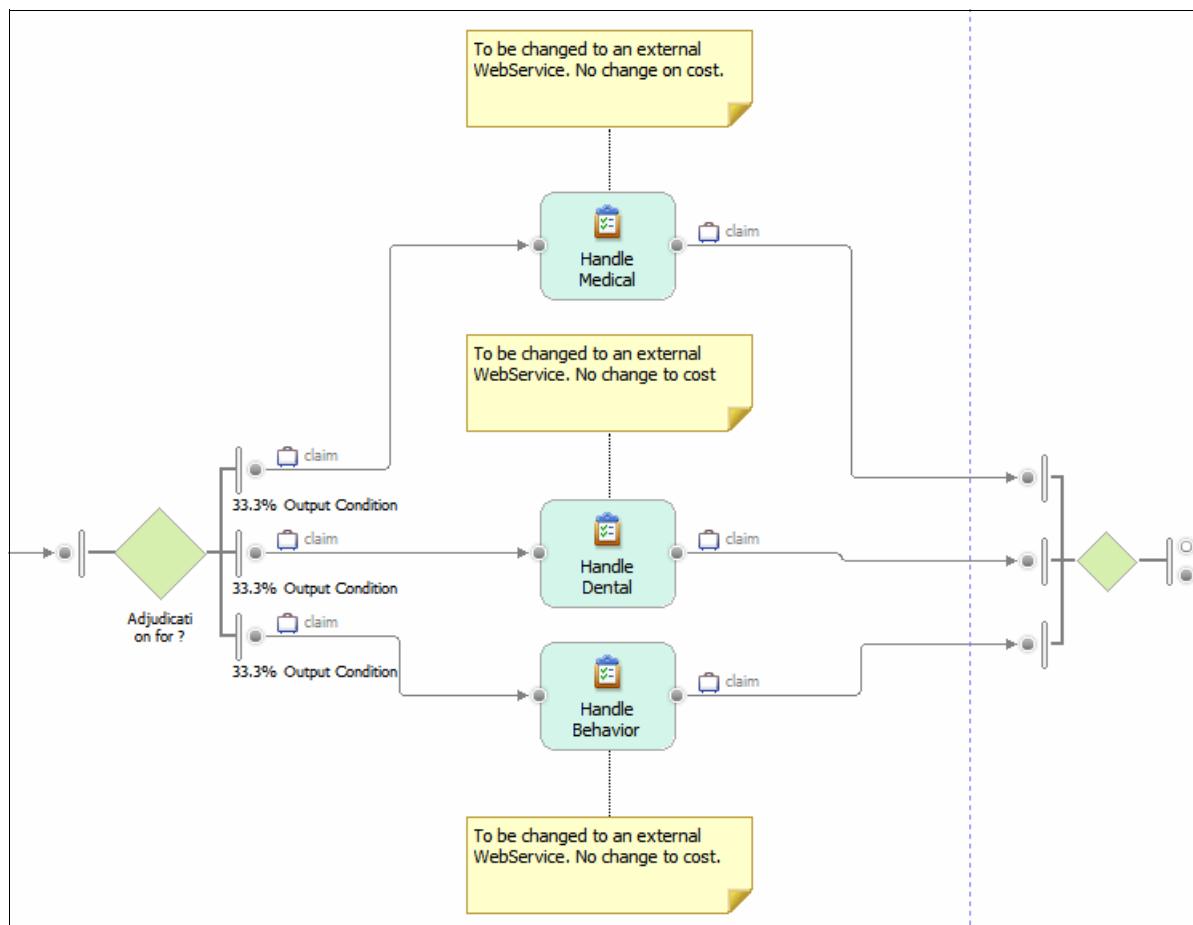


Figure 3-44 Missing rejection notification

3.5 Define the future state scenario

The goal of this section is to define and refine future state business process models that achieves the closest results to the most cost effective alternative chosen from case analysis.

Note: In this stage, we will execute future state scenarios to model the potential cost reduction benefits. At a later time, we will also have the ability to import actual monitor data back into simulation to effect more realistic percentages, allowing to continually refine the simulation model.

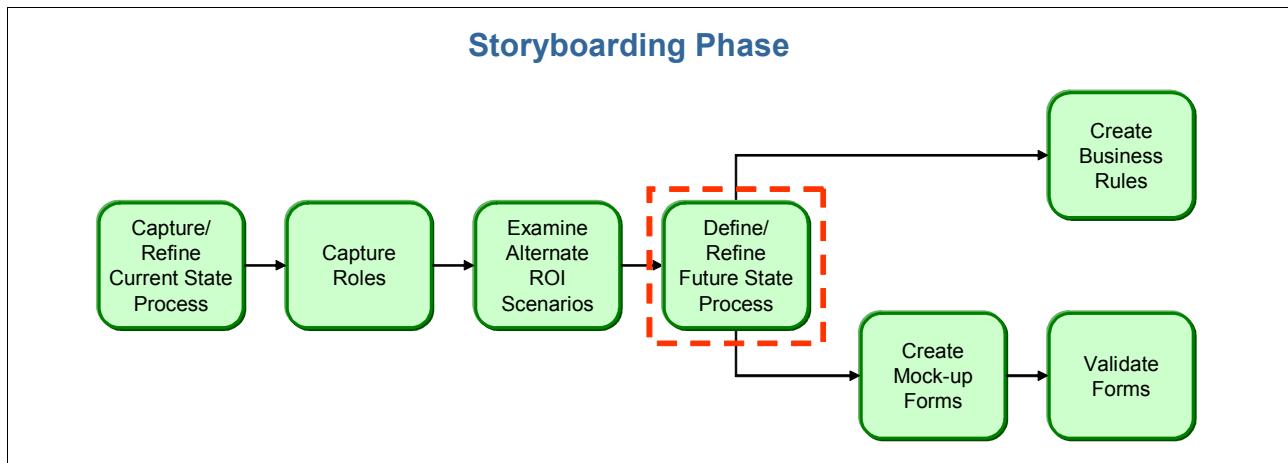


Figure 3-45 Define and refine future state scenario

More concretely for Health Care Insurance Co. ABC this means that in section 3.4, “Examine Alternate ROI Scenarios” on page 49 we identified 4 major issues and pinpointed actions to address these issues.

In a summary:

1. Implementation of Human tasks
2. Implementation of WebServices
3. Implementation of Business Rules
4. Add additional Task named “Notify rejection to customer”
5. Adapt control flow ratios to reflect simulation data.

3.5.1 Implementation of Human Tasks

Within a WebSphere Business Modeler Process Flow, by default all tasks are generic and do not give any information about if they are going to be executed automatically (by a machine) or manually (by a human being). If a task is identified as a Human Task, it permits WebSphere Modeler to automatically generate configurable IT artefacts, such as todo list, authorizations, escalations, etc. During simulation analysis within 3.4.2, “Issue 1: Efficiency of Manual Tasks” on page 53, we found that it would be efficient for our processes to use Human Tasks instead of pure Manual paper-based tasks. Within the same section we did not actually implement these tasks we only simulated the effect of using them. In the present section we are going to show how to implement these tasks as Human Tasks.

The steps below are going to transform 2 tasks from the Health Care Insurance Co. ABC processes into Human Task.

1. Right-click the human task and select **Convert To → Local Human Task**. Figure 3-46 on page 62 below will appear.

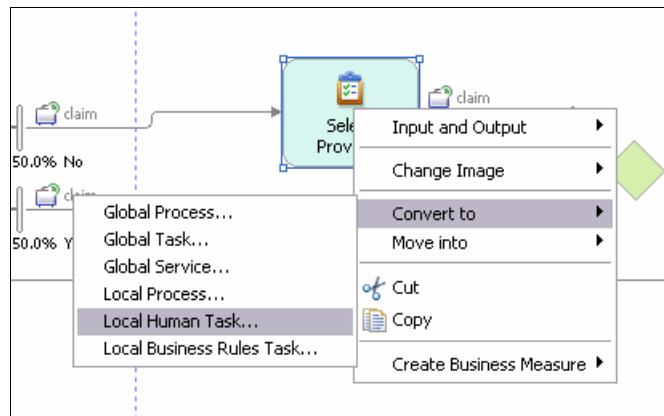


Figure 3-46 Convert manual task to local human task

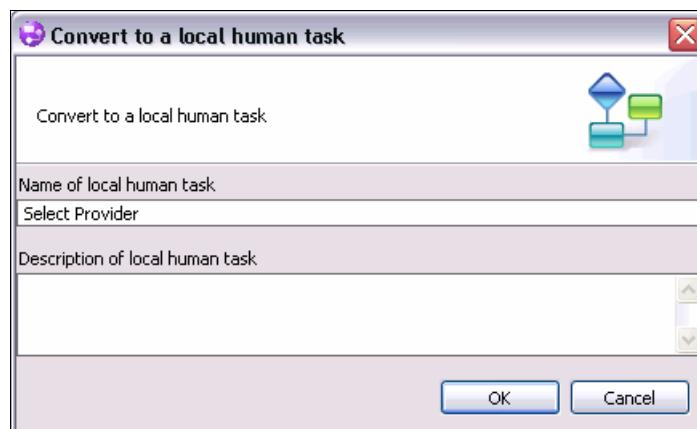


Figure 3-47 Add name to local human task

2. Click OK to complete the creation.

The icon of the task will change and a few options will be added in the attributes.

3.5.2 Implementation of WebServices

At this stage no particular implementations are required to convert Tasks into WebServices. WebServices Tasks need to be completed with operational characteristics to make them really executable. We discuss this in section 4.5.1, “Adding services to deployable applications” on page 95. For the time being we use Annotations to indicate these required changes during the “Experience phase”.

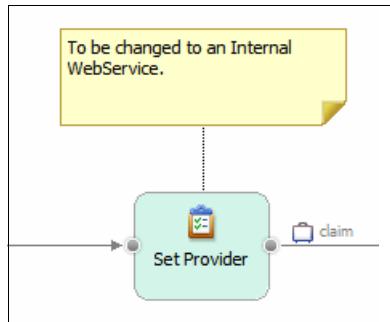


Figure 3-48 Annotation indicating that task has to be implemented by a WebService

3.5.3 Implementation of Business Rules Tasks

The following tasks explained in Table 3-6 shall be implemented as Business Rule Tasks.

Table 3-6 Tasks to be implemented as Business Rules Tasks

Business Rule	Characteristics
Provider Selection	Business Rule Engines makes assessment on amount and sets provider to “billing provider” if the amount within claim is smaller than amount specified in Business Rules engine. This is a clear example of request qualification what is perfectly executable by a Business Rules task.
Determine Adjudicator	Based on the claim type and patient details this Business Rules will determine which department will handle the claim. This is another example of request qualification.
Check Member Eligibility	Business Rule assesses the Claim and decides if Member is eligible or not by setting the appropriate output field to “true” or “false”. This is an example of a question in the process. We would like to determine if the member is eligible or not. The answer is evaluated based on input content and either “No” or “Yes”.

The steps below show how to convert existing Tasks into Business Rules tasks:

1. Right click “Determine Adjudicator” and select **Convert To → Local Business Rules Task** from the context menu. See Figure 3-49 on page 64 for more details. Repeat this operation for “Check Member Eligibility”, “Determine Adjudicator” and “Provider Selection”.

Note: In chapter Storyboarding, Business Rules Tasks are created. Section 3.6, “Identify Business Rules content” on page 69 gives details about the rules to be included and chapter Experience will specify these rules for the Business Rules Task.

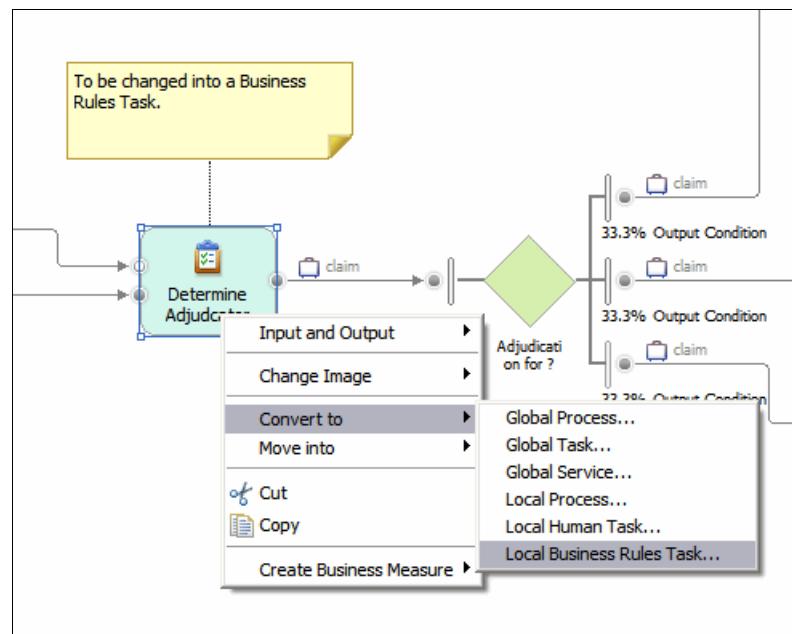


Figure 3-49 Convert existing task into Local Business Rules Task

3.5.4 Add additional Task “Notify Rejection to customer”

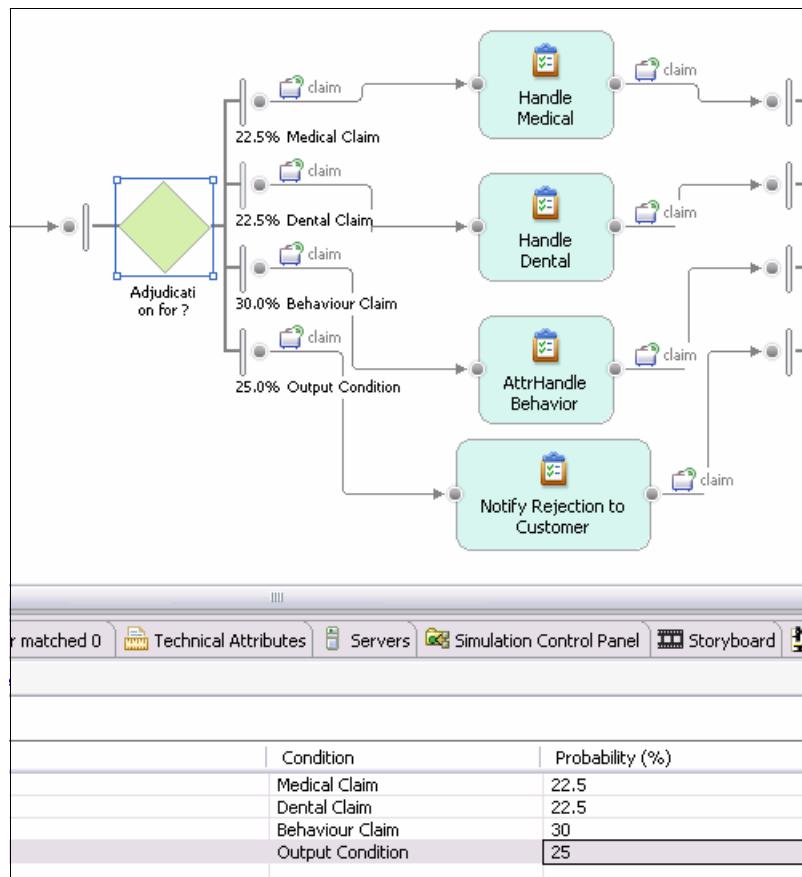


Figure 3-50 Add additional task “Notify Rejection to Customer”

1. Next we are going to add a task to process “Claim Adjudication”. This new task which will be in charge to notify customer of a rejected claim.
2. Once the changes completed recreate a snapshot of “Claim Process”, rerun a simulation and a Aggregated Process Activity Cost Analysis. The results obtained show a considerable improvement

3.5.5 Adapt control flow ratios to reflect insertion of Business Rules Tasks

3.5.3, “Implementation of Business Rules Tasks” on page 63 above describes the goals to place Business Rules Tasks into the process flow with goal to mainly automatize manual activity. A Business Rule is often introduced to avoid Human Activity. However not always Human Activity can be fully avoided. The Human Activity in the flow actually deals with “Exceptions” which cannot be handled by the Business Rules Tasks. Figure 3-51 shows a Business Rules Task “Provider Selection” which has the intention to filter requests and either continue normal execution if filtering was successful or go into human exception handling addressed by “Select Provider” implemented as a Human Task.

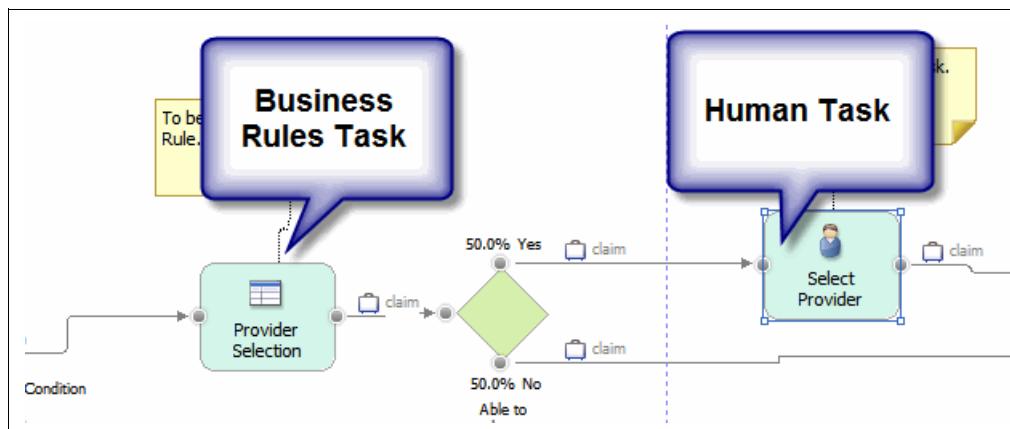


Figure 3-51 Human Tasks as exception handlers for Business Rules Tasks

Note: The ratio of 50% to 50% for this kind of pattern is too generous. The Business Rules Tasks has to filter more than just 50% of the requests. We recommend to target a ratio of 10% to 90%. The same is true for Business Rules Tasks “Check Member Eligibility” and “Determine Adjudicator”. Either a precise monitoring of these ratios as part of KPI’s will determine the real settings. As this is a paper-based process, no such detail is available and an assumption has to be made.

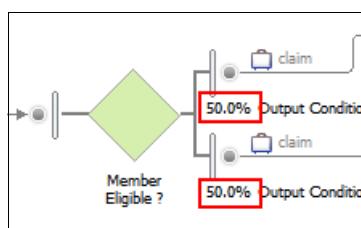


Figure 3-52 Change “Member Eligible” ratios

1. Change “Member Eligible?” ratios from originally 50%, 50% to now 10% and 90%. Figure 3-52 shows the ratio for “Member Eligible?”. Change this ratio to 10% non eligible and 90% eligible.

Note: This change will not influence actual execution of the Business Process. It has to be seen as a target in execution based on either real-time experience or on assumptions. KPI's in the manage phase will give the possibility to actually determine what the real value is.

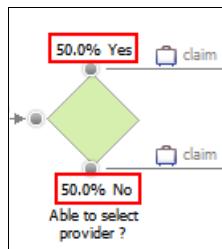


Figure 3-53 Change “Able to select provider” ratios

Change “Able to select provider?” ratios from originally 50%, 50% to now 10% and 90%. Figure 3-53 shows the ratio for “Able to select provider?”. Change this ratio to 10% “No” and and 90% “Yes”.

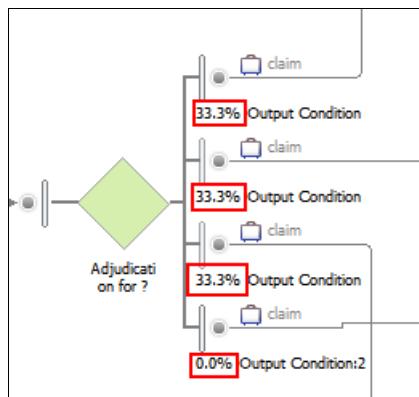


Figure 3-54 Change “Adjudication for?” ratios

Change “Adjudication for?” and adapt the ratio’s of the condition accordingly. The ratios to 22.5%, 22.5%, 25% and 30%. These ratios are based on estimations. Only execution will show the reality.

3.5.6 Run final simulation for validation purposes

The goal of this final simulation is to measure the overall impact the changes had to the improved process. The last series of changes

Simulation complete				
Time that simulation has been running: 00:00:10				
Processes	Tasks	Connections	Forms	
Claim Process Tuesday, June 23, 2009 1:53:48 ...	Simulation start time Tuesday, June 23, 200...	Instances created 100	Average duration 2 hours 6 minutes 6 sec...	Average cost 120.07 USD

Figure 3-55

Next, rerun a Process Cost Comparison for the Claim Process. You will see a cost improvement of 27.37%. See Figure 3-56 with results. This cost improvement is compared based on the last comparison done in 3.4.4, “Changes to cost table and second simulation” on page 55.

Processes Cost Comparison Simulation result Tuesday, June 23, 2009 1:54:33 PM Claim Process Tuesday, June 23, 2009 1:53:48 PM 1:56:45 PM					
	Simulation Result Name	Process Name	Average Revenue	Average Run Cost	Average Delay Cost
	Simulation result Tuesday, June 23, 2009 1:54:33 PM	Claim Process	USD0.00	USD68.07	USD0.00
	Simulation result Sunday, June 21, 2009 11:40:27 PM	Claim Process	USD0.00	USD99.73	USD0.00
Difference			USD0.00	(USD31.66)	USD0.00
Percentage Change			undefined	-46.51%	undefined
					-27.37%

Figure 3-56 Simulation analysis

Figure 3-57 shows a second comparison done with the baseline simulation executed in 3.4.1, “Baseline Simulation” on page 50. We can see an overall improvement of ABC.

Processes Cost Comparison Simulation result Tuesday, June 23, 2009 1:54:33 PM Claim Process Tuesday, June 23, 2009 1:53:48 PM 1:56:45 PM					
	Simulation Result Name	Process Name	Average Run Cost	Average Cost	Average Profit
	Simulation result Tuesday, June 23, 2009 1:54:33 PM	Claim Process	USD68.07	USD120.07	(USD120.07)
	Simulation result Sunday, June 21, 2009 12:09:44 AM	Claim Process	USD100.75	USD184.37	(USD184.37)
Difference			(USD32.68)	(USD64.30)	USD64.30
Percentage Change			-48.01%	-53.55%	-53.55%

Figure 3-57 Baseline Comparison

3.5.7 Future improved Business Process

The five figures below give an overview of the improved processes. WebServices are still marked with Annotations. WebServices will actually be completed with operational characteristics in chapter Experience.



Figure 3-58 Claim process parent process (no improvements)

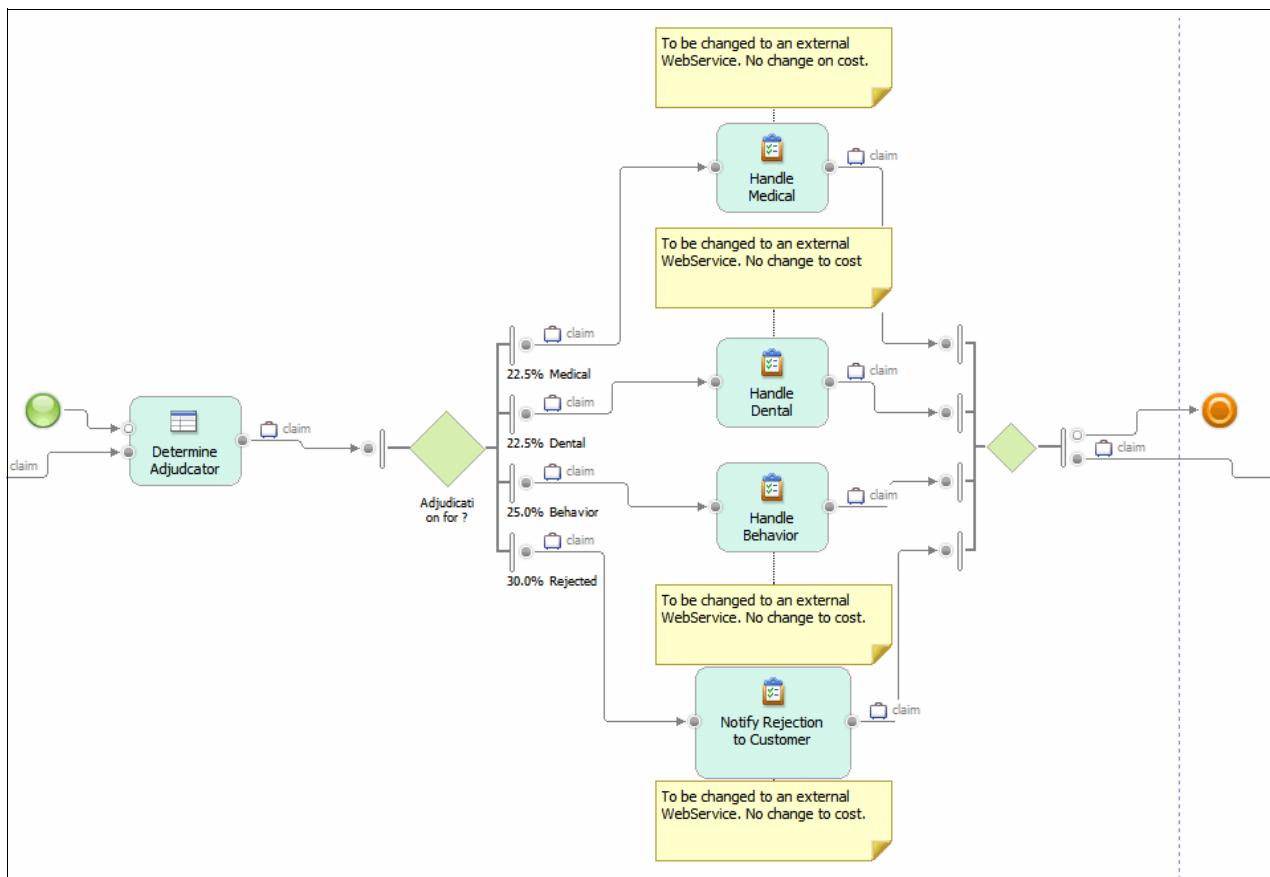


Figure 3-59 Claim Adjudication Process with improvements

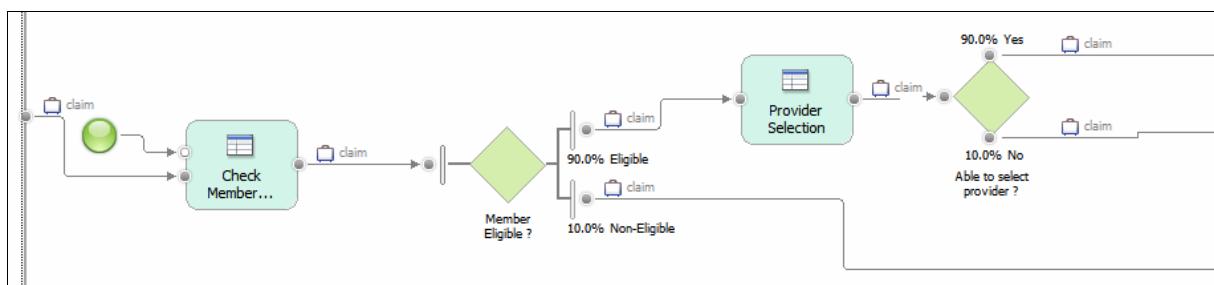


Figure 3-60 Improved Claim Intake Process

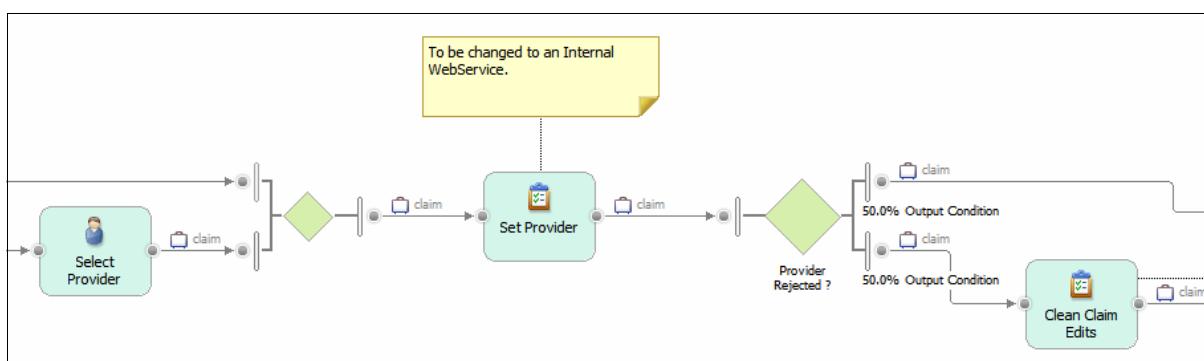


Figure 3-61 Improved Claim Intake Process

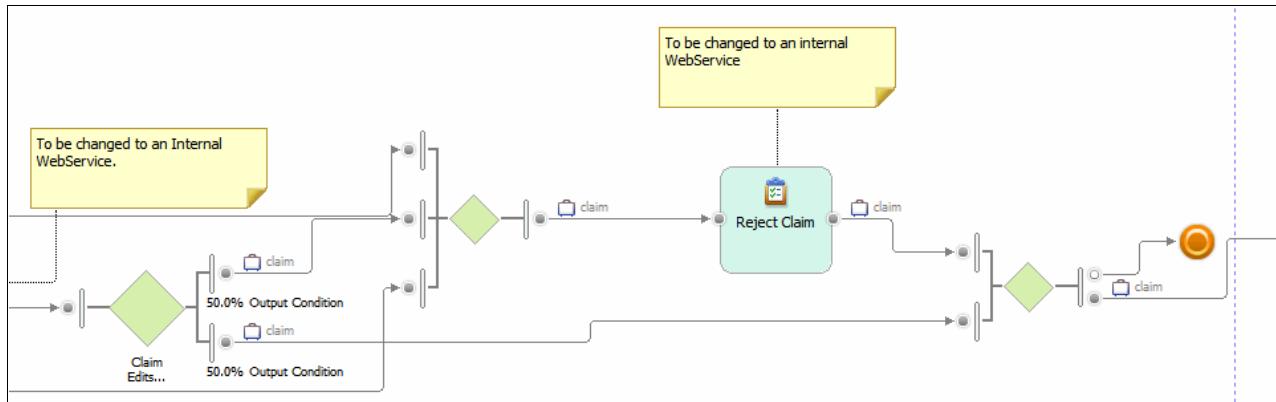


Figure 3-62 Improved Claim Intake Process

3.6 Identify Business Rules content

The goal of this section is to identify individual rules to be included into a Business Rules tasks. These implementation rules are summarized in annotations and than collaborated with the team implementing the Business Rules within stage Experience. This section does not convert task into Business Rules tasks. It specifies the content of these Business Rules tasks.

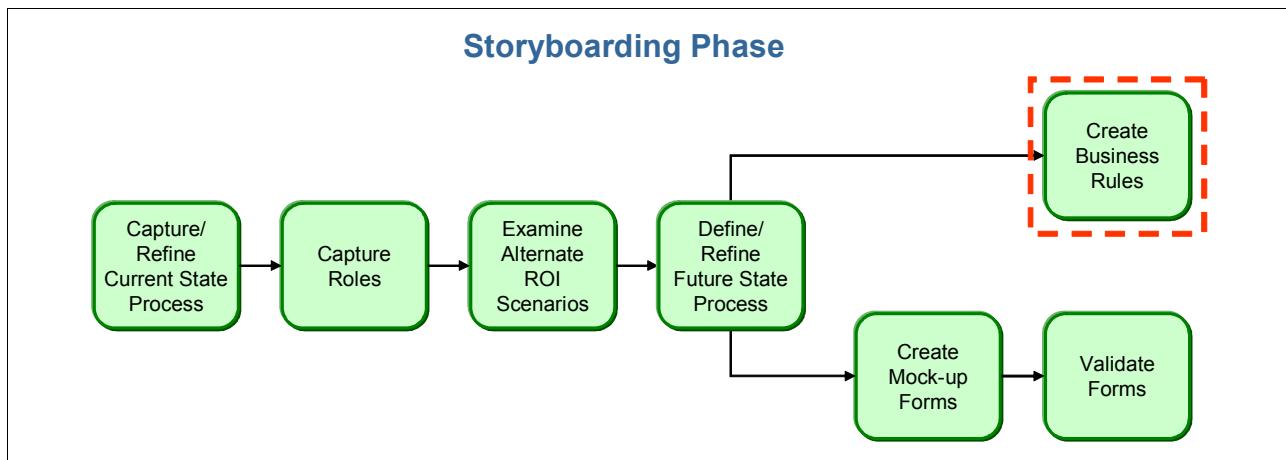


Figure 3-63 Identify steps to be implemented as Business Rules

Very often human activity can be replaced by Business Rules. This is usually the case when outcome is easily computable based on rules. Usually Business Rules apply whenever a task plays the role of a question in the process. Other examples are:

- ▶ Business Calculations
- ▶ Input Validation
- ▶ Request Classification

Answers to questions are implementable as decision tables or decision trees.

Business Rules candidates are as follows in Table 3-7. These rules will be implemented in chapter Experience. As of now they are only marked as Business Rules within 3.5.3, "Implementation of Business Rules Tasks" on page 63. There is however no indication on the

content of these Business Rules Tasks. The purpose of this section consists to define the content of Business Rules.

Table 3-7 Business Rules content

Activity	Question?	Description
Check Member Eligibility	Is the member eligible?	This can be either implemented as a decision table or as a decision tree. Idea is to make a couple of checks (such as the citizenship, place of living, years of membership) and give these answers to the caller of the Business Rule.
Claim Adjudication	Which adjudicator is valid for the claim?	This is typically a request classification. It can be typically implemented as a decision table.
Provider Selection	Which provider is valid for this claim?	This is typically a request classification. It can be typically implemented as a decision table.

3.7 Generation and validation of Mockup forms

The goal of this section is to generate simple form mock ups using forms designer based on the inputs and outputs for the tasks.

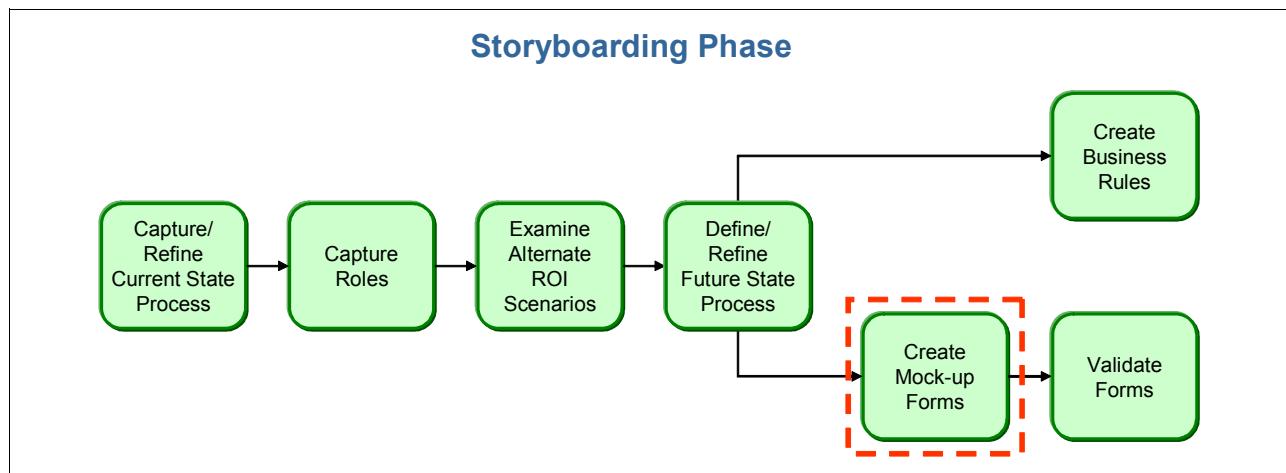


Figure 3-64 Generate Mockup forms

- ▶ If the human task has identical inputs and outputs, only one form will be generated and associated with the task as both the input and output form.
- ▶ If you have forms already created for the human tasks, you can associate forms with human task and process inputs and outputs on the Forms tab in the Attributes view.

The next steps are going to generate a new mockup form for the task "Select Provider".

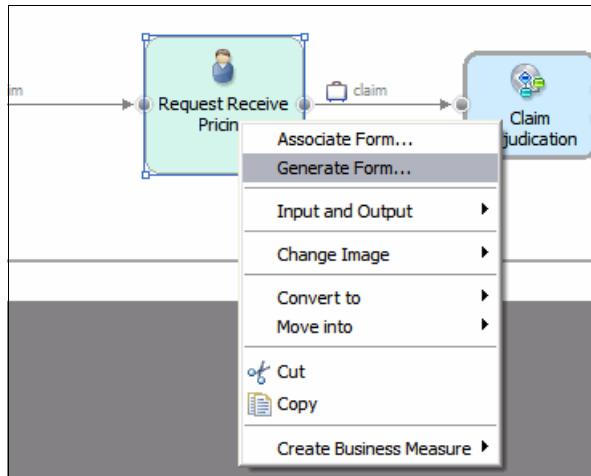


Figure 3-65 Generate Mockup forms

1. Right-click Generate Form and wait for form generation to complete.

Important: When you associate a form with a human task, if the inputs or outputs of the human task do not match the form data, then the inputs and outputs of the human task will be replaced with the form data.

3.8 Validation of Mockup forms

Create storyboards using simulation to validate with process owners the flow and content of the human steps within the process. Obtain sign off and approval in order to move to the experience phase

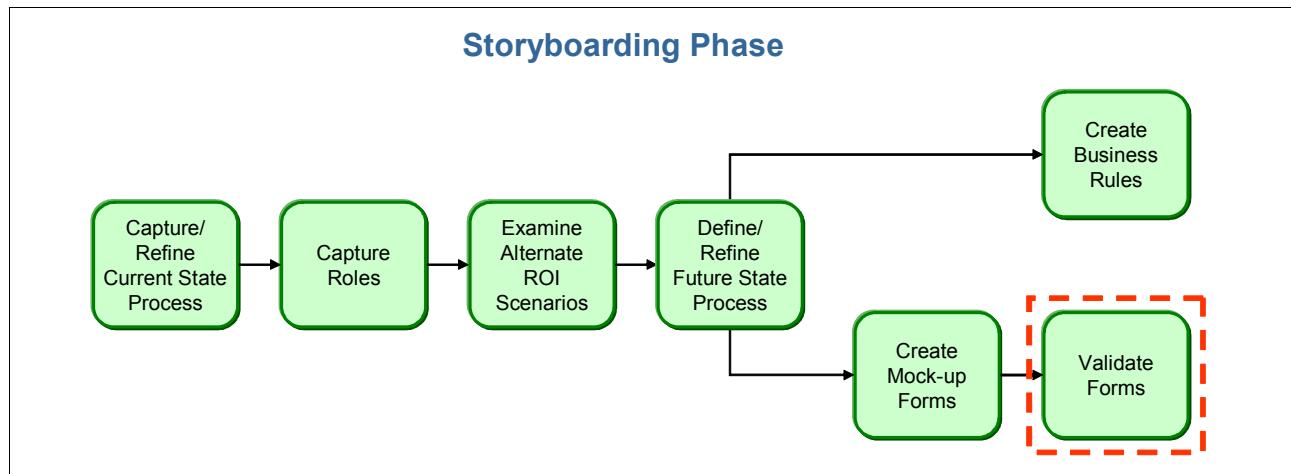


Figure 3-66

You can create storyboards to step through sequences of human tasks in a process, for example, to demonstrate the flow of a new human-centric process and provide stakeholders with a preview of the forms that are involved in the completion of each human task.

Important: Storyboards in a simulation offer a powerful possibility to test the look and feel and usability of Forms to be used within a Business Process. Storyboards can be used to get the signoff prior to going into Experience and Production Phases.

Storyboards allows you to view the forms associated with a human task side-by-side with the process diagram, mimicking the task owner's interaction with the form.

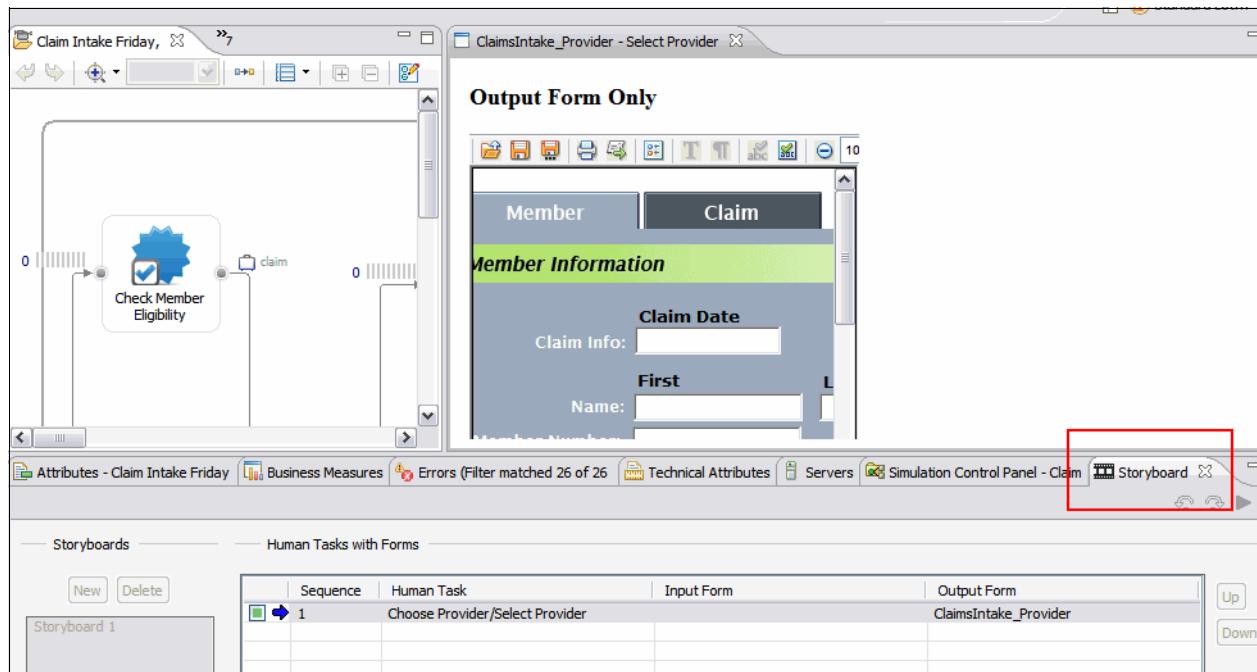


Figure 3-67 Storyboards of Human Task Forms

Storyboard (not to be confused with “Storyboarding”) as the name of this chapter, is a perfect possibility to validate generated Forms.

After having defined the storyboard of each of the Human Tasks the user can “storyboard” through the human tasks and try out the forms. Task can be added or removed according the convenience.

Note: More details on Storyboards can be obtained on the following page:

<http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.btools.modeler.advanced.help.doc/doc/tasks/simulating/creatingstoryboardsforhumantaskswithforms.html>

3.9 Definition of Control Points to prepare Experience

Simulation is important and gives a deep understanding of the process behavior. However real time data is much more valuable. At this stage the Business Analyst would like to define KPI's which will later appear on a Dashboard and be visible to the Business Leaders.

We have selected the following KPI's for performance measurements and monitoring of Health Care Insurance Co. ABC.

Table 3-8 Suggestions for KPI's

Activity	Type of Activity	Type of Measurement
Request Receive Pricing	Human Task	Key Performance Indicator on Duration. Average duration should remain < 3 hours.
Select Provider	Human Task	Key Performance Indicator on Duration. Average duration should remain < 1 hour.
Handle Medical	Automatic Task	should remain around 22.5%. Needs to be monitored
Handle Dental	Automatic Task	should remain around 22.5%. Needs to be monitored
Handle Behavior	Automatic Task	should remain around 30%. Needs to be monitored
Notify Rejection to Customer	Automatic Task	<25% (to guarantee satisfaction)

KPI's described in Table 3-8 on page 73 following the "Input, Output, Process and Outcome Model" also known from Logistics.

Table 3-9 KPI's for Health Care Insurance Co. ABC

Organization	Input	Output	Process	Outcome
Health Care Insurance Co. ABC Claims Process	Total Processing Time (Total Amount of time spent on Process) Amount of claims arriving to Health Care Insurance Co. ABC	Number of Handle Dental Number of Handle Medical Number of Handle Behavior	Average duration of Request Receive Pricing Average duration of Select Provider Average duration of Determine Adjudicators	Number of rejected claims Number of customers not notified by the Health Care Insurance Co. ABC after rejection.

Overall, the choice of performance measurement points has to follow both the strategy and vision of Health Care Insurance Co. ABC, and it has to be aligned with the metrics of processes.

Note: Jointly the Balanced Scorecard and the Input, Output, Process, Outcome Model from Logistics can be used to be most complete with Performance Measurement Definition.

3.9.1 The Balanced Scorecard approach to ensure strategical alignment

Definition: The Balanced Scorecard (BSC) is a performance management tool for measuring whether the smaller-scale operational activities of a company are aligned with its larger-scale objectives in terms of vision and strategy.

The *financial perspective* examines if the company's implementation and execution of its strategy are contributing to the bottom-line improvement of the company. It represents the

long-term strategic objectives of the organization and thus it incorporates the tangible outcomes of the strategy in traditional financial terms.

The *customer perspective* defines the value proposition that the organization will apply to satisfy customers and thus generate more sales to the most desired (i.e. the most profitable) customer groups. The measures that are selected for the customer perspective should measure both the value that is delivered to the customer (value proposition) which may involve time, quality, performance and service, and cost, and the outcomes that come as a result of this value proposition (e.g., customer satisfaction, market share). The value proposition can be centered on one of the three: operational excellence, customer intimacy or product leadership, while maintaining threshold levels at the other two.

The *internal process perspective* “Business Processes” is concerned with the processes that create and deliver the customer value proposition. It focuses on all the activities and key processes required in order for the company to excel at providing the value expected by the customers both productively and efficiently. These can include both short-term and long-term objectives as well as incorporating innovative process development in order to stimulate improvement.

The *innovation and learning perspective* “Organizational Learning” is the foundation of any strategy and focuses on the intangible assets of an organization, mainly on the internal skills and capabilities that are required to support the value-creating internal processes.

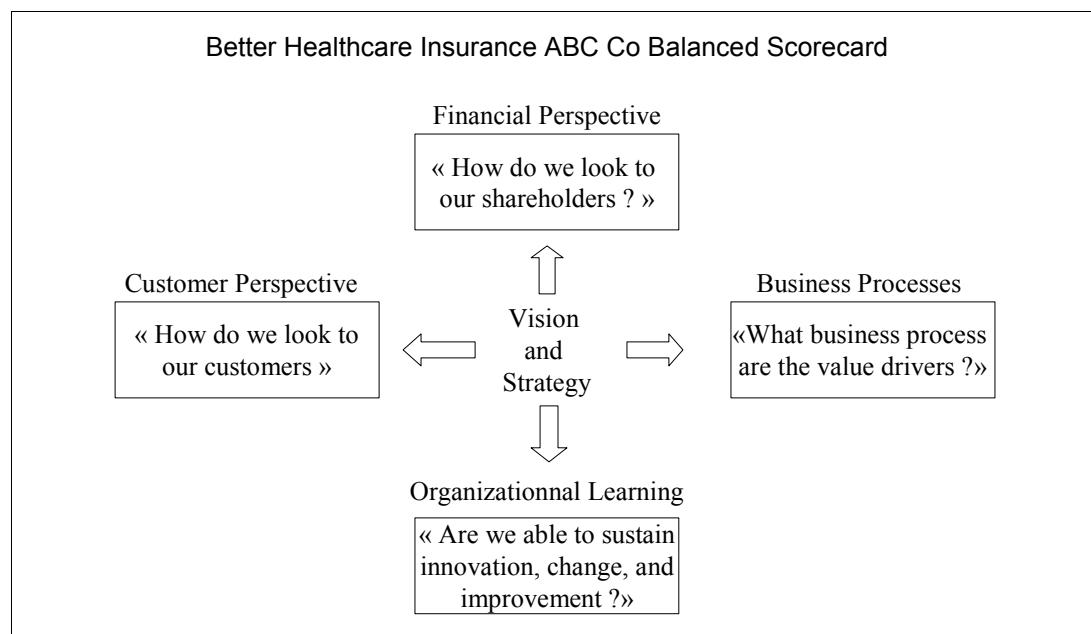


Figure 3-68 Balanced Score Card for Health Care Insurance Co. ABC

Strategy and Vision is on the one hand very important to determine the optimal performance measures of a company.

Note: The Business Leader Widgets can be used to define capability and strategical maps of your organization. The recommendation is to use a framework such as the Balanced Scorecard as an orientation when defining your strategical maps.

3.9.2 The Input, Output, Process, Outcome Model to cover process lifecycle

Definition: The Input, Output, Process and Outcome Model to ensure measurement completeness for processes. The Input, Output, Process and Outcome model is very common in quality management and logistics. It permits measure impact of organizations and define KPI's which are meaningful. Together with the strategical orientation this model is very powerful.

Categories of the Input, Output, Process and Outcome Model are:

- ▶ Input KPIs measure assets and resources invested in or used to generate business results. Examples include "Dollars spent on research and development," "Funding for employee training," "New hires' knowledge and skills," and "Quality of raw materials."
- ▶ Output KPIs measure the financial and non-financial results of business activities. Examples include "Revenues," "Number of new customers acquired," and "Percentage increase in full-time employees."
- ▶ Process KPIs measure the efficiency or productivity of a business process. Examples include "Product-repair cycle time," "Days to deliver an order," "Number of rings before a customer phone call is answered," "Number of employees graduating from training programs," and "Weeks required to fill vacant positions."
- ▶ Outcome KPI's measure the customer value impact as the result of an activity (e.g the number of incidents occurred). They measure what the customer values as the result of the activity. Outcome KPI's fully focus on client value.

3.10 Summary

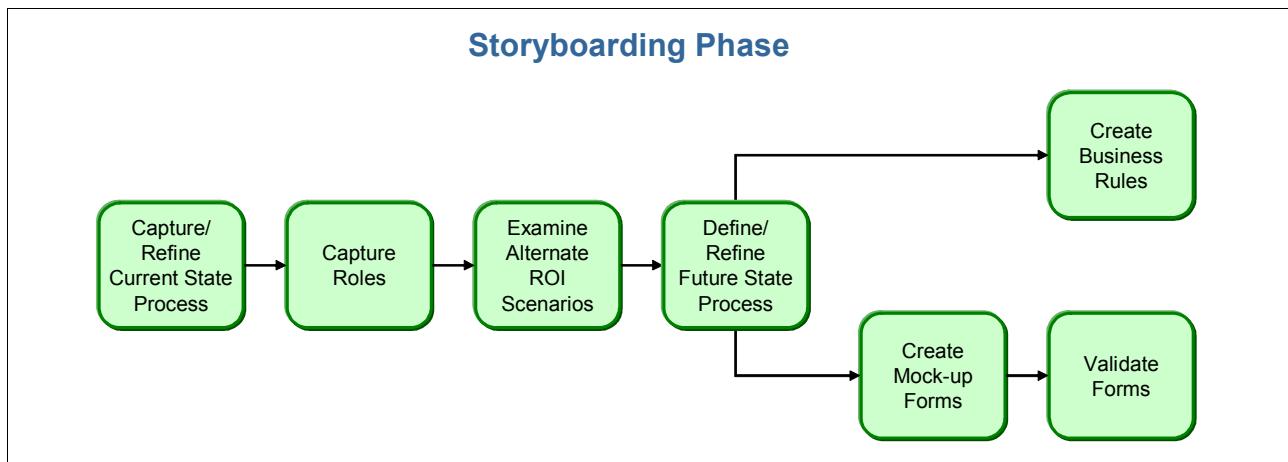


Figure 3-69 End of Storyboarding

In this chapter we captured the current state process imported from BPM Blueworks high level process diagrams. We enriched the imported information by specifying decisions. The imported Business Process was separated into domain specific sub-processes named Claim Intake and Claim Adjudication. We captured the roles and described roles.

Then we concentrated on examining alternate ROI scenarios. Therefore a detailed simulation was necessary which concentrated on finding all possibilities for improvement. 4 issues were discussed and remedies for these issues were applied. The Business Process was basically

automated by converting tasks into Human Tasks, Business Rules and WebServices. An analysis was made to determine the cost improvement between the various improvements. We determined an overall improvement of about 56% after automatization and process improvements.

Finally we detail Business Rules and Create respectively validated Mockup forms. The effort of Storyboarding results into a fully improved and simulated Future Business Process.



4

Experience

After you have modeled the basic flow of your process and verified that the flow and activities in the flow work as expected in Chapter 3, “Storyboarding” on page 33, you are now ready to *refine* your process to make it easier for people who will use the application to perform their assigned tasks.

This chapter introduces the “Experience” phase outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*. This is the third phase in the approach with the goal of capturing the business intent through documenting and creating basic models for the business goals, objectives and strategy. Within the chapter, we review the steps of the Experience phase using the specific context from the Health Care Scenario demo introduced in 1.6, “Introduction to the health care demo scenario” on page 15.

4.1 Objective of the Experience phase

Experience is the third phase in the approach described in *IBM Business Process Management Prescriptive Guide to Solution Implementation*. This is the phase in which the business analysts can begin to actually experience the solution through visualization and true “hands-on” iterative testing. The goal of this phase is to ultimately refine the solution; again while still working with sets of realistic data, but before the solution has been deployed into a larger scale, production environment. As we will discuss in this chapter, much of this is made possible through the Interactive Process Design (IPD) capability within WebSphere Business Modeler. (For example, later in the chapter, in section 4.8.2, “Testing with the real life scenario” on page 117) for example, we illustrate how to modify business rules and review the impact on the process.)

Based on the experience results during this iterative, hands on, refinement phase, you can be even more confident that the final solution, once deployed in a larger scale environment, will be the solution which most effectively meets your needs.

4.2 Overview of steps in the Experience Process

The steps to be accomplished in this phase include:

1. Add operational characteristics (attributes) to the future state process
2. Define Constructs for execution on future state process
3. Elaboration of Performance Measures, KPIs, and Business SLAs
4. Refine Forms
5. Interactively validate elaborated process in IT sandbox

In the upcoming sections, we will discuss how we performed these specific tasks within the context of Health Care Scenario demo introduced in 1.6, “Introduction to the health care demo scenario” on page 15.

Figure 4-1 illustrates an overview of these tasks from a visual model perspective.

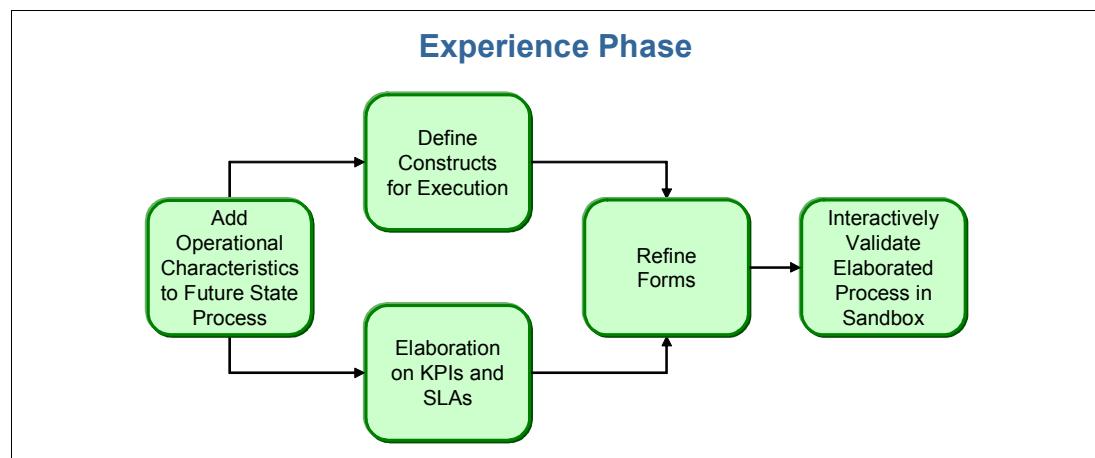


Figure 4-1 Visualization of the steps performed within the Experience phase

4.2.1 Activities within each task

This section provides more detail into the activities to be accomplished within each task.

1. Add operational characteristics to future state process
 - Refine and fill in high level process steps, process logic, error handling, and data flow to support process execution.
- Note:** Process data should reflect the fields & content needed to support the process from storyboarding
2. Define Constructs for execution on future state process
 - All process control flow (i.e., gateways) should be refined to reflect decision logic based on process data.
 - Define Business Object Model look for reuse opportunities
 - Business roles for human tasks should be mapped to the organizational directory.
 - Finally, technical attributes should be added to the process model to prepare for runtime deployment
 - Publish models to repository
 3. Elaboration of Performance Measures, KPIs, and Business SLAs
 - Introduce additional measures of process performance against the expanded operational process; this typically includes adding measures for activities, process branches, and other aggregated measures introduced during process refinement.
 - Task escalations should be added in accordance to business SLAs.
 4. Refine Forms
 - Working with UI development, the form mockups are built out as a fully functional end user experience.
 - Forms are typically exported separate from the process for the hand-off; the end result is a collection of fully functional forms that can be handed in a single web-ready (WAR) package to IT.
 - Publish forms to repository
 5. Interactively validate elaborated process in IT sandbox
 - After adding operational characteristics for the first time or for subsequent iterations, the process model can be deployed directly to a test environment for end user interaction & validation.
 - A mockup can also be created of an appropriate business space for interacting with the process, which can provide guidance for IT

4.3 Reviewing the goals of Experience within the context of the health care scenario

In the introductory sections above, we have defined the overall steps and activities defined within the *Experience* phase. Now, going forward in this chapter, we will illustrate how to perform several of these specific tasks and activities using the context of the Health Care scenario. Specifically, we will discuss the following topics:

- ▶ Within the activity of Adding Operational Characteristics (attributes) to the future state process, we will show where and how to define specific tasks as either:
 - Business Rule Task
 - A Human Task
 - An option for incorporating a Service Task (web service) to potentially replace a human task
- ▶ Within the activity of Elaborating on KPI's and SLA's, we discuss the following:
 - How to define the task duration KPI, using the example of the Request/ Receive Pricing Human Task. Once this KPI is defined, this gives the analyst a specific metric for measuring and comparing the duration of this task.
 - Define a KPI which measures Total Claim by Claim Type. With the creation of this KPI, the business analyst can have a much better understanding of where the majority of claims exists.
- ▶ Within the activity for Refining Forms, we give an illustrative example of how, using Lotus Forms Designer, a refined form could look, once you have created a very basic form which maps the inputs required for claim.

Note: Discussing the step-by step approach of using Lotus Forms designer and working with a UI/Graphics specialist is beyond the scope of this Redpaper, but we do provide an overview of the process and illustrate how a completed form will look.

- ▶ Finally we discuss how to deploy the model using the Interactive Design Process (IPD) to have a view of the working model within the context of the Business Space. We introduce the Business Space and show how an analyst can then review the process flow iterations and where appropriate, adjust specific KPI values to better monitor results.

Now that we have set the stage with the steps from the *IBM Business Process Management Prescriptive Guide to Solution Implementation*, let's get started with adding operational attributes in the process and defining business rules, human tasks, and potential service tasks.

4.4 Add operational characteristics

In the Storyboarding phase, we defined the future state process. (See 3.5, "Define the future state scenario" on page 61) This process will not yet deploy through the Interactive Process Design step (IPD) however, until we add specific operational characteristics to future state process. Figure 4-2 on page 81 illustrates the current focus of this section within the context of the overall *Experience* phase.

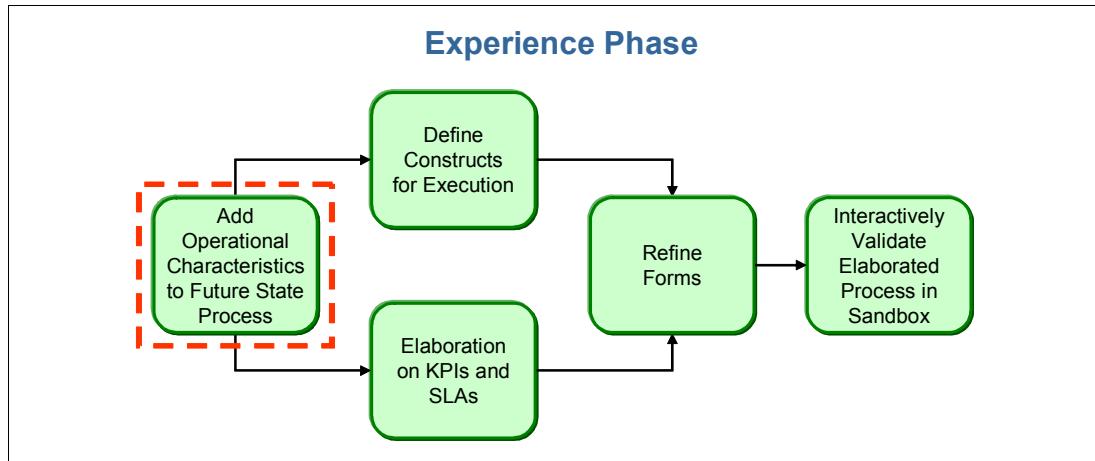


Figure 4-2 Visualization of the steps performed within the Experience phase

In this section, we review the process and determine for each task whether this should be:

- ▶ A Business Rule task
- ▶ A Human Task,
- ▶ A Service Call (Web Service) based task
- ▶ Refine and fill in high level process steps, process logic, error handling, and data flow to support process execution.
- ▶ Process data should reflect the fields & content needed to support the process from storyboarding

4.4.1 Defining Business Rule Tasks

A business rule task is a specialized type of task that helps you, as a business analyst, define business policies. You can expose your business policies as business rules in your process and if the rules are based on rule templates with parameters, then the parameter values are configurable in your process at runtime. While you are testing your application, you can view the associated business rules and update rule parameter values to test the effect of different values on the execution path. This rule is also viewable and configurable by Business Space users once the application is deployed.

Here are key concepts for Business Rules;

Rule

A rule is a condition that must evaluate as true to perform a specific action. For example, if the claim type is “Medical” & claim amount is less than \$1000, set the billing provider to “Internal Billing”.

Rule template

A rule template is a parameterized template simplifies the definition of many rules and can enforce the structure if there are several rules that have the same structure, . For example, the previous rule example can be turned into a template using the Claim Amount parameter instead of the actual amount value \$1000

Rule set

A rule set is a group of rules (and an associated template), with which you can manage related rules together. A rule set typically covers all eventualities so that you are certain that one rule will run, regardless of the input value. For example, Gold, Silver and Bronze rule with the rule template constitute a rule set.

Business rules task

A business rules task is a task that can contain multiple rule sets and allows multiple rule sets to run concurrently.

Rule presentation

A rules presentation is the text representation for your business rule. When you create a business rule, a default rule presentation is generated for you. Since the rule presentation that you set up in WebSphere Business Modeler is the same string that is presented to users for configuration in the Business Space interface, it is particularly important to customize the text into a clear and readable format so that the Business Space user can understand the rule logic and identify which parameters to modify.

Although this business logic can be represented with a multi-branch decision and parallel task flows, business rules provide a consolidated way to encapsulate the policy.

4.4.2 Identifying Business Rule candidates from the scenario process

Figure 4-3 on page 82 illustrates which specific tasks in the process are candidates as Business Rule tasks:

- ▶ Check Member Eligibility,
- ▶ Provider Selection
- ▶ Determine Adjudicator

Resource description	Type of resource
Claims Analyst	Role (Human Being)
Pricing Specialist	Role (Human Being)
Determine Adjudicator	Business Rule
Handle Medical	Service (WebService)
Handle Dental	Service (WebService)
Handle Behaviour	Service (WebService)
Check Member Eligibility	Business Rule
Provider Selection	Business Rule
Select Provider	Human Task
Set Provider	Service (WebService)
Clean Claim Edits	Service (WebService)
Reject Claim	Service (WebService)
Request Receive Pricing	Human Task

Figure 4-3 Activities for Business Rule from storyboard

- In our Claim Intake sub process where a claim is matched with a provider, we decided that we want to use a business rule for *provider selection*. Figure 4-4 illustrates the step within the Claim Intake process which can be defined as a Business Rule

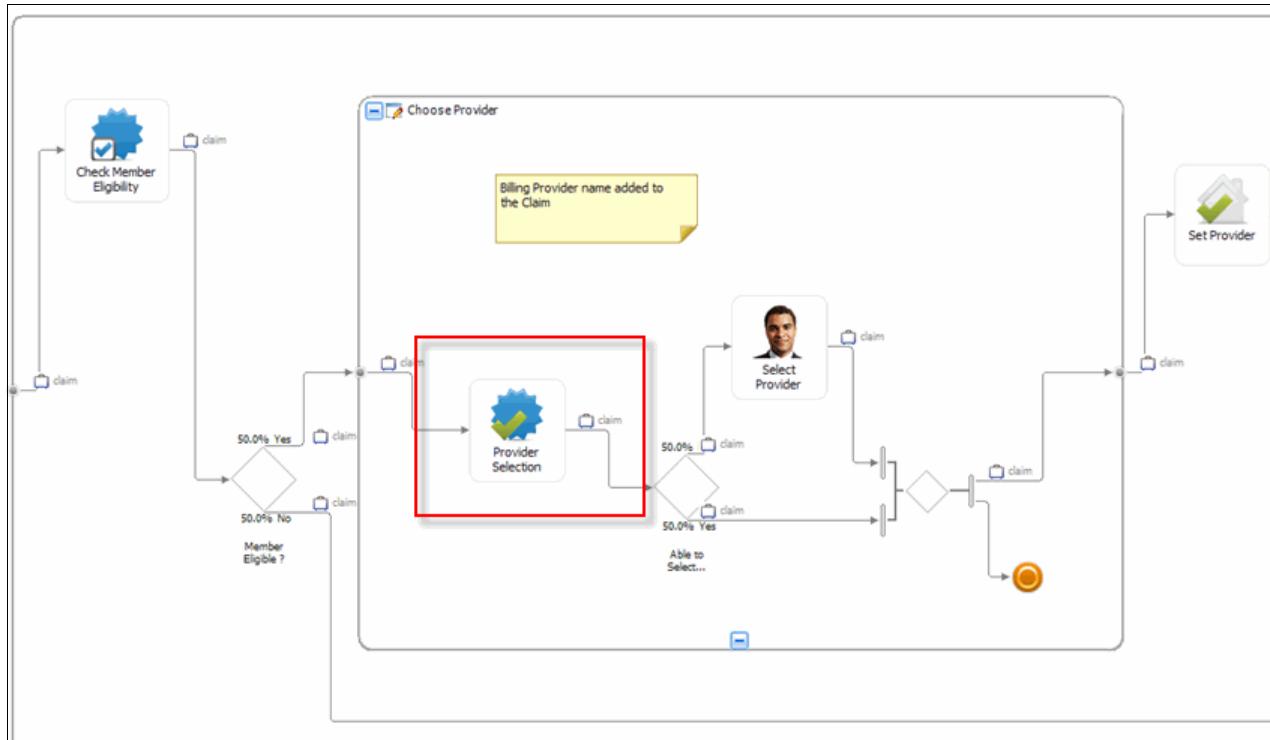


Figure 4-4 Step within the Claim Intake Process which can become a Business Rule

In this business rule scenario, we provide a filter for determining which claim amounts need to be routed to the human task of **Select Provider**. We can decide whether we *automatically* select the internal billing provider based on predefined claim amount or send to a human task to select another billing provider. Also, since we are using a business rule template, we can dynamically change this predefined claim amount during runtime in business space in order to adapt to changing business environment. This will greatly reduce the claim processing cost by reducing the select provider human task activity.

The business value of converting a manual task to a business rule: This business rule acts as a filter for the human task so that only high amount claim goes to the human task for selecting billing provider and the business rule (this filter) assigns the billing provider if the claim amount is low. Automating the manual task of Provider Selection as a business rule will reduce human error and labor cost .

4.4.3 Steps to create a business rule (Provider Selection)

In this section, we discuss the steps to create the **Provider Selection** business rule that we are going to use in order to efficiently decide either to:

- assign the internal billing provider or to,
- send the selection task to the claims analyst for the human task.

We are going to replace the current Provider Selection activity with the new rule task on the process editor for Cliam Intake process. Figure 4-5 on page 84 illustrates this step in the process flow.

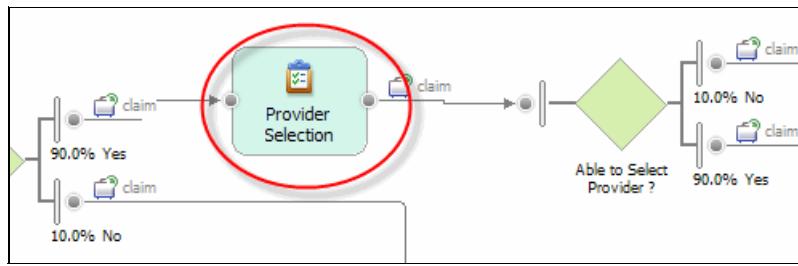


Figure 4-5 Current Provider Selection activity

To create this business rule, perform the following steps:

1. Drag a Business Rules task from Palette and drop it on the process editor.

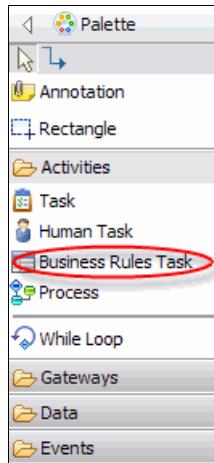


Figure 4-6 Business Rule Task

2. Change the name of this new rule task to 'Use Internal Billing' and replace the Provider Selection Activity by moving the input and output wiring from the Provider Selection Activity to Use Internal Billing Activity.
3. Delete the Provider Selection Activity.
4. Click Attributes - Attributes- XXXX Tab for the Business Rule Task and then select the Business Rules tab. (Figure 4-7)

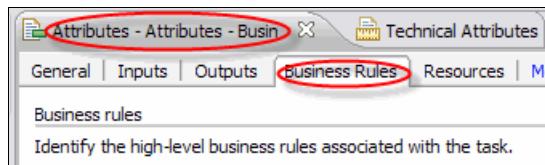


Figure 4-7 Business Rules Tab

5. In the Business Rules tab of the task, click **Add** to create a new business rule.

The screenshot shows a software interface for managing business rules. At the top, there are tabs: General, Inputs, Outputs, Business Rules (which is selected), Resources, and More. Below the tabs, a section titled 'Business rules' contains the instruction: 'Identify the high-level business rules associated with the task.' A table is provided for listing business rules, with columns for 'Business rule' and 'Description'. To the right of the table are three buttons: 'Add' (highlighted with a red oval), 'Edit...', and 'Remove'.

Figure 4-8 Add new Business Rule

- Now we must define the business rule. In the new Define Business Rule window, we are going to first define :

- rule parameter (Claim Amount)
- rule template (Internal Template)

With the parameter (Claim Amount), we can dynamically change the value in the business space during the runtime at a later time.

- Type Name **Use Internal Billing** for the Name field as shown in Figure 4-9.

The screenshot shows the 'Define Business Rule' dialog box. The title bar says 'Define Business Rule'. The main area is titled 'Specify the rule logic as a set of if-then rules' with the sub-instruction: 'Create or modify one or more if-then rules that define the logic of the business rule. To create rule conditions and actions, the business rules task must have inputs and outputs defined.' Below this, there are fields for 'Name' (containing 'Use Internal Billing') and 'Description' (containing 'For claims that are less than the specified amount, the internal billing department is used to collect'). An 'Important' note states: 'To reuse rule conditions and actions or allow their parameter values to be changed in an application at run time, create a rule template.' A tab labeled 'If-Then Rules' is selected. Below it, a 'Rule Templates' section is visible with the sub-instruction: 'To specify rule conditions and actions, create any required rule parameters. Also ensure that the business rules task has inputs and outputs defined.' A table for 'Rule Templates' is shown with columns: 'Template n...', 'Rule condition', 'Rule action', and 'Template d...'. To the right of the table are buttons: 'Add Template' (highlighted with a red oval), 'Remove Template', 'Move Up', and 'Move Down'. At the bottom, there is a 'Rule parameters' section.

Figure 4-9 Define Business Rule window

- Click **Add Template** and then click **Add** in the **Rule parameters** section.
- A new row will appear for you to create a new parameter. Type Claim Amount for **Parameter Name** and select Decimal (double- precision) for Type. (Figure 4-10 on page 86)

Rule parameters		
To change parameter values at run time or add parameters to either the rule condition or action, specify rule parameters. Add constraint information as a description.		
Parameter name	Type	Description
Claim Amount	Decimal (double-precision)	

Figure 4-10 New parameter

7. Now for the template, we want to create a template that compares the 'Claim Amount' parameter we defined with Amount in the input field of this Business Rule task. If the Amount is less than 'Claim Amount' (Condition), then it will set the Assign Provider field in output to False and also assign the Billing Proivder field in the output to 'Internal Billing'(Rule Action).
- Change the Template Name to 'Internal Template' and click rule condition button to create a condition template as shown below.

Rule Templates	
To specify rule conditions and actions, create any required rule parameters. Also ensu	
Template name	Rule condition
Internal Template	

Figure 4-11 New Rule Template

- The **New Expression® Builder** window will appear and click **Add** to define a new condition.
- Using the Expression Composer, create a new condition as shown in Figure 4-12 on page 87. Make sure you click **Apply** and then click **OK**. (Figure 4-12 on page 87)

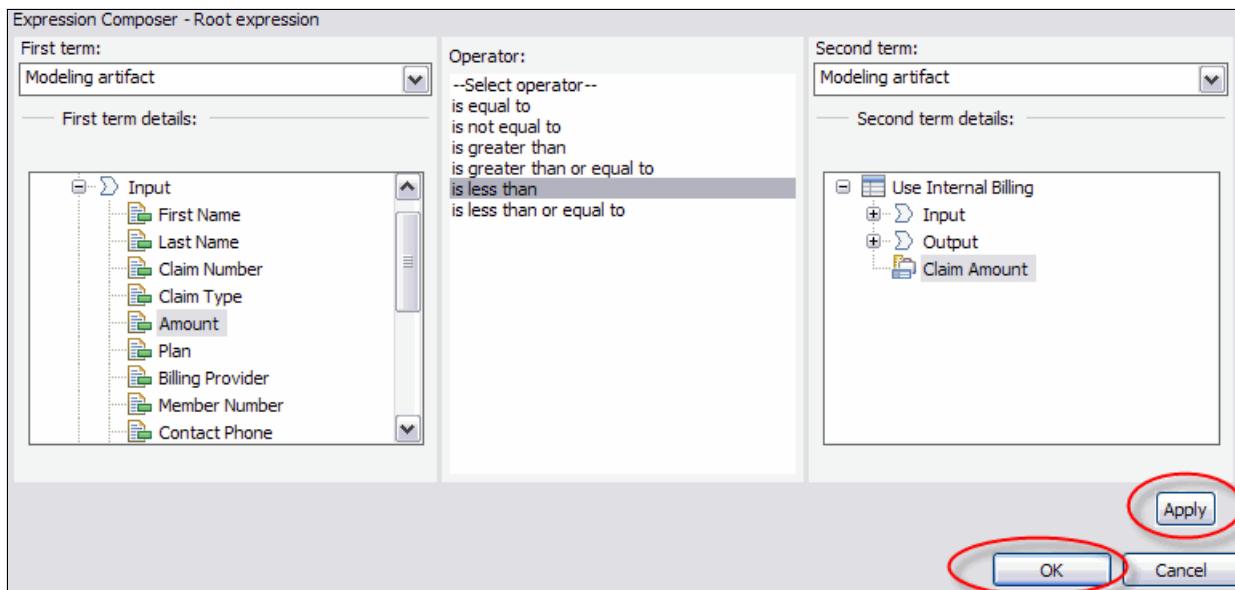


Figure 4-12 New Rule condition

8. Now we will create a new Rule Action that will be executed if the new Rule Condition is true.
- Click on the Rule Action button as below.

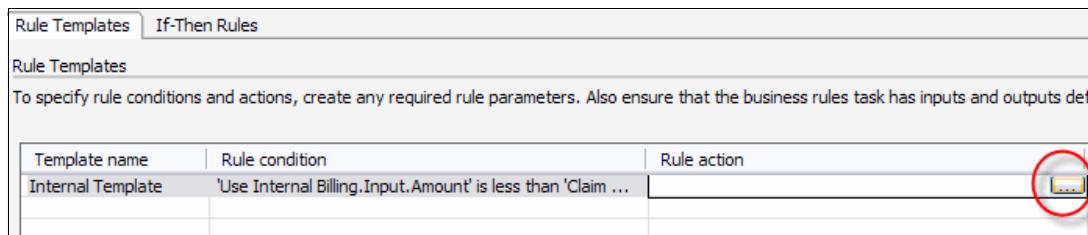


Figure 4-13

- Create a new Rule Action that assign 'Internal Billing' to Billing Provider field in output and also set Assign Provider output field to false as shown in Figure 4-14 on page 88. Click **OK**.

Details					Value specification	
For task inputs and outputs, assign a value to the input, the output, or one or more input or output attributes.					The value must match the type.	
Name	Type	M	M	Value		
Contact Phone	Text	0	1		<input type="radio"/> None	
Contact Address	Text	0	1		<input checked="" type="radio"/> Specific value	
Reason Code	Text	0	1	Internal Billing		
Cause	Text	0	1		<input type="radio"/> Expression	
Date	Date	0	1		Edit...	
Used Ambulance	Boolean	0	1			
Assign Provider	Boolean	0	1			
Output		claim	1	1		
Fist Name	Text	0	1			
Last Name	Text	0	1			
Claim Number	Text	0	1			
Claim Type	Text	0	1			
Amount	Integer	0	1			
Plan	Text	0	1			
Billing Provider	Text	0	1	Internal Billing		
Member Number	Text	0	1			
Contact Phone	Text	0	1			
Contact Address	Text	0	1			
Reason Code	Text	0	1			
Cause	Text	0	1			
Date	Date	0	1			
Used Ambulance	Boolean	0	1			
Assign Provider	Boolean	0	1	false		

Figure 4-14 Rule action

9. In order for Business Space users to be able to configure parameter values in runtime, you must include the configurable parameters in the rule presentation. You can customize the text that shows up in Business space during runtime for dynamic change of the parameter: (Figure 4-15)

Rule template presentation

Determine how the rule template is presented to users at run time for modification of the rule parameter

Automatically generate the text for the rule template presentation
 Customize the text for the rule template presentation

Tip: To add a parameter, right-click and select it from the list that is presented.

If the claim is less than the specified amount '\$Claim Amount', then assign to internal billing

Figure 4-15 Rule presentation

10. Click the **If-then rules** tab and we will create three rules:

- Rule for Initialization (copying input to output)
- Default Rule (setting 'Assign Provider' field in output to 'True')
- Rule for using the Internal Template we just created

Figure 4-16 If-Then Rules tab

- a. Click **Add Rule** to add rule #1: Initialization
 - b. Type '**Initialize**' for the Rule Name and click button on Rule Condition.
 - c. In the Expression Builder Window, we will create a condition that will be always true as shown in Figure 4-17.

Expression Composer - Root expression

First term:	Operator:	Second term:
Boolean true	-Select operator-- is equal to is not equal to	-Select type--
First term details:		Second term details:

Figure 4-17 true condition

- d. Click the button on the Rule Action and the **Specify Rule Action** Window will appear.
 - e. Highlight the Output and click Expression and then click **Edit** as shown below.

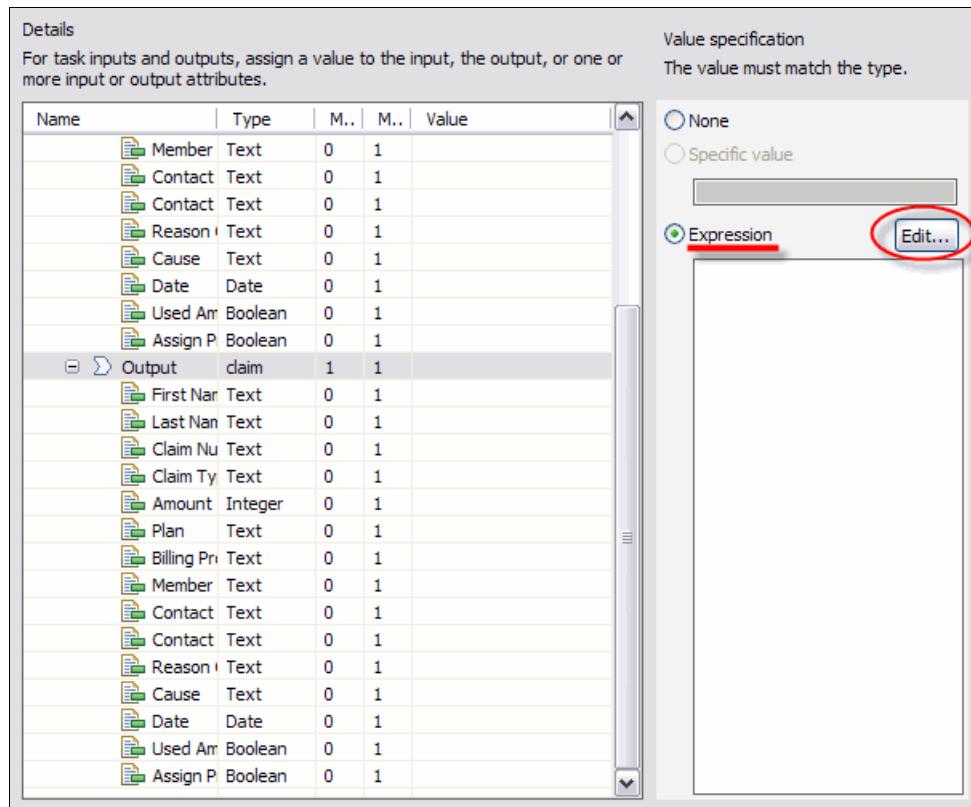


Figure 4-18 Initialization action rule

- f. In the Expression Builder Window, we will select input as shown below(Figure 4-19) and click **Apply** and then **OK**.

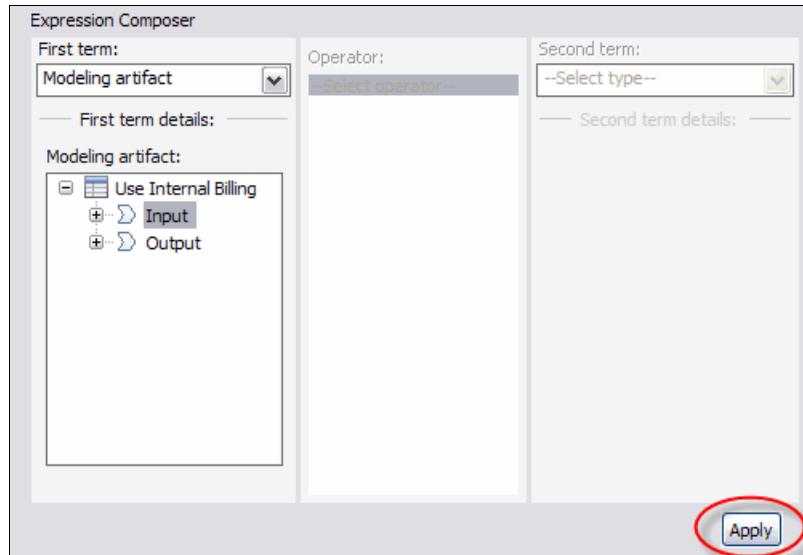


Figure 4-19 Initialization action rule Composer

11. The Initialization Rule is created. We will now create the second rule (Default Path) that sets Assign Provider field in output to 'true'.

- a. Click **Add Rule** again and change the Rule Name to 'Default Path' and click the **Rule Condition** button.
- b. Make the condition always true as we did in the previous rule.
- c. Click on **Rule Action** button and in the **Specify Rule Action** Window, set True to Assign Provider output field as shown below. Click OK to save.

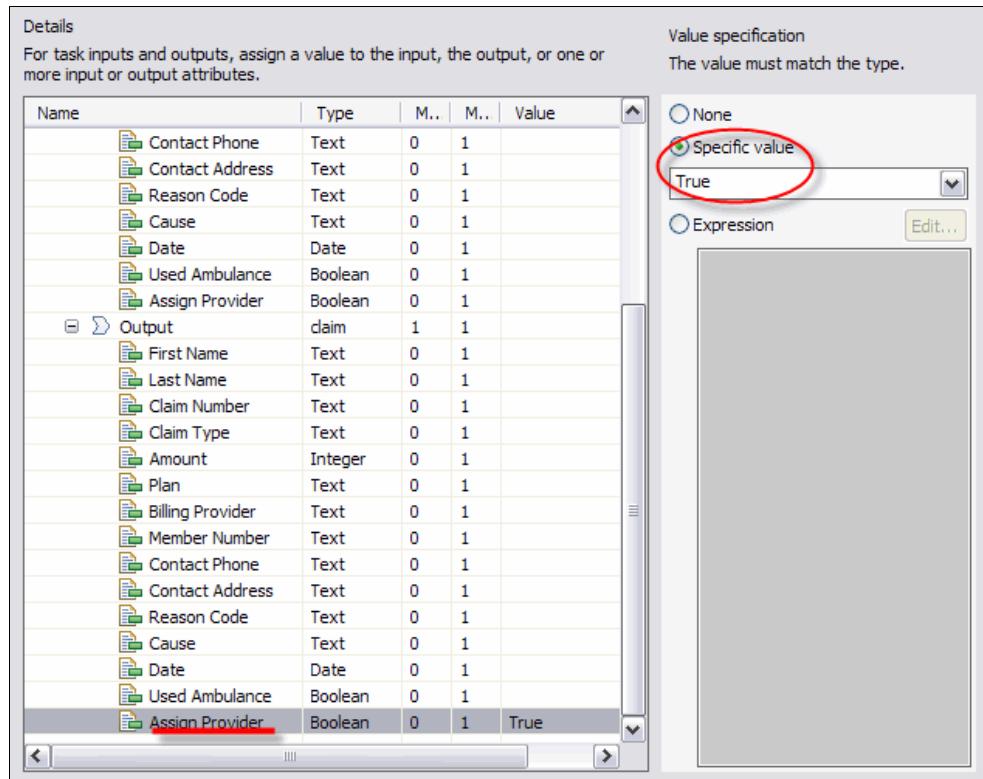


Figure 4-20 Default path rule composer

12. Now, we will create the rule #3 that uses the 'Internal Template' we created before.
- a. Click **Add Rule** and change the Rule Name to 'Internal Billing'.
 - b. This time, we will click the Template Name and select the 'Internal Template' we created. This will automatically populate the rule condition and action field with the templates.
 - c. Highlight the Internal Billing' rule as shown below.

Rule name	Template name	Rule condition	Rule action
Initialize	None	true	'Use Internal Billing.Output' is set to 'Use Internal Billing.Input'
Default Path	None	true	'Use Internal Billing.Output.Assign Provider' is set to True
Internal Billing	Internal Template	'Use Internal Billing.Input....	('Use Internal Billing.Output.Assign Provider' is set to False), ('Use Internal Billi...

Figure 4-21 Complete If-Then rules

- d. The Internal Billing rule includes the parameter (Claim Amount) that can be changed in runtime.

- e. Set the initial parameter value to the value of **1000**.

Rule parameter values			
Specify the value of each parameter used in the rule condition and action.			
Parameter name	Type	Value	Description
Claim Amount	Decimal (double-precision)	1000.0	Use the internal depart...

Figure 4-22 Claim Amount value

13. Finally, set this new rule (Use Internal Billing) as the default business rule in the scheduling section of Business Rules tab (Figure 4-23).
 14. You have now completed the creation of the first business rule.

Business rules	
Identify the high-level business rules associated with the task.	
Business rule	Description
Use Internal Billing	For claims that are less than the sp...
<input type="button" value="Add"/> <input type="button" value="Edit..."/> <input type="button" value="Remove"/>	
Scheduling	
Specify which business rule should be used by default and which business rules are in effect on specific dates. Dates are set in local time zones, so the scheduling of business rules in an application at run time occurs in the local time zone.	
Default business rule <input checked="" type="checkbox"/> Use Internal Billing	

Figure 4-23 Default business rule

15. We implemented rest of the business rules for resource type “Business Rule” in Figure 4-3 on page 82 following the same approach outlined in the above steps.

4.4.4 Defining Human Tasks

In the previous section, we added a set of operational characteristics by defining which steps in the overall process could be defined and implemented as *business rules*. The next step is to define which steps in the process can be defined and implemented as *human tasks*. The two candidate steps for this are:

- ▶ Select Provider task and the,
- ▶ Request / Receive Pricing task.

For the sake of this scenario, we will focus on the Request / Receive Pricing task and illustrate how we can assign escalation attributes to this task to create alerts if the duration of this task is taking too long.

Resource description	Type of resource
Claims Analyst	Role (Human Being)
Pricing Specialist	Role (Human Being)
Determine Adjudicator	Business Rule
Handle Medical	Service (WebService)
Handle Dental	Service (WebService)
Handle Behaviour	Service (WebService)
Check Member Eligibility	Business Rule
Provider Selection	Business Rule
Select Provider	Human Task
Set Provider	Service (WebService)
Clean Claim Edits	Service (WebService)
Reject Claim	Service (WebService)
Request Receive Pricing	Human Task

Figure 4-24 Activities for Human Task from storyboard

Business considerations for a human task

Complex process flows are often a combination of automated tasks and human tasks. In our solution, users can assign a human role or specific individual to a task. In addition, they can use a first-class process element called a human task, which enables an interaction between a person and a business process or service .

To ensure that human tasks do not adversely delay a running process, you can define the escalation logic that takes effect after a specified interval.

Important: Business roles for human tasks should be mapped to the organizational directory and task escalations should be added in accordance to business SLAs.

Escalation

In a human task, we can assign the task to a specific group of people based on their role and also create escalation if the task is not performed or claimed for a specified duration.

For the sake of illustration in our scenario, we will implement escalation within the Request/Receive Pricing human task activity in the Claim Process to meet our SLAs for customer satisfaction.



Figure 4-25 Request/Receive Pricing human task

Steps to implement escalation attributes to the human task

1. Click on **Attributes - Request/Receive Pricing** Tab of the Request/Receive Pricing Human Task and then click on Escalation tab .Click Add.

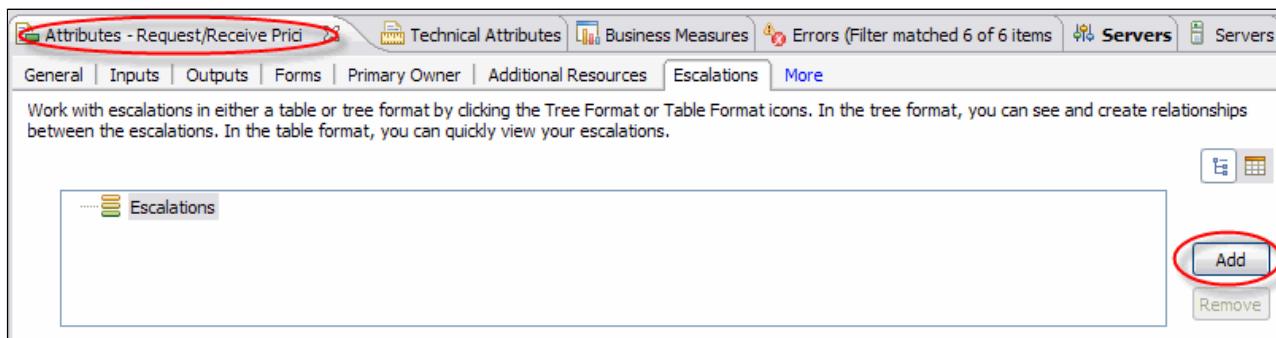


Figure 4-26 Add Escalations

2. It will populate with default escalation settings and we will modify some of the settings so that if the task is not claimed by users within 2 minutes after it is ready, it will be notified to the user with id "admin" by posting the escalation work item on the work list for the admin user. The changes are shown below in Figure 4-27.

The screenshot shows the 'Details' configuration dialog for a new escalation. The form fields are as follows:

- Name:** Pend
- Description:** If the service level for claiming a task is not achieved
- If task is:** Ready
- Task is not:** Claimed
- After:** Days: 0, Hours: 2, Minutes: 2, Seconds: 0. There is a 'Clear' button next to the input fields.
- After escalation:** No previous escalation
- Notify:** Person by person ID ("admin")
- Notification type:** E-mail (radio button) is selected, while Item on work list is unselected.
- E-mail message:** An empty text input field with a 'Select...' button and an 'Edit...' button.

Figure 4-27 New Escalation

4.5 Define Constructs for execution

As a next step within the *experience* phase, we must define constructs and ultimately prepare the process model for runtime deployment. For the sake of illustration in our scenario, we review the process and consider how existing web services already defined by the organization could be utilized to make steps in the process more efficient.

The goal for defining constructs for execution on future state process are as follows:

- All process control flow (i.e., gateways) should be refined to reflect decision logic based on process data.
- Define Business Object Model look for reuse opportunities
- Business roles for human tasks should be mapped to the organizational directory.
- Finally, technical attributes should be added to the process model to prepare for runtime deployment
- Publish models to repository

Figure 4-28 illustrates the current focus of this section within the context of the overall *Experience* phase.

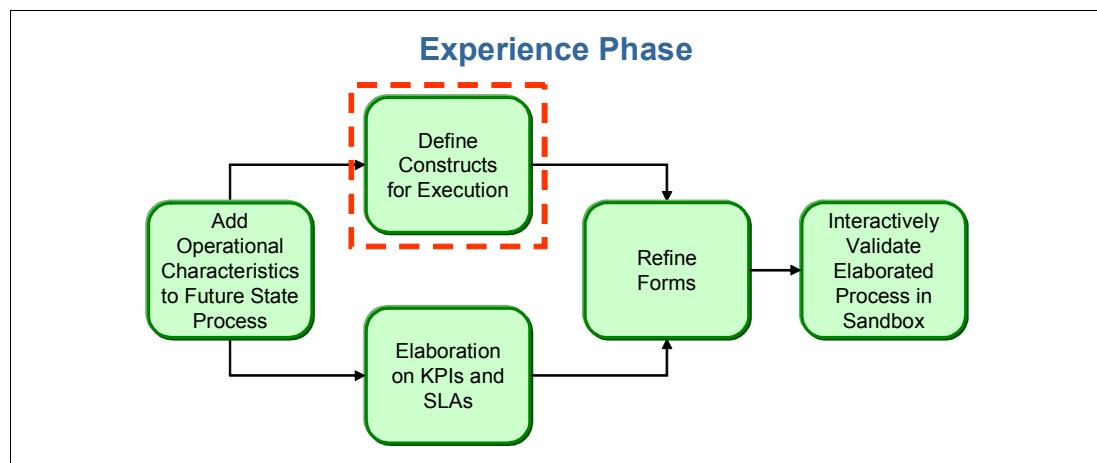


Figure 4-28 Visualization of the steps performed within the *Experience* phase

4.5.1 Adding services to deployable applications

Services are external processes outside the organization that can be used within the organization's processes. Services either provide input to the organization or receive output from the organization. Services have well-defined inputs and outputs, but their internal processes are unknown to the organization and cannot be changed.

As we review the Claim handling process, the steps which could be ultimately implemented as a service are:

- ▶ Handle Medical
- ▶ Handle Dental
- ▶ Set Provider
- ▶ Clean Claim Edits
- ▶ Reject Claim

Note: For the sake of this scenario, we are assuming that web services containing the functionality required either already exist, or have already been created by the IT Organization for Health Care Insurance ABC.

The goal is to illustrate why and how web services could be used here.

As you are modeling your deployable business process, you might identify certain activities that can be automated. Figure 4-29 is the table from previous section that identified some resources that can be implemented as automated services.

Resource description	Type of resource
Claims Analyst	Role (Human Being)
Pricing Specialist	Role (Human Being)
Determine Adjudicator	Business Rule
Handle Medical	Service (WebService)
Handle Dental	Service (WebService)
Handle Behaviour	Service (WebService)
Check Member Eligibility	Business Rule
Provider Selection	Business Rule
Select Provider	Human Task
Set Provider	Service (WebService)
Clean Claim Edits	Service (WebService)
Reject Claim	Service (WebService)
Request Receive Pricing	Human Task

Figure 4-29 Activities for Services from storyboard

Although services are outside the control of the organization, they are essential to modeling the realities of business-to-business integration. For example, in our scenario, Health Insurance company ABC may use the service of Set Provider as part of a claim application process. You can represent the Set Provider task as a service when modeling that process. Figure 4-30 illustrates how you can right click on a task and begin the process of converting this to a service.

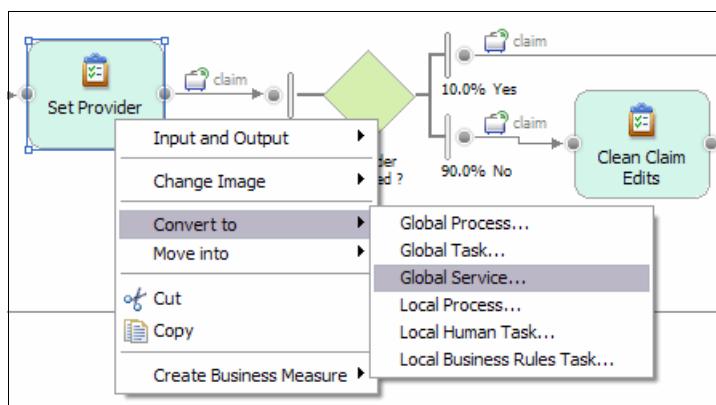


Figure 4-30 Service activity

Considerations for activities modelled as a service

These activities can be modeled in your process as services or business services, depending on whether or not they have already been implemented as a service and exist on your WebSphere Service Registry and Repository server.

If the business service already exists on your WebSphere Service Registry and Repository server, you can import the business service and related business service objects for inclusion within your process model. For example, if there is already an implemented service that performs selecting a billing provider for a claim in our scenario, you could replace the select provider human task in your process model with this service.

If your service has not yet been implemented, you can model the type of service that you would like to have implemented, including the types of input and output data and a description of the operations performed by the service, and pass the service specification to your IT developer to implement the service. The supported implementation types for tasks and global tasks in deployable processes are 'none' or "Import - Web Service binding".

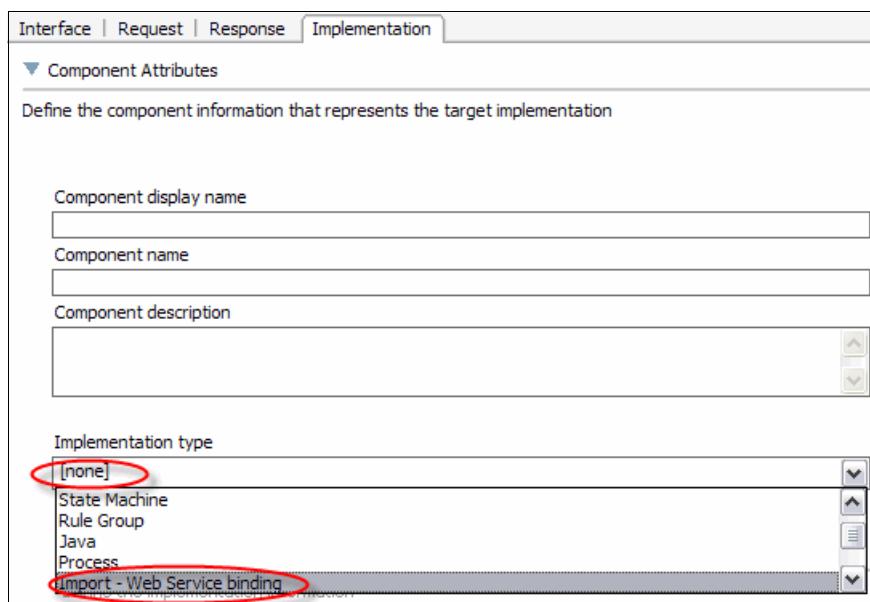


Figure 4-31 Implementation type for services

After the developer has implemented the service and published the endpoint to the WebSphere Service Registry and Repository server, you should be able to test your service within your deployable process. IT should make the default WSRR connection from your test server through WebSphere Admin Console as shown below.

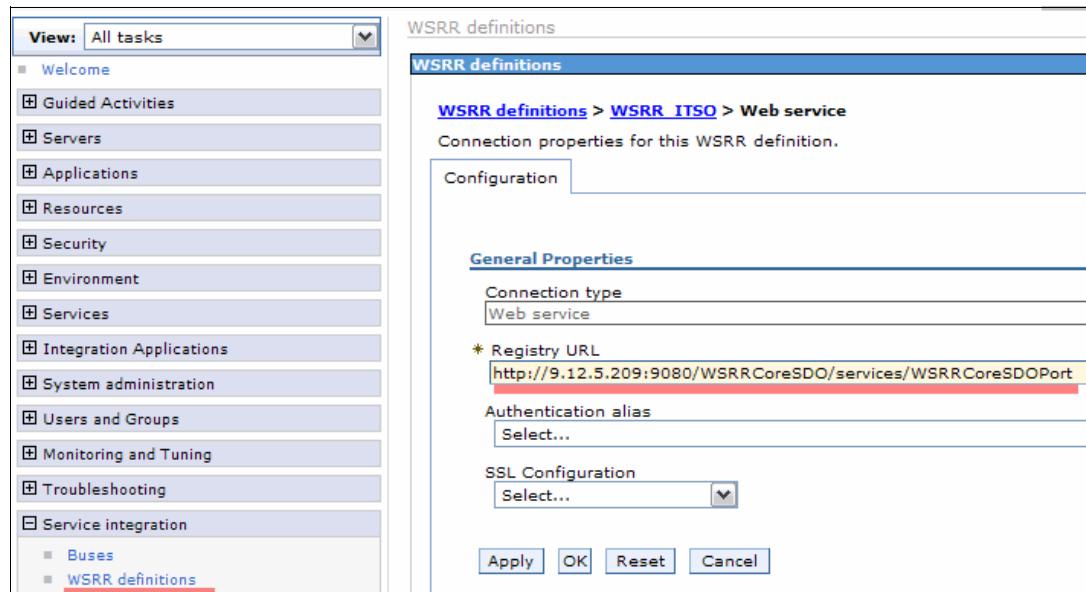


Figure 4-32 WSRR settings in IT sandbox

Note: You can still include services in your deployable process even if you are not using a WebSphere Service Registry and Repository server. If the WSDL you imported into WebSphere Business Modeler is a single WSDL that includes the PortType as well as the endpoint information, a WebServices Import will be generated that is bound to the mediation component as the default port. This means that if no WebSphere Service Registry and Repository server is configured the WebServices Import will be triggered, using the endpoint that is defined in the original WSDL object.

Optional: You can improve the efficiency of how your service is located at runtime by using a classification system that is defined for services in your WebSphere Service Registry and Repository server. Such a classification system might include, for example, values that distinguish services used by one geographic region from another. For example, there may be one claim service that is specific to California and one for rest of the countries. When modeling the claim process, you might want to ensure that the service for California is invoked and therefore tag the service invocation in your process model with the appropriate classifier.

4.6 Elaboration on KPIs and SLAs

With KPIs, you can analyze data to gain business insight into what might not be known or realized. As the business environment changes, KPI thresholds often need to change too. In the BusinessSpace, you can modify KPI thresholds so that you can move your success targets and evaluate various what-if scenarios without asking IT to update and redeploy the model.

Figure 4-33 illustrates the current focus of this section within the context of the overall *Experience* phase.

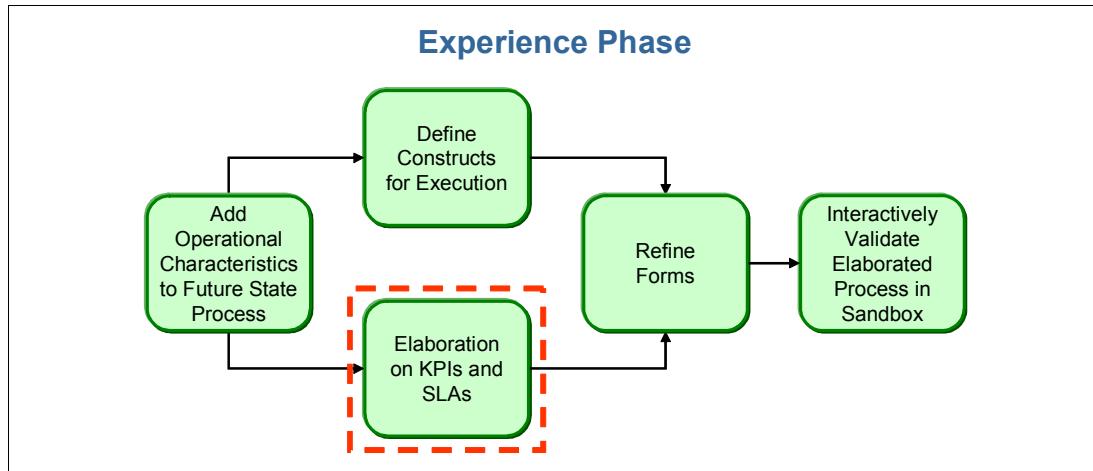


Figure 4-33 Visualization of the steps performed within the *Experience* phase

Note: In addition to this section, in which we introduce KPIs and illustrate how to define a specific KPI, please refer to Chapter 5, “Manage” on page 131 for much greater detail on creating, monitoring and managing KPI performance.

Setting the context within the scenario for Health Care Insurance ABC

To bring this into the context of our scenario, the business analysts, working together with the management team of Health Insurance Company ABC deem that the claim rejection totals threshold for Medical claim type is too high. The analyst lowers the threshold value for determining a rejection and assesses how well the business might perform given the same incoming claims. If this real-time simulation shows that the threshold has been exceeded, the management team can then ask the business analysts to determine how the process can be improved given this new goal.

As you assess the state of the business using the dashboard, you may realize that a new, yet-to-be-defined KPI might be helpful and one that correlates data in a new way. In the Business Space, you can dynamically create a new KPI without modifying the original process. Additionally, in the BusinessSpace, you can use one or more KPIs and modify the display mode (Table view, Gauge view, etc.) and the visual characteristics (color range spectrums, sizes, layout format, and so on). Then you can save this personal configuration so that it is applied to the most current deployed model. (See 5.6.2, “Steps to set up the KPI widget report” on page 146)

4.6.1 Steps to Define the Task Duration KPI

As part of our overall cost reduction effort, we would like to measure the duration of human tasks (Request/Receive Pricing and Select Provider task). In the following sections, we describe how to do this.

Before you start creating this KPI, you first need to enable monitored values for this task's processing time.

Enabling the monitored values

1. In process editor, click on the **Request/Receive Pricing Human Task** in the Claim Process and then click **Business Measures** tab.

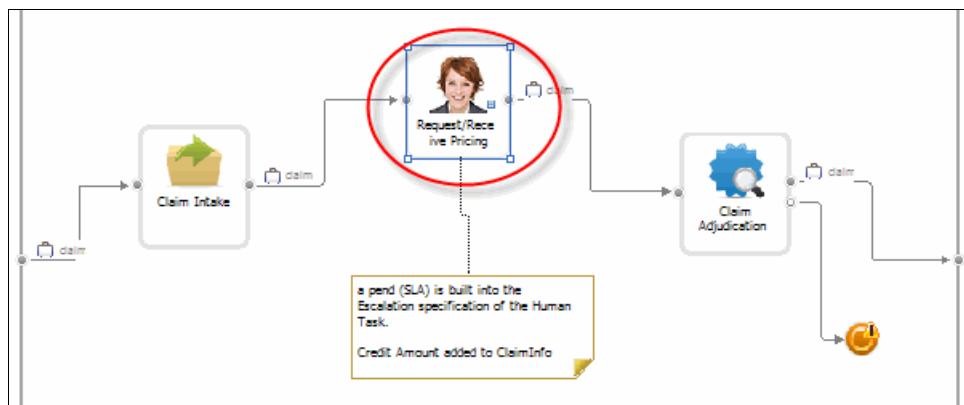


Figure 4-34 Request/Receiving Pricing activity

2. Click on the **Monitored Values** tab in Business Measures and select **Average Request/Receive Pricing Processing time** as shown Figure 4-35.

Business Performance Indicators				
Monitored Values				
Monitored values				
This section indicates which values you want returned from WebSphere Business Monitor after the process has been monitored.				
Process Element	Processing Time	Processing Cost	Startup Cost	
Claim Process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Request/Receive Pricing	<input checked="" type="checkbox"/> Average Request/Receive Pricing Processing Time	<input type="checkbox"/>	<input type="checkbox"/>	

Figure 4-35 Average Request/Receive Pricing Processing Time

3. If you go to **Business Performance Indicators** tab, you will see a new instance metric and an aggregate metric that you can use to create a new KPI. (Figure 4-36 on page 101)

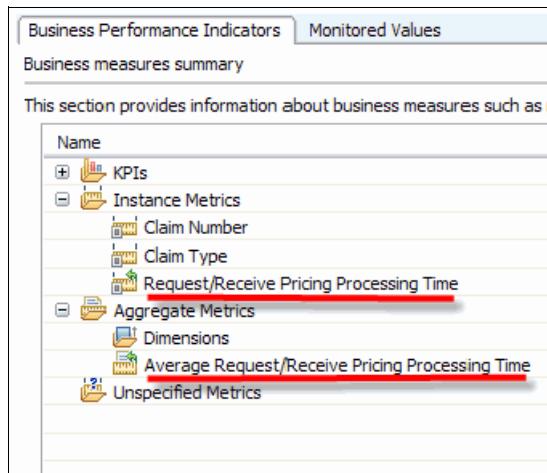


Figure 4-36 New metrics

Creating the KPI for Avg Duration of Request/Receive Pricing

- Now, in order to create the KPI that measures the task duration, click **Add**.

Name	Target	Time Period	Description
KPIs			
Total Claims (Medical) - Current Month	500	Repeating: monthly	This metric measures
Instance Metrics			This metric measures
Aggregate Metrics			
Dimensions			
Unspecified Metrics			

Figure 4-37 Add KPI

- Now type the name (Avg Duration of Request/Receive Pricing) and select **KPI** as type

Business Measure Information	
Name	Avg Duration of Request/Receive Pricing
Type	<input checked="" type="radio"/> KPI <input type="radio"/> Instance metric <input type="radio"/> Aggregate metric <input type="radio"/> Unspecified
Description	

Figure 4-38 KPI as Type

- Next, specify target type (Duration) and Target Value (2 hours)

Business Measure Details | **Dashboard Samples**

Target Type and Value

The target is an exact value that the KPI should achieve.

Specify a target type and value

Type: Duration

Days	Hours	Minutes	Seconds	Milliseconds
0	2	0	0	0

Figure 4-39 Target Type and Value

- Specify three ranges (Low,Medium,High) using percentage of target value as shown (Figure 4-40).

Ranges

Specify range details:

Ranges can be defined as percentages of the target value or as fixed, actual values.

Percentage of target value (target value = 100%)

Actual value

Specify ranges

A range is a set of values, such as allowable margins or lower and upper limits, against which to track your KPI.

Range Name	Start Value	End Value
Low	0 %	< 37 %
Medium	37 %	< 67 %
High	67 %	100 %

Add | Remove | Sort

Figure 4-40 Target Ranges

- Finally, specify how it should calculate the KPI by selecting the instance metric (Request/Receive Pricing Processing Time) and **Average for Aggregation** function

KPI Calculation Details

Specify the method used to calculate this KPI. If you choose to calculate the KPI based on an instance metric, you will also be able to specify the time period and data filters for use with the KPI.

Specify how to calculate this KPI

Based on an instance metric and an aggregation function

Instance metric to aggregate: Request/Receive Pricing Processing Time

Aggregation function: Average

Using an expression involving other KPIs

<Click the Edit... button to enter an expression>

Edit... | Clear

Figure 4-41 KPI calculation

6. Click OK to save.
7. At this point, you have now successfully created the task average duration KPI for Request / Receive Pricing Processing Time.
8. In order to create additional KPIs (namely for task average duration KPI for Select Provider Human Task Activity in the Claim Intake process), repeat the same steps above in this section.

4.6.2 Steps to Define the Total Claim KPI

In our Claim process, we would like to see how many claims are processed by claim type (e.g Medical, Dental, Behavioral) for the current month in order to measure the cost as part of our overall effort to reduce claim processing cost.

This KPI will automatically show up in the BusinessSpace dashboard once we deploy the process. You can design this key performance indicator using Business Measures editor in the modeler. The process for defining the Total Claim KPI is described in this next section.

1. Select the process (Claim Process) where you monitor this KPI and click the **Business Measures** tab.

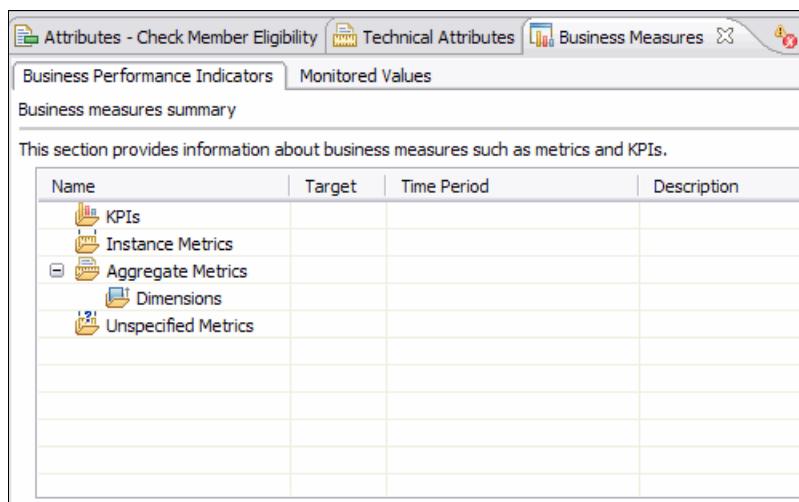


Figure 4-42 Business measures

2. To define this KPI, you first need to create a metric (Aggregate,Instance or unspecified).
 - a. Let's create the Claim Number instance metric by clicking the **Add** button. Type Claim Number for Name and select **Instance metric** for Type.

The dialog box is titled 'Business Measure Information'. It has three main sections: 'Name' (containing 'Claim Number'), 'Type' (radio buttons for 'KPI', 'Instance metric' (which is selected), 'Aggregate metric', and 'Unspecified'), and 'Description' (a large text area). The 'Type' section includes a radio button for 'Instance metric' which is checked.

Figure 4-43 Claim Number instance metric

- b. Select **text** for default type.



Figure 4-44 Default Type

- c. Specify how to calculate this instance metric by selecting template (Business Item Input), Process element (Claim Process) and Attribute (Claim Number)

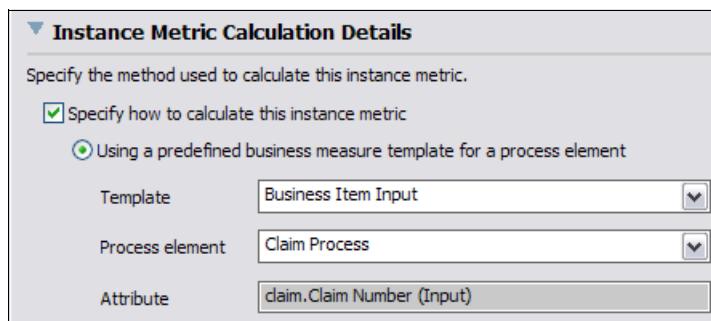


Figure 4-45 Instance Metric Calculation

- d. Click OK to save. At this point, you have now created an instance metric for the Claim number.
e. Repeat the steps above for another Instance Metric Claim type.

Business Measure Information

Name	Claim Type
Type	<input type="radio"/> KPI <input checked="" type="radio"/> Instance metric <input type="radio"/> Aggregate metric <input type="radio"/> Unspecified
Description	This metric measures the value of an attribute of the input to Claim Process.

Type and Default Value

<input checked="" type="checkbox"/> Specify a default value and type	
Type:	Text
Default value:	

Instance Metric Calculation Details

Specify the method used to calculate this instance metric.	
<input checked="" type="checkbox"/> Specify how to calculate this instance metric	
<input checked="" type="radio"/> Using a predefined business measure template for a process element	
Template	Business Item Input
Process element	Claim Process
Attribute	claim.Claim Type (Input)

Figure 4-46 Claim Type Instance Metric

3. Next, you will create a KPI using these metrics.

We will create a KPI - Total Claims with claim Type Medical for current month.

To create the metric:

- a. Click the **Add** button on the **Business Measures** tab again.
- b. Type a name for this KPI and select **KPI** for type. In the example here (Figure 4-47) we are calling this Total Claims Medical - Current Month

Business Measure Information

Name	Total Claims (Medical) - Current Month
Type	<input checked="" type="radio"/> KPI <input type="radio"/> Instance metric <input type="radio"/> Aggregate metric <input type="radio"/> Unspecified
Description	

Figure 4-47 KPI Type

- c. Specify target type and value: in our example, we are targeting 500 claims in total claim numbers.

Target Type and Value

The target is an exact value that the KPI should achieve.

Specify a target type and value

Type:

Target value: [▲] [▼]

Figure 4-48 Target Type Number

- d. Next, specify ranges of your KPI for low, average and above average using percentages of target value as below.

Ranges

Specify range details:

Ranges can be defined as percentages of the target value or as fixed, actual values.

Percentage of target value (target value = 100%)

Actual value

Specify ranges

A range is a set of values, such as allowable margins or lower and upper limits, against which to track your KPI.

Range Name	Start Value	End Value
Low	0 %	< 33 %
Average	33 %	< 67 %
Above Average	67 %	100 %

Add Remove Sort

Figure 4-49 KPI Ranges

- e. Next, specify how to calculate the KPI. For example, the example here (Figure 4-50) shows that we are going to aggregate the claim number (the instance metric you just created in the beginning of this section) using the count function to get claim totals.

KPI Calculation Details

Specify the method used to calculate this KPI. If you choose to calculate the KPI based on an instance metric, you will also be able to specify the time period and data filters for use with the KPI.

Specify how to calculate this KPI

Based on an instance metric and an aggregation function

Instance metric to aggregate:

Aggregation function:

Using an expression involving other KPIs

<Click the Edit... button to enter an expression>

Figure 4-50 KPI calculation

- f. Next, specify the time period that you will measure this KPI. In our example, we will be measuring during the current month and repeat that every month.

Specify a time period over which the business measure will be monitored

Repeating Rolling Fixed

Period type: Monthly Last: 30 days Start date:

Time zone: GMT-5 End date:

Base period on:

- Last full period
- Period in progress

Time zone: GMT-5

Figure 4-51 KPI Time Period

- g. Finally, specify a KPI data filter so that we will only calculate claims that include claim type Medical .

Specify data filters to limit the values included in the calculation of this KPI

Data Filter Name	Instance Metric	Operator	Values to Include
Type filter	Claim Type	equal to	Medical

Add Remove

Figure 4-52 KPI Data Filter

- h. Click OK to save.

Now this KPI is ready and when you deploy the process to the server, it will show up automatically on the dashboard of your business space screen.

You can repeat these steps to create another KPIs. For example, Total Claims for Claim Type Dental type during current month - You will change KPI Data Filter to 'Claim type is equal to Dental'.

Note: While we have discussed how to define and configure a few example KPIs, Chapter 5, "Manage" on page 131 provides much greater detail on how to use the Business Space to monitor and view KPI performance.

4.7 Refine Forms

Just as human tasks help you define the manual aspects of a process, forms help you (the business analyst) define how business users interact with in-flight process information. In fact, forms in our solution can be associated with human tasks only. The relationship between forms, business items, and human tasks is natural.

- Forms define the user interface,

- ▶ business items define the data being acted on throughout the process, and
- ▶ human tasks bring data and the user interface together.

One of the ways that you can make your application easier to use is to create custom forms for your human tasks. If you already have forms created using Lotus Forms Designer, you can import these forms into your workspace and associate them with a human task. You can also customize forms that you create in WebSphere Business Modeler and then update these forms in your process model. A custom form designed in Lotus Forms Designer can provide a more user-friendly and attractive interface for reviewing and entering the data associated with a human task.

Note: When you associate a form with a human task, if the inputs or outputs of the human task do not match the form data, then the inputs and outputs of the human task will be replaced with the form data.

Figure 4-53 illustrates the current focus of this section within the context of the overall *Experience* phase.

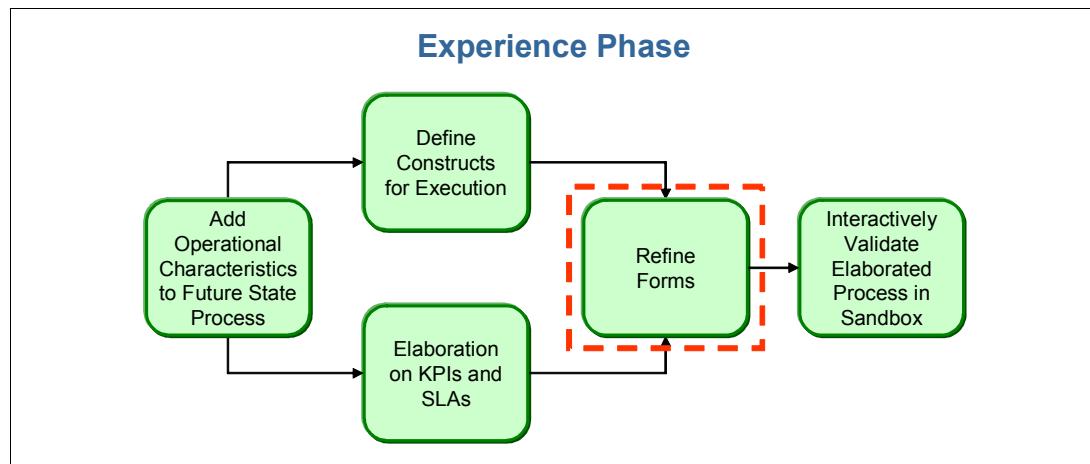


Figure 4-53 Visualization of the steps performed within the *Experience* phase

4.7.1 Automatic generation of forms for Human Tasks

The following section discusses how to generate a basic form for a human task. You can generate input or output forms for human task just by clicking the menu as shown below in Figure 4-54 on page 109

If the human task has identical inputs and outputs, only one form will be generated and associated with the task as both the input and output form.

If you have forms already created for the human tasks, you can associate forms with human task and process inputs and outputs on the Forms tab in the Attributes view.

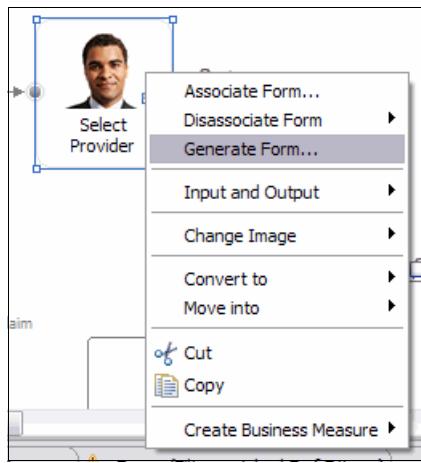


Figure 4-54 Generate Form

4.7.2 Customizing the appearance of the form

A plain input or output form using the input or output business item for the activity will be generated. Using the Claim Intake process for our example, if we use the default form generated from the claim business item for the human task, the user will enter data in a form that contains the following inputs:

Input	
First Name	<input type="text"/>
Last Name	<input type="text"/>
Claim Number	<input type="text"/>
Claim Type	<input type="text"/>
Amount	<input type="text"/>
Plan	<input type="text"/>
Billing Provider	<input type="text"/>
Member Number	<input type="text"/>
Contact Phone	<input type="text"/>
Contact Address	<input type="text"/>
Reason Code	<input type="text"/>
Cause	<input type="text"/>
Date	<input type="text"/>
Used Ambulance	<input type="checkbox"/>
Assign Provider	<input type="checkbox"/>

Figure 4-55 Plain form from automatic generation

Figure 4-55 illustrates only the generic, generated form. You can proceed to customize the form using palette in the Lotus Forms Editor by changing colors, rearranging the fields and inserting graphics into the form.

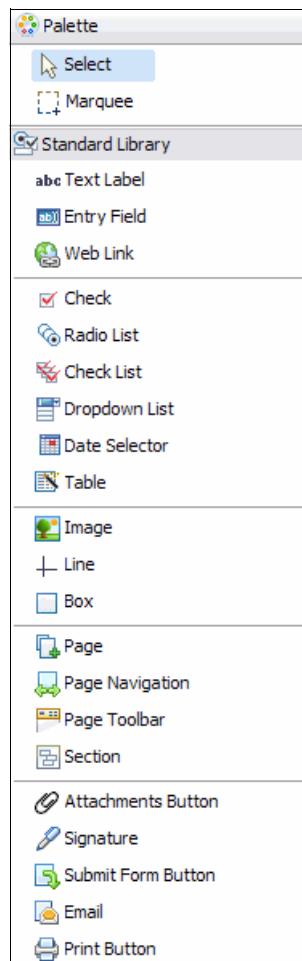
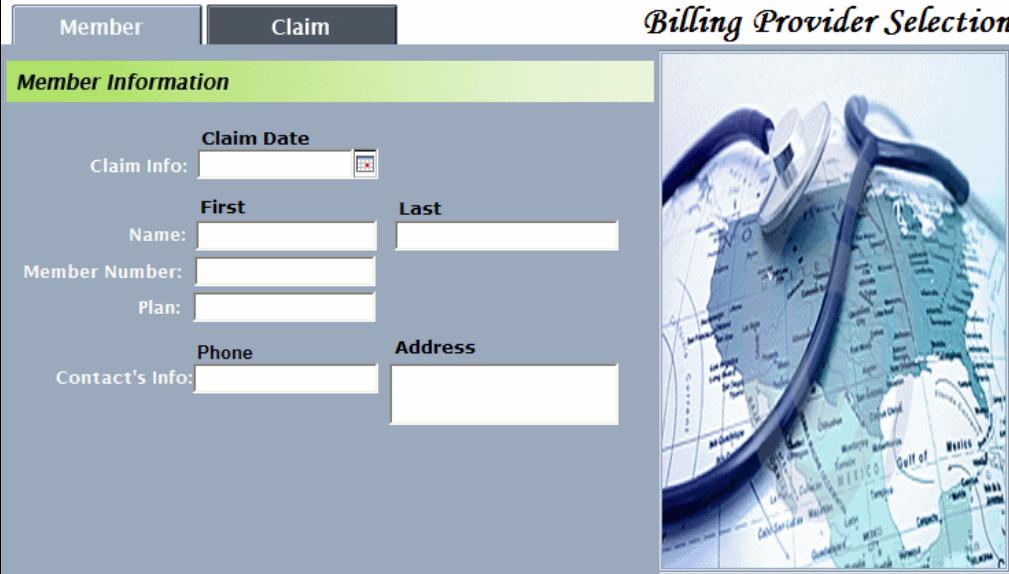


Figure 4-56 Lotus Form Editor Palette

If we customize a form based on the claim business item, then we can present users with a better form layout and format, allowing users at each step of the process to more easily find the fields in the form that are relevant to the current task. *This will save users time in data entry.*

Note: Detailed information on how to customize a form using Lotus Forms Designer is beyond the scope of this Redpaper. Instead, we illustrate a more customized form to give the readers a sense of what is possible when the business analyst works with members of the graphics / design team using Forms Designer.

Figure 4-57 on page 111 illustrates an example of our custom form after it is modified using the editor.



The form is titled "Billing Provider Selection". It has two tabs at the top: "Member" and "Claim", with "Member" being the active tab. The "Member Information" section contains fields for "Claim Date" (with a calendar icon), "Name" (split into "First" and "Last" fields), "Member Number", "Plan", "Phone", and "Address". A "Contact's Info:" field is also present. To the right of the form is a graphic of a magnifying glass focusing on a map of North America.

Figure 4-57 Customized new form

Important: After a form is associated with a human task or process, you or your form designer can move fields to improve the form layout, add headings and graphics, format fonts, and make other visual enhancements to the form. However, it is recommended that you do not add, delete, or re-create form data in the form editor (Lotus Forms Designer). To add or change form data fields, update the attributes of the relevant business items.

4.8 Refine the process

After you have modeled your business process for deployment, you can test it iteratively on a managed deployment environment server set up for you by the IT department. This will allow you to further experience the process and continue to make refinements to the process where needed before a larger scale deployment. If you include business measures in your process, monitoring dashboards are automatically generated that you can also test. The testing function is enabled when your business process is free of errors.

Note: First, ensure that your business process shows no errors in the WebSphere Process Server mode from within Business Modeller. You can test a business process if warnings are still displayed in the Errors view. However, any business measures with warnings that they require further editing to be monitored will not be deployed to the test server.

Figure 4-58 on page 112 illustrates the current focus of this section within the context of the overall *Experience* phase.

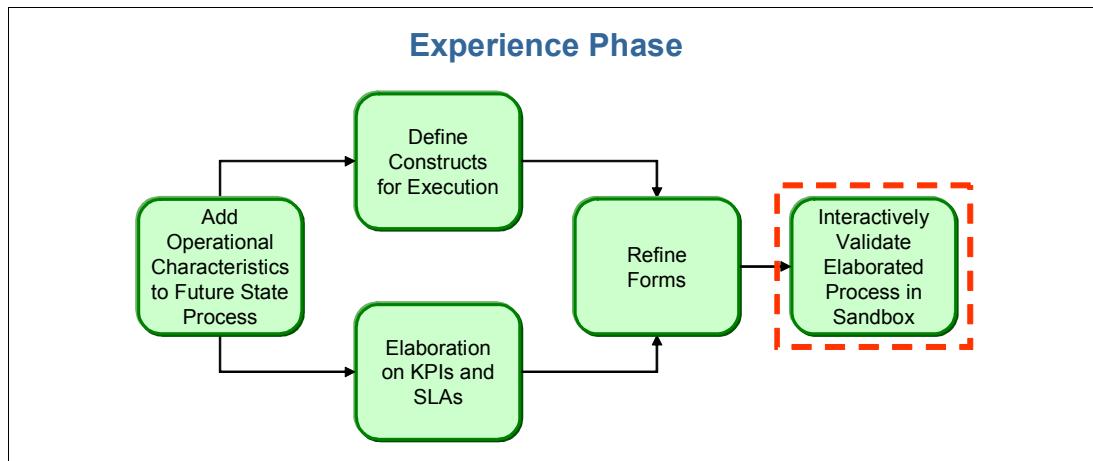


Figure 4-58 Visualization of the steps performed within the Experience phase

4.8.1 Interactive process Design (IPD)

In this next section, we discuss how to put the solution into action using the Interactive Process Design (IPD) feature in WebSphere Business Modeler 6.2. Taking advantage of this Interactive Process Design (IPD) feature allows you to *accelerate your time to value* by creating business process applications on your timeline to exactly match your line of business (LOB) requirements.

Note: The section below describes the process for deploying the model through the IPD process, a step which will primarily be handled by IT.

Important: IT level activities happen in parallel with business activities in this stage.

Steps to deploy the model through IPD.

The following section describes the steps to deploy through IPD.

- Once you have completed the previous steps in this chapter, (namely, adding operational characteristics, defining constructs for execution, elaborating on KPIs & SLAs, and refining forms) you are now ready to deploy the model directly to the test server environment that IT has prepared for you.
- IT will create a xml file that points to the test server for your testing. Example 4-1 illustrates an example of this XML file.

Example 4-1 Test Server Configuration xml file example

```

<?xml version="1.0" encoding="UTF-8"?>
<rest:serverConfiguration xmlns:rest="http://rest.dtd.btools.ibm.com"
    name="Test Server with Monitor" test="true" secured="true"
    memberMapping="Claims-Model.rmf">
    <description>
        Test MDE with WPS with Monitor
    </description>
    <serverComponent
        name="WebSphere Process Server"
        configuration="https://bpms0104.itso.ibm.com:9444/rest/serverComponent/componentCo
nfiguration">
    
```

```

</serverComponent>
<serverComponent
  name="WebSphere Monitor Server"

configuration="https://bpms0104.itso.ibm.com:9444/monitorServerComponent/component
Configuration">
  </serverComponent>
  <serverComponent
    name="WebSphere Business Space"

configuration="https://bpms0104.itso.ibm.com:9444/BusinessSpace/services/request/d
eployConfig">
  </serverComponent>
</rest:serverConfiguration>

```

3. IT also needs to create a mapping file that maps roles in your model to runtime WebSphere group definitions. This file is referred as Claims-Model.rmf and is shown in the Example 4-1 on page 112

Example 4-2 illustrates the content of the Claims-Model.rmf that describes user role mapping.

Example 4-2 Test Server Configuration xml file example containing mapping

```

<?xml version="1.0" encoding="UTF-8"?>
<logicalMapping:LogicalEntityRoot
  xmlns:logicalMapping="http://www.ibm.com/logicalMapping"
  peopleDirectory="bpe/staff/samplevmmconfiguration">
  <role name="Resources/Claims Analyst" uniqueName="cn=Claims
Analyst,o=defaultWIMFileBasedRealm" uid="BLM-d4d0c3677dc3828d70797439a9019443"
description="" groupName="Claims Analyst"/>
  <role name="Resources/Pricing Specialist" uniqueName="cn=Pricing
Specialist,o=defaultWIMFileBasedRealm" uid="BLM-70808a7cd51d9e1ac6209284295c3d4"
description="" groupName="Pricing Specialist"/>
</logicalMapping:LogicalEntityRoot>

```

In this xml file (Example 4-2), **role name** and **uid** are from your process model and **uniqueName** and **groupName** are from your test server environment that IT sets up for you.

4. Now you are ready to run your model on the server. Make sure you are in the WebSphere Process Server Mode. (Figure 4-59)

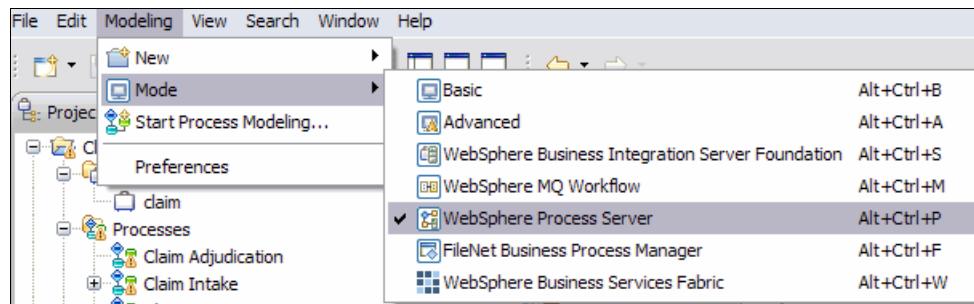


Figure 4-59 WebSphere Process Server Mode in Modeler

5. Click your process and select **Test On Server** menu.

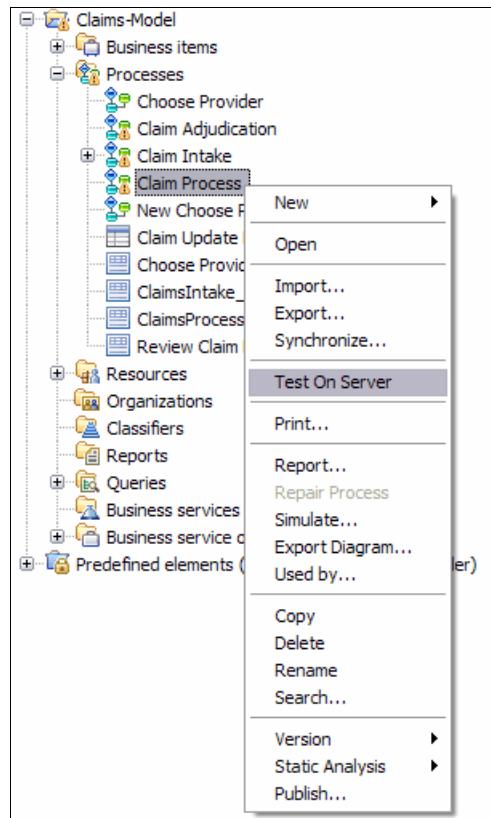


Figure 4-60 Test on server

You will be prompted for the server configuration file (Example 4-1) and user id and password for the test server login which you should get them from IT.

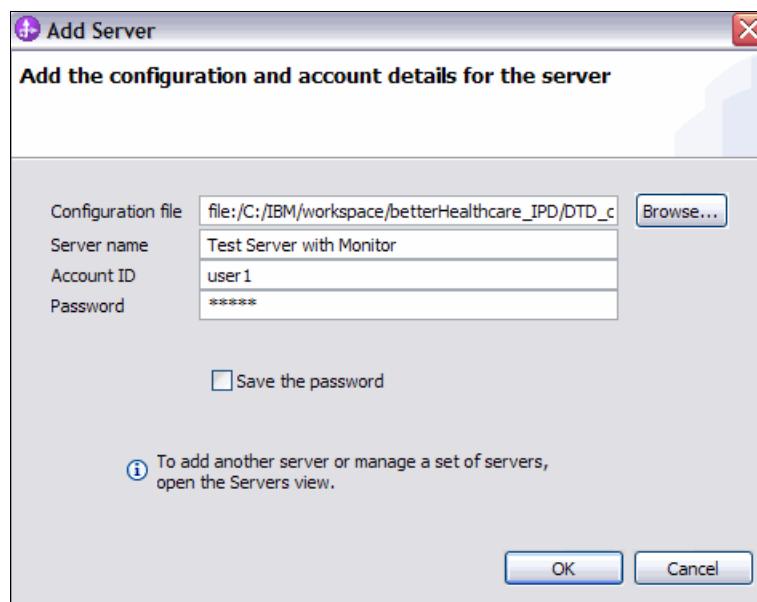


Figure 4-61 Select server configuration file

6. After you click **OK**, it will start deploying your model to the server. This can take several minutes.

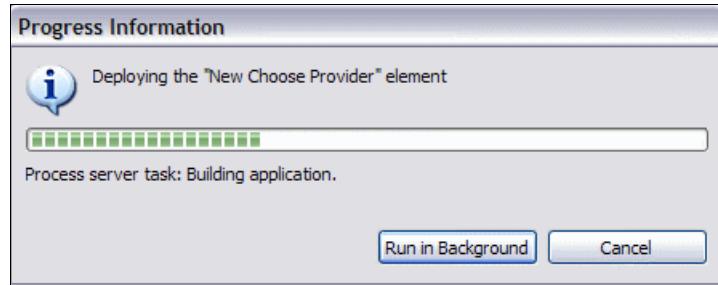


Figure 4-62 IPD in progress

Introduction to the Business Space

1. After the model deploys successfully, it will prompt to the login screen of BusinessSpace



Figure 4-63 Business Space login

2. Login to BusinessSpace with your user id and password that you received from IT. Now you are in the BusinessSpace where you can run and test your process you designed.
3. First, let's change the theme of your space to the corporate theme that IT designed. Click **Manage Business Spaces** on the upper right corner of your page.

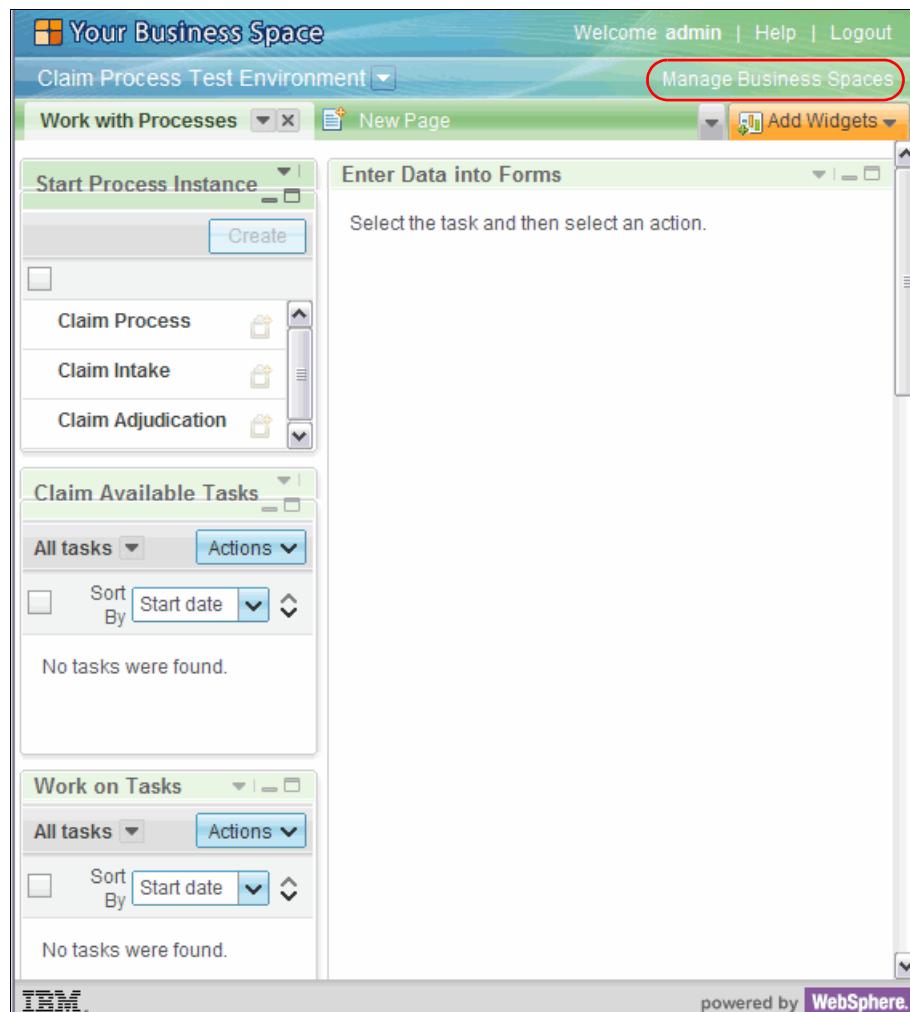


Figure 4-64 Manage Business Space

4. Click **Change** for the Theme in the manage space page and then click **Save**.

The screenshot shows the configuration page for a business space named "Claim Process Test Environment". It includes fields for Business Space Name, Description, Owner (admin admin), and Theme (Claims Processing). A red circle highlights the "Change..." button next to the theme name. At the bottom, there are "Save" and "Cancel" buttons, with "Save" also highlighted by a red circle.

Figure 4-65 Change the theme in Business Space

- Now you will see the theme customized for ABC Health company.

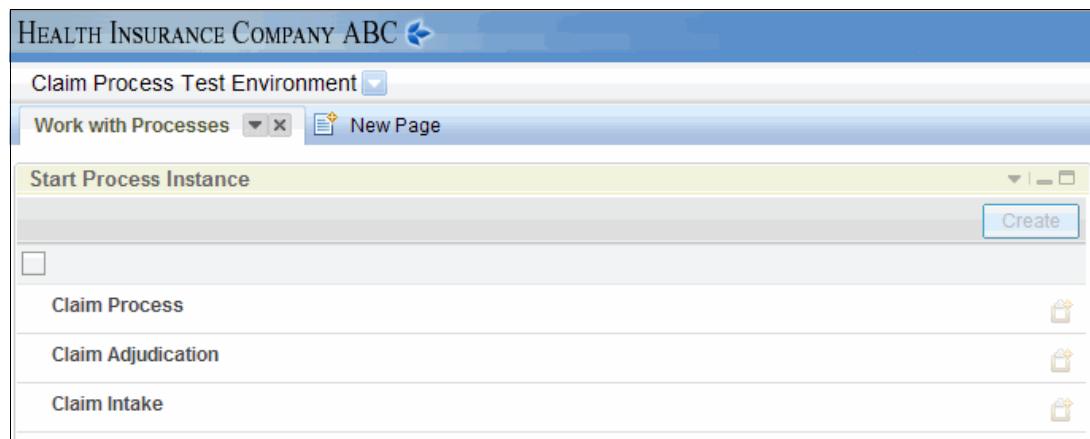


Figure 4-66 Customized theme

4.8.2 Testing with the real life scenario

The first step in testing your process should be to test the overall flow of your process, to make sure that your activities execute in the correct order, and that your gateways and

connections work as expected. You should also make sure that the correct data is passed from node to node as your process executes.

After the process has completed its execution, you can:

- ▶ See the path of the process execution in the Process Execution area. The execution path is highlighted in the diagram.
- ▶ See the list of activities that were completed during the process execution in the Process Execution Trace widget.
- ▶ View the data associated with each executed activity in the execution path by selecting an activity in the Process Execution Trace and Data Values widget, and examining the associated output data.
- ▶ Return to the Start Process Instance widget and start another process instance for testing, potentially modifying the process inputs or the values of configurable business rules to verify that the process runs as expected

Note: If you encounter errors in the process testing environment at any point during your testing, you can click the Request Help From IT button in the Process Execution Trace and Data Values widget. When this button is clicked, the log files from your testing session are packaged up for you to pass off to your IT developer for problem determination

We can now test the claim process that we created in the modeler with the Business Space without receiving any help from IT.

1. First, select the process you want to run - In our example, **Claim Process** - and click **Create**

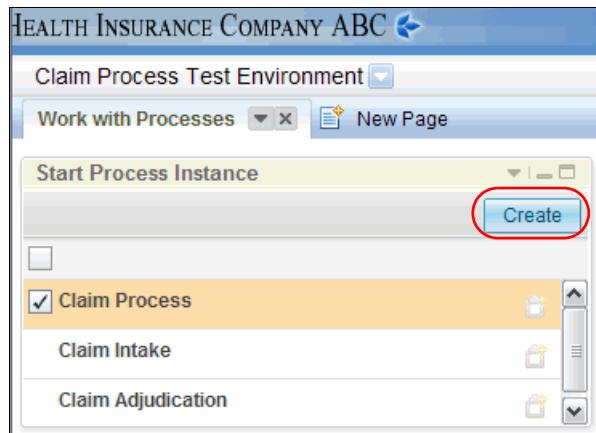


Figure 4-67 Create a new Instance

2. Next, the claim form will appear to be filled in in order to start the claim process. Enter the data as you want to test and click **Submit**. (Figure 4-68 on page 119)

The screenshot shows a software application window titled "Enter Data into Forms". At the top, there are two buttons: "Submit" (circled in red) and "Save as Draft". Below the buttons, a title bar reads "* Claim Process". The main area is labeled "Output" and contains a table of form fields and their values:

First Name	John
Last Name	Smith
Claim Number	A-8642
Claim Type	Medical
Amount	2,000
Plan	Gold
Billing Provider	
Member Number	B012
Contact Phone	1236530002
Contact Address	CA
Reason Code	98323
Cause	Heart
Date	21 May 2009 <input type="button" value="Calendar"/>

Figure 4-68 Claim data

3. The Process Execution widget displays the process diagram that you are testing. After you create a process instance for testing, the execution path through the process is highlighted in the diagram.

As each activity is completed, it is added to the Process Execution Trace and Data Values widget. The name of the completed activity and the output data from the activity is displayed in this widget.

You can view the data associated with different points in the execution path by selecting an activity from the list of completed activities in the Process Execution Trace and Data Values widget. When you select an activity from the list, the output data for the selected activity is displayed. In Figure 4-69 on page 120 you can see the output data of Use Internal Billing activity in the execution path list.

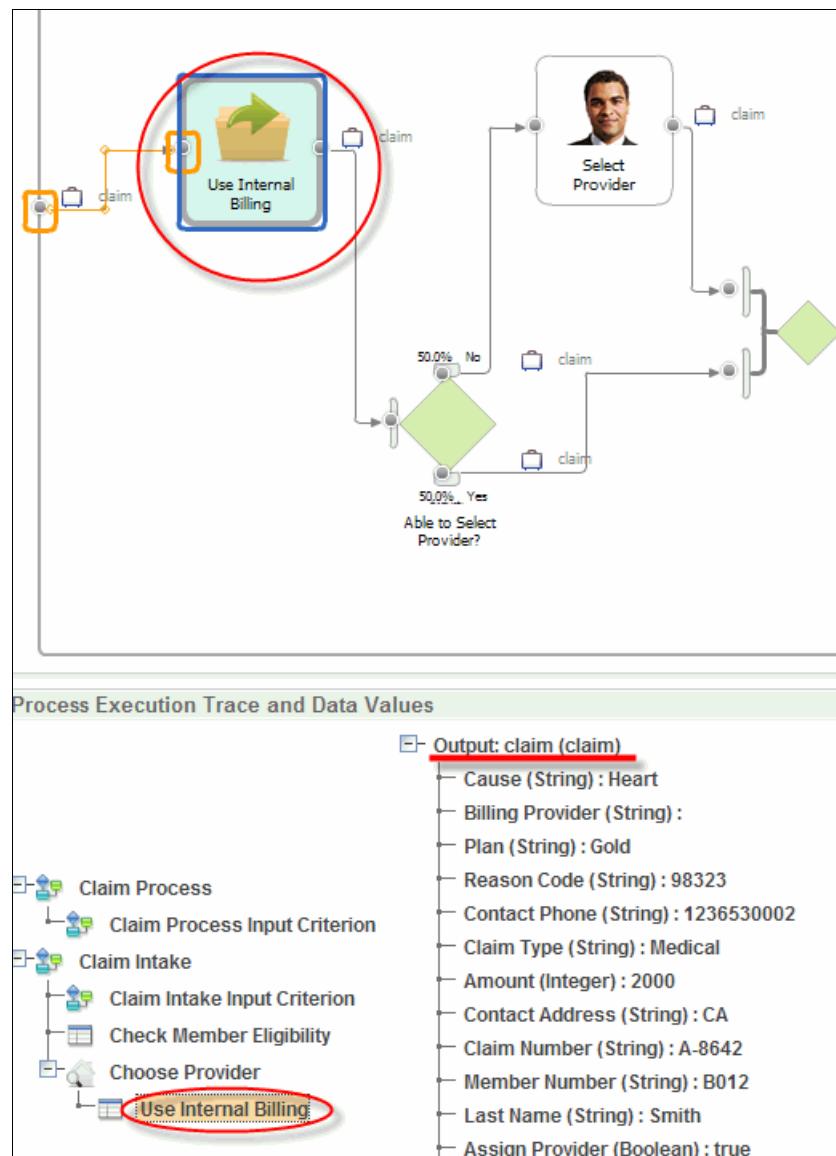


Figure 4-69 Execution Trace and Data

4. After you submit the claim, you can see the process is moving through the activities in your process execution diagram and stops where it is waiting for human task. In our example, since we entered claim amount \$2000, our Provider Selection business rule will send this claim to the human task where billing provider is selected by a claim analyst.

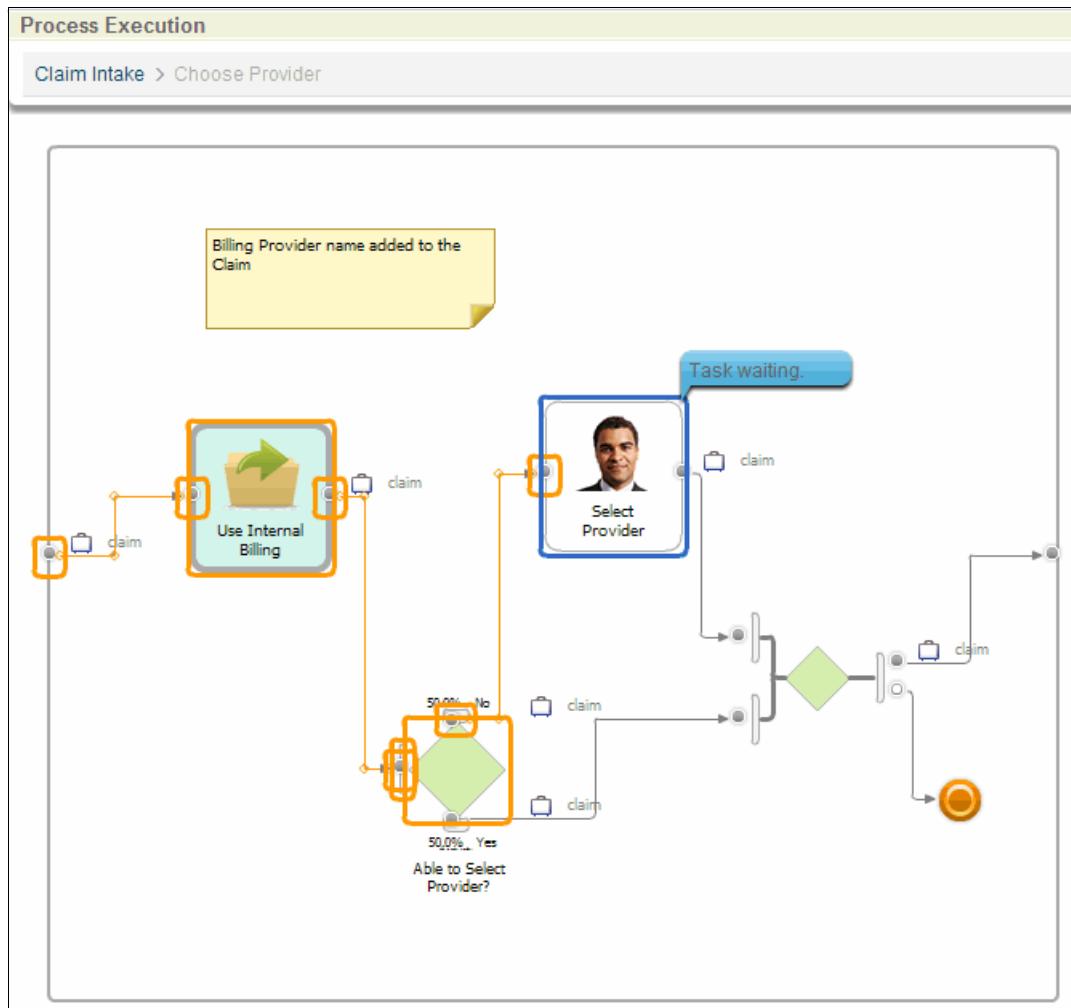


Figure 4-70 Claim Process Execution

5. In the available task section, you will find the select provider task is waiting to be claimed and you accept the task.

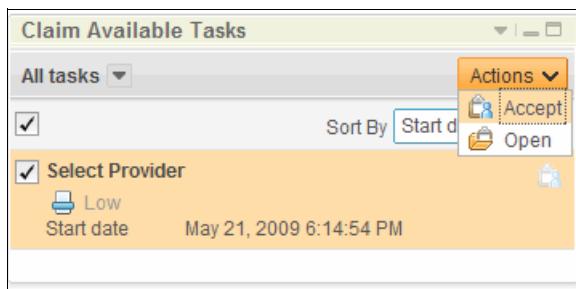


Figure 4-71 Accept a Task

After you claim this task, the **Billing Provider Selection** form will appear. Enter a billing provider as below and click **Submit**

Figure 4-72 Select Billing Provider

- After you submit the form with a biling provider, the process will move again and stop at the next human task for checking the pricing.

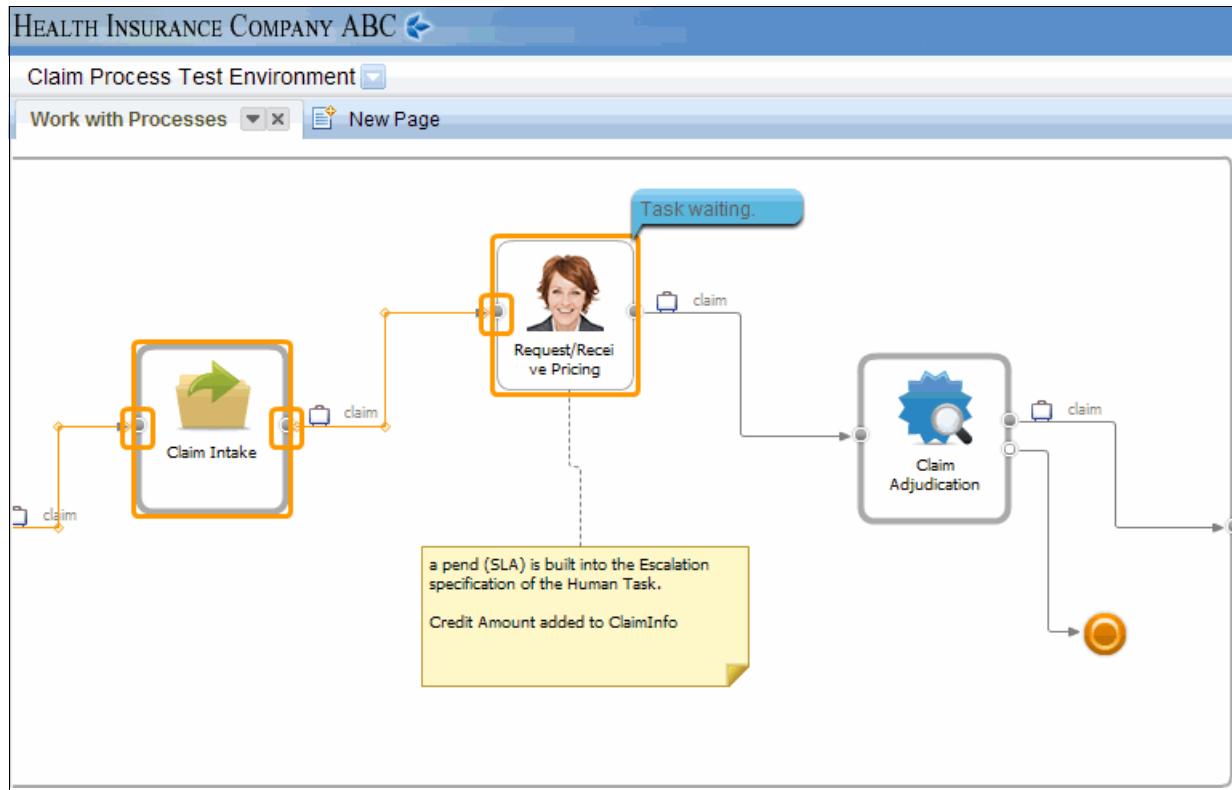


Figure 4-73 Claim Process Execution

- In available task section, this pricing task is waiting to be claimed and you accept this task.

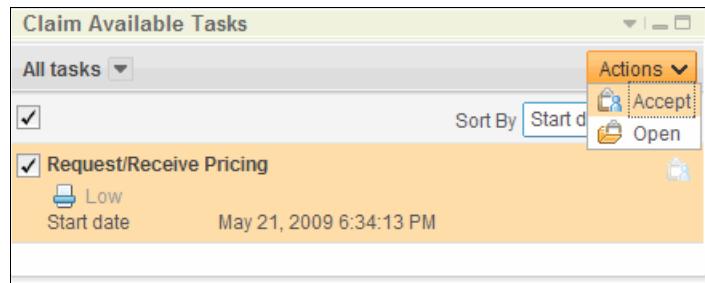


Figure 4-74 Accept a Task

8. The **Verify Claim Pricing** form will appear and after you look through the claim, you click the **Submit** button.

The screenshot shows the 'Enter Data into Forms' interface with the 'Request/Receive Pricing' form open. The 'Submit' button at the top left is highlighted with a red circle. The form itself has two tabs: 'Member' and 'Claim'. The 'Claim Details' section contains the following data:

	Claim Date	Claim Type
Claim Info:	21 May 2009	Medical
Claim No.	A-8642	Claim Amount (\$)
Reason Code	98323	Cause of Claim
Name:	John	Last
Member Number:	B012	Used Ambulance?
Plan:	Gold	Address
Phone	(123) 653-0002	CA
Contact's Info:		

Figure 4-75 Verify Claim Pricing form

9. After you submit the form, you can now see that all the activities in your process have successfully finished in your process execution diagram and that the process has reached an endpoint.

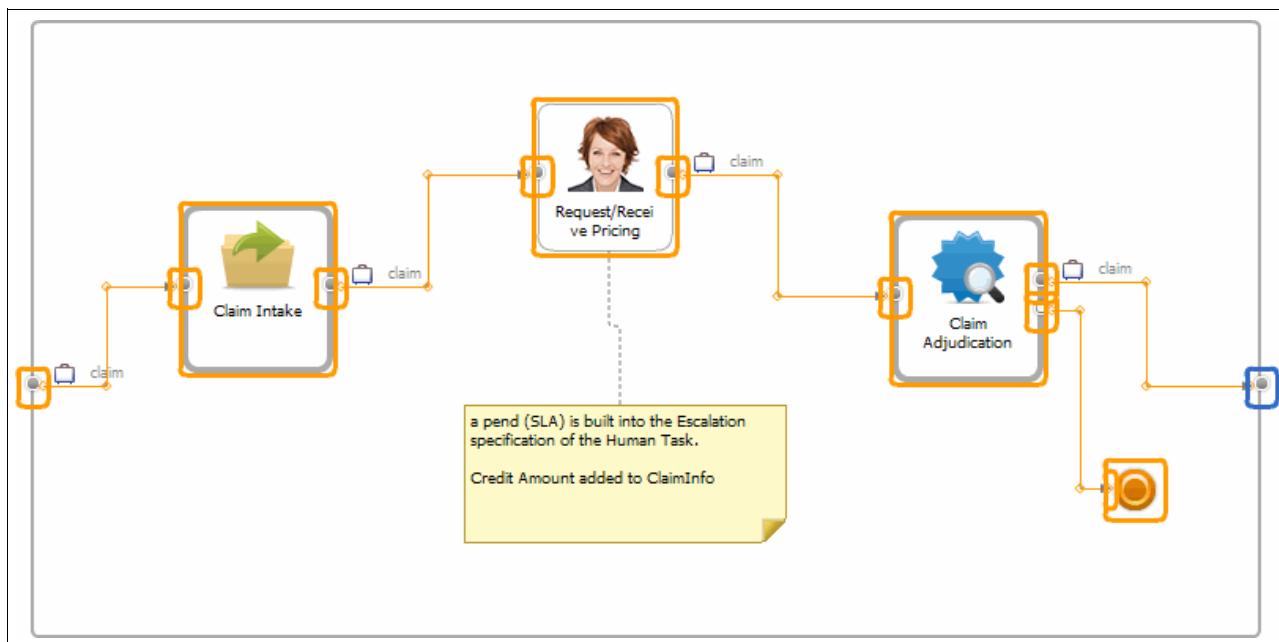


Figure 4-76 Completed claim process

Reviewing initial KPIs from the scenario test

Now let's look at the KPIs that we created to monitor the process.

Note: While this section provides an introduction to monitoring the KPIs, please also refer to 5.6, "Manage in real-time using KPIs" on page 145.

1. You can see the **total number of claims** for Medical type and **Average Duration** time for Request/Receive Pricing human task as below

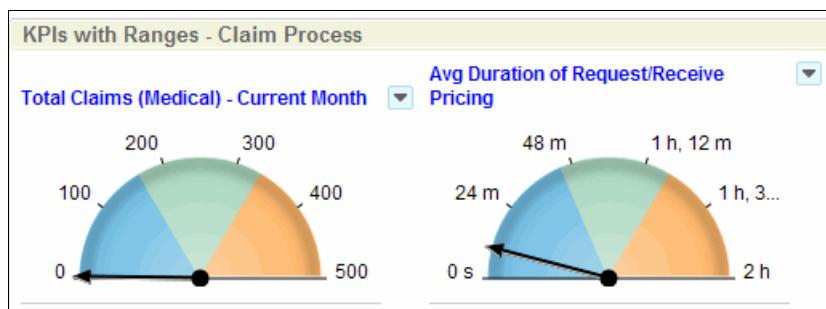


Figure 4-77 Predefined KPIs

2. You can also see this in instances view as shown below, displaying both the total number of claims of type Medical, and the average duration for **Request / Receive Pricing** processing time.

Instances - Claim Process				
	Claim Process Instance ID	Claim Process Start Time	Claim Number	Claim Type
PI:90030121.651e820e.fef5f5f5.51c3009d	May 21, 2009 5:40:49 PM	11111	Medical	6 m, 40.734 s
PI:90030121.653db05b.fef5f5f5.51c301ea	May 21, 2009 6:14:50 PM	A-8642	Medical	12 m, 35.391 s
1 - 2		2		

Figure 4-78 Process Instance view

Example of modifying the Business Rule parameter

We can run a different scenario by changing the value of the parameter in the business rule - In our example, we will modify the Claim Amount value, which is currently set to a value of \$1000. (For a review of how we set up the initial business rule to a value of \$1000, please refer back to section 4.4.2, “Identifying Business Rule candidates from the scenario process” on page 82.)

By increasing the value from \$1000 (as it was initially set) to \$2000, we can change the behavior of our process. Now claims over \$1000 and below \$2000 *will also be automatically assigned to internal billing provider*.

To modify the business rule parameter through the Business Space, perform the following steps:

1. Click on Add widgets and drag and drop business rules widget.

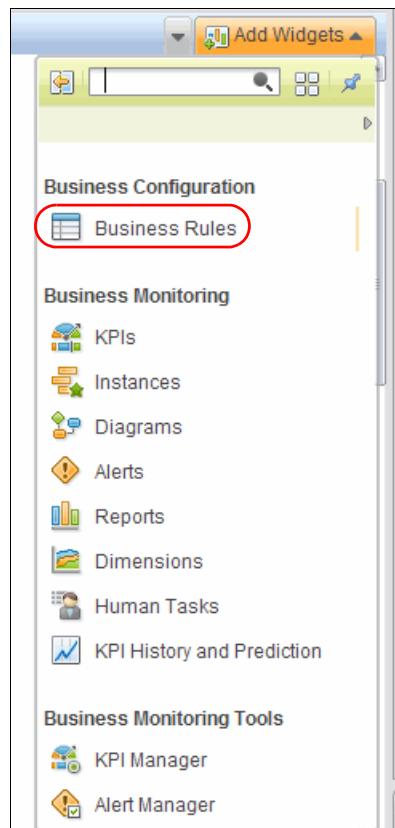


Figure 4-79 Business Rules Widget

- Within the **Business Rules** window, you will see the name of the Business Rule and the value initially set. You can edit this value, then click **Save**. (Figure 4-80 on page 126)

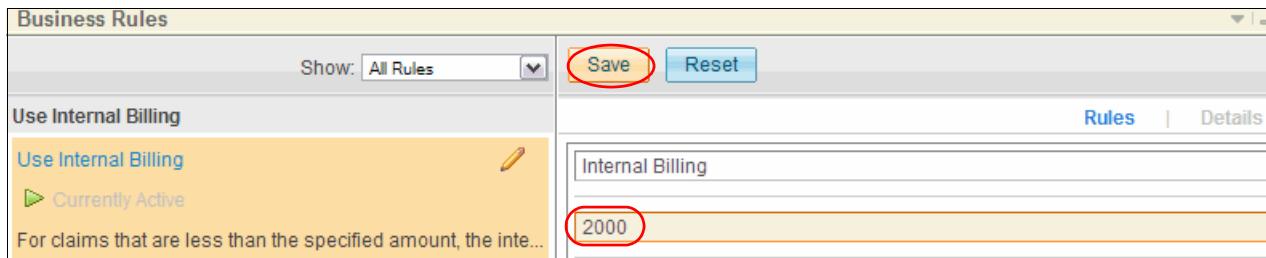


Figure 4-80 Business Rule change in runtime

- Now, we will rerun the claim process again with the modified business rule and observe the change by submitting claim amount between \$1000 and \$2000.
- Click on Claim Process and click **Create** to start a new instance of the process.

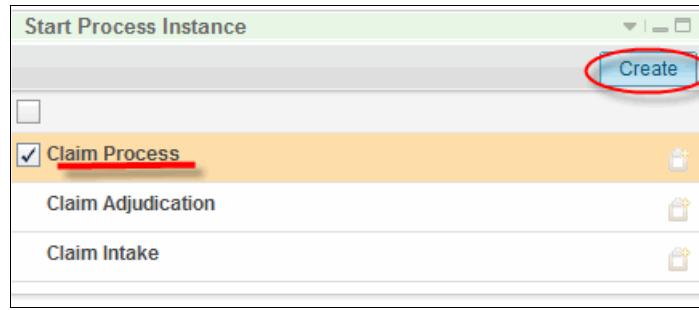


Figure 4-81 Start a new Instance

- Enter the same claim information except, increase the claim amount to a level between \$1000 and \$2000. In our example, (Figure 4-82 on page 127), we use the amount of \$1800.

The screenshot shows a software interface for a 'Claim Process'. At the top, there are 'Submit' and 'Save as Draft' buttons. The title bar says '* Claim Process'. Below the title bar is a toolbar with various icons and a '100%' zoom level. The main area is labeled 'Output' and contains a list of fields with their corresponding values:

Field	Value
First Name	John
Last Name	Smith
Claim Number	A-8642
Claim Type	Medical
Amount	1,800
Plan	Gold
Billing Provider	
Member Number	B012
Contact Phone	1236530002
Contact Address	CA
Reason Code	98323
Cause	Heart
Date	21 May 2009
Used Ambulance	<input type="checkbox"/>
Assign Provider	<input type="checkbox"/>

Figure 4-82 Claim data

6. Click **Submit** and watch the process execution path for the process flow.

In Figure 4-83 on page 128, we can see that this time the process didn't go to **Select Provider** human task due to our changed business rule. Instead, because the claim amount is less than \$2000, the claim is automatically assigned to internal billing to billing provider without first invoking the **Select Provider** human task.

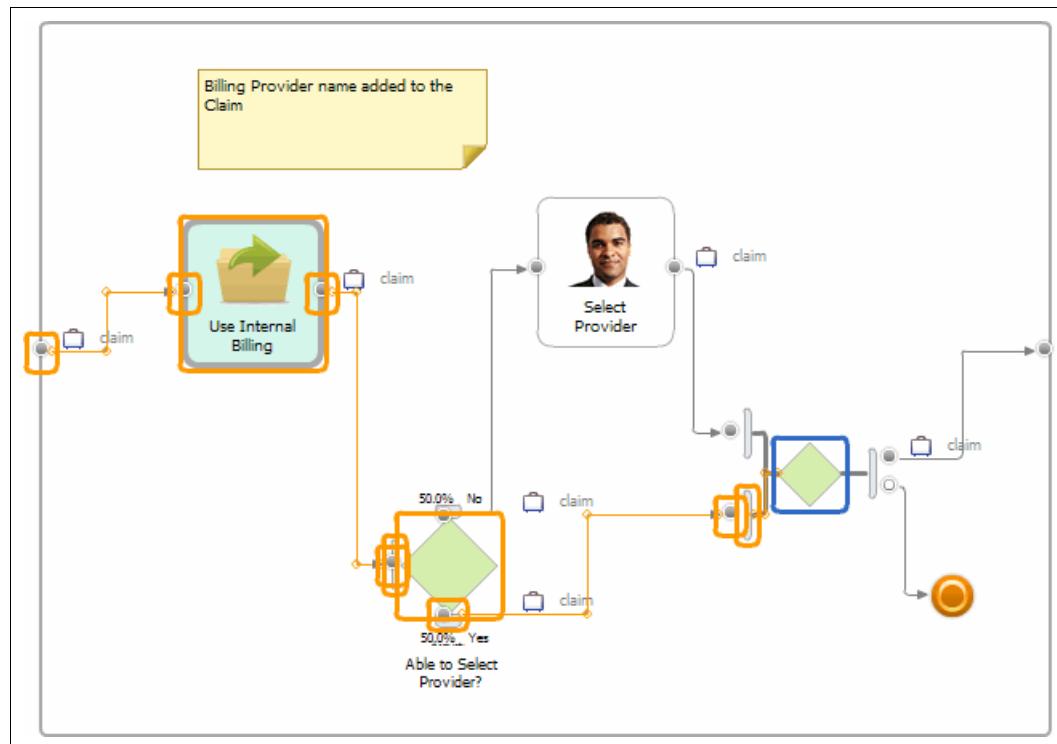


Figure 4-83 Different process execution path

7. Finish your scenario test by completing the remaining tasks (for example, **Request/Receive Pricing**) available on the task list.

4.9 Summary

This chapter has provided specific context to the “Experience” phase outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*. This is the third phase in the approach with the goal of capturing the business intent through documenting and creating basic models for the business goals, objectives and strategy.

Within the chapter, we have reviewed the steps of the Experience phase using the specific context from the Health Care Scenario demo introduced in 1.6, “Introduction to the health care demo scenario” on page 15.

Specifically, we have discussed and illustrated how to accomplish the following steps within the experience phase:

- ▶ We have discussed which tasks could be best defined as a business rule to improve process efficiency. See “Defining Business Rule Tasks” on page 81
- ▶ Building upon our rationale of which task step to implement as a business rule, we show the reader how to create the business rule. See “Steps to create a business rule (Provider Selection)” on page 83
- ▶ We review the process to determine which process steps are defined as human tasks and discuss the advantages of this. See “Defining Human Tasks” on page 92
- ▶ We discuss which steps in the process would be good candidates to be implemented as a service. Although we don’t actually go into detail on how to implement these tasks as

services, we discuss the advantages of having these function as a service. See “Adding services to deployable applications” on page 95

- ▶ Within the context of refining forms for input into the system, we illustrate how to create a basic form from the business object in the claim process. We then also discuss how the forms can be customized using Lotus Forms Designer. See “Customizing the appearance of the form” on page 109
- ▶ Moving forward, we discuss how you can use the feature within Websphere Business Modeler to deploy the process in a test environment and further experience testing with the process. See “Interactive process Design (IPD)” on page 112
- ▶ Finally, we introduce the Business Space and discuss how to perform some basic scenario testing for further refining the process. See “Testing with the real life scenario” on page 117.



5

Manage

This chapter discusses activities you perform after the completion of the *Experience* phase of your model process. This phase is referred to as the *Manage* phase. The emphasis in this phase is the *management of your business model process and its optimization*. When satisfied that your model process has met all your IPD cycle requirements, you proceed to deploy it into your Q/A or pre-production and then production environment. It is here in this environment that you can observe and record its production-like behaviors due to the availability of real-time data. Based on the results of the analysis using real-time data, you can also make improvements to optimize your business process.

In this chapter, we first review the objectives and goals of the Manage phase as outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*. Next, we introduce the Business Space and show you how to build and use a monitoring dashboard to view, analyze and act upon the real-time data results.

5.1 Goals of the Manage phase

As we will discuss in this chapter, the objective of this phase is to now pro-actively empower users to *monitor* and *manage* real time business performance using KPIs and alerts based on changing business conditions. You can then take corrective actions against process instances where the process is not executing as efficiently as needed.

During this phase, you can empower business users and ultimately, system administrators by providing customized, role based access to their own Business Space.

Following the approach outlined in *IBM Business Process Management Prescriptive Guide to Solution Implementation*, the high level tasks and activities within this phase are as follows:

1. (Optional) Empower business users to customize end user experience by providing their own Business Space

Note: This step is optional and not appropriate for business environments where the end user environment is locked down and strictly regulated.

2. Assign Access Rights for System Capability
3. Optimize Work Assignments
4. Govern Change
5. Manage Real-time Business Performance
6. Manage KPIs & Alerts Based on Changing Business Conditions
7. Take Corrective Action Against Process Instances

Figure 5-1 illustrates a visual representation of the tasks, highlighting that many of these tasks are done in parallel, while the ability to take corrective action based on the results of real-time data is an ongoing, iterative process.

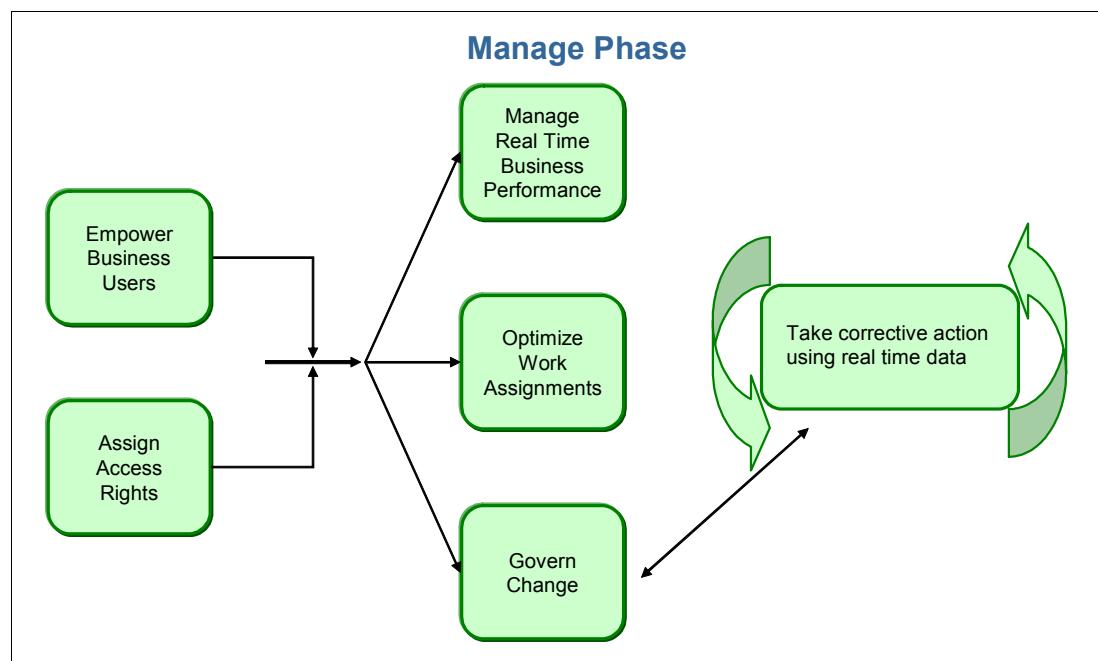


Figure 5-1 Representation of the steps in the manage phase

Note: We will continuously refer back to this diagram throughout the chapter, using it as a road map to highlight which specific objective and task we are addressing, based on the activities outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*.

5.1.1 Identifying the overlap between the Experience phase and the Manage phase

As you proceed from the *Experience* phase into the *Manage* phase, and eventually into your enterprise Deployment, it is common to question where one phase ends and the other begins. Figure 5-2 below depicts the overlapping of the two phases of *Manage* and *Deployment*, since it is fairly frequent and realistic that the two phases co-exist, reflecting that the *Manage* phase includes iterative improvements being conducted during the *Deployment* phase. Also, there are no hard rules about when the *Experience* phase stops and when a *Manage* phase begins in this iterative approach of continuous refinement.

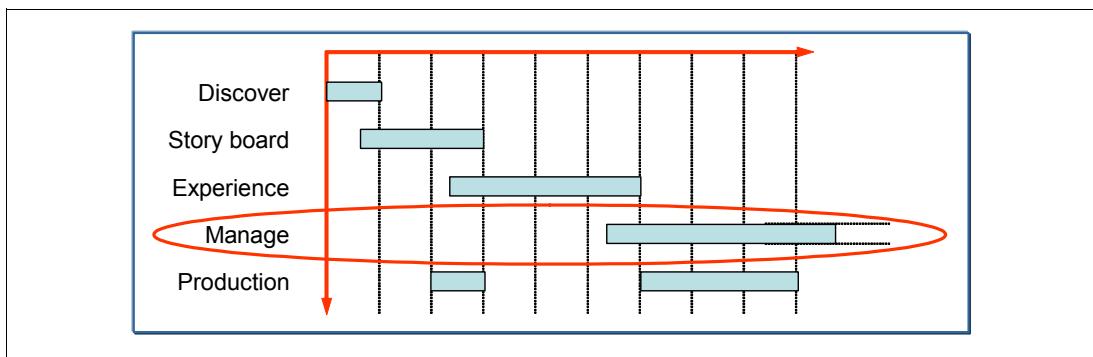


Figure 5-2 Manage and Production

In the ensuing sections we will describe the detailed activities of the *Manage* phase and how you can use the results of your analysis to enhance your business process. As a starting point, we review what do you want to manage.

5.2 What to manage

In the introduction sections of this chapter, we discussed the objectives of the *Manage* phase, namely to pro-actively empower users to *monitor* and *manage* real time business performance. This is the goal. We now address the question of *what* measurement criteria can you use to determine your efficiency. You can do this using status overviews of human task processes, KPIs, and alerts based on changing business conditions.

A typical performance management dashboard will have a set of KPIs that measure process performance against business targets, durations for key activities—e.g., human steps—in the process, and dimensional analysis that allows for analysis by different business attributes of the process (such as channels, customer type, etc.).

Dashboards will also typically incorporate some drill down enabling users to locate business transactions of interest. Drill down may start from high level views or data analysis, to visualizing a process flow, to locating individual human tasks in the process and taking action to reallocate work.

You will want to initially have a baseline measurement with basic KPI expectations set and some basic measures abstracted. Assuming you have been following the approach outlined in the *IBM Business Process Management Prescriptive Guide to Solution Implementation*, and modelled in this Redpaper, you should have identified the base KPIs and reports initially during the Storyboarding phase, and then have refined these in the Experience phase. (See Chapter 3, “Storyboarding” on page 33, and Chapter 4, “Experience” on page 77.)

As we will discuss in upcoming sections in this chapter, (5.6, “Manage in real-time using KPIs”) you begin to optimize the process by making incremental changes, reviewing and tuning your KPIs, and eventually, acquiring additional measures for your analysis.

For the purpose of this scenario, we assume that the monitoring model, based off of the live working demo from the fictitious Health Care Insurance Co, (Health Care Insurance Co. ABC, see section 1.6, “Introduction to the health care demo scenario” on page 15) provides this data and that you have used this information to set up an Initiating Process Improvements space and to configure the widgets within it. We will also assume that you have made each member of your team a viewer of the space.

5.3 Introduction to the Business Space

The core piece used to enable real-time management of your business efficiency is the WebSphere Business Monitor component. The tool itself is a framework that acquires measures and metrics based on data that your business process model carries called *events* and renders them into various graphic displays and reports in a web-based browser called the Business Space dashboard.

Using the new Web 2.0 Business Space interface, users can create a personal business space that combines business data from multiple sources. Each business space consists of custom pages that display content in one or more views on each page. The views on a page are enabled by *widgets* that are tailored for different types of dynamic and static content, such as business process information, human task activities, process diagrams, key performance indicators (KPIs), dimensional views, and documents (such as spreadsheets and presentations). The content sources can be local or remote. Each user can create multiple business spaces. Finally, the reports within the Business Space are highly customizable to suit your needs.

Figure 5-3 on page 135 illustrates an example dashboard with Human task overviews, KPIs and other metrics. We will be discussing how to build this specific dashboard in subsequent sections of this chapter.

Note: If you have been following the chapters of this Redpaper in sequence, then you have already seen an introduction to the business space from the ‘Experience’ phase and the Interactive Process Design (IPD) step in which you first deployed your process model. (See 4.8.1, “Interactive process Design (IPD)” on page 112).

The environment provided through the Interactive Process Design (IPD) step gives you a good idea of what the Business Space is. It is especially beneficial in that it allows for you to deploy your process model, largely independent on IT involvement, and this allows you to experience the Business Space and refine your monitoring goals and metrics, while still being *outside* of the true production environment. This keeps costs for changes and initial Business Space / KPI tuning to a minimum, since it will require only minimal IT involvement and is handled primarily by the line of business users. More importantly, your initial work in the IPD environment ensures that once you do eventually deploy the model into a production environment, it should have a very strong foundation for measuring KPIs accurately.

Keep in mind however that IPD is a *limited* environment, therefore you might not have all the real-time data that you acquire through the production environment.

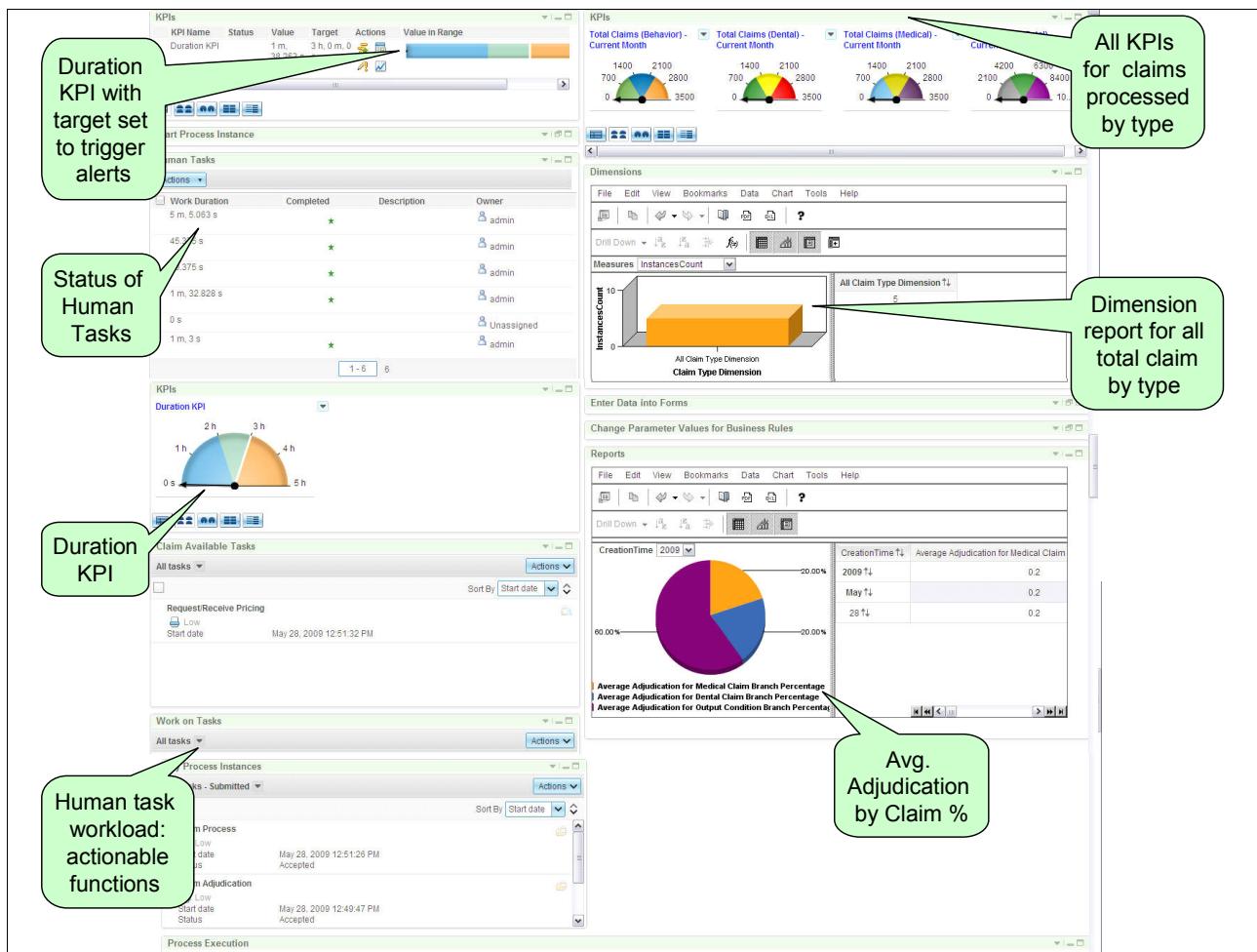


Figure 5-3 Preview of the Dashboard used for monitoring and managing

Now that we have introduced the Business Space, we proceed to activate and set the runtime functions that you perform to configure your business space to monitor the specifics applied to model process.

Note: For additional information on Business Activity Monitoring (BAM) using Websphere Business Monitor, refer to the *IBM Business Process Management Reviewer's Guide*, REDP-4433, Chapter 5, *Enabling BPM and BAM with the WebSphere Business Monitor*

5.4 Empowering the end user

An essential component of Business Process Management (BPM) is to enable the line of business (LOB) to play an active role in defining how the business processes should be managed. The scope of this role includes the ability to define the high-level business metrics (with WebSphere Business Modeler), view operational and strategic business activity using dashboards, be alerted to key situations, and use real-time data to improve business process definitions (also working with WebSphere Business Modeler).

WebSphere Business Monitor raises the bar of empowerment so that business users can customize the monitoring solution and dashboard to react to these changes rapidly, without requiring IT to re-implement, test, and re-deploy the monitoring solution, as defined by a monitor model. Business users can modify what is displayed, add new KPIs or change the thresholds on existing ones, and define alert situations and determine which alerts business users want to be alerted to, without discussing changes with a developer or portal administrator. This customization not only provides flexibility to the business, but it relaxes the need for IT to meticulously define all KPIs and alerts up front, enabling businesses to react quickly to changing conditions. At the same time, the routine workload on IT is reduced, enabling them to focus on more strategic projects.

In the following two section, we discuss how to customize the end-user line of business experience, and assign specific roles and perspectives into the Business Space.

5.4.1 Customizing the end-user experience

In this section we transition into using the context scenario for Health Care Insurance Co. ABC, and show you how to begin building a custom Business Space.

Note: For all subsequent sections in this chapter, we are following the outlined activities and tasks from *IBM Business Process Management Prescriptive Guide to Solution Implementation*, but using the specific data and context from the model of the fictitious company Health Care Insurance Provider, ABC. See 1.6, “Introduction to the health care demo scenario” on page 15 for details on the scenario.

Figure 5-4 on page 137 illustrates where we are in the overall flow of tasks within the manage phase.

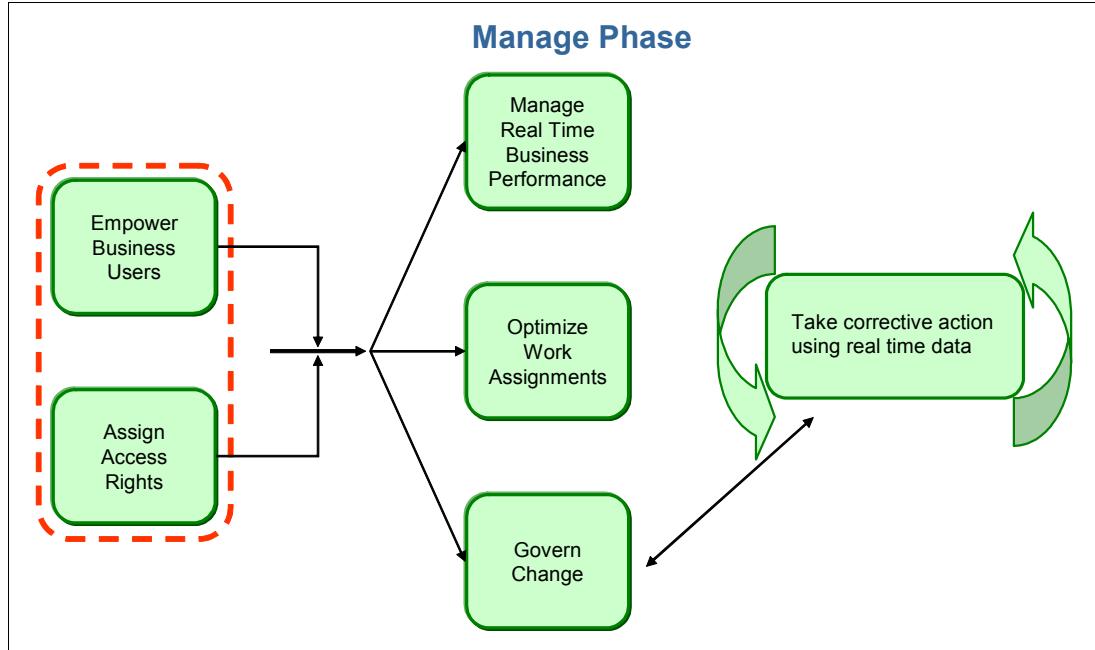


Figure 5-4 This section is focusing on these tasks

Websphere Business Monitor Business Space framework is a highly extensible framework for monitoring your business performance.

- ▶ The Business Space dashboard is easy to use and graphics rich to augment the end-user experience.
- ▶ You can easily perform custom branding to match your corporate identity. Not only can you customize its look and feel to make it tailored for a specific group of users based on access level and their perspective of the business, but you can easily brand and customize the business space with graphics matching your corporate identity.
 - In the upcoming example, we brand the space for the fictitious scenario - “Health Care Insurance Company ABC”. We have branded the logon screen and top frame banner, but other options for customization exist.
- ▶ Business space widgets from other components can be integrated to provide an end-to-end monitoring solution across the enterprise. You can bring in data company wide from source outside of Monitor and still be able to present it on the Business Space as one place to look at.
- ▶ There are predefined templates and themes to use and reuse from so you don't have to make up your own.
- ▶ Easily collaborate between departments within enterprise and possibly outside.
- ▶ A complete typical graphical business space configuration as shown below takes less than five minutes.

Figure 5-5 on page 138 illustrates an example of a customized Business Space, using the data from the scenario used throughout this Redpaper, Health Care Insurance Co. ABC.

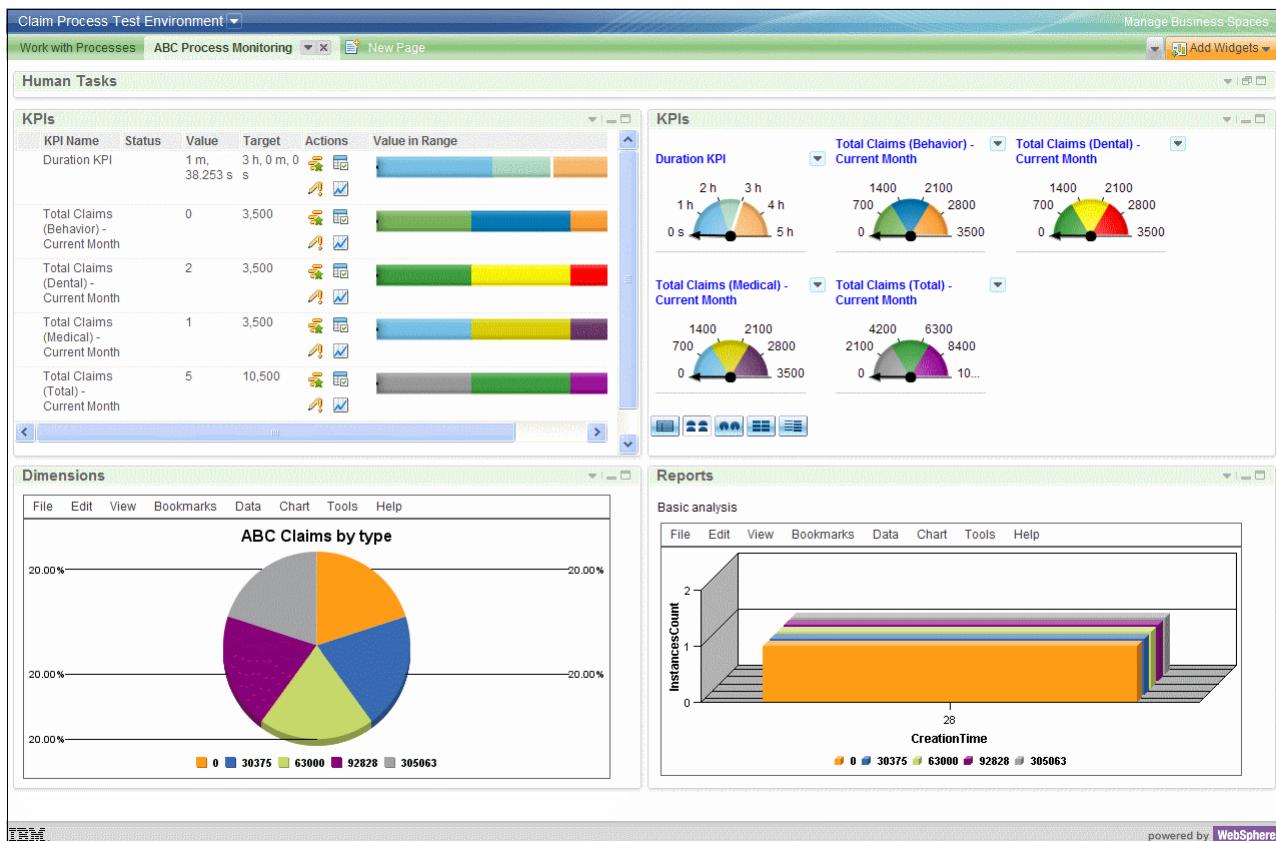


Figure 5-5 This business space report with all widgets for a at-a-glance look take a few minutes to configure

5.4.2 Assigning Access Rights - Why they are beneficial and how to assign them

For collaborative business environments, you can configure role-based access in Business Space to enable business users to create, modify, improve upon, or personalize their BPM experience as business needs evolve. Customer-specific templates can replace out-of-the-box templates in Business Space to simplify the creation of new spaces by end users.

Note: Assigning access rights is an optional step in the process and is not appropriate for business environments where the end user environment is locked down and strictly regulated. In these environments a collaboration with the I/T Infrastructure Security resource administrator is needed to get the access rights implemented.

How to assign access rights to the hosting environment

This section provides specific guidance on how to assign access rights for the Business Space within the runtime environment.

1. Ensure that your user id has the role and authority to administer and manage your models. This can be quickly activated by the Websphere Monitor Security administrator. It is a business role as opposed to an I/T role.
 - a. This function can be performed by a Monitor administrator through the Websphere Application administrative console under the Monitor Security function. Select the

models you want to allow a role to administer and below it, you assign that role to the User ID.

2. Go to the Websphere Admin console and select **Monitor Data Security Administration**
3. Select the model name: **Claims_Processing_HL**, **Claims Processing_LL**, as shown in Figure 5-6



Figure 5-6 Model to administer

4. Select the role you want this user id to have
5. Click the **Users** button, then **Search**, as shown in Figure 5-7.

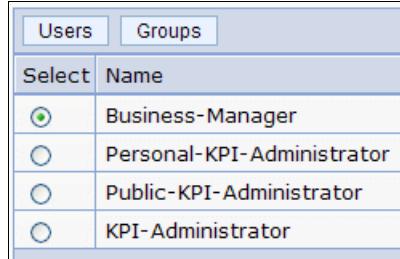


Figure 5-7 Select role

6. In search result list, add all applicable users to the window on the right

Figure 5-8 below shows the different user ids that are assigned to different roles in order to be for them to be able to administer the models for Health Care Insurance Co. ABC. This takes care of the infrastructure security. It is allowing a user id to access what model running on an application server infrastructure.

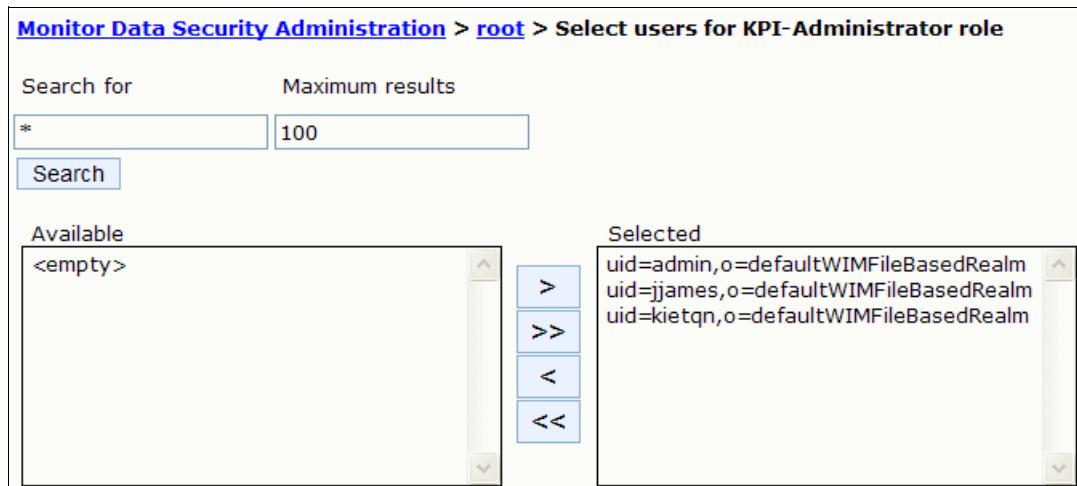


Figure 5-8 Assigning role to user IDs

How to assign access rights for system capability

You now have access rights to the production environment infrastructure where the Health Care Insurance Co. ABC process model is executing. As the administrator role of the modeling process for this workflow, you can decide with whom on your team you wish to share access to your business space so that they can view your reports.

1. Configure role-based access control to process & system function and data according to the business organization structure. This configuration should reflect the separation of concerns in the business: who needs access to what data and what actions those users can take on the data. Access rights should be fine tuned along the following high-level areas:
 - Process configuration and decision making, such as business rules and calendars
 - Visibility into data about the process, such as monitor models & process administration
 - Interactions with the process managed by the BPM system, such as human task roles
2. Continue to define the *realm of possibility* for what process users are allowed to do by sharing your business space.
 - Once user ids are assigned to role groups above you can share your business space reports with them. This sharing can eliminate the need to set up separate business space report groups for each class of users or groups.
 - In your Manage Business Space screen, you can share your business space with other users. You can let them view or edit the configuration settings of your business space if desired.
3. In order to share your Business Space, go into the business space and click on **Manage Business Space**. (Figure 5-9)

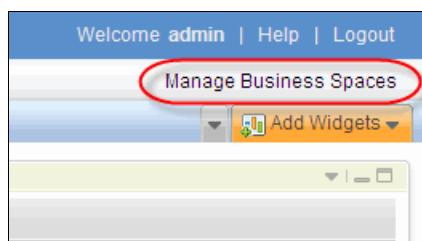


Figure 5-9

4. Check the 'Share this Business Space' check box to share it with User IDs you enter as the Viewers or Editors, as shown in Figure 5-10 on page 141

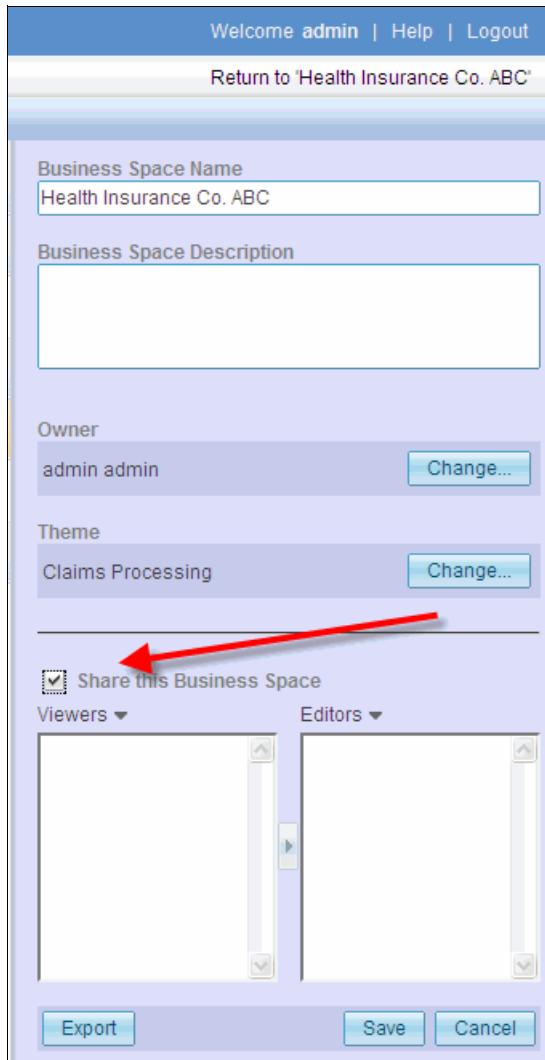


Figure 5-10

5. A search window facilitates the adding of user id if you don't have the exact id.

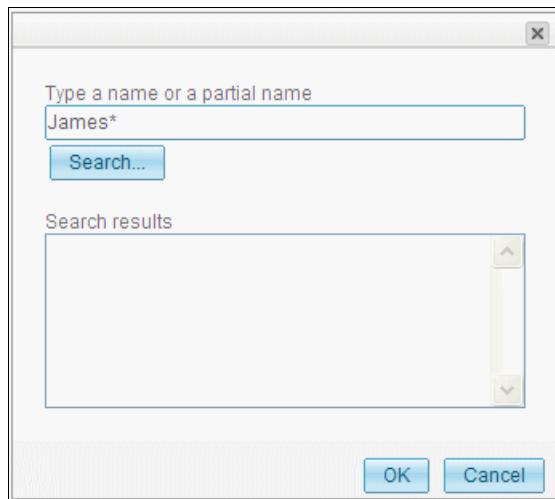


Figure 5-11 Search for User IDs if you don't know the exact ID

6. In our example, we will share the Business Space with John James. Figure 5-12 on page 142 below shows a shared business space owned by User ID 'admin', sharing to User ID 'jjames'.

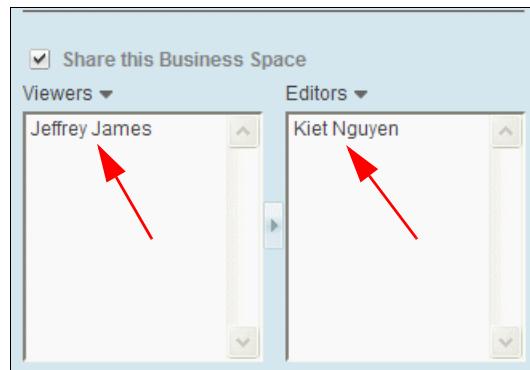


Figure 5-12 Allowed user ID can either edit or view your Business Space

7. Figure 5-13 below shows a shared business space owned by User ID 'admin', sharing to User ID 'jjames'. Since that User ID is only allowed to view a shared business space, it cannot modify any of modifiable features the configuration. Notice how there is no **Change** button next to the Claims Processing Theme, when compare to the image shown in Figure 5-13.

Welcome jjames | Help | Logout
Return to 'ABC Health Insurance'

Business Space Name
ABC Health Insurance

Business Space Description
ABC Health Insurance Claim reports

Owner
admin admin

Theme
Claims Processing

 Share this Business Space

Figure 5-13 View mode of sharing

8. If your User ID is allowed to edit a shared business space's configuration, its context sensitive controls will be exposed, as shown in Figure 5-14.

Welcome admin | Help | Logout
Return to 'Health Insurance Co. ABC'

Business Space Name
Health Insurance Co. ABC

Business Space Description

Owner
admin admin [Change...](#)

Theme
Claims Processing [Change...](#)

Figure 5-14 Edit mode of sharing

In the next section, will be setting up the all the necessary widget views in to be able to monitor the human task activities for the Health Care Insurance Co. ABC process model.

5.5 Monitoring the Health Insurance Claim Process

The objective of monitoring a business process is to acquire insight into its current performance and, if applicable, look at possible improvements for any or all the activities in the process. The end goal is to validate the efficiency of the process, identify potential bottlenecks and where possible, fine tune the process to reach higher efficiency.

In a real-time monitoring environment, your Business Space provides a single inclusive dashboard that lets you see everything that is going on in your process via the service of its reporting widgets. You use the widget reports on the Business Space to alert you of any impending situation that you need to be aware of and might possibly need to act on.

The progression of activities that we are following throughout this chapter is as follows:

1. Monitor the overall process and sub-processes
2. Identify process bottlenecks and diagnose the cause of inefficiencies,
3. Remedy and fix
4. Implement permanent changes

Figure 5-15 on page 144 illustrates a configured Monitor business space, based on the fictitious scenario for Health Care Insurance Co. ABC. This shows all the KPIs to make anomalies stand out within the Business Space.

In the following sections, we show you how to add widgets to your Business space and create a dashboard similar to the one shown here for the scenario based on Health Insurance Co. ABC.

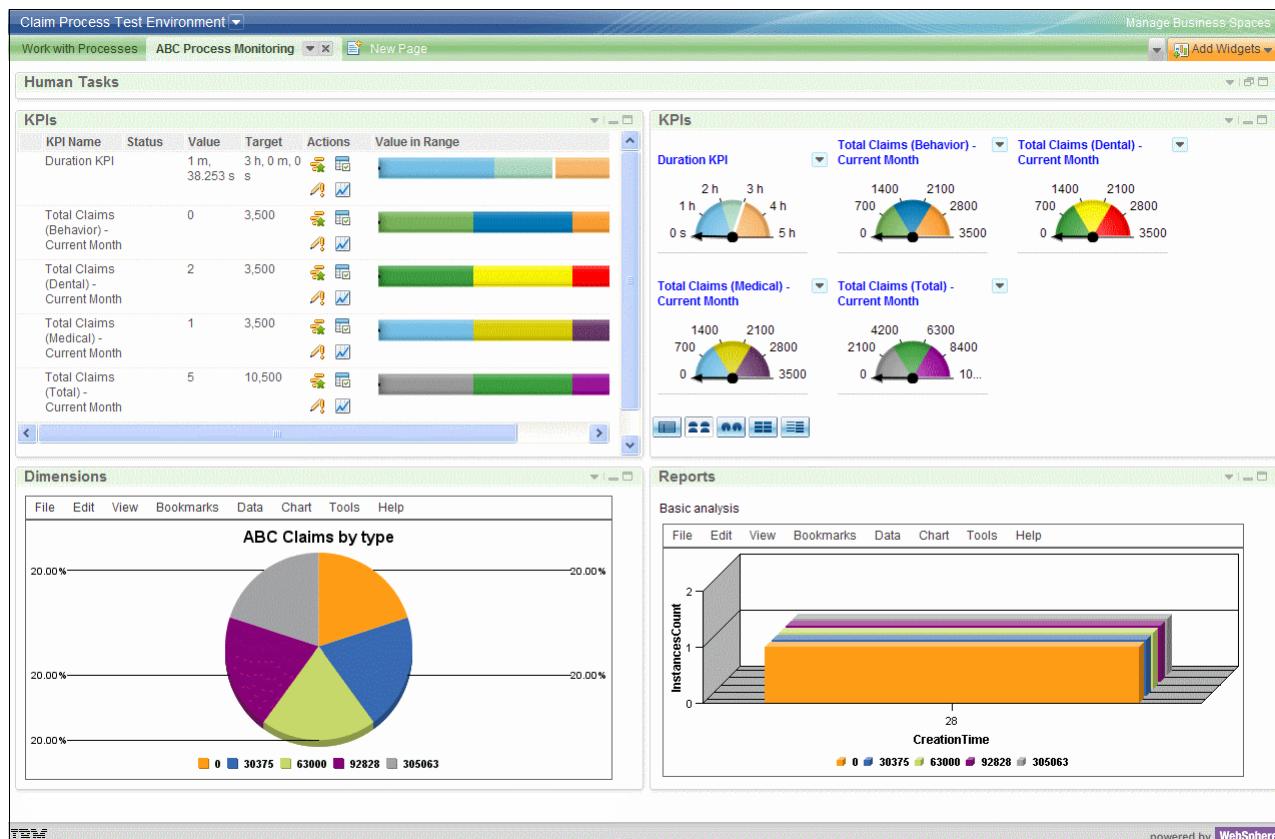


Figure 5-15 A typically configured business space dashboard shows all important KPIs views at a glance

5.6 Manage in real-time using KPIs

Based on our work initially in the Storyboarding Phase (Chapter 3, “Storyboarding” on page 33), and further refined in the Experience phase (Chapter 4, “Experience” on page 77), we have a solid understanding of KPI guidelines to help anchor a baseline monitoring scenario for Health Care Insurance Co. ABC. In this section, we discuss how you can now monitor these KPIs and determine how your initially simulated data results are comparing to your real-time data results. The objective is to analyze and monitor these KPIs in real-time with production volume to get a feel of whether the targets from results of your simulation are in-line with the real picture.

Figure 5-16 illustrates the focus of this section within the overall steps of the Manage phase.

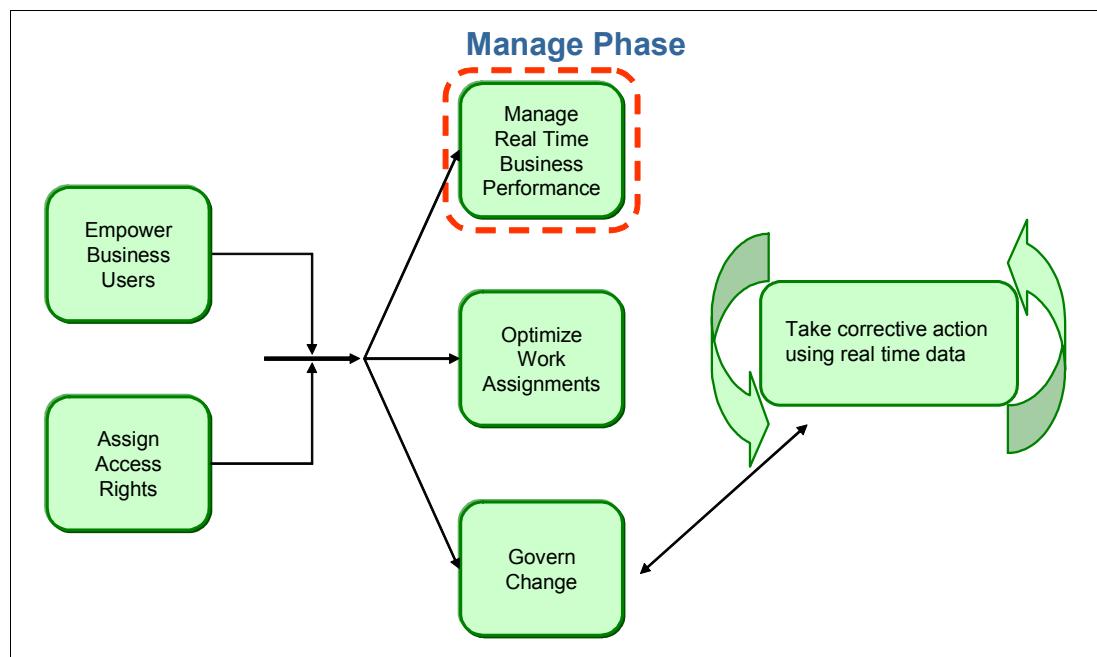


Figure 5-16 Managing Real Time Business Performance

5.6.1 Review of the KPIs to be monitored

Note: The KPIs shown here correspond with the KPIs which were introduced and analyzed in 3.9, “Definition of Control Points to prepare Experience” on page 72.

To better understand a breakdown of the effort among the various claim types, we are looking at the percentage of claims processing by type. We also wish to monitor the duration of some human task processing, being the two primary goals of improvements.

You will setup the KPIs widget report in order to view the real-time results of the following KPIs.

Table 5-1 KPI measurements for reporting

Claim Type	Activity Type	Measurements
Handle Medical	Automatic	KPI < 22.5%
Handle Dental	Automatic	KPI < 22.5%

Claim Type	Activity Type	Measurements
Handle Behavioral	Automatic	KPI < 30%
Notify Rejection	Automatic	KPI < 25%
Request/Receive	Human task	duration < 3 hours
Select Provider	Human task	duration < 1 hour

- The KPIs above are predefined in the model for Health Care Insurance Co. ABC Claim process. These are *baseline* KPIs. If after the course of monitoring these, you have found that they are inadequate to harness an improvement plan, you can add more KPIs or change the target values at runtime.

5.6.2 Steps to set up the KPI widget report

For this example, we will set it up as a KPI to measure the duration of how long our *Request for Pricing* human task would take on the average.

The following steps describe how to set up the widget report

1. From within your Business Space, add a KPI widget from the **Add Widgets** icon. This is found in the upper right corner of the Business Space screen(Figure 5-17). Select **KPIs** then drag this out onto the Business Space.

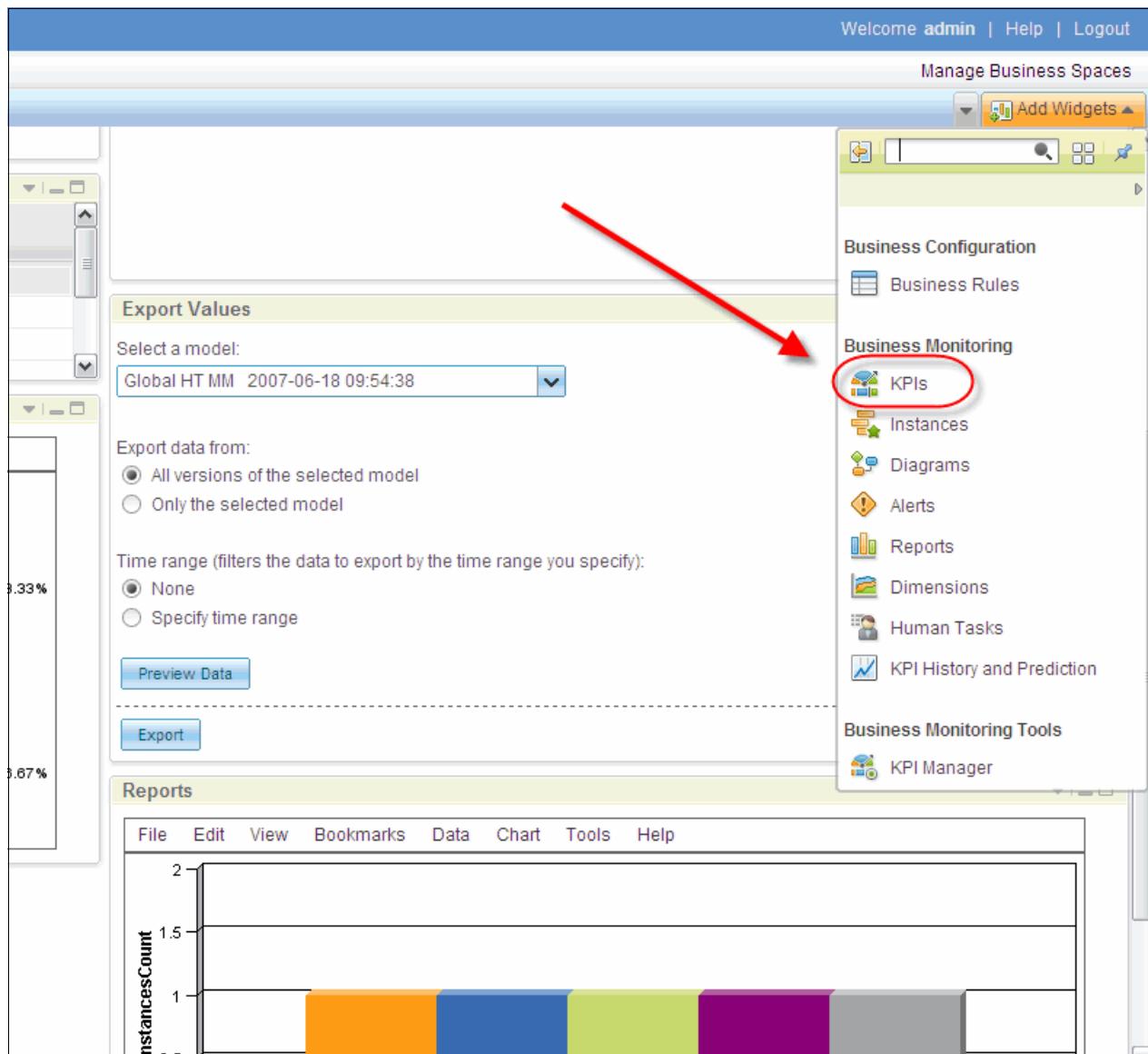


Figure 5-17 Drag and drop to add a KPI widget

2. Once dragged onto the Business Space, this creates a KPI widget window. The base widget still needs configuration. (Figure 5-18 on page 147)

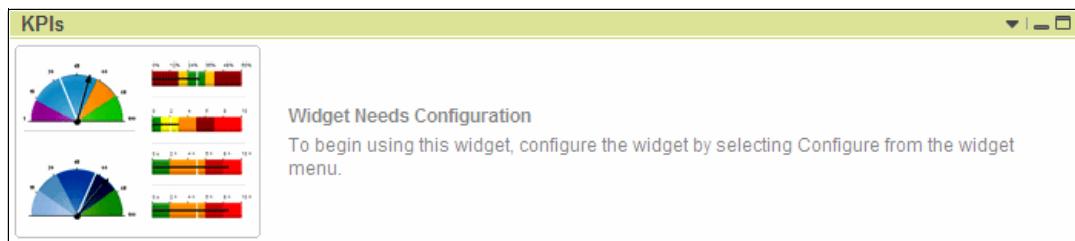


Figure 5-18

3. Select **Configure**. (Figure 5-19)

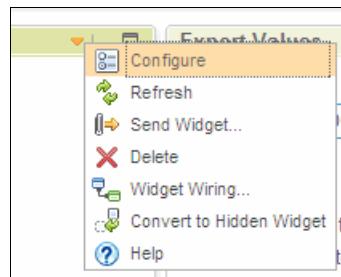


Figure 5-19 Configure the widget window

4. This now opens and displays your available deployed Claim Process model with its defined KPIs. Expand and select the Duration KPI for your model.

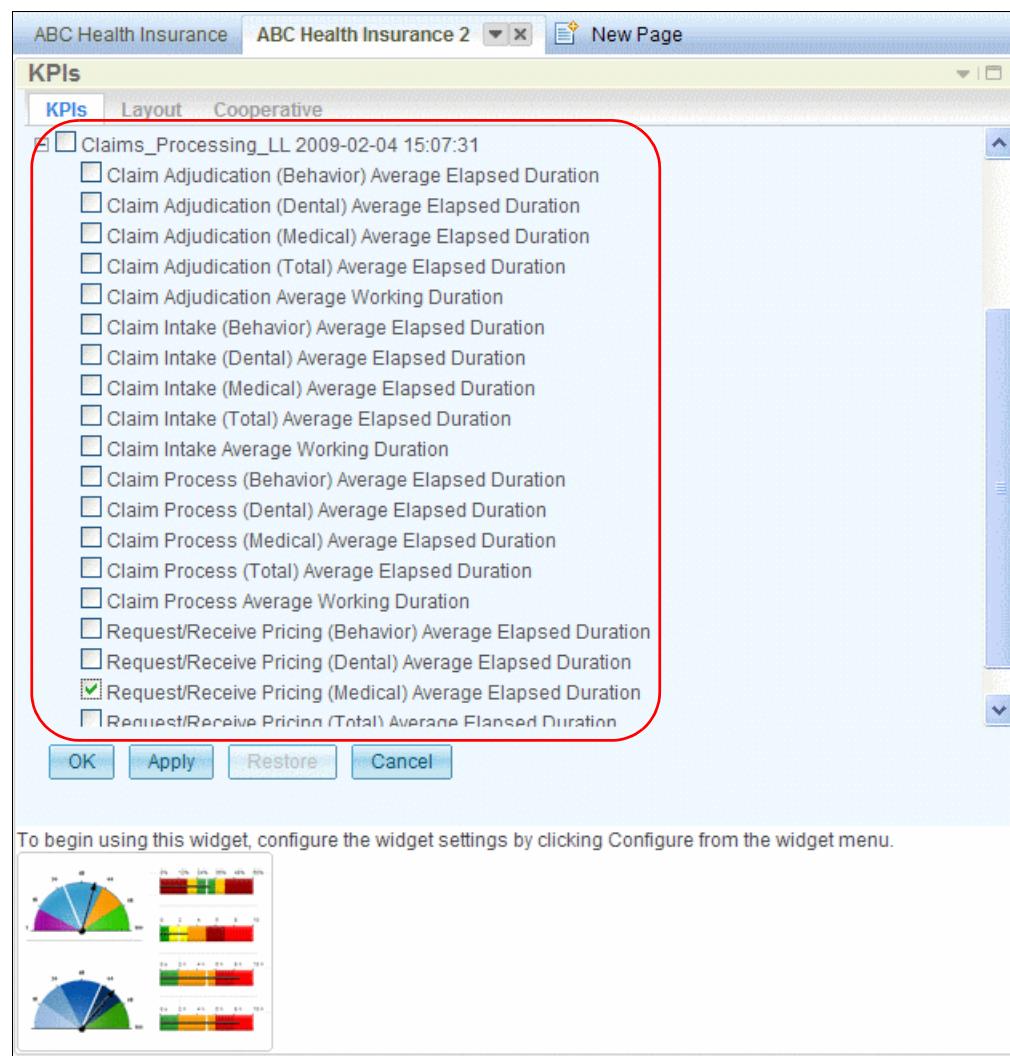


Figure 5-20 Select and add pre-defined KPI from model to your Business Space

Note: The Mortgage Lending Showcase comes out-of-the-box as a sample for experiencing with Monitor. You can use it KPI examples for reference as needed.

5. After selecting the KPI, click the **Layout** tab at the top of the window (Figure 5-21 on page 149) to define the layout. By default the layout of a KPI widget is in table form. You can choose a different layout if so desired.

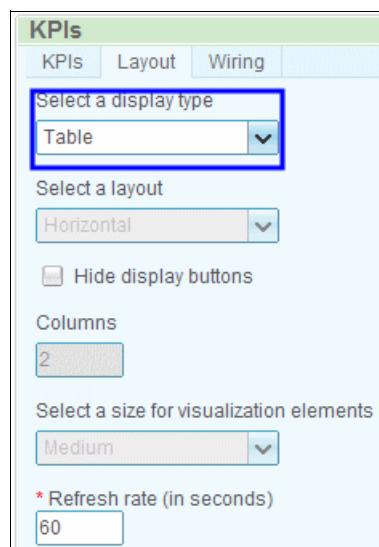


Figure 5-21 Default KPI layout display is table form

6. Once you click **OK**, the KPI widget will display within your Business Space. (Figure 5-22)

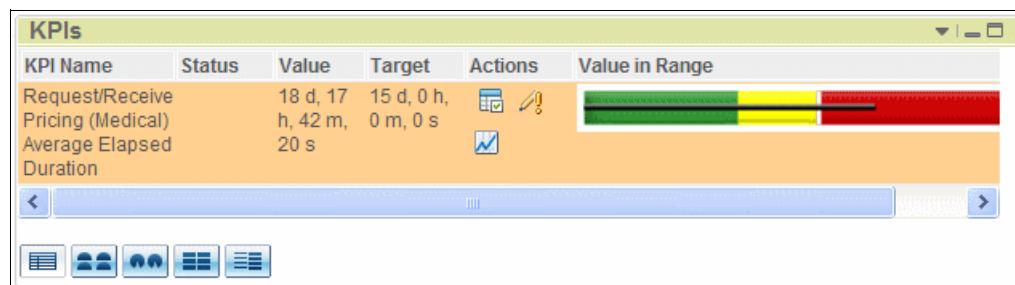


Figure 5-22 Initial display of the Duration KPI

- a. With a different layout the same KPI widget can be graphically displayed differently. Below is the example of how the Duration KPI would appear if displayed as a Half Gauge layout

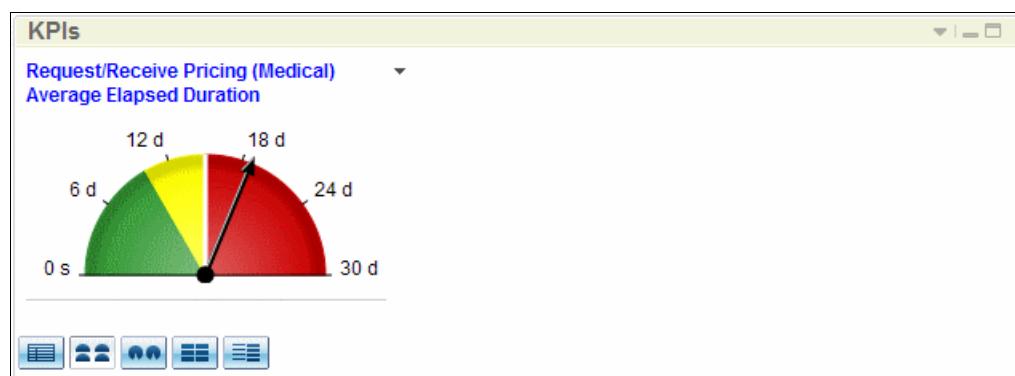


Figure 5-23 Half gauge layout of duration KPI for Health Care Insurance Co. ABC Claim Process

7. You can also use the quick layout change icons to change layouts for KPIs. (Figure 5-24)

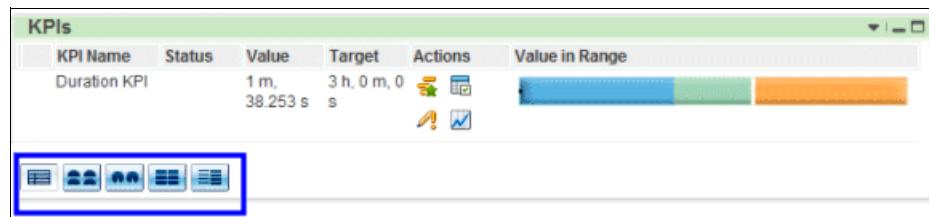


Figure 5-24 Quick access to change KPI layout

8. Click on the KPI range color band itself to get a range definition quickview.(Figure 5-25)
The range shows the duration target set for this KPI in Claim Process model.

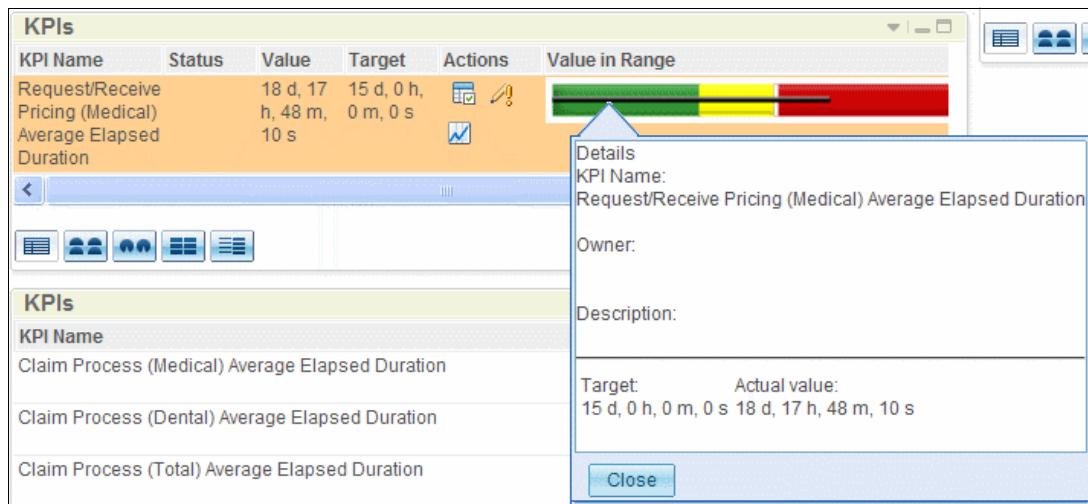


Figure 5-25 Click color range to view KPI range value

9. To edit the KPI properties, click on the KPI Properties Action to edit the properties for this KPI.

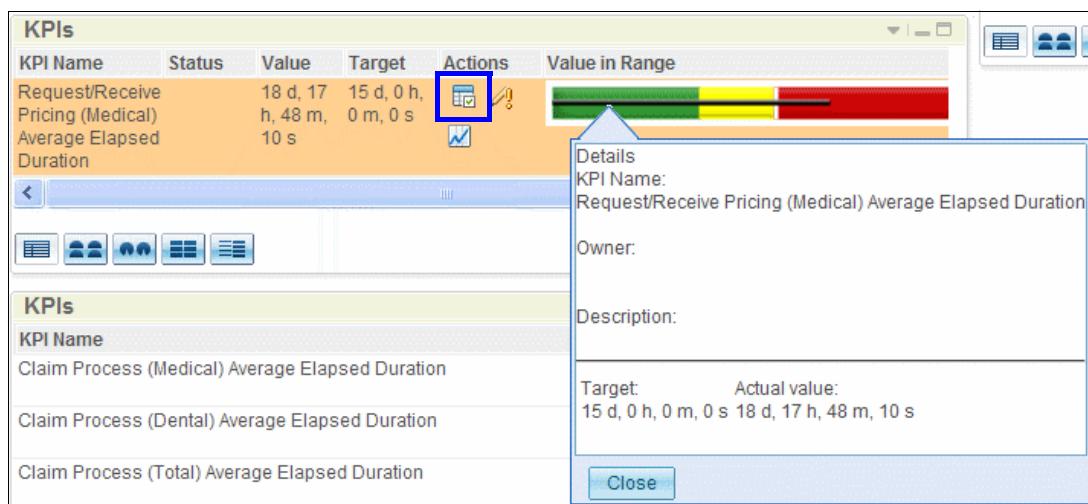


Figure 5-26 Click Edit Properties to change KPI properties

- a. A screen opens and let you change different properties for the KPI at runtime. There are five tabs: **Name, Definition, Range, Other, Preview**.
- b. In the **Name** tab these are things you can change. A modeled KPI name marked with an asterisk (*) can not be changed at runtime.

KPI Properties

Name	Definition	Range	Other	Preview
* KPI name: Duration KPI				
Description:				
Model associated with KPI: Claim Process				
Access:	<input type="radio"/> Personal <input checked="" type="radio"/> Shared			

Figure 5-27 Things you can change in Name tab

- c. The most common changes made to KPIs are under the Range tab. Here you can change target, range values and color properties. (Figure 5-28)

KPI Properties

Name	Definition	Range	Other	Preview	
Target: <input type="text"/> 0 d 3 h 0 m 0 s <input type="button"/> ...					
Range definition: <input checked="" type="radio"/> Numerical <input type="radio"/> Percentage					
Range Name	Start Value	End Value	Color	Icon	Delete
Low	= 0 d 0 h 0 m 0 s	< 0 d 2 h 0 m 0 s		-	<input type="button"/>
Medium	= 0 d 2 h 0 m 0 s	< 0 d 3 h 0 m 0 s		-	<input type="button"/>
High	= 0 d 3 h 0 m 0 s	< 0 d 5 h 0 m 0 s		-	<input type="button"/>
<input type="button"/> Add row		<input type="button"/> Copy from template			

Figure 5-28 Changing range value and colors for KPI

10. Proceed to add additional KPI widgets for Medical, Dental, Behavioral and Rejection by following the same procedure outlined above. You can add these by either adding new KPI Widgets, or modifying the Widget Configuration (Figure 5-29)

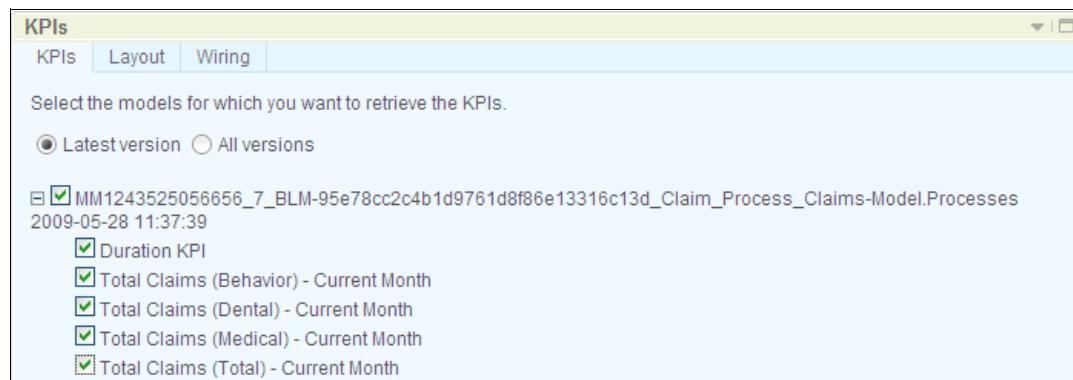


Figure 5-29

11. After adding and positioning the KPI widgets within the Business Space near each other, you can arrange to have a nice report view like this below.

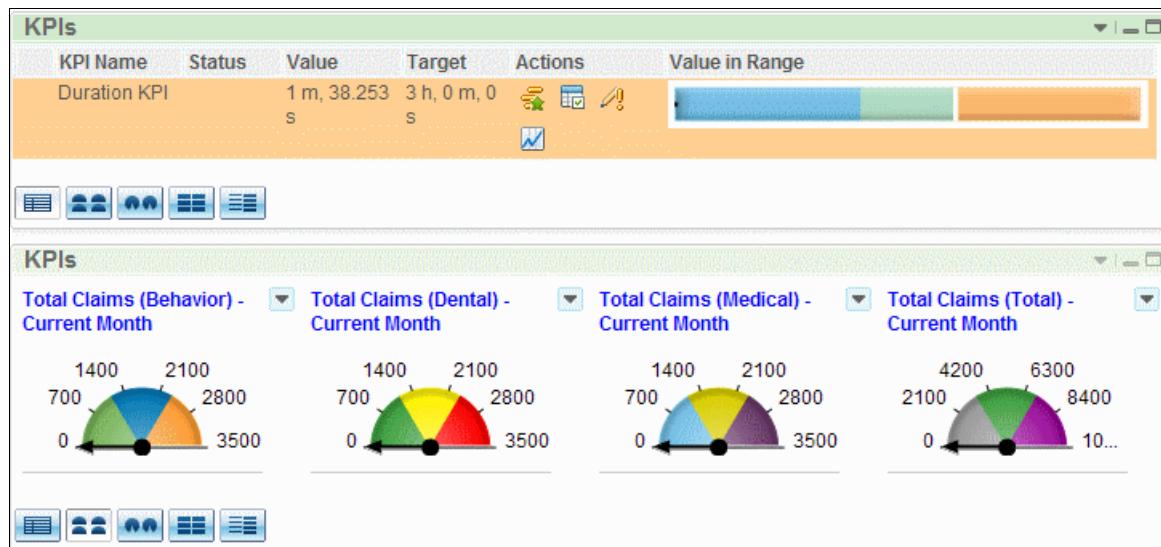


Figure 5-30 Changing color for individual half gauges

12. Finally, with some focus on how and where you place the widget reports within the Business Space page, you can fit several widgets to gain an overview of KPIs and process status for Health Care Insurance Co. ABC Claim Process, similar to the Business Space example shown in Figure 5-31. In this example, we have added the following widgets:

- ▶ KPIs - including Duration, Total Claims Behavior (Current Month), Total Claims Dental (Current Month), Total Claims Medical (Current Month)

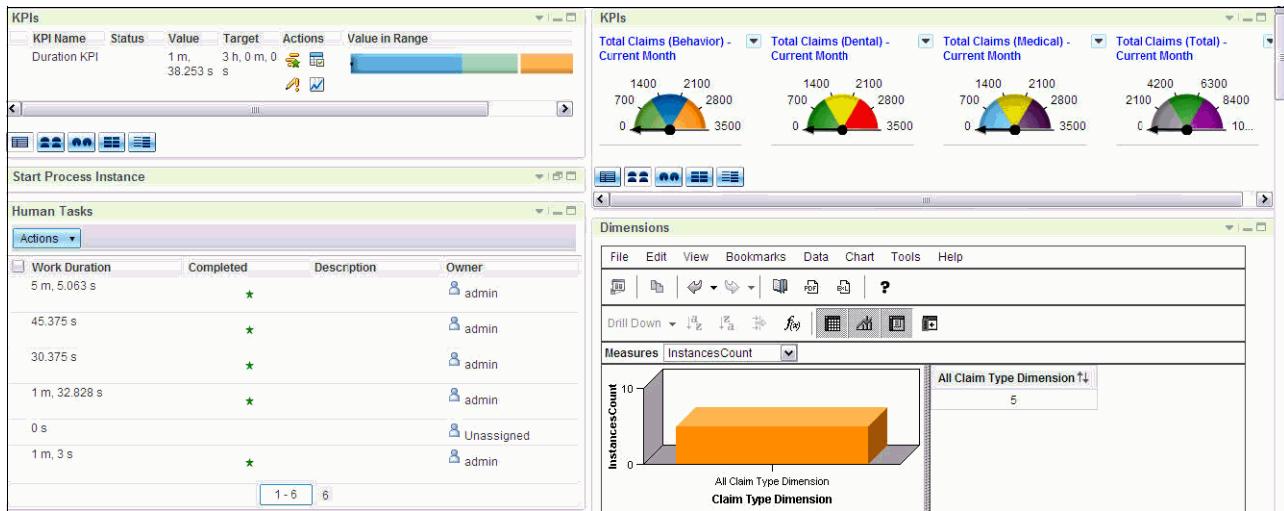


Figure 5-31 Combining different KPI widgets for a total overview of Health Care Insurance Co. ABC process

In a later section, we will go into configuring additional advanced widgets for your reports like dimension for further analysis. But now, we need to go back to the basic KPIs report that you've just set up and learn to use it to look at situations.

5.6.3 Setting thresholds and spotting bottlenecks in KPI Reports

Keep in mind that the objective of monitoring your KPI data is to identify inefficiencies and bottlenecks in the process, so that if needed, you can take corrective action to remedy the situation. Once you have decided on a set measurement for a threshold, you can then use this baseline as the standard threshold to leverage the different alert modes of the Monitor framework to notify you when a situation requires attention.

Note: The definition of a process bottleneck is as follows:^a

- ▶ An activity within an organization which has a lower capacity than preceding or subsequent activities, thereby limiting throughput. Bottlenecks are often the cause of a build-up of work in progress and of idle time.
- ▶ A limiting factor on the rate of an operation.

a. <http://dictionary.bnet.com/definition/bottleneck.html>

5.6.4 Using the KPI Widget reports to identify bottlenecks

The most common widget report to use for spotting bottlenecks is the KPI widget view. We illustrate this using the sample data and process from the fictitious scenario based on Health Care Insurance Co. ABC Claim Process. Figure 5-32 illustrates the report you configured according to the KPI target table (Table 5-1 on page 145) at the beginning of this chapter.

Looking at the KPI report you just configured on the Business Space, you can see that the first *duration KPI* for the human task has spiked up into the red zone.

Note: For illustration purpose we arbitrarily set the duration target for these KPIs to be in minutes. This is to show that your target threshold has been reached and that there might be a situation that need your focus in handling performance of some human tasks.

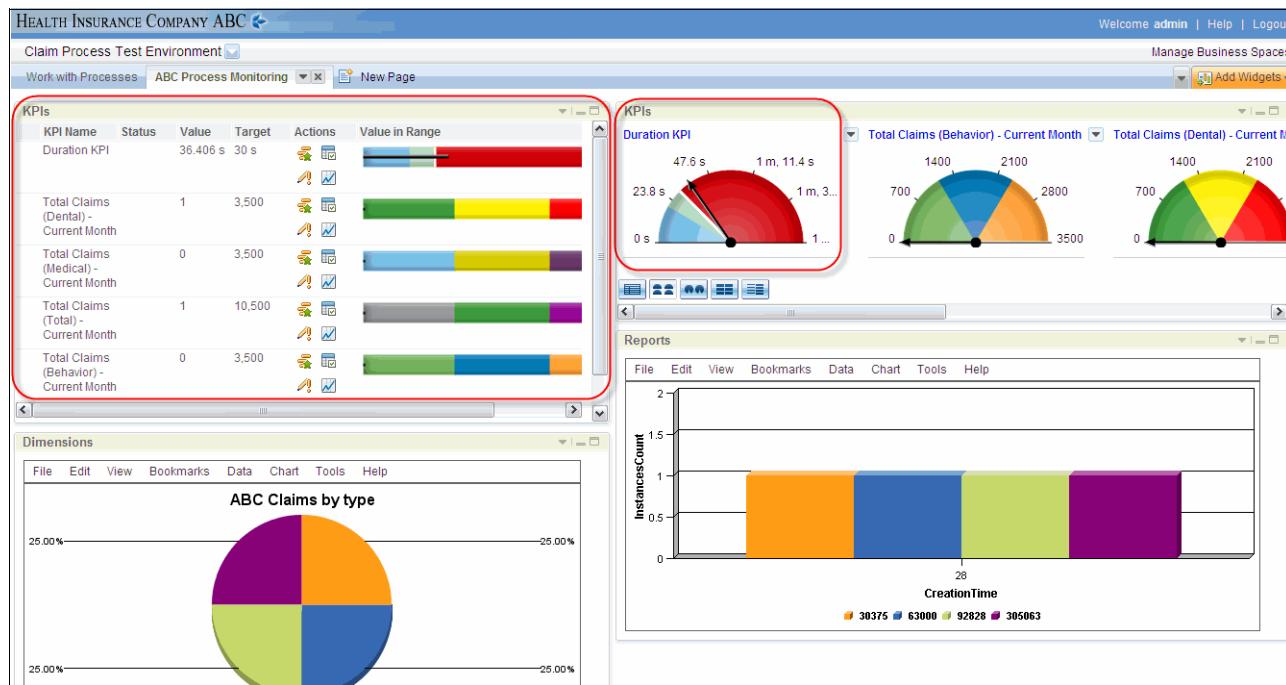


Figure 5-32 KPI Duration Report from Business Space

The meter has indicated that the target has been exceeded. Looking closer you see that its the human task average duration is too long per our measurement standards. Whereas the target range is 30 Seconds, the actual value captured is 36 seconds, exceeding the target range.

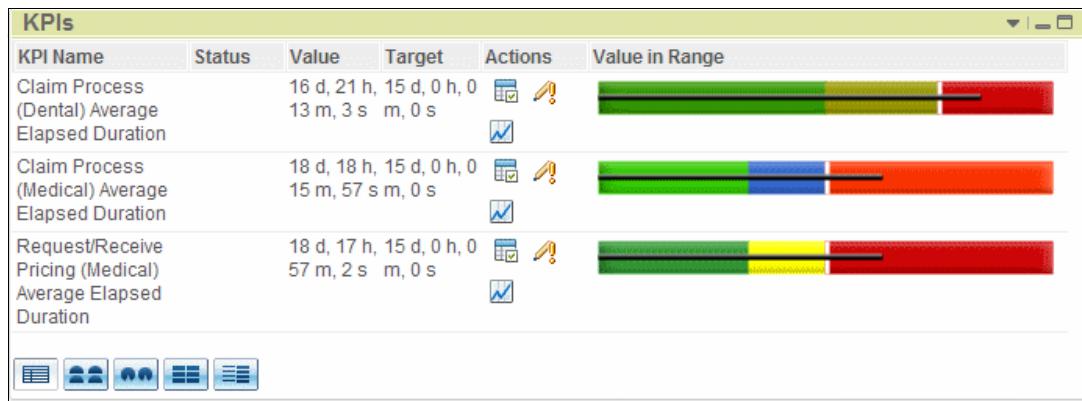


Figure 5-33 Duration KPI reporting target exceeded

5.6.5 Reviewing the Human Task widget to analyze bottlenecks

Following on from the KPI report widget, the next report widget you want to look at is the Human Tasks widgets to identify a delay in processing of human tasks. As we illustrate in the screenshots, we are assuming that you have a completely configured business space which includes both KPI widget reports and Human Task widget reports. Figure 5-34 on page 155 illustrates a listing of the human tasks and their status

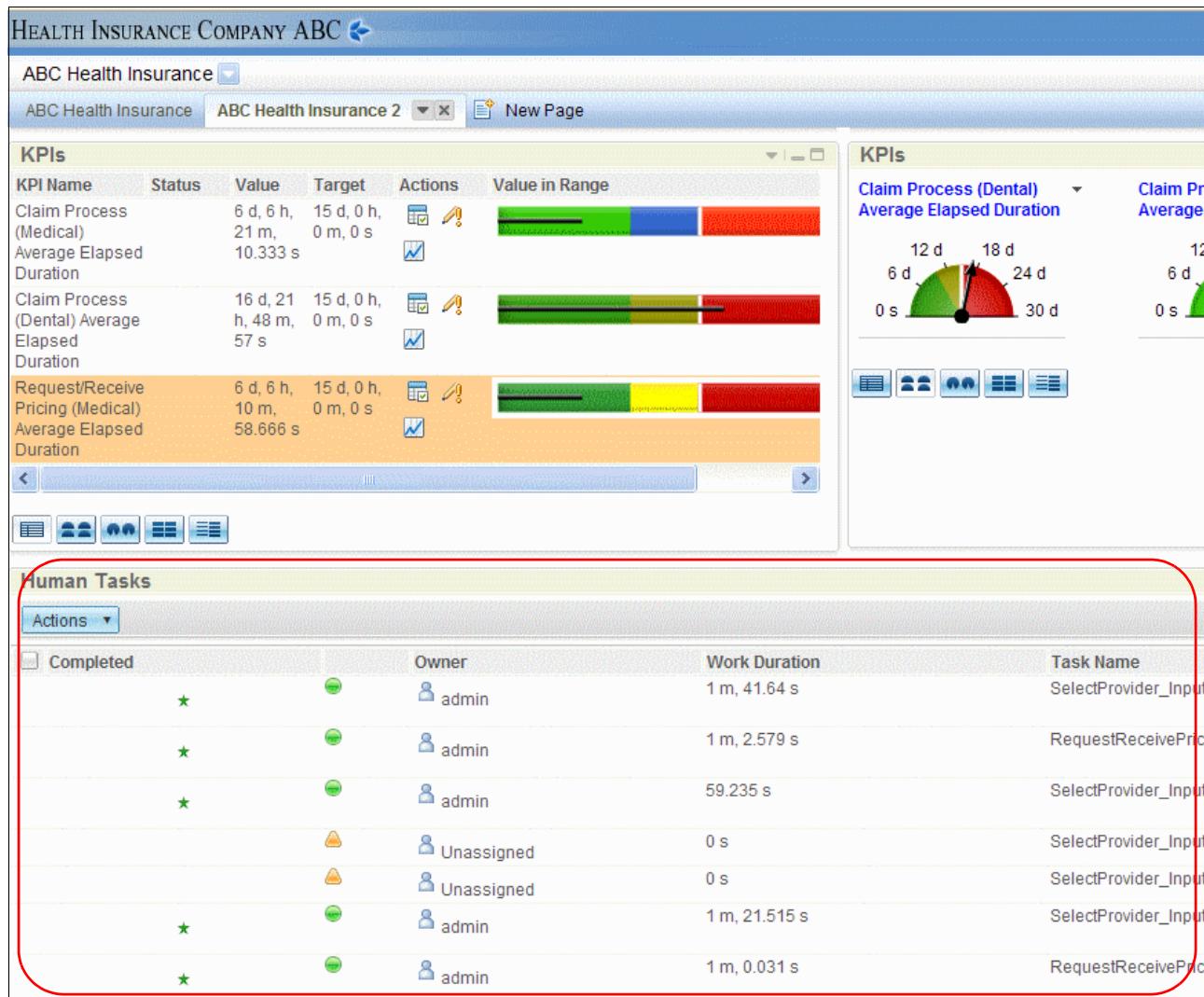


Figure 5-34 The Human Task Report from the Business Space

- ▶ In the Human Task Widget report, you want to pay special attention to the tasks with a status of *unassigned*. Normally the reason for an increase in the duration of human tasks is that they are backed up.
- ▶ Based on the information listed in this widget report, you can count the tasks with a status of *unassigned* tasks or tasks in the *pending* state. Figure 5-35 on page 156 illustrates a listing of these unassigned task.

Human Tasks				
Actions ▾		Owner	Work Duration	Task Name
<input type="checkbox"/>	Completed	★ admin	1 m, 41.64 s	SelectProvider_Input
<input type="checkbox"/>	★ admin	1 m, 2.579 s	RequestReceivePric	
	★ admin	59.235 s	SelectProvider_Input	
	Unassigned	0 s	SelectProvider_Input	
	Unassigned	0 s	SelectProvider_Input	
	Unassigned	0 s	SelectProvider_Input	
	admin	1 m, 21.515 s	SelectProvider_Input	
	admin	1 m, 0.031 s	RequestReceivePric	

Figure 5-35 Human Task widget

Human Tasks				
Actions ▾		Owner	Task Name	
<input type="checkbox"/>	Completed	★ admin	RequestReceivePricing_InputCriterion	
	★ admin	SelectProvider_InputCriterion		
	★ admin	RequestReceivePricing_InputCriterion		
	★ admin	RequestReceivePricing_InputCriterion		
<input type="checkbox"/>	Unassigned	RequestReceivePricing_InputCriterion		
	admin	RequestReceivePricing_InputCriterion		

Figure 5-36 Spotting unassigned human tasks

- ▶ Once you have acquired enough information about the root cause of a delay or excessive duration in the processing of human tasks you can take action accordingly.
- ▶ By clicking the **Actions** button you are presented with several choices that you can perform on these human tasks, with the most logical one being to re-assign it another resource to work on. Or you can contact the owners of those human tasks and have them claimed.
- ▶ For specific approaches on how better manage human tasks based on the results from the Human Tasks reporting, see section 5.7, “Optimize workload assignments” on page 171. We discuss how to administer and manage human tasks and ultimately reach the goal of optimizing workload.

5.6.6 Dimension Reports

Dimension reports are powerful tools for business intelligence work. Dimension reports provide ways to divide up your data and summarize it in a structured way, based on the specific dimensions you select. This allows you to optionally look at measures by more than

one grouping (dimension) at a time. For example, a dimension report could report the average of profit - measured both by business unit, *and* by country, all in a single report. In our upcoming example, we illustrate a simple example of measuring duration, reported in terms of claim type (Medical, Dental or Behavioral.)

Dimension reports can be added as a widget report to your Business Space, giving you the capability to look at your data in different levels of granularity and analyze them according to your specifications. You can also choose from a full library of chart templates to support your reporting requirements. This capability is made possible through Alphablox, which is the component and data repository underneath all the business dimension functionalities.

Steps to add a Dimension Report

To add a Dimension report to your business space page:

1. From within your Business Space, add a Dimension widget from the **Add Widgets** icon, found in the upper right corner of the Business Space screen. (For reference, refer to Step 1 on page 146, and Figure 5-17 on page 147).
2. Select **Dimension** then drag this widget out onto the Business Space page.

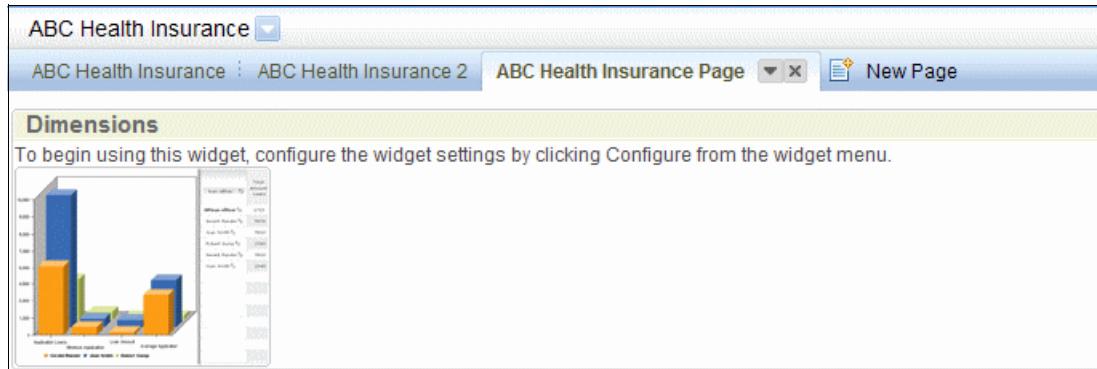


Figure 5-37 Select Dimension Report widget

3. Click the configure button to start configuring the report. (See Figure 5-38 on page 158 for visual reference on configuring the parameters.)
 - a. For **Monitoring Model**, select the Claim Process model name. Once this is selected, the available monitoring context and measures available will become visible.
 - b. Next you need to select the **Monitoring Context**. In this case, we wish to drill down within the context of Claim Type.
 - c. Select the **Dimensions** and **Measures** which you wish to report on.

Note:

- The instance count measure is selected by default, you can configure to use it if desired.
- Be sure to adjust the Frequency to monthly if you want your data range to be beyond a daily cycle.

HEALTH INSURANCE COMPANY ABC

ABC Health Insurance

ABC Health Insurance : ABC Health Insurance 2 ABC Health Insurance Page New Page

Reports

Report Options Cooperative

Model:
Claims Processing High-Level (All Versions)

Monitoring context:
Claim Process

Dimension:
None

Analysis type:
Basic

Weighing factor:
0.18

Measures

Reports View Measures
 Sum of new items
 Sum of resolved items

Modeled Measures
 InstancesCount

Time range (filters the data to report by the time range you specify)
From:
Monday, June 15, 2009

To:
Monday, June 15, 2009

Year to Date Month to Date

Frequency:
Daily

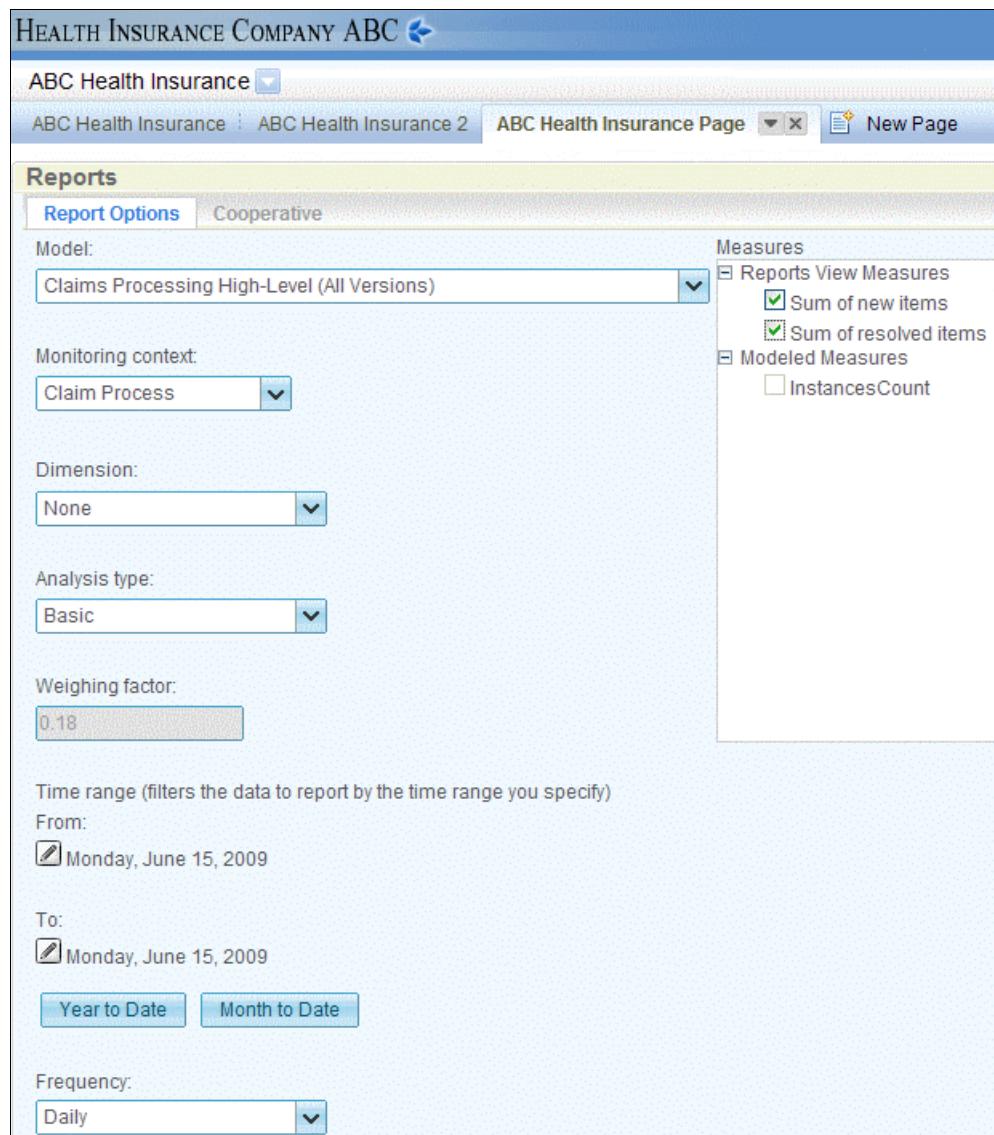


Figure 5-38 Add model name and measures for Dimension report

4. Click **Apply** and **Save**.
5. Your default base report will appear. An example base report is shown in Figure 5-39 on page 159.

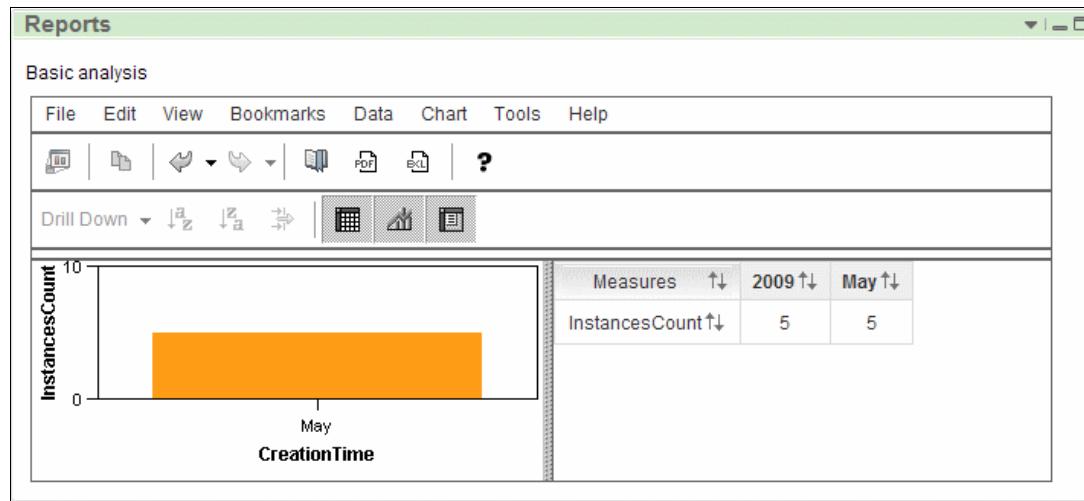


Figure 5-39 Default base dimension report

6. Next, to make your report more meaningful, you may need to set the chart type and data color. The common things to change would be the chart type and color of the graph elements. For example, in the example for Health Care Insurance Co. ABC, we want to have this data displayed in the form of a pie chart.
7. To change chart type: click **Chart** from the menu then select the chart type from the dropdown menu.

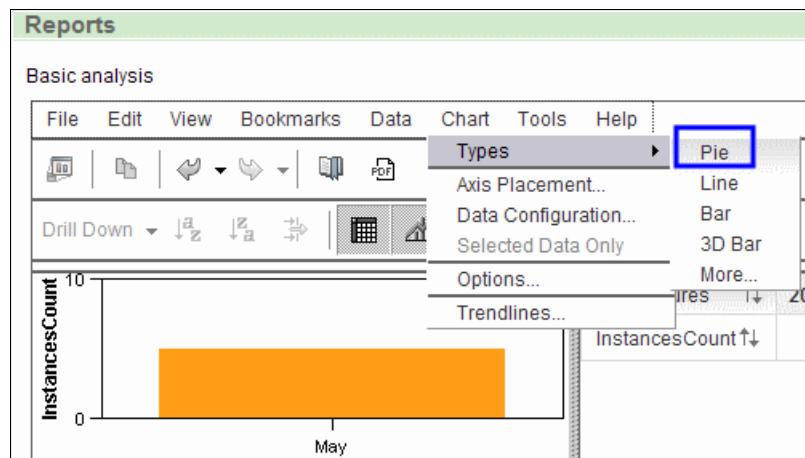


Figure 5-40 Changing chart type

- After changing the chart type to pie, the chart updates the report to display as shown in Figure 5-41 on page 160.

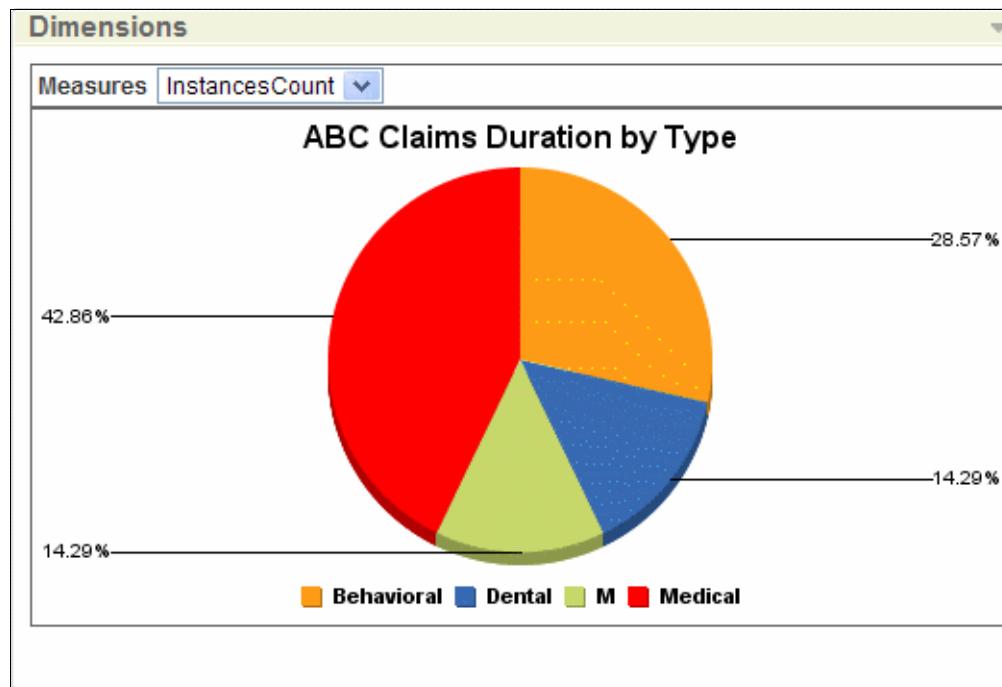


Figure 5-41 Pie chart for Health Care Insurance Co. ABC claim intake by type

What does this Dimension report tell us?

In the example above, we can see that the Claims by Type % are different and exceeding the range of our set baseline KPI parameters. For example, in Table 5-1 on page 145, we have set the target percentage of total intake for Medical claim types for Health Care Insurance Co. ABC to a target level of < 22.5%. According to this report however, the actual value is currently above 42%.

Assuming that the report was configured using multiple-dimensions (for example, we would configure the report such that **row dimensions** are set for one parameter, **column dimensions** are set for another, and finally, **page dimensions** are set for a different parameter,) then you could click on specific quadrants within the chart to drill down and see the values of the other dimension.

Note: Dimension reporting offers many features and options. Most of the configuration work can easily be done at runtime and can be modified as the line of business uses the report and further refines their requirements. In this section we have just shown you the most common widget features to configure your business space so you can be up and running quickly and using your report productively.

5.6.7 KPI Administration

As the real time monitor results give you a better sense of the accuracy of your existing KPI Baselines, you will most likely need to make fine tuning adjustments to parameters going forward. WebSphere Monitor Business Space allows for you to make these modifications, adding and adjusting KPIs at runtime. The necessary changes can be across the end-to-end solution or can just be simple adjustments to the runtime business space setting. The most common changes are changes to the range or target of the KPI in order to tune it.

In the upcoming section, we discuss the following two topics in detail:

- ▶ Adding a KPI at runtime directly from within the Business Space,
- ▶ Set KPI alerts

Adding KPI at runtime

A handy feature in Websphere Business Monitor business space is the ability to add more KPIs directly at runtime via the Business Space. This is much more flexible than requiring for you to re-deploy the model for each additional KPI you wish to track. One important assumption however, is that you have already defined the metrics within your model in order to base the KPI aggregation on. In other words, think of these as predefined columns in the table, which you may wish to use and display in certain situations.

Why is the feature beneficial?

- ▶ The flexibility this gives you is the ability of mix and match all the metrics at runtime and see which combinations work best and which ones you do not need *before* you decide on a permanent model based implementation. This feature is used a lot in first or second stage of production deployment, as some metrics, once revealed within production context, may not need to be measured as a KPI as frequently as originally predicted.
- ▶ This feature is helpful for temporary situations in production: for example - if your organization wanted to monitor seasonal inventory (for example - snowboards in the winter) and get alerts etc., on these, then remove it for the rest of the year.

Steps to add a new KPI at runtime via the Business Space

To add a new KPI, decide on the metric and function that the KPI will be using then follow these steps:

1. From the add widget icon, pull down the widgets menu and invoke the **KPI Manager** widget
2. Drag and drop the selected widget into an open space on the Business Space page.

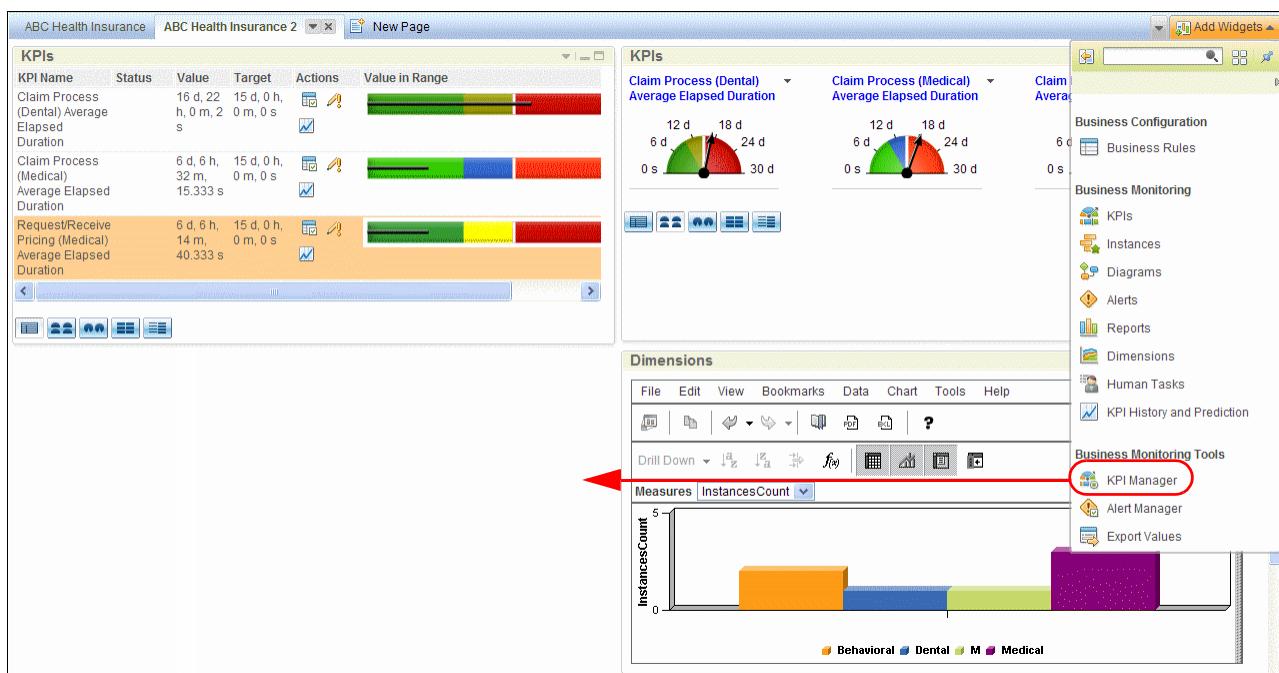


Figure 5-42 Configuring KPI at runtime

- From the Model dropdown list, select your model name to expose all its KPIs. (Figure 5-43)

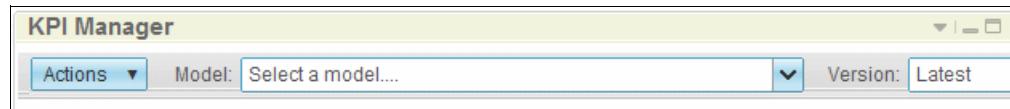


Figure 5-43 Select the model to add your KPI

- The screen shows all the KPIs currently associated with your Health Care Insurance Co. ABC model. (Figure 5-44)

KPI Manager			
Actions	Model:	Version:	Latest
	Claims Processing High-Level		
KPI Name	Created	Owner	Type
Claims in Process - Adjudication	Modeled	-	Aggregate
Claims in Process - Intake	Modeled	-	Aggregate
Claims in Process - Pricing	Modeled	-	Aggregate
Reject Claims	Dashboard	admin	Aggregate
Total Claims Processed	Modeled	-	Aggregate
Total Claims Processed - Behavior	Modeled	-	Aggregate
Total Claims Processed - Dental	Modeled	-	Aggregate
Total Claims Processed - Medical	Modeled	-	Aggregate

Figure 5-44 KPIs for a model listed

- Click the **Action** button to select the type of KPI you are going to add.
- Enter the KPI name and the process that contains the metrics that you want the KPI to be based on.

Name	Definition	Range	Other	Preview
* KPI name: Claim Process Average Duration				
Description:	<input type="text"/>			
Model associated with KPI:	<input type="button" value="Claim Intake"/>			
Access:	<input checked="" type="radio"/> Personal <input type="radio"/> Shared			

Figure 5-45 Adding a KPI at runtime

- Click the **Definition** tab and enter the operator and the metrics for the KPI. (Figure 5-46)

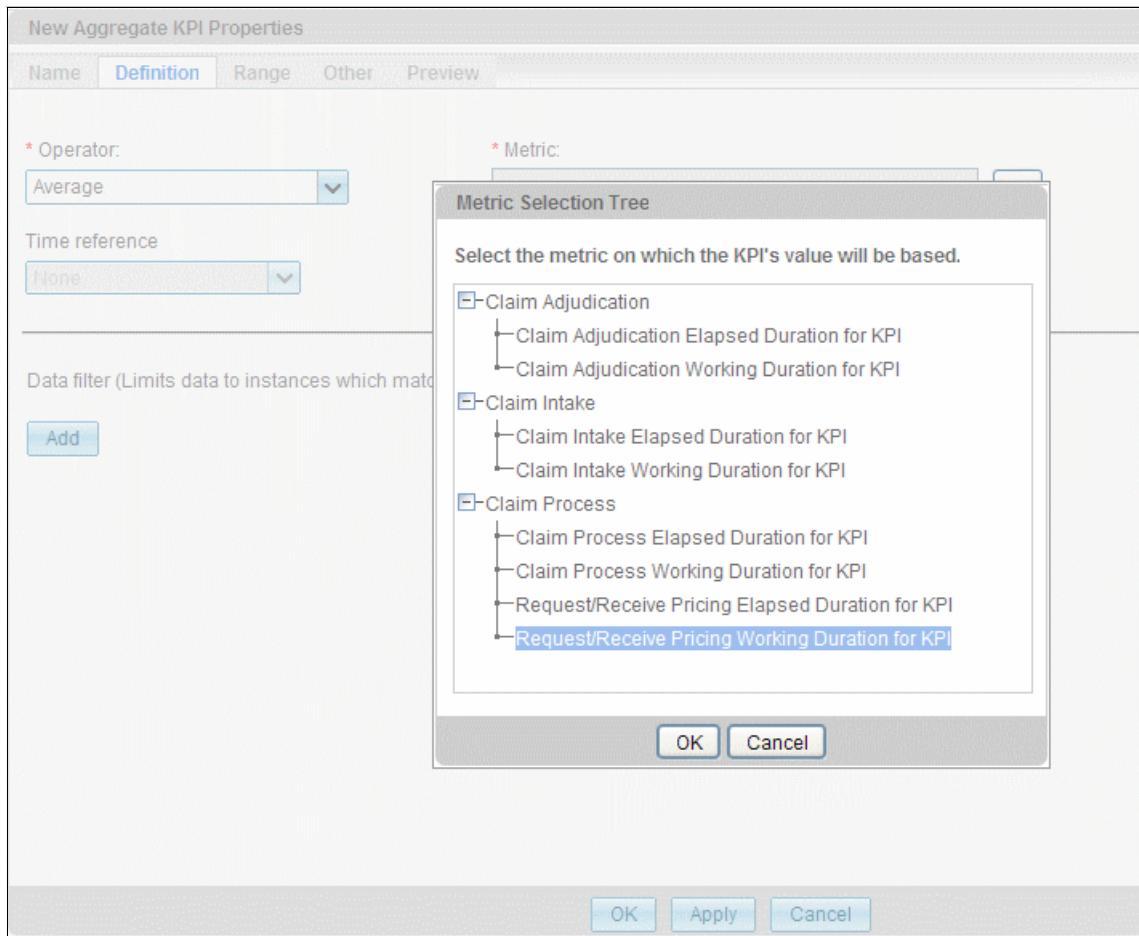


Figure 5-46 Definition of KPI

8. Select **Range** tab to enter the **target**, **range values** and **color properties** for the duration KPI.

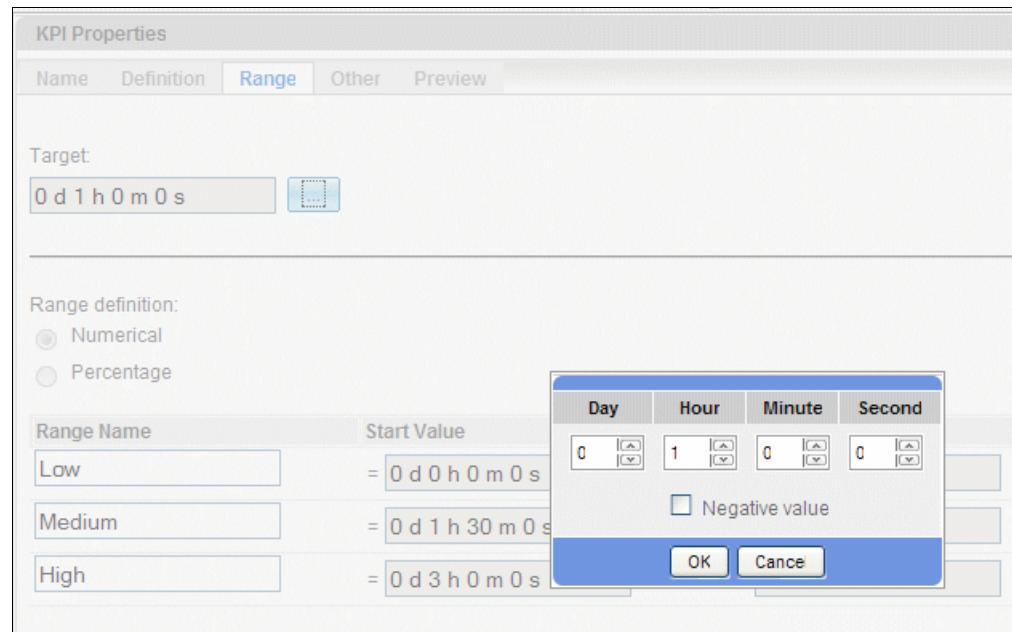


Figure 5-47 Adding KPI duration

9. Add the **range definition** values and color as shown in Figure 5-48.

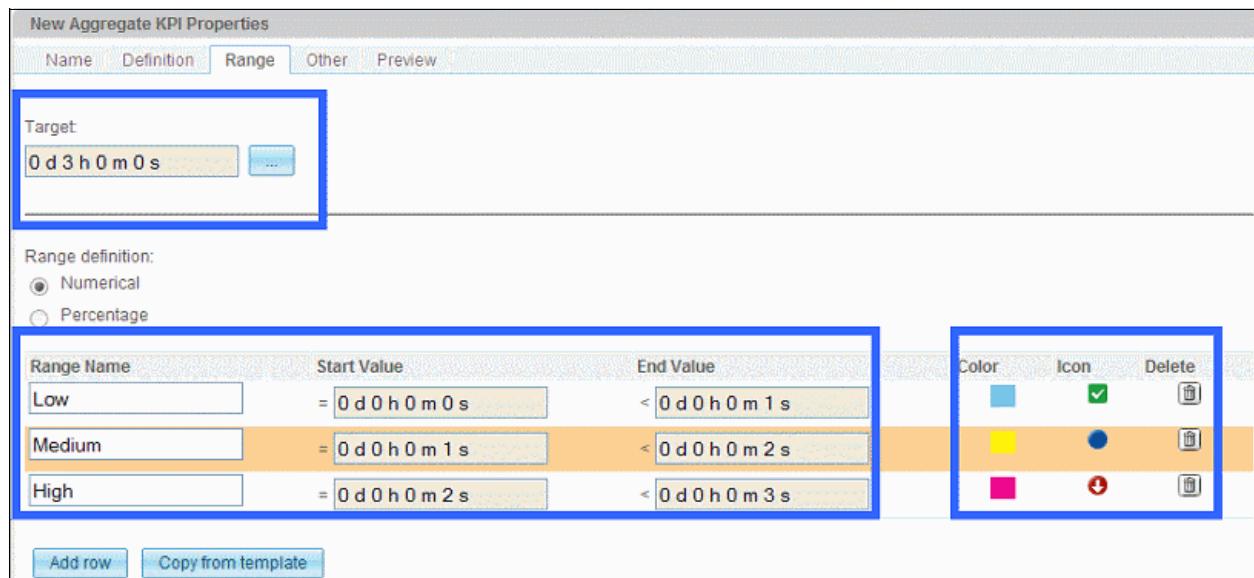


Figure 5-48 Adding KPI target, range values and colors for the Claim Processing model

- Once you have completed the previous steps, you'll see the new KPI added in the **KPI Manager** screen for the Claim Intake process.

KPI Manager				
Actions	Model:	Created	Owner	Type
Claim Process Duration	Dashboard	admin	Aggregate	Personal

Figure 5-49 New KPI added at runtime for Health Care Insurance Co. ABC Claim Process

- After adding the new KPI at runtime and incorporating it into the KPI widget of the monitoring business space for Health Care Insurance Co. ABC, this is what you come up with.

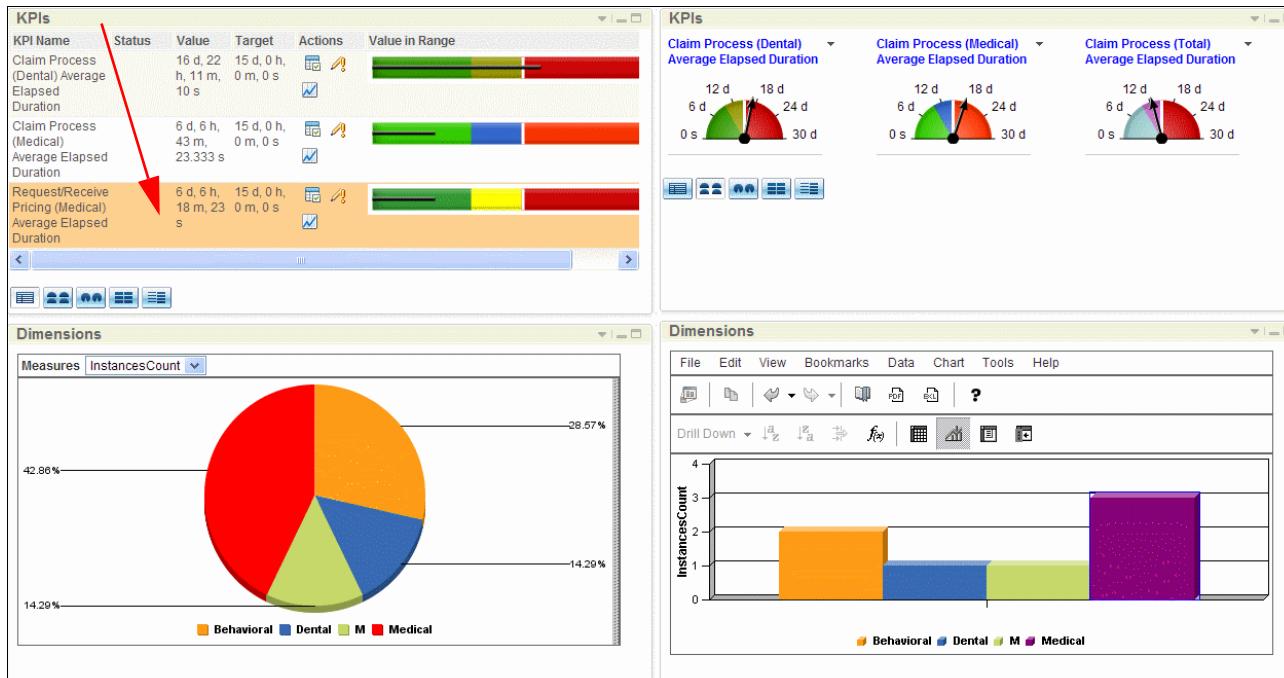


Figure 5-50 Business space with new KPI duration added at runtime

KPI modifications in runtime vs. manipulating in the business model

Finally, the question remains about overall strategy in terms of when to make KPI adjustments in the runtime environment via the Business Space, vs. when to go back and make the changes in the original model, then re-deploy the model. The note box below highlights some guidelines for when and where to best make these changes.

Note: When to use modeled KPIs vs. dashboard KPIs

You can define KPIs either in the Monitor Model editor or on the WebSphere Business Monitor dashboards. If you model the KPIs in the Monitor Model editor, there are some restrictions on the changes you can make in the dashboards.

You create KPIs in the model for any of the following reasons:

- ▶ KPIs created in the model (modeled KPIs) represent the intent of the organization that authored the model. These KPIs can come from WebSphere Business Modeler and can, therefore, carry the intent of the business owner. The KPIs that are created in the dashboards, although they can be used for the same purpose, can also be defined as needed for personal or temporary what-if analysis.
- ▶ Modeled KPIs are portable, making it simpler to deploy models with KPIs across environments.
- ▶ Modeled KPIs reduce the amount of configuration that is required after deploying a monitor model.
- ▶ The Monitor Model editor provides access to a KPI library of typically used KPIs, categorized according to the type of process to which they apply. Selecting a KPI from the library creates a KPI with that name in the monitor model. The KPI library is based on APQC's Process Classification Framework (PCF). APQC is a member-based nonprofit organization that provides benchmarking and best practices for approximately 500 organizations worldwide in all industries. PCF organizes operating and management processes into twelve enterprise-level categories and more than 1,500 processes and associated activities. PCF provides organizations with a shared language for communicating with each other.

KPIs that you model in the Monitor Model editor can be personalized in the dashboards but have the following restrictions:

- ▶ The number of ranges and the IDs of those ranges cannot be changed because the trigger conditions of triggers in the model might refer to them. However, the ranges are still configurable at run time. The target and range values are treated as initial values so that they can be changed to reflect changes in business conditions.
- ▶ A target cannot be set to null at run time, again because the trigger conditions of triggers in the model might refer to it.

KPI Alerts

There are situations where you might want to set an alert based on a KPI threshold for when there is claims processing backlog.

Within WebSphere Business Monitor, you can set dynamic alerts based on the KPIs you have configured for a process, such as the example shown for the Health Care Insurance Co. ABC Claim Process. You can have alerts sent to different recipients' email, pagers, cell phones or sent as a visual cue right on their dashboards. The pda, pager and cell phone options empower the users with the flexibility to monitor business processes and address situations without requiring direct access to a computer.

In this next section, we illustrate how to set up an alert report within the Business Space.

Steps to set an alert on a KPI

To set alert on a KPI, follow these steps:

1. Click on the Alert Manager button in the KPI widget as shown.

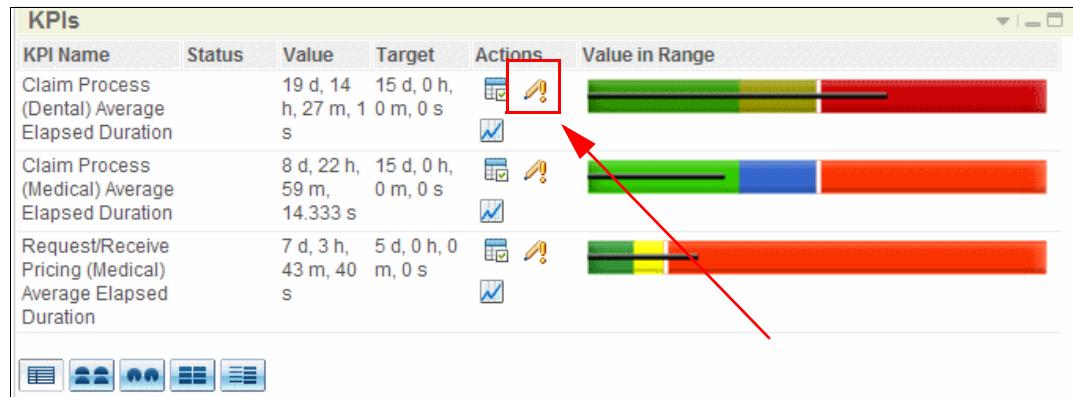


Figure 5-51 Alert Manager button to configure alerts

2. After clicking the action button, the Alert configuration screen displays. (Figure 5-52) Click **New Alert**.

Alert Name	Description	Owner	Dashboard Alert	Cell Phone	E-mail	Pager	Actions
			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Figure 5-52 Adding KPI alert

3. Enter the condition for the alert to be sent and other properties. You can choose to define your own content or use the default template. See Figure 5-53 on page 168.

Showing : Alert

Alert			
Conditions	Alert Content	Notification	
Alert name	Medical Duration Exceeded		
Description			
Model	Claims Processing Low-level 2009-02-04 15:07:31		
Owner	admin		
Conditions			
Notify when all of the following conditions apply			
KPI Name	Prediction Model	Condition	Value
Claim Process (Medical) Average ...	None (Use actual data)	Click to choose condition	Click to choose value
<input type="button" value="Add"/>			
Timing			
How often to check conditions	Hours	1	<input type="button" value="▼"/>
When to start notifications	June 15, 2009 00:00:00	<input type="button" value="Calendar"/>	GMT-05:00
Notification frequency	Once per selected period when the condition applies		
<input type="button" value="OK"/> <input type="button" value="Cancel"/>			

Figure 5-53 Add content for Alert

4. Select the recipient of alert and the medium for delivery. In this scenario we send the alert as an dashboard alert, to appear directly in the Business Space.

Alert					
Conditions	Alert Content	Notification			
Recipients					
<input checked="" type="checkbox"/> Dashboard Alert <input type="checkbox"/> Cell Phone <input type="checkbox"/> E-mail <input type="checkbox"/> Pager					
admin <input type="checkbox"/>					
<input type="button" value="Add"/>					

Figure 5-54 Define recipient and medium for alert

5. Finally, upon completion, you get the confirmation that the alert was created.

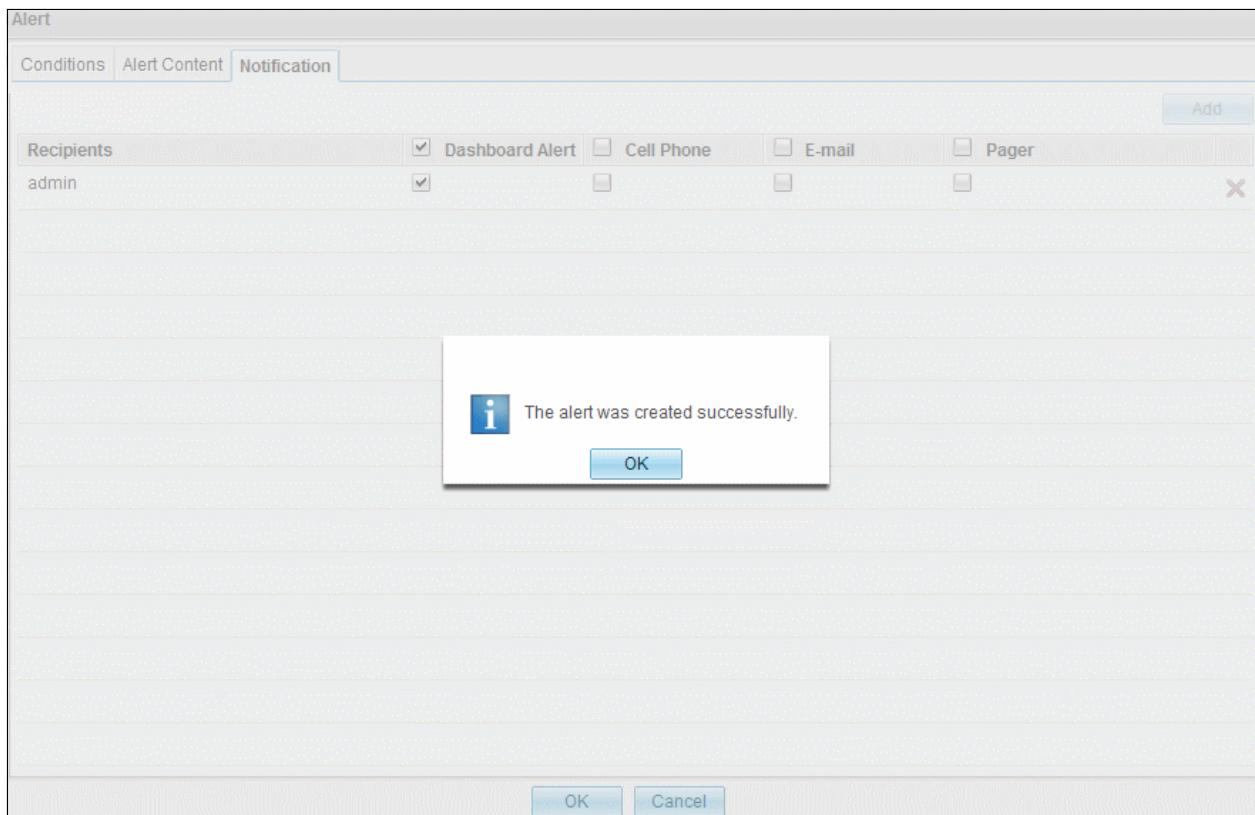


Figure 5-55 KPI Alert creation confirmation

6. Add an Alert widget view onto your business space, following the same procedure for adding a report such as the KPI Reports in section 5.6.2, “Steps to set up the KPI widget report” on page 146.
7. Once the alert widget is added you will see the alert view showing your alert. This happens right on the business space since we chose to receive dashboard (business space) alert and that the condition for the alert has already happened because the KPI target has been exceeded. This is shown in Figure 5-56 on page 170.

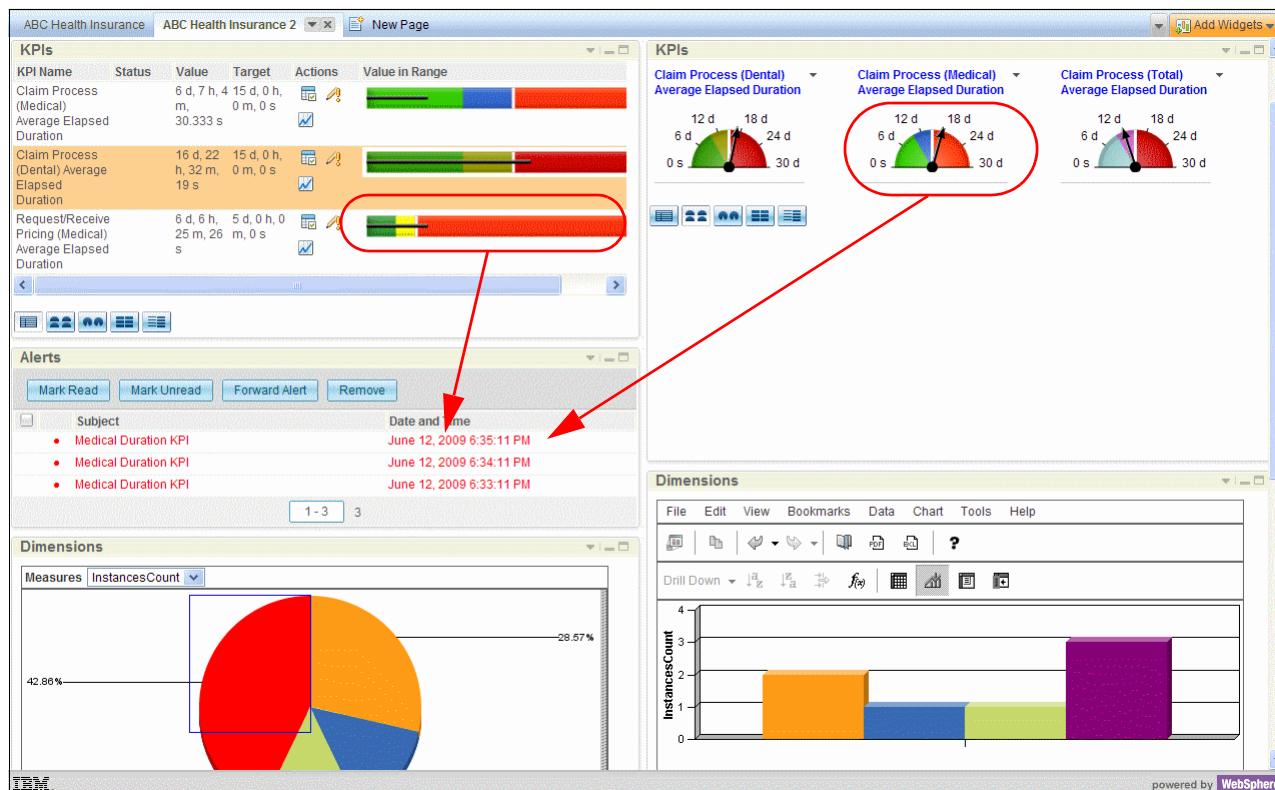


Figure 5-56 Alert view showing alert triggered by KPI target being exceeded condition. Click on the alert to view the content

For each alert, the user can click the alert to see details about why the alert was triggered.

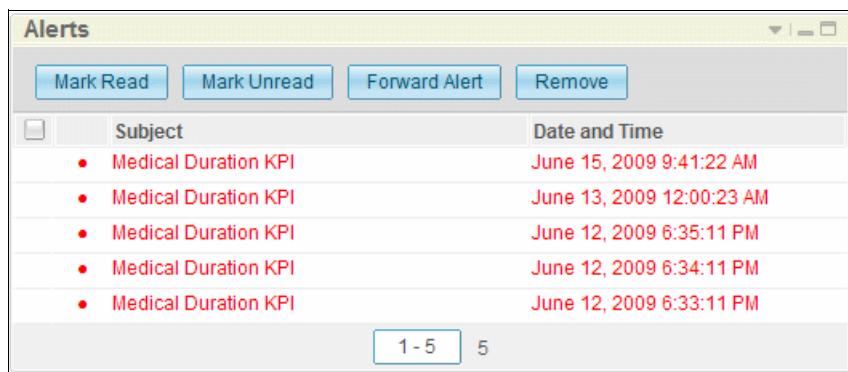


Figure 5-57 Click alert to view content

As shown in Figure 5-58 on page 171, when you click on an alert, the content of the alert displays the results of the duration - illustrating details of the situation that we have set up to notify us when the average duration for a human task in the Health Care Insurance Co. ABC Claim Processing has exceeded the target threshold.

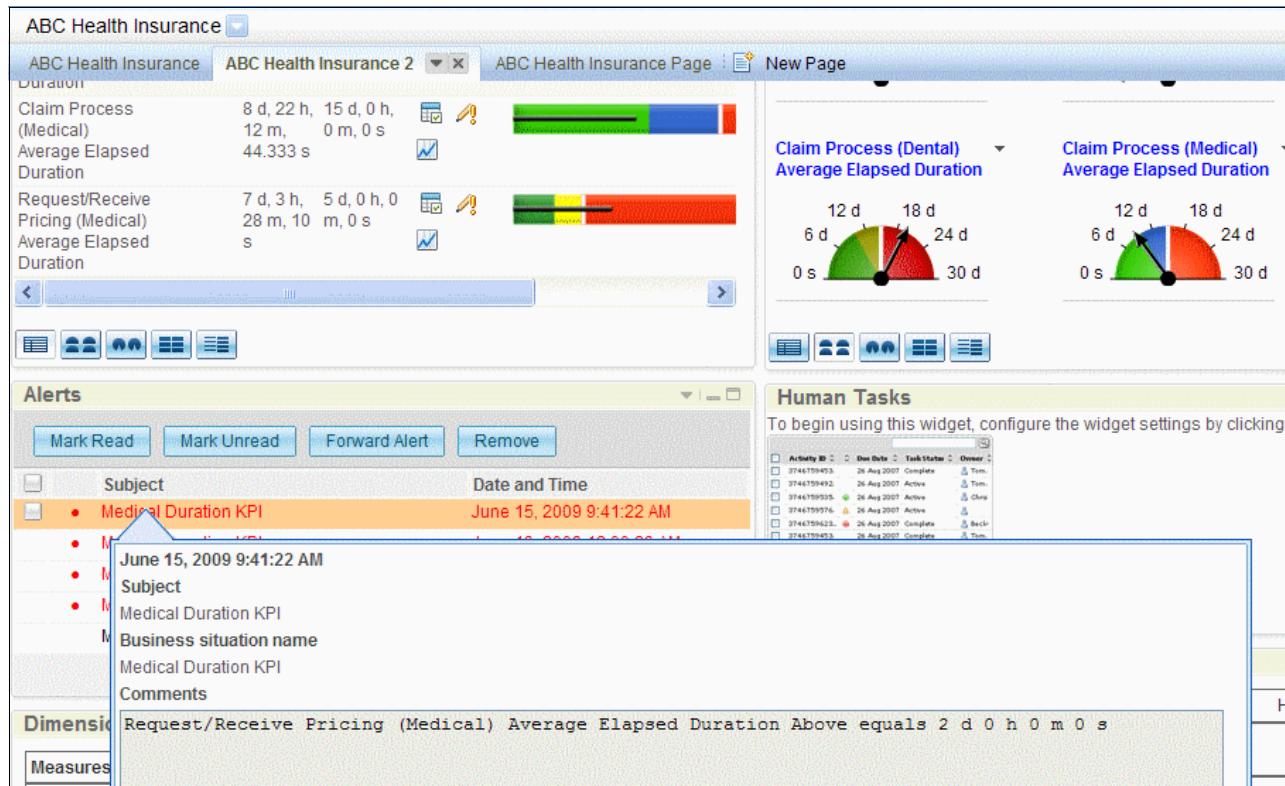


Figure 5-58 Alert content displayed

There are many more features of the Websphere Business Monitor framework that can be leveraged to help optimize and manage Health Care Insurance Co. ABC Claim Process activities workload. We have discussed the common way of using KPIs for monitoring, alerts triggering and usage of business human task administration to spot and resolve bottlenecks, and streamline your day-to-day workflows.

Note: Please refer to “Related publications” on page 183 for additional resources on using WebSphere Business Monitor to manage your business processes..

5.7 Optimize workload assignments

In the remaining sections of this chapter, we discuss how you can utilize the information from your analysis to both optimize workload assignments, and ultimately, continue to govern changes in monitoring and optimizing your business process.

Key Point: Again, this is a key value add from WebSphere Business Monitor. You are able to have a better understanding of the data and efficiency of your process, so that your organization can act accordingly to improve it.

You monitor and optimize workload assignments to reach maximum efficiency in your process and to meet Service Level Agreements with the stakeholders and customers.

Figure 5-59 on page 172 illustrates the focus of this section within the overall *Manage* phase.

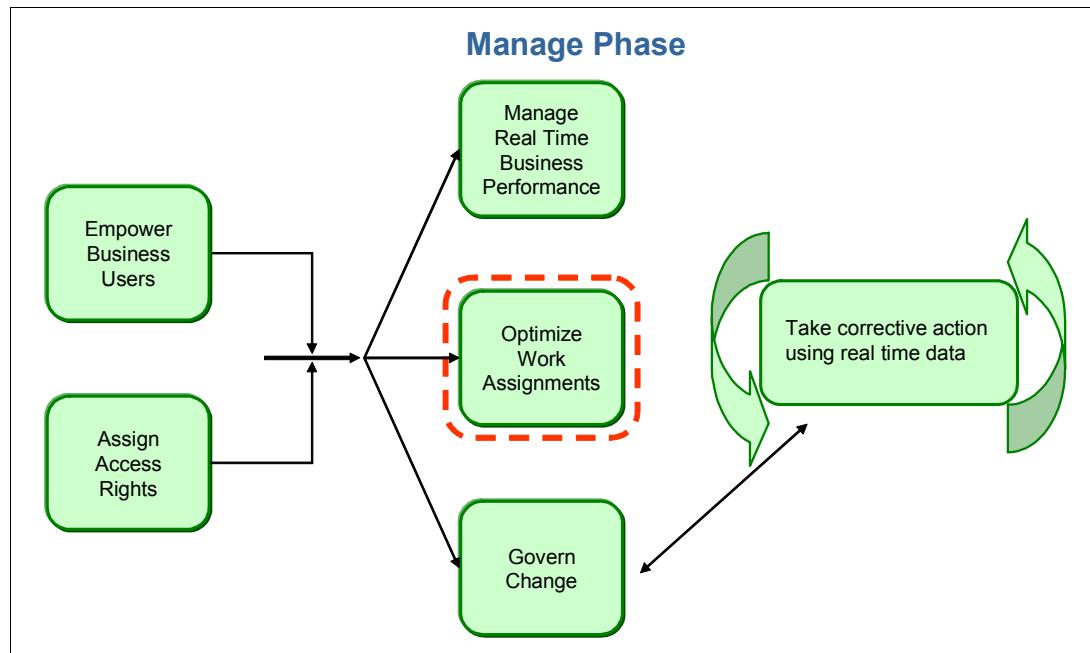


Figure 5-59 We are in Optimize Work Assignments section of chapter

5.7.1 Objective of optimizing workload assignments

First - let's clarify what we mean by optimizing workload assignments as it pertains to the *IBM Prescriptive Guide for Business Process Management*. Optimizing workload assignments consists of:

- ▶ An ongoing process of looking across the allocation of human tasks among organizational team members to shuffle work around and respond to changing business conditions.
- ▶ Insight into work allocation can be achieved through a combination of team-based task views and monitor visualizations that can optimization decisions.
- ▶ Efforts to optimize work can be performed by a business user playing a supervisory role or as part of a empowered peer organizational structure.

Optimizing workload within the context of Health Insurance Co. ABC

During the *Storyboarding* phase (See Chapter 3, “Storyboarding” on page 33), you performed initial simulations which provided insight into the benefits of improving the as-is business process. During the *Experience* phase (See Chapter 4, “Experience” on page 77), and the *Manage* phase, you now analyze the KPI results to determine the bottlenecks within the human tasks and determine how to best re-allocate the work.

For optimizing workload, we focus primarily on monitoring the human task activities. We are again working with the KPIs defined in Table 5-1 on page 145. To monitor all the human task activities for the Health Care Insurance Co. ABC Claims Process, you start by setting up a human task widget report on your new page of the Business Space.

Steps to add the Human Task Report Widget

Perform the following steps to add the Human Task widget to

1. In your new page click **Add Widgets** icon

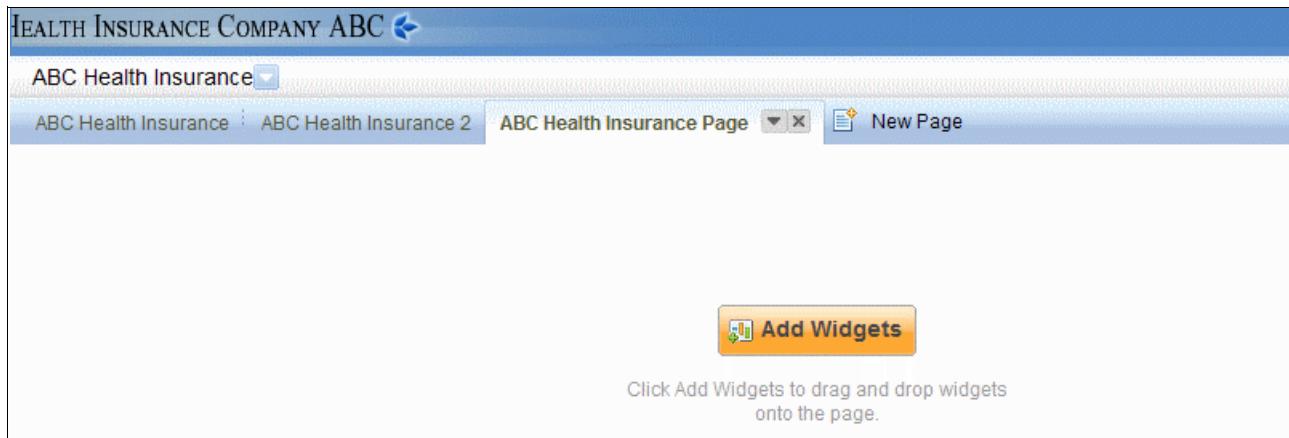


Figure 5-60 Adding a widget to the page

2. The widget icon will be positioned in the open space. Select the Human Task icon

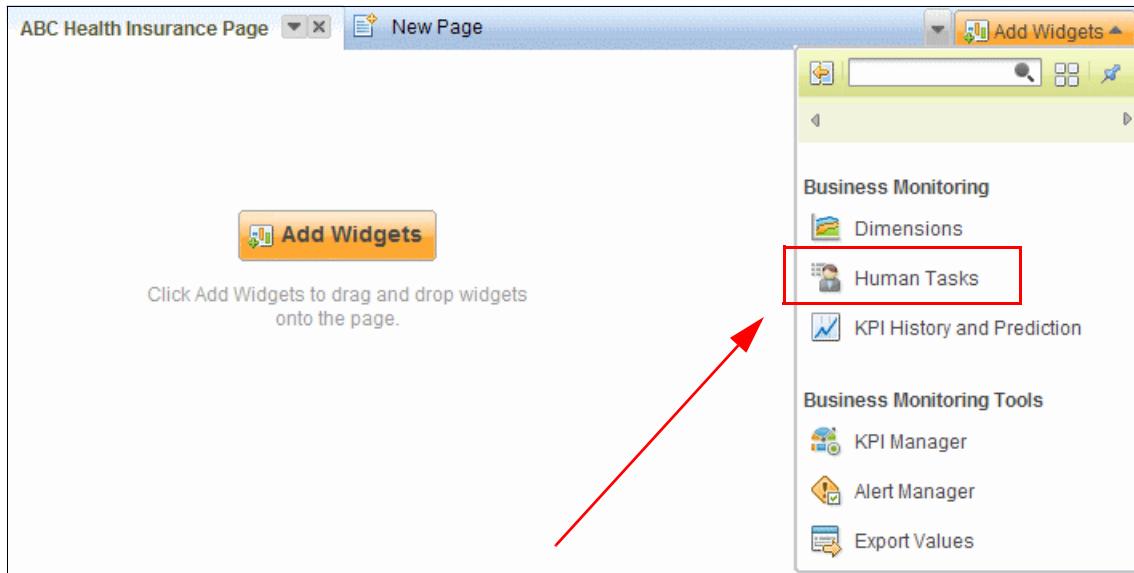


Figure 5-61 Human Task widget added - to be configured

3. Click the **Configure** button on the top right corner as shown to configure your human task report.

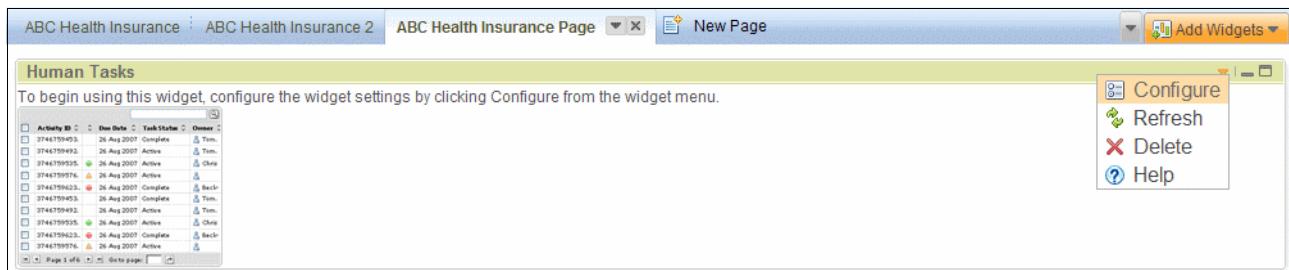


Figure 5-62 Click Configure button

4. The human task widget will display a window with all the variables available for you to select for your report. You can use the **Add All**, **Add One**, **Remove All**, **Remove One** and **Sort** the order of the fields being displayed in the widget. Click **OK** when done.

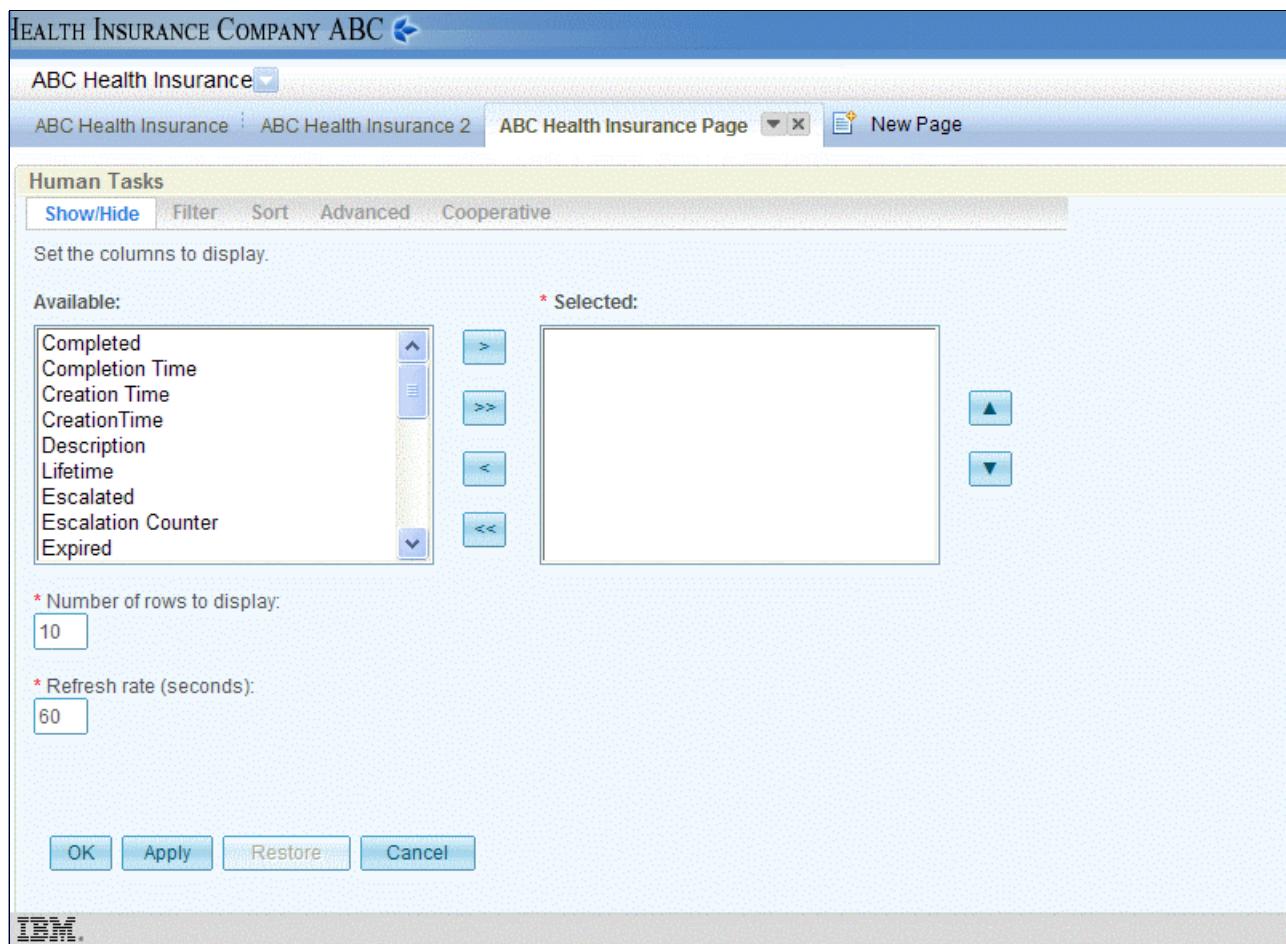


Figure 5-63 Select and add variables to your Human Task report

5. After configuring the human task widget, you should see an overview of the activities, similar to that shown in Figure 5-64 on page 175. Notice that you have a clear indication of which tasks have been completed, vs. any which may still be in a pending state.

Human Tasks									
Actions ▾									
Completed	Completion Time	Creation Time	CreationTime	Description	Lifetime	Escalated	Escalation Counter	Expired	
★	April 17, 2009 5:57:14 PM	January 3, 2009 10:09:29 PM	January 3, 2009 10:09:29 PM			103 d, 19 h, false 47 m, 45.392 s	0	false	
★	May 22, 2009 6:16:26 AM	January 3, 2009 10:35:19 PM	January 3, 2009 10:35:19 PM			138 d, 7 h, false 41 m, 7.053 s	0	false	
★	May 24, 2009 10:07:28 PM	May 22, 2009 6:19:58 AM	May 22, 2009 6:19:58 AM	Select provider for claim #001	2 d, 15 h, 47 m, 30.141 s	false	0	false	
★	May 24, 2009 11:17:58 PM	May 24, 2009 11:03:09 PM	May 24, 2009 11:03:09 PM	Select provider for claim #CP003	14 m, 49.844 s	false	0	false	
★	May 25, 2009 12:00:49 AM	May 24, 2009 11:20:00 PM	May 24, 2009 11:20:00 PM	Request pricing for claim #CP003	40 m, 49.422 s	false	1	false	
		May 26, 2009 8:06:25 PM	May 26, 2009 8:06:25 PM	Select provider for claim #CP006	16 d, 22 h, 47 m, 37 s	false	0	false	
★	June 12, 2009 1:11:55 PM	June 12, 2009 1:07:47 PM	June 12, 2009 1:07:47 PM	Select provider for claim #CP020	4 m, 7.328 s	false	0	false	
★	June 12, 2009 1:19:22 PM	June 12, 2009 1:13:56 PM	June 12, 2009 1:13:56 PM	Request pricing for claim #CP020	5 m, 26.094 s	false	1	false	

Figure 5-64 Human Task activities at a glance: all instances

Note: This is where you look to spot bottlenecks in the human task activities for the Health Care Insurance Co. ABC process. Any activity that is incomplete (has a status still of pending) and doesn't have an 'owner' assigned should be verified and that it is in 'pending' state for a valid reason.

As shown in Figure 5-65 on page 176, the final task is not yet completed, nor does it have an assigned owner.

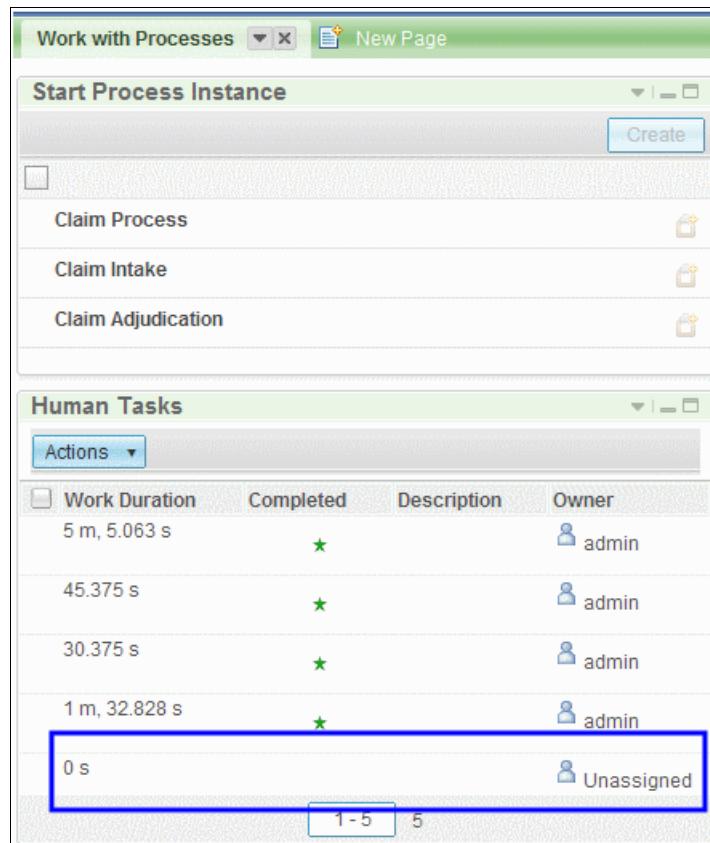


Figure 5-65 Unassigned human tasks should have a valid reason

- From this list you can take action on the task yourself by claiming it and working on it, or you can choose to transfer it to someone else.

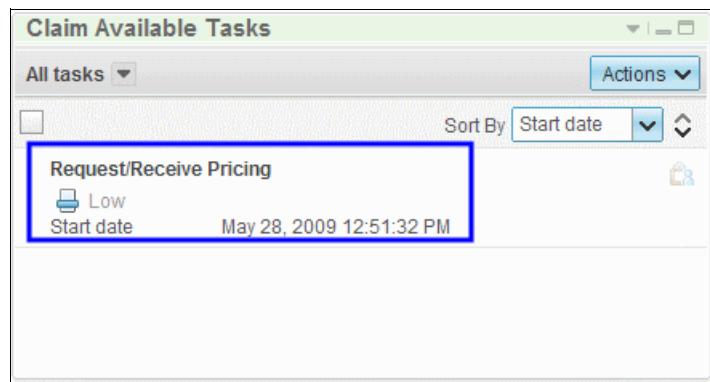


Figure 5-66 Claim a task to work on it

- Figure 5-67 on page 177 illustrates the other actions you can perform on a specific task, including:
 - Assign the task to a User ID
 - Claim the task,
 - Release the task,
 - Transfer the task

Additionally, you can change the status to Active, Complete, or On Hold.

Human Tasks									
Actions		Time	Creation Time	CreationTime	Description	Lifetime	Escalated	Escalation Counter	Expired
Assign task to user ID	Claim	2009-01-03 10:09:29	January 3, 2009	10:09:29 PM	January 3, 2009	103 d, 19 h, 47 m, 45.392 s	false	0	false
Release	Release	2009-01-03 10:09:29	January 3, 2009	10:09:29 PM	January 3, 2009	138 d, 7 h, 41 m, 7.053 s	false	0	false
Transfer task to user ID	Transfer task to user ID	2009-01-03 10:16:26	January 3, 2009	10:16:26 PM	January 3, 2009	10:35:19 PM	false	0	false
Active	Active	2009-01-03 10:16:26	January 3, 2009	10:16:26 PM	January 3, 2009	10:35:19 PM	41 m, 7.053 s	0	false
Complete	Complete	2009-01-03 10:19:58	May 22, 2009	6:19:58 AM	May 22, 2009	6:19:58 AM	Select provider for claim #001	2 d, 15 h, 47 m, 30.141 s	false
On Hold	On Hold	2009-01-03 10:19:58	May 24, 2009	11:17:58 PM	May 24, 2009	11:03:09 PM	Select provider for claim #CP003	14 m, 49.844 s	false
	★	May 24, 2009 12:00:49 AM	May 24, 2009	11:20:00 PM	May 24, 2009	11:20:00 PM	Request pricing for claim #CP003	40 m, 49.422 s	1
	★	May 26, 2009 1:11:55 PM	May 26, 2009	8:06:25 PM	May 26, 2009	8:06:25 PM	Select provider for claim #CP006	16 d, 22 h, 49 m, 41 s	false
	★	June 12, 2009 1:19:22 PM	June 12, 2009	1:07:47 PM	June 12, 2009	1:07:47 PM	Select provider for claim #CP020	4 m, 7.328 s	false
	★	June 12, 2009 1:19:22 PM	June 12, 2009	1:13:56 PM	June 12, 2009	1:13:56 PM	Request pricing for claim #CP020	5 m, 26.094 s	1

Figure 5-67 Available actions for administering human tasks

8. Once a task is claimed it will move to the next state.

Note: In working with a business model processes, a flow diagram can be helpful to visually help tell you where you are in the process and which activity is in a pending state for you to monitor.

9. To add a flow diagram, first follow the procedure mentioned in earlier steps to add a widget onto a page view. In this case, you are adding a **Diagram widget** depicting Health Care Insurance Co. ABC claims processing flow. Once set up, you will see the flow diagram (Figure 5-68 on page 178).

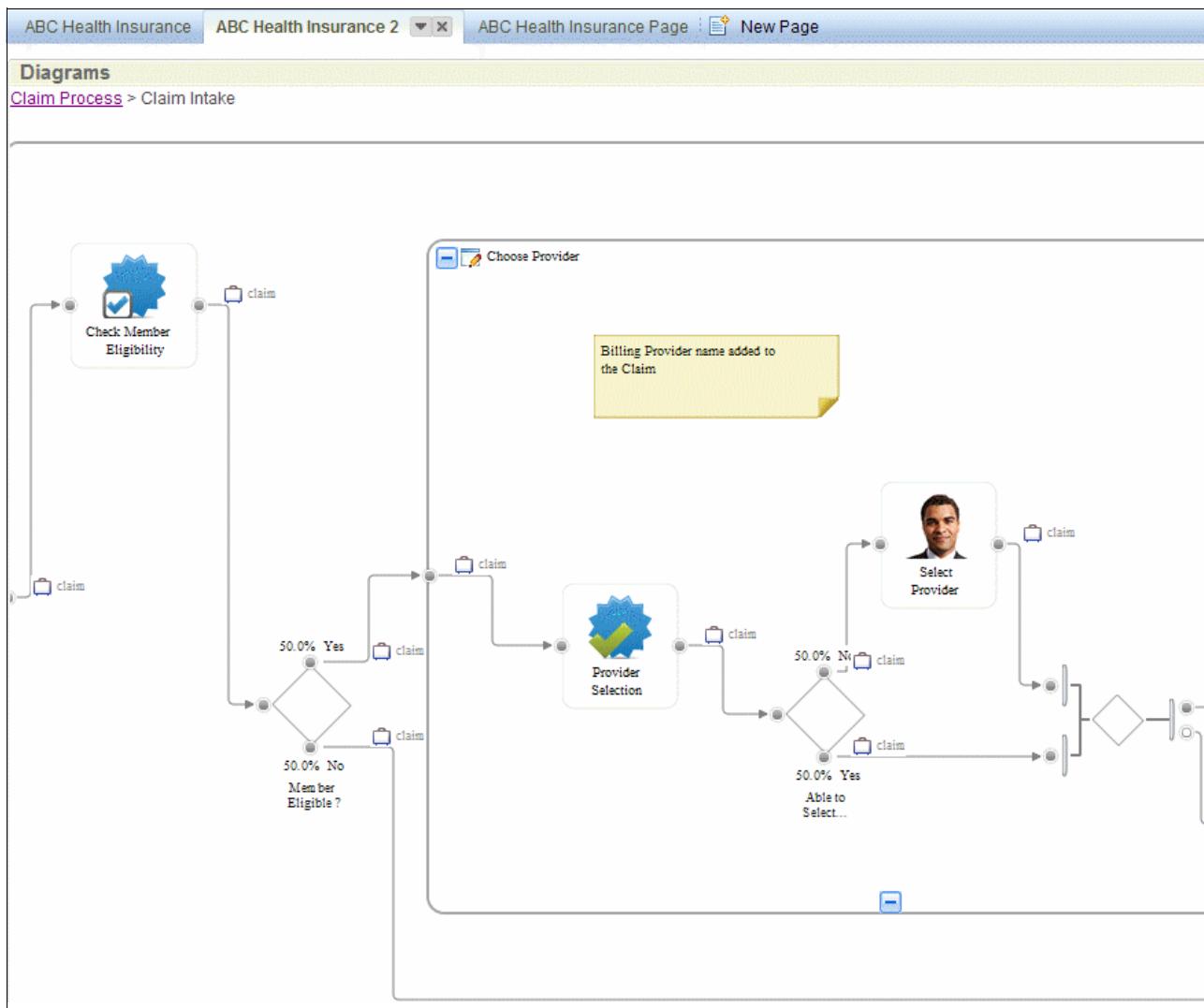


Figure 5-68 Flow diagram for Health Care Insurance Co. ABC claim process

- From within the flow diagram, you can further drill down on a process activity. If there is a sub-process diagram, you can see what state an activity is in under the main process.

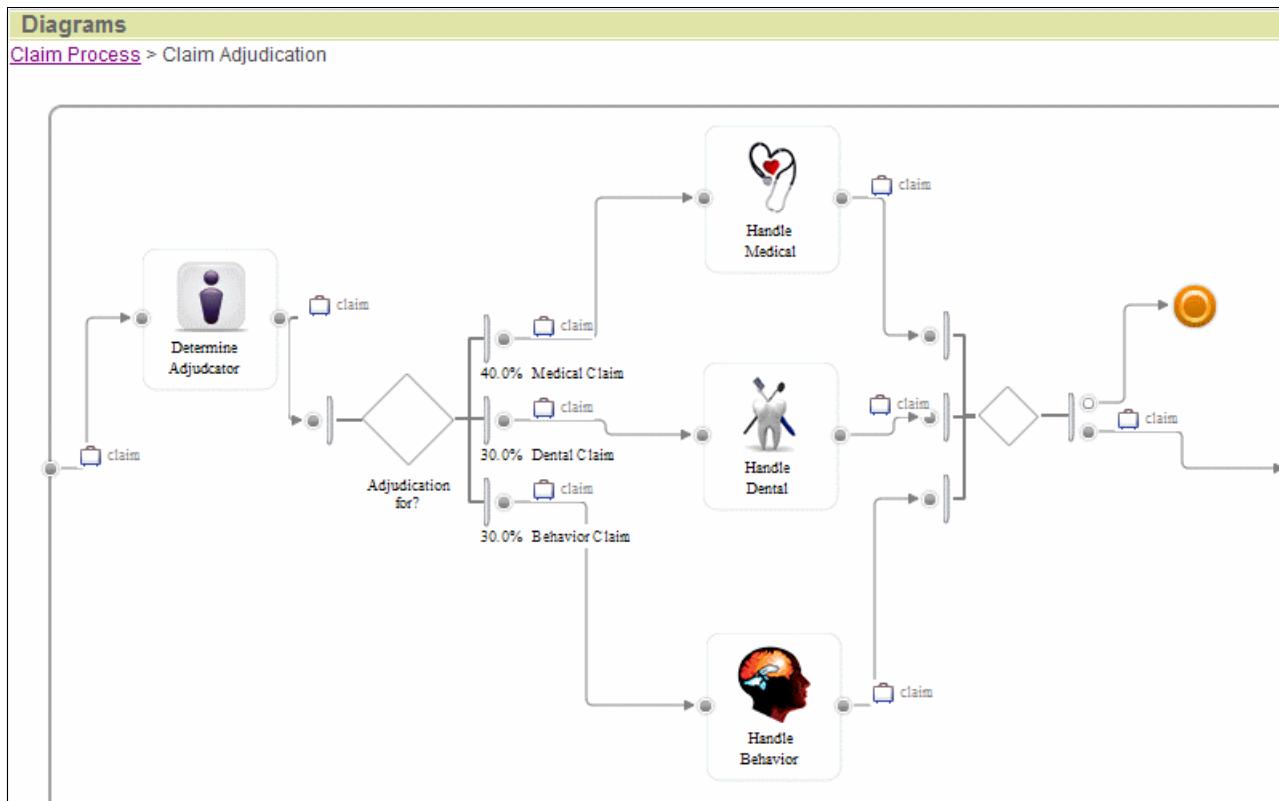


Figure 5-69 Drilling down on subprocess

In conclusion for this section, optimizing workload is based on inspecting the queues and monitoring the counts of the tasks being backed up and remaining in a pending state. You can decide when and what to reassign or how best and to whom to redistribute the workload. Again, the *unassigned tasks* and the *pending state tasks* are what you want to pay attention to.

5.8 Govern changes

As you manage your business process using the data, the analytical tools and the KPI adjustment capabilities from Websphere Business Monitor, you will eventually need to manage *change* in the business process. While change is inevitable going forward, your ability to pro-actively manage and control the change in an organized way will be critical to success.

Change may be the result of:

- ▶ improvements which your organization implements in order to become more efficient, or
- ▶ changes required to adapt to varying market and competitive conditions.

As you adapt and make changes to the process, you need to maintain traceability for changes in the process. According *IBM Prescriptive Guide for Business Process Management*, the key factors for governing change include:

- ▶ Artifacts should be stored and managed in a common repository in order preserve traceability across tools and changes being made.
- ▶ Key stakeholders should be identified and a review process put in place to govern change.

Figure 5-70 illustrates the focus on governing change within the greater context of the *Manage* phase.

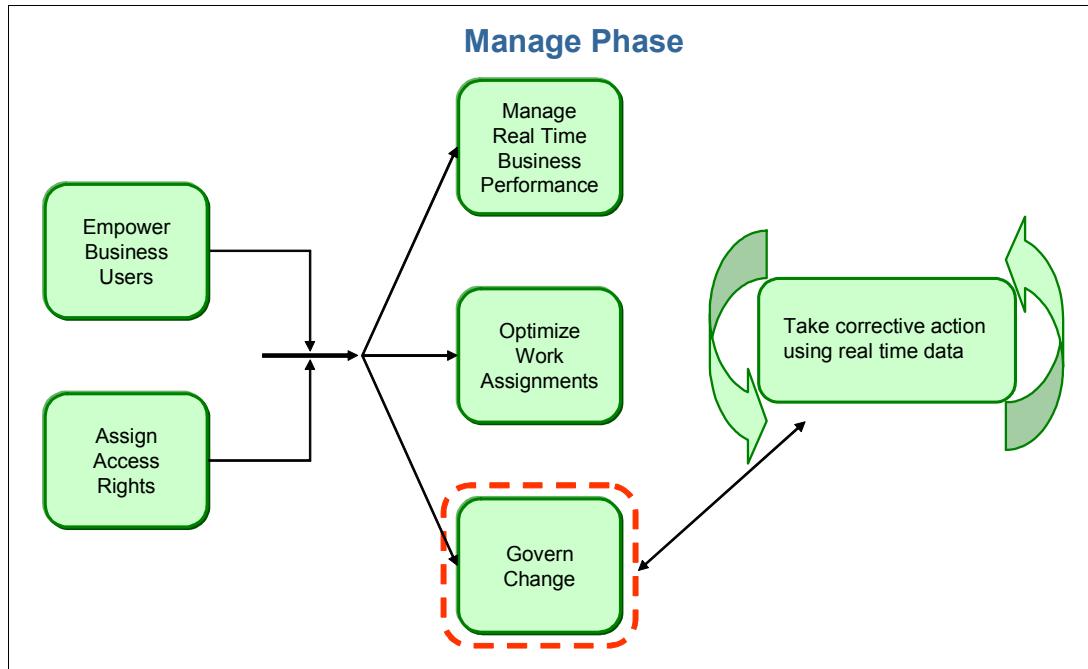


Figure 5-70 Representation of the steps in the manage phase

5.8.1 Governing Change within the context of Health Insurance ABC. Co.

You have implemented your first stage of monitoring capabilities. The KPIs you've defined will need periodic refinements as the dynamics of your line of business change.

- ▶ The exporting functionality of Monitor business space can be used to unload the real measurements acquired during the course of your monitoring periods. This data can be fed back into the front-end modeling process for re-simulation.
- ▶ This continuous cycle can help hardening your optimization of the Health Care Insurance Co. ABC process.
- ▶ Finally, this data can also be warehoused for future business intelligence purposes. Going forward, you can conduct, periodic, regular analyses of running process results in order to institute additional measures or even more monitor models to the greater enterprise.

Exporting monitoring data

You can export monitoring data to capture a specific point in time for the process, then archive this information to use it for future reference or comparison.

To export monitoring data to an XML file that can be used in WebSphere Business Modeler, use the **Export Values** page widget. Add the widget to an empty space on the Business Space page as has been described in earlier sections of this chapter.

To export monitoring data to an XML file:

1. Select the model you want to export.
2. Choose either **All versions of the selected model** or **Only the selected model**. (See Figure 5-71 on page 181)
 - a. Optional: To view the data, click **Preview Data**.

3. To export the XML file, click Export.

Export Values

Select a model:

Claim Process 2009-05-28 11:37:39

Export data from:

All versions of the selected model
 Only the selected model

Time range (filters the data to export by the time range you specify):

None
 Specify time range

Name	Value
InstancesCount	6
InstancesCount	3
InstancesCount	4

Figure 5-71 Export Values widget of Monitor business space

5.9 Chapter Summary

In this chapter, we have first defined what is covered in the *Manage* Phase and discussed the value provided by giving you the ability to monitor and adjust your KPIs, set alerts, and

Key value point: During the *Manage* phase, you pro-actively empower users to *monitor* and *manage* real time business performance using KPIs and alerts based on changing business conditions. You can then take corrective actions against process instances where the process is not executing as efficiently as needed.

This chapter provides specific examples on how to configure the Business Space specific to your monitoring needs, using the context and business process from Health Care Insurance Co. ABC for specific examples.

Finally - going forward, note that business processes will not remain static, but will need to continually be adjusted and improved in order to continuously adapt to market conditions. Accordingly, this will be an iterative process of analyzing the data, then taking corrective action using real time data.

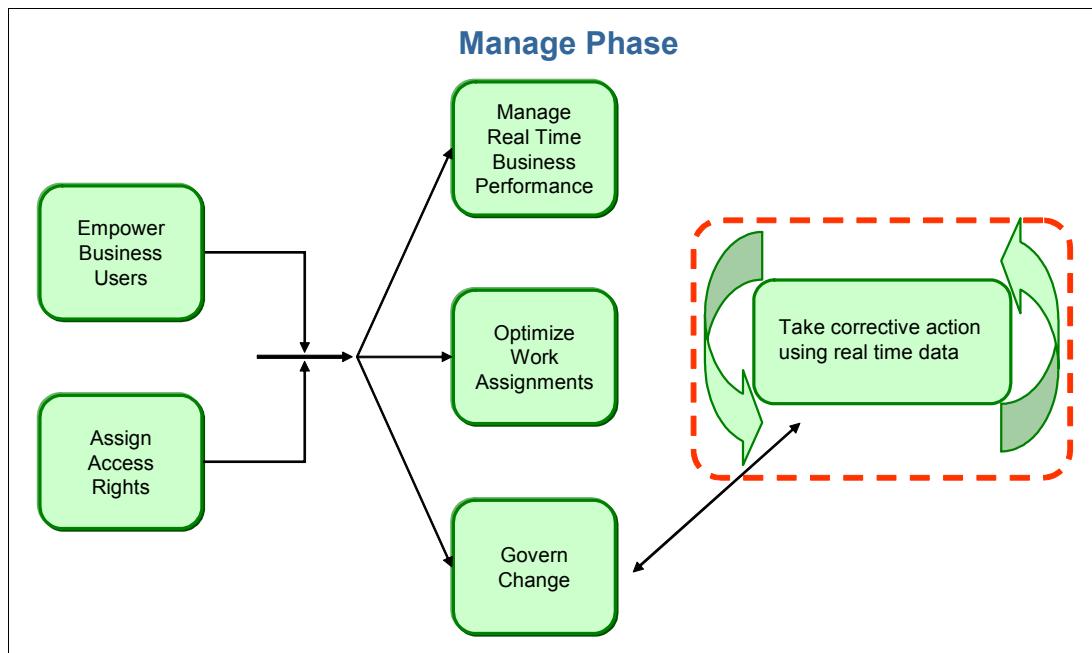


Figure 5-72 Representation of the steps in the manage phase

For further details on the manage aspect of BPM refer to the references listed in section, “Related publications” on page 247.



Deployment

The previous chapters in this IBM Redpaper primarily focus on the business phases of BPM, targeting a fundamental re-thinking of companies' processes to achieve both efficiency and most effectively realize their business goals. The work in the earlier phases, namely, *Discovery, Storyboarding, Experience* and *Manage*, allows the business leaders and business analysts to review, re-engineer and streamline their business goals within BPM. Their focus can be to:

- ▶ concentrate on the core processes that really matter to the organization's business goals,
- ▶ be customer oriented, by putting both external customers and internal peers into the center of all change considerations,
- ▶ re-examine and possibly change completely the old way of working
- ▶ change existing structures to match the new processes.

With this chapter, we now focus on working with the IT team to implement the BPM Solution. To make BPM a full success, it is fundamental and highly important to involve IT. The full strength of BPM is only realized if and when the documented and simulated model finally is also executed, monitored and delivers real data to be improved. A BPM approach must use all possible and efficient information technologies to ensure a successful implementation of the new core Business Processes.

This leads to the fifth point of the BPM prescriptive guide approach; *Deployment*.

- ▶ Deployment requires IT to offer all possibilities to make the Business Processes executable and automatizable across the complete organization of the company.

In this chapter, we begin with discussing an approach to thinking about Deployment, namely what needs to be done where and by whom. We begin with the foundation of SOA and how this fits with BPM. We then proceed to outline the specific deployment steps necessary to arrive at a complete solution in a production environment.

6.1 Objectives of the steps of the deployment phase

The objective of the Deployment Phase is to put the solution into production. More specifically, it focuses on the following tasks:

- ▶ Design BPM solution architecture
- ▶ Setup IT Environments
- ▶ Prepare and Deploy Production Artifacts
- ▶ Unit Test Solution
- ▶ Monitor health of your solution to ensure process integrity

IT is going to focus on “Deployment”. The objective of “Deployment” consists of transforming the outcome of the Interactive Process Design into a really “production ready” executable application.

Concretely this means that a responsible IT team will be in charge of:

- ▶ A capability to assemble and deploy Business Processes. This relates to the transformation, packaging, distribution, and installation of the models created during the modeling activity in Discovery, Storyboarding, Experience and Manage. The transformation involves applying a so called “model-driven architecture (MDA) approach” to transform platform-independent models to technology-specific implementations. The packaging and distribution is driven by the logical system topology for the running of the models.
- ▶ An infrastructure to be used to run a process and provide possibilities to monitor the processes.

Business Processes are accompanying the whole development of a product and going horizontally through the company. They easily spawn different IT systems from different departments using different protocols. Nobody can afford a “Big Bang” approach. It is strongly important to rely on existing legacy IT systems and departments. This easily faces an IT department to a huge amount of technical integration challenges as shown on Figure 6-1.

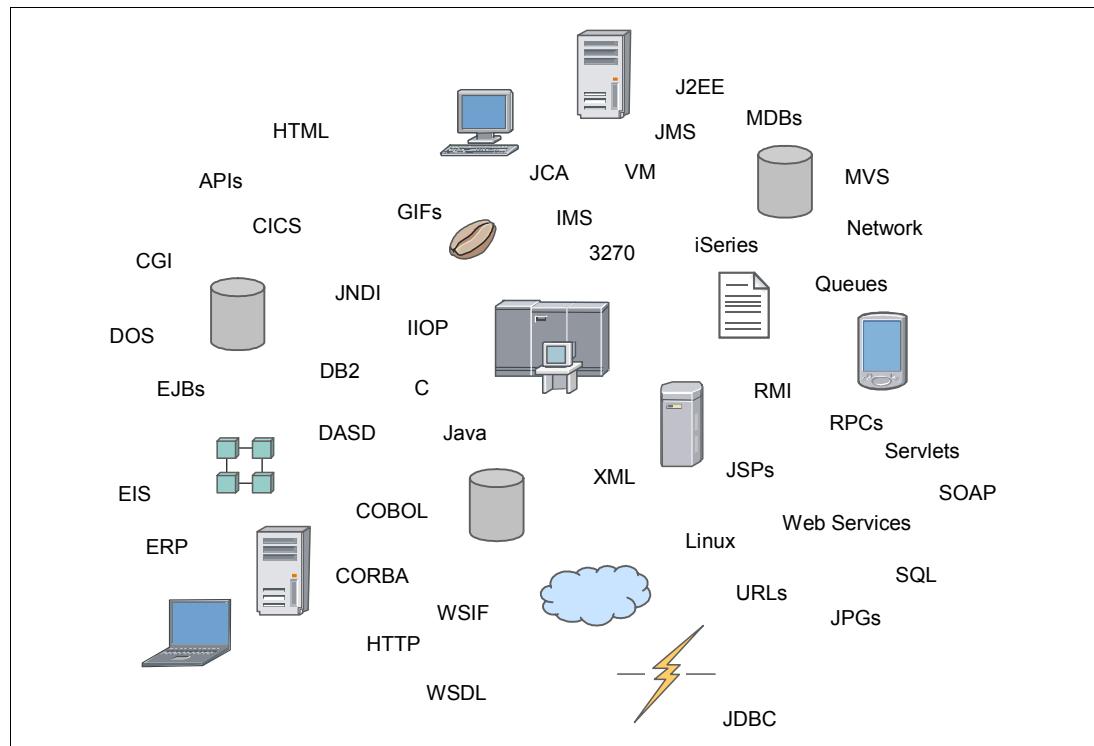


Figure 6-1 Common integration challenges

It is definitely not recommended to integrate all possible protocols from scratch. Rather we recommend the usage of a strong integration tooling and infrastructure such as WebSphere Integration Developer.

More concretely, we selected the following approach during the Deployment Chapter. It is strongly oriented on the approach of the *IBM Business Process Management Prescriptive Guide to Solution Implementation*. Figure 6-2 on page 186 illustrates an overview of these tasks from a visual model perspective.

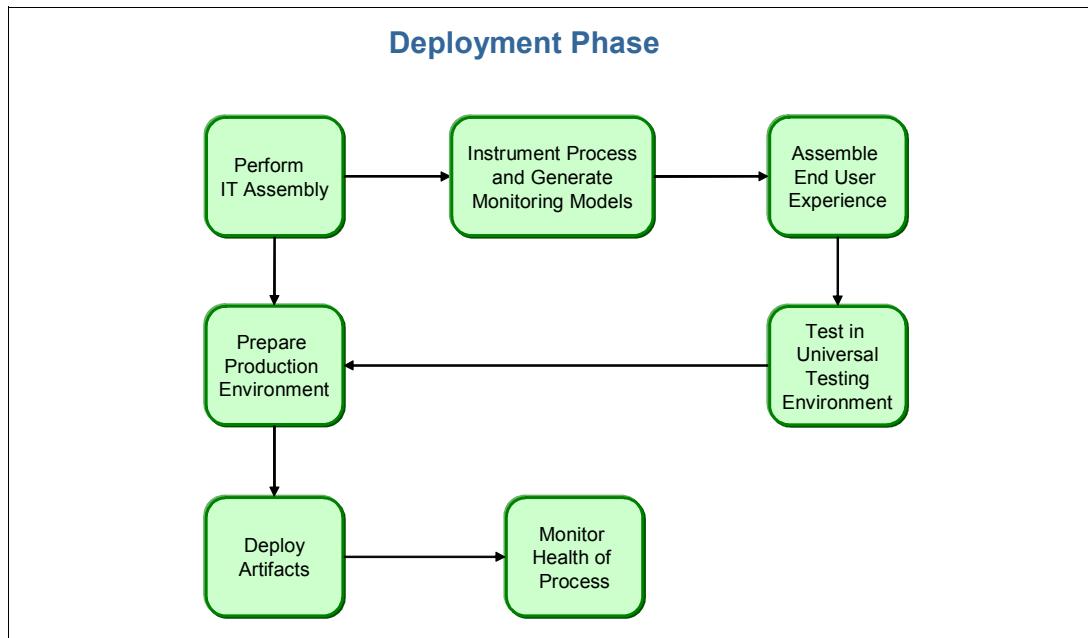


Figure 6-2 Visualization of the steps performed within the Deployment phase

The steps outlined within this chapter are:

- ▶ Perform IT Assembly
- ▶ Instrument process for monitoring and generate monitoring models
- ▶ Assemble End User Experience
- ▶ Test in Universal Test Environment
- ▶ Prepare Production Environment
- ▶ Deploy Artifacts
- ▶ Monitor health of processes

Throughout this Deployment chapter, we also use WebSphere Integration Developer to assemble the solution. Additionally to the steps above we also recommend spending time on choosing your reference architecture and creating your target architecture. A correct approach for an Integration Architecture is absolutely mandatory for BPM to be deployable in all its strength. This redpaper however does not cover architecture topics.

Note: More details on WebSphere Integration Developer, can be obtained in the IBM BPM Information Center.

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.websphere.wps.620.doc/welcome_wps_dev.html

6.2 Perform IT Assembly

Figure 6-3 on page 187 illustrates the current focus of this section within the context of the overall *Deployment* phase

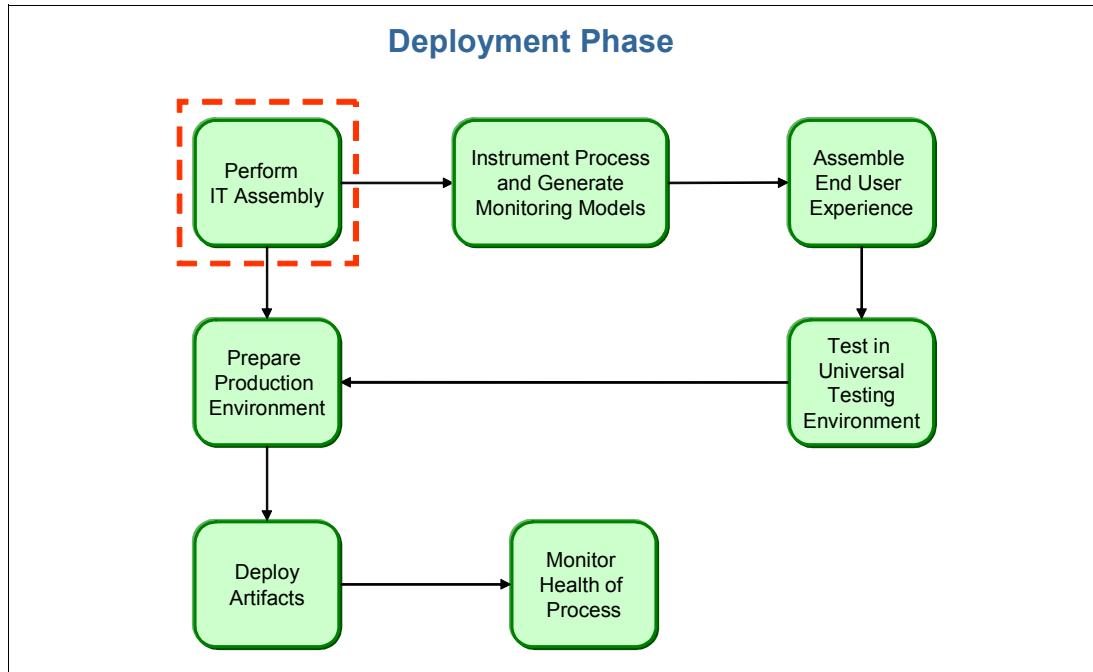


Figure 6-3 Perform IT Assembly

6.2.1 Prepare Export

To be able to leverage a maximum of the generation capabilities of WebSphere Business Modeler, the steps below are necessary to be performed on every automatic webservice invoke. If the steps are not performed, adaptations to namespace and porttype may be necessary in further steps.

The screenshot shows the 'WSDL Interface Attributes' tab in the WebSphere Business Modeler interface. It displays fields for 'Target namespace' (set to <http://www.betterhealthcare.com/setprovider>) and 'PortType name' (set to 'setprovider').

Figure 6-4 Add namespace and porttype information

Figure 6-5 Add Component information and select binding type

Note: Currently only the implementation type “Web Service binding” is supported.

6.2.2 Export WebSphere Business Modeler artefacts

The next steps are going to perform an export of Artefacts from WebSphere Business Modeler. A project interchanged also known as PI is an archive file which can be easily exchanged between WebSphere Integration Developer environments. A PI can also be used as input for manual commandline build named “ServiceDeploy”.

1. Click **File** → **Export**. A dialog box will pop up.

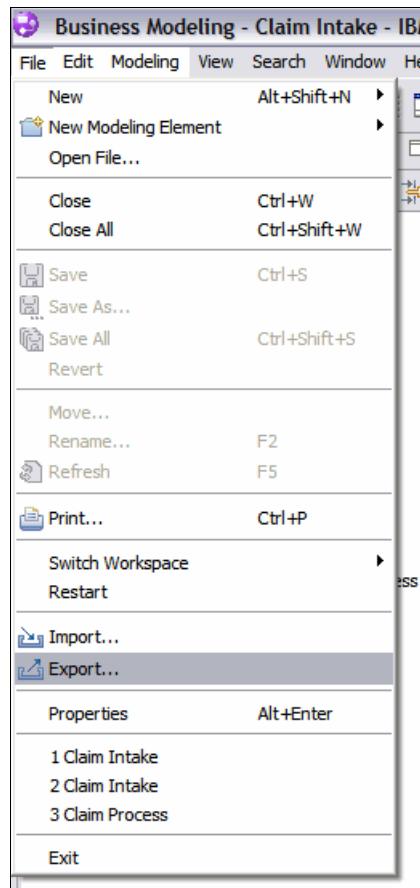


Figure 6-6 Select Export from the Menu

2. Select “WebSphere Integration Developer” as a format or product to which you want to export. This is depicted in Figure 6-7 on page 189.

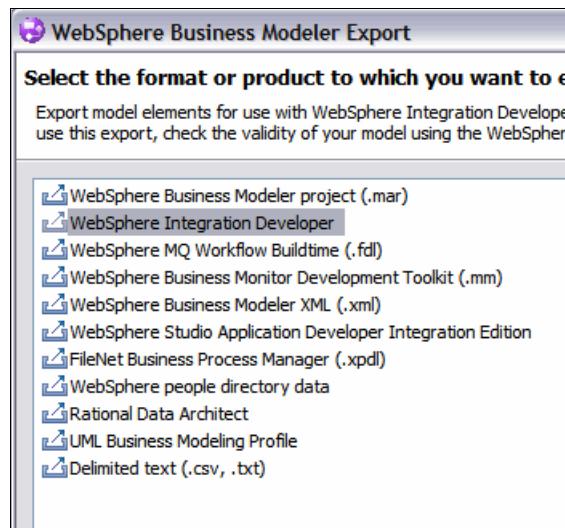


Figure 6-7 WebSphere Integration Developer as Export format

3. Type a directory to export too. Click Next to continue.

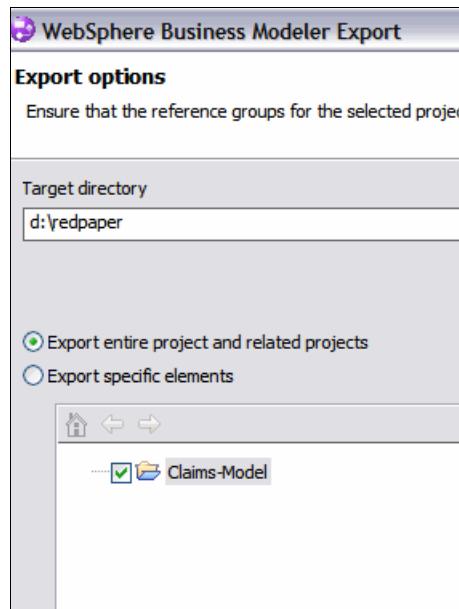


Figure 6-8 Type directory

4. Select “Export entire project and select related projects. Click Next to continue

Modeler Project Name	Business Logic Module Name	Implementation Module Name	Library Name
Claims-Model	Claims-Model	Claims-Model_Impl	Claims-Model_Lib

Figure 6-9 WebSphere Integration Developer export details

5. Leave defaults and click Next to continue.

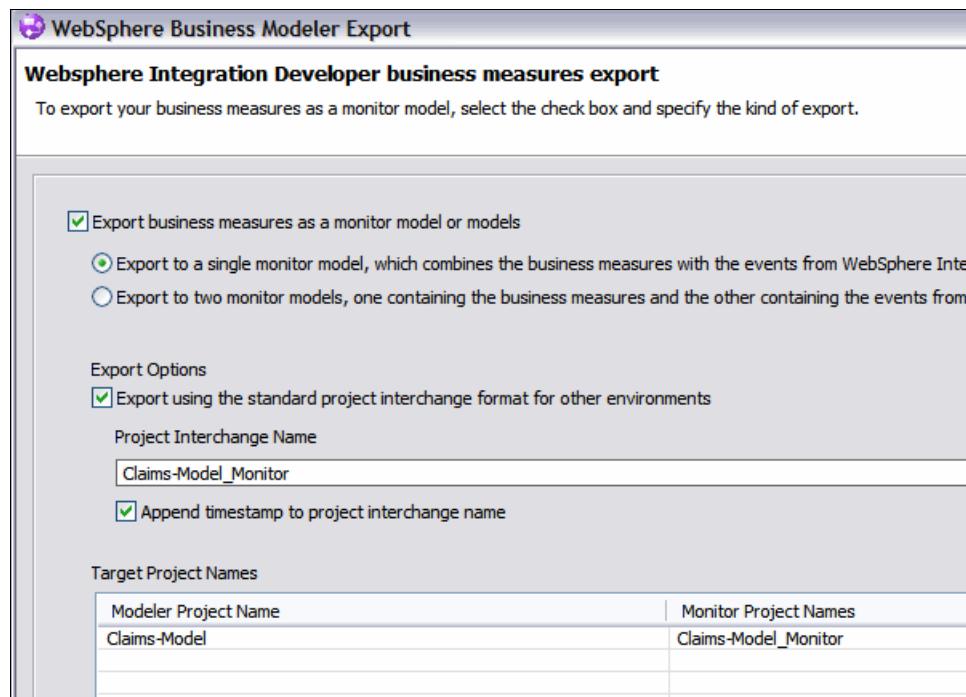


Figure 6-10 Websphere Integration Developer business measures export

6. Select the checkbox "Export business measures as a monitor model". Click "Next" to continue.

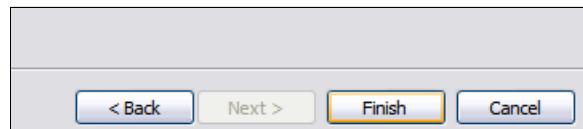


Figure 6-11 Click Finish to end export

Screenshot depicted on Figure 6-12 on page 191 shows the exported Project Interchange™ files.

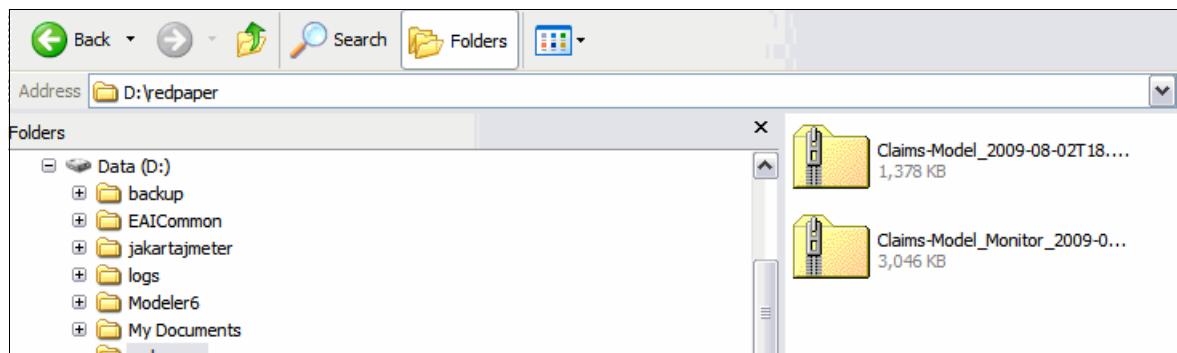


Figure 6-12 Exported project interchange files

Note: More details on export from WebSphere Business Modeler Advanced to WebSphere Integration Developer can be obtained under link
<http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.btools.modeler.advanced.help.doc/doc/tasks/transforming/exportingtowid.html>.

6.2.3 Import Project Interchange into WebSphere Integration Developer

As a user you are going to do this steps to be able to edit the generated Business Process Model and Monitor Model within WebSphere Integration Developer and WebSphere Business Monitor toolkit.

The following steps are going to lead through an import of a Project Interchange into WebSphere Integration Developer :

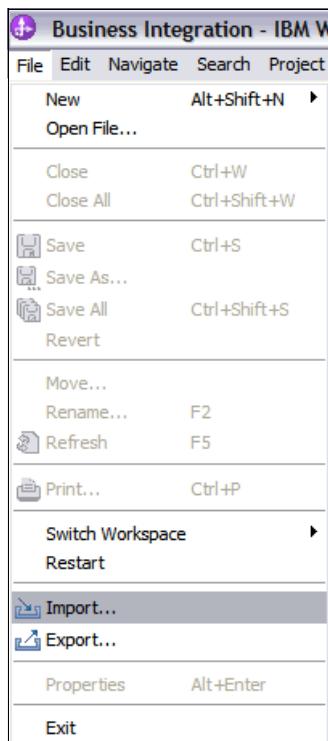


Figure 6-13 Select Import from the menu

1. After having started WebSphere Integration Developer using a new Workspace : Select **File → Import** from the main Menu.

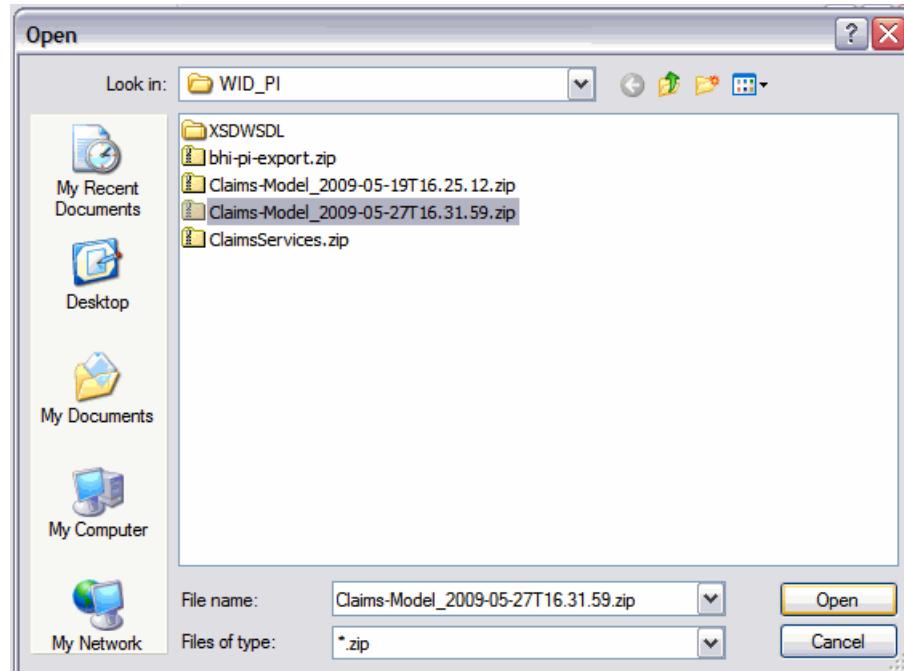


Figure 6-14 Import Claims-Model Project Interchange

2. Next import Claims-Model Project Interchange.

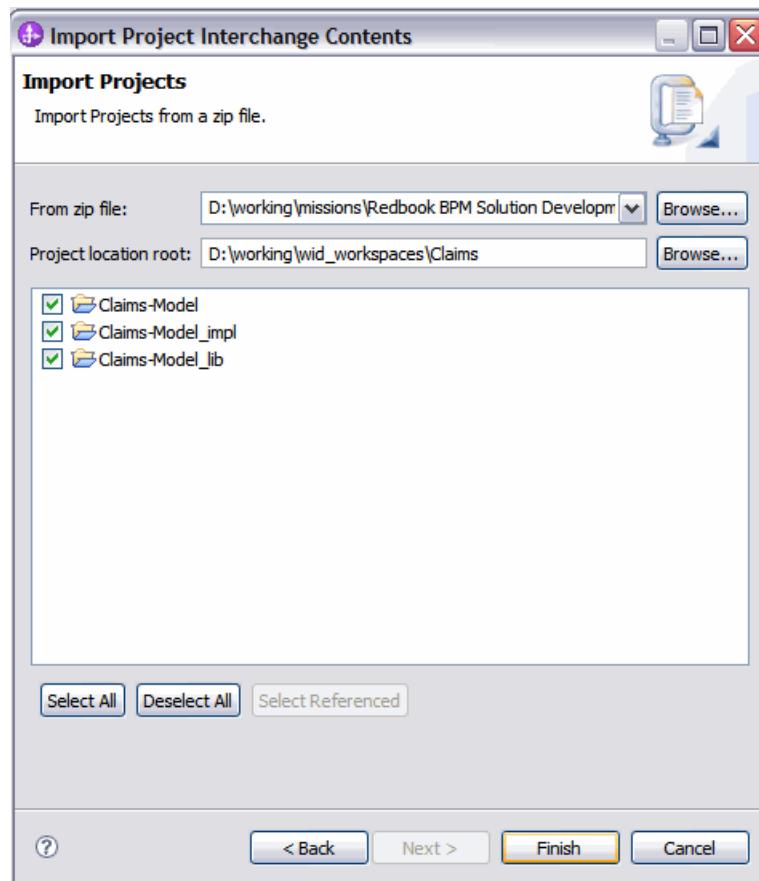


Figure 6-15 Project Intechange Contents

3. Make sure to select the correct content in the Project Interchange File. In this case the whole content is necessary. Refer to Figure 6-15 for details. Click Finish to end the import process.

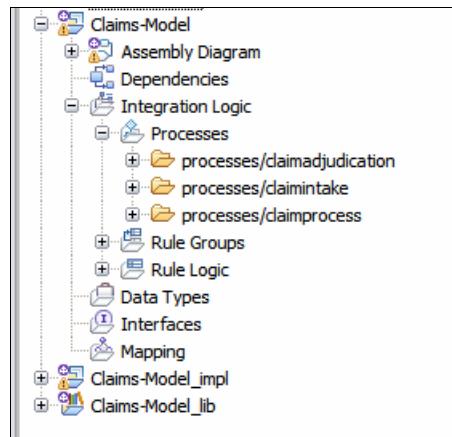


Figure 6-16 Explore imported artefacts

The following 3 artefacts have been imported :

- ▶ Claims-Model : Contains the exported BPMN flow translated to BPEL. The flow can be opened within WebSphere Integration Developer and customized.
- ▶ Claims-Model_Impl : Contains a series of Mediation Modules (Dynamic Service Gateways) which are guaranteeing the connectivity between the BPEL process Module and underlying services. A screenshot from the Assembly diagram of the module in question is depicted on Figure 6-17 on page 195.

Note: Each of these mediation modules contains a mediation flow including a "Dynamic Endpoint Lookup Primitive". Using this technology the real endpoint can be determined through a lookup into the WebSphere Service Registry and Repository.

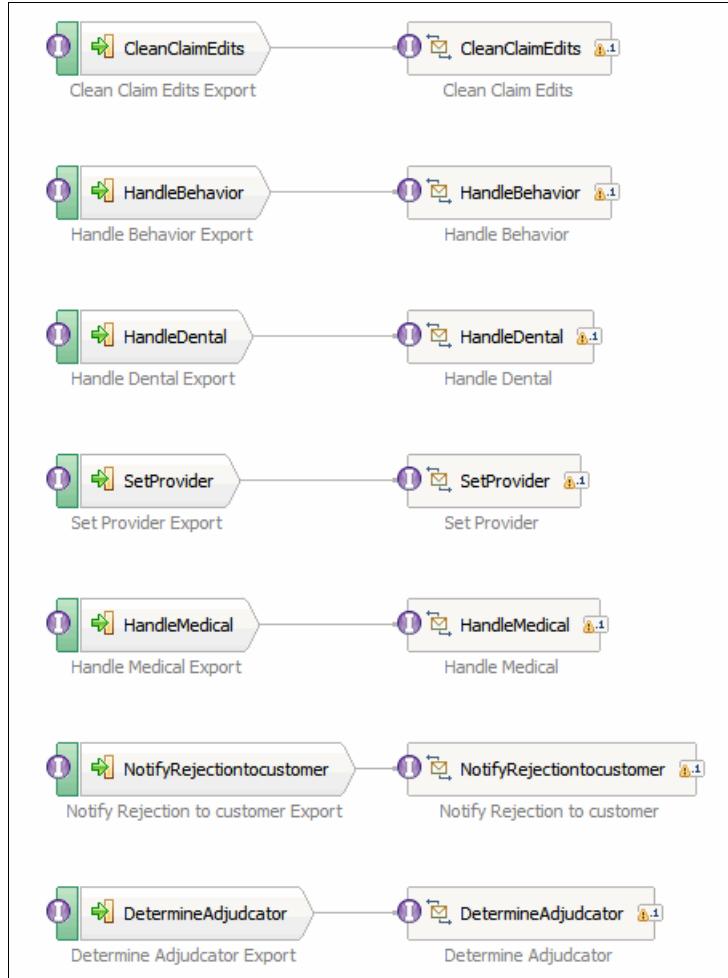


Figure 6-17 Mediation Modules (Service Gateways) mediating between Business Process to underlying services

- Claim-Model_lib; Contains all interfaces and xsd's from the Business Process Layer. It also contains interfaces of outbound WebServices.

Note: The Service interfaces need to be implemented to enable the connectivity of the BPEL process to underlying services. Typically these Services can be implemented as Mediations negotiating between the generated mediations (Claims-Model_impl) and the corporate service layer. These services are included in a Module named “Claims Services”.

To make the further steps easier and more meaningful, and to permit execution at a very early stage we fully implemented these services as stub services. These stub services simulate real services. Stub services are depicted on Figure 6-18.

- Each of the service interfaces referenced by the initial WebSphere Business Modeler Project has been implemented by a Dummy WebService.
- We explicitly generated exports with WebServices Bindings.
- When generating a WebService binding automatically an endpoint and port will be generated. Once deployed each of the components below are accessible as WebServices.



Figure 6-18 Implemented Dummy WebServices

The next steps explained within section below are going to show how these WebServices can be published in the WSRR with goal that they are found out of the Mediation Modules generated during the export to WebSphere Integration Developer.

Note: The following article :

http://www.ibm.com/developerworks/websphere/library/techarticles/0906_jackson2/0906_jackson2.html explains in detail how to implement service gateways with endpoints in WSRR.

6.2.4 Load Interface files into the Service Registry and Repository

The following steps are going to show how to load interface files into WebSphere Service Registry and Repository.

At a first stage the generated WSDL files including their Service endpoint information needs to be exported to the filesystem. Easiest is to export these WSDL's directly using the Archive Wizard within the Export Menu.

The next steps are going to show how to export WSDL files to a ZIP Archive and import these files into WSRR.

1. First right-click “Claims-Model_lib” to obtain the context menu. Select Export from the Menu. This is depicted on Figure 6-19 on page 197.

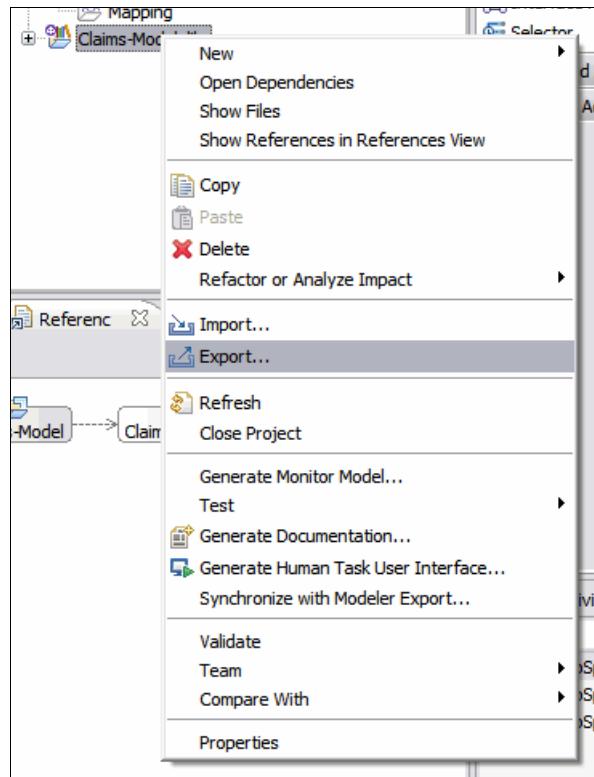


Figure 6-19 Select “Export” from the context menu

2. Next select **General → Archive File**.

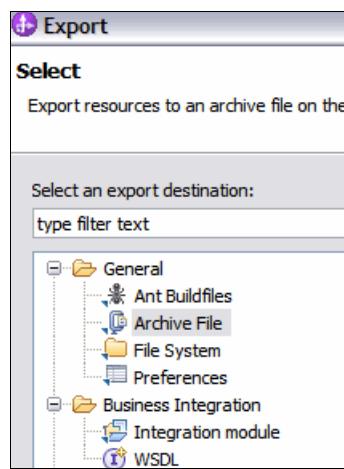


Figure 6-20 Select Archive File

3. Next within the Export Dialog, unselect all files other then WSDL or XSD. Only these files are interesting to be imported into the WebSphere Registry and Repository. Click finish to complete.

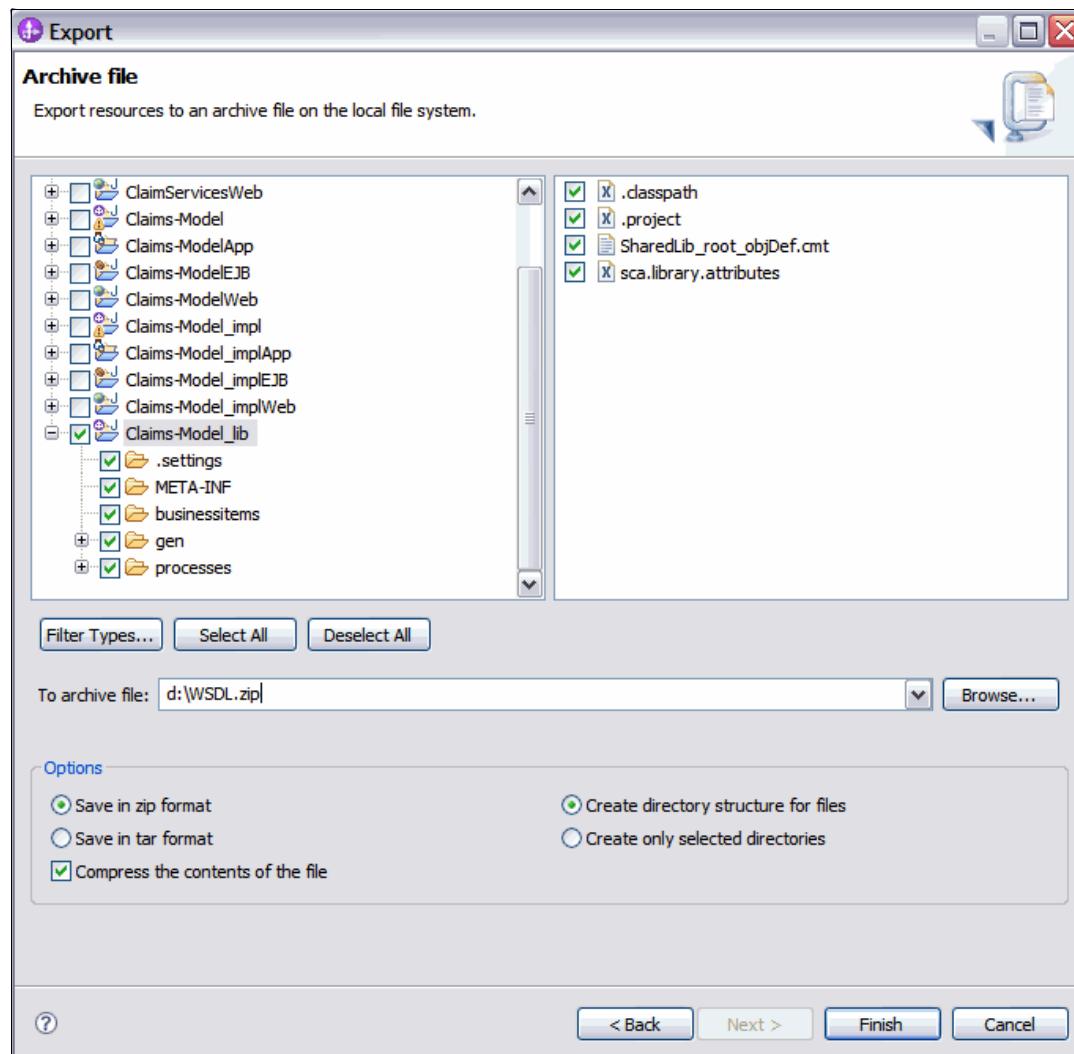


Figure 6-21 Select WSDL and XSD files and click finish

4. Now open a Web Browser and access URL http://localhost:<your_port>/ServiceRegistry. Logon to the page and select **Service Documents** → **WSDL Documents**.

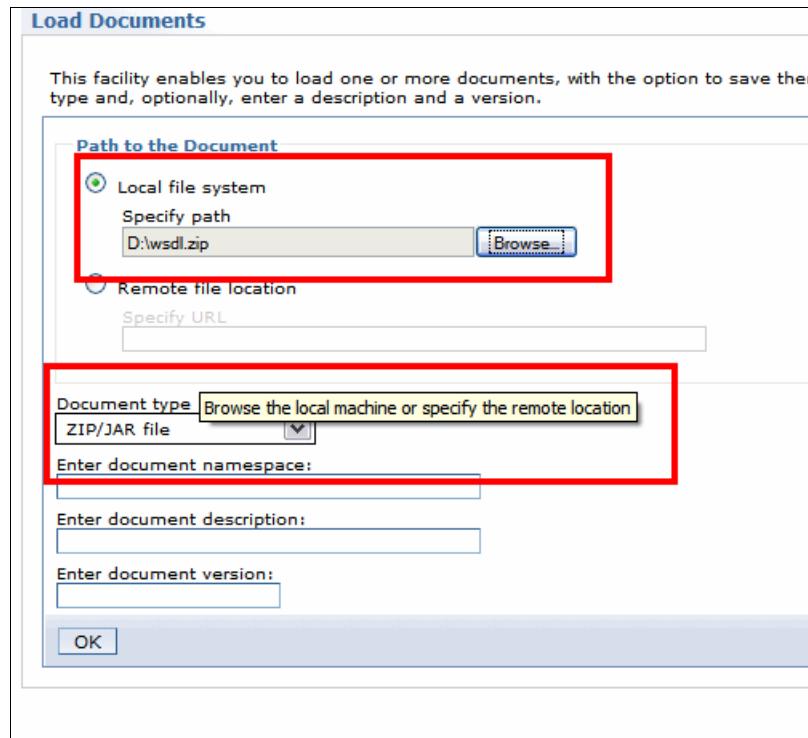


Figure 6-22

5. Browse to the ZIP file (In this case WSDL.zip), select ZIP/JAR as a Document Type and click "OK" to continue.

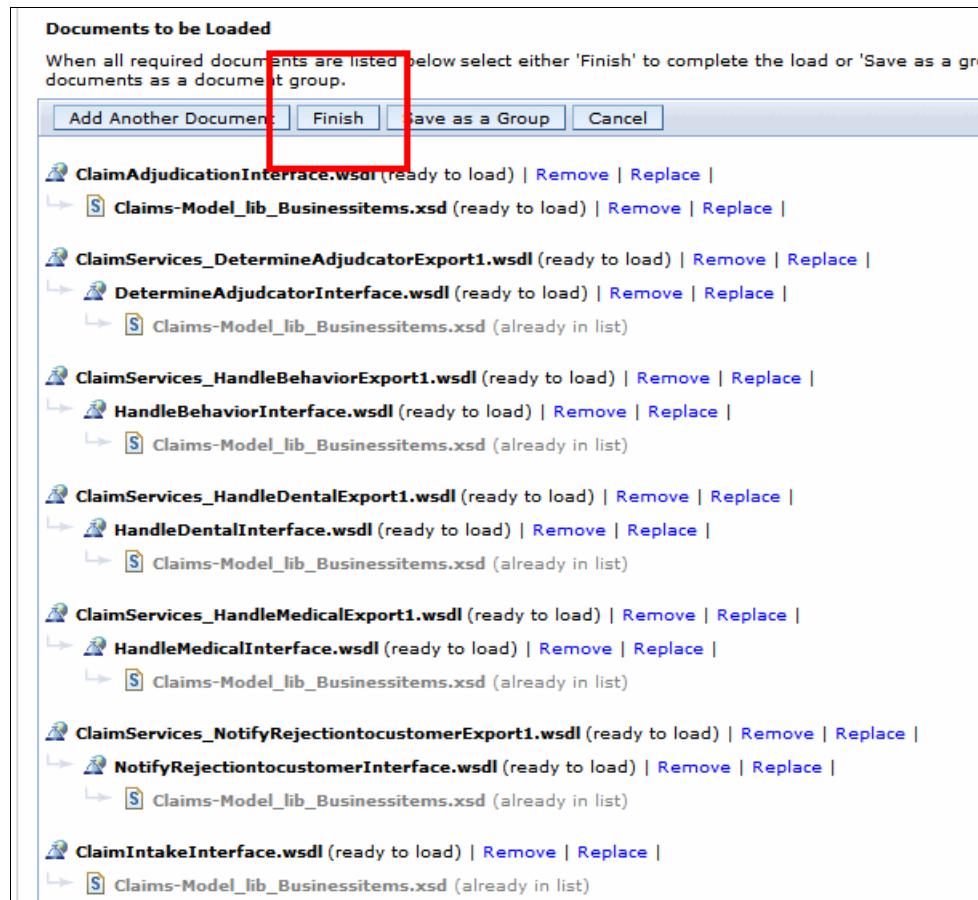


Figure 6-23 Review service documents to import (WSDL's)

- Click "Finish" and wait until documents successfully uploaded.

Note: The information center for WebSphere Service Registry and Repository is an ideal place to explore usage of the tool.

http://publib.boulder.ibm.com/infocenter/sr/v6r2/index.jsp?topic=/com.ibm.help_swg.ic.doc/wsrr_homepage.htm

If required, the endpoint can now directly be changed within the WebSphere Service Registry and Repository Console. Figure 6-24 on page 201 below depicts this possibility. It can be obtained after clicking :

WSDL Documents > ClaimServices_HandleBehaviorExport1.wsdl >
 HandleBehaviorExport1_HandleBehaviorHttpService >
 HandleBehaviorExport1_HandleBehaviorHttpPort >
 HandleBehaviorExport1_HandleBehaviorHttpPort_SOAPAddress > Edit Relationships.

Note: WebService Endpoints can be changed using the Registry and Repository Console. This makes dynamic change easily possible and guarantees services to remain loosely-coupled.

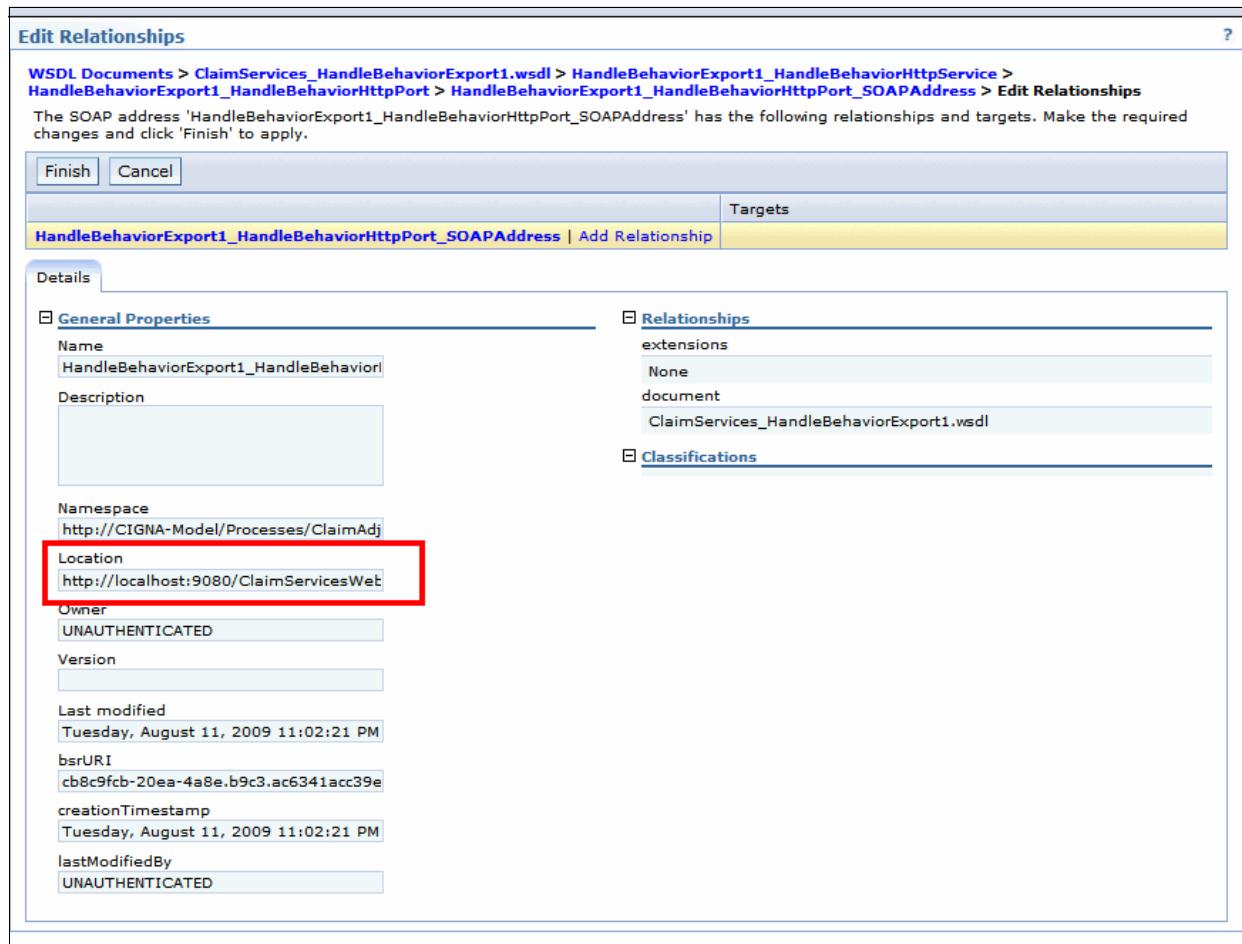


Figure 6-24 Change WebService Endpoint

6.2.5 Mediation Modules and Business Integration Modules

A module is a unit of deployment that determines which artifacts are packaged together in an Enterprise Archive (EAR) file. Components within a module are collocated for performance, and can pass their data by reference. A module can be seen as a scoping mechanism; that is, it sets an organizational boundary for artifacts.

A module is a composite of service components, imports and exports. The service components, imports and exports reside in the same project and root folder, which also contain the wiring that links the components and the bindings needed for the imports and exports. A module may also contain the implementations and interfaces referenced by its components, imports and exports, or these may be placed in other projects, such as a library project.

There are two types of modules. First, a module called *business integration module* that contains a choice of many component types, often used to support a business process. Second, a module called a *mediation module*, which contains up to one component, one or more mediation flow components, plus zero or more Java™ components that augment the mediation flow component.

Before entering into details we would recommend to explore the various components we obtain after exporting the WebSphere Business Modeler workspace into WebSphere

Integration Developer. A good practice consists of generating first an Integration Solution out of the imported artefacts which gives a good overview of all the artefacts from the Workspace.

The following steps are going to show how to create a new Integration Solution.

1. Click “New” in the upper-right corner of the Business Solutions Project view. Details in Figure 6-25.

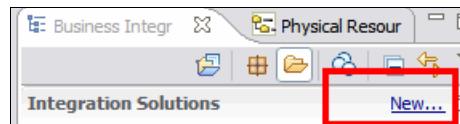


Figure 6-25 Create new Integration Solution

2. The dialog box Figure 6-26 appears. Type a name such as for example “Better Healthcare”. Click “Next” to continue.

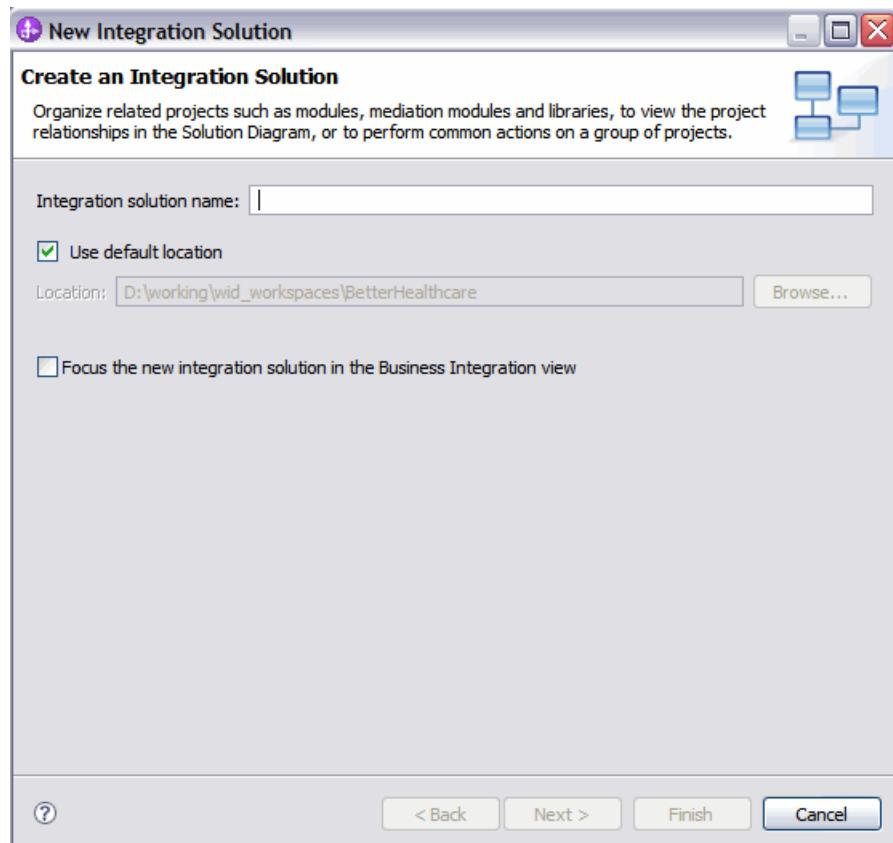


Figure 6-26 Type Integration solution name

3. Select existing artefacts to be included in the Integration Solution. and click “Next” to continue.

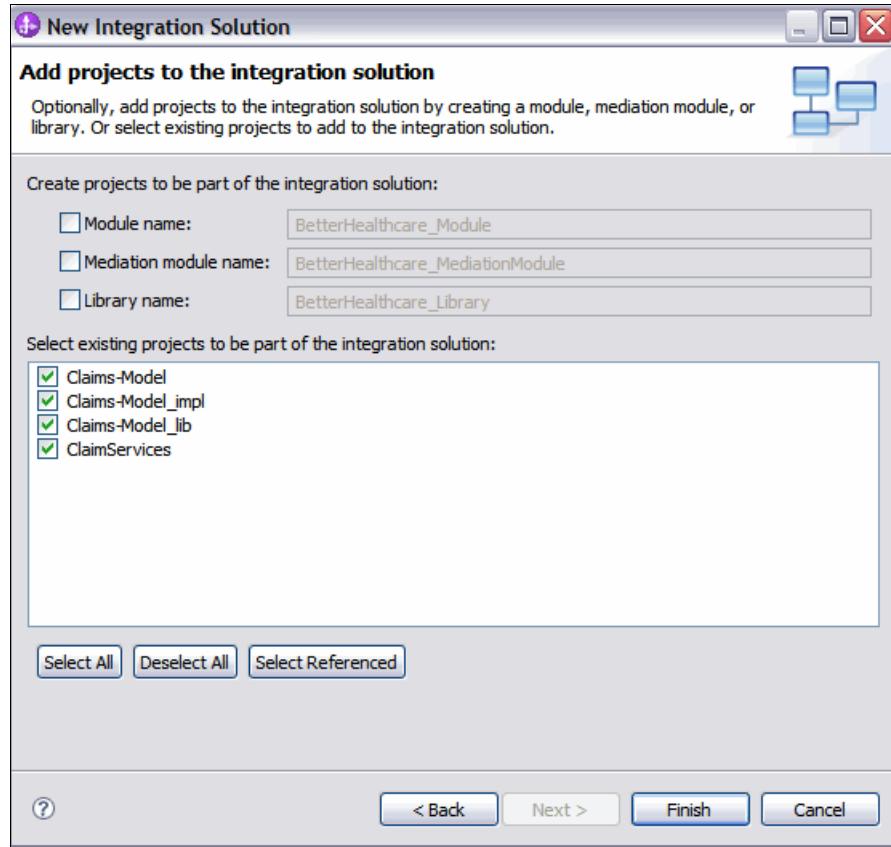


Figure 6-27 Select modules to be included in an integration solution

Note: The existing artefacts include a Project named “Claims Services” which are basically Dummy Services which creation is out-of-scope of this redpaper. More on the dummy services within section 6.2.3, “Import Project Interchange into WebSphere Integration Developer” on page 192.

4. Open the Integration solution and review content. The integration solution is depicted in Figure 6-28 on page 204.
 - ▶ (1) shows Module named “Claims-Model”. It includes the generated BPEL Business Process, Generated forms, and Maps associated to the BPEL process.
 - ▶ (2) shows Module named “Claims-Model_Impl”. It includes the generated Mediation modules which guarantee dynamic lookup to the services (which are dummy services for the moment and will really be implemented in the following section of this paper).
 - ▶ (3) shows Module named ‘Claims Services’. It includes the dummy Java Services implemented as WebServices with SOAP/HTTP Bindings.

Note: As of version 6.2.0.1 only WebServices Bindings are supported in Interactive Process Design. Next versions will also implement other bindings such as JMS or SCA.

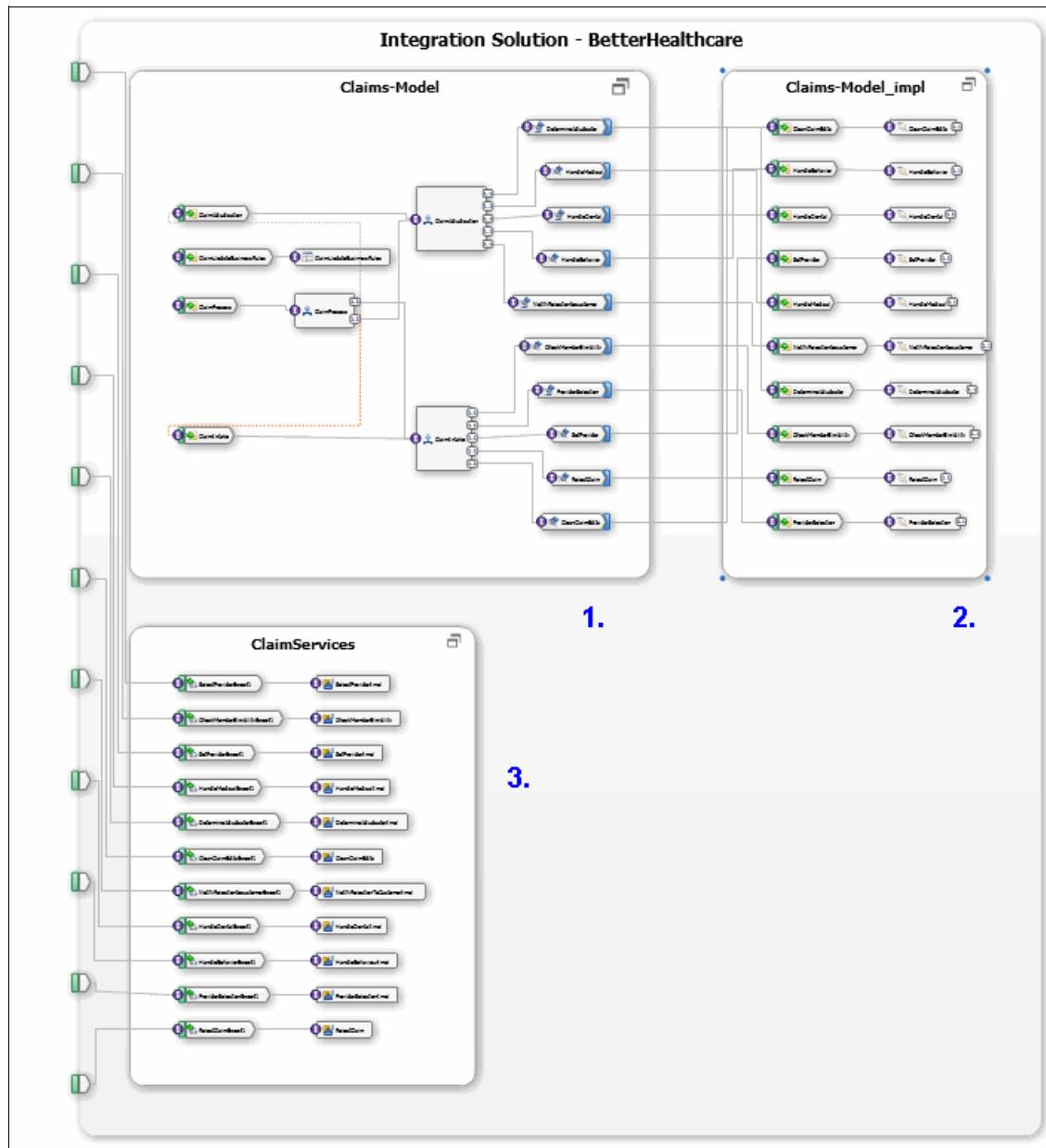


Figure 6-28 Review Better Healthcare Integration Solution

Why are there two module types?

- ▶ A Business Integration Module is primarily designed for business processes.
- ▶ A mediation module is like a gateway to existing external services, which is common in enterprise service bus architectures.

Mediation Modules included Mediation Flows and are responsible to intercept and modify messages that are passed between existing services (providers) and clients (requesters) that want to use those services. They are most commonly used for transforming data and accessing header information, such as JMS, MQ or SOAP headers.

Mediation modules can be deployed on the WebSphere Enterprise Service Bus or the WebSphere Process Server.

Introducing mediation flows between services enables you to process the messages that are being passed between these services. A message is a communication sent from one application or service to another application or service. Mediation flows provide the logic that processes the messages. For example, mediation flows can be used to find services with specific characteristics that a requester is seeking and to resolve interface differences between requesters and providers. For complex interactions, mediation primitives can be linked sequentially. Typical mediations include:

- ▶ Transforming a message from one format to another so that the receiving service can accept the message
- ▶ Conditionally routing a message to one or more target services based on the contents of the message
- ▶ Augmenting a message by adding data from a data source

Note: More details on mediations can be obtained in the IBM Information Center under the following URL :

<http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.wbit.620.help.sib.mediation.ui.doc/topics/cmediations.html>

Business Integration Modules as already said include service components which can be implemented according to a variety of service implementation types :

- ▶ Java : An implementation of a component in Java is referred to as a Java object.
- ▶ BPEL4WS : A BPEL process component implements a business process.
- ▶ Selector : Integrated applications contain many ways to interact. A selector is used to route an operation from a client application to one of several possible components for implementation.
- ▶ Human Task : A human task component implements a task done by a person. It represents the involvement of a person in a business process.
- ▶ State Machine : state machine is an alternative way of creating a business process. A state machine is suited for processes related to changing states rather than a flow of control. A state defines what an artifact can do at a point in time. A state machine is an implementation of this set of states. A state machine is implemented as BPEL.
- ▶ Interface Map : An interface map resolves differences between the interfaces of interacting components.
- ▶ Human Task : A human task component implements a task done by a person. It represents the involvement of a person in a business process.
- ▶ Business Rule : Business rules complement business processes and state machines. If there is condition with a variable, for example, a business rule can change the value in that variable at run time. Created by a visual programming language, a business rule makes a decision based on context. The decision can be simple or complex. Business rules are nonprocedural and the rules can be changed independently of an application.
- ▶ Standalone Reference : Stand-alone references are references to applications that are not defined as Service Component Architecture components (for example, JavaServer™ Pages or servlets). Stand-alone references permit these applications to interact with Service Component Architecture components.

Note: More details about the Service Component Architecture, included in WebSphere Process Server and WebSphere Enterprise Service Bus can be found in the IBM Information Center under the following URL :

<http://publib.boulder.ibm.com/infocenter/dmndhe1p/v6r2mx/topic/com.ibm.wbit.620.help.prodovr.doc/topics/csrvcomparch.html>

6.2.6 Assemble to a WebService

The goal of this section consists to replace an existing Dummy Service named “Select Provider Impl” by a call to an existing WebService. As depicted in Figure 6-29 the situation after export from Modeler to WID is as described in (1). IPD generates a Process and a Gateway permitting to call underlying Process Services. These Process Services however are usually decoupled from the underlying Corporate Service layer, meaning that a gateway and maps respectively logic needs to be written to permit the communication to occur successfully. This is shown under (2).

Note: This section shows how to couple IPD generated processes to the underlying corporate WebServices, without creating dependencies between the Process Services datamodel and the corporate datamodel. The Process Services Datamodel needs to be capable to evolve freely and regenerated without that underlying maps have to be changed. The same counts for the corporate services datamodel which needs to be capable to evolve freely without that the process is impacted.

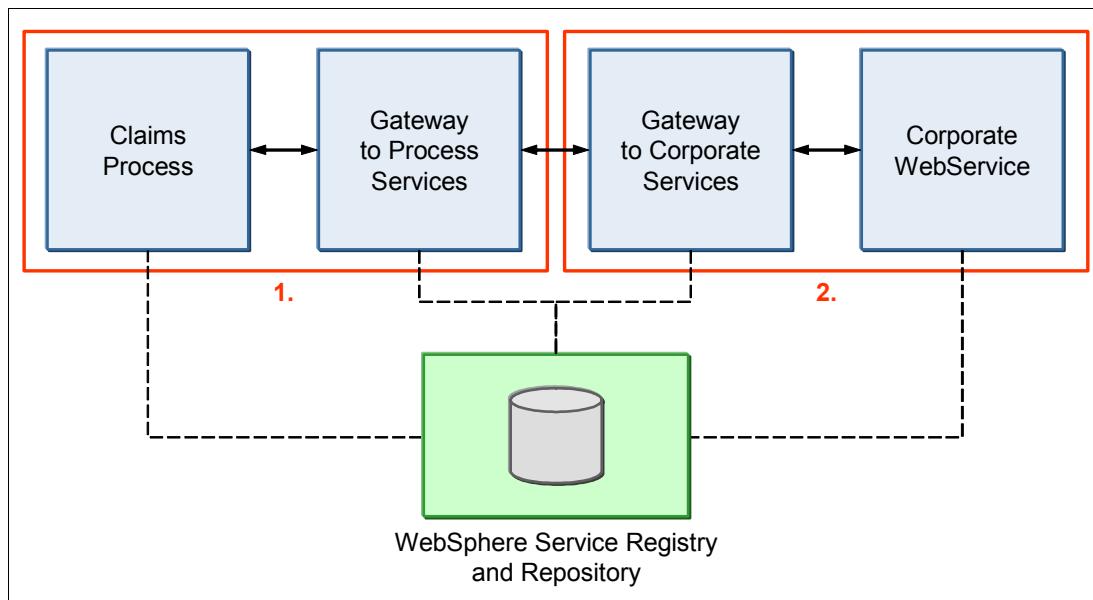


Figure 6-29 Situation after export

Figure 6-30 on page 207 below show Java Components exposed as WebServices. These Java Components need to be individually linked to WebService Exports.

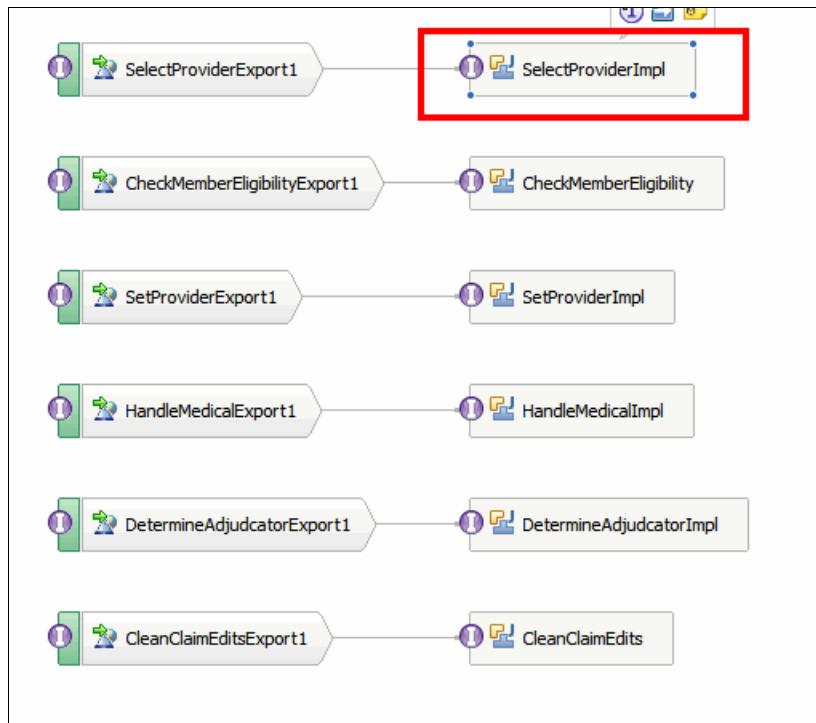


Figure 6-30 Java Pojo's exported as WebServices

Note: More information on integrating services with Web Services Bindings can be obtained in the IBM WebSphere Enterprise Service Bus Information Center under the link below :

<http://publib.boulder.ibm.com/infocenter/dmndhe1p/v6r2mx/topic/com.ibm.wbit.620.help.basics.doc/topics/cgenwsbnd.html>.

6.2.7 Integrate with WebSphere MQ

IBM's WebSphere MQ (WMQ) is a popular middleware set of products that provide a well-known set of messaging communications between applications, which can themselves be on many dissimilar systems.

Integration with WebSphere MQ is important whenever data needed in the Business Process needs to be called from services invocable via MQ. The link below describes how a WMQ message maps to Service Component Architecture (SCA) artifacts; that is, how a message maps to a business object and how input and output from a WMQ client maps to an interface's operations. Data bindings and an important function called the function selector as applied to WMQ are discussed. You are then led through the generation of an MQ import and export binding.

A detailed description on how to use Imports and Exports with MQ Bindings are not in the scope of this redpaper.

Note: Details on MQ Bindings can be obtained within WebSphere Enterprise Service Bus Information center. Please consult the following URL :

<http://publib.boulder.ibm.com/infocenter/dmndhe1p/v6r2mx/index.jsp?topic=/com.ibm.wbit.620.help.messaging.doc/topics/tgenmqbnd.html>

6.2.8 Integrate with JMS

JMS is a standard API for sending and receiving messages. It allows components based on the Java 2 Platform, Enterprise Edition (J2EE™) to create, send, receive, and read messages.

Integration with JMS is important when a Service (for example a Message Driven Bean) is only callable via JMS Queues. The link belows how a JMS message maps to Service Component Architecture (SCA) artifacts; that is, how a message maps to a business object and how input and output from a JMS client maps to an interface's operations. Data bindings and an important function called the function selector are discussed. You are then led through the generation of a JMS import and export binding and presented with some standard applications that make use of the JMS binding.

Note: Details on JMS Bindings can be obtained within WebSphere Enterprise Service Bus Information Center. Please consult the following URL :
<http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/topic/com.ibm.wbit.620.help.messaging.doc/topics/cjms.html>.

6.2.9 Integrate with JCA Adapters

BM adapters allow you to integrate enterprise applications, and data storage facilities, in a service-oriented way. Adapters expose low-level EIS functions, or events, in the form of a service.

Adapters are sometimes referred to as resource adapters, and provide a standard interface to proprietary systems. Using standard interfaces avoids the maintenance issues associated with non-standard solutions.

Some adapters come with WebSphere Integration Developer and are licensed for production use, others are only for development purposes: that is, they can be used to develop and test an application. Generally, after you deploy your application to WebSphere ESB, or WebSphere Process Server, you will need a licensed runtime resource adapter.

There are two types of IBM adapters:

1. WebSphere Adapters, also referred to as JCA adapters.

Note: WebSphere Adapters are based on Java 2 Platform, Enterprise Edition (J2EE) Connector architecture (JCA), and are the recommended adapters to use with WebSphere ESB and WebSphere Process Server.

2. WebSphere Business Integration (WBI) Adapters.

Note: WebSphere Business Integration Adapters reside outside of WebSphere ESB or WebSphere Process Server. The run time communicates with this type of adapter through a Java Message Service (JMS) transport layer.

Both types of adapter can be split into two classes:

- Technology Adapters : They let you integrate files, FTP, databases and email: these adapters come with WebSphere Integration Developer and are licensed for production use with WebSphere ESB and WebSphere Process Server.

- ▶ Application Adapters : Application adapters let you integrate enterprise application suites, such as SAP® Exchange Infrastructure (XI).

WebSphere Process Server and WebSphere Integration Developer supports a variety of Adapters :

- ▶ IBM CICS® ECI Resource Adapter version 7.1.0.2
- ▶ IBM IMS™ TM Resource Adapter version 9.1.0.2
- ▶ IBM WebSphere Adapter for Email version 6.2.0
- ▶ IBM WebSphere Adapter for FTP version 6.2.0
- ▶ IBM WebSphere Adapter for Flat Files version 6.2.0
- ▶ IBM WebSphere Adapter for IBM i version 6.2.0
- ▶ IBM WebSphere Adapter for JDBC™ version 6.2.0
- ▶ IBM WebSphere Adapter for JD Edwards® EnterpriseOne version 6.2.0
- ▶ IBM WebSphere Adapter for Oracle® E-Business Suite version 6.2.0
- ▶ IBM WebSphere Adapter for PeopleSoft® Enterprise version 6.2.0
- ▶ IBM WebSphere Adapter for SAP Software version 6.2.0
- ▶ IBM WebSphere Adapter for Siebel® Business Applications Version 6.2.0

Note: More information on working with adapters can be obtained in the IBM WebSphere Enterprise Service Bus Information Center. Refer to URL :

<http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/topic/com.ibm.wbit.620.help.adapter.emd.ui.doc/topics/timpexpapps.html>.

Important: Adapter patterns provide a quick and easy way of creating a service with an adapter. The adapter patterns wizard can save you time in creating a service. In a few pages containing a few fields, you can generate a service. In many cases, a service generated from an adapter pattern will meet the requirements for the service you want to create.

The adapter patterns wizard can be used with the following adapters:

- ▶ WebSphere Adapter for Email
- ▶ WebSphere Adapter for FTP
- ▶ WebSphere Adapter for Flat Files.

6.3 Generate and customize Monitor Models

The next step in the “Prescriptive Guide Approach” is “Generate and customize Monitor Models”. It includes :

- ▶ Export of a Monitor Model to WebSphere Integration Developer
- ▶ Customization of the Monitor Model
- ▶ Generation of Monitor EJB™ projects
- ▶ Deployment to the runtime for testing purposes

Figure 6-31 illustrates the current focus of this section within the context of the overall *Deployment* phase.

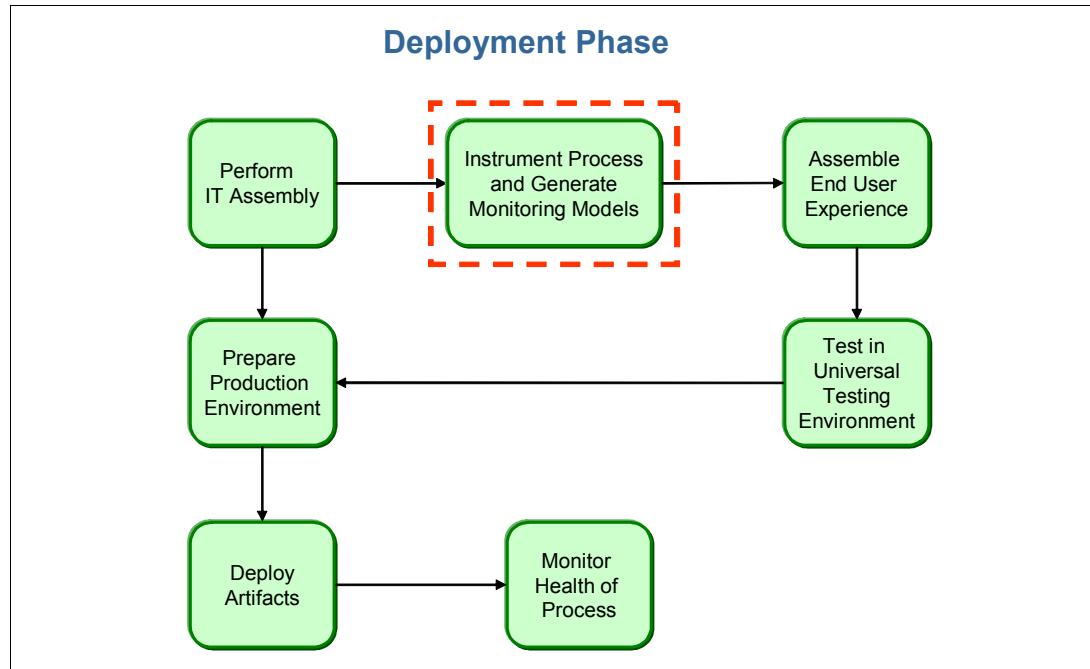


Figure 6-31 *Instrument process and generate monitoring models*

Generate the J2EE ears necessary for all of the Business Measures. It is possible to test in the iterative development environment prior to this step, but deployment requires that these artifacts be generated. This allows for the KPIs and other data to be collected, and for the Business Space Widgets to be configured properly.

Once you have a satisfactory baseline model from the IPD environment you can export the model from Modeler into the WID Toolkit to generate the J2EE monitoring model ear.

Though in most cases the model you have from the Experience phase is all that is necessary for you to deploy into the production environment as well; there are cases where you might want to even augment the model created from Modeler with some more features and metrics beyond what the D2D environment gives you. You can do so easily in the WID Toolkit.

We will describe how you can import the model from modeler into WID Toolkit, select the events you want emitted for monitoring and how to generate a J2EE monitoring EAR to all of the Business Measures. It is also possible to test in the WID Toolkit environment prior to deployment as well. The WID Toolkit environment is a full fledge development and test environment.

To generate an EAR from the modeler zip file you receive as a project interchange format, you first import it into your WID Toolkit, activate the events for monitoring and generate a J2EE artifacts from the project to be deployed to production.

These are the steps:

1. Import the project interchange artifact from modeler. It must be exported in Websphere Business Monitor Development Toolkit format.

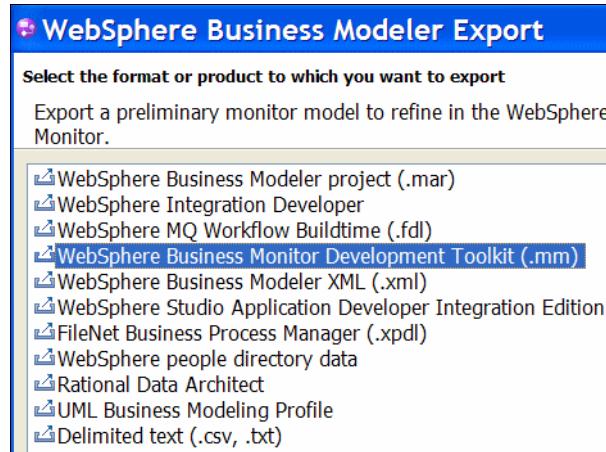


Figure 6-32 Export model in toolkit format to generate monitor model

2. Open your WID Toolkit workspace and import the project interchange.

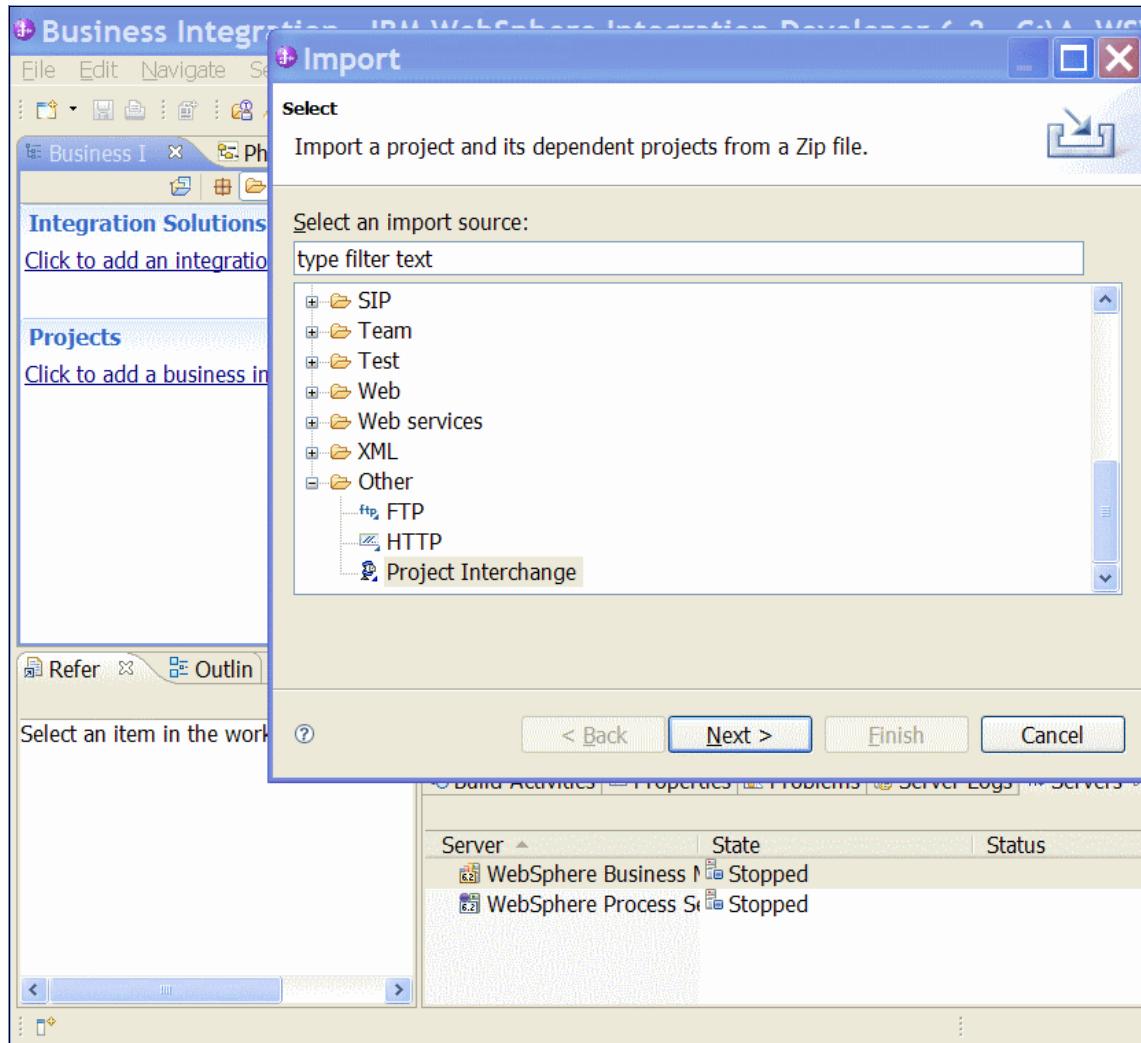


Figure 6-33 Import the PI into your WID Toolkit workspace

3. Select the project to import as shown below.

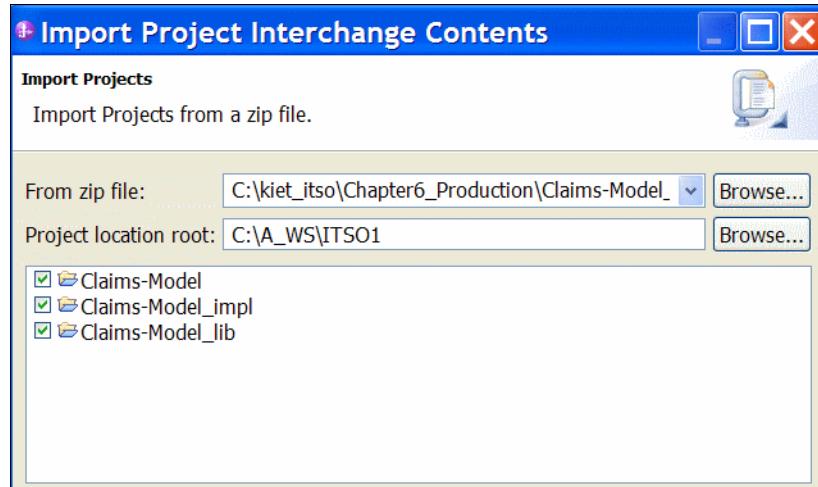


Figure 6-34 Import all modules of project

4. After the build your project will be displayed in the workspace in the business integration perspective.

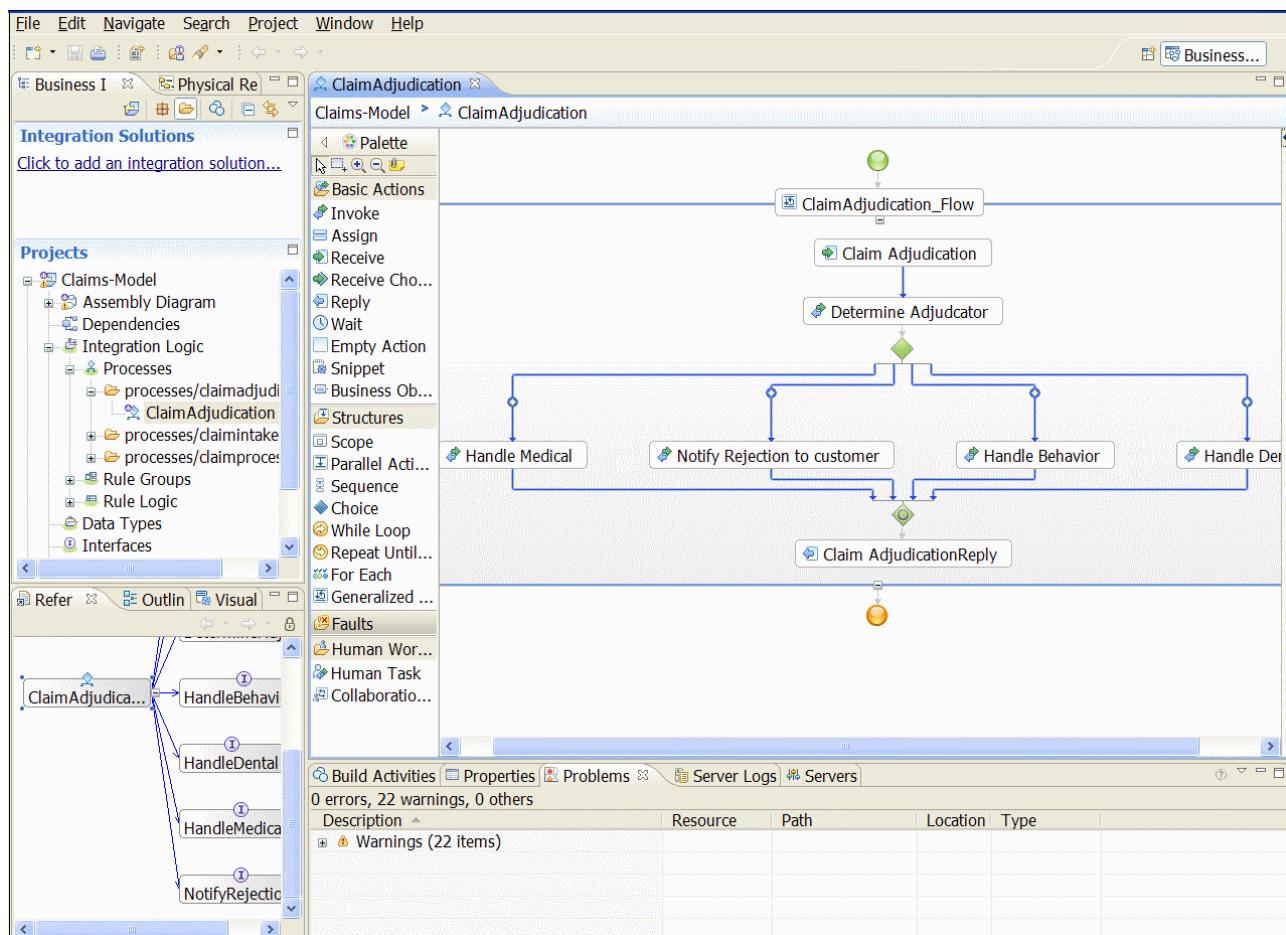


Figure 6-35 Default Business Integration layout

5. Verify that there is no errors from the import. Warnings are ok.

Though the model you instrumented in modeler D2D has all events turned on to support the metrics and KPIs defined, it is a good practice just to verify them after the model project is being imported into the WID Toolkit environment.

You can refine and implement additional events for monitoring if you chose too beyond what you have specified in the D2D. If you did so however make sure that you remember to propagate the additional changes back to your model in modeler.

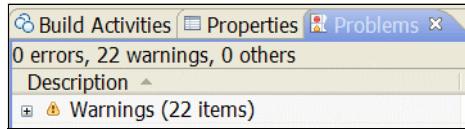


Figure 6-36 Verify there is no errors after import

6. For **every process and every activity** within a model that you want monitored, you must ensure that their event emission setting is turned on.

In this sample that we use throughout this redpiece, the three processes are:

- ClaimAdjudication
- ClaimIntake
- ClaimProcess.

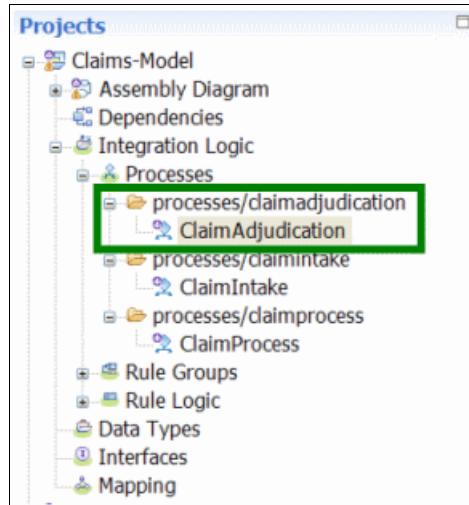


Figure 6-37 Decide on which process to monitor

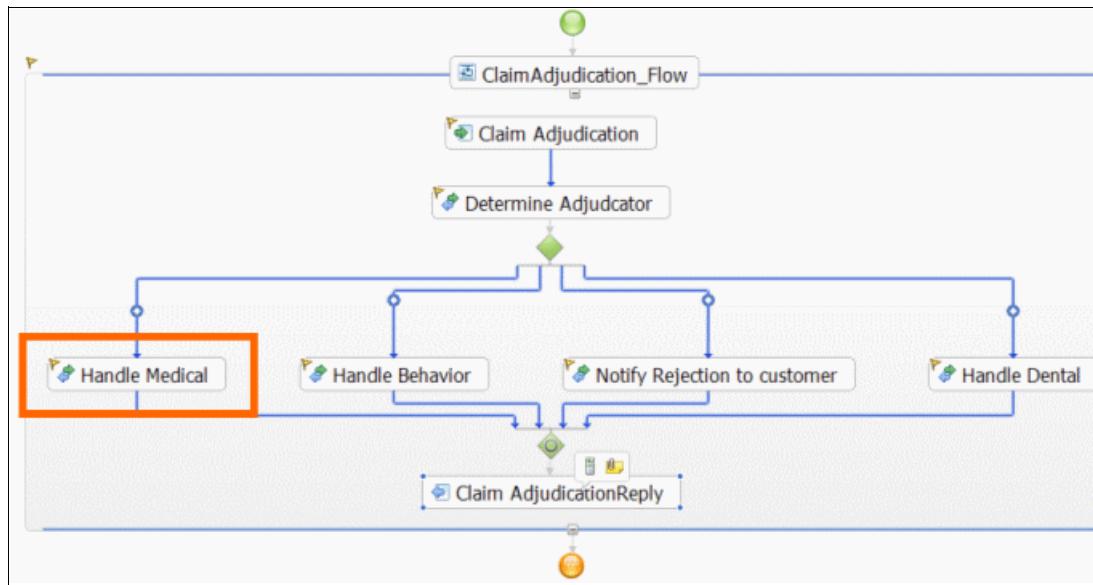


Figure 6-38 Decide which activity in a process to monitor

7. Select the process (green) in figure above or activity (orange) in figure above from the Business Integration canvas editor that you want to set to emit events for monitoring.
 - a. Select the process or activity
 - b. Expose its properties via the Properties tab
 - c. Select Event Monitor
 - d. Select All for all event type and click Save.
 - e. Notice the Flag icon indicating that the activity or process is being wired to emit events for monitoring.
 - f. Save the settings.

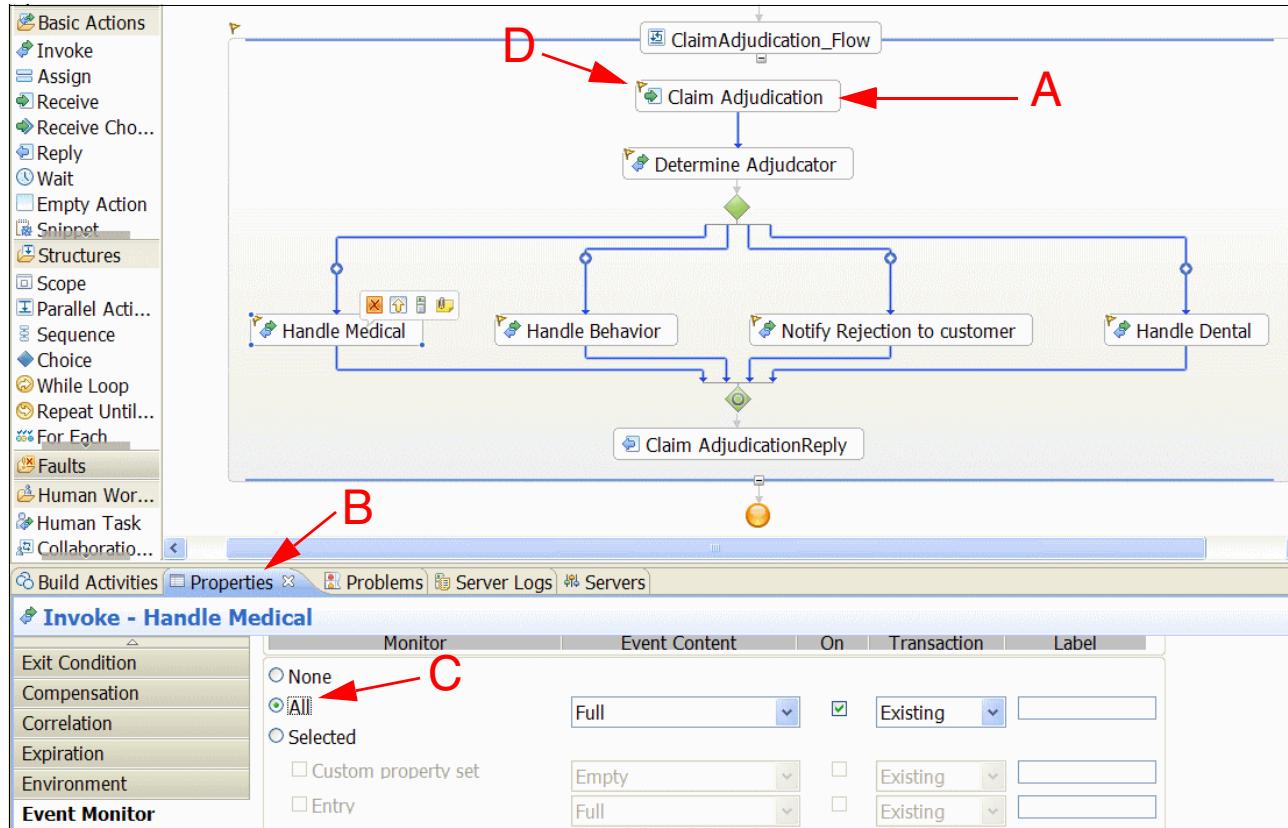


Figure 6-39 Activate process or activity to emit events for monitoring

Now that you have wired your business process model for monitoring, proceed to generate J2EE artifacts so that it can be deployed into the production environment. To do so:

- a. Select your monitor model project,
 - b. Right click for the dropdown options,
 - c. Select Monitor Tools
 - d. Select Generate Monitor Model.
8. When the generate functions starts, enter the Monitor project and model module name. If the names already exist you must specify new names.

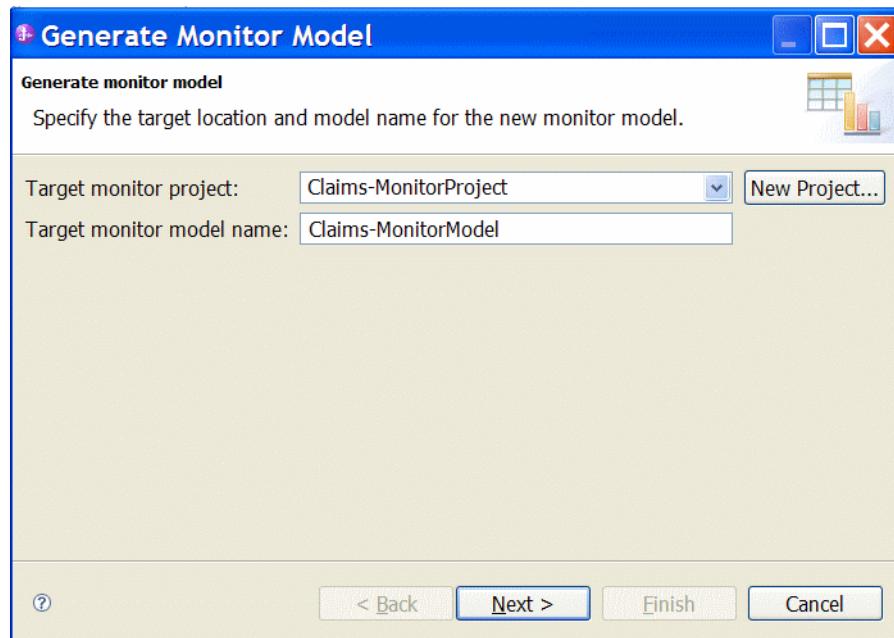


Figure 6-40 Enter project and model name to generate

- Follow through by clicking Next, keep all default options and include all reference projects.

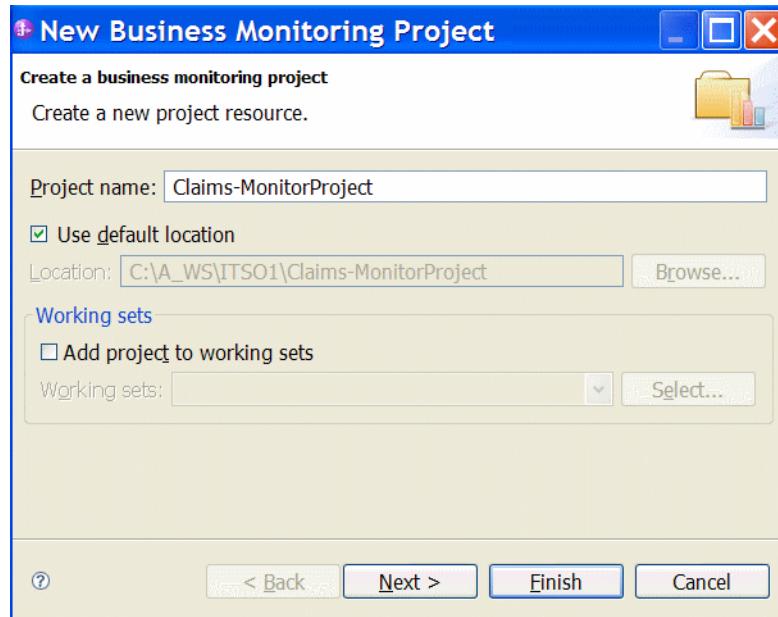


Figure 6-41 Verify project name

- The next screen lets you select what event you wanted to monitor. You can do so by selecting the default metrics from the template or by specific event selection for more granularity.

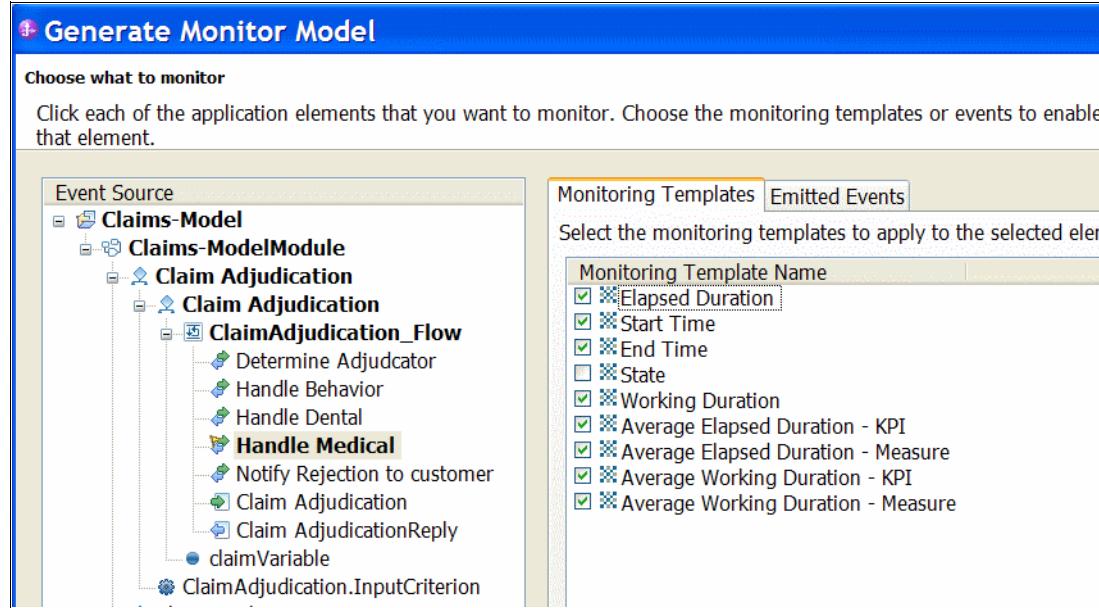


Figure 6-42 Select the metrics to monitor from default template

You can also further refine by the exact event type you want to select.

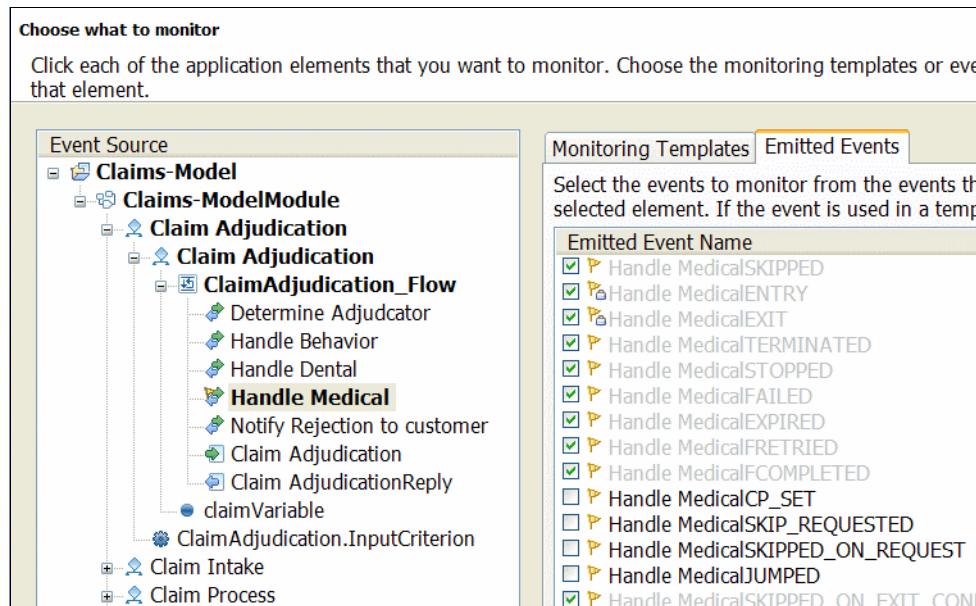


Figure 6-43 Refine selection by exact event type

11. If you wanted to monitor the value of variables' changes, you must also select them.

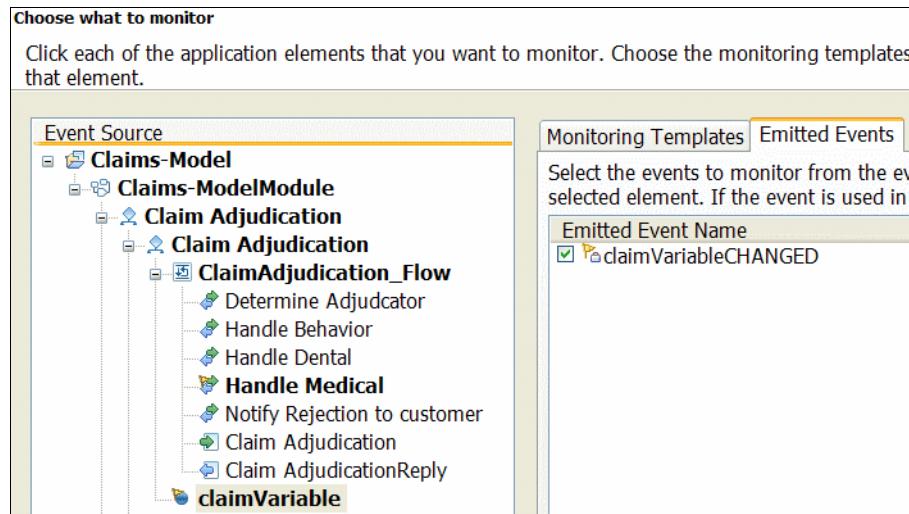


Figure 6-44 Select variable values for monitoring as applicable

12. You can also choose the quick option of just select what was turned on in the application as shown in prior step.

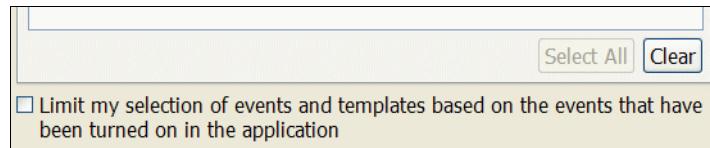


Figure 6-45 Select default events turned on in application

13. Once satisfied with your selection, click Next to proceed to generate the Monitor model.
14. You'll get two more summary screens: one to show you your selection of what event types you turned on for monitoring and the last screen will let you have a preview of what would transpire into your monitor model in terms of metrics and KPIs.

Generate Monitor Model	
Choose how to monitor	
The first column shows the elements that will be implemented in the monitor model. The second column shows the kind of implementation and might allow you to change it.	
Event Source	Implementation
Claims-Model	--
Claims-ModelModule	None
Claim Adjudication	None
Claim Adjudication	Monitoring context
ClaimAdjudication_Flow	None
Handle Medical	Monitoring context
claimVariable	Event group

Figure 6-46 Review screen for events selected

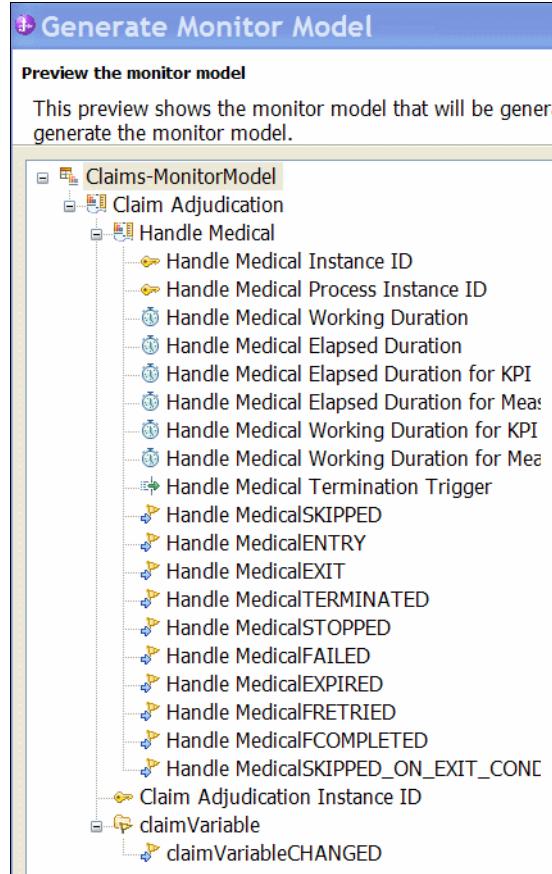


Figure 6-47 Model metrics and KPIs preview

15. Click Finish to generate the Monitor model.
16. After the monitor model gets generated you will see it displayed in the monitor model editor perspective. Verify that there are no errors in the model. Warnings are OK.

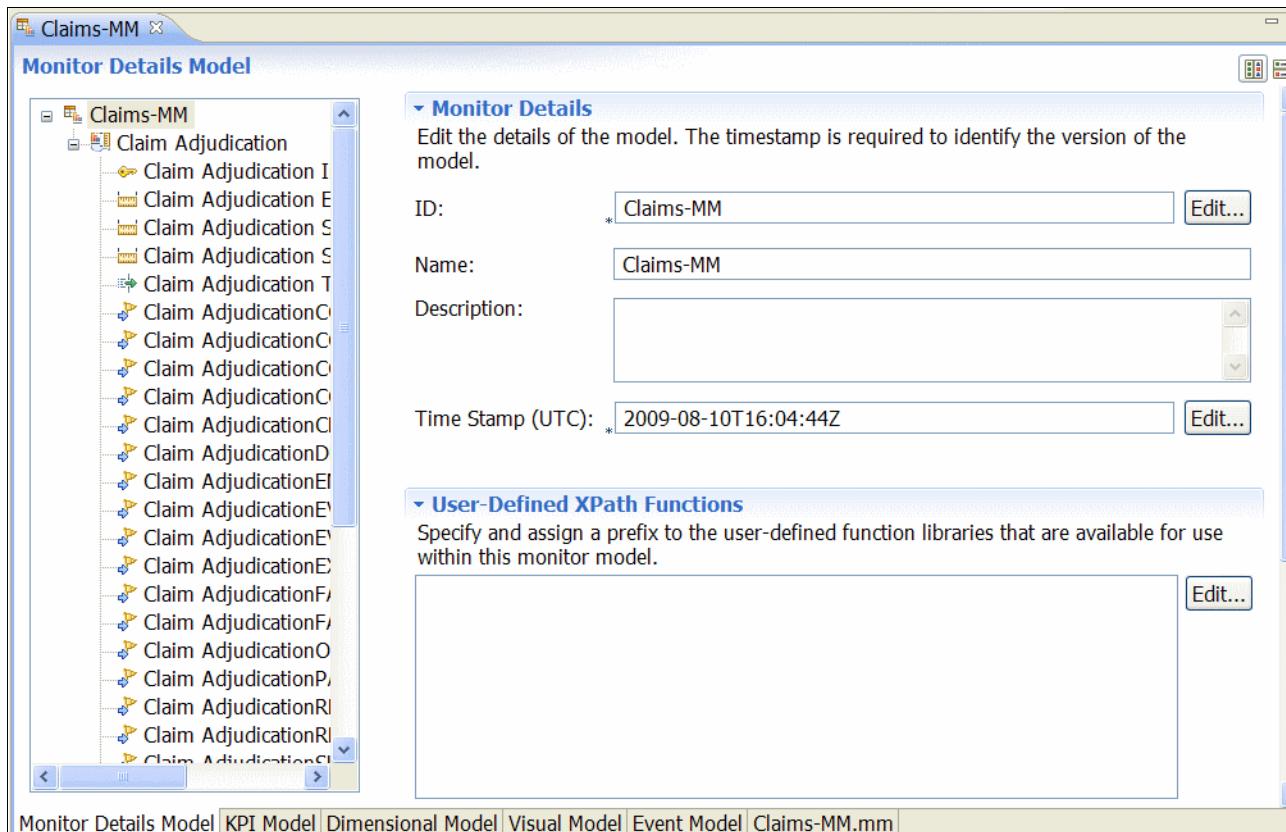


Figure 6-48 Verify monitor model after generation

Note: The WID Toolkit environment is a full extension of the Modeler IPD environment that you are already familiar with in your Experience phase. If you choose to, the WID Toolkit can be used to augment your monitor model with additional monitoring rich features that the IPD environment doesn't offer.

You can also do iteration testing of your model here in this environment.

Once your monitor model is deemed production ready, you can export it in the format of a J2EE artifact to be deployed.

To do this:

17. Select your Monitor model project, **right click** and **Export**.
18. Select **option** to export EAR file.

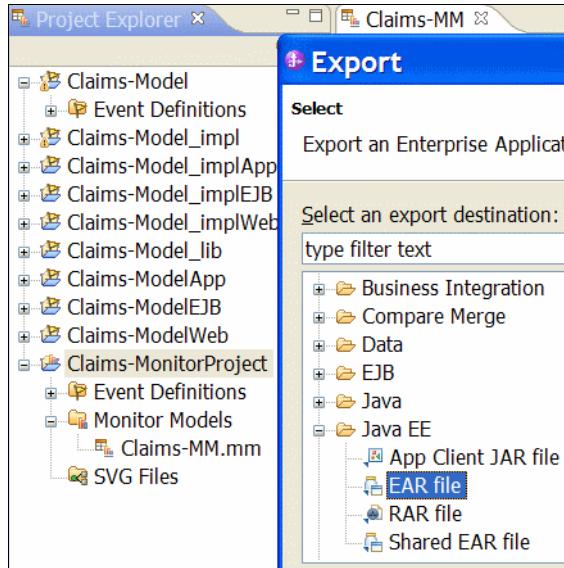


Figure 6-49 Select to export project as a J2EE EAR

19. Enter the external name for the EAR file and specify folder location.

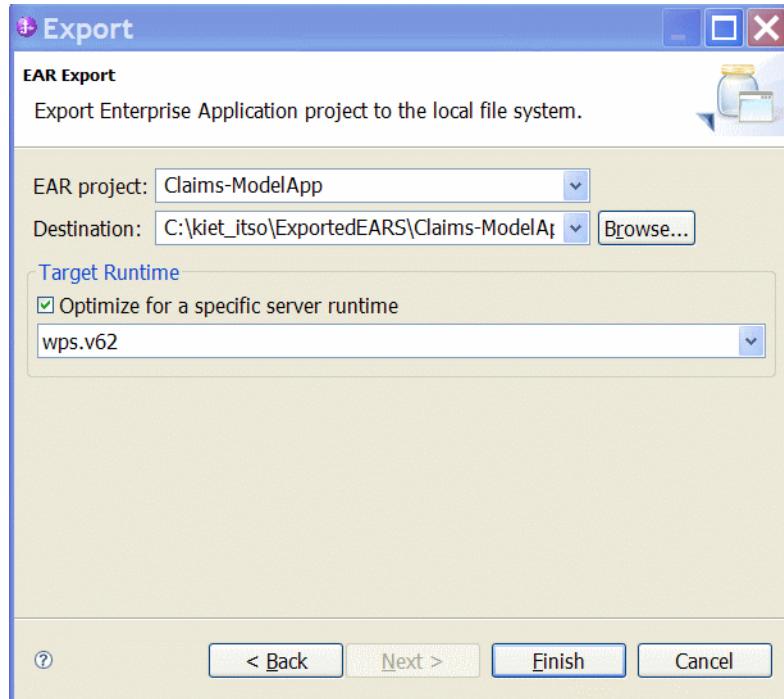


Figure 6-50 Export EAR file

You can now hand off your Monitor model EAR file to be deployed to Production.

Note: The process of exporting your emitting BPEL application as an EAR file for deployment is exactly the same as the process for exporting a Monitor EAR file since they follow one standard specification.

6.4 Assemble end user Experience

The next step in the Prescriptive Guide Approach is “Assemble end-user experience”. It includes:

- ▶ Automatic generation of lotus forms
- ▶ Customization of lotus forms
- ▶ Recommendations for advanced forms creation customization

Figure 6-51 illustrates the current focus of this section within the context of the overall *Deployment* phase.

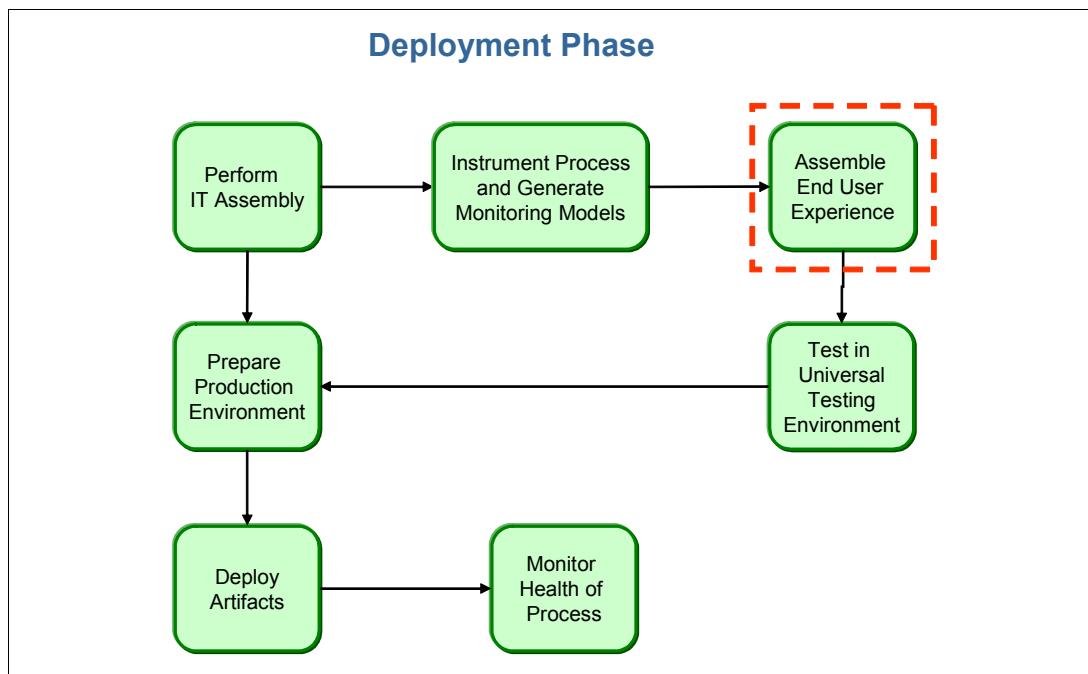


Figure 6-51 Assemble end-user experience

Forms allow you (the business analyst) to define how business users interact with real time process information. Forms in our solution can be associated with human tasks only. The relationship between forms, business items, and human tasks is natural:

- ▶ Forms define the user interface,
- ▶ business items define the data being acted on throughout the process, and
- ▶ human tasks bring data and the user interface together.

One of the ways that you can make your application easier to use is to create custom forms for your human tasks. If you already have forms created using Lotus Forms Designer, you can import these forms into your workspace and associate them with a human task. You can also customize forms that you create in WebSphere Business Modeler and then update these forms in your process model. A custom form designed in Lotus Forms Designer can provide a more user-friendly and attractive interface for reviewing and entering the data associated with a human task.

Note: When you associate a form with a human task, if the inputs or outputs of the human task do not match the form data, then the inputs and outputs of the human task will be replaced with the form data.

6.4.1 Automatic generation of forms for Human Tasks

The following section discusses how to generate a basic form for a human task. You can generate input or output forms for human task just by clicking the menu as shown below in Figure 6-52 on page 223

If the human task has identical inputs and outputs, only one form will be generated and associated with the task as both the input and output form.

If you have forms already created for the human tasks, you can associate forms with human task and process inputs and outputs on the Forms tab in the Attributes view.

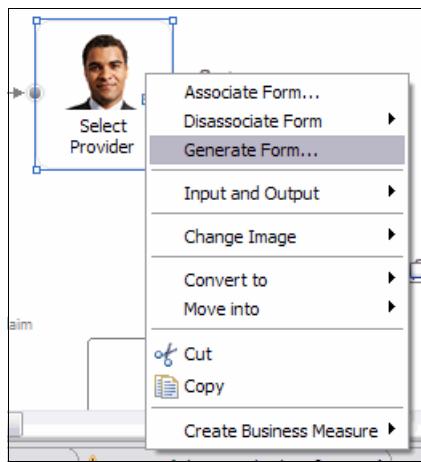


Figure 6-52 Generate Form

6.4.2 Customizing the appearance of the form

A plain input or output form using the input or output business item for the activity will be generated. Using the Claim Intake process for our example, if we use the default form generated from the claim business item for the human task, the user will enter data in a form that contains the following inputs:

Input	
First Name	<input type="text"/>
Last Name	<input type="text"/>
Claim Number	<input type="text"/>
Claim Type	<input type="text"/>
Amount	<input type="text"/>
Plan	<input type="text"/>
Billing Provider	<input type="text"/>
Member Number	<input type="text"/>
Contact Phone	<input type="text"/>
Contact Address	<input type="text"/>
Reason Code	<input type="text"/>
Cause	<input type="text"/>
Date	<input type="text"/> 
Used Ambulance	<input type="checkbox"/>
Assign Provider	<input type="checkbox"/>

Figure 6-53 Plain form from automatic generation

Figure 6-53 illustrates only the generic, generated form. You can proceed to customize the form using palette in the Lotus Forms Editior by changing colors, rearranging the fields and inserting graphics into the form.

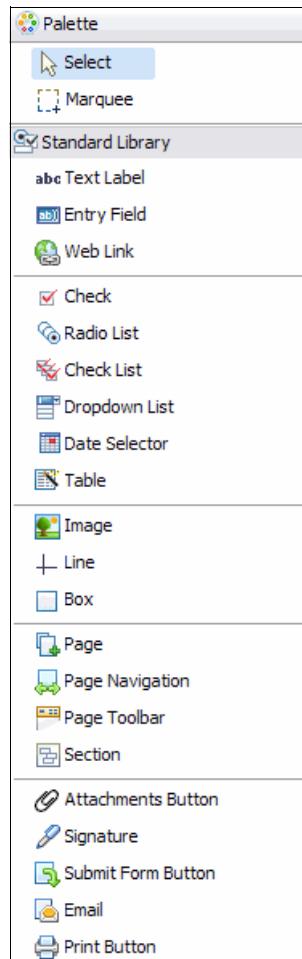


Figure 6-54 Lotus Form Editor Palette

If we customize a form based on the claim business item, then we can present users with a better form layout and format, allowing users at each step of the process to more easily find the fields in the form that are relevant to the current task. *This will save users time in data entry.*

Note: Detailed information on how to customize a form using Lotus Forms Designer is beyond the scope of this Redpaper. Instead, we illustrate a more customized form to give the readers a sense of what is possible when the business analyst works with members of the graphics / design team using Forms Designer.

Figure 6-55 on page 226 illustrates an example of our custom form after it is modified using the editor.

The image shows a customized new form titled "Billing Provider Selection". It has two tabs at the top: "Member" and "Claim", with "Member" being the active tab. The "Member" tab contains a "Member Information" section with fields for "Claim Info", "Name" (First and Last), "Member Number", "Plan", "Phone", and "Address". Below this is a "Contact's Info" field. To the right of the form is a graphic of a stethoscope resting on a world map.

Figure 6-55 Customized new form

Important: After a form is associated with a human task or process, you or your form designer can move fields to improve the form layout, add headings and graphics, format fonts, and make other visual enhancements to the form. However, it is recommended that you do not add, delete, or re-create form data in the form editor (Lotus Forms Designer). To add or change form data fields, update the attributes of the relevant business items.

6.4.3 Advanced Lotus Forms editing

In this IBM Redpaper, our objective is merely to convey the importance and flexibility of creating and designing Forms as the end user interaction with the system. Fortunately, other resources exist which go into more depth on how to use Lotus Forms and Lotus Forms Designer for advanced editing of Lotus Forms. For more information on using Lotus Forms for advanced design of Forms, please refer to:

- ▶ IBM Workplace Forms 2.6: Guide to Building and Integrating a Sample Workplace Forms Application (<http://www.redbooks.ibm.com/abstracts/sg247388.html?Open>)
- ▶ The library for Lotus Forms documentation - located at <http://www-01.ibm.com/software/lotus/forms/library.html>

6.5 Test applications in Universal Test Environment

The following section is named *Test in UTE* and is the next phase of Deployment within the *Prescriptive Guide Approach*. It focuses mainly on testing the application prior to really deploying it to the production environment. Two different types of testing are possible :

- ▶ Unit Testing using the Integration Test Client.
- ▶ Automated and Batch processed testing using the component testing capabilities

The sections below are going to explain these 2 capabilities in more detail and provide partly small examples on how to go through it. Intention is to give the reader a good overview of the capabilities and permit to find the right links to further dig into the capabilities.

Figure 6-56 illustrates the current focus of this section within the context of the overall *Deployment* phase

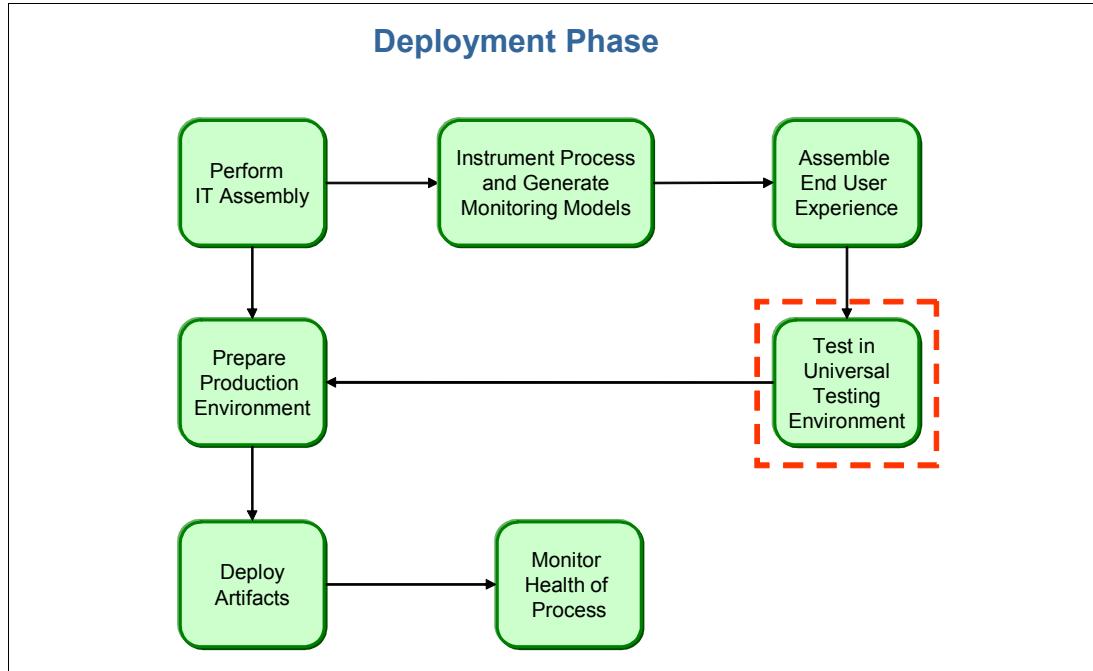


Figure 6-56 *Test in Universal Test Environment*

The amount and kind of testing performed depends on whether the effort can be completed using the Interactive Process Design capability. If not, then one can use the component testing capability in the WID environment

6.5.1 Using the integration test client

In WebSphere Integration Developer, the integration test client is the designated tool for testing modules and components. The test client features a sophisticated user interface that enables you to easily manage and precisely control your tests.

The steps below give an overview on how to use the integration test client based on a unit test on the freshly implemented Mediation “Select Provider”.

1. Select Test Component from the Context Menu. This will trigger a full end to end test.
Testing the component in isolation permits to test the component without actually calling towards outgoing services.

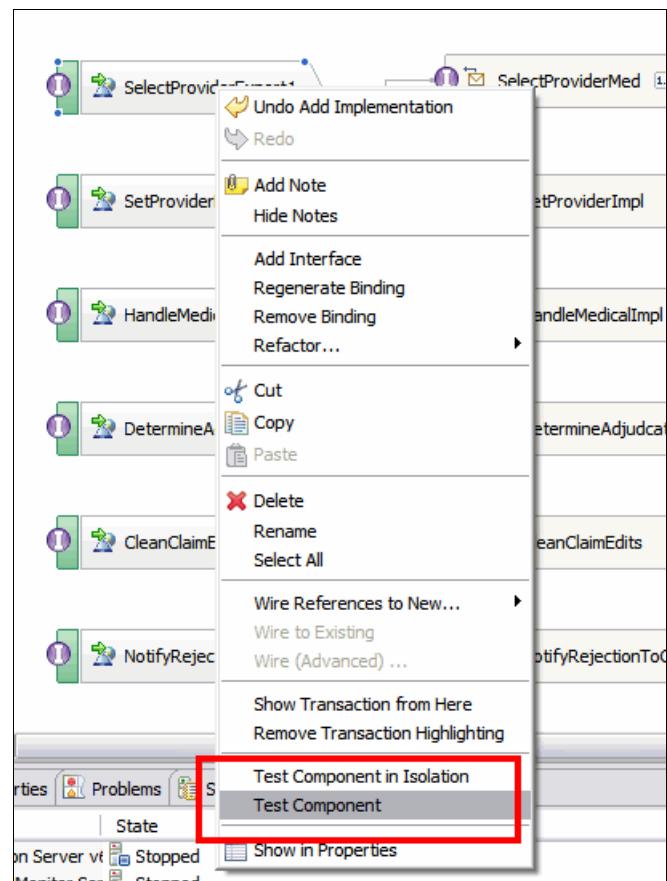


Figure 6-57 Select Test Component from the context menu

2. The integration test client will appear. (1) permits to start a new unit test. (2) permits to select values to be send to the service.

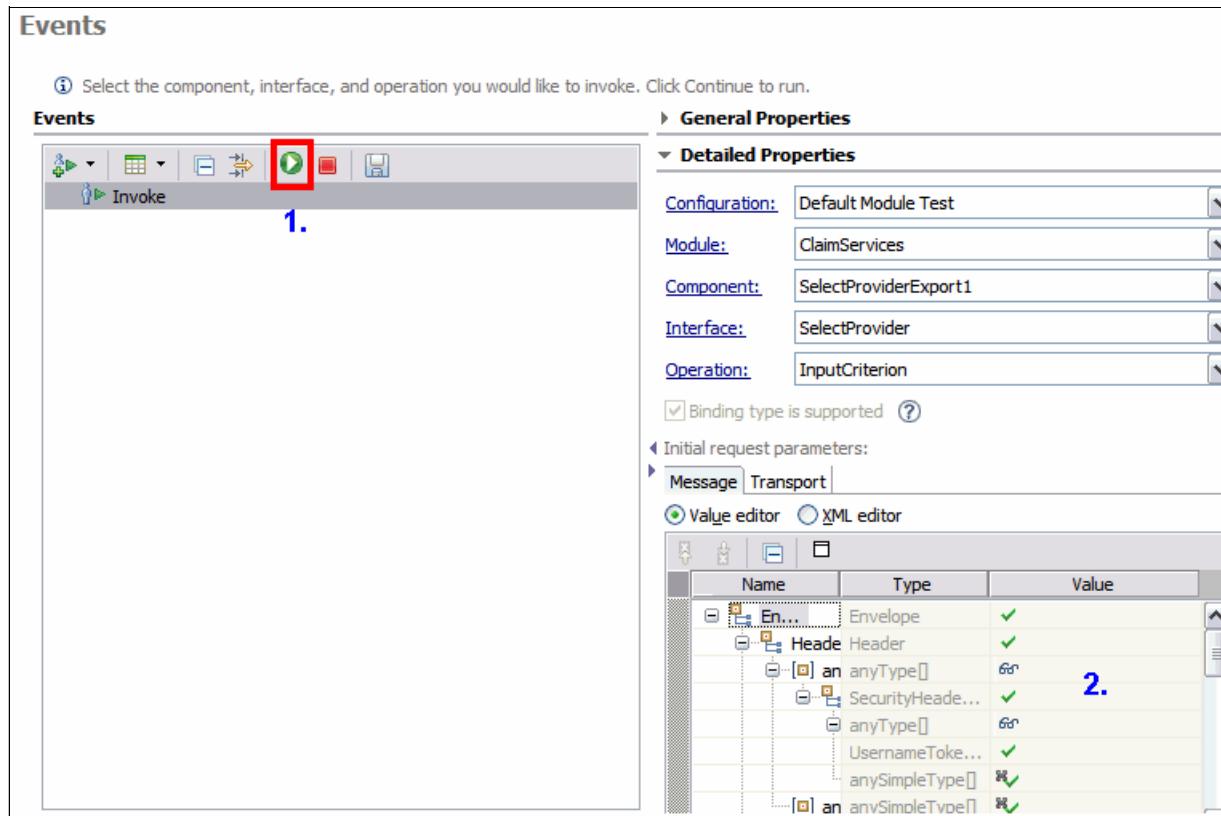


Figure 6-58 Integration test client for Select Provider

The integration test client is very rich in functionality. It supports :

- ▶ Events page of the integration test client: In the Events page of the integration test client, you can perform numerous test activities that enable you to interact with your module during testing, such as selecting an operation to test, specifying values for the operation, and invoking the operation.
- ▶ Value and data pool editors: On the Events page of the integration test client, a value editor is provided that enables you to specify, view, edit, and pass values for operations, manual emulations, and event definitions. The value editor also enables you to save values to a data pool, where you can view and edit the values using the data pool editor and later reuse them in the value editor.
- ▶ Configurations page of the integration test client: In the Configurations page of the integration test client, you can edit the default test configuration or you can create and edit new test configurations. This enables you to add modules to your test configurations, or add emulators and monitors to your test configuration modules, to more precisely control your tests.
- ▶ Icons and symbols for the integration test client: In the integration test client and other WebSphere Integration Developer tools, icons are images that are used to invoke actions. Symbols, by comparison, are images that simply represent workbench elements and they are not used to invoke actions.
- ▶ Keyboard shortcuts for the integration test client: In the integration test client, you can perform many of the available test actions by using keyboard shortcuts.

Note: More information on the Integration test client can be found within the WebSphere Process Server Information Center under the following link :
<http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/topic/com.ibm.wbit.620.help.comptest.ui.doc/topics/rtestui.html>.

6.5.2 Using component testing

In component testing, you use the new test suite editor and associated wizards to create and define test cases that are comprised of one or more operations. This enables you to sequentially test multiple operations as a group in the integration test client. You can also perform batch component testing on either a test environment server or a stand-alone server by using test scripts or the user interface of the Web-based Component Test Explorer.

The test suite editor is fully integrated into the workbench, which enables you to navigate through the Business Integration view and other views while using the editor. It is also closely integrated with the assembly editor and you can open the assembly editor from the test suite editor. The primary launch point for the test suite editor is the Business Integration view. You can open multiple instances of the test suite editor and use them to define your test suites and test cases.

Note: More information on component testing can be obtained within the WebSphere Process Server Information Center under the following link :
<http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/topic/com.ibm.wbit.620.help.comptest.ui.doc/topics/ccomptestovw.html>.

6.6 Prepare Production Environment

Create a staging environment for testing on the full topology. This environment will be created with as close to the production topology as possible. The same topologies, database configurations, messaging resources, and repositories should be utilized as for production.

The product stack to install includes :

- ▶ WebSphere Process Server,
- ▶ WebSphere Business Monitor,
- ▶ WebSphere Services Registry and Repository

Once testing is complete, perform any and all installation needed on the production topology.

Figure 6-59 on page 231 illustrates the current focus of this section within the context of the overall *Deployment* phase

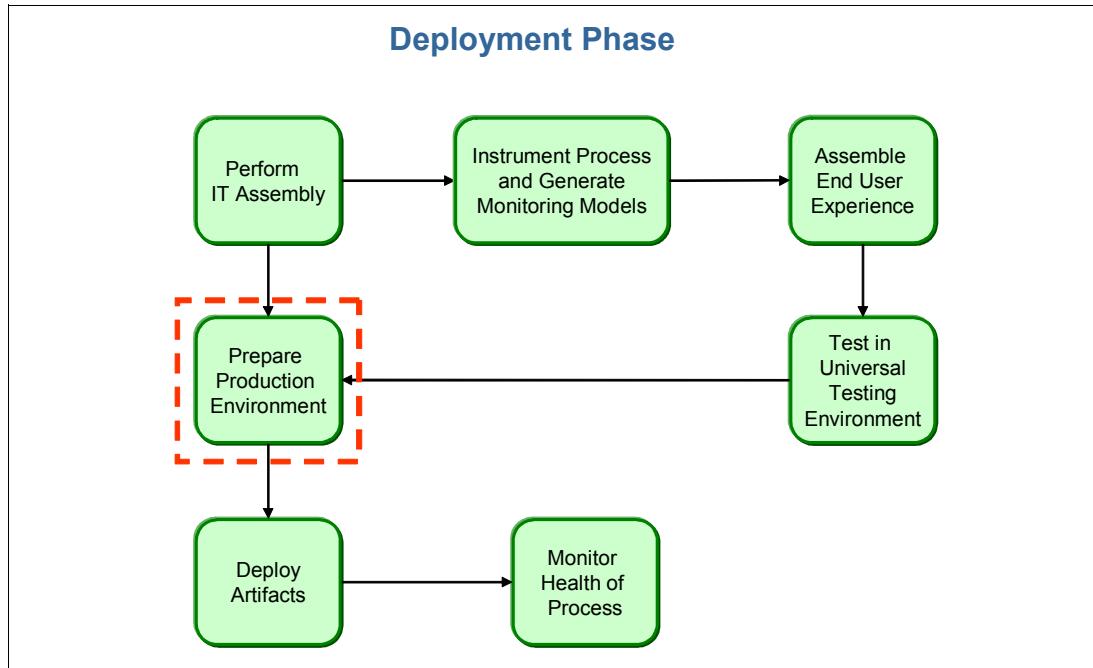


Figure 6-59 Prepare Production Environment

In general a variety of topologies are possible and a decision on the best solution depends on the appropriate customer needs. In this document a topology is chosen which has an average complexity and is suitable for showing the various configuration steps.

The selected topology for BPM is named “BPM Golden Topology” and includes :

- ▶ Application Deployment Cluster : Contains the business process applications (I.e BPEL Processes).
- ▶ Web Tools Cluster : Contains the Web based administration tools such as the Business Space.
- ▶ Messaging Cluster and Support Cluster contain internal BPM components such as the Registry, Messaging engines, as well as the Business Rules Engine..

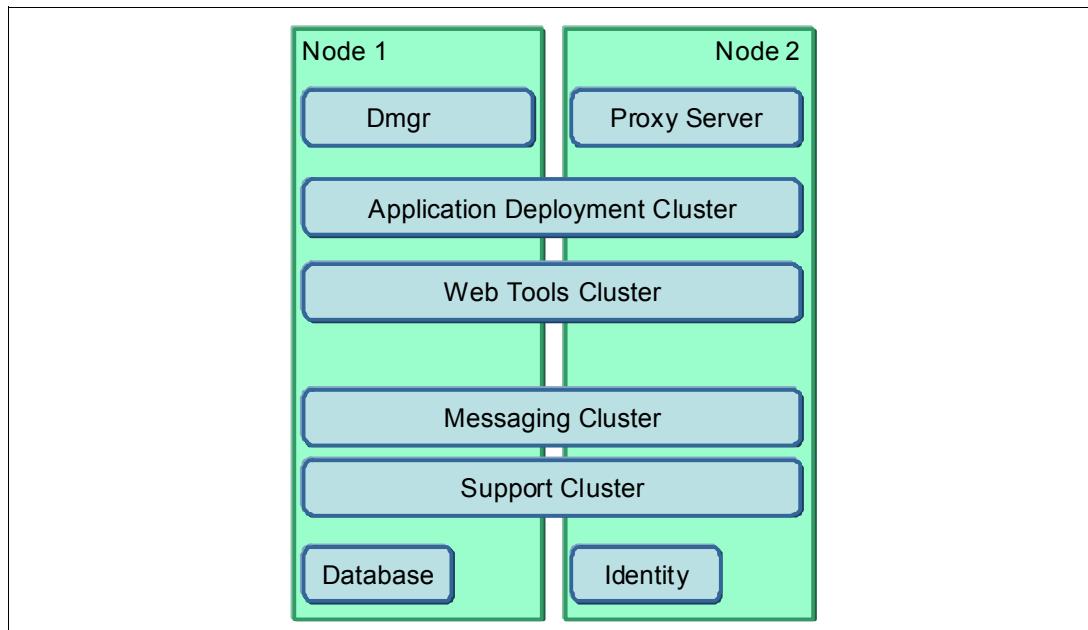


Figure 6-60 Example production topology

The clustered environment is installed on 2 dedicated logical or physical machines.

Note: The 2 nodes should have at least 5 Gigabytes of available memory each and be running on a modern CPU architecture.

For scalability reasons and further high availability specific requirements it may be needed to add additional LPAR's such as for duplication of the Database, but also duplication of the HTTP Server and duplication of Identity servers (LDAP).

A detailed click-by-click installation of such an environment is out of scope of this redpaper. However the links below give very detailed information on how to set up a BPM topology within a clustered environment.

Note: The redbook "WebSphere Business Process Management V6.2 Production Topologies" can be found under : <http://www.redbooks.ibm.com/abstracts/sg247732.html>. It gives in detail explanations on how to setup a Production environment for a Business Process Management environment.

6.7 Deploy Applications

Deploy applications is the next step in the *Deployment Phase* which is part of the *Prescriptive Guide Approach*. The sections below are going to give a highlevel overview of the following capabilities :

- ▶ Manually generate applications within WebSphere Integration Developer
- ▶ Automatically generate applications using command line tools and ANT support.
- ▶ Manually deploy applications to the server environment
- ▶ Automatically deploy applications to the server environment

Figure 6-61 on page 233 illustrates the current focus of this section within the context of the overall *Deployment* phase

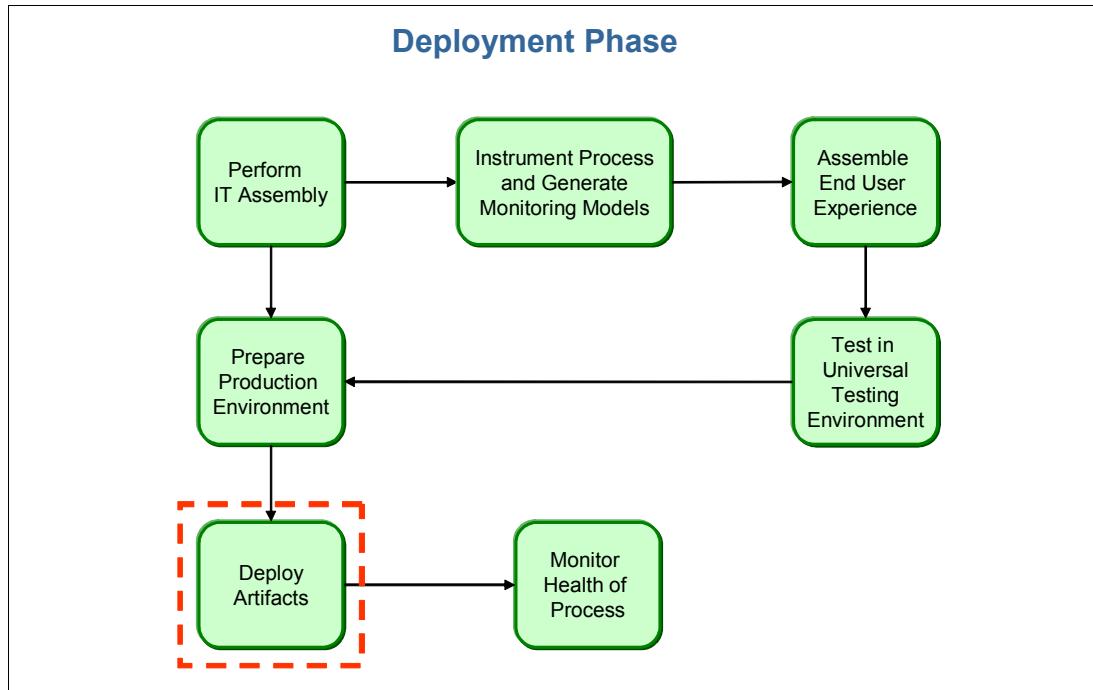


Figure 6-61 Generate and Deploy Applications to Server

6.7.1 Generate Applications in WebSphere Integration Developer

This section is going to show how to generate applications within WebSphere Integration Developer. The section shows in an overview how the modules created in the previous steps can be packaged as EAR files and saved to the disk.

The steps below illustrate how to perform these actions.

1. Select **File** → **Export** from the menu.

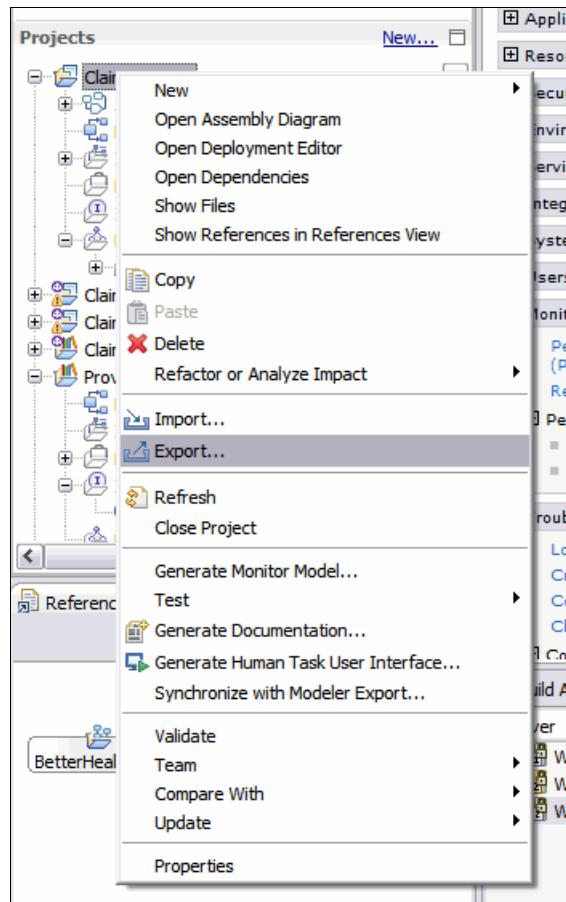


Figure 6-62 Export Module as an EAR file

2. The dialog box depicted in Figure 6-63 on page 235 appears. Select “EAR files for server deployment” and select the EAR’s to deploy.

Important: The Modules will have “Versioning” enabled. If “Versioning enabled” only export as a “Command line service deployment” is possible. The user will have to use the service deployment command line tool to generate the ear file to deploy to the server. More details can be found within WebSphere Process Server Information Center on the following link :

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.websphere.wps.620.doc/doc/tadm_installversionedsca.html.

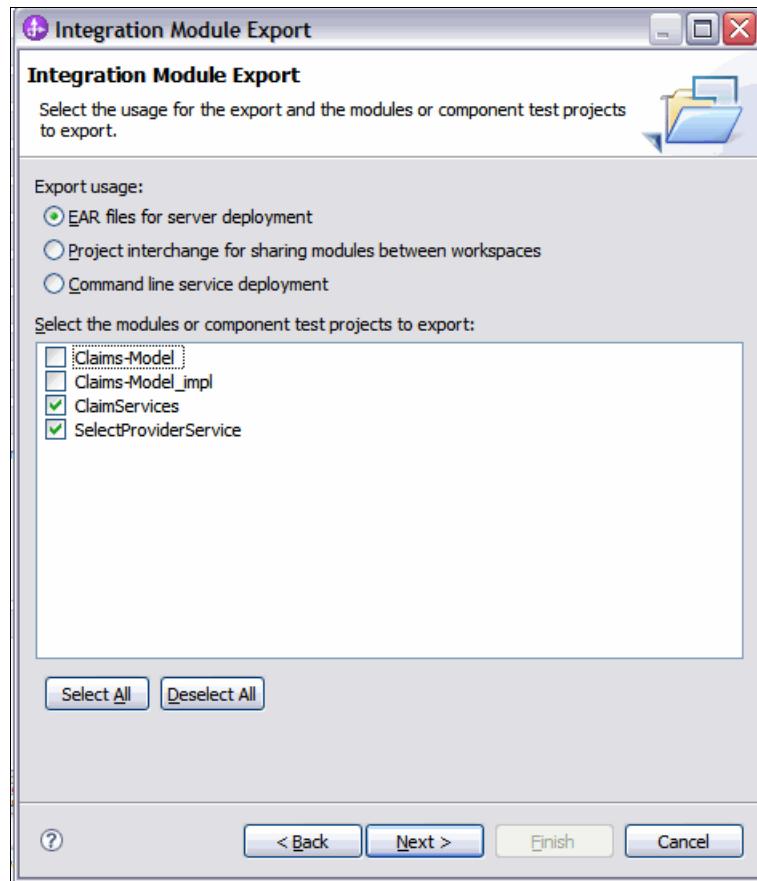


Figure 6-63 Integration Module Export - Select export usage

3. As depicted in Figure 6-64, select a directory and click Finish to continue.

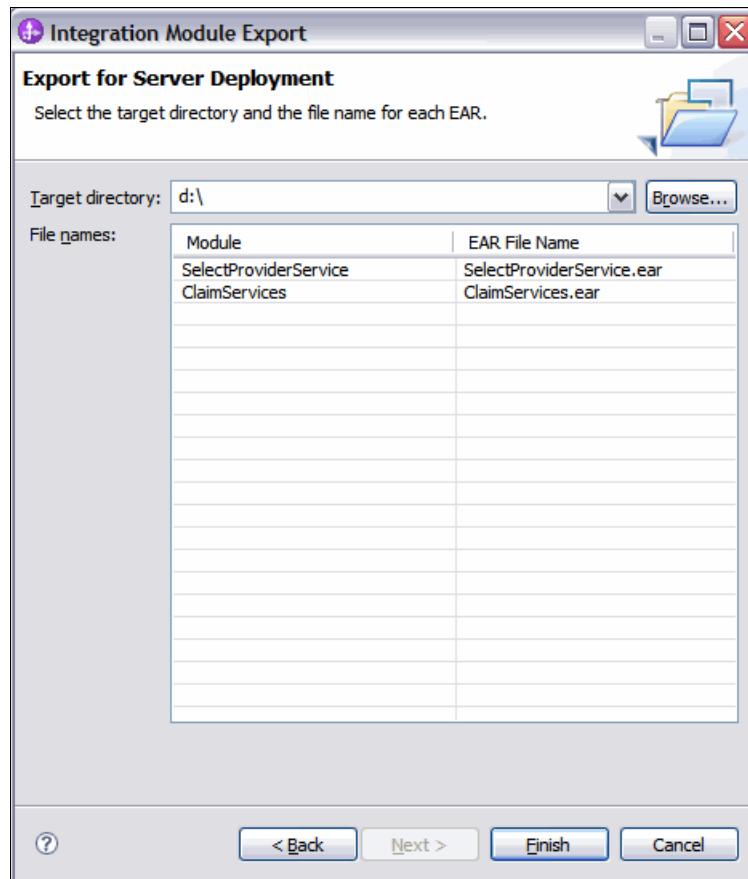


Figure 6-64 Select target directory

Exporting the modules as Service Deploy archives goes in a similar way. Instead of selecting “EAR files for server deployment” the user will have to select command-line service deployment.

Note: More details on deploying modules can be found within the WebSphere Process Server Information Center under link :

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/topic/com.ibm.websphere.wps.620.doc/doc/tdep_depprodserver.html.

6.7.2 Implementation of an automated Build

WebSphere Process Server does not offer out-of-the-box scripts to build and deploy application Modules. However the artefacts and script languages to write such a script do exist. We recommend the usage of Apache ANT to write the build script. WebSphere Process Server offers ANT tasks for the following purposes :

- ▶ ServiceDeploy Build of Module using ServiceDeploy
- ▶ EJB Deploy Generation of EJB deployment code

For application deployment to the server we recommend the usage of Jython or Jacl. This is documented as example scripts within the various Information Centers. A few links below.

Note: Information on creating a deployable application module using the ServiceDeploy command line tool.

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.websphere.wps.z.620.doc/doc/rdev_servicedeploy.html

Information on the ServiceDeploy command line tool also available as a specific Apache Ant task.

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.websphere.wps.620.doc/doc/tdep_usingant.html

6.7.3 Deployment of applications

Once the ear files produced, they can easily be deployed to the WebSphere Process Server and WebSphere Business Monitor environments. Detailed deployment is out of scope of this redpaper.

Additionally deployment can also be executed through the use of Jython or JACL executed using the wsadmin tool. The wsadmin tool is a command-line version of the Administrative console and can be used to script any activity executed in the administrative console. More information on this topic as well in the WebSphere Process Server and WebSphere Business Monitor Information Center.

Note: More information can be obtained under link :

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/topic/com.ibm.websphere.wps.620.doc/doc/tdep_depprodserver.html

6.8 Monitor health of process

Once the applications deployed, as a user you would most probably like to monitor the health of the processes contained in these applications. *Monitor health of process* is the next step in the Deployment Phase.

The tools and components which are part of the WebSphere BPM suite propose a variety of possibilities. In this section we selected 4 major capabilities and explain the capabilities briefly in the sections below. It has to be noted that detailed descriptions of these capabilities are not in the scope of this redpaper. We indicate below each of the sections links and references we think are useful to give more details.

Figure 6-65 on page 238 illustrates the current focus of this section within the context of the overall *Deployment* phase

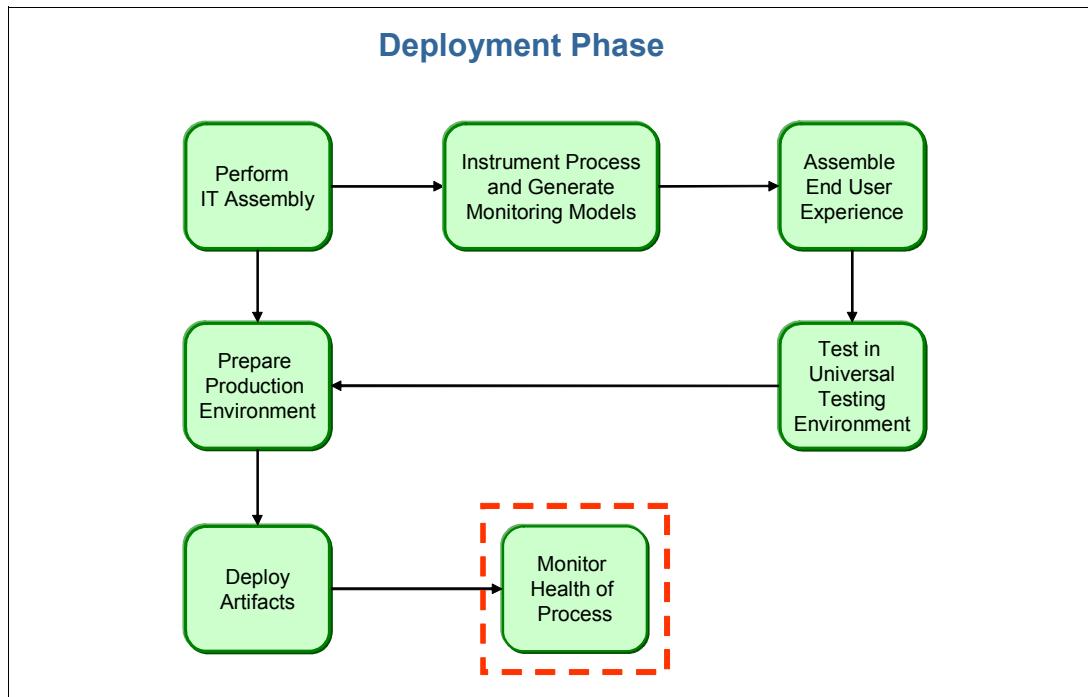


Figure 6-65 Monitor health of the process

If you look for throughput and performance problems, if you look to adjust your system to provide scalability and reliability, the four following capabilities within WebSphere Process Server permit to monitor health and debug your system.

- ▶ Failed Event Manager : Shall be used to monitor errors in asynchronous communication. If for example a message could not be delivered to a target component, the user may use the Failed Event Manager to resubmit this message after either correcting message payload or after correcting the error.
- ▶ Service Integration Bus Browser : Shall be used to monitor and administer the Service Integration Bus topology underneath WebSphere Process Server. It delivers details about Messaging engines, publishing points and also queue depth. Additionally it can be used to manage messages in a queue including to browse the content of messages.
- ▶ Business Space Health Monitor : The Business Space Health Monitor is part of the Business Space. It gives an aggregated and high level view on application and component health which are part of WebSphere Process Server.
- ▶ Tivoli® Performance Viewer: It can be used to do performance tuning of a Business Process Management Production Environment.

Additionally FFDC, logs and trace can be used to track down issues: FFDC stands for first-failure data capture support and persists records of failures and significant software incidents that occur during run time in WebSphere Process Server or WebSphere Enterprise Service Bus. Additionally WebSphere provides logs and trace settings which can be used to debug and trace a problem to the deepest level.

Note: Please refer to WebSphere Application Server 6.1 Information Center for more detailed information on how to troubleshoot WebSphere. More information under the following link :

http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/topic/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/ttrb_diagfix.html.

6.8.1 Failed Event Manager

The failed event manager is a web-based client for working with and resubmitting the failed invocations. It is an integration application and is available in the Administrative console and displays the number of failed events and provides a number of search capabilities.

You can query for failed events using a variety of criteria such as date, last successful or failed event, by exception text or a combination of these.

The following illustration provides a high-level description WebSphere Process Server exception processing and its relationship to the failed event manager. Explanations of the numbered steps follow the illustration.

1. Component A calls component B in an asynchronous manner
2. Component B encounters a runtime exception and a failed event record is generated
3. The failure recovery service captures this failure and stores it in the failed event database
4. The system administrator opens the failed event manager to investigate the problem

Refer to Figure 6-66 on page 239 for more details.

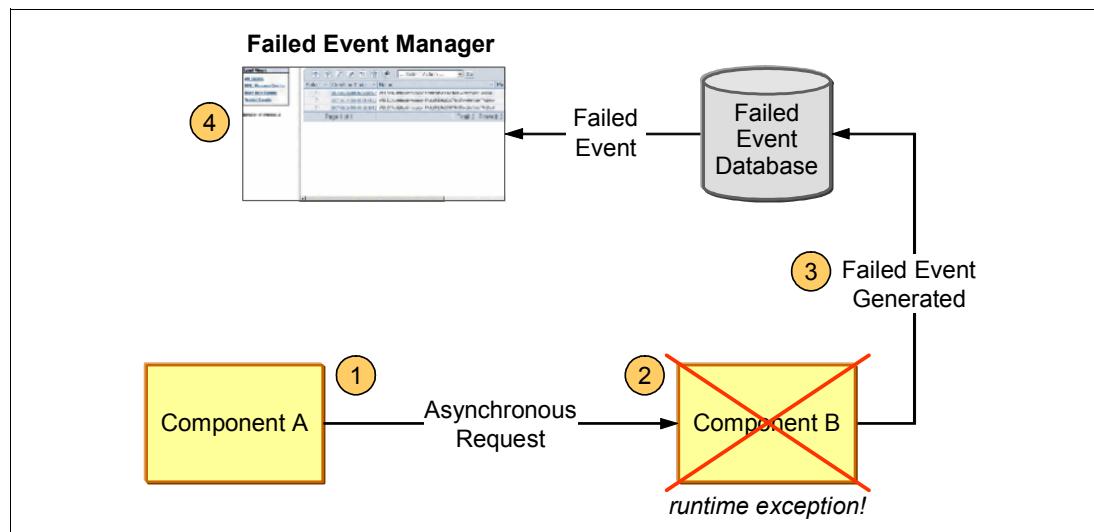


Figure 6-66 Failed Event Manager

Note: The WebSphere Process Server Information Center gives more details on the Failed Event Manager. Consult the following link for more information :

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.websphere.wps.620.doc/doc/ctroub_howto_submitt_failed_events.html.

Additionally the following link gives a detailed explanation based on a use case on recovery from an error situation using the failed event handler:

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.websphere.wps.620.doc/doc/ctroub_howto_submitt_failed_events.html.

6.8.2 Service Integration Bus Browser

The Service Integration Bus Browser provides a single location for browsing and performing day-to-day operational tasks on service integration buses. The Service Integration Bus Browser is particularly interesting for debugging asynchronous communication. Application

errors may for example cause messages not to be picked up. Using the SIB Explorer the user can at any moment check where his messages remain.

Examples of day-to-day operations include browsing service integration buses, viewing runtime properties for messaging engines, or managing messages on message points. The browser is not intended as a bus configuration tool.

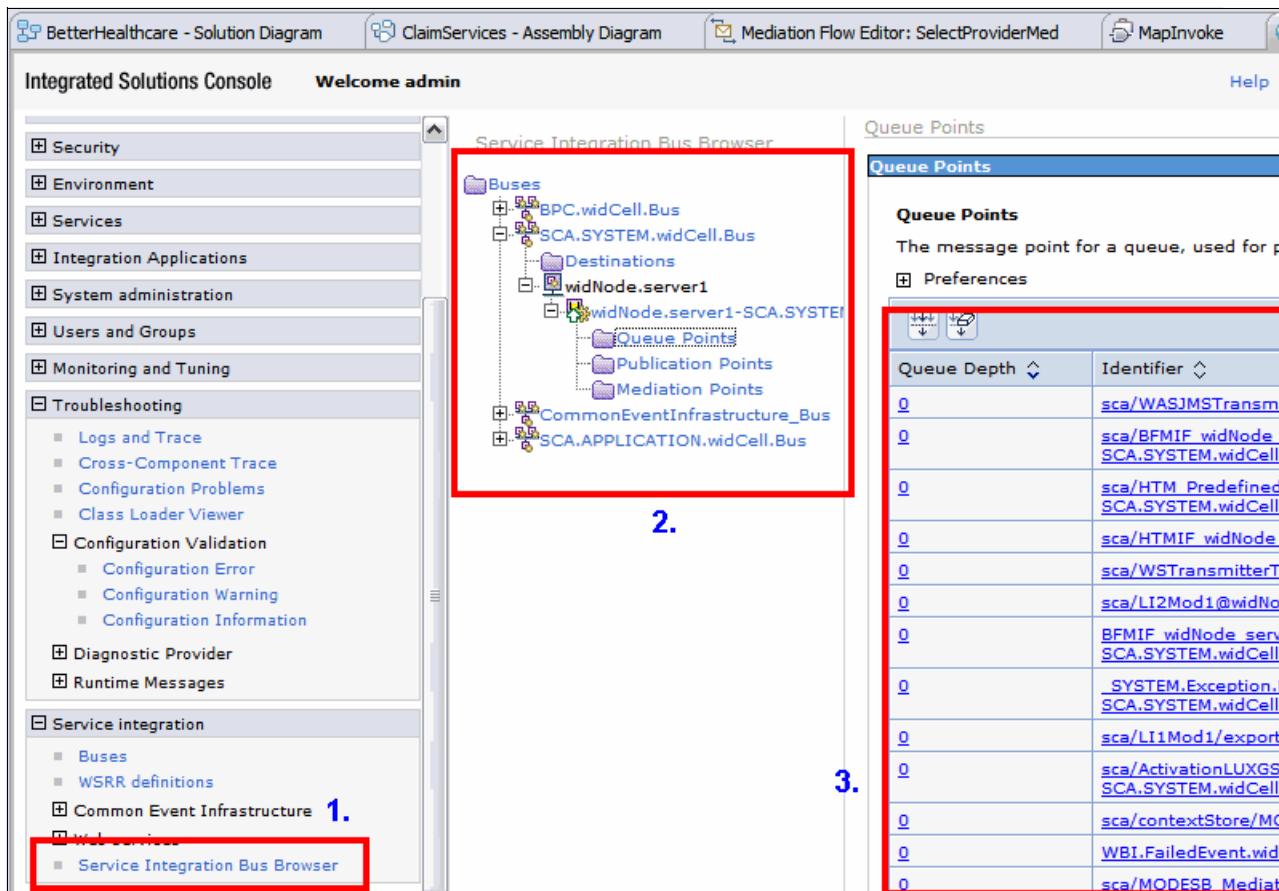


Figure 6-67 Service Integration Bus Browser within the Administrative Console

Figure 6-67 shows a screen capture of the Service Integration Bus Browser which is embedded in the Administrative Console.

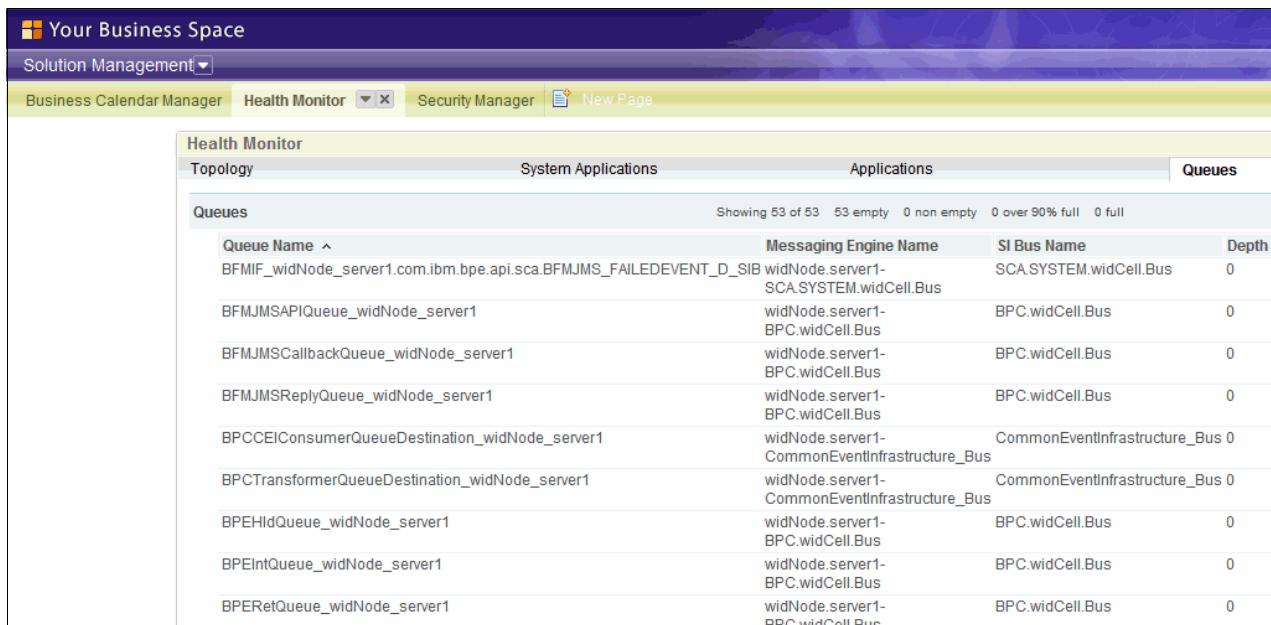
1. From within the Administrative Console the SIB Browser can be accessed in Menu **Service Integration → Service Integration Bus Browser**.
2. A pane shows the Bus topology including messaging engines, queue Points, Publication Points and Mediation Points.
1. A details pane shows actual content of Queue Points. In this case we selected the queue points from the SCA System Bus.

Note: The Service Integration Bus Browser gives you the possibility to monitor queue content and actually browse messages on the queue. It is a very useful tool for debugging. More information about the Service Integration Bus Browser can be found within the IBM WebSphere BPM Information Center under the following link :

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.websphere.wps.620.doc/doc/cadm_sibrowser.html

6.8.3 Business Space Health Widgets

The Business Space Health Widgets also known as Health Monitor shall be used to view a snapshot of the overall system health of your business solution. This widget provides a single place from which you can quickly assess the status of application servers, nodes, clusters, deployment environments, messaging engines and their queues, databases, system applications, and failed events.



The screenshot shows the 'Health Monitor' tab selected in the 'Solution Management' menu. The main area displays a table titled 'Queues' under the 'Topology' section. The table has columns for 'Queue Name', 'Messaging Engine Name', 'SI Bus Name', and 'Depth'. There are 53 rows listed, showing various queue names like 'BFMIF_widNode_server1.com.ibm.bpe.api.sca.BFMJMS_FAILEDEVENT_D_SIB' and their corresponding messaging engine and bus details. The table includes a header row and several data rows.

Queue Name	Messaging Engine Name	SI Bus Name	Depth
BFMIF_widNode_server1.com.ibm.bpe.api.sca.BFMJMS_FAILEDEVENT_D_SIB	widNode.server1-SCA.SYSTEM.widCell.Bus	SCA.SYSTEM.widCell.Bus	0
BFMJMSAPIQueue_widNode_server1	widNode.server1-BPC.widCell.Bus	BPC.widCell.Bus	0
BFMJMSCallbackQueue_widNode_server1	widNode.server1-BPC.widCell.Bus	BPC.widCell.Bus	0
BFMJMSReplyQueue_widNode_server1	widNode.server1-BPC.widCell.Bus	BPC.widCell.Bus	0
BPCCEIConsumerQueueDestination_widNode_server1	widNode.server1-CommonEventInfrastructure_Bus	CommonEventInfrastructure_Bus	0
BPCTransformerQueueDestination_widNode_server1	widNode.server1-CommonEventInfrastructure_Bus	CommonEventInfrastructure_Bus	0
BPEHdQueue_widNode_server1	widNode.server1-BPC.widCell.Bus	BPC.widCell.Bus	0
BPEIntQueue_widNode_server1	widNode.server1-BPC.widCell.Bus	BPC.widCell.Bus	0
BPERetQueue_widNode_server1	widNode.server1-BPC.widCell.Bus	BPC.widCell.Bus	0

Figure 6-68 Screen Capture of Health Monitor Widget

In Health Monitor, you can perform the following actions:

- ▶ Customize the widget to provide status on a desired subset of system components. Click Configure from the widget menu to access the list of item types available in Health Monitor. By default, all item types are selected; clear any that you do not want to monitor. You can update this configuration at any time to change the types of system components you are currently monitoring. In addition, you can use the text boxes under certain system components (clusters, servers, deployment environments, applications, and system databases) to further filter the monitoring results. Enter the full text or use partial text with a wild card character. The text fields support two types of wild cards: the question mark (?) is a single-character wild card and the asterisk (*) is a multi-character wild card. You can enter multiple values delimited by a comma (,) or a carriage return.
- ▶ Specify the rate at which the widget refreshes the information. You can specify any positive value in the Refresh every numberOfSeconds seconds field; set it to 0 (zero) to prevent Health Monitor from refreshing.
- ▶ Specify the number of rows to show per page. For each system component you are monitoring, Health Monitor displays only the number of rows you specify. All other rows are placed into tabbed pages; use the forward arrow (>) and back arrow (<) to navigate through the data. When you have configured Health Monitor to display status for a large number of system component types, use a smaller value for the Rows per page field to prevent the need for excessive scrolling.
- ▶ Specify the maximum number of query results sent from the server to the client. You can specify any positive value in the Maximum query result field.

Note: More details about the Health Monitor can be obtained from the WebSphere Process Server Information Center under following link :
http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.bspace.620.help.widgets.doc/doc/help_healthwidget/help_healthmonitor.html.

Additionally a more concrete scenario is shown under the following link :
http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.bspace.620.help.framework.doc/scenarios/solution_management/solutionmanagementscenario2.html.

6.8.4 Tivoli Performance Viewer

The Tivoli Performance Viewer (TPV) is a powerful application that allows you view a variety of details of about the performance of your server. The performance viewer enables administrators and programmers to monitor the current health of WebSphere Process Server. Because the collection and viewing of data occurs on the process server, performance is affected. To minimize performance impacts, monitor only those servers whose activity you want to monitor.

The steps below are going to show how to use the Tivoli Performance Viewer :

1. First as depicted on Figure 6-69, the PMI (Performance Monitoring Infrastructure) needs to be activated on the server.

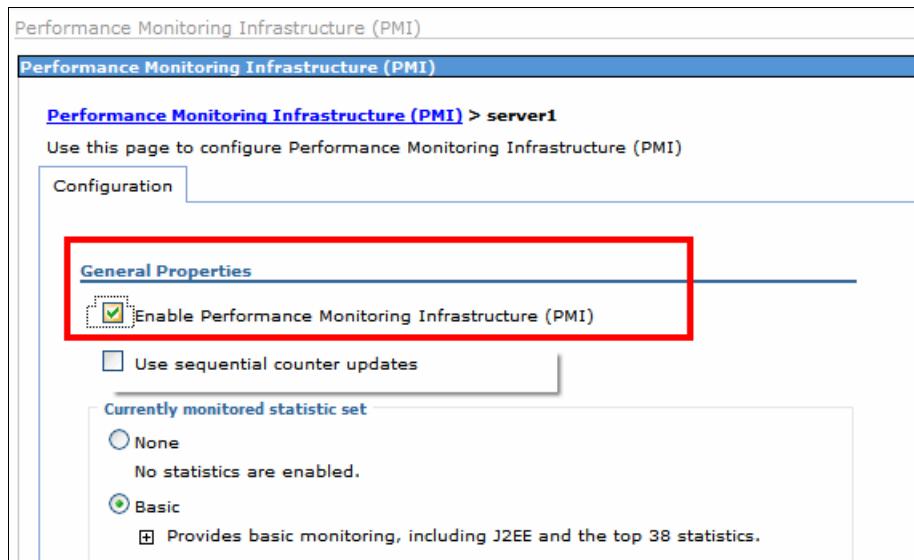


Figure 6-69 Activate Performance Monitoring Infrastructure

2. Next select **Monitoring and Tuning** → **Performance Viewer** → **Current Activity** from the Menu.

The screenshot shows the Tivoli Performance Viewer interface. The left pane displays a tree view of the server1 node, with the 'Performance Modules' section expanded. Under 'Performance Modules', the 'JDBC Connection Pools' section is selected and highlighted with a red box. The right pane contains a table titled 'Start Logging' with four rows of data. The table has columns for Time, jdbc/bpm/BusinessSpace CreateCount, jdbc/bpm/BusinessSpace CloseCount, and jdbc/bpm/BusinessSpace PoolSize. The data shows four entries at different times, all with a value of 1.00 for CreateCount and 0.00 for CloseCount and PoolSize. A red box also highlights the table area.

Time	jdbc/bpm/BusinessSpace CreateCount	jdbc/bpm/BusinessSpace CloseCount	jdbc/bpm/BusinessSpace PoolSize
4:52:05 PM	1.00	0.00	
4:51:35 PM	1.00	0.00	
4:51:05 PM	1.00	0.00	
4:50:34 PM	1.00	0.00	
Total 4			

Figure 6-70 Tivoli Performance Viewer

3. A screen capture depicted on Figure 6-70 shows the Tivoli Performance Viewer details. (1) shall be used to select a Performance Module (such as a JDBC Datasource). (2) permits to actually display the content in the right pane (3). The view can be toggled between a graphical overview and a table overview. In this case it is a table overview.

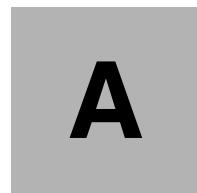
Note: The WebSphere Process Server 6.2 Information Center provides more details about using Tivoli Performance Viewer within WebSphere BPM products.

http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp?topic=/com.ibm.websphere.wps.620.doc/doc/tmon_viewing_pmi.html. Additional information can be obtained within the WebSphere Application Server V6.1 Information Center under the following link :

[http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/tprf_tpvmonitor.html](http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.nd.multiplatform.doc/info/ae/ae/tprf_tpvmmonitor.html).

Note: For performance monitoring going beyond the usage of Tivoli Performance Viewer, including for example alerts, notification or a more advanced Dashboard, we strongly recommend the usage of Tivoli Composite Manager for SOA. More info on ITCAM for SOA can be obtained under the following link :

<http://www-01.ibm.com/software/tivoli/products/composite-application-mgr-soa/>.



Additional material

This paper refers to additional material that can be downloaded from the Internet as described below.

Locating the Web material

The Web material associated with this paper is available in softcopy on the Internet from the IBM Redbooks Web server. Point your Web browser at:

<ftp://www.redbooks.ibm.com/redbooks/REDP4543>

Alternatively, you can go to the IBM Redbooks Web site at:

ibm.com/redbooks

Select the **Additional materials** and open the directory that corresponds with the IBM Redpaper form number, REDP4543?.

Using the Web material

The additional Web material that accompanies this paper includes the following files:

Table 6-1 Materials available for download

Filename	Description
IBM Business Process Management Prescriptive Guide to Solution Implementation	Prescriptive guidance that is simple and usable on how to use BPM products to deliver a solution into production within 60 days.
ArchitectureGuide.pdf	Appendix - ArchitectureGuide : Includes material on selecting and implementing a BPM SOA Architecture

Filename	Description
ImplementWebServices.pdf	ImplementWebServices : Includes additional material on how to link existing webservices to the Business Processes
Claims-Model_2009-05-27T16.31.59.zip	Contain WID Projects used as an example in this Redpaper
ClaimsServices.zip	Contain WID Projects used as an example in this Redpaper
Claims-Model_Final.mar	Contains the modeler Projects

How to use the Web material

Create a subdirectory (folder) on your workstation, and unzip the contents of the Web material zip file into this folder.

Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this paper.

IBM Redbooks

For information about ordering these publications, see “How to get Redbooks” on page 247. Note that some of the documents referenced here may be available in softcopy only.

- ▶ *Business Process Management Enabled by SOA*
<http://www.redbooks.ibm.com/abstracts/redp4495.html>

Online resources

These Web sites are also relevant as further information sources:

- ▶ IBM BPM — Business Process Management Site
<http://www-01.ibm.com/software/info/bpm/>
- ▶ BPM Blueworks
<https://apps.lotuslive.com/bpmblueworks/>

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BPM Solution Implementation Guide



A Practical approach to rapid BPM solution delivery

Business driven BPM solution implementation

Complements existing business partner and customer solution methodologies

This IBM® Redpaper™ provides a practical bridge toward achieving successful BPM solution implementation within 60 days. It is based on an approach using phases and specific activities outlined in the IBM Business Process Management Prescriptive Guide to Solution Implementation. To provide a realistic context for the solution, we incorporate the process, business model and specific scenario from a health care provider. The context is based on a live code demo which consists of a fictitious application based on a customer scenario / requirements, using the approach in the IBM Business Process Management Prescriptive Guide to Solution Implementation to assemble the solution. This Redpaper discusses how to analyze, model and ultimately manage the processes within this realistic health care scenario.

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