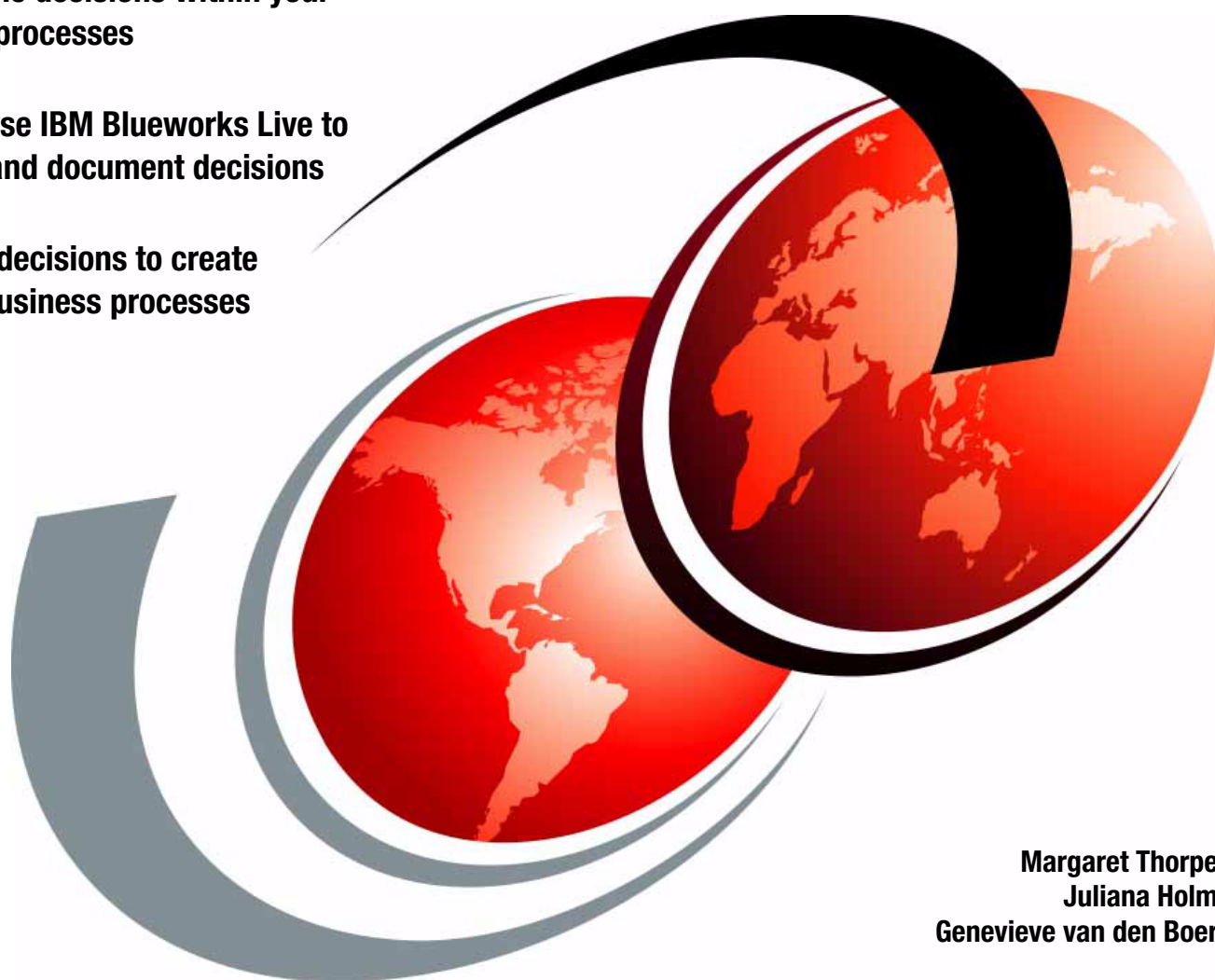


Discovering the Decisions within Your Business Processes using IBM Blueworks Live

Uncover the decisions within your
business processes

Learn to use IBM Blueworks Live to
discover and document decisions

Leverage decisions to create
smarter business processes



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International Technical Support Organization

**Discovering the Decisions within Your Business
Processes using IBM Blueworks Live**

January 2014

Note: Before using this information and the product it supports, read the information in “Notices” on page v.

First Edition (January 2014)

This edition applies to IBM Blueworks Live, an IBM Software-as-a-Service (SaaS) offering, accessible at <https://www.blueworkslive.com>

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Preface

In today's competitive, always-on global marketplace, businesses need to be able to make better decisions more quickly. And they need to be able to change those decisions immediately in order to adapt to this increasingly dynamic business environment. Whether it is a regulatory change in your industry, a new product introduction by a competitor that your organization needs to react to, or a new market opportunity that you want to quickly capture by changing your product pricing. Decisions like these lie at the heart of your organization's key business processes.

In this IBM® Redpaper™ publication, we explore the benefits of identifying and documenting decisions within the context of your business processes. We describe a straightforward approach for doing this by using a business process and decision discovery tool called *IBM Blueworks Live™*, and we apply these techniques to a fictitious example from the auto insurance industry to help you better understand the concepts.

This paper was written with a non-technical audience in mind. It is intended to help business users, subject matter experts, business analysts, and business managers get started discovering and documenting the decisions that are key to their company's business operations.

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Introduction to decision discovery

In today's competitive, always-on global marketplace, organizations need to be able to make better *decisions* more *quickly*. And they need to be able to change those decisions immediately in order to adapt to this increasingly dynamic business environment. Whether it is a regulatory change in your industry, a new product introduction by a competitor that you need to react to, or a new market opportunity that you want to quickly capture by changing your product pricing. Decisions like these lie at the heart of your key business processes. And the ability to automate these decisions can give organizations the ability to do this at scale, gaining a competitive edge. Business Rule Management Systems (BRMSs) and Decision Management platforms have typically been the technology of choice for decision automation. Now decisions are becoming increasingly important in Business Process Automation, as well as, the value of smarter processes becomes more widely understood.

In this Redpaper publication, we explore the benefits of identifying and documenting decisions within the context of your business processes. We describe a straightforward approach for doing this by using a business process and decision discovery tool called *IBM Blueworks Live*, and we apply these techniques to a fictitious example from the auto insurance industry to help you better understand the concepts. In the Appendixes, we briefly explain the topic of automation if you are interested in how you can go about automating decisions once they have been documented. Although it is our intention to enable you to get started immediately discovering and documenting the decisions within your business processes, we have also provided links to additional resources at the end if you want to gain a broader and deeper understanding of this subject.

This paper was written with a non-technical audience in mind, which is a little unusual for an IBM Redpaper publication. It is intended to help business users, subject matter experts, business analysts, and business managers begin to discover and document the key decisions within their business processes using IBM Blueworks Live. However, the paper should also prove informative for IT readers looking for a quick introduction to the topic. For a deeper dive into some of the more technical aspects of decision modeling and implementation, there are a number of excellent resources referenced at the end of the paper for you to explore.

So let us get started.

1.1 Decisions

Decisions are foundational assets in most business operations. Decision discovery is the process of identifying and documenting the key business decisions within an organization. In this chapter, we introduce decisions and decision discovery and explore the relationship between decisions and business processes.

1.1.1 Operational decisions

Decisions are everywhere. They are made constantly in organizations both large and small. Regardless of whether they belong to the private, public, or non-profit sector, the success of an organization depends on the quality of its decisions. There are many different types of decisions. Some decisions are more *strategic* in nature and while they may have a significant impact on the business, they are made relatively infrequently. These strategic decisions are usually *one-offs* that require intensive data analysis, human interaction, judgment, and expertise, and sometimes intuition. For example, the decision by a manufacturing company to build a new distribution center at a particular location can have a huge impact on lead times, fulfillment of orders, customer satisfaction, and other key business objectives. But it is not a decision that is made very often, and when it is, it likely involves a lot of analysis and discussion at high levels of the organization in order to reach a decision. Or take the example of the decision by a mortgage lender to introduce a new, innovative loan product to the marketplace. This decision could also have a major impact on the success of the company by enabling them to capture a new segment of the market, increase revenue and profitability, and reduce risk exposure. But, once again, this decision is made relatively infrequently and likely involves human creativity, intensive collaboration, and much analysis before a *go* or *no-go* decision is reached.

Operational decisions, however, tend to be more tactical and focused. They have a limited scope, but are repeatable and are often made quite frequently. The decision by an auto insurance company to pay or reject a particular claim is a good example of this. The decision by an online retailer to offer a special discount to a particular customer for a specific product is another good example. They are called *operational decisions* because they are critical to the effective operation of an organization. It is often the quality and timeliness of these operational decisions that determines whether an organization meets its business objectives or not. Because operational decisions are often made very frequently, the benefits can really add up when they are of a high quality, even though the value of each individual decision may be relatively small. For example, assessing whether or not a credit card purchase might be fraudulent may not have much of an impact when we are considering a single \$23.29 gas purchase transaction. But when we are evaluating hundreds of thousands of transactions a day, the impact to a company's bottom line can be substantial!

1.1.2 Decision discovery

Decision discovery is the process of identifying and documenting the key business decisions that are made regularly within a given business. The first step on the decision discovery journey is to understand the decisions that are currently being made within an organization. Often this knowledge is hidden in an expert's head, in existing code, and in corporate documents, which is why it must be *discovered*. By extracting it and documenting it, you can gain insight into what is driving your key business operations. Only then can you begin to analyze, improve, and potentially automate some or all of these decisions as shown in Figure 1-1 on page 3.

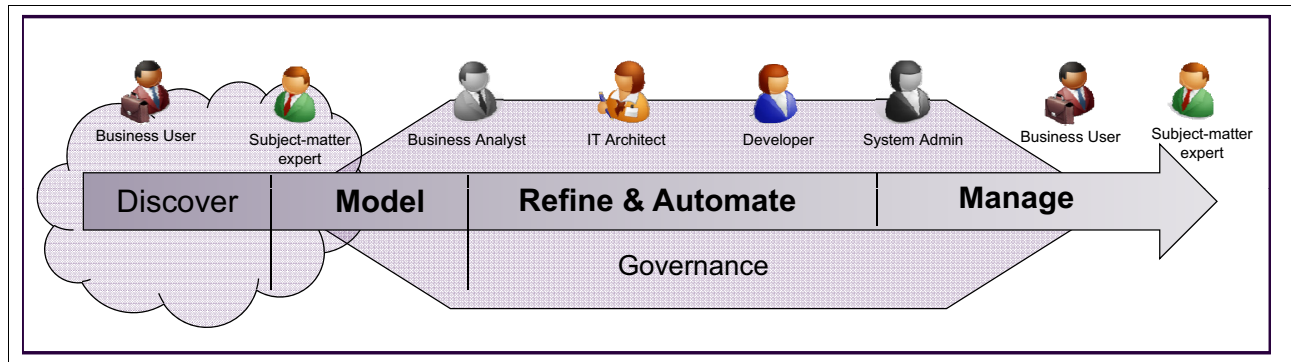


Figure 1-1 Decision discovery through automation

When identifying the key business decisions being made within your organization, it is helpful to think of them as answers to important business questions. Is this applicant eligible for automobile insurance? What annual premium should we charge this applicant for this policy? Is this vehicle eligible for coverage? Certain keywords can tip you off to the potential presence of a decision. Phrases that use verbs like assess, determine, evaluate, identify, validate, analyze, establish, diagnose, select, choose, calculate, and others like this may indicate candidate decisions. These same phrases can be used effectively to name your decisions when documenting them: Assess Applicant Eligibility, Calculate Premium, Determine Vehicle Eligibility.

Once you have identified a decision worth documenting, there are a number of key pieces of information about the decision that are best captured early on. These are a few of them:

- ▶ What is the business motivation behind this decision?

Document the key business objectives that the decision seeks to achieve. This can be very helpful when assessing which decisions to tackle first in a discovery initiative. If the documented business objectives have a significant impact on the overall project goals, the decision may be a high priority for further discovery.

- ▶ Who are the subject matter experts?

Capture the names and titles of the people that have knowledge of this business decision. These people will likely prove indispensable during the discovery process. And, in some cases, the existence of experts may influence your discovery plan. For example, the lack of experts may be reason not to tackle a particular decision until later in the project, when the team has more experience with the process. Or, the planned retirement of experts may motivate an entire project to document the decisions that those experts have knowledge of so that it can be retained after their departure.

- ▶ Are there definitive sources of knowledge for this decision?

Capture any regulatory guides, corporate documents, work aids, and other authoritative documents describing the decision. These documents may become very important during the discovery process.

- ▶ What are the key performance indicators (KPIs)?

Document any business metrics that are used to assess the quality and outcome of this decision. These will likely be related to the business motivation captured earlier. KPIs will be necessary to measure any resulting improvements to the business operations and to analyze the effectiveness of this decision in relation to specific business objectives.

- ▶ Is this decision made frequently?

High-volume decisions may be good candidates for automation using Decision Management technology because the potential for significant ROI exists.

- ▶ Does the decision logic change frequently?

Capture the change dynamics of the decision. Decisions that must be changed frequently or quickly are often good candidates for automation using Decision Management technology.

Once this high-level information has been documented for the key decisions in the business area of focus, the decision discovery team will be able to evaluate and prioritize their efforts. Then they can get to work documenting the details of each of the decisions that have been selected for discovery.

1.1.3 The anatomy of a decision

What exactly is a decision? For the purposes of this paper, a decision is the act of determining a wanted business outcome by applying specialized business knowledge to relevant information. A decision consists of the following factors:

- ▶ The *decision output*: The conclusion reached, the option selected
- ▶ Any number of *decision inputs*: The facts to be considered
- ▶ The *decision logic*: Describes how the conclusion is reached, based on these facts. Decision logic is usually expressed using decision tables, business rules, analytic models, or other such formalisms as shown in Figure 1-2.

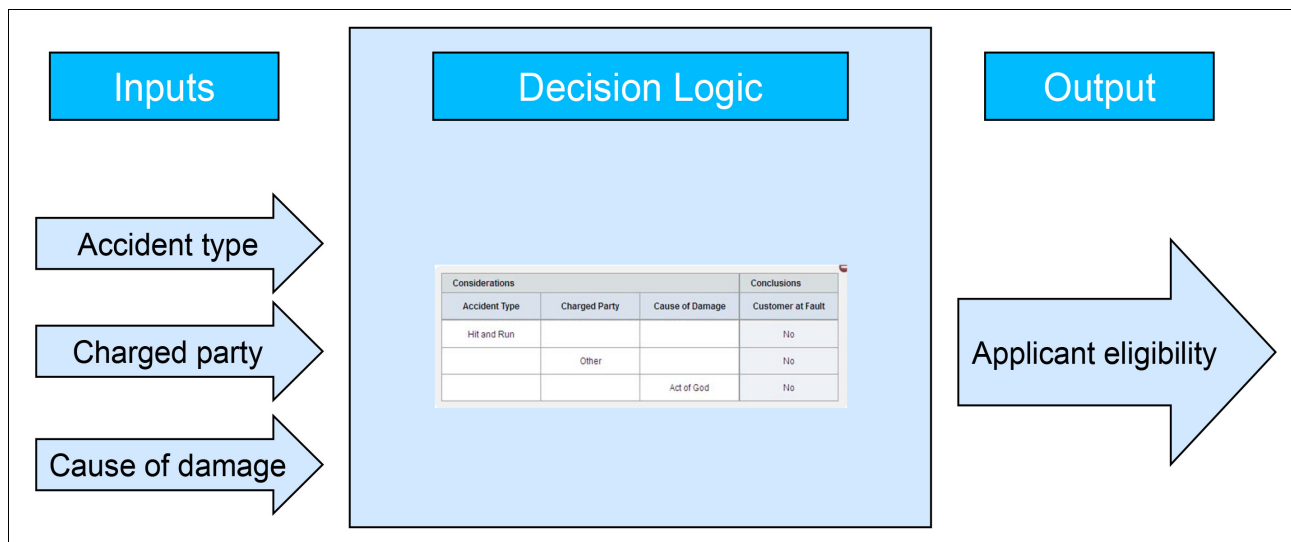


Figure 1-2 Structure of a simple decision

If you are new to decision discovery, you may occasionally come across the term *business rules* and wonder how these relate to decisions. A business rule is a rule that defines or constrains the structure or operations of a business. Business rules are often expressed as if-then statements. When a group of business rules is used together to determine a single outcome, they are typically organized into decision tables. Decision tables are a very compact, effective, and intuitive means of documenting and understanding decision logic. When business rules are organized this way, we refer to them as *decision rules*. Each row in a decision table is essentially a decision rule. For example, Figure 1-3 on page 5 shows the decision logic for the Validate Offer Compliance decision, which determines whether or not the salary proposed for offer to a potential new hire is compliant with corporate salary guidelines. Each row in the decision table is a decision rule.



Figure 1-3 Example of a decision rule

You may also see business rules used together to enforce business policies across a set of business processes. Unlike decision rules, these enforcement rules do not together determine a single outcome. Rather, they typically express a constraint or requirement on some element of the business. For example, an auto rental company might have a business policy in place which states that *Depreciation of rental cars must be minimized*. In order to enforce this policy, there may be a number of business rules that will need to be applied at different points in the car rental company's business processes. For example:

- ▶ When a rental car is being assigned to a customer, this business rule should be applied: *The assigned rental car should be the available car with the lowest mileage in the requested car group.*
- ▶ When a customer requests an extension to their rental by phone, this business rule should be applied: *A rental cannot be extended by phone if the car is within 500 miles of its next service mileage.*

In this paper, you learn to use decision rules in the form of decision tables to document your decision logic because this is the easiest way to get started discovering and documenting decisions. Once you have become comfortable working with basic decision rules, you may want to explore additional techniques for describing other sorts of business rules and decision logic. There are some additional resources referenced at the end of this paper that will help you, should you decide to delve more deeply into these topics.

1.2 Decisions and business processes

Because decisions and processes are complementary and often tightly intertwined, it is important to understand a bit about your business processes before you begin to discover and document your decisions.

1.2.1 Relationship between decisions and business processes

To understand how decisions and processes relate to each other, let us begin by reviewing some basic definitions:

- ▶ What is a business process?

A *business process* represents the sequence of activities taken by various participants to repeatedly achieve a business goal.

A process does not represent the steps taken to perform a task once, such as a project. A process occurs over time, and may involve a number of participants. The process definition may include a number of milestones indicating phases, or stages, within the process. While there may be some tasks within a process that occur in parallel, a process is fundamentally understood and envisioned as a sequence of activities over time.

- ▶ What is a decision?

A *decision* is a conclusion reached in response to a set of facts.

Decisions generally occur at a specific point in time, at which point the facts are gathered and a conclusion is drawn from them. Sometimes decisions appear to occur over time, but it is not really that the decision logic is being applied over time; rather it is the facts that are gathered over time. The final decision is made once all of the facts have been gathered. There are also occasionally decisions in which sub-decisions have to occur in a particular order, which would seem to imply that they occur over time. However, even in these cases, decisions are fundamentally understood and described as conclusions reached at a point of time in response to a set of facts.

- ▶ What is a decision point?

A *decision point* is a place within a business process where a decision is made.

Most processes contain decisions. For example, in a process to issue an insurance policy, there will be points in the process where a determination will need to be made as to whether to go ahead and issue the policy, or whether to deny the coverage to the applicant. Each of these points in the process is a place where some form of decision is made; it is a *decision point*, as shown in Figure 1-4 on page 7.

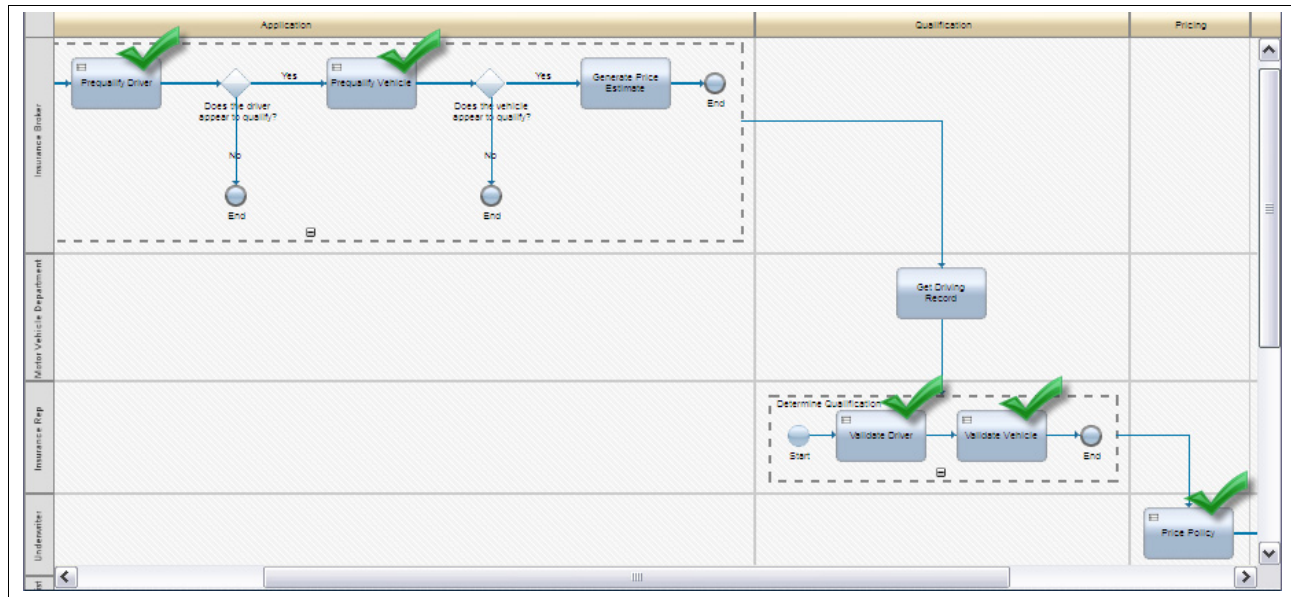


Figure 1-4 Decision points within a process

Most operational decisions take place within some form of business process. These decisions usually require that some form of information be provided as input to the decision. These inputs are typically prepared by defined steps in a process prior to the decision point. Decisions produce some form of output. The information that is the output of a decision may be used by the process to determine whether to continue the process flow. An example of this type of output would be the decision whether to accept or reject an applicant. A decision to accept would indicate that the process flow should continue with the application. The output of a decision can also be the information that is required by steps defined in the process following the decision point. For example, a decision may be used to calculate a price for a policy. This price could then be used by steps later in the process to define a contract for the insurance policy.

1.2.2 Benefits of documenting the decisions within your business processes

Even when automation is not the goal, discovering and documenting decisions during process discovery can result in a number of benefits:

- Clearer, more accurate understanding of the business process

Most business processes make decisions. Documenting these decisions explicitly leads to a better understanding of how a process is actually being carried out within an organization or system. Highlighting these decisions may provide insight into common areas of your enterprise. Once you begin discovering the decisions, you may find that you use a similar decision in a different process. By documenting these decisions, you can standardize the decision and apply it consistently across the different situations. You can then use the same decision everywhere, rather than having multiple decisions that vary slightly from process to process. This insight, when leveraged for automation purposes, can lead to the execution of repeatable decisions, even across disparate processes.

- Simpler, more efficient business processes

Extracting the decision logic out of the processes, when appropriate, can reduce the process complexity and lead to a more streamlined process. Many process variations relate to regional or divisional differences. Capturing these variations in the form of decisions, rather than detailing them through complicated branches in the process makes

the overall solution easier to understand. By isolating the variations from the process, you will be left with a foundational process that can be standardized across your enterprise.

- ▶ Smarter, more agile business processes

Business processes that are designed to ensure that the right decisions are made at the right time can provide a real competitive advantage. In general, processes tend to be more stable than decisions, which tend to change more frequently. When you pull the decision logic out of a process, you can update the decisions and processes independently. This results in processes that are more responsive to changing business conditions, and systems that can be changed in days rather than weeks or months.

The result is increased agility, where the time to get new changes implemented is significantly faster than what would be required if the decision logic was buried in the process. Processes where the decision logic has been encapsulated in this way are not only more flexible and dynamic, they are also more repeatable. Since a process standardized in this way is still able to deal with exceptions, the same process definition can apply in multiple business situations. This leads to broader usage and applicability.

- ▶ Transparent, more manageable business processes

Defining the decision logic separately from the process can improve overall management of your operations. For example, if you clearly capture the conditions under which a process meets certain milestones in the form of a decision, you will have explicit acceptance criteria with which to manage those transitions. Most enterprises have some form of audit requirements that they need to meet. Documenting the decision logic apart from the process can provide visibility into the inputs, or necessary facts; and outputs, or outcomes, of a decision, as well as the decision structure and logic. This creates transparency in how you conduct your business.

1.3 Summary

In this chapter, you have seen what decisions are, how pervasive and fundamental they are to the operation of any business, and the value of discovering and documenting the decisions that are buried within business processes.



Introduction to IBM Blueworks Live

Decision discovery is usually best performed in the context of the business processes where the decisions are being made. Because of this, it is helpful to have a common set of tools with a single repository to document both processes and the decisions that use them. IBM Blueworks Live is such a tool, and is used throughout this paper to discover and document decisions. In this section, we introduce some of the capabilities of Blueworks Live that are useful for discovering and documenting decisions.

2.1 Collaborative platform for discovering and documenting business processes

IBM Blueworks Live is a collaborative platform for process discovery in the cloud. It provides a rich set of tools for discovering and documenting important process knowledge. Easy to use, and highly collaborative, it enables subject matter experts and business analysts to work together to capture and refine their process discovery maps and process models. Teams can easily leverage knowledge and expertise from across the organization to analyze and improve their business processes once they have been captured in Blueworks Live.

Blueworks Live provides an easy-to-use environment for the rapid discovery, definition, and documentation of business processes and their associated decisions and policies. Its graphical design and visualization tools are specifically designed to make it easy for business owners, business users, and subject matter experts to engage directly in the analysis and improvement of their business processes. Business processes can be outlined or brainstormed with the ease of creating a bulleted list and Business Process Model and Notation (BPMN) diagrams are automatically generated from them. Processes can be viewed on a shared whiteboard. And two or more users can work on the same process at the same time; all changes are shown instantly to all users.

Blueworks Live provides the single, shared repository where all stakeholders can find the *single version of truth* about any process. In this way, Blueworks Live helps facilitate successful process improvement projects by enabling all users on the process improvement team to get aligned on process goals, problems, and areas for improvement. When the BPM team is ready to inventory, discover, and analyze the details of their processes, Blueworks Live can be used as the *system of record* for storing and sharing the detailed information for all of the business processes. As processes and improvement opportunities change over time, the details can be documented in Blueworks Live so that there is a single spot where all users can go to access the latest up-to-date information. And Blueworks Live directly integrates with IBM Business Process Manager so business processes that are documented in Blueworks Live can be implemented, executed, and optimized.

2.2 Decision discovery with Blueworks Live

Blueworks Live also provides the ability to discover and document the decisions within business processes. Decisions can be modeled graphically, enabling users to compose, view, and collaborate on decision diagrams. Key characteristics of decisions can be captured, and the decision logic documented using decisions tables. Changes to decisions can be tracked, and previous versions of decisions restored. Decisions of interest can be easily located, along with the business processes that are using those decisions. Decision documentation can be shared by printing decision diagrams, exporting decision information to MS Word and MS Excel, and sharing links to decisions.

2.2.1 Decisions within business processes

In Blueworks Live, a decision is associated with a *Decision Task* in the Process Diagram. A Decision Task is equivalent to a *Business Rule Task* in BPMN 2.0, and uses the same graphical notation and icon, as shown in Figure 2-1 on page 11 and Figure 2-2 on page 11.

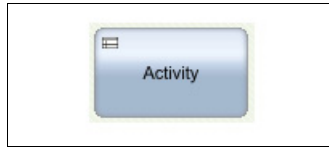


Figure 2-1 Decision Task Element Icon

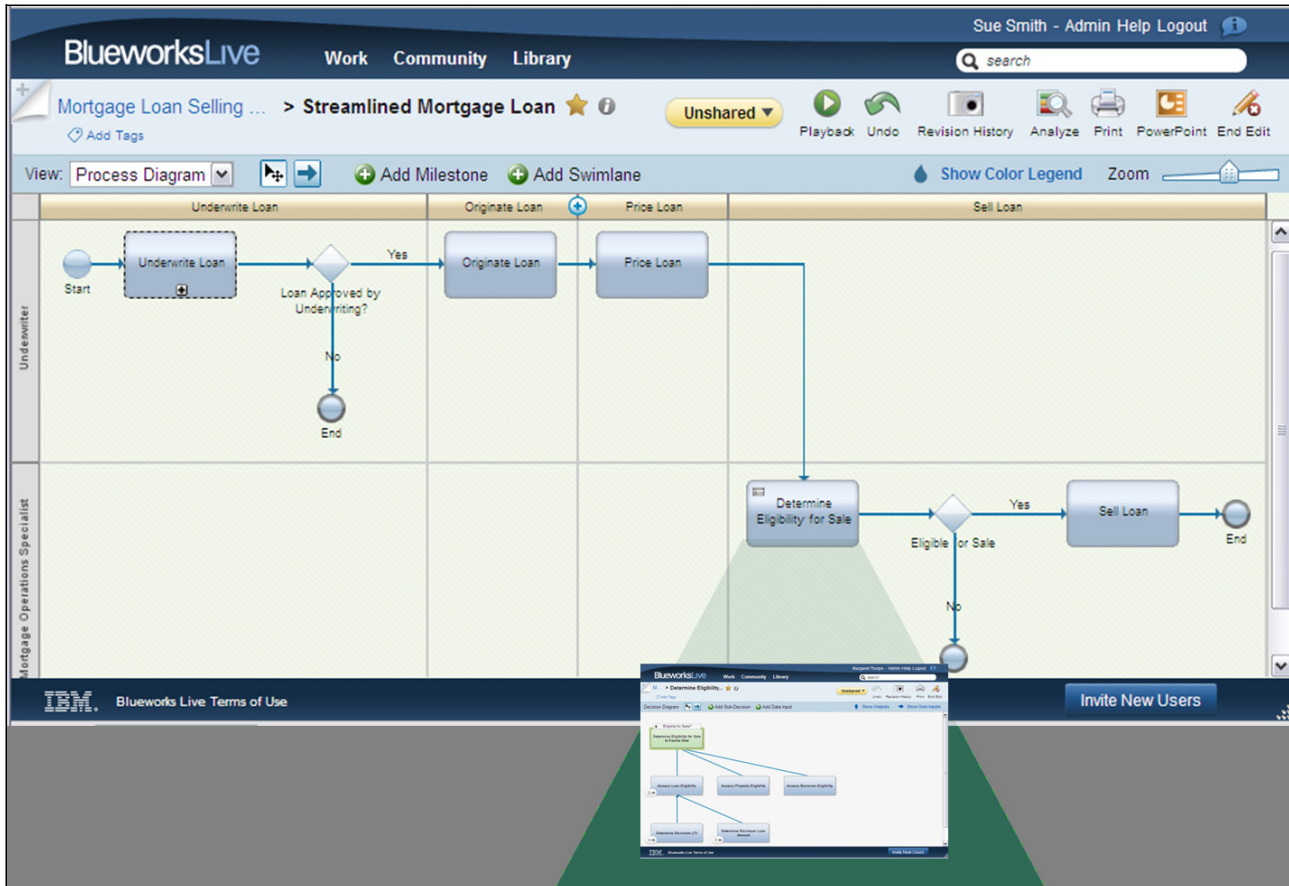


Figure 2-2 A decision task, and its associated decision, within a business process

2.2.2 Capturing key decision characteristics

Many of the key decision characteristics described in the earlier part of this paper can be documented explicitly in Blueworks Live using the Details tab on the Decision panel (see Figure 2-3 on page 12). Additional details can be captured using the Documentation tab, and if needed, documents can be attached to the decision using the Attachments tab.

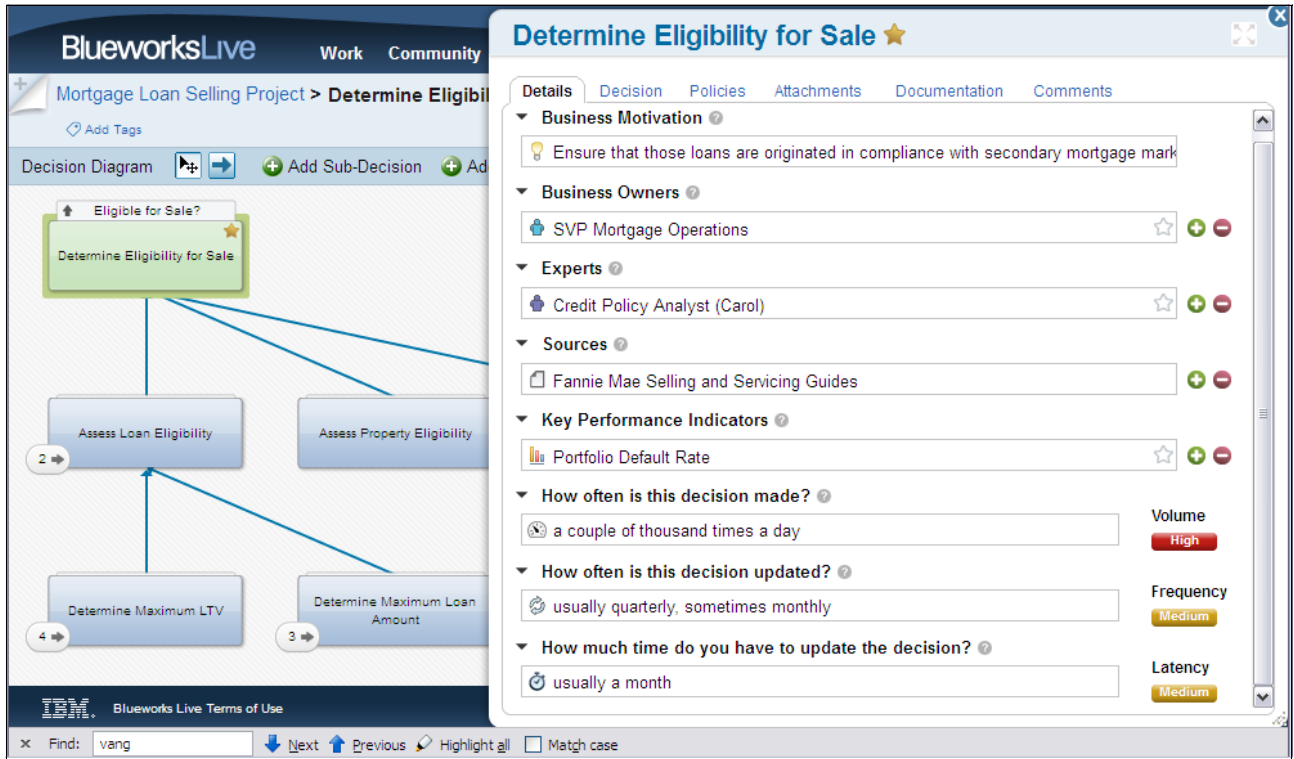


Figure 2-3 Documenting decision properties

2.2.3 Composing a decision

The Blueworks Live decision diagram is based on the principles and style proposed in the draft OMG DMN (Decision Model and Notation) 1.0 specification. Figure 2-4 depicts the main graphical elements of the Blueworks Live decision diagram.

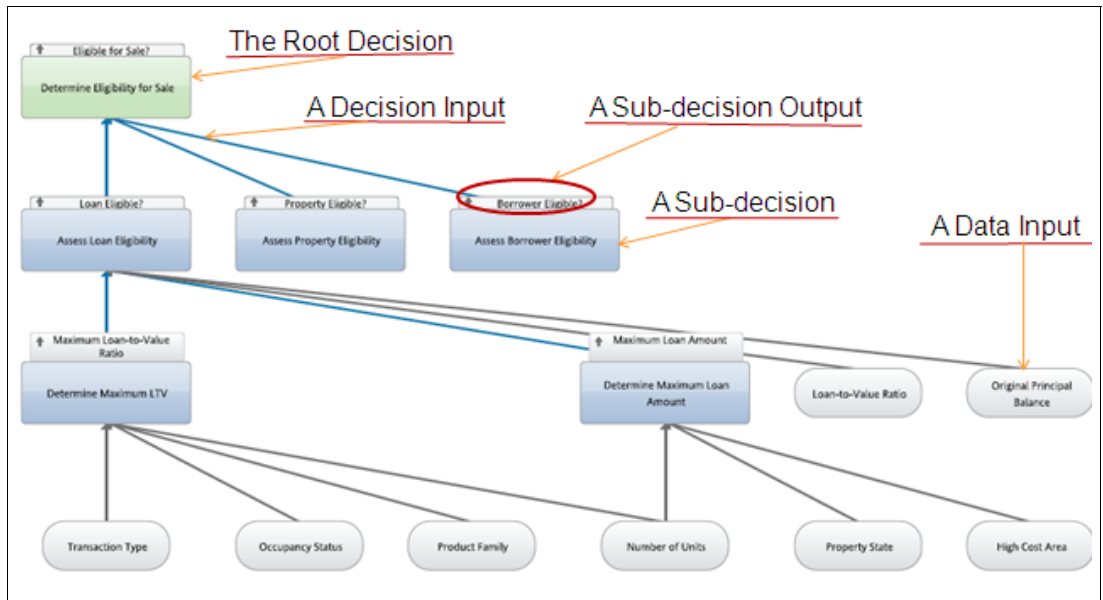


Figure 2-4 Decision diagram

When composing a decision, you begin in a top-down fashion, beginning with the root decision. You give the decision output a meaningful business name, and add any data inputs or sub-decisions that this decision may depend on. Then you move down to the next level in the decision diagram and do the same for any required sub-decisions. This is usually repeated for each sub-decision until the decision structure is complete, although it is also possible to go back and forth between the various levels and sub-decisions in the diagram refining them iteratively until they are all complete. Figure 2-5 shows a composed decision. The **Add Sub-Decision** and **Add Data Input** buttons and menu items automatically lay out the diagram as the corresponding elements are added.

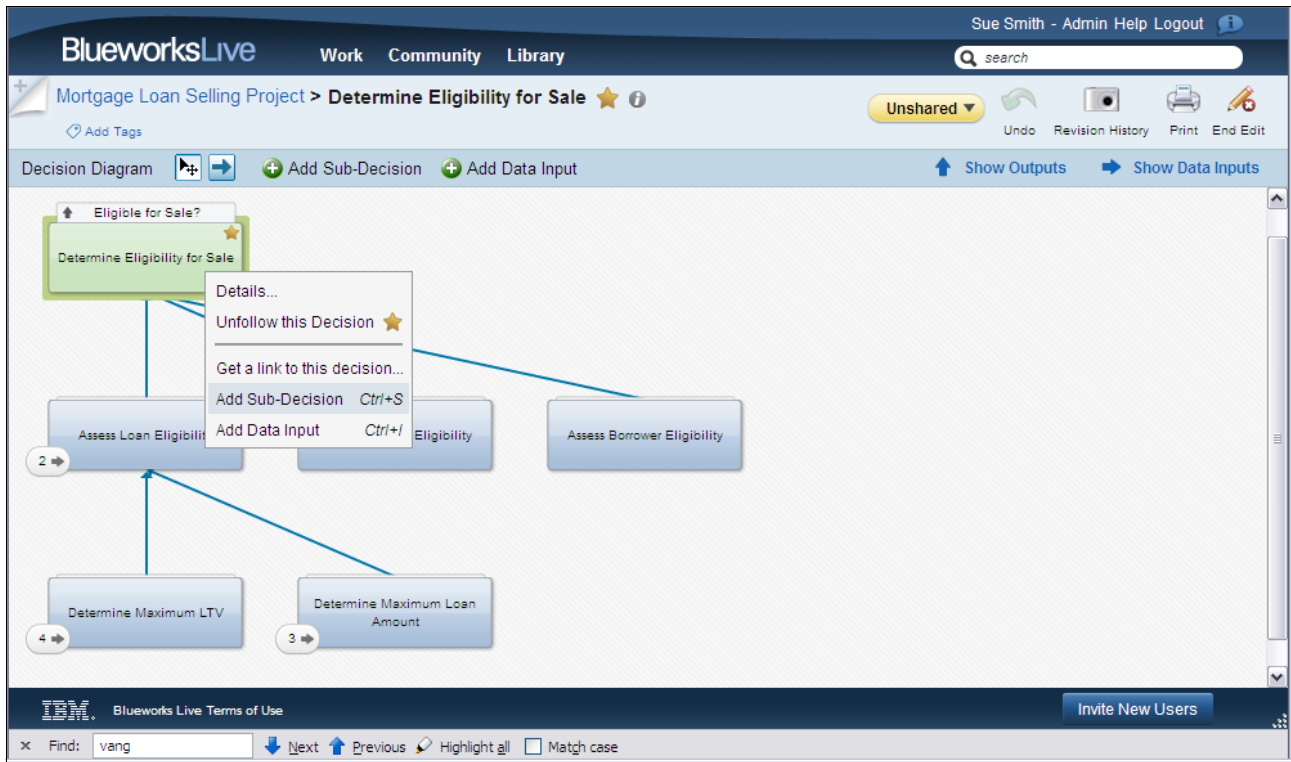


Figure 2-5 Composing a decision

Once the decision inputs and the output for a decision or sub-decision have been defined, the decision logic can be defined on the Decision tab. Blueworks Live generates a skeleton decision table based on the inputs and output from the decision diagram, or the user can opt to create their own decision table from scratch. In either case, the user can re-arrange and re-label the columns. Once they are satisfied with the structure of the decision table, they can begin populating it. When working with decision tables that have more than a few rows, the editor productivity tools, like copy and paste (CTRL-C, CTRL-V), can be very helpful for populating new rows or blocks of rows.

Figure 2-6 shows the decision table editor.

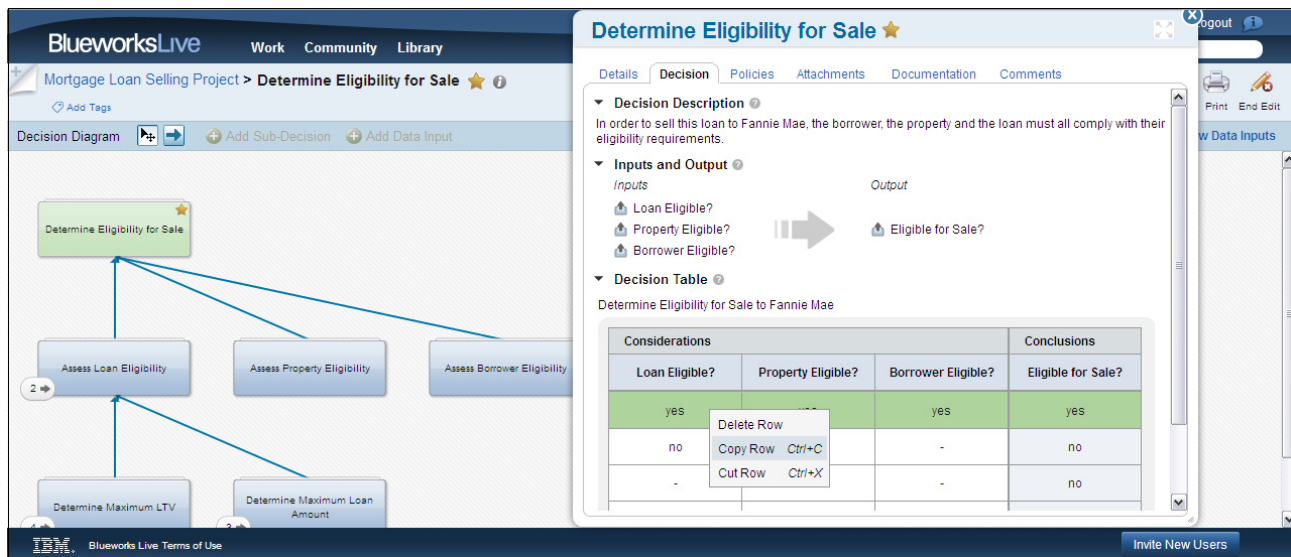


Figure 2-6 Documenting decision logic

2.2.4 Viewing a decision

In View mode, the user can navigate between the different elements of the decision diagram, with the details appearing in a separate pane on the right side of the window. When a sub-decision is selected in the diagram, this pane shows all of the details of that sub-decision including any decision tables, documentation, attachments, or comments. When a data input is selected, the description associated with that data input in the Blueworks Live glossary is shown. Figure 2-7 shows the root decision selected and its details displayed in the pane on the right of the window.

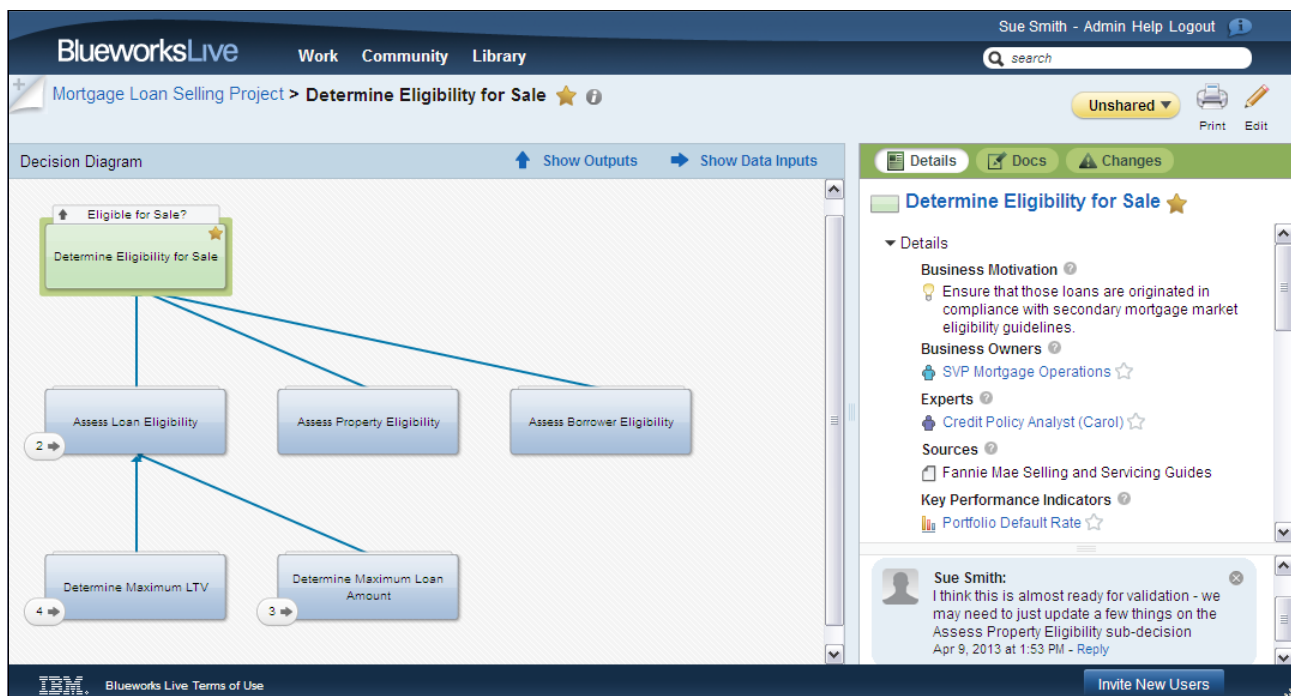


Figure 2-7 Navigating a decision

2.2.5 Collaborating on decisions

There are many useful collaboration features available in Blueworks Live. Particularly useful when working with decisions is the *Activity Stream*. Here, the user can see all of the changes made to their decisions, and who made them. They can communicate with their team through posting to the stream, or adding comments to decisions that they are collaborating on. They can also interact through live chat with their teammates, sharing links to the processes and decisions that they are viewing, as depicted in Figure 2-8.

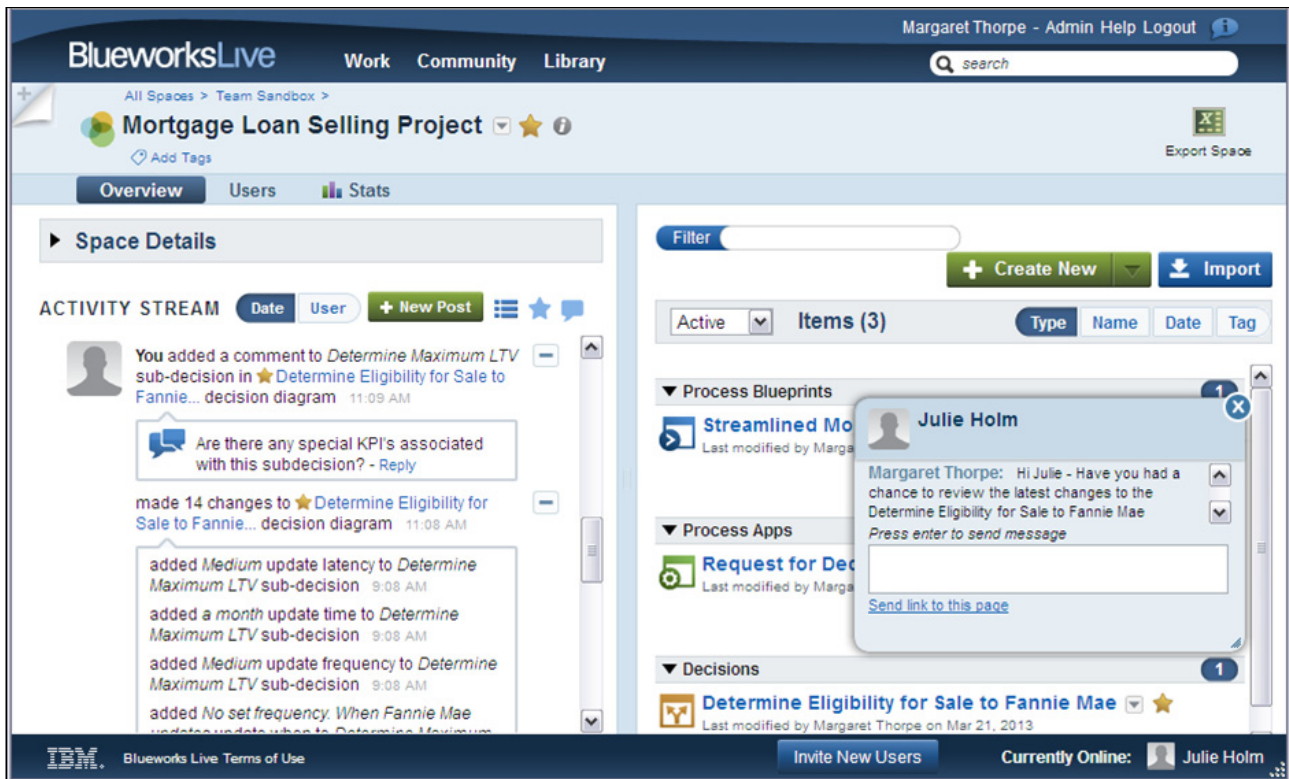


Figure 2-8 Collaborating on decisions

2.2.6 Validating decisions

Once a decision has been fully documented, it will typically need to be validated by experts and stakeholders. Blueworks Live has some lightweight process automation features that are very useful for automating decision review and approval workflows. Reviewers and approvers can manage their tasks within Blueworks Live and receive automatic email notifications when there are tasks awaiting their response. The overall status of review and approval workflows can be monitored in Blueworks Live.

Figure 2-9 shows an example of a request for decision review and approval.

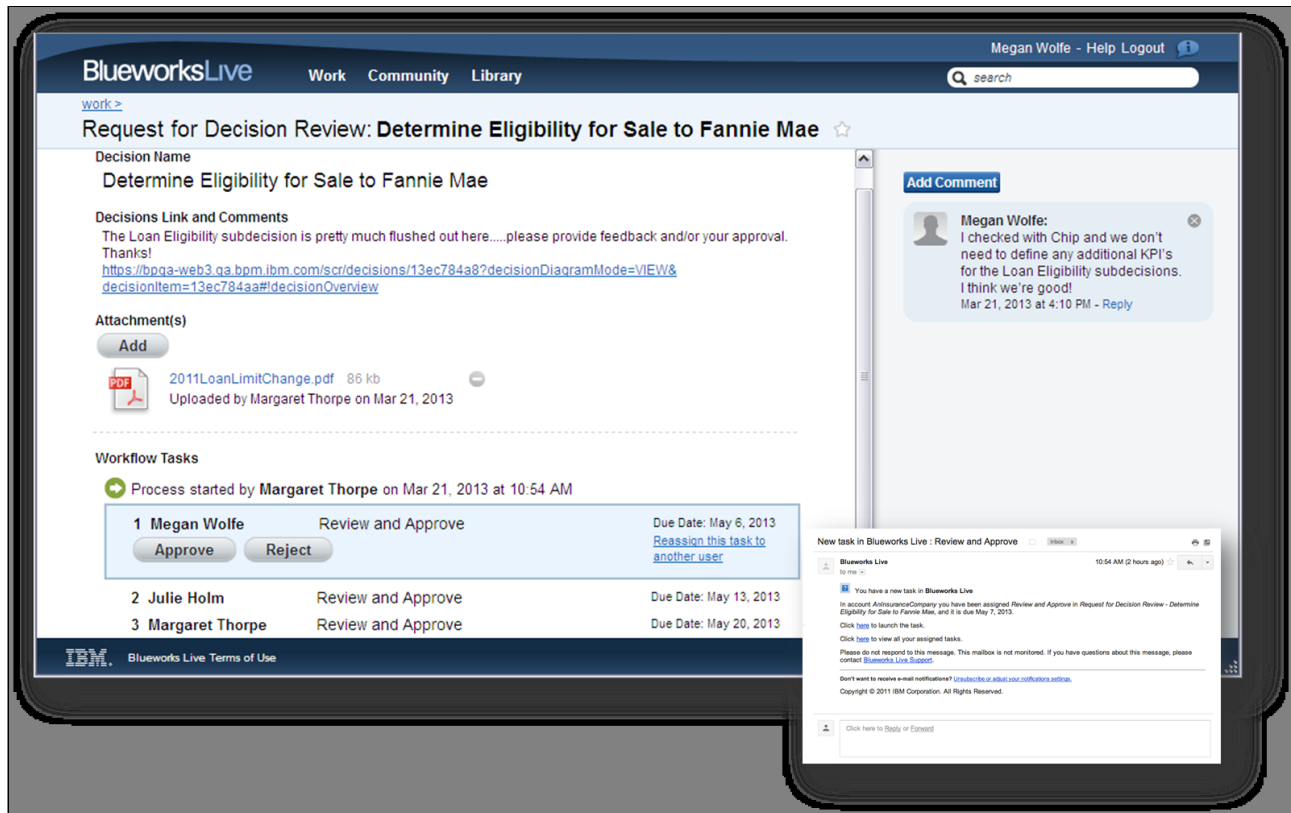


Figure 2-9 Validating a decision

2.2.7 Tracking changes to decisions

When modeling a decision, the ability to revert to a previous state of the decision can be very helpful during early discovery stages. This can also be very useful for managing changes to decisions and for viewing past versions of decisions for audit and compliance purposes. In Blueworks Live, the user can take a snapshot of a decision at any point in time as well as restore to a previous (or future) version of a decision. Of course, they can also *undo* the last change to a decision by using the **Undo** button if they made a simple mistake in which they need to back out.

The revision history feature is shown in Figure 2-10.

The screenshot displays the IBM Blueworks Live interface for a decision diagram titled "Determine Eligibility for Sale". The diagram shows a central decision node "Eligible for Sale?" which branches into "Assess Loan Eligibility", "Assess Property Eligibility", and "Assess Income Eligibility". "Assess Loan Eligibility" further branches into "Determine Maximum LTV" and "Determine Maximum Loan Amount". A dialog box titled "Add a Snapshot" is open, showing a list of snapshots under the heading "Today". The list includes two "Autosnapshot" entries for "Margaret Thorpe": one at "Now" and another at "10:55 AM" with a "Restore" link. The interface also shows navigation options like "Revision History", "Print", and "End Edit".

Figure 2-10 Managing decision changes with snapshots

2.2.8 Finding and sharing decisions

Decisions in the Blueworks Live library can be found by using the search and filter capabilities. And their relationships to other process artifacts can be explored by using the *Where Used* feature. Links to decisions in Blueworks Live can be included in emails and documents. Decision diagrams can be saved as PDF files or printed. And all of the details of a decision can be exported by using Microsoft Excel. Figure 2-11 illustrates some of these capabilities.

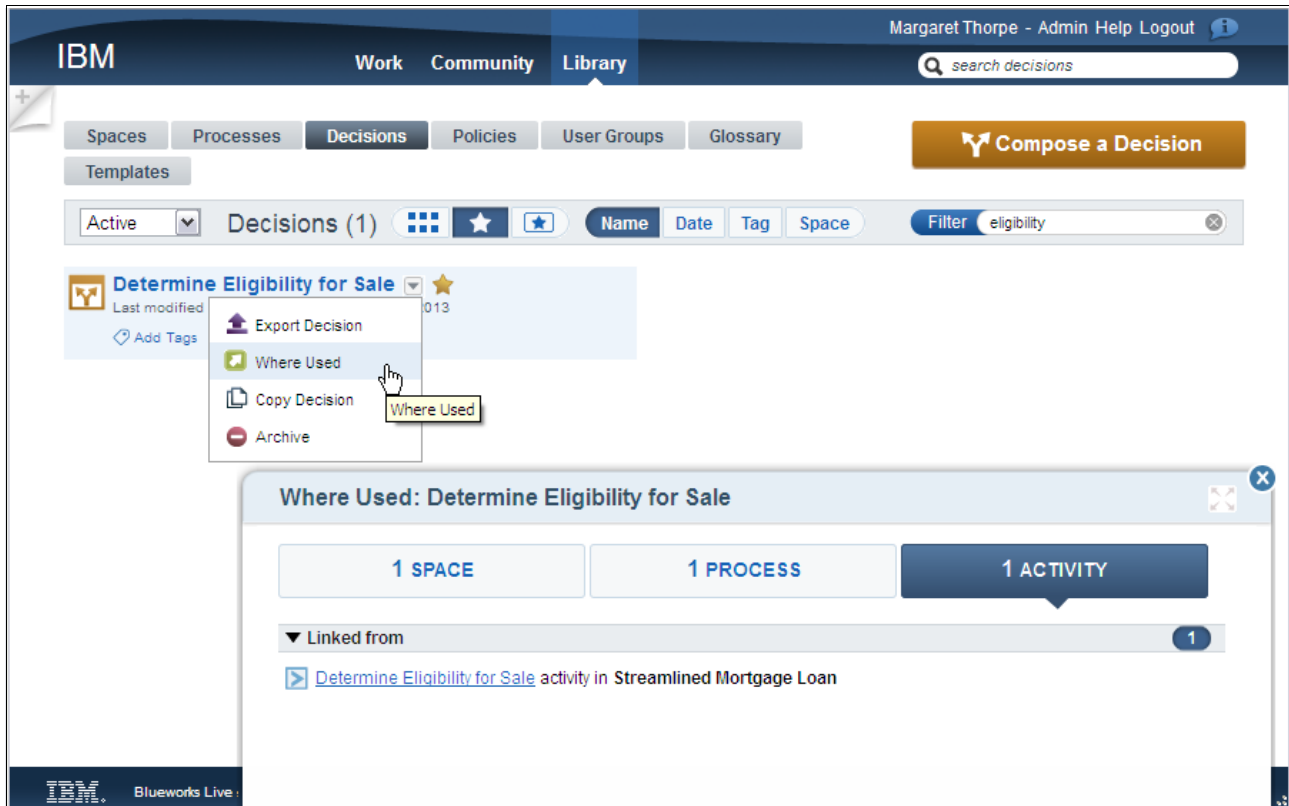


Figure 2-11 Finding a decision and where it is used

Figure 2-12 also shows details of a decision by using MS Word, MS Excel, and Adobe PDF.

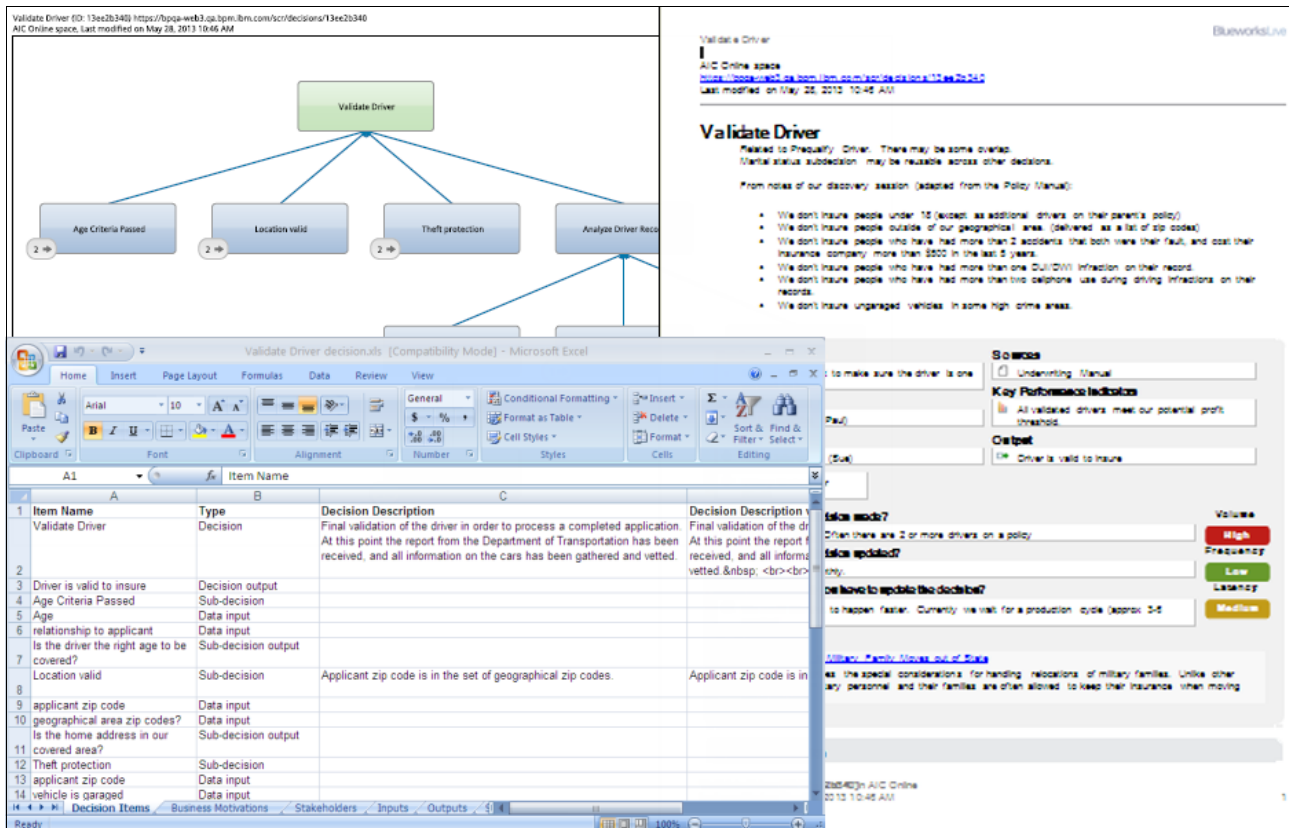


Figure 2-12 Sharing decisions via MS Word, MS Excel, and Adobe PDF

2.3 Summary

This chapter introduced you to the decision discovery capabilities of Blueworks Live. This tool is used later in this paper to discover and document decisions at AIC, a fictitious auto insurance company. By the time you have finished the paper, you will be quite familiar with Blueworks Live. You may even want to use it as you walk through this decision discovery scenario to learn to do some of the things described in the paper.

Note: For more information about Blueworks Live, including how to try it, see the following site:

<https://www.blueworkslive.com>



Getting started with decision discovery

In previous chapters, we discussed decisions, and the value of identifying and documenting them during process discovery. We introduced IBM Blueworks Live, a tool for discovering and documenting business processes and decisions. In this chapter, we provide an overview of some of the key activities that take place during decision discovery, along with some of the techniques used to discover, document, model, and validate decisions.

3.1 Start with the business process

To discover and document the decisions within a process, you need to have a process definition to begin with. If you do not already have a process diagram for the business area of focus, you will need to initiate a process discovery workshop to discover and document the process related to the decisions that you want to discover. For example, if you are having issues with pricing of insurance policies, you will want to discover the process related to pricing policies to find the appropriate decisions. This kind of decision-driven process discovery effort can take as little as a few days of working sessions with the process owner and other process experts. It is important to also invite decision experts to the workshop to facilitate the discovery and initial documentation of the decision points within the process. Once you begin decision discovery, you may find that you need more process information to appropriately identify the decision points. It is essential to continue to engage the process experts to expand the process until the key decision points can be highlighted.

Your decision discovery effort may also take place as part of a full scale process improvement project with the goals of process improvement and automation. This type of project involves extensive process documentation and analysis, and will likely follow a process improvement lifecycle like the one shown in Figure 3-1.

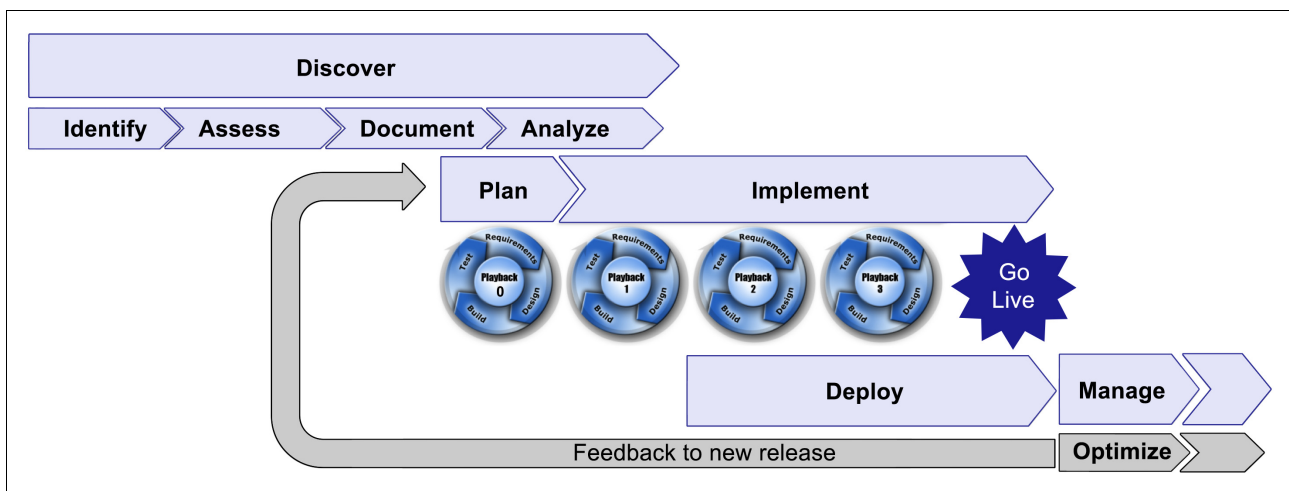


Figure 3-1 Process improvement lifecycle

As you can see in Figure 3-1, process discovery in a process improvement project consists of four stages:

1. Identify: This stage requires a few hours to interview the process owner and create the initial process definition in IBM Blueworks Live.
2. Assess: This stage requires a few days to conduct a Process Improvement and Discovery Workshop and propose a solution to the process owner and other stakeholders.
3. Document: This stage requires a couple of weeks of workshops with the process owner and participants to model the current state process and validate any integration or technical requirements.
4. Analyze: This stage involves a few more weeks of workshops to analyze the current state process and design the future state process in IBM Blueworks Live. The Analyze stage ends with a validation of the proposed solution in the form of a Playback - a formalized walk-through of the potential process solution conducted by the process owner and other process experts.

Often, in a process-driven improvement effort, it is not until the *Analyze* stage, during the analysis of the current state process, when the process team discovers that decisions may be an important source of the process issues. At this point, the process documentation will be at a sufficient level of detail to facilitate effective decision discovery.

For more information about discovering your business processes, see the IBM Redbooks publication *Scaling BPM Adoption: From Project to Program with IBM Business Process Manager*, SG24-7973.

3.1.1 Review of key process elements

There are a number of useful techniques for finding where the decisions are made in your business processes. We look at these in the next section. But before doing that, we review some of the fundamental process elements and naming conventions that you will need to pay particular attention to when applying these techniques. Processes in IBM Blueworks Live are drawn using Business Process Model and Notation (BPMN). Within that notation there are constructs to represent different elements within a process. This is not intended as a comprehensive overview of all the BPMN constructs, but merely an introduction to those constructs relevant to decision discovery.

Milestones

Milestones represent important stages within the process, as shown in Figure 3-2. Milestones are not a BPMN construct, but they are used in both Blueworks Live and the IBM Business Process Manager process definition tool, *Process Designer*. Activities that occur within a milestone are usually related in some way, and the entities they act upon may transform from one milestone to another. For example, an insurance application received in a milestone *Application* is simply an initially *filled out insurance application*. During the *Qualification* milestone, the application is validated, so it becomes a *validated insurance application*. Later in the process, there might be a *Contracting* milestone, where the insurance application is transformed into an *insurance contract*.

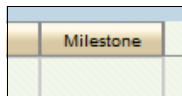


Figure 3-2 Milestone

Activities

An *Activity* is a task that cannot be broken down further, as shown in Figure 3-3. When naming an activity, it is important to follow a standard naming convention in the form: Action (verb) Entity (noun). For example, with this convention, *Document Review* means document the review and *Review Document* means review the document. Beware of using generic action verbs, such as *perform*, *produce*, *complete*, as they do not precisely describe the action taking place in the task. Without precise action names, it is hard to identify decision points in a process from task names alone.

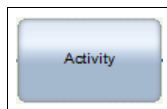


Figure 3-3 Activity

Here is an easy formula to remember for naming your activities: Activity name = action + entity

Or:

[action verb] + [business object]

Embedded subprocess

An embedded subprocess is an activity that can be broken down further into a collection of tasks represented by a process, as shown in Figure 3-4.

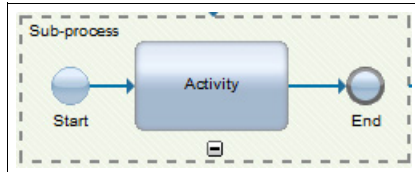


Figure 3-4 Embedded subprocess

Decision tasks

Decision tasks are a special kind of activity in Blueworks Live. They are an activity that invokes a decision. In BPMN 2.0 this type of activity is known as a *business rule task*, and represents a task that performs some kind of automated decision, usually through calling a decision service as shown in Figure 3-5.

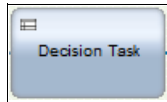


Figure 3-5 Decision task

Gateways

There are three types of gateways represented in BPMN: Exclusive, Inclusive, and Parallel.

Exclusive gateway

An *exclusive gateway* includes one or more input paths and multiple output paths. It represents a point in the process where the process flow can continue only along *one* of the specified output paths. It typically represents a form of choice, the outcome of which determines which output path to follow, as shown in Figure 3-6.

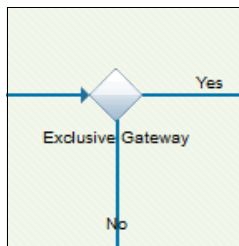


Figure 3-6 Exclusive gateway

Inclusive gateway

An *inclusive gateway* includes one or more input paths and multiple output paths. It represents a point in the process where the process flow can continue along *any number* (one or more) of the specified output paths. It typically represents a form of choice, the outcome of which determines which output paths to follow, as shown in Figure 3-7.

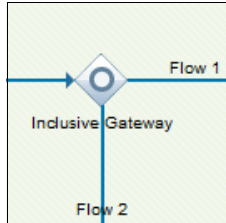


Figure 3-7 *Inclusive gateway*

Parallel gateway

A *parallel gateway* includes one or more input paths and multiple output paths. It represents a point in the process where the process flow will continue along *all* of the output paths *in parallel*, as shown in Figure 3-8. A parallel gateway differs from other gateways in that it does not represent a choice. *All output paths are always followed.*

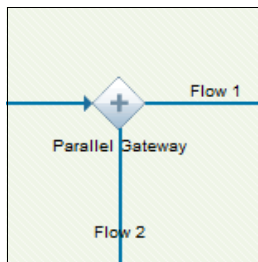


Figure 3-8 *Parallel gateway*

Additional information: For a complete overview of BPMN constructs supported in IBM Blueworks Live, see the following section in the Blueworks Live help:

<https://www.blueworkslive.com/scr/help/usingblueworkslive.html>

3.2 Identify the decision points in the business process

As described earlier, every decision discovery exercise begins with the operational business context that the decision is made in. This is documented and communicated in the form of a business process diagram. Once we have this process diagram, we begin looking for the places in the business process where decisions are being made: the *decision points*. There are a number of clues that can tip you off to the fact that a decision may be hiding in the business process. This section describes some techniques for finding those decisions.

3.2.1 Consider the business goals and pain points

If you suspect there are decisions in your process, a good place to start is to examine the goals, or objectives, and the problems, or pain points, of the process. If these align with decision management, you may find there are some key decisions that you should be identifying in the process.

Goals

If the goals of the process improvement project that produced the process diagram involve increased business agility or improved change management, there is a good chance that the project will need to look at decisions to meet those goals. Goals like dynamicity, governance, manageability, flexibility, repeatability, effective change, or audit-able updates are all indicators that decisions might need to be discovered, documented and possibly automated to achieve those goals. In this case, you will want to examine the process, using the techniques described below, to locate the decision points that relate to these goals.

Problems

If the business problems documented during process discovery point to difficulties making and managing change, or difficulties producing consistent results, that may indicate the need to uncover the related decisions. Problems like unknown updates, technical barriers to change in business policy, inflexible conditions, inconsistent or non-repeatable results may indicate that there is a decision somewhere in the process step where the pain point is documented. If the pain point is not documented for a specific step, or activity, in the process, but instead is noted for a milestone, or the entire process, look for an activity that relates to the topic of the pain point topic within the milestone, or process. If you cannot find one, you will need to add an activity to represent the decision that is taking place. Examine these parts of the process using the techniques described below to locate the decision points that relate to these pain points.

3.2.2 Closely examine gateways, activities, milestones, and participant hand-offs

There are a number of process elements that can help you find decisions. In particular, gateways, activities, milestones, and participant hand-offs in the process diagram should be examined closely.

Gateways

Gateways represent branches in the process flow. These branches are often the result of answers produced by decisions. Look for the tasks prior to the gateway for the work that is performed to determine the answers. These are usually decision points. Sometimes, the gateway itself represents the question and answer, and no task is captured to represent the work performed to answer the question. In this case, you will need to add a task to represent the decision.

Activities

You can also find decisions by looking directly at the names of the *activities* in the process flow. If activities are named following the standard naming convention of *action entity*, you can examine the *action verbs* for decision or computation keywords. Table 3-1 on page 27 lists key action verbs that indicate that a decision or calculation is taking place. An activity with one of these verbs in its name is usually a decision point.

Table 3-1 Decision keywords

Decide	Calculate
Adjudicate	Apply
Agree On	Appraise
Analyze	Appraise
Appraise	Calculate
Approve	Categorize
Assess	Classify
Change	Combine
Choose	Compute
Compare	Construct
Conclude	Construct
Contrast	Derive
Decide	Estimate
Detect	Formulate
Determine	Price
Differentiate	Produce
Discriminate	Reconstruct
Distinguish	Revise
Evaluate	Solve
Gauge	Weigh
Identify	n/a
Qualify	n/a
Reckon	n/a
Resolve	n/a
Review	n/a
Settle	n/a
Validate	n/a
Verify	n/a

Milestones

You can examine the *milestones* in your process to find decision points. Milestone boundaries may be decision points. If you pass a milestone in a process, there might be some criteria that you need to meet before moving onto the next milestone. Determining whether this criteria is met could be a decision. Look for activities at the end of a milestone, are they checking that you are ready to proceed to the next milestone? This is a decision point. Look for tasks at the start of a milestone. Are they validating that data is complete or correct before continuing? This is a decision point. Sometimes, not all the tasks in a process are captured or the tasks

are high-level and generic. In this case, you can review the milestone documentation to find possible decision points, by asking the following questions:

- ▶ Is the scope of the milestone defined? Decision points identify if the boundary of the milestone is reached.
- ▶ Are entry and exit conditions defined? Decision points validate entry and exit conditions. Are goals defined? Decision points determine if goals are achieved.

If you find that any of the above conditions are not described by an activity in the process flow, you need to add an activity to the process to represent the decision point.

Participant hand-offs

When you see a hand-off from one participant to another, this is often an indication that a decision is taking place. This decision may be one that is checking to ensure that the information is complete before handing it over to the next participant in the process flow. Look for activities around the participant hand-off to see if one of them may be or may contain a decision. Again, as with milestones, you might find that you need to add another activity to the process to represent the decision point.

3.2.3 Review related processes

At this point, you may have already identified some decision points in your current process. Perhaps, you feel that these decisions may not be unique. That is, you think they may be used elsewhere in your enterprise. If you already have a process inventory, you may find it useful to extend your search to other related processes, where you may find one of the following scenarios.

Similar processes, different decision

Look for business processes that appear to be very similar, except for a few variations. If the variations relate to different decisions, there may be an opportunity to simplify your process inventory. You can redefine the process as a single definition that uses different decisions, depending on the scenario.

Similar decisions, different processes

Look at different business processes that use a similar decision. There may be another opportunity to simplify your decision inventory by reusing a decision service. The following are some sample scenarios of decisions that frequently get reused across an enterprise:

- ▶ Do you do similar types of validation on user inputs?
- ▶ Do you use standard calculation models, for example for taxes?
- ▶ Do you do similar types of reviews of client information, such as applications?
- ▶ Do you reuse a standard pricing model across many processes?

When you discover these similar decisions in different processes, you can redefine the processes to use the same decision that you now need to define only once.

Localized exceptions

Often, processes that appear different are in fact very similar, but they really differ only by some form of localized exceptions. Localized exceptions are where each part of your enterprise, for example a country, division, or product group, may have defined its own exceptions to a global standard. For better, more effective, business process management, it is a recommended practice to define these processes according to the single standard. Then, determine if any of those differences can be eliminated. For any that must remain, for example those based on different regional laws, it is recommended to manage those conditions governing the exceptions through decisions. Identify the places in the process

where variations, or exceptions, occur, and for each place, if no activity exists that represents an appropriate decision, add one to your process to capture the alternatives.

3.3 Identify and prioritize decisions for further discovery

Once you have identified the potential decision points in your processes, it is time to prioritize and plan the detailed decision discovery activities. Not all of the identified decision points will necessarily be worth the time and effort that is required to further discover and document them. You need to capture some additional information about these decisions in order to make this assessment. They need to be reviewed and prioritized in light of your specific business goals and some general suitability criteria. Once this is done, you can plan the detailed decision discovery work for each of them and create your *decision discovery* roadmap. This roadmap lays out a plan for conducting the decision discovery workshops that are the foundation of any decision discovery project.

3.3.1 Document high-level decision characteristics

Any decision that your organization needs a better understanding of can be a good candidate for in-depth discovery. Any decision that will likely be automated can be a good candidate for in-depth discovery. The specific business goals and pain points that your project seeks to address will ultimately have the greatest influence on the selection of decisions for further discovery. But there are also some more general questions to consider when reviewing your list of candidate decision points. The best practice is to quickly capture some of the high-level characteristics of these decision points, just enough to enable you to answer the following questions:

- ▶ How complex is this decision? If it is very simple, you might not really need to discover and document it further.
- ▶ How often does the decision change? Decisions that change frequently may be good candidates for automation by using Decision Management technology. If automation is ultimately the goal, it is likely that you will want to discover and document these decisions.
- ▶ Does the decision have to be changed quickly? If there is a lot of time pressure to comply with related policy changes, for example, then the decision may be a good candidate for automation.
- ▶ Who has knowledge and expertise related to this decision? If they are within the IT organization, this may not really be a business decision, in which case other software-oriented requirements gathering techniques may be more appropriate. If the knowledge is in the business organization, going through this kind of decision discovery exercise may prove invaluable.
- ▶ Who owns this decision? Who ultimately determines how the decision is made? If it is a computer programmer, once again, other software-oriented requirements gathering techniques may be more appropriate. If, however, the person who owns the decision is responsible for working directly with customers (processing their applications and claims, for example), going through this kind of decision discovery exercise may be very worthwhile.
- ▶ Are there really strict guidelines around who can make changes to the decision logic? If you need a lot of control over the way a decision is changed, it may be a good candidate for automation and management using Decision Management technology. If this is the case, you will definitely want to discover and document it.
- ▶ Are there audit requirements related to the decision? If there is a need to know, after the fact, exactly how a specific decision was made, it may be a good candidate for automation

and management using Decision Management technology. If this is the case, you will definitely want to discover and document it.

Complex decisions that change relatively frequently, must be changed quickly, are owned by the business, require robust change control or governance, or must be auditable, are great candidates for automation with Decision Management technology. If automation is a goal of your project, you will likely want to discover and document most of the decision points that meet these criteria.

Many other factors may determine the order in which you decide to discover and document these decisions: The skills of the decision discovery team, the availability of subject matter experts, and the relationship between decisions in a process are some of them. Once you have laid this out in your decision discovery roadmap, it is time to assemble the team and begin the detailed discovery work.

3.3.2 The importance of the subject matter expert

When assembling the decision discovery team, make sure to include one or more subject matter experts, which are people who possess in-depth knowledge of the decisions being discovered. It is important to ensure their participation by identifying them up front, securing the commitment of their management, and involving them early on in the discovery process.

Often, you will find the business knowledge related to a decision documented in some kind of manual or even within an existing computer program. It is best to always involve a human source during decision discovery, even when you are relying heavily on documentation to understand the details of the decision. Deconstructing code can be time consuming, especially if the original programmers are no longer around to help, many changes have been made, and the documentation is lacking. Policy and procedure manuals often describe the business knowledge in a way that best suits the needs of the policy maker, not necessarily the person that is tasked with applying the policy. As a result, the person applying the policy usually relies on their own knowledge to supplement what's in the policy manual and to figure out how to understand and use the knowledge presented in it. The organizational context often has a significant effect on how the business knowledge is applied, so having a knowledgeable person involved is essential for effective decision discovery. As illustrated in Figure 3-9 on page 31, the best sources for decision discovery are always the people with direct knowledge of the decision.



Figure 3-9 Of all the sources of decisions, the most reliable are people

It is not always easy for subject matter experts to articulate their knowledge. After years of working in a particular area, knowledge and expertise may become unconscious and automatic. Often an examples-based approach can be a great way to begin the interview process. Using this approach, you provide the expert with some examples of real business situations where the decision is being made and have them explain out loud how they would go about making the decision in each of the cases. It is important to have somebody on the team with good interview and elicitation skills to guide these discussions. A good business analyst will typically have these skills, but there may be other qualified individuals in your organization that you can enlist.

3.4 Model the decision

Once the decision discovery roadmap has been created and the decision discovery team assembled, you are ready to begin conducting the decision discovery workshops. In these sessions, the team will leverage the subject matter experts and other important knowledge sources to understand and document, in depth, how the decision is made. This is called *decision modeling* and during this activity you will identify and document:

- ▶ What the decision is, and what it is that is being decided
- ▶ Any information that is required in order to make the decision
- ▶ Any other decisions that this decision depends on in order to reach a conclusion
- ▶ The logic that describes how the decision reaches a conclusion that is based on these inputs

3.4.1 Capture the fundamentals of the decision

If you have not already done so, give the decision a name and a description, typically a couple of sentences, but definitely less than a paragraph. And define the decision's output.

Decision output

Consider what exactly is being decided, and succinctly document that as the decision's *output*. Sometimes it can be helpful to phrase this as a question that the decision answers. For example, *Driver eligible for insurance?* is a good name for the output of the Validate Driver decision. *Driver eligibility* or *Driver Eligible?* would also be fine, although these names are not quite as descriptive. This is an example of a decision that produces a *boolean* result—the output must be one of two values: *yes* or *no*. This is a very effective way to model a decision output because it is very clear and easy to understand.

However, some decisions cannot be modeled this way, and in these cases an enumerated set of values or a number may be a better way to define the decision output. For example, take a decision called *Determine Vehicle Theft Risk* that determines whether the vehicle theft risk is *High, Medium, or Low*. A good name for this decision output may simply be *Vehicle Theft Risk*. Another example would be the Price Policy decision, which calculates the price of the premium. A good name for this decision output might simply be *Premium Price*.

When defining the decision output, try to choose a name that is clear, concise, easy to understand, and that accurately conveys the business meaning of what is being decided.

3.4.2 Identify the information required to make the decision

When interviewing the subject matter experts and reviewing your other knowledge sources, identify any information that is needed to make the decision. It may involve data coming from corporate databases, the contents of fields in forms or questionnaires, information in spreadsheets, data from an online feed, or any other form of information. The best practice involves documenting this at a higher level of granularity as inputs to the process activity that the decision is associated with (the decision task). Then, the data inputs needed by the decision are documented at a lower level of detail. So, for example, in a process that issues an auto insurance policy there might be a qualification activity that takes place. As part of that qualification activity, a decision is made as to whether or not the applicant qualifies for insurance. Following this best practice, the Insurance Application and the applicant's DMV Report would be documented as inputs to the qualification activity in the process. Whereas in the decision, the actual fields from the Insurance Application (age, ZIP (or postal) code, gender, and so on) and the DMV Report (number of moving violations in the last five years, number of accidents in the last five years, and so on) that are used to make the decision would be documented as data inputs to the decision.

3.4.3 Identify any required sub-decisions

Often, decisions are based on the results of other decisions. For example, Marie's driving record may be evaluated by a decision that calculates some sort of driving score based on her driving record. With no accidents or tickets in the past five years, and as a 43-year old woman, Marie's driving record might score 100%, for example. A decision by an auto insurance company whether or not to provide Marie with auto insurance may depend on that driving score, which is the result of another decision, plus some additional information about the cars she owns. Let us assume that this insurance company does not like to insure antique performance cars, but is very happy to insure current hybrids. In that case, her score along with the information about her cars might result in a decision to insure only the Hybrid ABC, or the decision to insure both cars, with a surcharge for the Antique XYZ.

3.4.4 Document the decision logic

The next step is to document the logic that the decision uses to reach its conclusion. In Blueworks Live, we do this with decision tables, as shown in Figure 3-10, which organize the logic into rows and columns. Decision tables are a very straightforward and intuitive way to document decision logic, as many people are familiar with spreadsheet applications and so are comfortable both documenting and understanding this kind of tabular representation. If you would like to understand more about the logical structure of decision tables and how we use them in this paper, read the next section. Otherwise, it is fine to skip this for now and learn more about decision tables when you get into the AIC example that is presented later in the paper. To learn more about decision tables in general, there are some excellent references in the appendix that you can leverage, should you want to explore this topic further.



Considerations			Conclusions
Position	Department	Proposed Salary	Offer Compliant
VP	Sales	>180 and <250	Yes
Dir	Sales	>130 and <200	Yes
Mgr	Sales	>90 and <125	Yes
VP	Other	>100 and <160	Yes
Dir	Other	>90 and <110	Yes
Mgr	Other	>80 and <100	Yes

If we're hiring for a manager position outside of the Sales organization, the proposed salary must be between \$80,000 – \$100,000

Figure 3-10 Example of a decision table containing decision rules

Decision table conventions

There are several different types of decision tables, and various options for documenting and interpreting them. In this paper, we use *unique*, *single-hit*, and *rules as rows* decision tables because these are usually the easiest to understand and work with in the beginning. We will also follow some best practices of decision design to ensure that both the decisions and decision rules described in these decision tables are atomic and readable.

The decision table conventions followed in this paper are described below:

Column headers in a decision table

The facts to be considered (the *considerations*) and the conclusion reached (the *conclusion*) are identified in the column headers of the table:

- ▶ The considerations in the decision table typically map one-to-one to the decision inputs that are documented in the Blueworks Live decision diagram. However, sometimes a

consideration may be derived from one or more decision inputs, in which case it will not map directly to a single decision input.

A consideration column heading may contain a decision input or any combination of addition, subtraction, multiplication, division, and exponentiation of decision inputs and literals.

- ▶ By definition, a decision has a single output (that is, reaches a single conclusion). There must be a single conclusion column in the decision table that maps directly to the decision output in the Blueworks Live decision diagram. In some cases, you may choose to create an additional conclusion column to capture a key piece of information related to the conclusion (typically a message column, describing the reason the conclusion was reached in natural language business-friendly text). But only one of these conclusion columns can be designated as the decision output in the decision diagram.

Cells in a decision table

We have to look at two types of cells:

- ▶ Each cell in a consideration column contains some sort of expression that is applied to the consideration identified in the column header:
 - These condition cells typically contain operators such as =, !=, <, <=, >, >= that test the consideration in the column header against a literal, another decision input, a range, or a list of these. You can express these operators in natural language, or use the symbols. Do whichever produces the most understandable decision table for your organization.
 - When a cell is left empty, it means that any value for that consideration will cause the condition to be evaluated to *true*.
 - If there is no operator in a populated cell, then we assume the operator to be =.
- ▶ Each cell in a conclusion column contains some sort of expression that is used to assign a value to the conclusion identified in the column header (that is, the decision output):

These conclusion cells often contain a simple literal or numeric value, but can also compute a numeric value using arithmetic operators (+, -, *, /, and so on) and decision inputs.

Rows in a decision table

Each row in the decision table represents a decision rule.

Each decision rule has a single path to the conclusion. In other words, the cells in a row are implicitly ANDed together to reach the conclusion. ORs are not supported between columns.

Decision table best practices

In addition to following the above conventions, the decision tables in this paper are documented with the following best practices in mind:

- ▶ It is a good idea to limit the number of consideration columns for readability purposes. If you find yourself with more than seven or eight consideration columns, you might want to consider breaking the decision up into sub-decisions.
- ▶ Each decision rule should be unique in that no more than one decision rule should be able to evaluate to *true* for any given set of inputs. In other words, there should not be overlap between rules.
- ▶ There should be no implied order of evaluation in a decision table, no notion of sequence. Rather, your decision tables should be organized in the way that most clearly reflects the business knowledge, and is easiest to understand.
- ▶ A decision table should be as complete as possible.

- ▶ A decision table should be as easy to understand as possible. For readability purposes, we sometimes make an exception to these last three guidelines. It can become quite tedious filling out endless rows of a decision table just to make sure that every possible combination has been accounted for explicitly. Similarly, it can sometimes be hard to read such a decision table:
 - When it makes sense, we may use empty cells, rather than creating a decision rule for every single possible combination of considerations. In these cases, we may relax the uniqueness constraint described above...as long as the overlapping decision rules all reach the same conclusion. The Analyze Driving Record decision table in Figure 3-11 shows an example of how you might document a decision table like this in Blueworks Live.

Analyze Driving Record

Details Decision Policies Attachments Documentation Comments

Total number of recent DUI/D... → Driver Profile

Total number of recent spee...

Total number of recent Cell p...

▼ Decision Table

Analyze Driving Record

Considerations				Conclusions
Total number of chargeable accidents	Total number of recent DUI/DWIs	Total number of recent speeding violations	Total number of recent Cell phone use infractions	Driver Profile
<=2	<=1	<=1	<=2	Good
>2				Poor
	>1			Poor
		>1		Poor
			>2	Poor

+ Add Exceptions

Figure 3-11 Making a decision table more readable by using empty cells

- When it makes sense, we may create an exception table for a decision table that provides an *else*, or *otherwise* clause. This way, the decision table does not have to be cluttered with many decision rules that essentially have the same meaning. The Validate Salary decision table in Figure 3-12 shows an example of how you might document a decision table like this in Blueworks Live.

Validate Salary ★

Details **Decision** Policies Attachments Documentation Comments

Position	Department	Proposed Salary	Offer Compliant
VP	Sales	>180 and <250	Yes
Dir	Sales	>130 and <200	Yes
Mgr	Sales	>90 and <125	Yes
VP	Other	>100 and <160	Yes
Dir	Other	>90 and <110	Yes
Mgr	Other	>80 and <100	Yes

Otherwise

Considerations	Conclusions
Consideration	Offer Compliant
Otherwise	No

Figure 3-12 Making a decision table more readable by using an Otherwise clause

3.4.5 Modeling decisions for understanding, validation, and communication

When documenting a decision in Blueworks Live, focus on making it easy to understand and easy to explain to others. Aim for it to be complete and correct from a *business* standpoint when you are done modeling and validating it. But do not expect to create a rigorous and formal decision model that can be automatically translated into executable code. Blueworks Live does not currently enforce the necessary semantics or support the necessary data modeling constructs required for automation. Instead, approach Blueworks Live as a tool for documenting the *business* requirements that are associated with a decision.

If the decision is going to be automated, these requirements will have to be transformed into a precise, formal, unambiguous specification. A formal data model will have to be created to describe the information that the decision will need to access when it executes. The decision logic will have to be translated into some sort of language that can be executed on a computer. Business analysts that are skilled in creating UML models and documenting business rules using formal languages like BAL (the IBM Business Action Language), SBVR-based languages (Semantics of Business Vocabulary and Business Rules from OMG), or others, will need to get involved. Developers that are skilled in designing and integrating decision services and orchestrating the rule sets within them will need to get involved.

Decision automation: See Appendix A, “Automation considerations” on page 121 for a brief overview of some of the tasks that are required to automate a decision that has been documented using Blueworks Live.

If you do a good job modeling, documenting, and validating the business requirements associated with the decision, these other tasks become much more straightforward. Also, traceability can be maintained between the decision requirements as documented in Blueworks Live and the decision services as implemented in your organization’s software applications.

3.5 Validate the decision and establish any necessary governance practices

It is important for the organization to be able to rely on the accuracy and timeliness of documented decisions. If they are out-of-date, incomplete, or fail to accurately reflect the organization’s knowledge, they will never become a trusted, single source of truth and they will be of limited value. Engaging the right subject matter experts, and doing a good job of analyzing and documenting their knowledge will go a long way towards producing a good result. Engaging a broader set of experts and stakeholders to get different perspectives and help reconcile conflicting views will ensure that the decision truly reflects the knowledge of your organization, rather than just a select few.

The introduction of a formal decision validation process will raise awareness of and visibility into the decision throughout the organization. It will also ensure ownership and buy-in up the management chain. And the incorporation of some change control and management practices can help ensure that the decision always reflects the current state of the business, and that it can be relied upon in the future. The establishment of naming conventions for decisions and decision versions can help with both decision validation and decision governance. But it is important to put some thought into how your organization will manage decision validation and governance, up front.

3.5.1 Decision validation

Decision discovery is a highly interactive, iterative process that involves a lot of collaboration between team members and other participants. Validation occurs informally on an ongoing basis as team members review each other’s work and solicit feedback from other experts and stakeholders. This feedback typically results in frequent reworking and revision of the decision, especially in the early stages of the project.

Once a decision has been fully documented, it should be formally validated by a wider group to ensure that it is complete and correct. In addition to the core decision discovery team members, you may want to request validation by subject matter experts from adjacent or impacted business areas. If the decision is related to specific corporate business policies, you might want to ask the person in charge of defining or documenting those policies to validate the decision. If the goal is to automate the decision, somebody from the information technology group responsible for implementing it should be involved in validation. Basically, any stakeholders that have a strong interest in and knowledge of the decision should be part of the formal validation process. The business owners and the owner of the decision discovery project should not only review, but also approve the final decision.

It is a good idea to log the following formal validation activities:

- ▶ The names and roles of participants in the validation process.
- ▶ The feedback received from them.
- ▶ The dates the decision was reviewed and approved.

Feedback from the formal validation process may result in additional changes being made to a decision. However, at this point, changes should be minimal because the informal validation that took place earlier should have identified most issues. Once any necessary feedback has been incorporated, and the final decision approved, it should be clearly identified as the current validated version. In this way, when future changes in the business require that the decision be updated, these changes can be applied to the current version and they can be tracked. This is often necessary to satisfy compliance or audit requirements. But it is also considered a basic best practice for change control and management of decisions, also known as *decision governance*.

3.5.2 Decision governance

Once a decision has been validated, it is important to govern (that is, manage) any changes made to it. What this means is that:

- ▶ There should be a well understood lifecycle for decision changes.

For example, as a result of a decision change request, a decision's status may change from *valid* to *under revision*, from *under revision* to *out for review*, and once all required approvals have come back, it may change from *out for review* to *valid*. Of course, a decision's status could also go from *out for review* to *under revision*.

- ▶ The specific individuals or organizational roles should be identified that are allowed to make direct changes to a decision.

If the decision is only intended to be viewed by a limited group of individuals or roles within your organization, they should also be clearly identified.

- ▶ The validation process for decision changes should be defined.

It may be the same as the validation process for the original decision, or you may decide to streamline the review and approval process and involve fewer people. In either case, the individuals or organizational roles that are designated to review and approve the decision should be documented.

- ▶ The lifecycle of changes should be logged.

You should log the following details:

- What was the change that was made?
- Why was it made?
- Who was it made by?
- When was it made?
- Who reviewed and approved it?
- What feedback did they have?

With some basic processes and tools in place to manage the decision validation and governance processes, the results of your decision discovery efforts will likely be of significantly more value to your organization.

3.6 Conclusion

In this chapter, we provided an overview of some of the key activities and techniques involved in conducting a decision discovery exercise. We saw how important it is to start with the business process and to identify the decision points before planning the decision discovery roadmap. We touched upon some of the key activities that take place once the decision discovery workshops begin and the decisions are documented and modeled. We emphasized the importance of validating and setting up some kind of governance around decisions once they have been modeled and documented. Together, this set of practices provides a framework for conducting decision discovery. In the next chapter, we see how to apply this framework to a fictional example at An Insurance Company.



Bringing it all together: The AIC decision discovery project

In Chapter 1, “Introduction to decision discovery” on page 1 you learned about decisions, and the value of identifying and documenting them during process discovery. In Chapter 2, “Introduction to IBM Blueworks Live” on page 9, you were introduced to IBM Blueworks Live, a tool for discovering and documenting business processes and decisions. Chapter 3, “Getting started with decision discovery” on page 21 provided an overview of how to approach decision discovery, and some of the important things to consider when discovering and documenting decisions. This chapter brings all of these elements together and delves into the details of how to discover and document decisions with Blueworks Live, based on the experiences of a fictitious auto insurance company, An Insurance Company (AIC), with their first decision discovery project.

4.1 Introducing An Insurance Company

Sue, the head underwriter of An Insurance Company (AIC), was expecting someone to walk into her office that morning, but was surprised that it was Ginny.

“So, you found another one?” Ginny asked.

“Yes,” Sue replied. “A senior citizen, living in one of the retirement communities. Here, take a look.”

“No accidents on her record except somebody backed into her last winter....they probably slipped on the ice. Her premium went up about \$100 more than my calculation said it should have.”

Ginny sighed. As director of IT, her whole last year had been dominated by not-at-fault accidents. Three years ago, a very public court case had been argued, and a competing insurance company had paid a very large fine for raising the rate on customers whose only accidents had been ones where they were not at fault; accidents that occurred when they were parked, when they were stopped at a light, hit and run accidents. Paul, the CEO of An Insurance Company had sent down an order that the company should remove any calculation that used not-at fault accidents to calculate rates.

This had been a nightmare. Their systems were old, legacy systems that used a lot of database tables to calculate rates. But the kind of logic that Paul wanted them to remove was not in the tables; it was in the old code. And it was not documented. It had been a year's work for the best minds of their IT department to find and change all the places where this logic was, and in the process they found that their systems did not always work the way they thought they did. Personally, Ginny was proud of the efficiency of her programmers, rooting out all the places where this was used by the calculation.

Except, of course, they had not. Yes, most of the calculations were now fine, but every now and then they ran into a situation where the system was still increasing the rates incorrectly. Sometimes this was program logic that they had missed. Sometimes it was old code, so messy that they had not been able to figure it out. Sometimes it was bugs they had introduced inadvertently. They had recruited the underwriters, who were manually checking a selection of the statements as they were generated to help them find issues. Now, half a year after implementing their solution, another issue had been found. Ginny really hoped that this was the last one.

But today, Ginny was here to try to rethink how they were doing their work. “You know, Sue,” she said, “we have had a terrible time with this in IT.”

“Yes,” Sue replied, “I know.”

“I've recently been to a conference and learned a little bit about decision management. I want to propose a project to you.”

“Me? On an IT project? I do not think so, Ginny. I know just about everything there is to know about underwriting, but I have trouble when I use anything more complex than presentations and spreadsheets on my computer.”

“That is OK, Sue.” Ginny smiled. “I do not want you to become a programmer. But this whole painful process has taught us that we really do not know exactly what our systems are doing, and whether it is exactly what they should be doing. I mean, we do not know what the decisions are that they are making. I think we need to identify what our decisions are, not in the code, but from a business standpoint. I think we need to identify and document what

decisions we should be making, and how those decisions should be made, not based on the code, but based on the policies of this company.”

“That makes sense, but I am not sure how I can help.”

“Well, you know the underwriting decisions better than anyone. And you and Frank in accounting, between you, understand the pricing best of anyone in this company. Don't you think that is true?”

“I suppose so.”

“Well, I'd like you to spend some time helping us figure out and document those decisions so we all understand them. It will be useful in a number of ways, but I think it will be particularly important as we bring this new web interface online. It is using the legacy systems, but we need to be able to explain to customers why we make certain decisions, especially if they can see them on the web page.”

“This sounds a little like the work we were doing on the process. Is that what you have in mind?”

“Yes, and no, but there are a lot of similarities. In fact, we are going to use the same software tool we are using for the process work. You've worked with that, haven't you?”

“Yes. I have looked at the process models that your group has created, and even edited them once or twice. It seemed pretty simple to me.”

“Great. I am going to talk to Paul about this, but I think we will start with what the process team has developed, and begin to try to discover our decisions using it as our starting point. In the meantime, why don't you start thinking about how you make these decisions, and we can gather on Thursday for a kickoff meeting. Please invite anyone on your team who you think might have knowledge about this. OK?”

“Sure, Ginny. We are glad to help.”

Insurance is an area where policy and decisions drive a significant business value, and therefore deserve significant attention. The importance, complexity, and quantity of the decisions make insurance applications an important place where decision discovery and automation can be of great value. Most insurance companies conduct yearly re-evaluations of their policies, which are based on their claim experience. Insurance is also heavily affected by legal decisions and governmental regulations. Policy changes required in response to a shifting regulatory environment may need to be implemented quickly. There is often a need for decisions to be audited by outside agencies, and to be understood by employees in customer-facing roles, so visibility is a significant goal in most cases. And, of course, these policies and decisions originate with people who understand the insurance business and industry, rather than people who are more technical.

For all these reasons, we are going to follow the initiative that An Insurance Company is kicking off to discover and document their decisions, as they begin to put together their web project. Will they use Decision Management technology to automate these decisions? They do not know, and we do not know, although many insurance companies have found this to be very beneficial to their business. Whether or not they do that, however, understanding the decisions they make, and how they make them will be of value to the company and to their work, and will provide insights that will enable them to streamline their efforts. The process discovery work that was previously done at AIC had already helped make their operations more efficient. They will leverage this work to help drive their decision discovery initiative.

4.2 Step 1: Starting with the business process

Most decision discovery initiatives begin with at least a general idea of what decisions the project team will need to focus on. “I want to look at the decision about who qualifies for insurance, and the decision as to how to price that insurance correctly,” says Sue of AIC.

The process discovery work that Ginny referred to would be the starting point for this decision discovery project. The process improvement team had been using Blueworks Live to discover and document the processes in a project related to setting up a new web interface for customers to conduct business with AIC. When the team started doing process discovery, they found a lot of inconsistencies in the way that they were doing pricing. The team decided to first focus on improving the pricing process used internally, before exposing it via the web to their external clientele.

During the analysis of the current state process, the process team started to drill down into the validation, pricing, and contracting areas. As the team dove deeper and deeper into these process activities with more extensive analysis, Ginny realized that they did not need to know more about the process steps sequence at that point, but instead needed to understand the decisions made within the process. For this, she brought Sue and Frank on board for their underwriting and financial knowledge.

Sue had been involved with the earlier process discovery project, but it had been in the role of an underwriter with the perspective of tasks and sequence, that is, identifying the activities in the process and determining their order in the process flow. Now she was going to participate as a decision expert and use her underwriting knowledge to help find the decision points in the process and discover and document how those decisions were made at AIC.

The Process Diagram

As we saw in Chapter 3, “Getting started with decision discovery” on page 21, the first step in any decision discovery exercise is to understand the operational business context that a decision is made in. Spend some time thinking through and understanding the business process before focusing on the decisions in any depth. This will help clarify exactly what the decisions are that you need to discover and document. The easiest way to identify decisions is to start with a process diagram.

The process discovery phase of a process improvement project begins with the *Identify* and *Assess* stages. You can begin this work in Blueworks Live by creating a space and capturing your project goals. These goals will be central to defining the direction and objectives of your project, but they may also be useful for identifying important decisions that need to be examined. Once you have set up a space, create a Discovery Map in Blueworks Live. Determine the major milestones, or stages, in the process. Then, in each milestone you can list out the tasks that are performed. You do not have to worry about sequence at this stage.

Once you feel you have a good representation of the milestones and activities in the process, you can create a Process Diagram from the Discovery Map in Blueworks Live. At this point, you will focus on the sequence of the activities and on capturing the details of each activity: the participant, or role, that performs the task; the inputs to the activity and its outputs, and a number of other properties. From this, you will be able to see how the process flows from one activity to the next and from one participant to another. You can capture lots of information about each activity, but it is particularly important in a process improvement effort to capture the problems, or pain points, for each activity. This information will help later when you are looking for decisions. To learn how to do process discovery with Blueworks Live, consult the additional resources provided in the appendix.

The AIC process improvement team had already done quite a bit of process discovery, and was in the *Analyze* stage of their process improvement project when Sue and her team were brought in to start focusing on decisions. Figure 4-1 shows the process diagram that they had created.

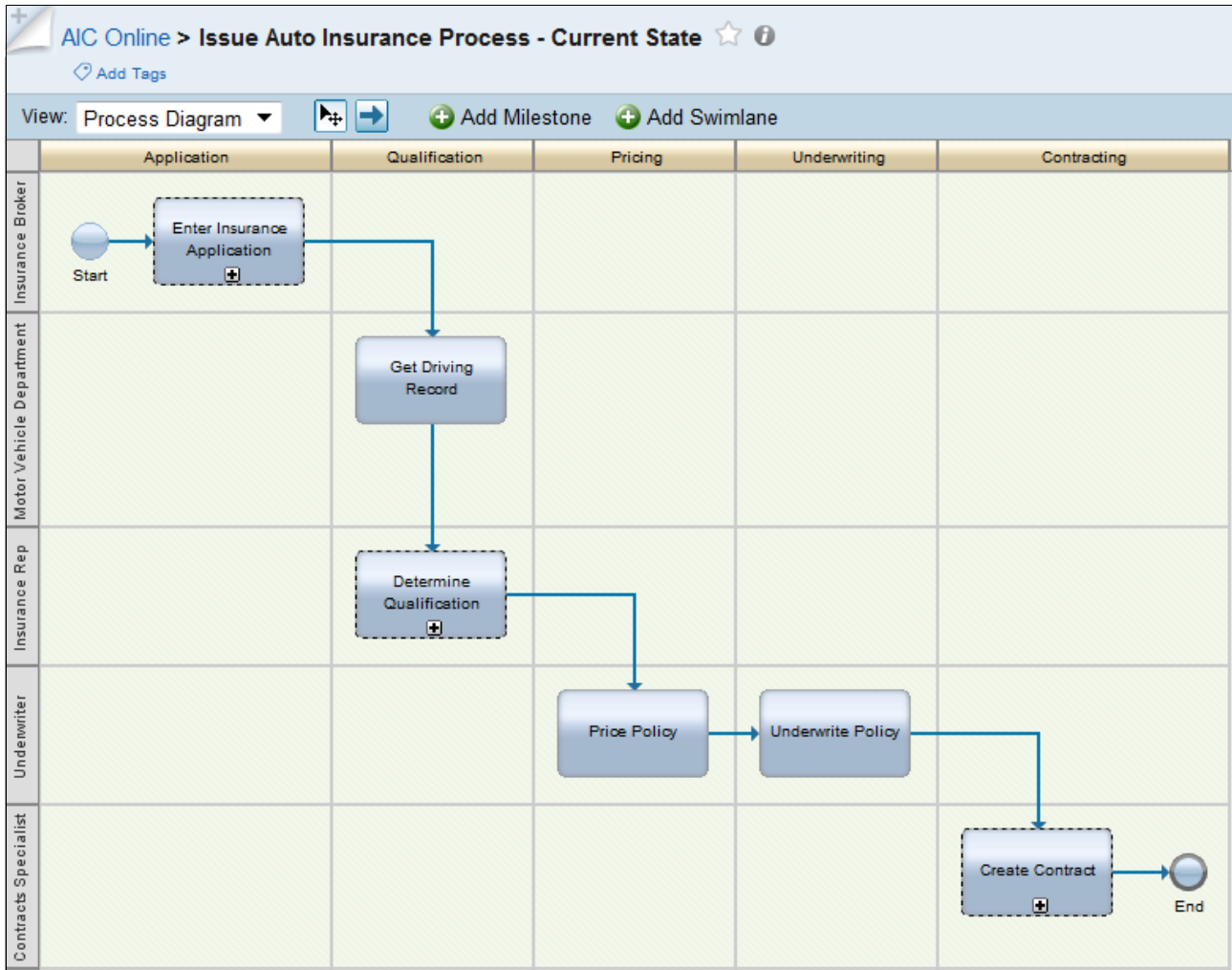


Figure 4-1 AIC Issue Auto Insurance process

In this process there are five milestones: Application, Qualification, Pricing, Underwriting, and Contracting. The process improvement team had many discussions around the application steps and how much pre-qualification they did for each applicant. They had also looked at qualification to understand what sort of validation was taking place after the driving record was requested. As the process team tried to document the activities in these areas, they struggled with the best way to document this logic in the process flow. They realized that documenting the details of qualifying eligible applicants was not something they could do easily with a process diagram that focused on human actors. They needed some kind of visibility into how the systems were applying eligibility criteria and pricing. To clarify their thinking, they converted the “Enter Insurance Application” and “Determine Qualification” activities into subprocesses so they could explore them in more depth. It was at this point that they realized there was more complexity there than they were prepared to deal with. That is when Ginny attended the decision management workshop, and decided that they needed to do some decision discovery.

As Sue studies the process diagram and the documentation, she makes note of these two areas for further investigation. She suspects that decisions are involved, and that the logic would be better documented in the decisions than in the process model. In fact, Sue thinks there are at least three decisions there. They need to look at both the car and the driver information to determine whether or not they would cover them. AIC does not cover drivers under 18 on their own policies, and they do not cover “performance cars” like hot rods, or trucks. If they do not make some kind of decision about that before requesting the driving record, they will end up paying for the driving record of customers that they already know they cannot insure.

Now that Sue has familiarized herself with the process diagram, she is ready to dive in to start finding the decision points in the process.

4.3 Step 2: Identifying the decision points

As discussed in Chapter 3, “Getting started with decision discovery” on page 21, there are a number of clues that can tip you off to the fact that a decision may be hiding within a business process. Now we use the techniques that were described in that chapter to find the decision points in the AIC Issue Insurance Policy process. We start with the process diagram created by AIC’s process improvement project as shown in Figure 4-2.

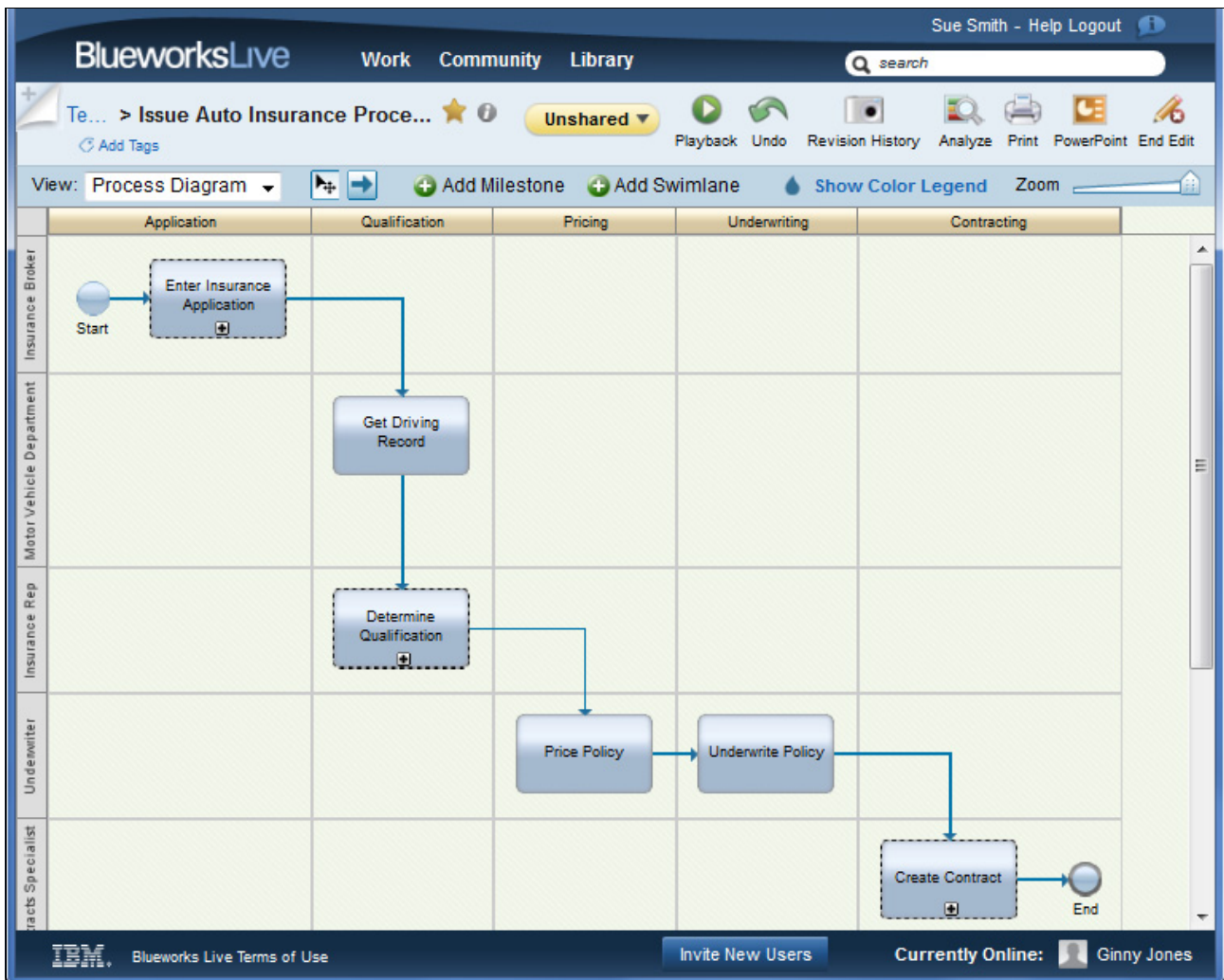


Figure 4-2 The AIC AS-IS business process

4.3.1 Look at the gateways

In Chapter 3, “Getting started with decision discovery” on page 21 we learned that the gateways in the process diagram are a good place to start looking for decision points.

In the AIC process diagram, Sue finds the first gateway in the “Enter Insurance Application” subprocess, which is shown in Figure 4-3. This is an exclusive gateway, which we learned about in Chapter 3, “Getting started with decision discovery” on page 21. The gateway asks a simple Yes/No question: “Does the Driver appear to qualify?” If the answer is “Yes,” the process continues, if the answer is “No,” the process ends.

Many gateways are binary, that is, they test for a Yes or No, True or False value and have only two exits. However, gateways can be more complex with any number of choices and exit paths, especially where more complex decisions are involved. The gateway itself does not usually represent a decision. More typically the gateway is just testing the value of an output from a previous activity to determine what the next step in the process should be. It is not actually making the decision that sets that value. However, if the gateway is assessing a whole set of information that has been collected in previous steps of the process, it may indicate that the decision is “hidden” in the gateway itself. If the gateway is checking a simple value, trace backward from the gateway to find a process activity that produced this output. This is likely where you will find the decision.

Sue traces backwards from the first gateway in this subprocess and sees the “Prequalify Driver” activity. This activity determines whether or not the driver qualifies, at this early stage in the process. While it is very common to find the activity that makes a decision just before the gateway that consumes it, it is also possible that the decision may occur earlier in the process. If you do not find the process immediately in front of the gateway, keep tracing backwards until you either find it, or reach the beginning of the process.

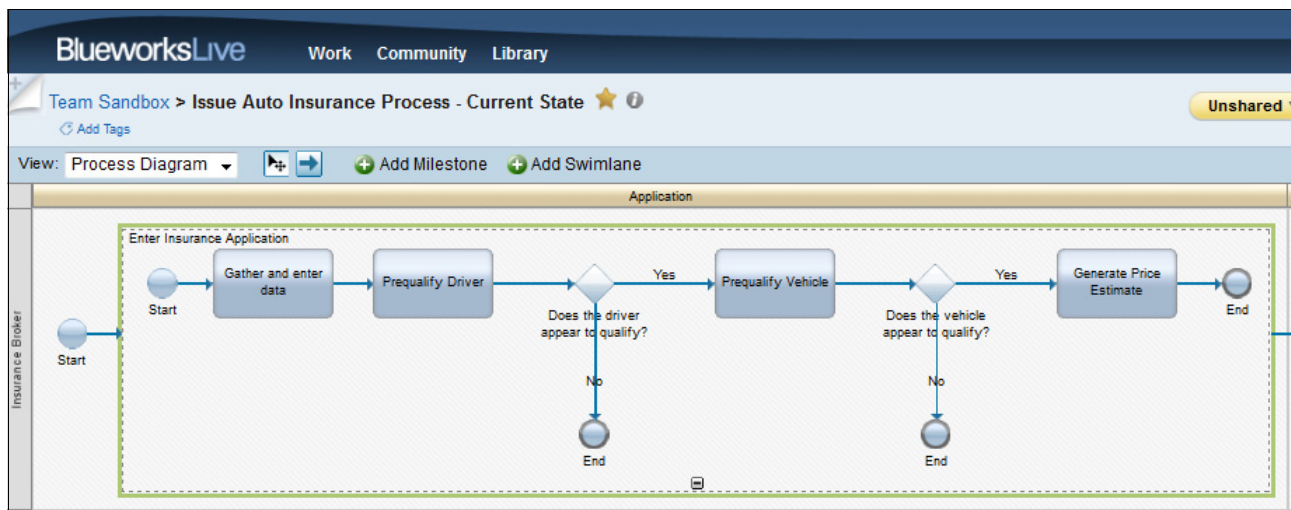


Figure 4-3 Decisions can often be found before gateways in a process diagram

If you trace back to the beginning of the process and do not find an activity that makes the decision that the gateway is testing, then one of two things are true: Either the gateway does indeed represent a decision, or the gateway is just testing a piece of information, not a conclusion reached by a decision earlier in the process. If you are in doubt as to what your gateway is doing, it will not hurt to identify the gateway as a potential decision point and come back to it later when you have more information.

Once you have identified a decision point, you will need to create a *Decision Task* in Blueworks Live to represent it. If the decision point was discovered in an existing activity, you do this by changing the *type* of the activity to *Decision Task* in Blueworks Live. If there was no activity associated with the decision point, you will need to create a new activity of *type Decision Task*. To do this, right-click the activity and select these choices from the menu as shown in Figure 4-4.

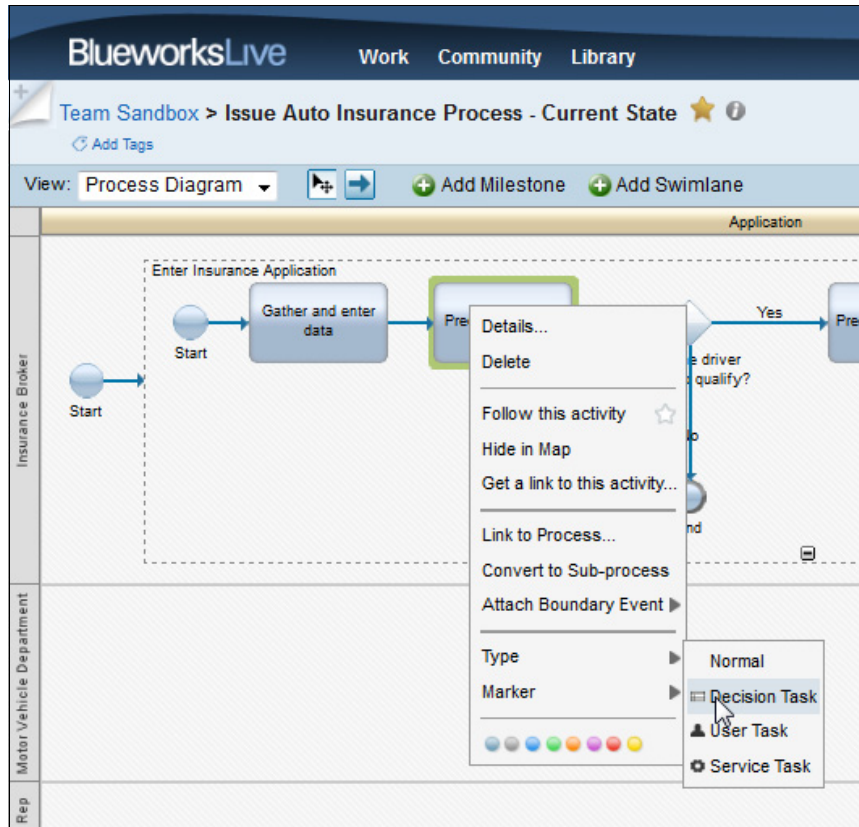


Figure 4-4 Create a Decision Task to represent the decision point

Sue has identified two activities that precede gateways and appear to be decision points. They are “Prequalify Driver” and “Prequalify Vehicle.” You can see these activities identified as decision tasks in Figure 4-5 on page 49.

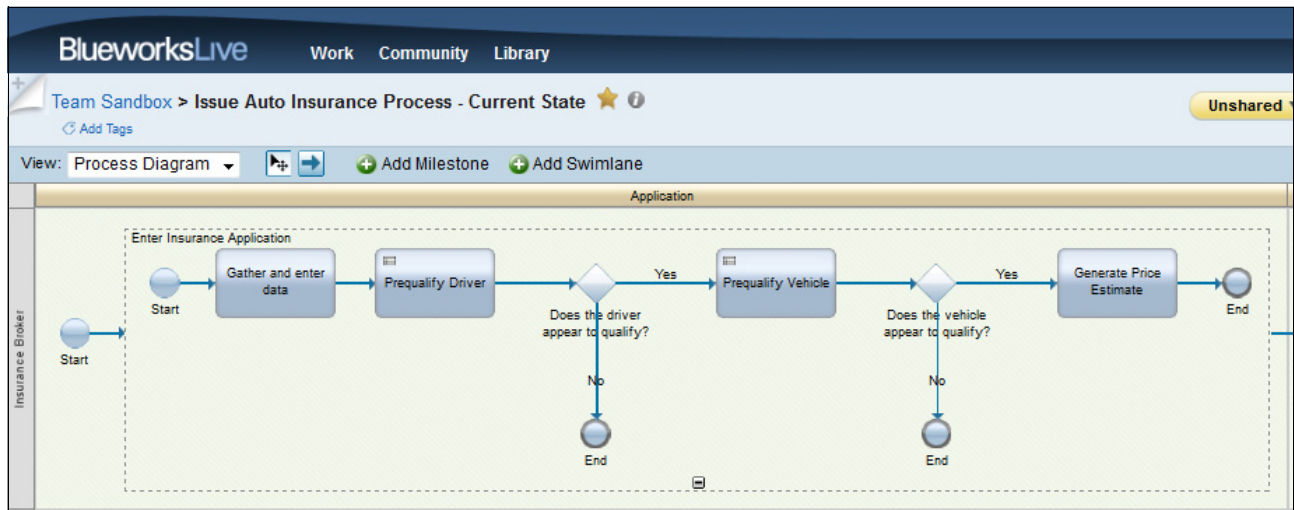


Figure 4-5 Two decision tasks identified by Sue in association with gateways

4.3.2 Look at the activity names

Decisions do not always drive branching in process diagrams. Sometimes the conclusions of decisions are simply carried forward and used in a later step of the process—where a quote is produced, an invoice generated, a report created, or any number of possible uses. So in addition to looking for decisions that are associated with gateways, you will need to look for decisions in other process activities. One way to do this is to look for words that indicate that a decision is being made. If the verb associated with the process activity is a “decision” or “calculation” verb, then there is a good possibility that a decision is at least part of what is happening in the activity.

Decision and calculation verbs: For more information, review Chapter 3, “Getting started with decision discovery” on page 21, where decision and calculation verbs were discussed and a list of them was provided.

Sue identifies some process activities later in the process diagram whose names contain decision and calculation verbs. The verb, *validate*, in “validate driver” and “validate vehicle” clearly suggests that these activities involve decisions, so she identifies both of them as decision points. And the verb, *price*, is in the list of calculation verbs. This, combined with the fact that inconsistencies in pricing were clearly documented as pain points by the process improvement team (and highlighted by the CEO in company-wide communications), leads her to also identify “Price Policy” as a potential decision point as shown in Figure 4-6 on page 50.

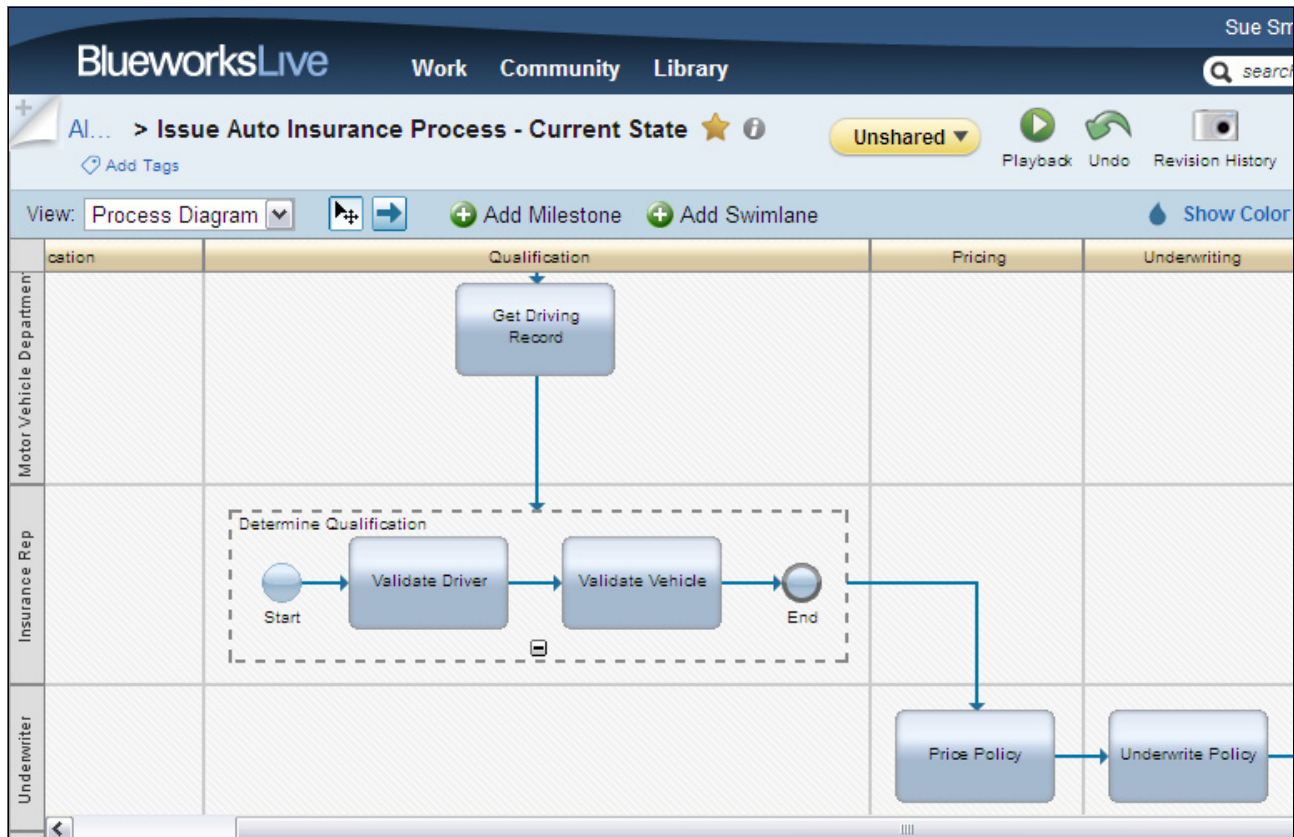


Figure 4-6 Process activities containing decision verbs

4.3.3 Look at the milestones

In your review of the process diagram, you may come across a process activity that is not associated with a gateway, and whose name does not contain a decision verb, but that you feel is making some kind of decision. This often occurs at the points in a process where work is being handed off from one participant to another, or where transitions between milestones occur. Evaluate the activities immediately before and after a hand-off between participants or a transition between milestones.

As Sue considers the transitions between milestones in the AIC process diagram, she notes that the transition between the Pricing and Underwriting milestones likely involves a decision. As an underwriter, she knows that they never underwrite a policy until it has been priced. And although there is currently no gateway in the diagram indicating this, based on everything else she has seen she thinks that this just provides even more evidence that the Pricing activity is an important decision point.

4.3.4 Summary

In this section we have seen how to identify decision points in several ways:

- ▶ By examining activities associated with branching and gateways in the process diagram.
- ▶ By examining activities whose names contain a decision or calculation verb.
- ▶ By examining transitions between milestones.

After applying these techniques to the AIC “Issue Insurance” process, Sue feels that she has identified all of the potential decision points. She has updated the process diagram, which is shown in Figure 4-7 (the decision points are called out with green check marks).

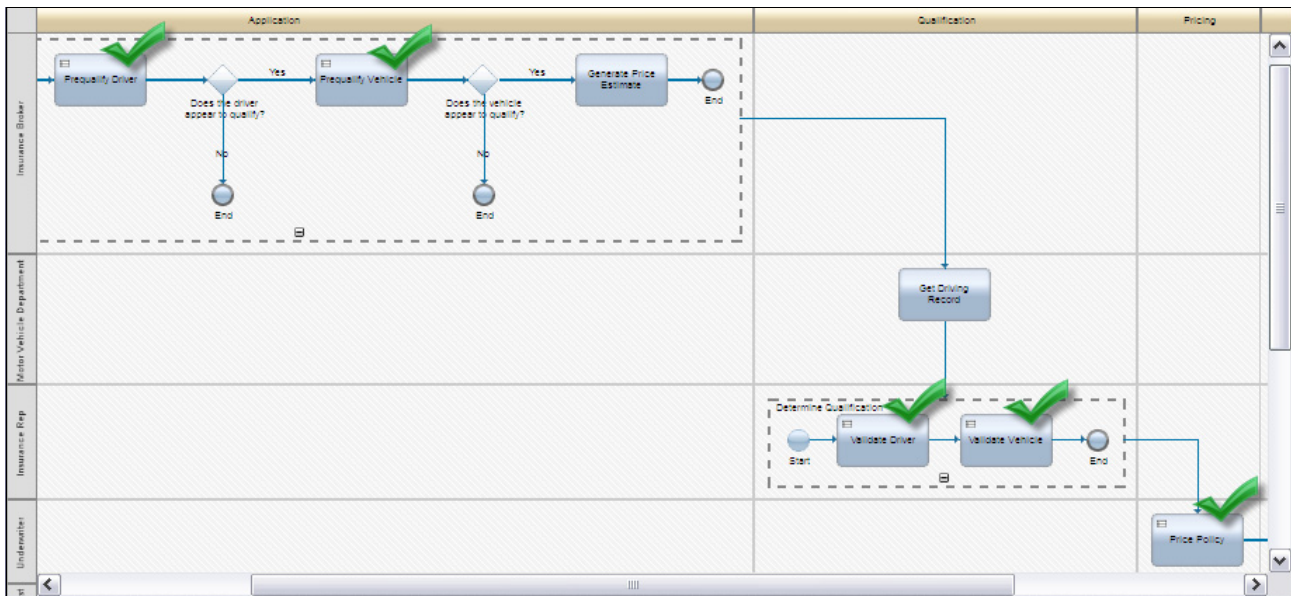


Figure 4-7 The five AIC decision points

Now she is ready to review these decision points with the rest of the team, and capture some of their important properties. This information will enable the team to select and prioritize the decisions that they will document as part of this project, and to lay out their decision discovery roadmap.

4.4 Step 3: Identify and prioritize decisions for further discovery

As described in Chapter 3, “Getting started with decision discovery” on page 21, once you have identified your decision points, you will need to document some of the important properties of each of them. This will enable you to assess which decisions should be discovered and documented in greater depth, create the decision discovery roadmap and assemble the decision discovery team. We touched on this in Chapter 1, “Introduction to decision discovery” on page 1, Chapter 2, “Introduction to IBM Blueworks Live” on page 9 and Chapter 3, “Getting started with decision discovery” on page 21. Now we describe how it is done.

4.4.1 Compose a decision

The AIC decision discovery team identified five decision points in their process diagram and designated those as Decision Tasks in Blueworks Live: Prequalify Driver, Prequalify Vehicle, Validate Driver, Validate Vehicle, and Price Policy. As you may recall, decisions are associated with a process via the *Decision Task*, and as such may be reused across multiple activities and processes, if necessary. The first thing Sue is going to do is to create some decisions to associate with these Decision Tasks so that she can begin to capture the high-level characteristics of each of them. In Blueworks Live, business artifacts (processes, decisions, policies, and so on) are organized into what are called *Spaces*. And while decisions

can also be composed from the Decisions tab of the Blueworks Live Library, Sue goes to her AIC Online space, as shown in Figure 4-8, to perform this task since she can easily see and work with all of her project artifacts from here.

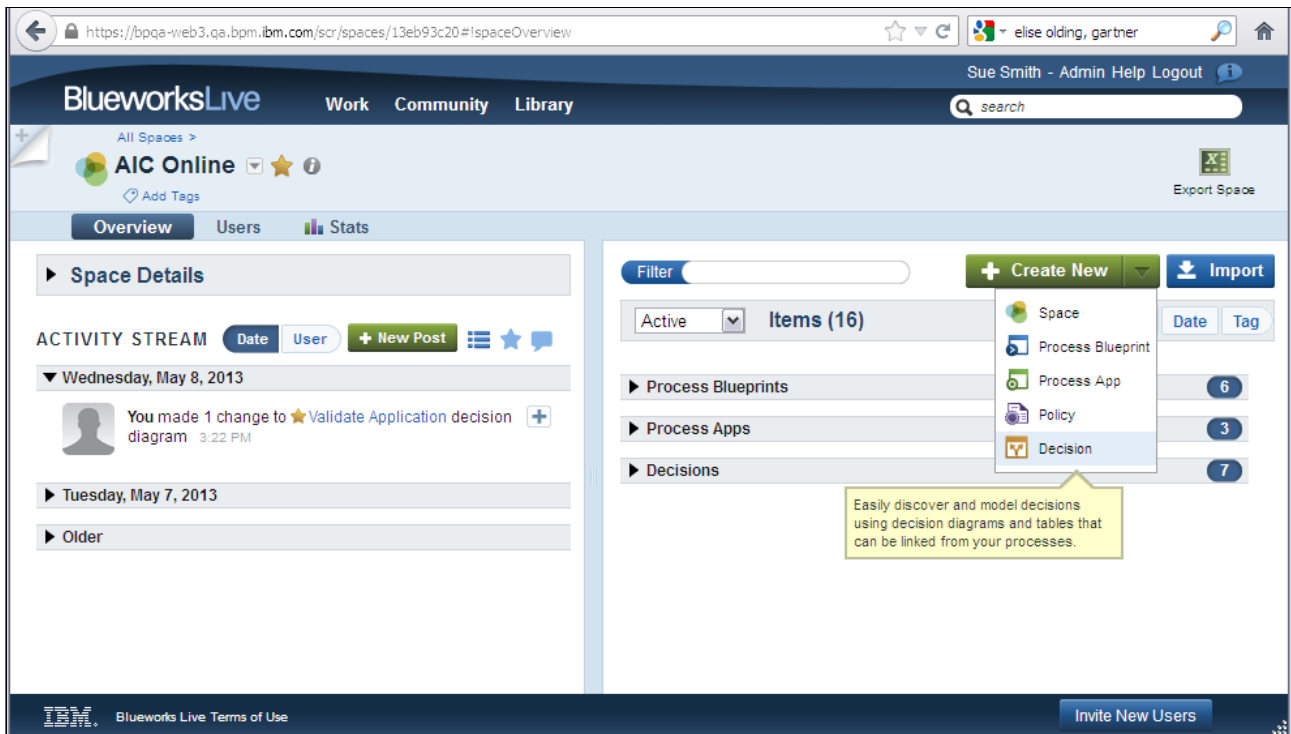


Figure 4-8 Creating a new decision in the AIC Online space

Sue presses the “Create New” button and selects to create a decision. This opens a compose window for the decision, where she enters the name of the new decision “Prequalify Driver”, as shown in Figure 4-9 on page 53. The best practice, in most cases, is to give the decision the same name as the Decision Task. However, when a decision will be reused in different activities or different processes, the Decision Task name should reflect the specific context whereas the name of the decision will be a bit more generic. When naming decisions, we follow a convention where the decision name = action (decision or calculation verb) + entity (business object).

Decision and calculation verbs: See Chapter 3, “Getting started with decision discovery” on page 21 for a review of decision and calculation verbs.

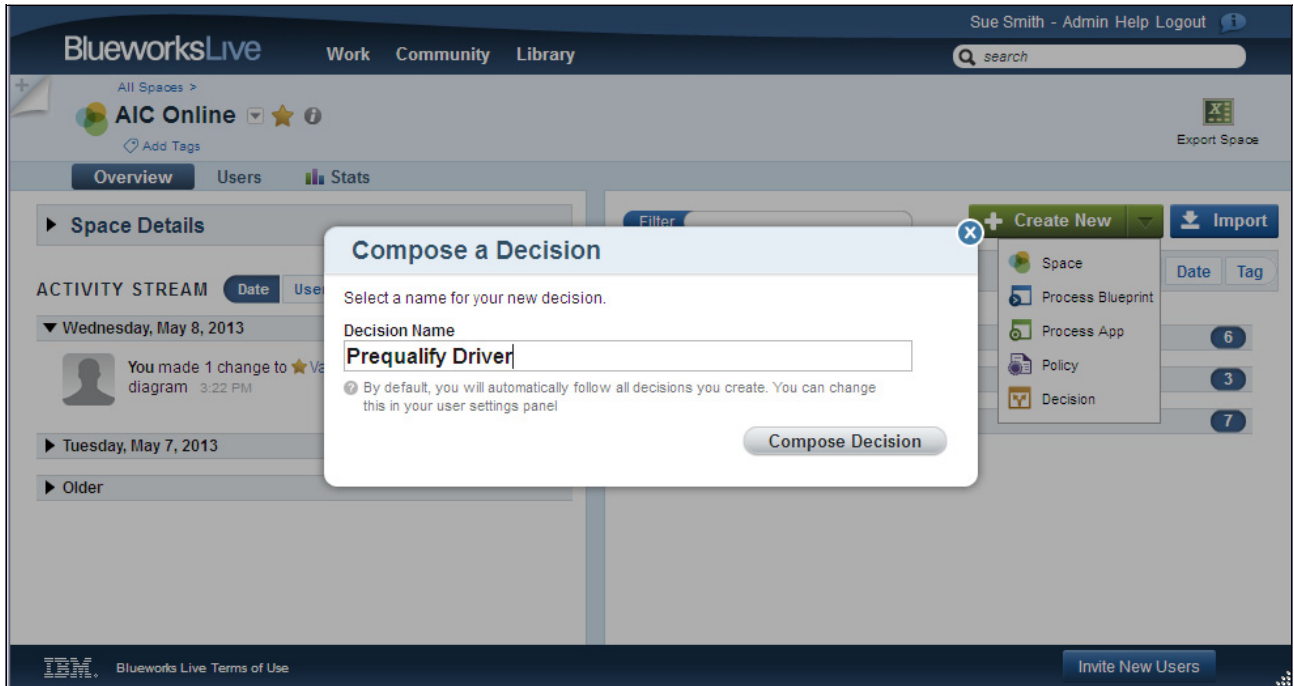


Figure 4-9 Compose a Decision

Sue goes on to create five decisions, one for each one of the decision points that were identified previously. In Figure 4-10, you can see these newly created top-level decisions in the Decisions tab of the Blueworks Live library.

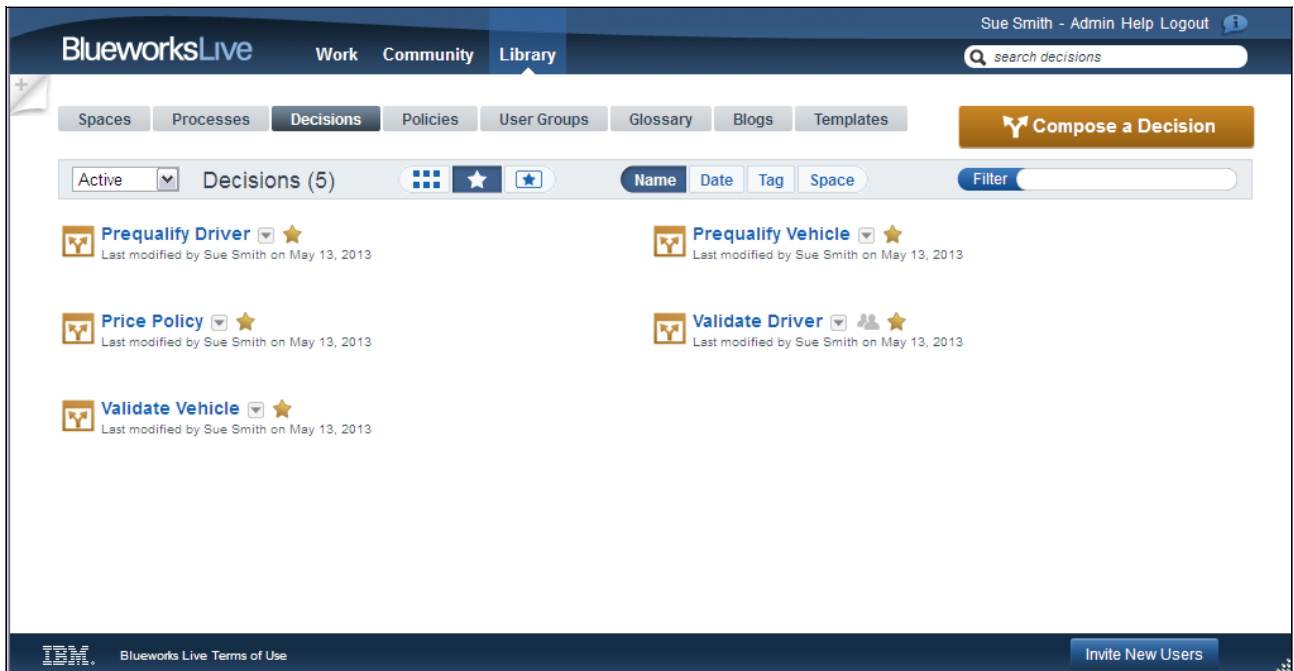


Figure 4-10 Top-level decisions in Blueworks Live

4.4.2 Capturing key decision characteristics

Now Sue is ready to get back together with the team for the next decision discovery workshop, where they will go through and document some of the important high-level characteristics associated with each of these decision points:

- ▶ The basic business description and rationale for the decision (name, description, decision output, business motivation, business owner)
- ▶ Sources of knowledge about this decision (experts and other sources)
- ▶ Important business metrics associated with the decision (KPIs, decision volume)
- ▶ Change dynamics of the decision (change frequency and latency)

Basic business information

The first thing that you should capture in Blueworks Live are the most fundamental pieces of business information about the decision: what exactly is being decided (that is, the output of the top-level decision), a brief description of the decision, the business motivation behind the decision and the business owner.

Sue begins by opening up the “Prequalify Driver” decision diagram, and typing “Driver prequalified for Insurance?” into the output name pop-up window on the top of the decision box. Then, she opens the decision details panel as shown in Figure 4-11 to enter a description of the decision.

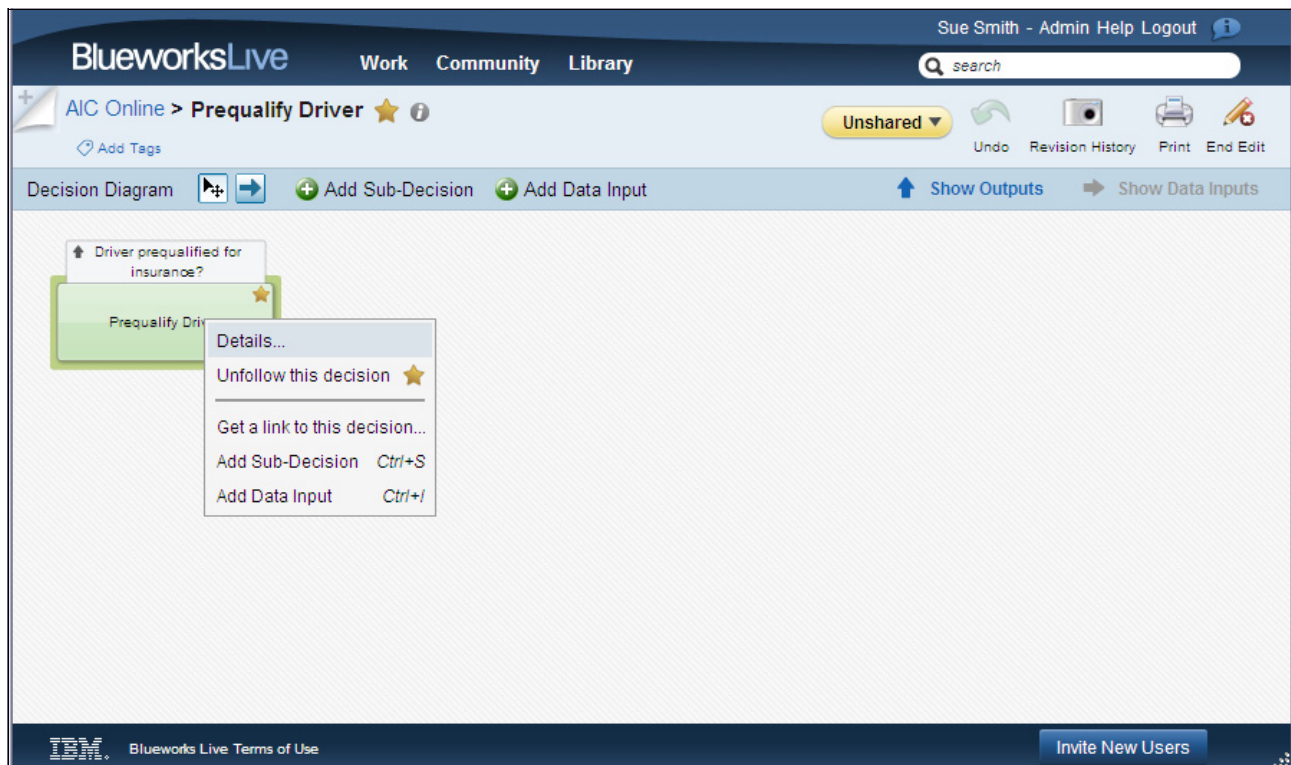


Figure 4-11 Opening the decision details panel

She enters a description of the decision on the decision tab, as shown in Figure 4-12 on page 55.

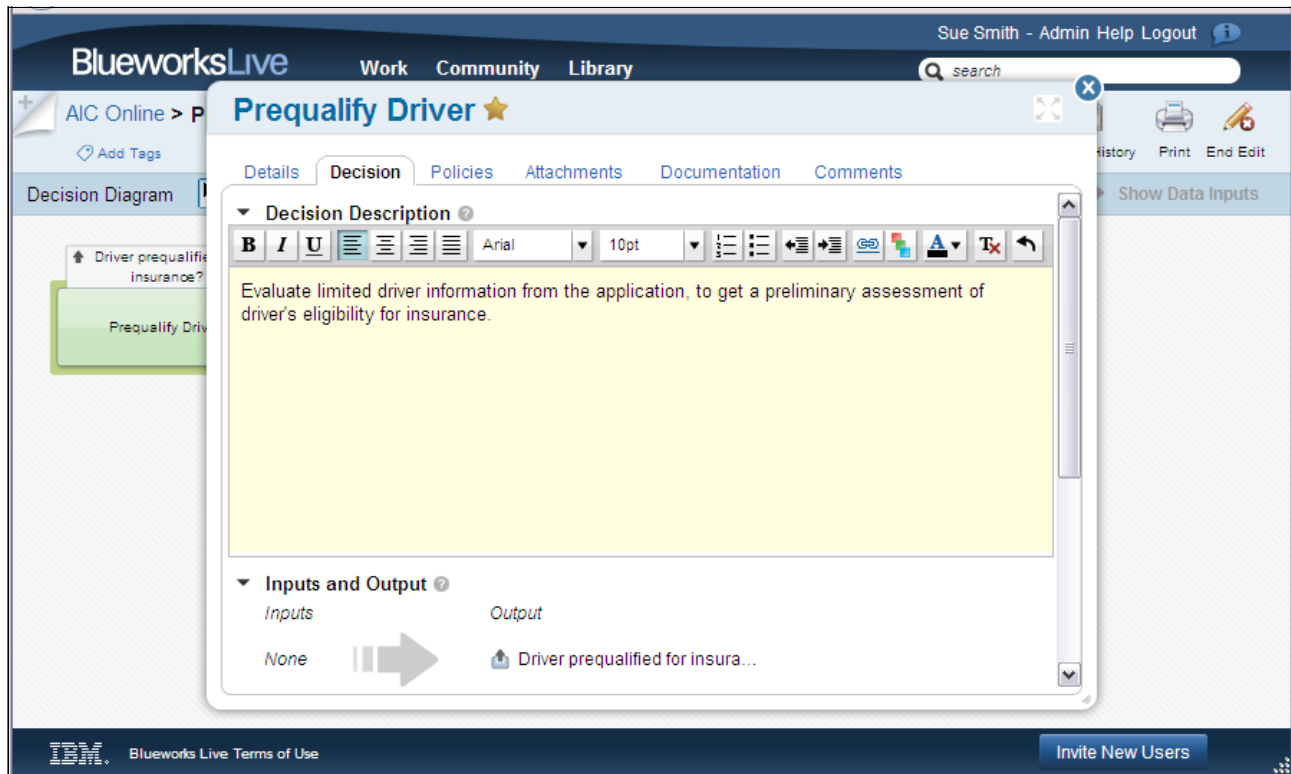


Figure 4-12 Entering a description of the decision

As Sue considers the business motivation behind this decision, she feels it is twofold: To figure out if a driver *might be* eligible and to avoid sending for (and thus paying for) a DMV report for a driver who is not eligible. So she enters this information into the Business Motivation slot of the decision details panel.

Sue knows that it is the underwriters who have responsibility for ensuring that this decision is made in accordance with AIC's risk management policies, so she enters the VP of Underwriting as the Business Owner. While Paul, the VP of Underwriting, himself might not know all of the details associated with this decision, the underwriters on his team do. And it is the VP of Underwriting who is ultimately responsible for ensuring that this decision is being made correctly.

Figure 4-13 shows where Sue entered this information about the decision details panel.

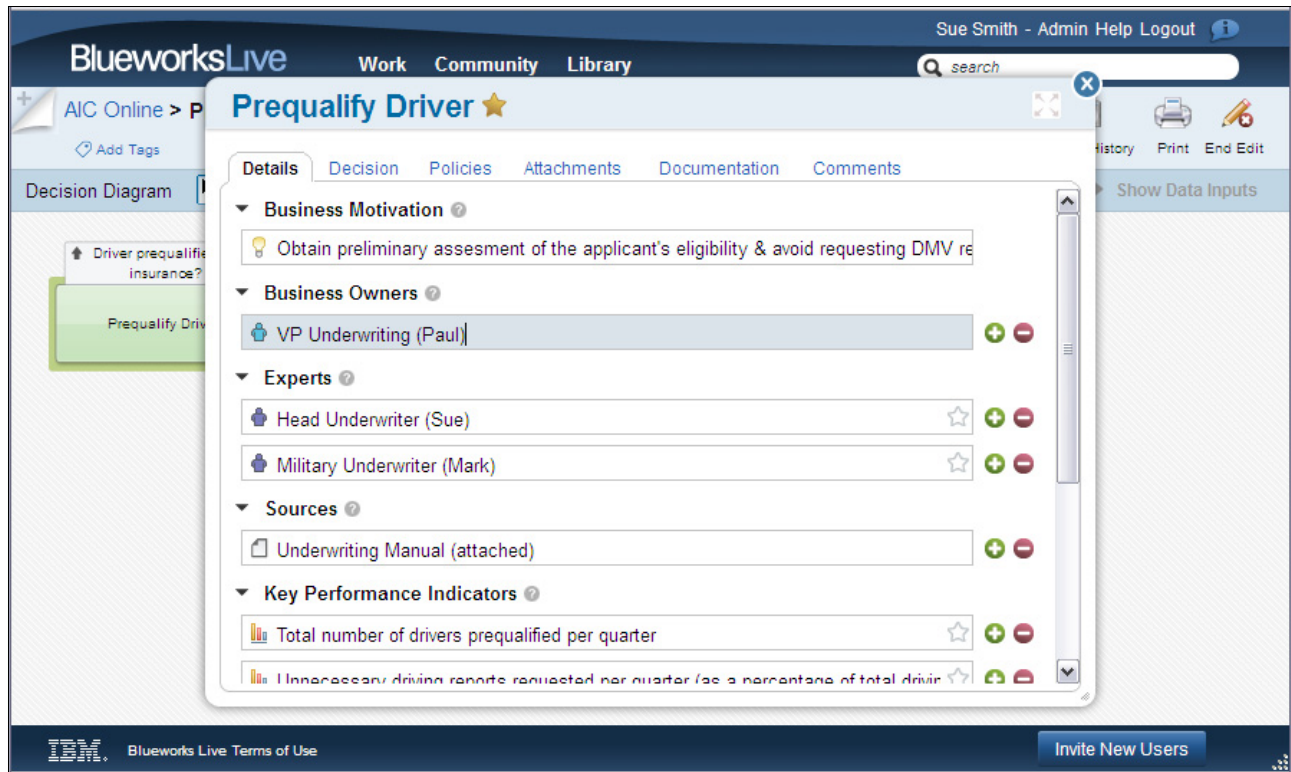


Figure 4-13 Entering the business motivation and business owner

Sources of knowledge

The next thing to do is to identify the sources of knowledge for this decision. You will need to identify *who* knows the details of this decision best. Even if the decision is fully documented already, in a policy manual, code, or program documentation, you want a person with whom you can work, someone who can provide you with information that might not be documented.

Most documentation does not fully document decisions. Most of the time, documentation reflects requirements. Requirements usually reflect *what* a system is supposed to do. Decisions are about *how* a conclusion is reached. Usually, requirements documentation does not include all of the context or logic that is necessary in order to fully define the decision. It may not fully describe how a decision is actually applied, how a given piece of information is used, in what context a decision becomes active, or details about how the conclusion is actually used. There will almost always be gaps in the decision knowledge that comes from documentation. That is why we recommend that you identify a person who has expertise in the particular decision.

In general, there are four main sources of knowledge about a decision:

- ▶ People
- ▶ Operational documentation
- ▶ Regulatory documents and policies
- ▶ Computer system code

People

People, as previously mentioned, are always needed as a source. In some situations, people are a source of context, that is, that they will help you understand how the documented decisions are applied, and how the conclusions are used. In many cases, however, the

decisions might not be automated, and may be only sketchily documented. In this case, the selection of people as sources is critical.

When identifying a person as a source, find the person who knows the decision best. This is generally the person who makes the decision on a day to day basis. Usually this is someone other than a manager. Often managers want to have input into the decision logic, and they should, but it is the person whose work is to apply and make the decision day to day that will be the best source of knowledge for the decision. Start with the person who does the work.

In the case of AIC, Sue, the head underwriter, makes underwriting decisions on a daily basis. As the head underwriter, Sue gets the most difficult cases, and she may bring in another underwriter to help when she is looking at simpler situations that she does not handle as frequently. Sue will be an excellent subject matter expert to help document these decisions at AIC.

Sometimes there is more than one person who does the work. Particularly when the work is complex and when it is already significantly divided, you may need to identify different people for different decision points, or even more than one person for a given decision point. Sue does automobile insurance underwriting, but really is not an expert in real estate insurance. If the project expands to include real estate insurance underwriting, she will need to bring in another subject matter expert. In addition, though she knows much about pricing, she will want to bring in someone from the accounting department to be an expert on that area, which is not a primary concern of hers.

Managers, team leaders, and supervisors, while they are not primary experts, fill a couple of really important roles in the process of discovering and documenting decisions. The first occurs when there is more than one expert. It is almost inevitable that when working with more than one subject matter expert, there will be a difference of opinion or understanding discovered between them. It may be a major difference, or it may be a subtle difference of emphasis. When this happens, it is important to fully gather and document each person's point of view. Then, if a consensus between the experts cannot be reached, ask a third party to make a decision as to how to reconcile the disparate views. Typically this is one of the managers who is responsible for the policy on which the decisions are based.

Managers can also be invaluable as reviewers. Management invariably determines the business objectives and policies behind a decision. Their staffs usually figure out the details of how to achieve the business objectives and implement that policy. At AIC, the CEO and the Board of Directors made the decision that the company would no longer raise rates based on not-at-fault incidents. However, they did not specifically indicate how that change should be implemented. Instead Sue and Ginny and their staffs had to figure out what that meant in terms of the specific decisions. When decisions are clearly documented in plain business language, managers, especially those who actually make policy, can be invaluable as reviewers.

So as Sue considers how to document the sources of knowledge for the “Prequalify Driver” decision, she realizes that she is the person that knows the most about this decision. But she remembers that one of her fellow underwriters, Mark, works exclusively on applications from military families, who have some special considerations, and she knows that she will have to gather that information eventually. So she enters herself and Mark as the experts for this decision, as shown in Figure 4-14.

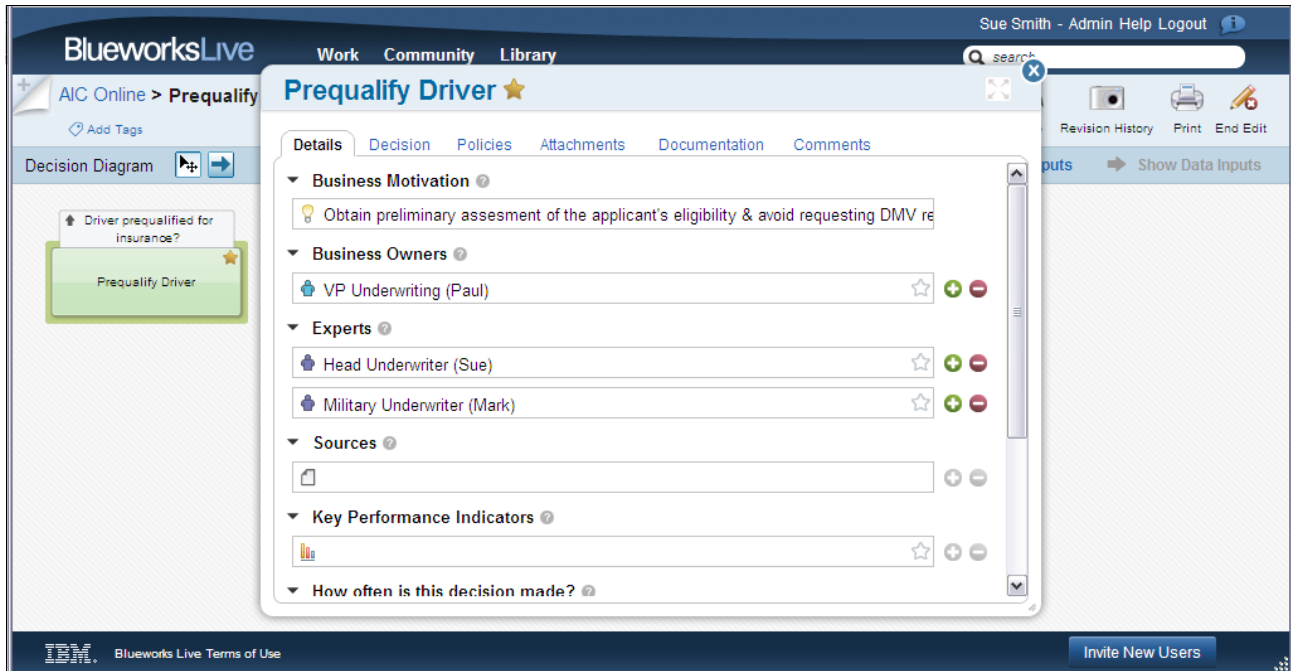


Figure 4-14 Documenting the experts

Operational documentation

Various different types of corporate documents may exist that contain knowledge about a particular decision. Manuals and work aids used by the people actually doing the work, computer spreadsheets, memos, and computer program documentation are just a few examples of operational documents that may describe how a decision is actually being made and used within the daily operations of the business. They may contain references to, or sections that describe corporate strategies or policies, but for the most part they support the day to day operations.

The closer you get to the work of the person who is actually making or managing a given decision, the higher quality the documentation will typically be. So work aids that are posted on the walls of the cubicles are most valuable. Manuals and spreadsheets used by people making decisions are the next. Program documentation is usually preferable to relying solely on code. But it is often incomplete, incorrect, and may not address the decision directly.

Capture all of the documents, web pages, and other sources that contain knowledge about this decision in the “Sources” field on the decision panel in Blueworks Live. You may want to associate the actual source documents, excerpts from these documents or links to them with the decision. This can be accomplished using the Documentation and Attachments tab on the decision panel.

Sue enters the “Underwriting Manual (attached)” as a source of knowledge as shown in Figure 4-15 on page 59.

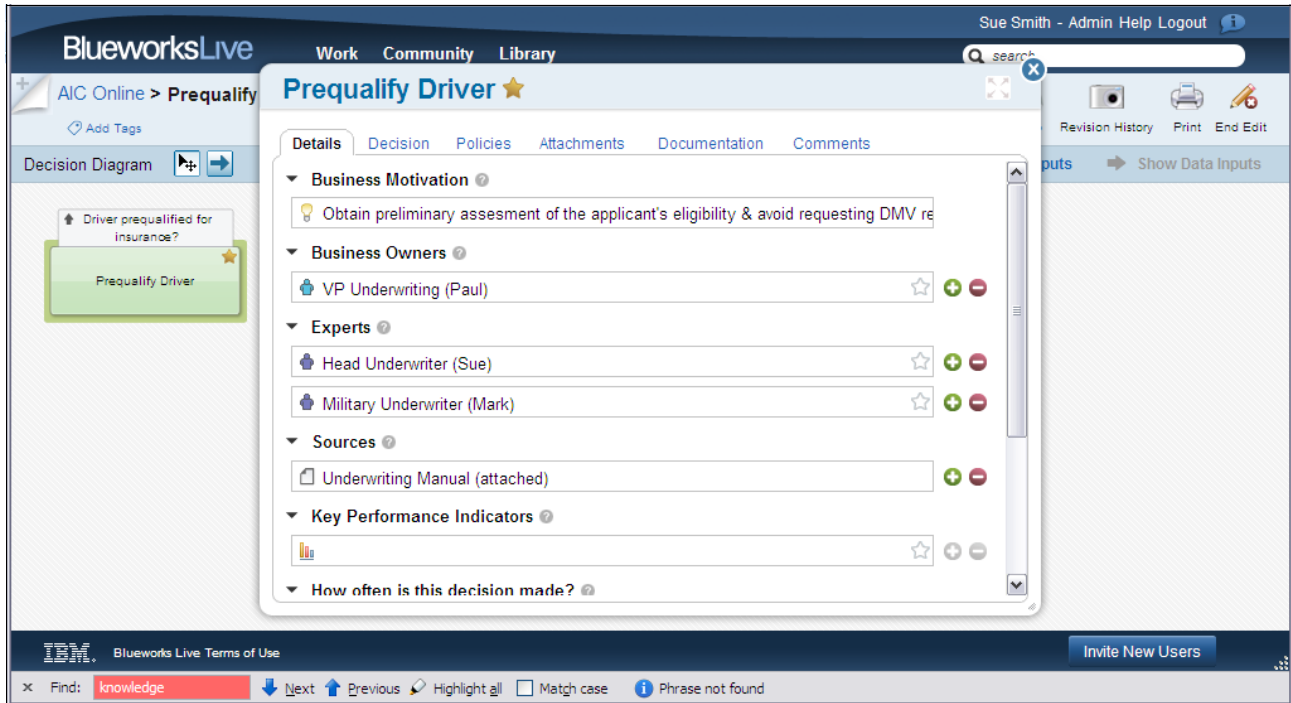


Figure 4-15 Capturing sources of knowledge

Sue thinks it will be useful to have the entire underwriting manual attached to the decision for easy reference, so she adds it on the Attachments tab by clicking **Add** at the lower left of the dialog and selecting the appropriate file, `AIC_Underwriting_Manual_January_2013.odt`, as shown in Figure 4-16.

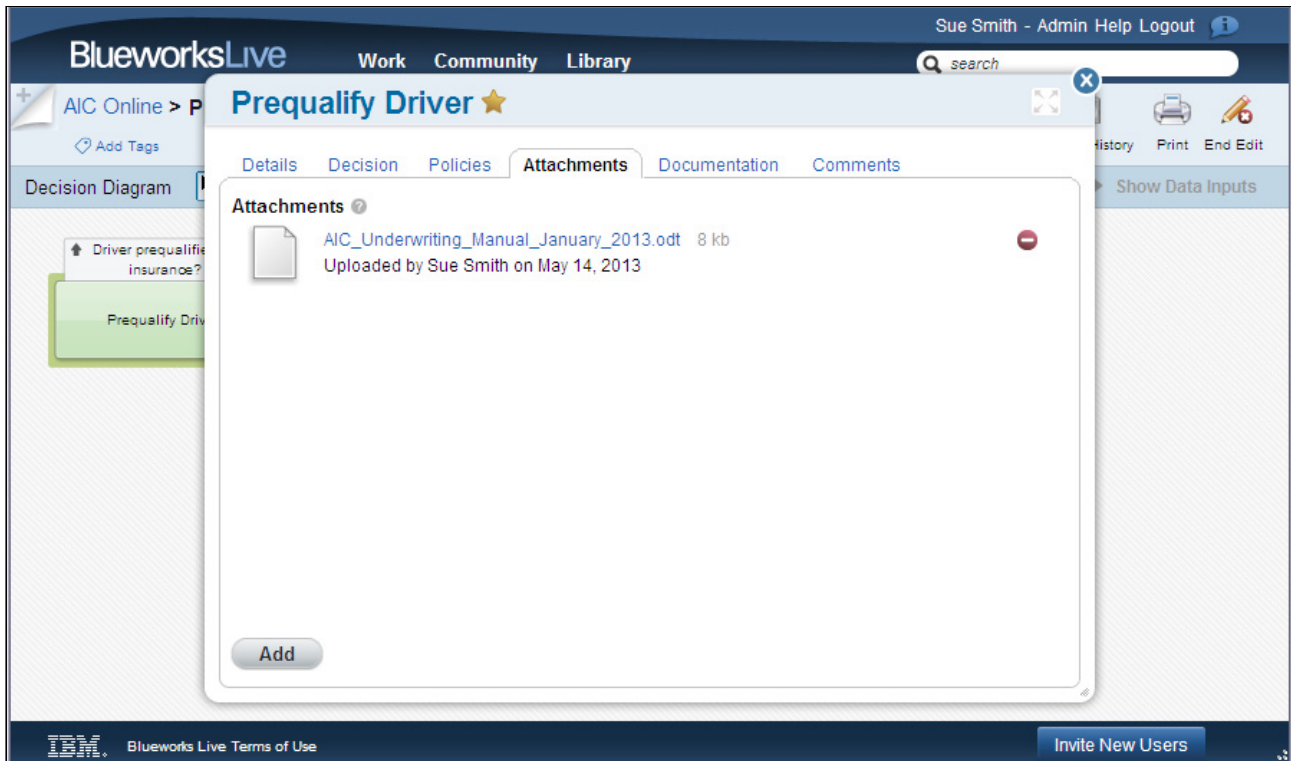


Figure 4-16 Attaching a source document

In addition, Sue may want to capture an excerpt from Mark's memo on military drivers because it contains some important information that is not in the Underwriting Manual. To do this, she simply copies and pastes the memo text into the Documentation tab. If she wants to provide a link to the memo on the AIC intranet, she can choose to insert a link on the Documentation tab as shown in Figure 4-17.

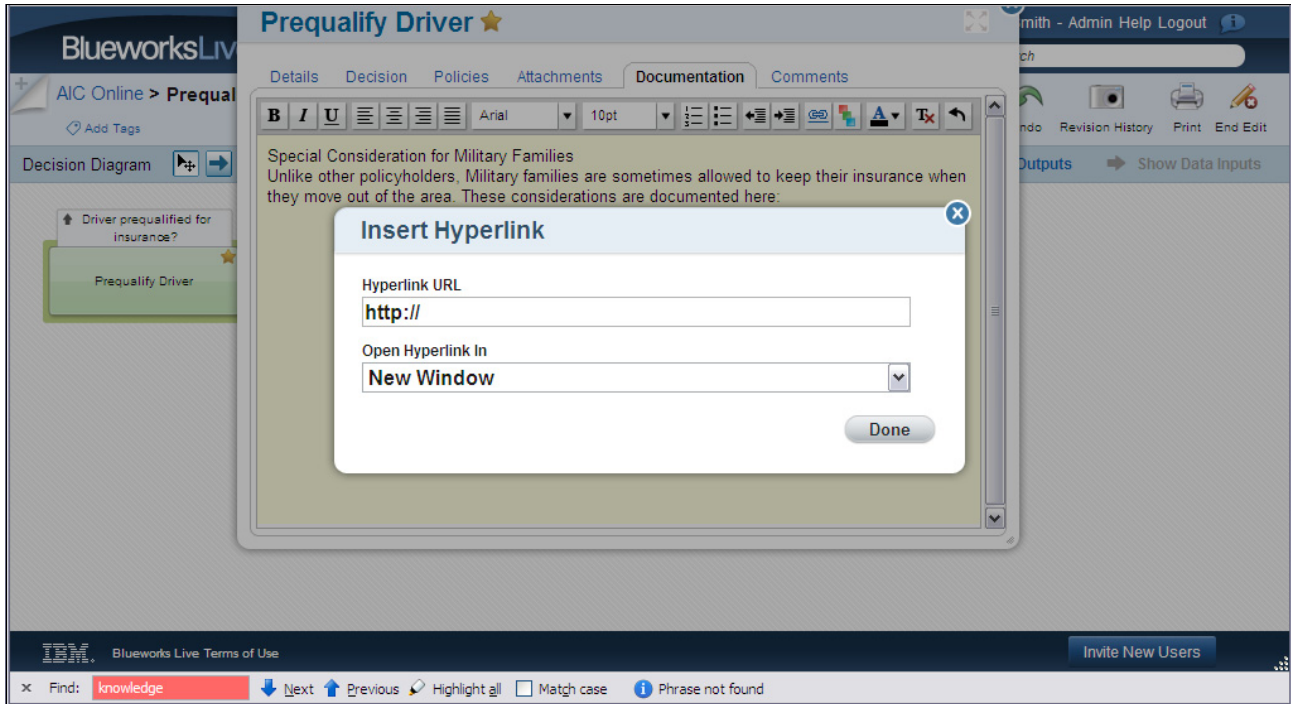


Figure 4-17 Entering text and links in Documentation tab

Regulatory documents and policies

Decisions are frequently made in support of policies. Policies represent the more general, overarching goals and constraints on a business, and are typically expressed at a higher level of detail than the decisions that apply them. For example, at AIC, the lawsuits related to not-at-fault claims resulted in the CEO determining that the company should not raise rates for not-at-fault accidents. Though it may sound like a decision, this is a policy. It is a very general statement, and does not describe the details required in order to actually apply the policy throughout the day to day business operations.

Sometimes, policies describe a legal or regulatory requirement. Often those requirements are detailed and communicated in publications by government agencies or other legal documents. Often policies refer to both decisions and process, and the boundaries between them are not well delineated.

Policies are almost always incomplete, and require some thinking and analysis to identify and document the decisions that result from them or that may be impacted by them. It is important to validate documented decisions against any related policies to ensure that they are consistent. Sometimes we can extrapolate decisions from policy, but not always.

For example, Sue of AIC is the lead underwriter. But she is trying to figure out the policy regarding at fault or not at fault claims. So she went to talk with Chris, who works in claims processing, because they are the ones that code the accidents.

“Chris,” she asked, “how do you identify what is at fault and what is not at fault?”

“Well,” Chris replied, as he sat down. “Obviously if someone is charged in an accident, they are at fault. And if the other person is charged they are not at fault.”

“Is that it? If the other person is charged then the applicant was not at fault? And all others are at fault?”

“Not completely,” said Chris, “there are some situations where there is no other person to charge and they are not at fault. Hit and run accidents, for example. I cannot tell you how many people park in a hotel parking lot and wake up to find a big dent in their bumper, or in their door. It happens all the time. And there is an act of God, like if a tree falls on the car in a storm. Usually those are not at fault.”

“Usually? Do you mean there are times when an act of God is someone's fault?”

“Not the act of God, but the damage. If there is a hurricane coming through, and the person leaves their windows open, that means they may have some responsibility for the accident. We pay the claim.” Chris smiled. “But their insurance might go up. I don't know about the pricing end though.”

Policies like this one are almost always documented. For example, Chris shares with Sue his policy manual, which contains all of the policies associated with how to determine fault in an accident. You can document these as sources in Blueworks Live and attach them as documents, text or links as we saw in the previous section. But if the policy is important, widely referenced across your organization or related to multiple decisions you may want to actually capture it as a Policy artifact in Blueworks Live. A policy artifact in Blueworks Live is defined once, but can be referenced across any number of processes, process activities and decisions.

A Policy artifact can be created in Blueworks Live from either the Policy tab of the library or from the Space view. Sue decides that she will create a policy in Blueworks Live to document the not-at-fault accident policy that so much of this project revolves around. She chooses “Create a Policy” from the AIC Online space as shown in Figure 4-18.

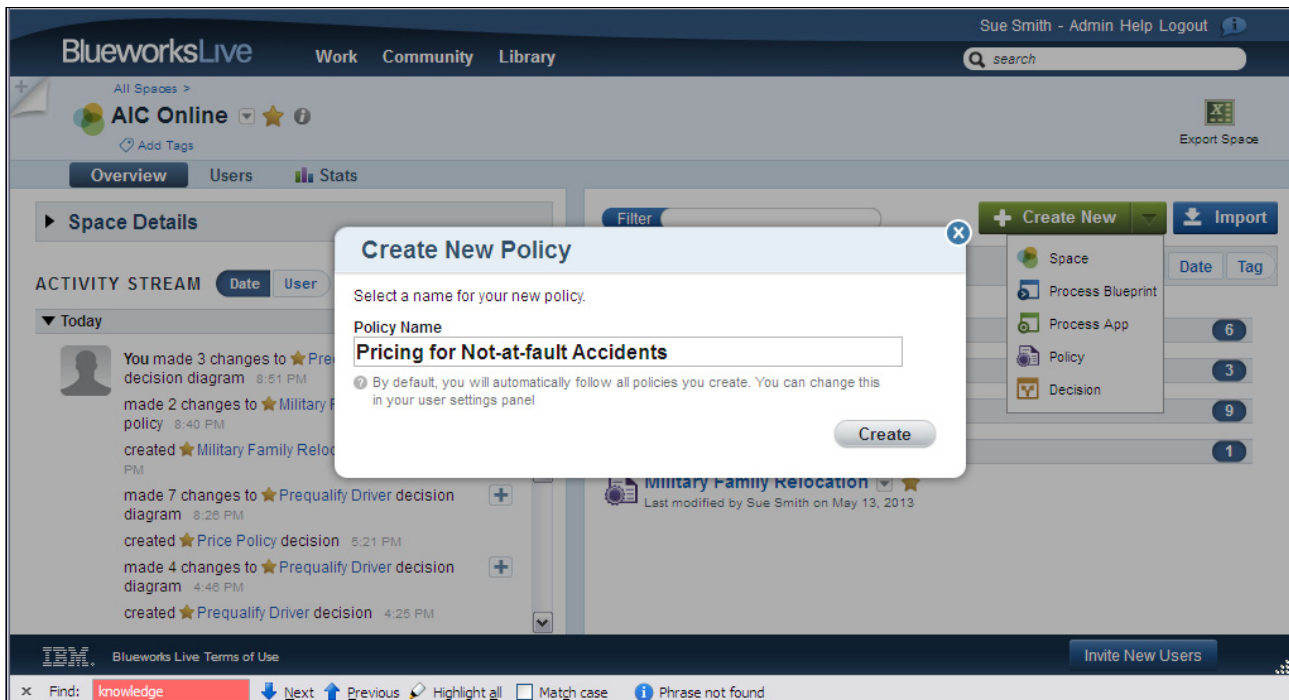


Figure 4-18 Creating a new policy

When she presses **Create**, the policy opens and she is able to add a description and attach reference documents and links to this policy, as shown in Figure 4-19.

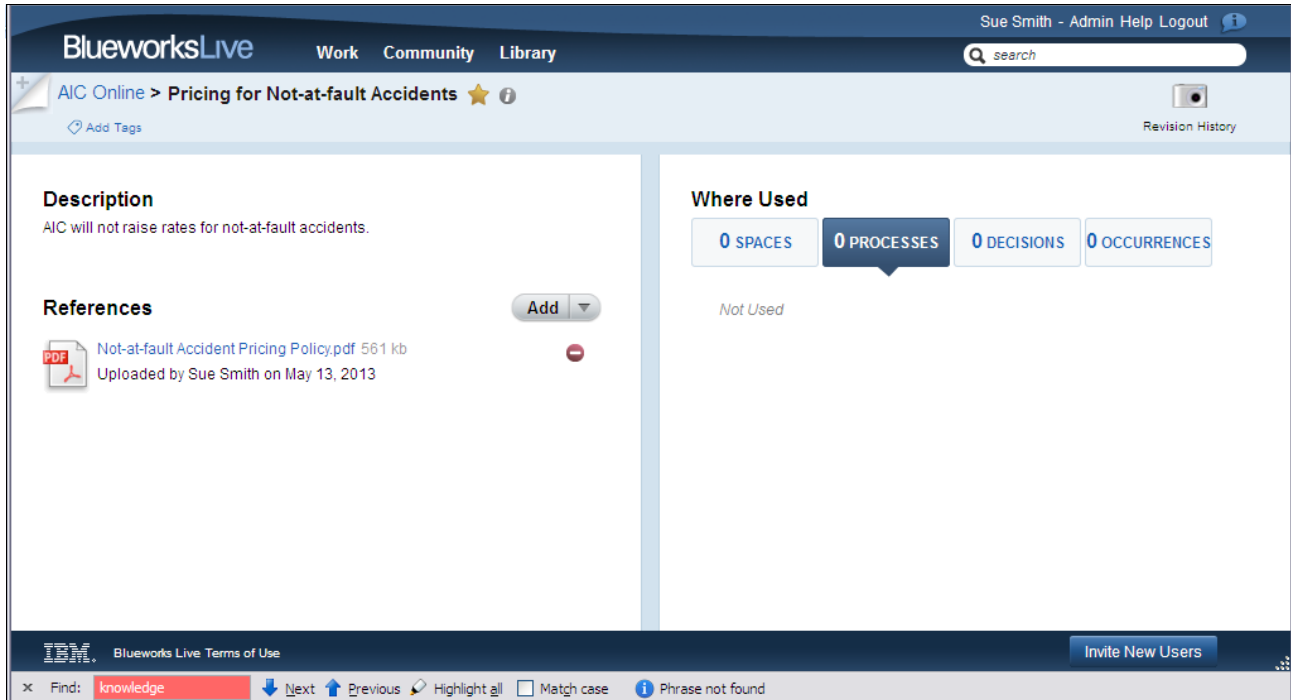


Figure 4-19 Adding a new policy in Blueworks Live

Once a policy has been created in Blueworks Live you can associate it with any number of processes, process activities, or decisions. And you can associate a process, process activity, or decision with any number of policies. You can see how Sue has associated this new policy with the Prequalify Driver decision, as shown in Figure 4-20.



Figure 4-20 Associating a policy with a decision

Computer system code

Last, and most certainly least, is the documentation of decisions in computer system code. Business decisions are rarely well documented in computer programs. Deconstructing computer code is a very labor-intensive process, and results in if-then statements that are at a very low level of detail and are often quite technical. This makes it difficult to separate the decision logic of the business decision from the technical implementation details. This is a reverse engineering process that requires technical resources closely paired with business resources. There are some software tools available to help identify business rules in computer code in some programming languages, but these are not always as effective as one might hope. They are also difficult for business people to use.

If you have no other documented source of knowledge for a decision, then you may choose to identify the computer program as a source in Blueworks Live. You can certainly attach it as a document to the Documentation tab. However, you will have to go through a completely different process to analyze and extract the business knowledge from that code in order to fully document the business decision. This paper does not address any of the techniques required for such an exercise.

4.4.3 Business metrics

Next, we capture some important business metrics that will help us better understand how the decision is used and evaluated within the organization.

Key performance indicators

When discovering and documenting decisions, it is important to understand how the business measures the quality or effectiveness of any given decision. This way you can be on the lookout during decision discovery for opportunities to improve the decision.

Decisions are made in support of business goals. In order to evaluate the effectiveness of a decision, you need to be able to measure whether or not it is bringing your organization closer to the achievement of those business goals. In order to determine this, you must be clear about what the business goals are. In order to assess the quality or effectiveness of a decision, you need to be able to measure its outcome in relation to these goals. This is accomplished by defining the key performance indicators (KPIs).

KPIs are measures that quantify the business performance of an operational decision. In addition to corresponding to clear business goals, they must be quantifiable. And in order to compare and evaluate them, corresponding targets should be set for each. Some KPIs may indicate quantity (for example, number of foreclosed loans over a period). Others may describe directional measures that indicate whether a situation is improving or worsening (for example, YoY % increase in sales revenue). And others may indicate progress, how close we are to reaching a goal (for example, % complete code development).

So make sure and spend some time thinking about the business objectives and KPIs before diving into the structure and logic of your decisions. And when you are documenting the KPIs, try to make them as SMART as you can:

- ▶ Specific
- ▶ Measurable
- ▶ Achievable
- ▶ Result-oriented
- ▶ Time-bound

Sue understands that one of the main goals of the Prequalify Driver decision is to identify ineligible drivers early on so that the company does not have to spend money obtaining their

driving record report from the DMV. In essence, AIC is trying to minimize money spent on obtaining unnecessary driving records. In trying to make the KPI SMART, she rephrases it as “Total cost per quarter of DMV reports requested for ineligible drivers”. It seems to her that if they capture this metric, they will be able to compare it from quarter to quarter in order to ensure that they are improving. But then she realizes that if they increase their overall business, and issue insurance policies to significantly more applicants, they may actually increase the dollar amount spent on these unnecessary driving reports while achieving the business objective. So she decides that a better KPI for evaluating the quality of this decision will be “Unnecessary driving reports requested per quarter (as a percentage of total driving reports requested per quarter)”, and she enters this into Blueworks Live.

Sue also remembers that one of the main motivations behind introducing this prequalification step was to get a quick quote out to engage applicants and keep them from shopping around elsewhere while AIC was doing the full validation on the drivers and vehicles. AIC’s ability to provide a preliminary quote before its competitors was an important competitive advantage for the company. Sue feels that there should be a KPI to help them measure whether or not this decision is being made in a way that is moving them in this direction. After discussing with Mindy in the Marketing department, she decides to keep it simple. When they implement the self-service web application, they can define something more sophisticated. For now, they simply want to maximize the number of preliminary quotes they are making. She types in “Total number of drivers prequalified per quarter” as the second KPI. See how Sue defined these KPIs in Figure 4-21.



Figure 4-21 Entering the KPIs for prequalify driver

You may have noticed that the business goals that these two KPIs are designed to measure progress towards appear to be in conflict. This is often the case with business objectives and their related KPIs. In this case, for example, AIC management is trying to maximize profits while minimizing risk. Measuring these KPIs will give them the information that they need to better balance these objectives.

Decision volume

Capturing the frequency with which a particular decision is made within the organization can be helpful for planning & prioritizing decision discovery and automation. If a decision is made frequently, then it may be worth documenting for better understanding. It may also be a good potential candidate for automation at some point in the future. Ideally, this metric is documented as the number of times the decision is made over some period. For example, twice a day, 300,000 times a week, 1,000 per hour, once a quarter. It can also be a good idea to document any significant triggers that cause this decision to be made. In some cases, you may not know the exact number of times the decision is made, but can document the business events that drive it. For example, reviewing insurance claims for potential fraud may be something that is done for approximately 10% of claims processed, based on a random sampling. Blueworks Live also provides a subjective measure of decision volume (High, Medium, Low). This is useful as a decision volume of 10,000 times a day may not be considered high when you're talking about a processing a million credit card transactions a day, but it may be considered very high in another situation where a total of 20,000 new insurance policies are being issued each day.

Without researching, Sue does not know how many times a day the Prequalify Driver decision is made, but she does know that it happens once for each application that is processed. She can follow up later with Operations to find out how many applications are currently processed per day. She considers a decision volume of once per application to be "average", decisions that occur multiple times per application to be "high", and decisions made only on some applications to be "low". She enters this information into Blueworks Live, as shown in Figure 4-22.

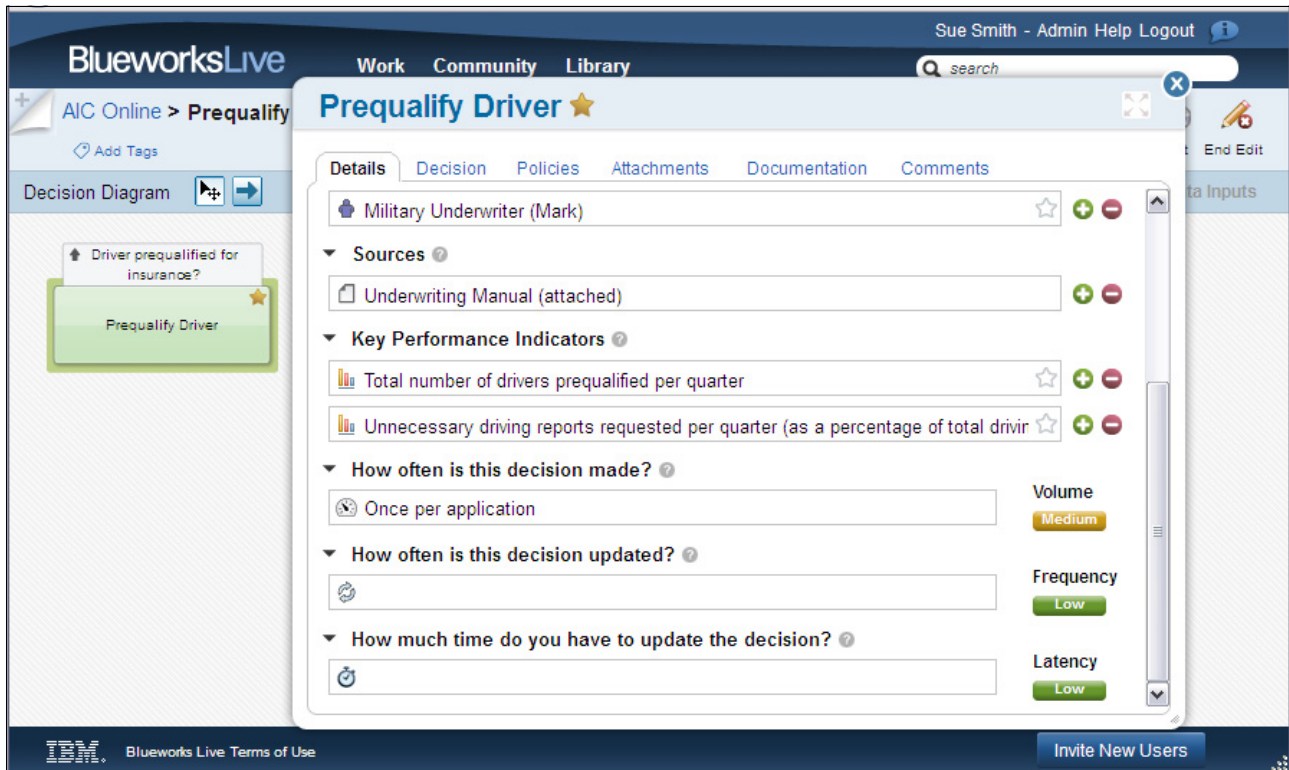


Figure 4-22 Decision volume

4.4.4 Decision change dynamics

The dynamicity of a decision – the frequency and speed of change, is an important factor to consider when identifying potential candidates for automation using Decision Management technology. If a decision must be changed frequently (a pricing decision that is updated daily, for example), or if it must be changed very quickly (for example, we have a short overnight window to make these daily changes to the pricing decision logic), the agility afforded by a Business Rule Management System or Decision Management platform can be very compelling.

At AIC, the Prequalify Driver decision does not change very often. It is a pretty stable decision. And when it does change, it does not have to be changed quickly. They typically have a lead time of several months to implement significant policy changes that may impact this decision.

Sue enters this information as shown in Figure 4-23.



Figure 4-23 Change dynamics of the Prequalify Driver decision

But as Sue documents the change dynamics of the Prequalify Vehicle decision, she sees a very different pattern. Vehicle prequalification happens more frequently, since people can own more than one vehicle. And Sue knows that there is new information coming out on vehicles every week, sometimes several times a week. AIC is careful selecting the vehicles they will insure, and they do not insure those vehicles that have a high likelihood of being involved in accidents. That means they do not insure fancy hot-rods, or cars that have been converted to run on a racetrack rather than just on the street. Nor do they insure trucks, only cars. And while most pickups are considered cars for insurance purposes, some of the larger, more industrial pickups, and the larger vans are considered trucks. AIC receives this information from various sources. Sometimes it is in the form of a keyed list of VINs, sometimes a letter about a model or make. Sometimes it is from a police report, and identified by tag number.

Sue knows that if a change to this decision would cause a car to be rejected rather than accepted, AIC management wants the change to take effect immediately.

Sue records all this information in the decision details panel of the Prequalify Vehicle decision, as shown in Figure 4-24.

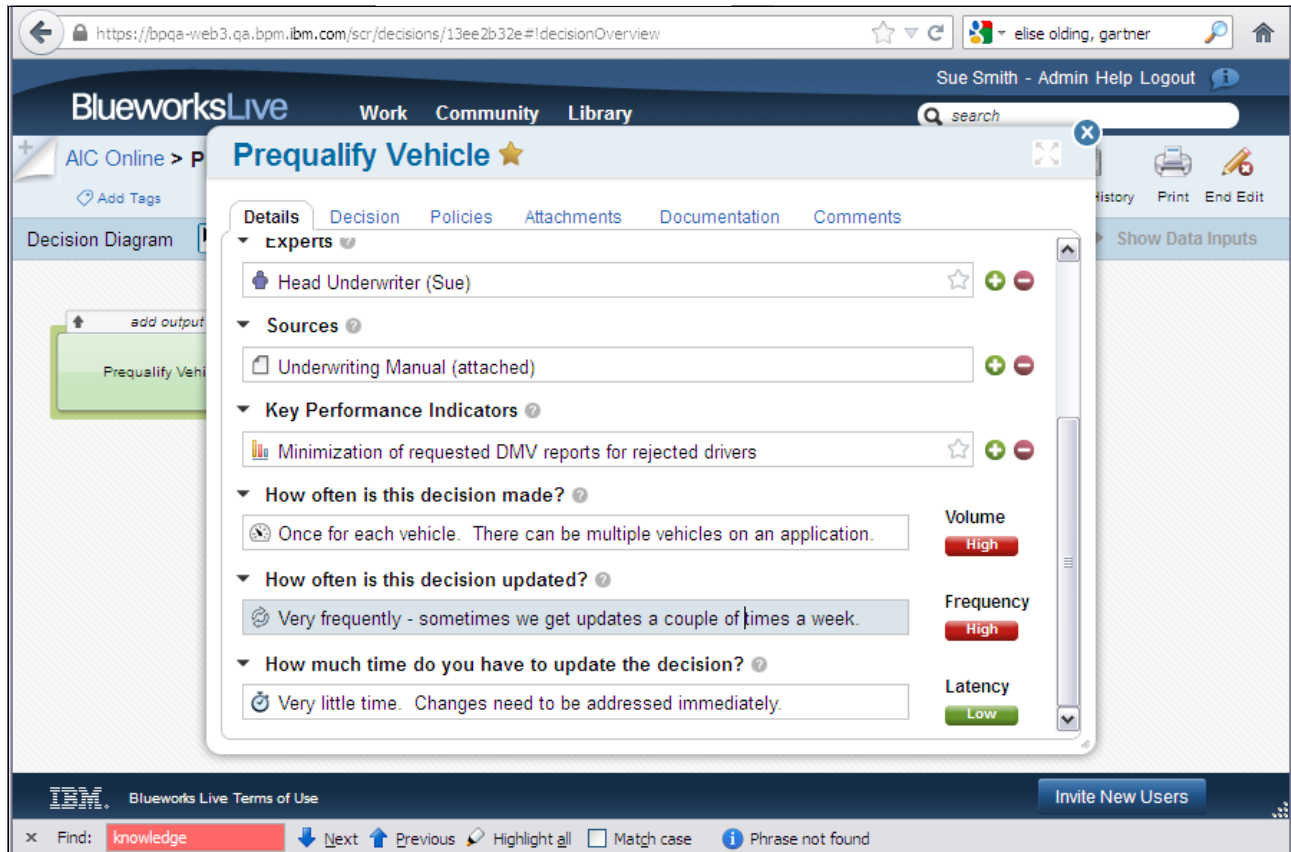


Figure 4-24 Change dynamics of the Prequalify Vehicle decision

Given how dynamic this decision is, Sue decides to explore the change dynamics for Prequalify Vehicle a little more deeply. What triggers the change to the decision? What policy affects this decision? Who determines the need for change? What are the goals of change? Are there situations that influence this change? At AIC, their rates, and thereby surcharges, change every year, meaning that the decisions that support pricing change on an annual basis. In fact, Monica, the accounting supervisor tells Sue that they have to register their prices with the state insurance board, and cannot do that more than once every six months. This means that pricing changes can only occur twice a year. And they usually have about a three-month lead time on implementing these changes.

Changes to how they qualify vehicles and drivers, however, can happen at any time. They can decide to insure someone or not to insure someone with a little more freedom, "as long," Sue says, "as we do not break any non-discrimination rules." "We cannot refuse insurance due to race, creed, color, gender, and so on. But we can change the qualification decisions at any time, both on people and on cars. Realistically, we do it more with cars. Remember when that car company had that brake scare? For a couple of months, we required all of the affected cars to have had the recall work done before we would insure them. That kind of thing is allowed. So changing decisions about cars is pretty unpredictable. If there is a serious problem with the car, if we are likely to be dealing with more liability with some models, whenever we discover this, we change the list of car models that we do not insure."

“Sue, don't we change our decisions based on the monthly analysis we do?” asked Ginny, “as well.” “Yes, we get a statistical report from IT every month about our profits by car. Based on that report, management decides whether we are going to stop insuring certain cars, or change rates, or start insuring some cars again that are no longer on the bad list. They would like us to respond immediately to those changes, but it usually takes a few weeks.”

Not all decisions have clear triggers, but in this case Sue decides to capture this additional information about the change triggers for Prequalify Vehicle on the decision Documentation tab in Blueworks Live, as shown in Figure 4-25.

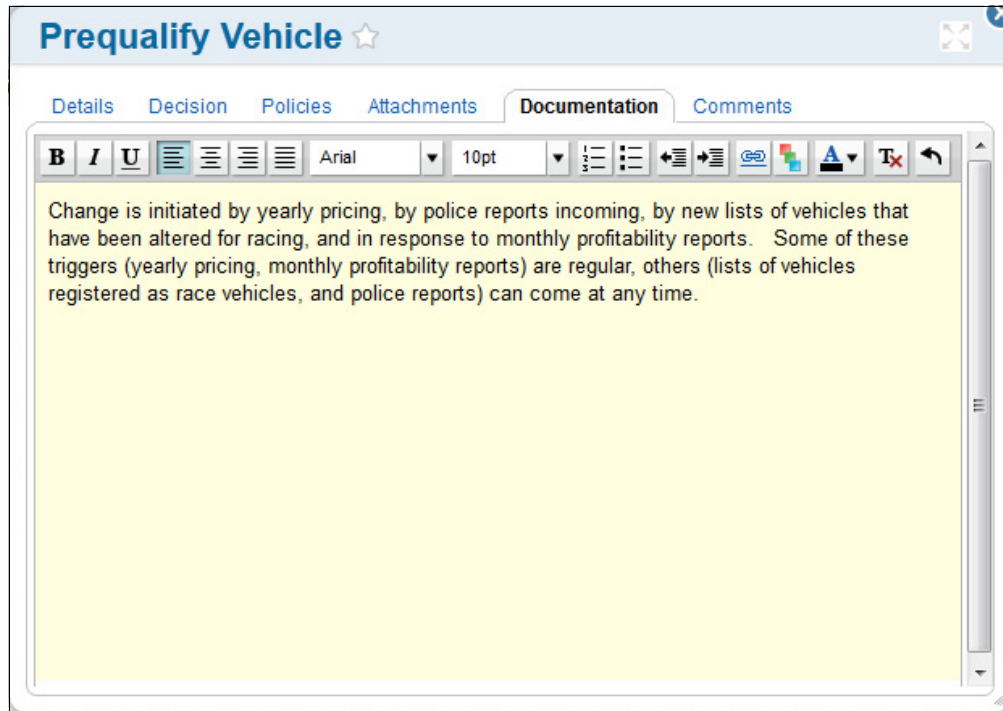


Figure 4-25 Documenting the change triggers for the Prequalify Vehicle decision

4.4.5 Preparing for in-depth decision discovery

Once Sue has documented the high-level characteristics of each of the five top-level decisions, she associates them with the decision points in the process that had been identified in the earlier on in the project. This way the team will be able to navigate directly to a decision from the decision point in the process diagram. This will be helpful during the workshop that they are having the next day where they will walk through each of these decision points to decide which ones they will proceed to document in more detail. She creates these associations by clicking each decision task in the process diagram, going to the Decision tab and selecting the appropriate decision, as shown in Figure 4-26 on page 69.

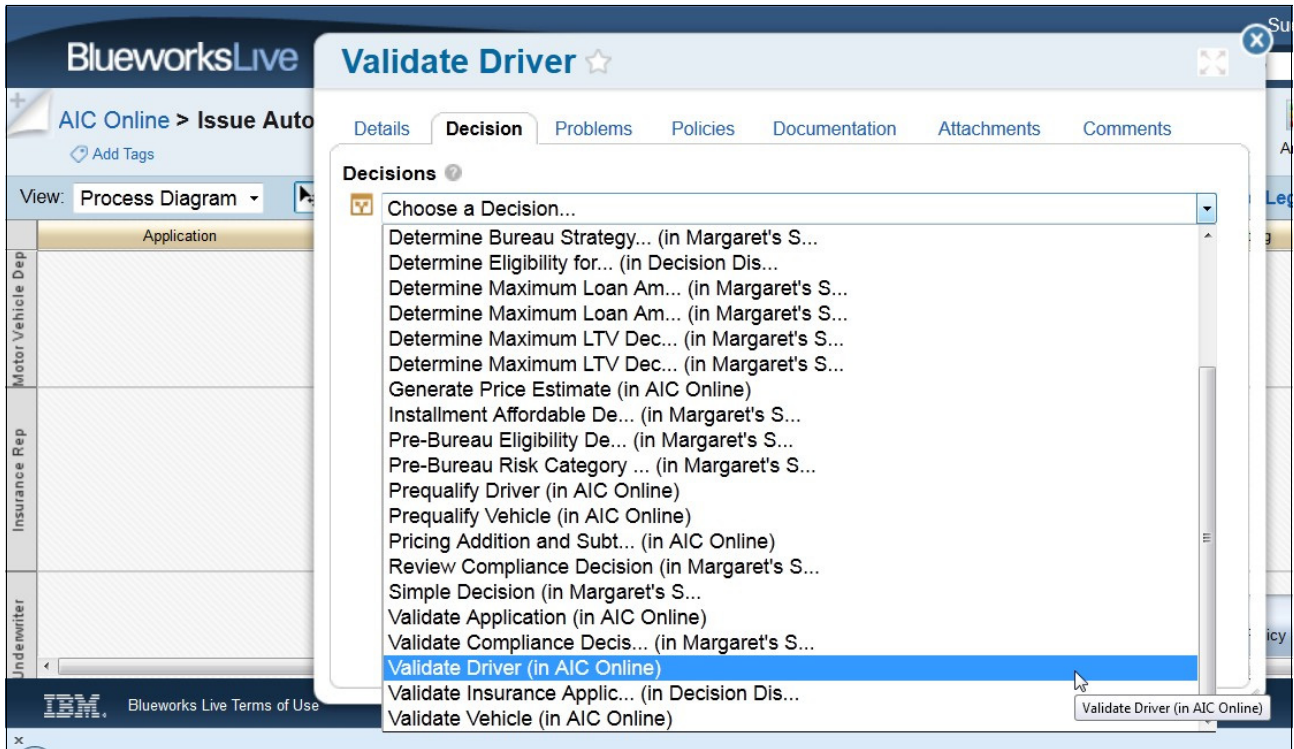


Figure 4-26 Associating the Validate Driver decision task with the Validate Driver decision

Once selected, the decision appears on the Decision tab where it can be clicked to navigate directly to the decision diagram, as shown in Figure 4-27.

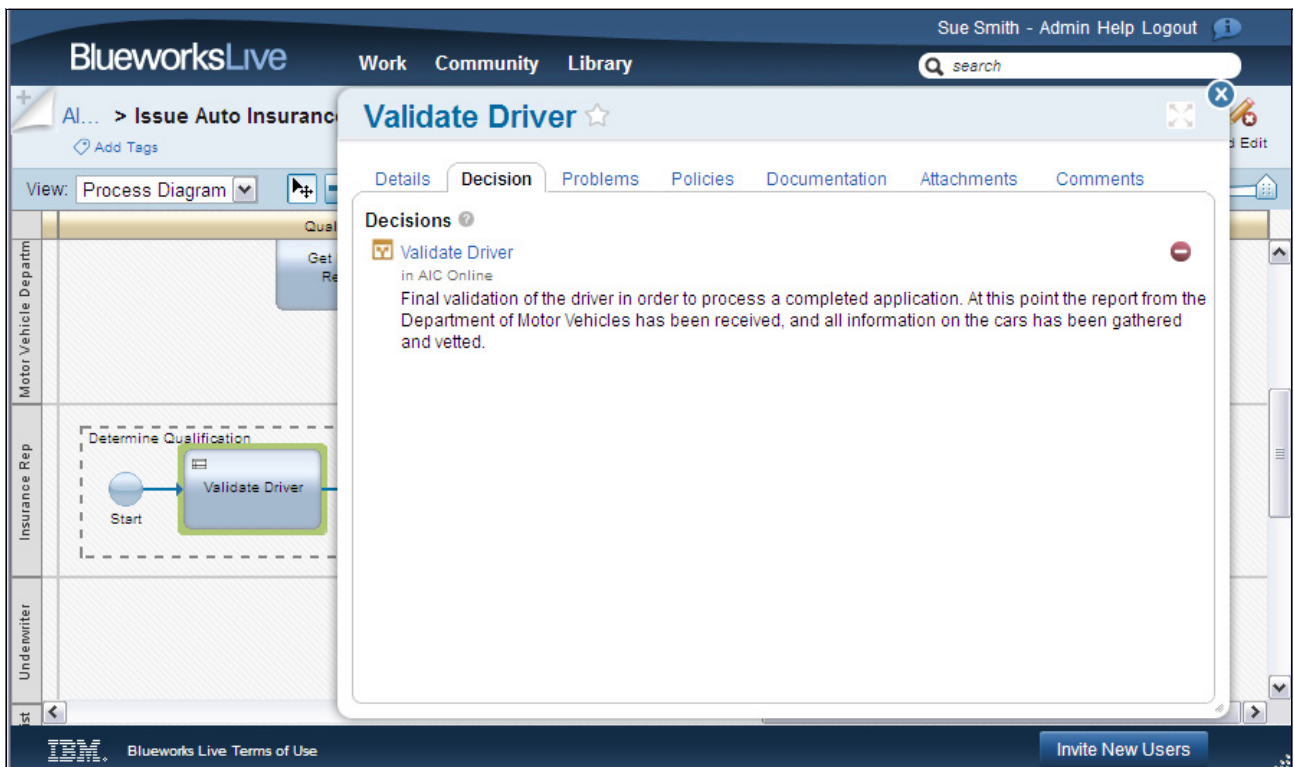


Figure 4-27 The Validate Driver decision task associated with the Validate Driver decision

Selecting decisions for further discovery

In Chapter 3, “Getting started with decision discovery” on page 21 we discussed a set of criteria to help identify and prioritize decisions for further discovery. You may want to quickly review this before continuing on. Detailed decision discovery is a lot of work, so you do not necessarily want to go ahead and do it for each of the decision points that you uncover. But it is necessary to capture some high-level information up front about these decision points in order to make that evaluation.

The AIC decision discovery team has gotten together to review their five decision points and identify which ones they want to tackle. Sue has Blueworks Live open and projected onto a screen so everybody can see. She is presenting, walking the team through what she has captured for each decision point and making recommendations.

“Throwing out” cars and customers that we do not insure is really a fairly easy decision. We have a list of the cars that we do not insure, and we only update that every year. Right now the only customers that we “throw out” at this point are those who are under 18. While I could imagine wanting to decide on cars based on something better than just a list, I really do not think that we are ready for this....so I would say that this one should be a low priority for us right now.”

“Deciding whether the driver and car qualify is a really complex decision, based on looking at all the factors on the application, on the driver's record, and at some of the qualities of the car. Now we usually only make changes twice a year, but when the state insurance board makes a change, we usually only have a short time until it becomes effective. It is so difficult to go back and review all the auto insurance policies that have been issued between the changes becoming effective and the new code being implemented. Some of this decision is made by the computer now, but most of it is done manually by the underwriters and the policy adjusters, and they really understand these decisions well. In fact, sometimes when the system is wrong they catch it. This one looks like a good choice to me.”

“Now the pricing decision actually involves three related decisions. We have to figure out a base price for the car, adjust the price based on many factors, and then perform the actual pricing calculation. Figuring out the base price for the car just comes from a table. That usually changes every year, in January. We have this in a database, and it just gets pulled out. I would say this one is low priority.”

“Adjusting the price requires consideration of many different pieces of information about the customer and their driving record to determine what the price should be. Sometimes some factors override other factors. Sometimes we back things out. I do not completely trust that the system is doing it right now, but the worksheets to figure the adjustments out are so long, I hate to keep checking the system answers. And when customers call to ask about their rate, it would be really nice to know exactly how it is calculated. This looks like a good choice, too.”

“The calculation is easy once we come up with the base price and applied the adjustments. It is just math. I think it might be nice to be able to see how it is done, but I am not sure that this is a great choice.”

The team discusses this for a while, and ends up agreeing that the best candidate decisions for further discovery are “Validate Driver”, “Validate Vehicle”, and “Adjust Price”. However, because they are not sure that the knowledge for adjusting the price is correct in their organization, they decide to go ahead and get started with “Validate Driver” and “Validate Vehicle” first. They will come back to “Adjust Price” after they have gotten more experience and have had some initial success with their decision discovery efforts.

The decision discovery roadmap

Sue documents the team's recommendation, puts together a high-level project plan, and packages this up with a PDF of the process diagram and a Word document containing the decision point details. She sends this Decision Discovery Roadmap out to the management team for their review, and schedules a meeting convening the stakeholders to review and approve the project going forward. This will ensure that they have buy-in and visibility across the organization, as well as the commitment for the team members to continue to invest their time in this decision discovery initiative.

4.4.6 Summary

In this section, we learned how to capture the high-level characteristics of our decision points in Blueworks Live, and how to evaluate those decision points to identify decisions that might be worth additional discovery.

4.5 Step 4: Model the decision

Now that we documented the high-level characteristics of our identified decision points, and decided which of these decisions to go ahead and document in depth, we are ready to begin modeling the selected decisions.

As you may recall from Chapter 1, "Introduction to decision discovery" on page 1 of this paper, a decision consists of:

- ▶ An *output* - the conclusion reached, the option selected
- ▶ Any number of *inputs* - the facts to be considered
- ▶ The *decision logic* - which describes how the conclusion is reached, based on these facts

Decision modeling with Blueworks Live is an iterative process. We begin by capturing the fundamentals of the decision: what it is and what it is deciding. Then we model the structure of the decision: the information that is required to make the decision, and any other decisions (that is, sub-decisions) that the decision depends on. Once we have a pretty good idea of the overall structure of the decision, we go on to document the decision logic associated with the decision and its sub-decisions. In practice, it is quite common to go back and forth between modeling the structure of the decision and documenting the decision logic. As we delve into the details of the decision logic we may discover that additional information or sub-decisions are required to make the decision, in which case we will need to add new decision inputs or sub-decisions to the decision diagram. This is the iterative aspect of decision modeling.

In this chapter, we see how Sue goes about modeling the Validate Driver decision in our AIC example. You may find it helpful to refresh your memory by reviewing the concepts and techniques described in the "Model the Decision" section of Chapter 3, "Getting started with decision discovery" on page 21 before proceeding further.

4.5.1 Capturing the fundamentals of the decision

The AIC decision discovery team already captured basic information about the Validate Driver decision when they initially documented the high-level characteristics for each decision point. To refresh her memory, Sue brings up the Issue Auto Insurance process diagram in Blueworks Live.

In Figure 4-28, you can see that Validate Driver was identified as a decision point in the process diagram.

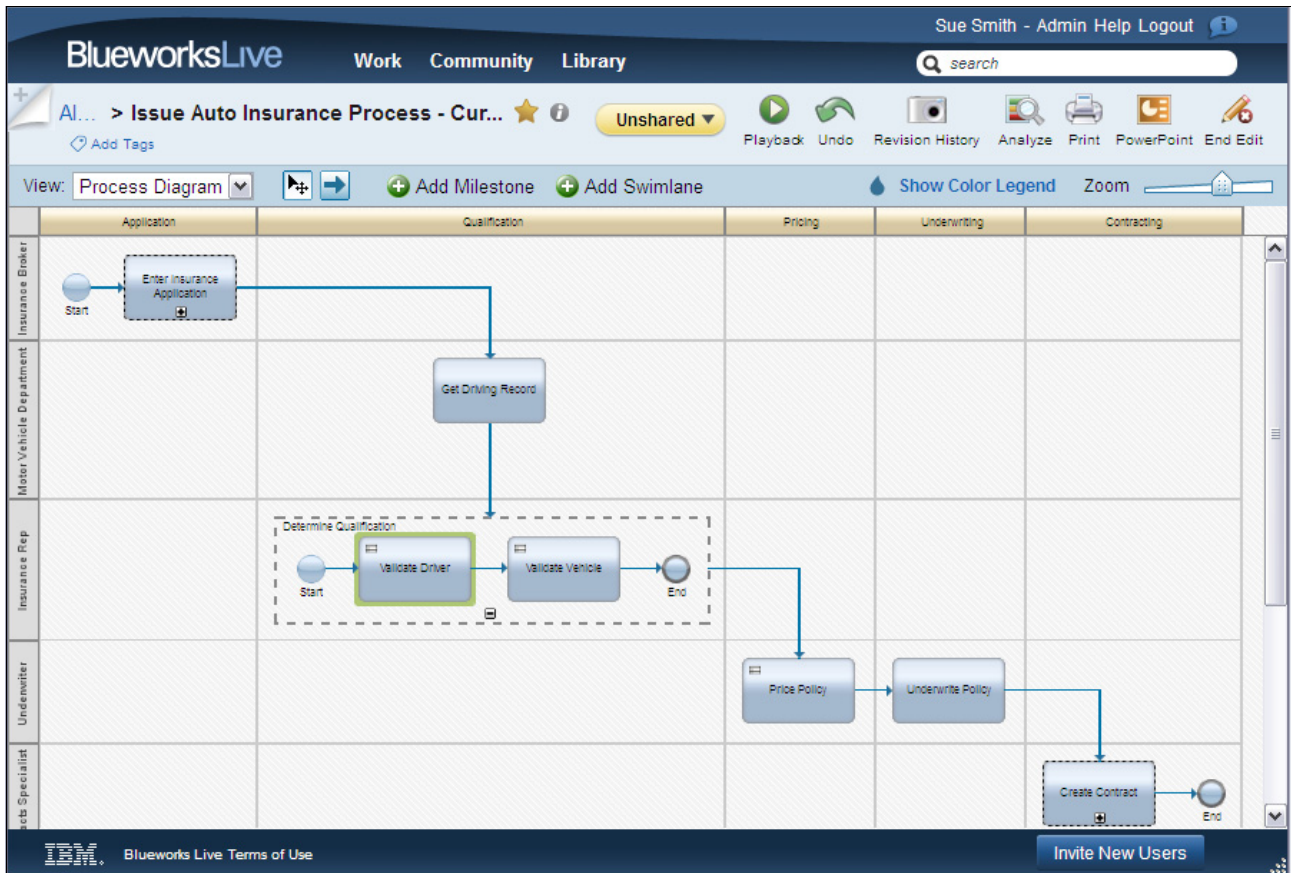


Figure 4-28 AIC Process Diagram with Validate Driver highlighted

She navigates to the Validate Driver decision point and opens the Validate Driver decision task in the process diagram. There she can see that this decision task is associated with the Validate Driver decision. She clicks the decision as shown in Figure 4-29 on page 73.

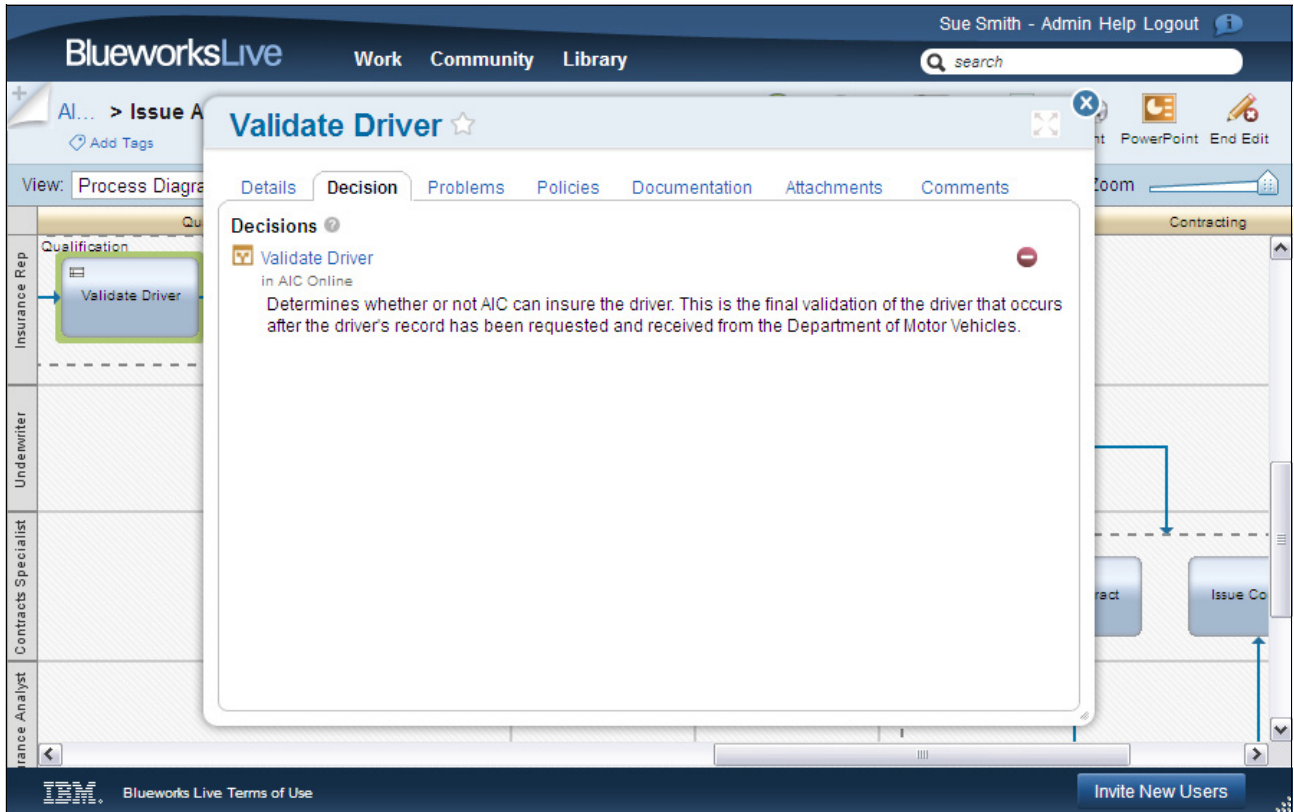


Figure 4-29 Navigating to the Validate Driver decision from the process diagram.

Clicking the decision brings up the Validate Driver decision diagram where Sue can see the name of the decision “Validate Driver”, and the name of the decision output “Driver eligible for coverage?”. When she right-clicks and selects “Details” from the menu, Blueworks Live opens the Decision Details panel.

Clicking this “Decision” tab displays the description of the decision as shown in Figure 4-30.

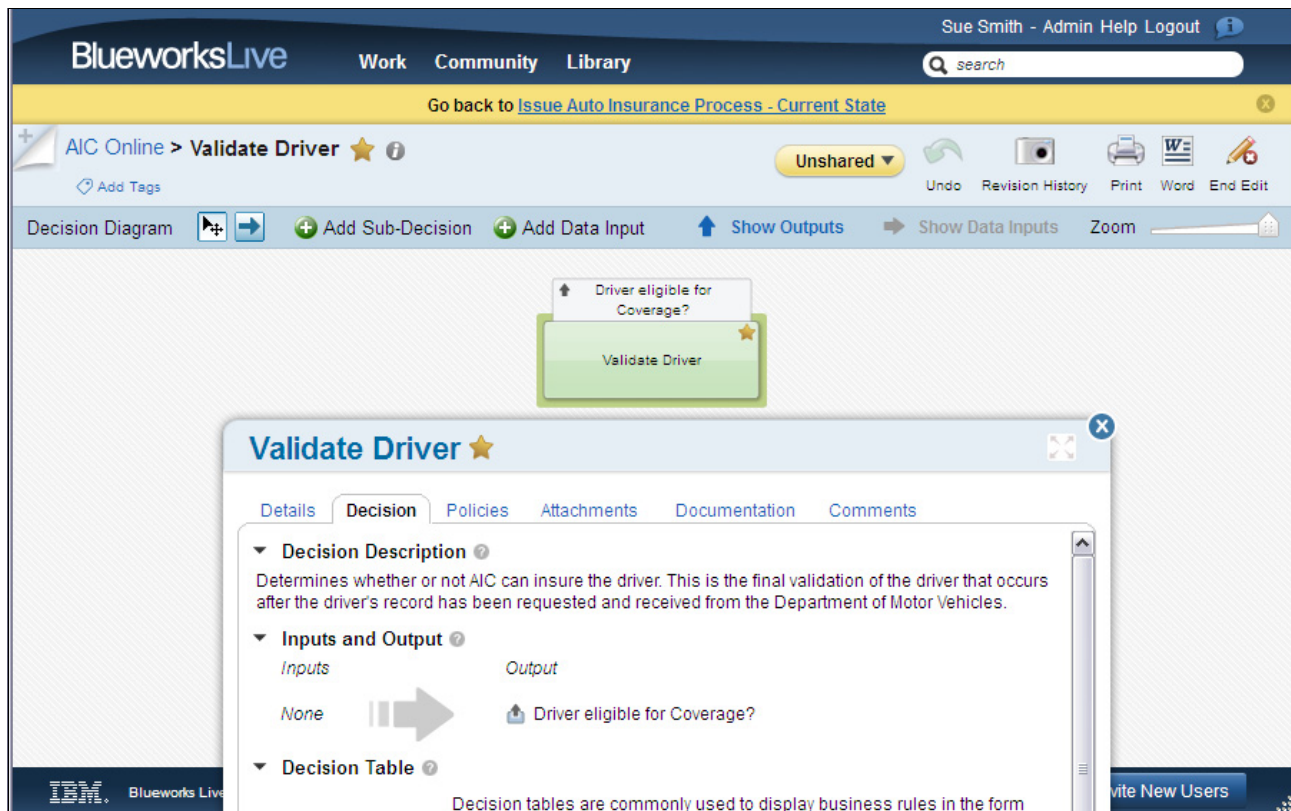


Figure 4-30 Decision name, description, and decision output for Validate Driver

4.5.2 Documenting the decision inputs

Now that the basics of the decision have been captured, Sue can start modeling its structure. She begins by identifying the inputs to the top-level decision and documenting them as either data inputs or sub-decisions. Then she moves down to the next level in the decision diagram and do the same thing for each of the sub-decisions she created. She continues to do this until there are no more sub-decisions that need to be decomposed and all of the data inputs for all of the sub-decisions have been captured. As mentioned earlier, modeling a decision is a highly iterative process, so she will likely go back and forth between the different levels in the decision diagram as she discovers additional decision inputs that need to be documented.

Identifying the information required to make the decision

In her review of the original process diagram in Blueworks Live, Sue sees that a couple of important inputs had been identified for the Validate Driver decision task: The Insurance Application form and the Driver’s DMV report. Sue knows from her experience as an underwriter that AIC considers a number of items from the application and the DMV report when deciding whether or not to insure a particular driver. She starts reading the “Driver Eligibility” section in AIC’s Underwriting manual to refresh her memory and makes some notes about the information that is required to determine whether or not AIC can insure the applicant or any other drivers that might be listed on the application:

- ▶ The driver’s age: AIC does not insure people under 18 except as additional drivers on their parents’ policies.
- ▶ The driver’s address: AIC does not insure people outside of their geographical coverage area.

- ▶ Whether or not the vehicle is kept in a garage: In high crime areas, this is a requirement for AIC to be able to provide the applicant with coverage.
- ▶ The driver’s driving history: AIC will not insure a driver that does not have a good driving history. AIC’s definition of this changes from time to time, but focuses on accidents, major moving violations like DUI/DWIs and excessive speeding, and more recently, cellphone driving infractions have been incorporated into this definition.

As she starts to think about how to capture Driver’s Age in Blueworks Live, it seems straightforward, she will just add Driver Age as a data input to the top-level decision, and a little later, when she defines the decision logic, she will add a decision rule to the Validate Driver decision table that tests Driver Age to make sure that the driver is at least 18. But then she realizes that it is going to be a little more involved than that since they make an exception for children of the policyholder.

Identifying any required sub-decisions

Because of this additional complexity, she decides to create a sub-decision that is called “Check Driver Age” that will determine whether or not the driver’s age meets AIC’s guidelines, and produce a “Yes” or “No” result. She adds a sub-decision to Validate Driver by right-clicking it and selecting “Add Sub-Decision” as shown in Figure 4-31. She could also use the “Add Sub-Decision” button at the top of the diagram.



Figure 4-31 Adding a sub-decision to Validate Driver

She names the new sub-decision Check Driver Age, and types the name of the output, “Driver of Eligible Age?” into the pop-up window on the top of the sub-decision, as shown in Figure 4-32.

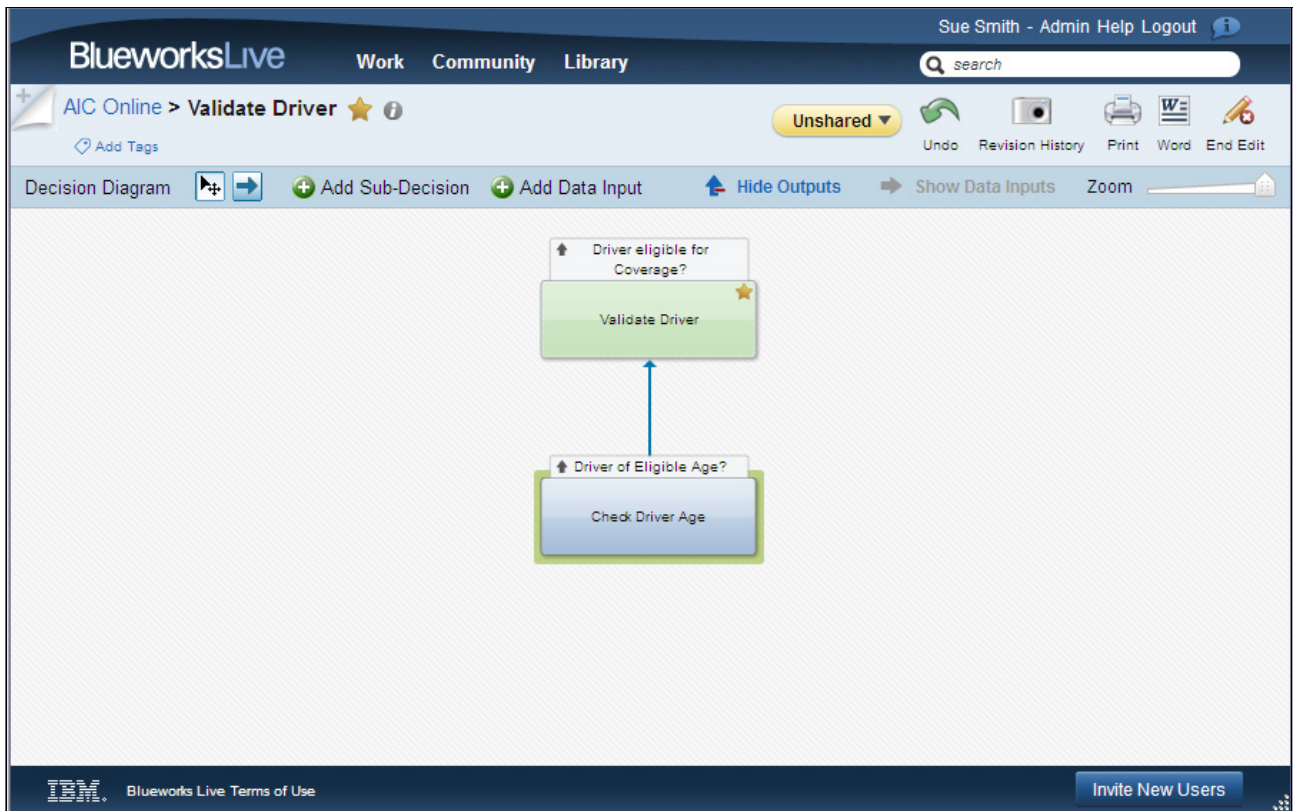


Figure 4-32 The Check Driver Age sub-decision

Sue knows that the driver’s age from the application will be needed here, so she adds a data input to Check Driver Age by right-clicking it and selecting “Add Data Input”, as shown in Figure 4-33 on page 77. She could also use the “Add Data Input” button at the top of the diagram.

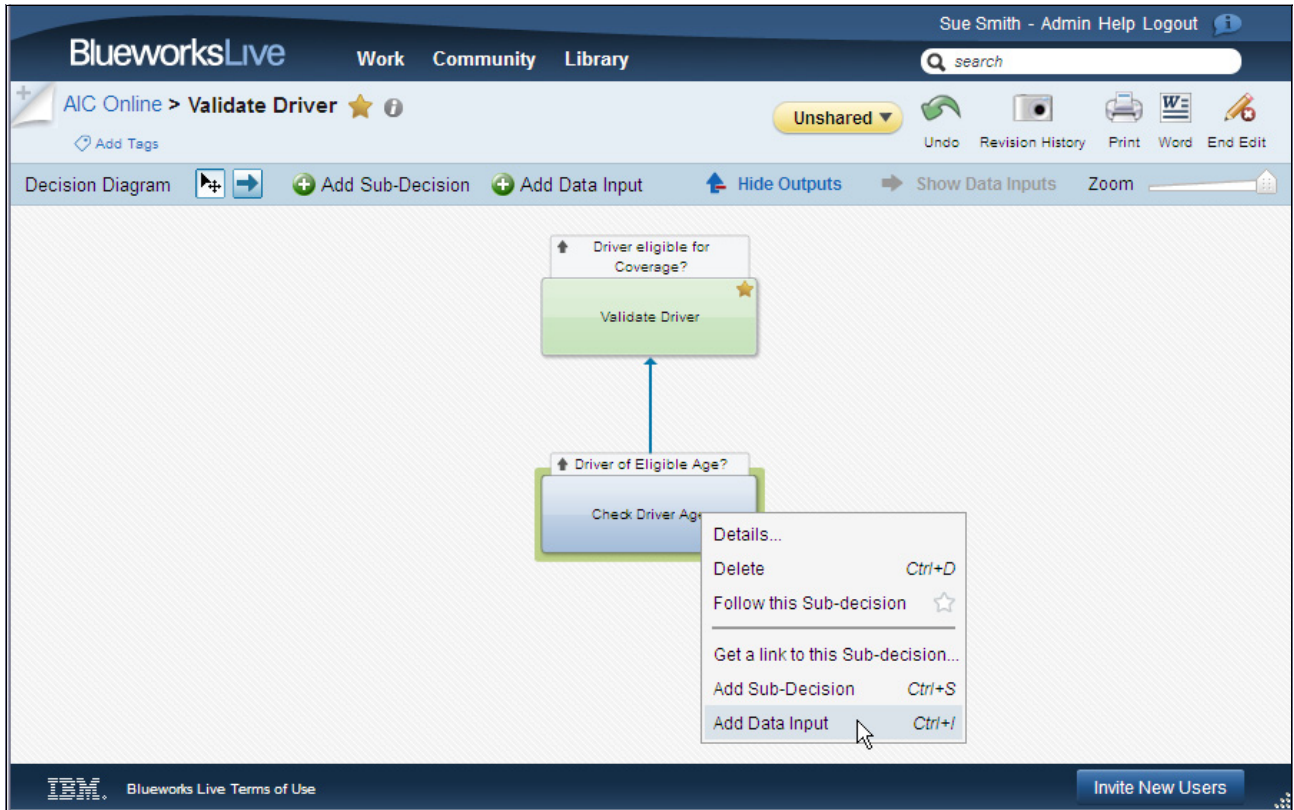


Figure 4-33 Adding a data input to Check Driver Age

She adds the Driver Age as a data input. She knows that she will also need the “Relationship to Applicant” field from the insurance application in order to determine whether or not the driver is the applicant’s child. So she adds another data input for this, creating the decision diagram that is shown in Figure 4-34.

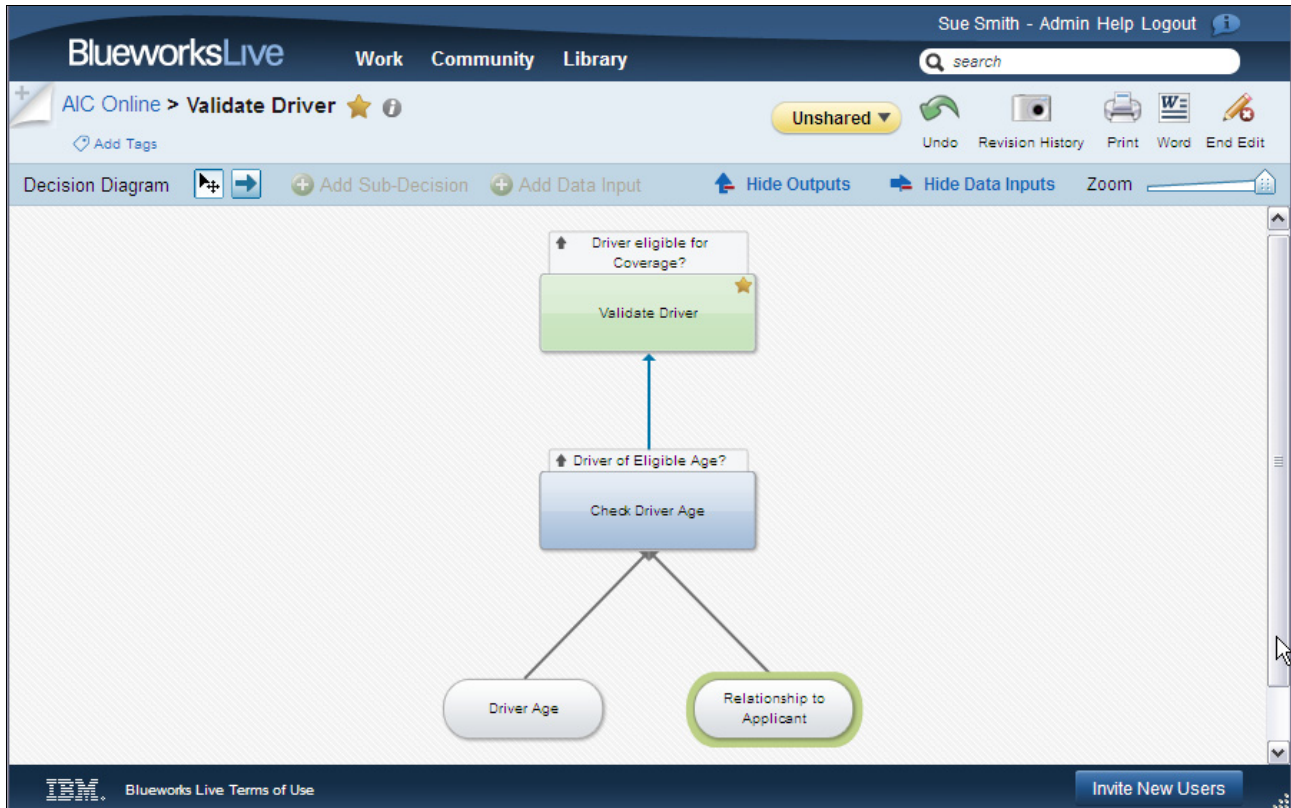


Figure 4-34 Check Driver Age with its data inputs

Iterating across the decision diagram

Sue moves on to the next decision input she had listed in her notes for the Validate Driver decision: the driver’s address. AIC is a small insurance company and does not provide insurance coverage everywhere in the country. They cannot issue insurance policies to applicants that do not reside within their coverage area. Sue knows that their coverage area has expanded over the years, as the company has grown. But she is not sure where that is documented, or who is responsible for maintaining it, so she takes a walk down the hall and knocks on a couple of doors. It turns out that AIC’s legal counsel is responsible for defining and documenting the coverage area, and this information is published on the intranet as a spreadsheet of ZIP codes.

Once again, this is a bit more complex than she originally thought, so she decides to add a new sub-decision. She calls it Check Geographical Coverage and adds it to the decision diagram along with the necessary data inputs, as shown in Figure 4-35 on page 79.

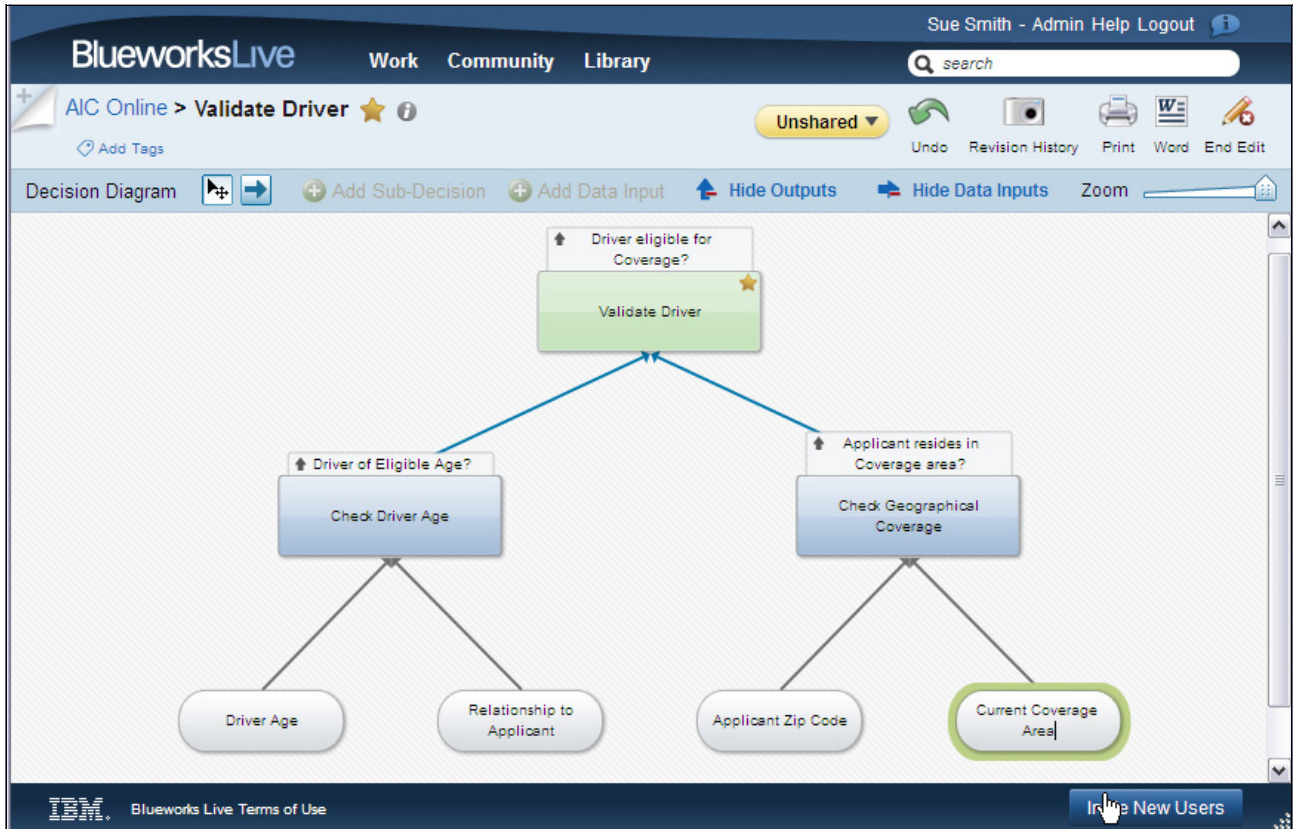


Figure 4-35 Validate Geographical Coverage with data inputs and high-level characteristics

Since the knowledge about AIC's geographical coverage areas resides in their legal group, is maintained in a different source document than the most of the other underwriting guidelines, and has its own update frequency, she decides to capture some additional high-level characteristics for this sub-decision. When she created the Check Driver Age sub-decision she did not feel that this was necessary, as that sub-decision shares the same source documents, business owners, and experts as the top-level decision, Validate Driver, so she left those empty.

But for the Check Geographical Coverage sub-decision, she captures the additional characteristics as shown in Figure 4-36.

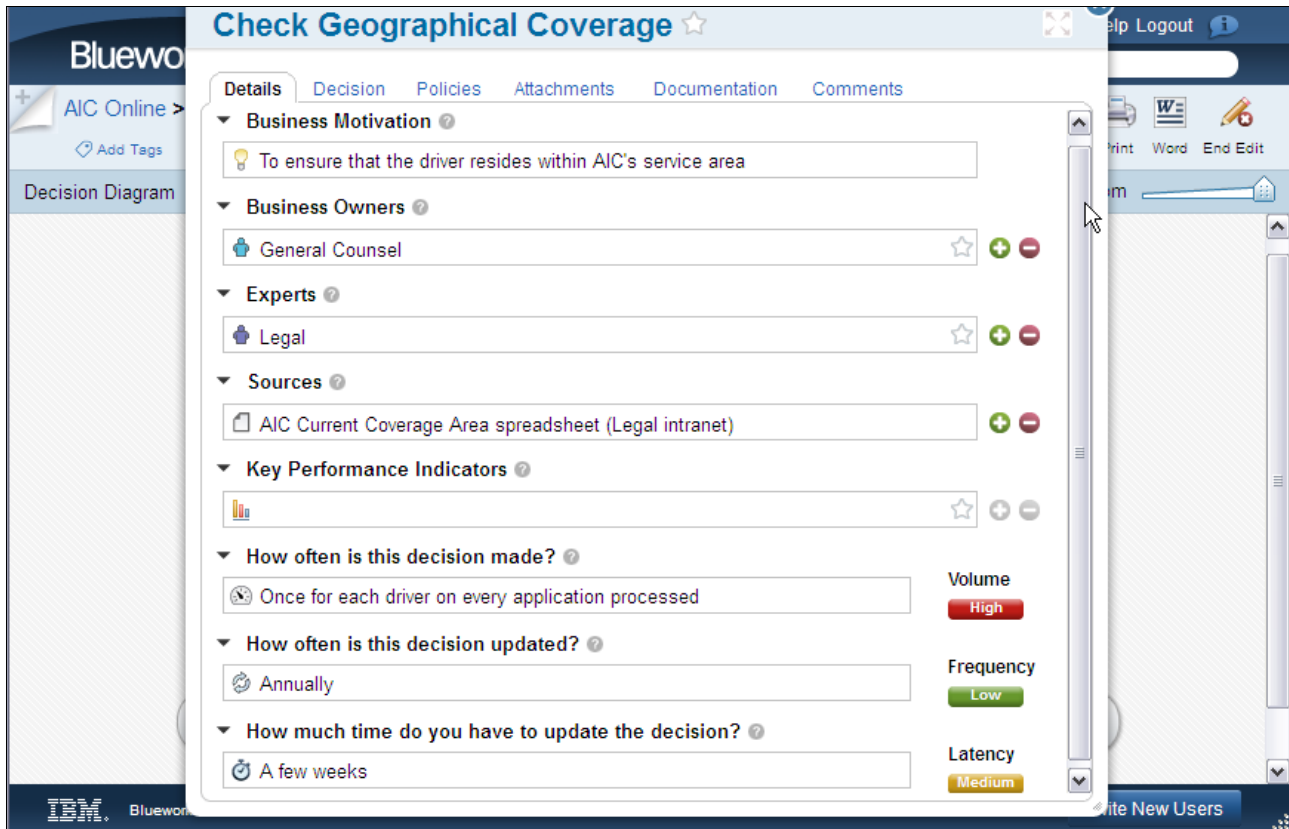


Figure 4-36 Validate Geographical Coverage sub-decision with high-level characteristics added

Sue looks at her notes and moves on to consider the requirement AIC has for vehicles to be kept in a garage if the driver lives in a high crime area. This is also a little more complex than just checking a field from the application so she decides to create another sub-decision to model it. Vehicle theft has been steadily increasing in recent years, and Sue has heard that the management team is looking at the whole topic of theft protection more carefully. She would not be surprised to see some new business policies created in this area in the near future. Because of this, she decides to give this sub-decision a more generic name, “Assess Vehicle Theft Protection”. This way, it will be easy to expand the sub-decision in the future when new policies are introduced.

Once again, the applicant ZIP code will be needed, so she adds it as a data input. She notices that Blueworks Live automatically merges the two instances of this data input, so that applicant ZIP code only shows up once on the decision diagram, but it now has two connecting lines to it: One from the Validate Geographical Coverage sub-decision, and one from Assess Vehicle Theft Protection. Sue knows that the fact that a vehicle is garaged or not comes directly from the application, and it can be either “Yes” or a “No”, so she adds this as a data input to the sub-decision. But she is not sure how to tell if the driver resides in a high crime area. She makes another visit to her co-worker down the hall in the Legal department to see if he knows anything about it. It turns out that AIC subscribes to a service on the web that consolidates and scores data from local law enforcement agencies, the FBI, and the Department of Justice. You enter a ZIP code, and the website gives you back a High, Medium, or Low ranking based on a calculated Crime Index. Sue adds a data input for this to the decision diagram, and calls it “Neighborhood Theft Risk”, as shown in Figure 4-37 on page 81.

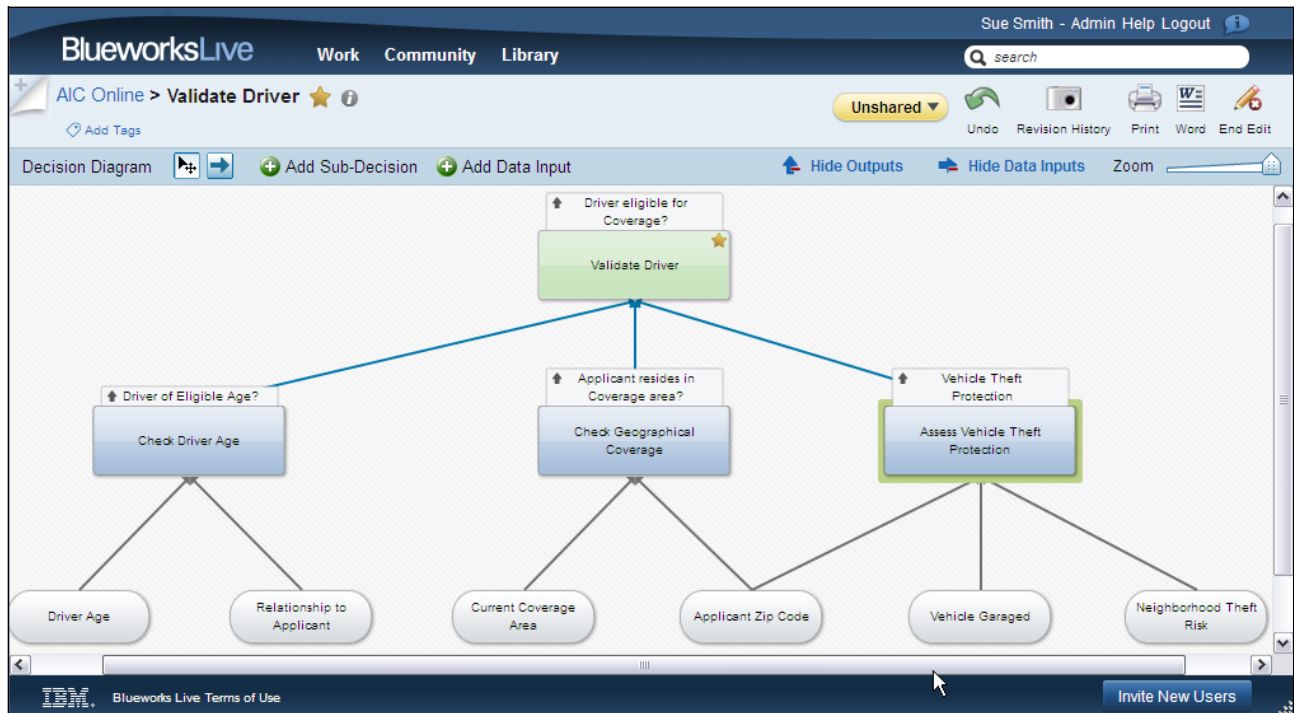


Figure 4-37 Assess Vehicle Theft Protection added with data inputs (Applicant ZIP code shared)

As Sue looks at the last item listed in her notes, the driver’s driving history, she realizes why she left this one until last, there is a lot going on here. The report that AIC gets from the Department of Motor Vehicles has a huge amount of information about it about the driver’s prior driving history. As she peruses the sections of the AIC Underwriting manual that describe how the driving record is considered when deciding whether or not to insure a driver, she takes some more notes:

- ▶ AIC does not insure drivers that have more than two accidents that cost their insurance company more than \$500, in the last five years.
- ▶ AIC does not insure drivers that have had more than one DUI/DWI infraction on their record in the last five years.
- ▶ AIC does not insure drivers that have had more than one excessive speeding violation in the last three years.
- ▶ AIC does not insure drivers that have had more than two cell phone use infractions in the last three years.

Before beginning to model this in Blueworks Live, Sue decides to go and talk this through with one of her fellow underwriters to get another perspective and help clarify her thinking. She sits down with Mark, one of her fellow underwriters, to talk about it.

“Mark,” Sue says, “the various criteria, accidents, DUIs, speeding tickets, cellphone infractions, these all have to do with the report we get of the driving record.”

“Yes,” Mark replied, “but I have to say I do not think of them that way.”

“What way?”

“Well, as separate issues. I see that someone has a good driving record, or a bad driving record, and all of these things are the contributing factors. And, in fact, some of these factors

may change from year to year. For example, the way we started incorporating cell phone use infractions last year.”

“Yes, I think of it that way as well. I guess we need a higher-level decision here, since we decide to insure someone based on whether or not their record indicates that they are a good driver. And we consider a number of different factors when determining whether or not to classify them as a good driver. You bring up a good point in that these factors can change fairly often. I will keep that in mind when modeling this to make sure that it is easy to change in the future.”

“Sounds good, Sue. Just let me know if there is anything else I can help with.”

“Thanks, Mark. I will definitely be coming back to ask you to review and validate the Validate Driver decision before I send it out for formal review. Hopefully by the end of this week.”

Sue goes back to her office, brings up Blueworks Live and adds the “Analyze Driving Record” sub-decision. Rather than making the output a simple “Yes”, “No” boolean type, as she has done with most of the previously defined sub-deisions, she names it “Driver Profile”. As far as she is currently aware, there are only two possible values: “Good” and “Poor”, but she may discover there are others or they may add others in the future so she wants to keep it flexible. You can see how Sue modeled the structure of the additional required sub-deisions in Figure 4-38.

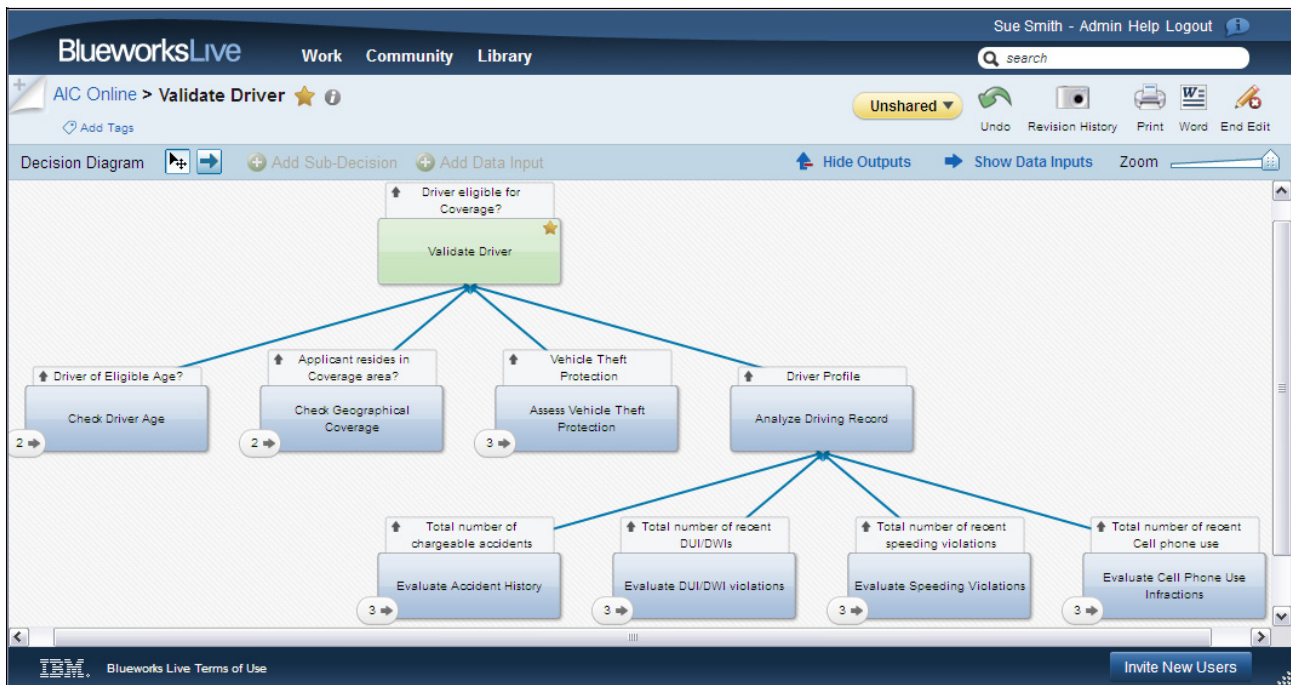


Figure 4-38 Adding the Analyze Driving Record sub-decision (along with its sub-deisions)

Let us take a closer look at this new section of the decision diagram, with all of the data inputs expanded (by toggling the “Hide/Unhide Data Inputs option in the upper right corner of the decision diagram), in Figure 4-39 on page 83.

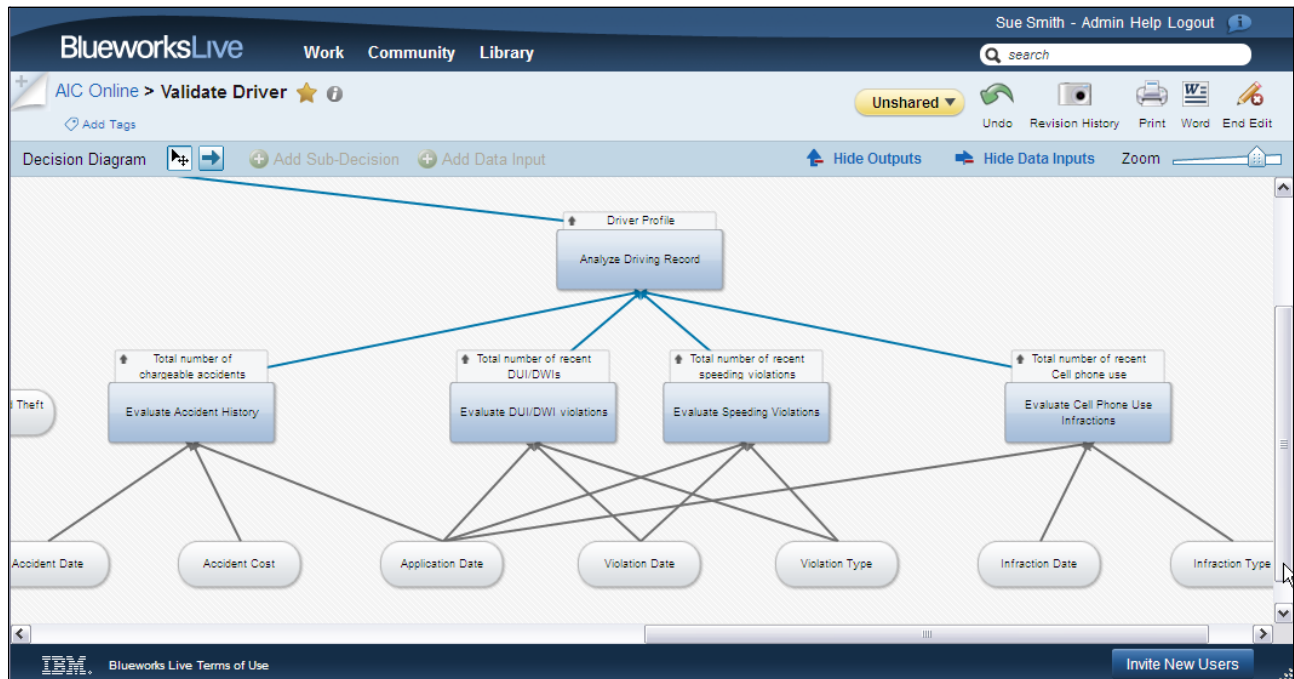


Figure 4-39 The Analyze Driving Record sub-decision (with decision outputs and data inputs expanded)

As you can see, Sue has created a sub-decision called “Analyze Driving Record” that determines whether the driver is a good driver or not based on various factors. Each of these factors is addressed in detail within the four required sub-decisions: “Evaluate Accident History”, “Evaluate DUI/DWI Violations”, “Evaluate Speeding Violations”, and “Evaluate Cell Phone Use Infractions”. These sub-decisions look at the data about accidents, moving violations, and infractions that comes from the DMV reports and determine how many of them should be taken into consideration based on time frame, cost, severity, and so on.

Now that Sue has captured most of the information and sub-decisions needed for Validate Driver, she is ready to start documenting the decision logic.

4.5.3 Documenting the decision logic

As was discussed in Chapter 3, “Getting started with decision discovery” on page 21, Blueworks Live uses decision tables as the primary means of documenting decision logic. In Blueworks Live, decision tables are organized by rows and columns, where each row is a decision rule. A decision rule consists of one or more considerations and a single conclusion.

A consideration is basically a condition that when tested evaluates to either true or false. Considerations in a decision table map to the decision inputs defined for a given decision or sub-decision on the Blueworks Live decision diagram. However, the mapping is not always one-to-one as a consideration may consist of a more complex expression involving more than one decision input, rather than just a simple equality test. You may use any number of logical or arithmetic operators when defining your considerations, and you may spell these out using natural language rather than symbols if this will make your decision logic easier to understand.

A conclusion is basically a value that is assigned to the decision output when all of the conditions in the decision rule have been met (that is, evaluated to true). The conclusion maps directly to the decision output defined for a given decision or sub-decision on the Blueworks Live decision diagram.

Sue is not sure where to begin documenting the decision logic. She feels that she could start with the top-level decision and work her way down, or she could start with the lowest level sub-decisions and work her way up. Instead, she decides to start with Analyze Driver Record and its required sub-decisions, as these are still fresh in her mind.

Analyze driver record

Sue opens the Analyze Driving Record by clicking the sub-decision in the Blueworks Live decision diagram, and goes to the Decision tab to generate a decision table for it. To do this, she presses the “Create table using inputs and output” button as shown in Figure 4-40.

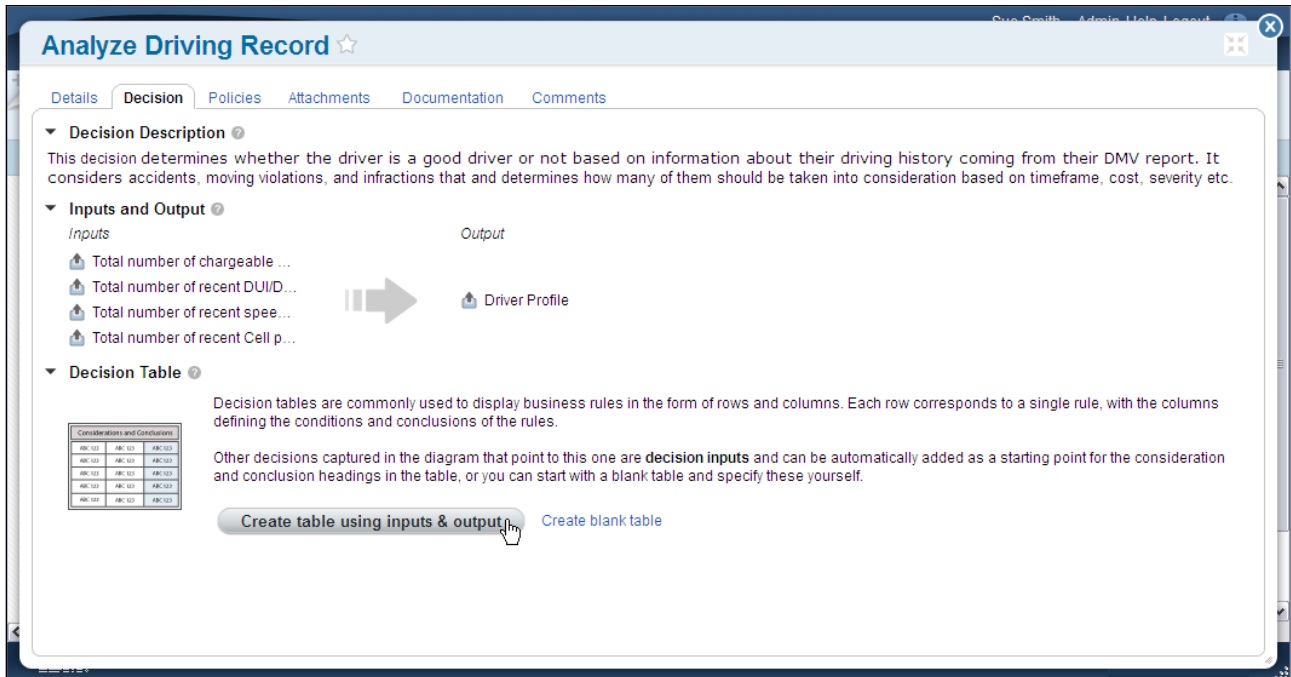


Figure 4-40 How to generate a decision table in Blueworks Live

Blueworks Live then generates an empty decision table based on the data inputs and sub-decisions that Sue recently documented in the decision diagram as shown in Figure 4-41 on page 85.

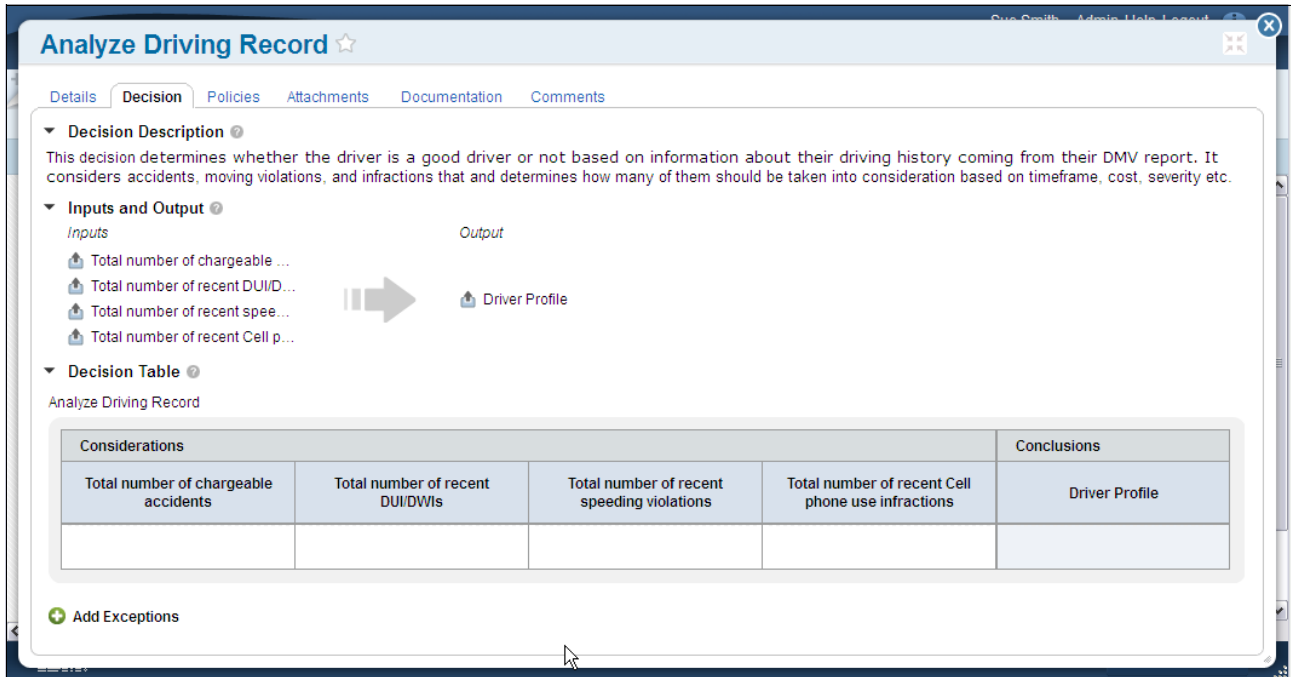


Figure 4-41 Empty decision table for the Analyze Driving Record sub-decision

Sue plans to put the logic around how to identify and add up the number of relevant accidents, moving violations and infractions into the individual sub-decisions underneath Analyze Driving Record. In Analyze Driving Record, she wants to make it very clear how AIC identifies good drivers. So she looks at her notes and creates a decision rule that determines when the Driver Profile is “Good”. To do this in Blueworks Live, she simply starts typing into the empty cells in the decision table, positioning her cursor with the mouse or using the tab key. This decision rule is shown in Figure 4-42.

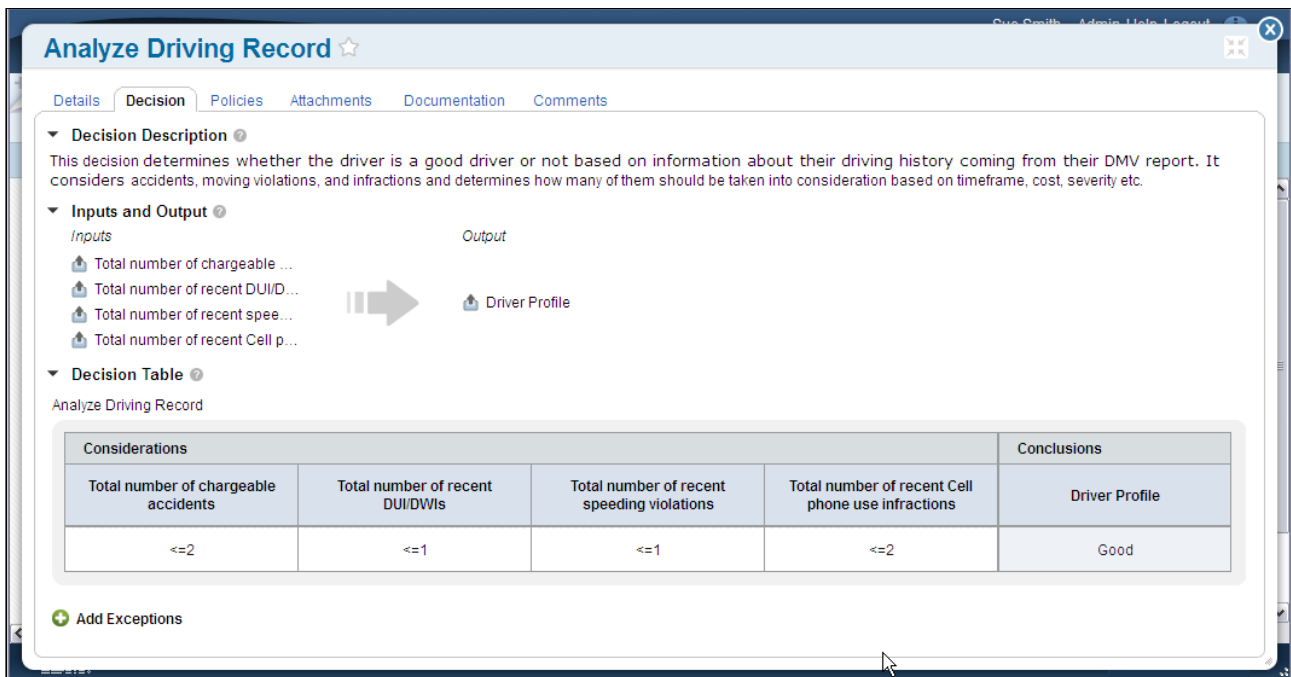


Figure 4-42 Adding a decision rule to the Analyze Driving Record sub-decision

Sue inserts a new blank row into the decision table by pressing the + sign as shown in Figure 4-43.

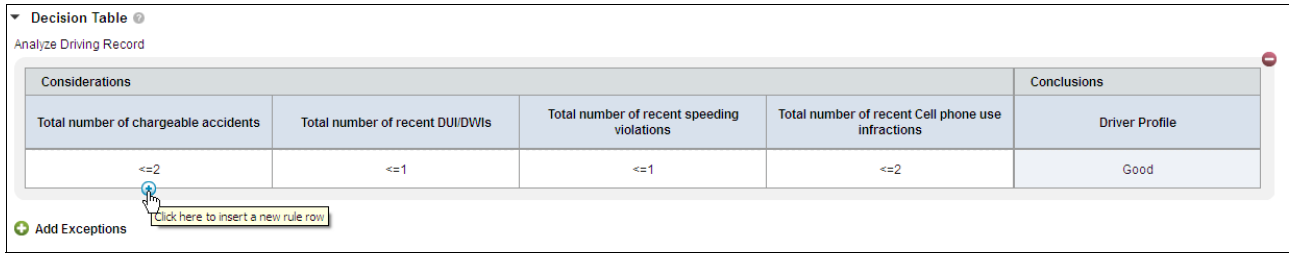


Figure 4-43 Inserting a new row into the decision table

She plays around with the decision table editor a bit to familiarize herself with the functionality, and quickly figures out how to copy and paste rows, as well as drag columns, as shown in Figure 4-44 and Figure 4-45.

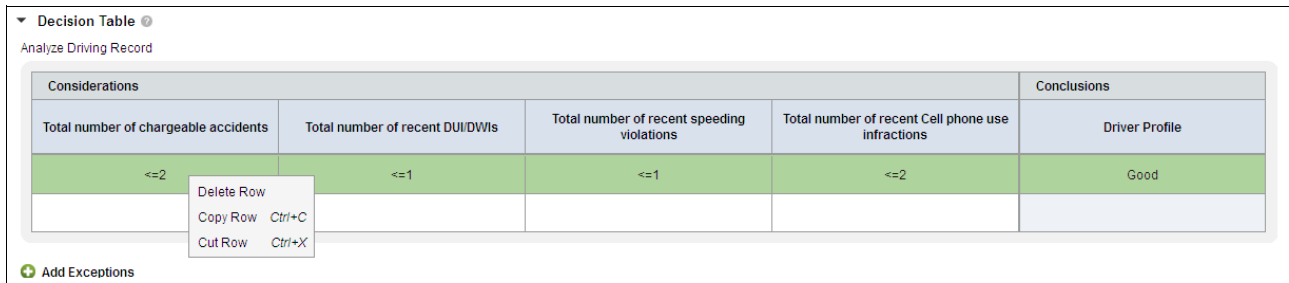


Figure 4-44 The right-click menu for copying and pasting rows in a decision table

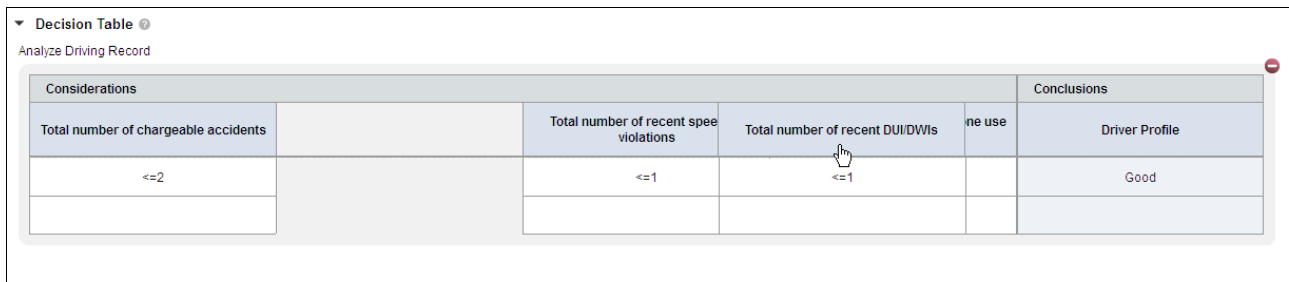


Figure 4-45 Dragging and dropping columns in a decision table to change the order of considerations

Sue thinks for a moment about how to document the “Poor” Driver Profile decision rules. She knows that if one or more of the documented conditions are not met, then AIC considers the driver profile to be poor. She does not want to create a decision rule for every possible combination of values for each consideration, as it will make the decision table hard to read. She could simply add an “otherwise” clause to indicate that any other combination of consideration values leads to a conclusion of “Poor”. Instead she decides to create a few decision rules, each one highlighting one of the conditions that will cause the driver to be viewed negatively. She feels that this will be the clearest way to document this logic, ensuring that it is well understood by anybody reading it. To accomplish this, she makes use of empty cells. An empty cell in a decision table indicates that it does not matter what the value is for that cell; the consideration will always evaluate to “true”. See Sue’s completed decision table in Figure 4-46 on page 87.

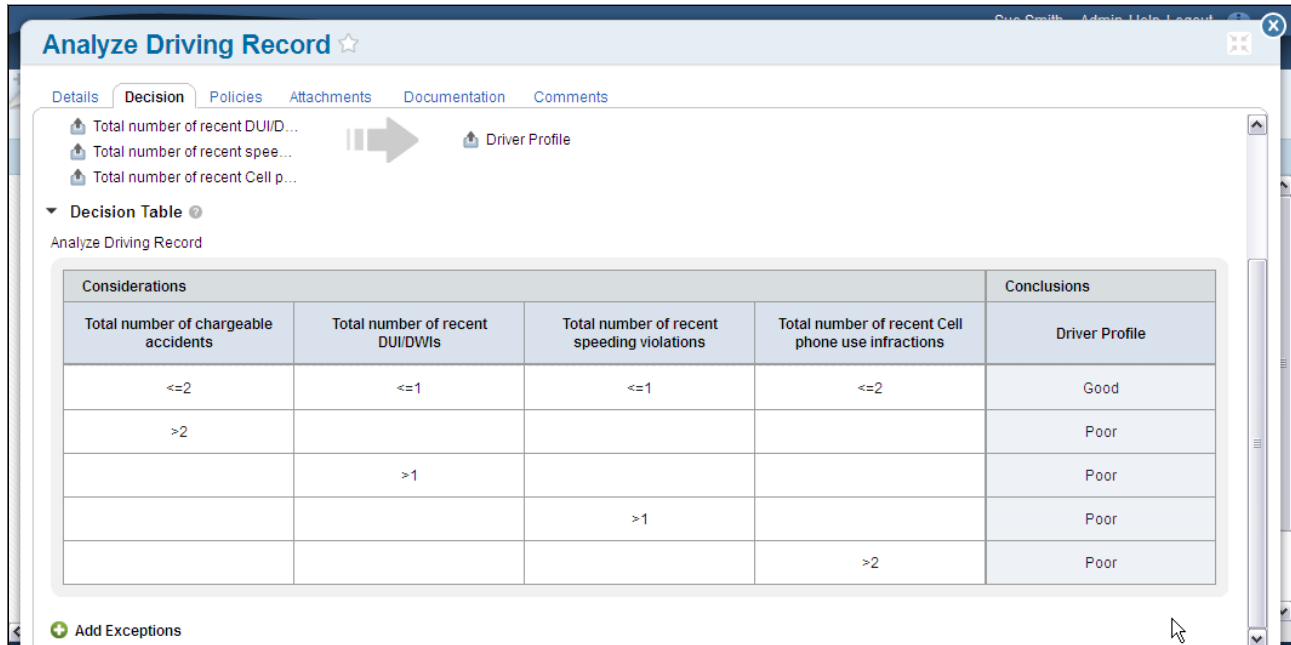


Figure 4-46 Adding the decision rules to the Analyze Driving Record sub-decision that reach a “Poor” conclusion

Sue moves on to define the decision logic for the sub-decisions that Analyze Driver Record depends on. This involves identifying and adding up the incidents from the DMV report that will be analyzed in Analyze Driver Record. She is a little unclear on how best to document this decision logic. She wants to stay focused on the business requirements, and it seems to her that the logic of counting is really more of an IT requirement that has to take into account the structure of the data coming from the DMV, how the records are coded for the different incident types, and so on. She decides to go talk to Ginny about it to see if she can get some guidance on this.

“Ginny, I am not sure what to do with the DMV reports right now.”

“What is the problem?”

“Well there are a lot of things that we count, like the number of accidents, cellphone infractions, DUIs, and speeding tickets. I have created a sub-decision for each type of incident, but am not sure how best to document the aggregation of them.”

“What do the inputs and outputs to those sub-decisions look like?” asks Ginny, as she opens the decision diagram in Blueworks Live on her desktop computer.

“You can see that the output of each of those sub-decisions is the total number of eligible incidents: Total number of chargeable accidents, Total number of recent DUI/DWIs, Total number of recent speeding violations, and Total number of recent cell phone use infractions” says Sue. “The data inputs are the dates of the incidences (Accident Date, Violation Date, Infraction Date), the accident cost, the violation, and infraction types, and so on. I’m afraid that if I get into describing the logic of counting and the coding of the driver records, that it is really outside of the scope of my expertise and it becomes more about the IT requirements rather than the business requirements. I would prefer to just identify which incidents need to be counted.”

“Actually, Sue, I think that would be just fine.” says Ginny, “The mechanics of counting are really something that the developers can address when the time comes to implement the decision logic, and our systems analysts are quite familiar with how the data in the DMV

records is coded; they deal with it all of the time. You do not need to figure that low level IT stuff out. Rather than documenting *how* we should do these things, just focus on documenting *what* the business requirement is. We will figure out how to do it. Does that make sense?”

Sue smiled. “I got it Ginny. Thanks.”

When Sue gets back to her office, she documents the decision logic for the Evaluate Accident History sub-decision in Blueworks Live. Only accidents that occurred in the last five years, and that cost the insurance company over \$500 are considered when they evaluate the accidents on the DMV report. Sue documents this simply and succinctly in natural language using a single decision rule, as shown in Figure 4-47.

Evaluate Accident History ☆

Details **Decision** Policies Attachments Documentation Comments

▼ **Decision Description** ⓘ
Only accidents that occurred in the last 5 years, and that cost the insurance company over \$500 are added up to be taken into consideration when evaluating the accidents on the DMV report.

▼ **Inputs and Output** ⓘ

Inputs → Output

- ⊕ Accident Date
- ⊕ Accident Cost
- ⊕ Application Date

⊕ Total number of chargeable ...

▼ **Decision Table** ⓘ

Evaluate Accidents

Considerations		Conclusions
Accident Date	Accident Cost	Total number of chargeable accidents
Less than 5 years before application date	Greater than \$500	+1

⊕ Add Exceptions

Figure 4-47 The decision rule for adding up accidents considered when evaluating driving history

The decision logic for the rest of the sub-decisions under Analyze Driving Record are very straightforward. Sue generates the empty decision tables and documents the decision rules as shown in Figure 4-48 on page 89, Figure 4-49 on page 89 and Figure 4-50 on page 90.

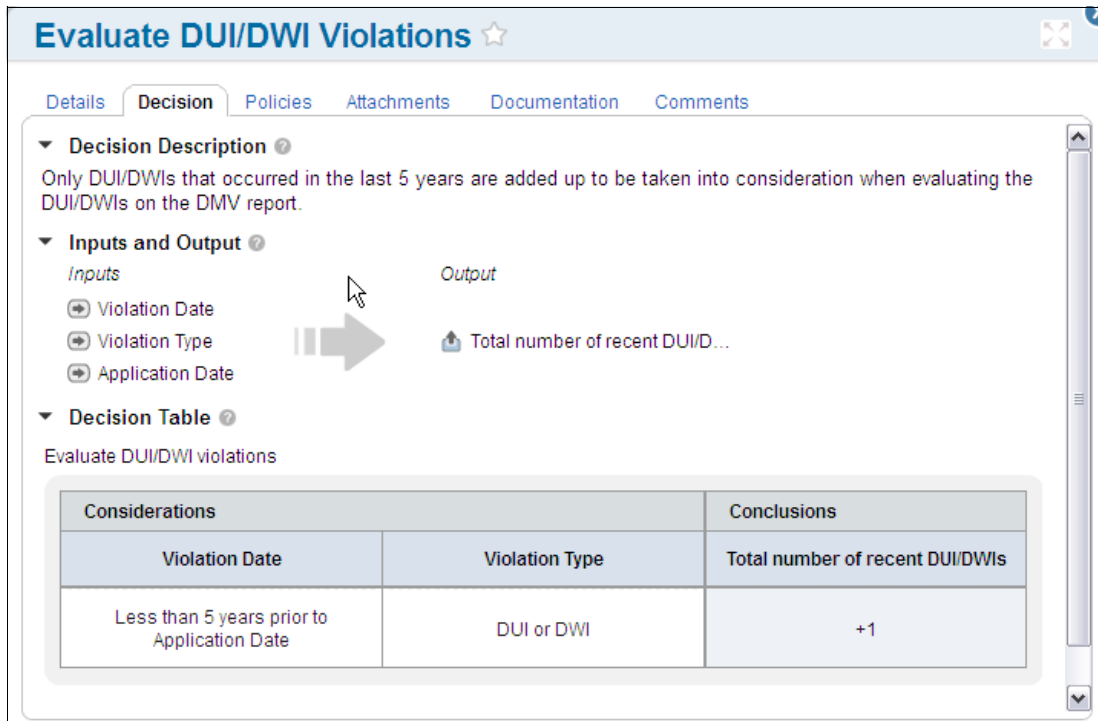


Figure 4-48 The decision rule for adding up DUI/DWIs considered when evaluating driving history

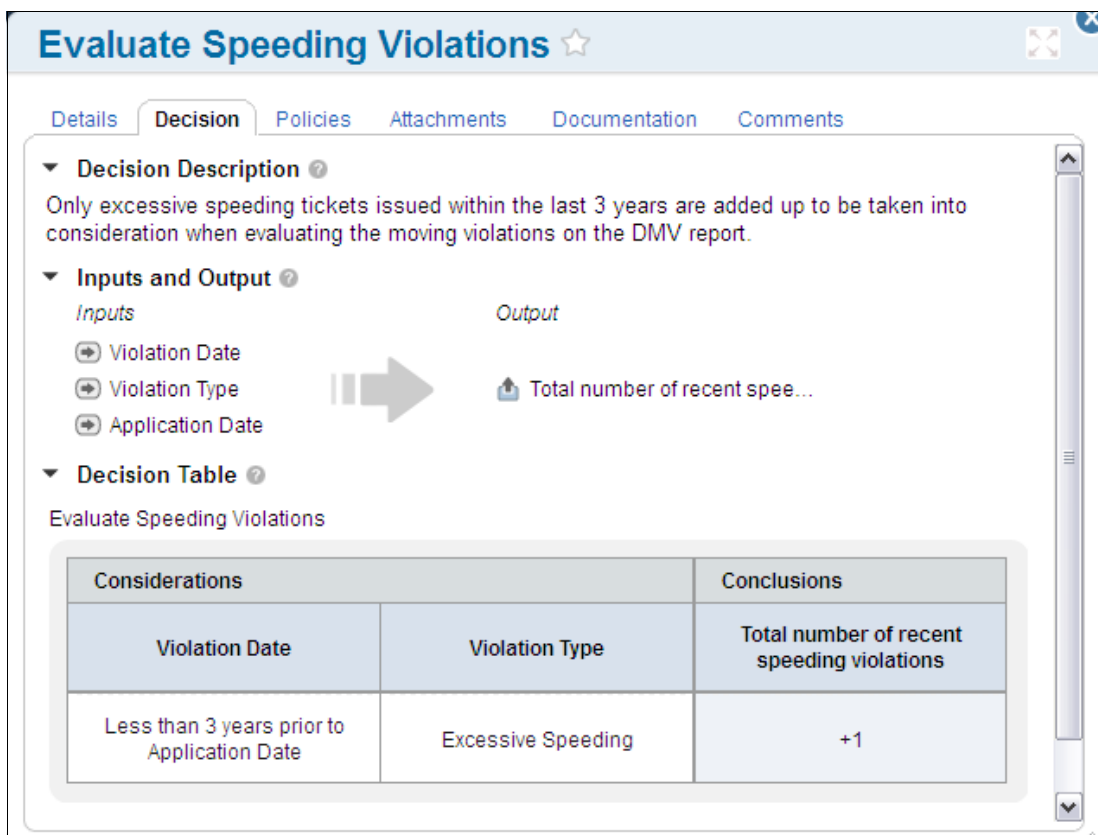


Figure 4-49 The decision rule for adding up speeding tickets considered when evaluating driving history

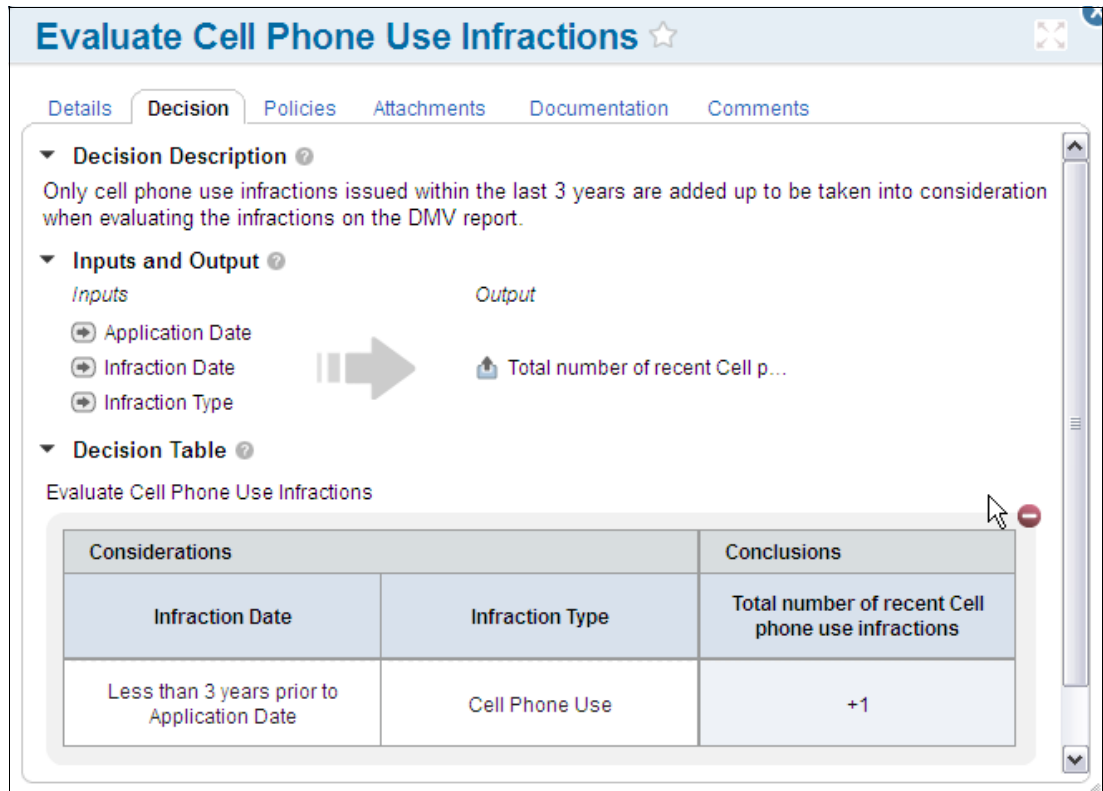


Figure 4-50 The decision rule for adding up infractions considered when evaluating driving history

Validate driver

Now that Sue has finished modeling Analyze Driver Record, she just has the top-level decision and three more sub-decisions left to complete the decision logic for Validate Driver. She is curious to see what the decision logic for the top-level decision is going to end up looking like, so she decides to work on that before documenting the remaining sub-decisions. This is the top-level decision that will look at all of the different aspects of the decision: The driving history, driver's age, driver's address, and the vehicle theft protection and decide whether or not AIC will insure the driver. Sue generates the empty decision table and begins to enter the decision logic. She enters the first decision rule, which identifies drivers that are eligible for coverage, and decides to take a similar approach as she did with the Analyze Driver Record sub-decision. That approach was to not document all of the possible combinations of cell values, nor use the "otherwise" clause, but rely on empty cells to highlight the important considerations. You can see the decision table that Sue created in Figure 4-51 on page 91.

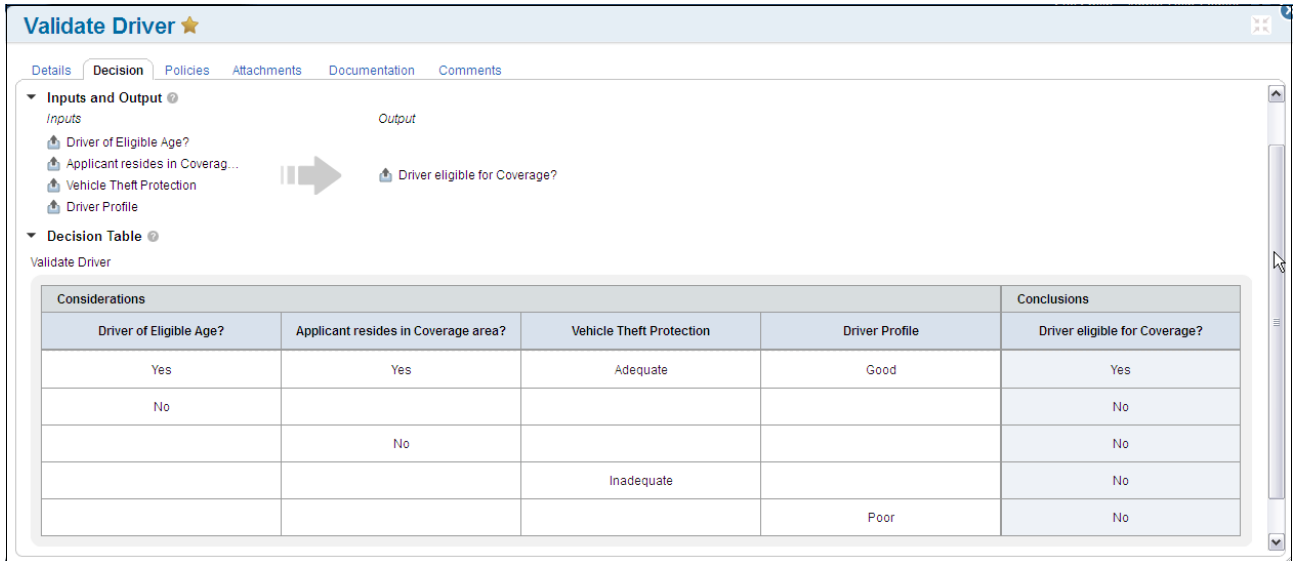


Figure 4-51 The decision logic for the top-level decision: Validate Driver

Check driver age

Next, Sue generates the decision table for Check Driver Age and adds the decision logic. She creates a decision rule that identifies everybody who is 18 or older as being of eligible age. She creates another rule to accommodate teen drivers being covered on their parent's policies. Then she creates a final decision rule rejecting anybody under 18 years of age that is not a child of the applicant. You can see how she defines this in Figure 4-52.

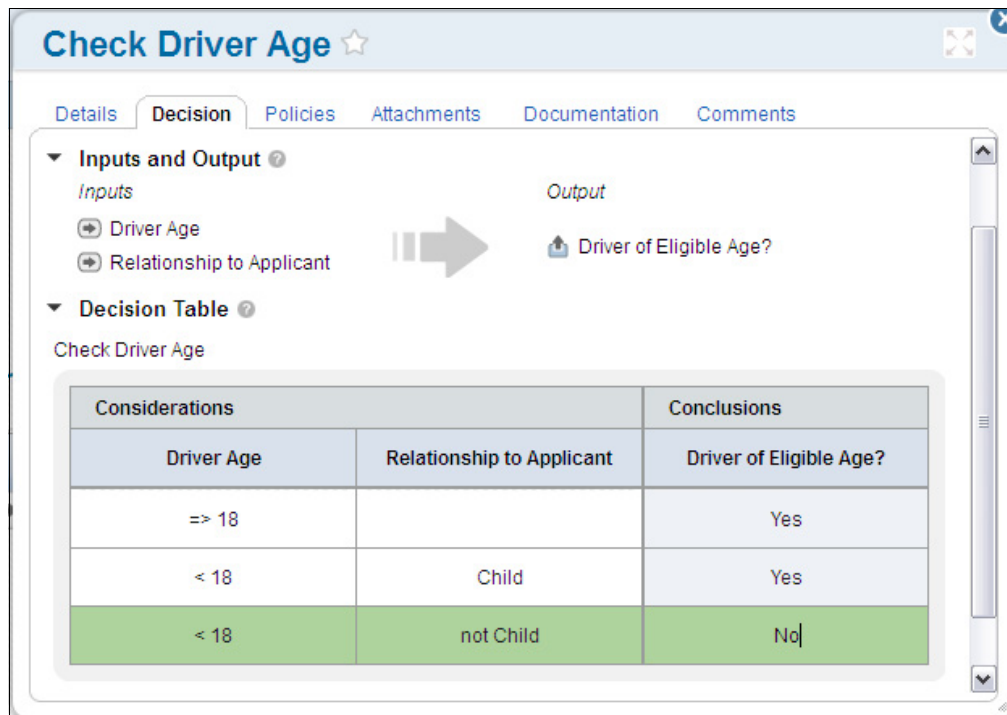


Figure 4-52 The decision logic for Check Driver Age

Check geographical coverage

AIC does not issue insurance policies to applicants that do not reside within their coverage area. As we learned earlier, the geographical coverage area is defined as a list of ZIP codes in a spreadsheet maintained by the legal department. As Sue considers how to define the decision logic for this decision, she knows that she needs to express the business requirement, rather than the low-level details of extracting ZIP codes from a spreadsheet or doing a ZIP code lookup operation on a database. A link to the current version of this spreadsheet has already been captured in Blueworks Live, so it will be very easy for anybody trying to automate this later to figure out exactly how to do so. Sue creates a simple, clear decision rule to accomplish this, as shown in Figure 4-53.

The screenshot shows a web interface for a decision rule titled "Check Geographical Coverage". It has tabs for "Details", "Decision", "Policies", "Attachments", "Documentation", and "Comments". The "Decision" tab is active. Under "Decision Description", it states: "AIC doesn't issue insurance policies to applicants that don't reside within our coverage area (as defined by a list of zip codes that is defined and maintained by the Legal department)". Under "Inputs and Output", there are two columns: "Inputs" with "Applicant Zip Code" and "Current Coverage Area", and "Output" with "Applicant resides in Coverag...". A large grey arrow points from the inputs to the output. Below is a "Decision Table" with the following content:

Considerations	Conclusions
Applicant Zip Code	Applicant resides in Coverage area?
within current coverage area	Yes
not within current coverage area	No

Figure 4-53 The decision logic for Check Geographical Coverage

Assess vehicle theft protection

Sue considers the requirement AIC has for vehicles to be kept in a garage if the driver lives in a high crime area. This is a little complicated, since the determination of an area as a high crime area is provided by an external service, based on the ZIP code. Once again, she wants to keep the decision logic focused squarely on the business requirement, rather than getting into the details of web service calls or database lookups. So she comes up with the representation shown in Figure 4-54 on page 93.

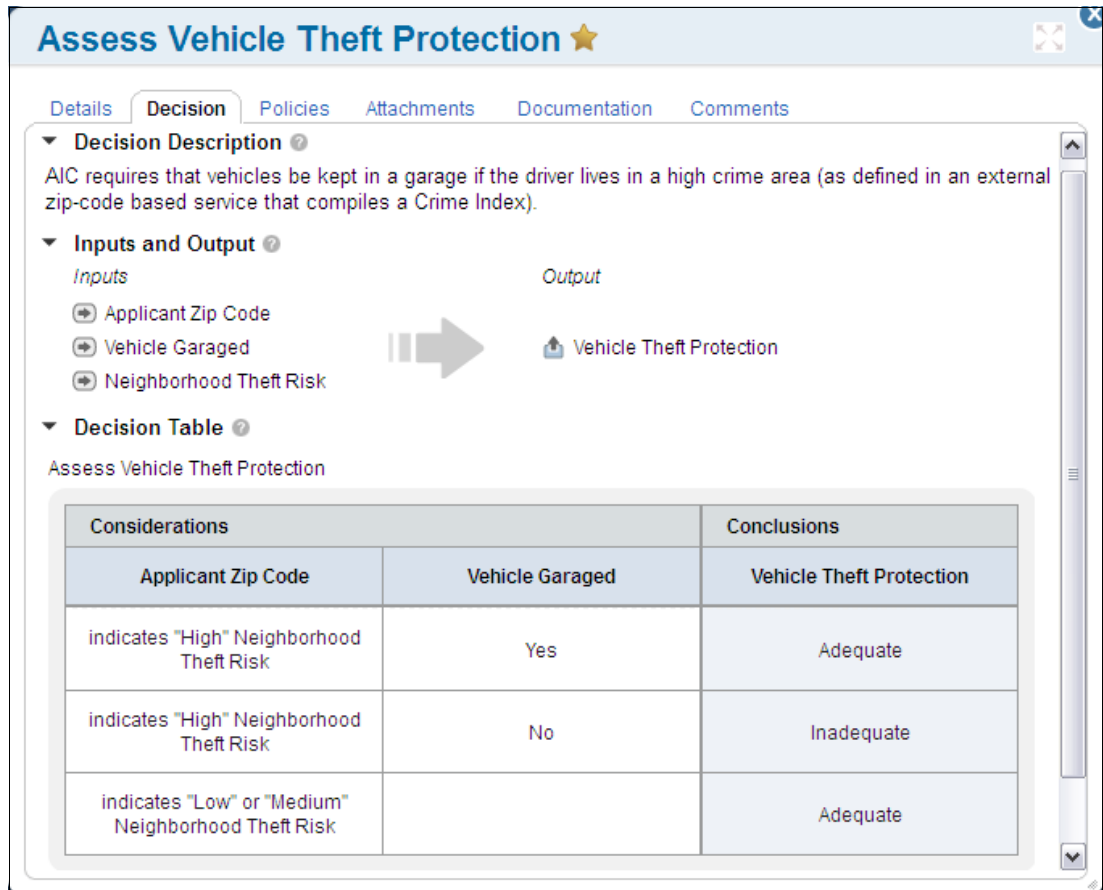


Figure 4-54 The decision logic for Vehicle Theft Protection

4.5.4 Reviewing the decision

As Sue views her finished diagram in Blueworks Live, she finds the “zoom” tool and “View” mode very helpful. With the “zoom” tool, which is located in the upper right corner of the decision diagram, Sue is able to view her entire diagram on the screen at the same time, as shown in Figure 4-55 on page 94.

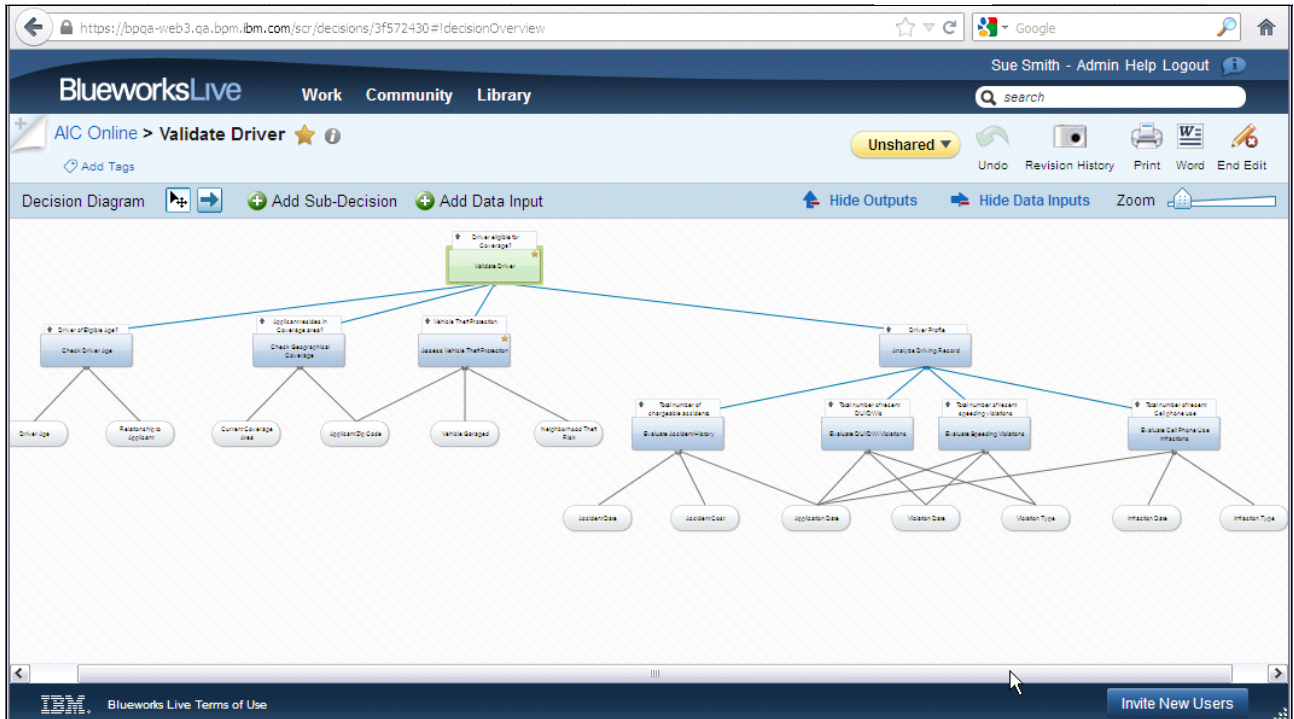


Figure 4-55 Reviewing the final decision diagram in Blueworks Live

When she presses the “End Edit” button, in the upper right corner of the screen, Blueworks Live switches into “View” mode. Here, she is able to see the details of any sub-decision or data input that she selects in a separate pane on the right side of the screen, as shown in Figure 4-56.

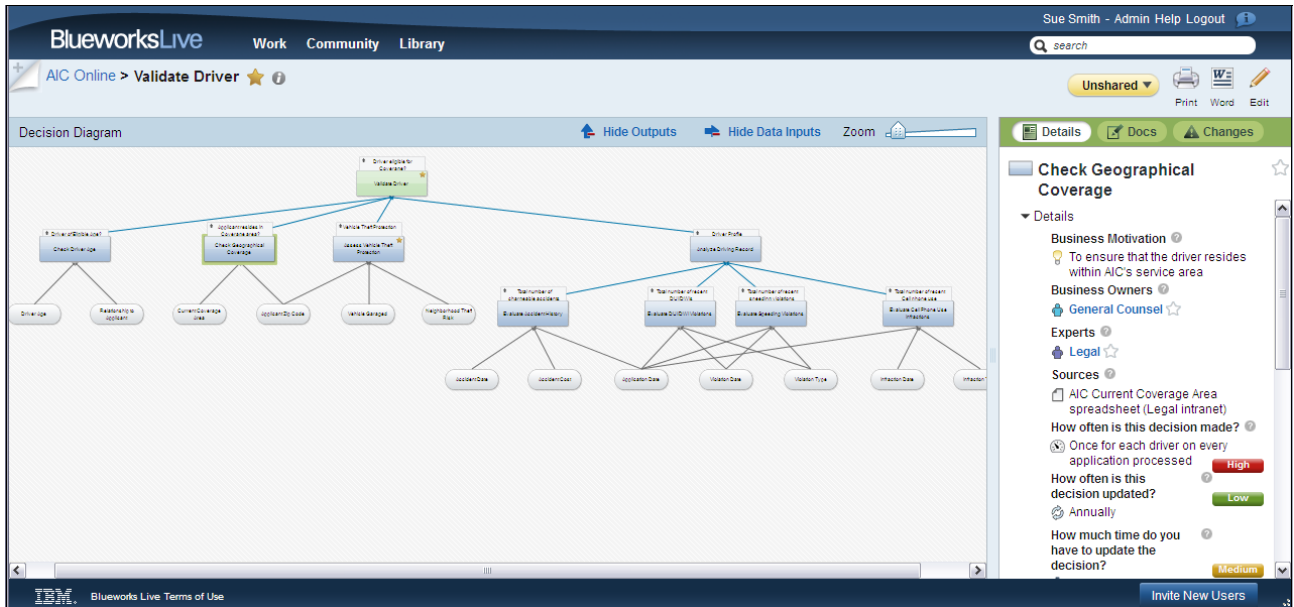


Figure 4-56 Reviewing the final decision diagram in Blueworks Live

As she reviews all of the components of the Validate Driver decision, she feels that she has captured all of the data inputs, modeled all of the necessary sub-decisions, and documented the related decision logic. She is now ready to distribute to the team for broader review.

4.6 Step 5: Validate the decision

Engaging subject matter experts and stakeholders in the review and validation of decisions will help ensure that your documented decisions are correct and complete. Much of this validation occurs naturally during a decision discovery project as a result of the collaboration between the different members of the decision discovery team. This process is iterative and highly interactive and almost always results in changes being made to the documented decision, especially in the earlier stages of the project. However, it is also important to have some kind of final, formal validation step where key stakeholders can review and approve the final documented decision.

In this section, we discuss some tools and techniques that are helpful for working with others to validate decisions both formally and informally. And we learn about an easy way to use Blueworks Live to manage and log the formal validation of decisions.

4.6.1 Collaboration

Everybody involved with the decision discovery project at AIC needs to collaborate. They need to be able to review each other's work, provide feedback related to that work, make suggestions for how to describe, and document the decisions, make updates directly to the decision documentation, and sometime even change each other's work. Blueworks Live provides a number of features that support this kind of collaboration, including:

- ▶ Activity Stream
- ▶ Chat
- ▶ Comments

The activity stream

The activity stream in Blueworks Live provides a dynamic view into the work taking place on a decision discovery project. The decision discovery team members at AIC can see the details of changes made to the decisions in the AIC Online space, who made these changes and when they made them. They can view this information by date or by user, and they can expand and collapse the changes to show more or less detail. They can also post messages to the activity stream, which enables them to broadcast important project-related information to the whole team. The activity stream has quickly become an information hub for the decision discovery project team at AIC.

You can see some of the information available through the Blueworks Live activity stream in the left pane of the screen capture, as shown in Figure 4-57.

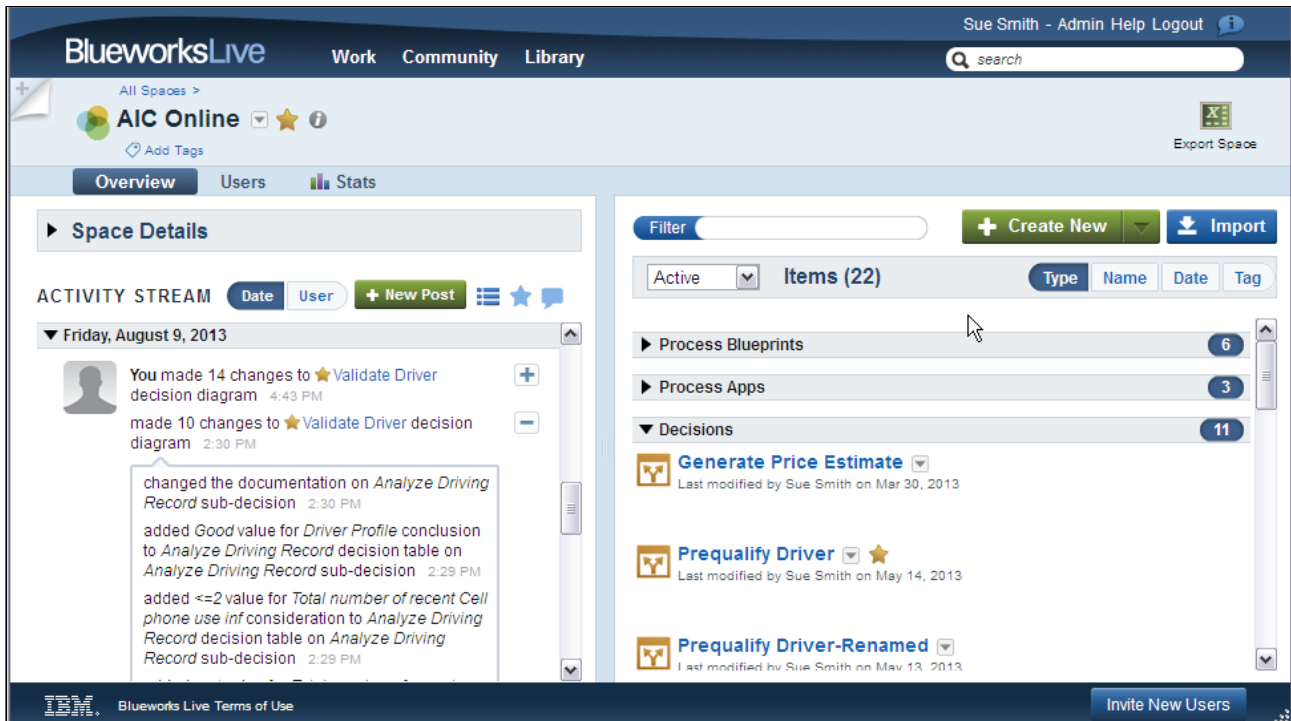


Figure 4-57 The activity stream

Chat

Ideally, your decision discovery team is co-located in the same general area to facilitate efficient communication and collaboration. However, in this day and age that is often not possible. Blueworks Live provides an online chat capability that can help distributed teams with informal communication and ad hoc collaboration. The AIC team is co-located on the AIC campus, but they work in different buildings. When Sue is working in Blueworks Live, she frequently uses the online chat when she needs to ask a teammate a quick question, find a good time to meet or let a co-worker know that she would like for them to informally review some of her work. And she often finds herself responding to similar chats from her teammates. The Chat function can be unwieldy for comprehensive, in-depth communications and the history of a communication thread is not retained so Chat is best used for quick, informal interactions. Quick questions, straightforward coordination and notification, and checking in with teammates are all great uses of the Blueworks Live Chat function.

To initiate a chat, the person you want to communicate with has to be logged in to Blueworks Live. You can see the names of people that are online at the lower right corner of your Blueworks Live screen. If you click one of those names, you get a pop-up window, which shows you what they are currently viewing in Blueworks Live, as shown in Figure 4-58 on page 97.

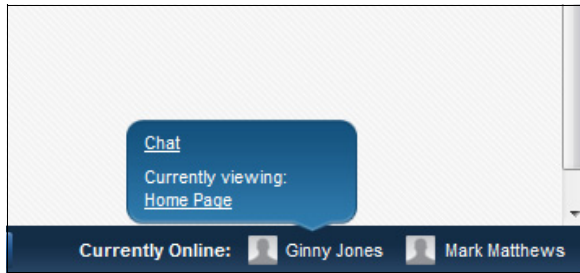


Figure 4-58 Opening a chat window

When you start a chat, the chat window opens, as shown in Figure 4-59.

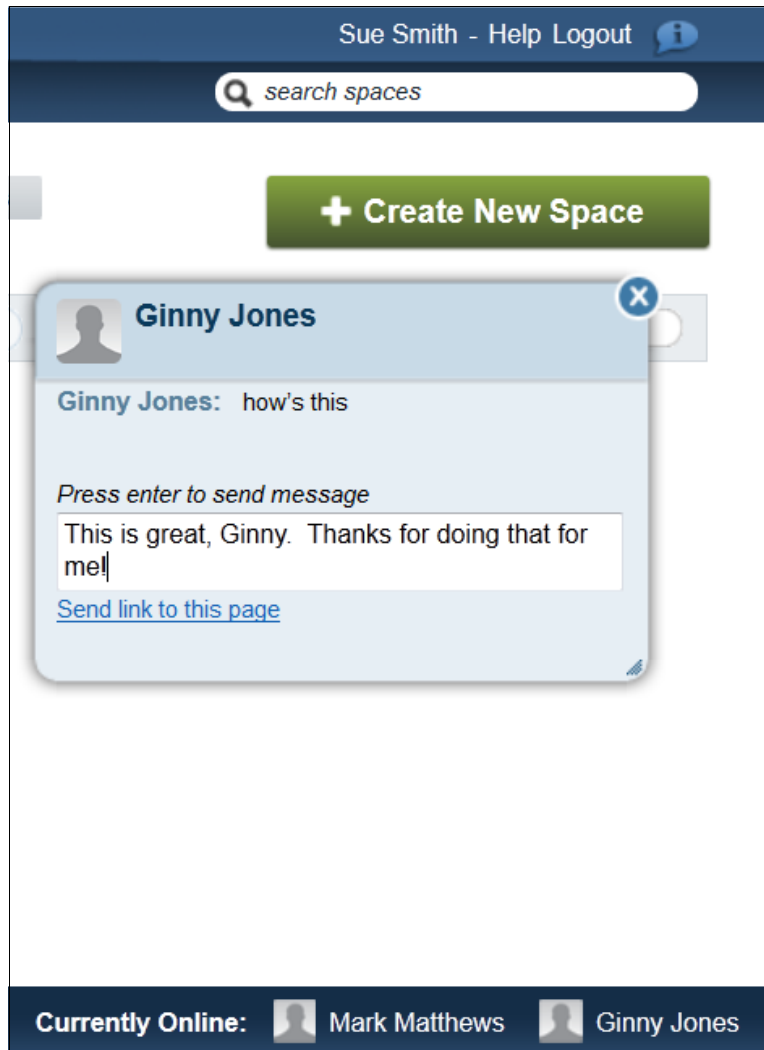


Figure 4-59 The chat window

In addition to being able to type a text message into the chat window, you can send a link to the page that you are viewing as depicted in Figure 4-60 on page 98. If Ginny clicks the link that Sue sent her in the chat window, she will automatically navigate to that same page. In the example below, Sue is making some changes to the Pricing decision diagram that she would like some informal feedback from Ginny on. When Ginny clicks the link and navigates to the decision diagram, she will see the changes that Sue is making to the decision diagram in real

time. And, of course, if Ginny makes any changes, Sue will see those in real time. Chat can be a very effective tool for collaborating dynamically and “getting on the same page”.

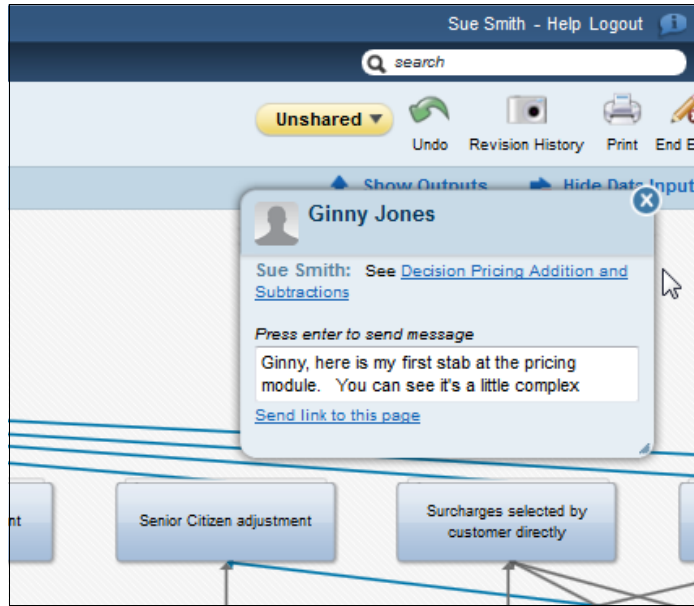


Figure 4-60 Getting on the same page – sending a link via online chat

However, for more significant interactions, you will need a permanent, threaded, context-sensitive way to communicate around decisions that are being documented and reviewed. Comments, in Blueworks Live, work well for this purpose.

Comments

We have already seen comments in action in Blueworks Live. The advantage of comments is that they are context-sensitive, that is, the comment is made and attached directly to the decision, activity, or process being documented or reviewed. Sue can use comments as a way of leaving notes for herself to help with her work. For example, she may want to remind herself of some additional tasks she needs to perform or some additional documentation she needs to obtain before she can finish documenting a particular decision or process activity. But comments can also be tremendously useful for collaborating with others when reviewing and validating decisions.

As we saw in the last section, Sue started a chat with Ginny to request some preliminary feedback on an early draft of the Pricing decision that Sue was beginning work on. When Ginny reviewed this Pricing decision, she was happy to see that it considered whether or not the driver had been at fault for accidents that could have an impact on the premium price. When Ginny reviewed the Validate Driver decision, it did not appear to her that this was being considered when evaluating the driver's accident history for eligibility purposes.

Thinking that she may have discovered yet another area within AIC where this determination of fault was not being properly taken into consideration, Ginny immediately brought it to the team's attention by adding a comment. She navigated to the Evaluate Accident History sub-decision of Validate Driver, and pressed the “Add Comment” button in the pane on the lower right side of the window bringing up the “Add Comment” dialog, as shown in Figure 4-61 on page 99.

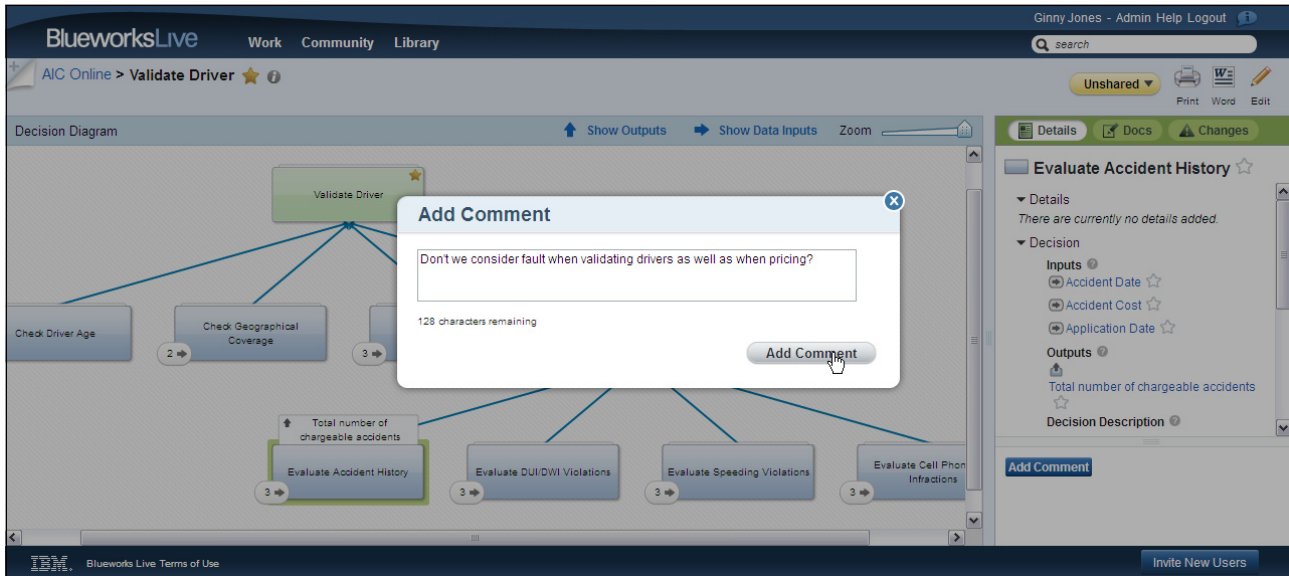


Figure 4-61 Adding a comment on the decision diagram

Comments can also be captured on the Comments tab of the Decision Details panel. Comments are displayed, in context, when a sub-decision is selected in the decision diagram in View mode, as illustrated in Figure 4-62. They are also displayed in the Activity Stream for the entire space. And team members can reply directly to a comment wherever they appear.

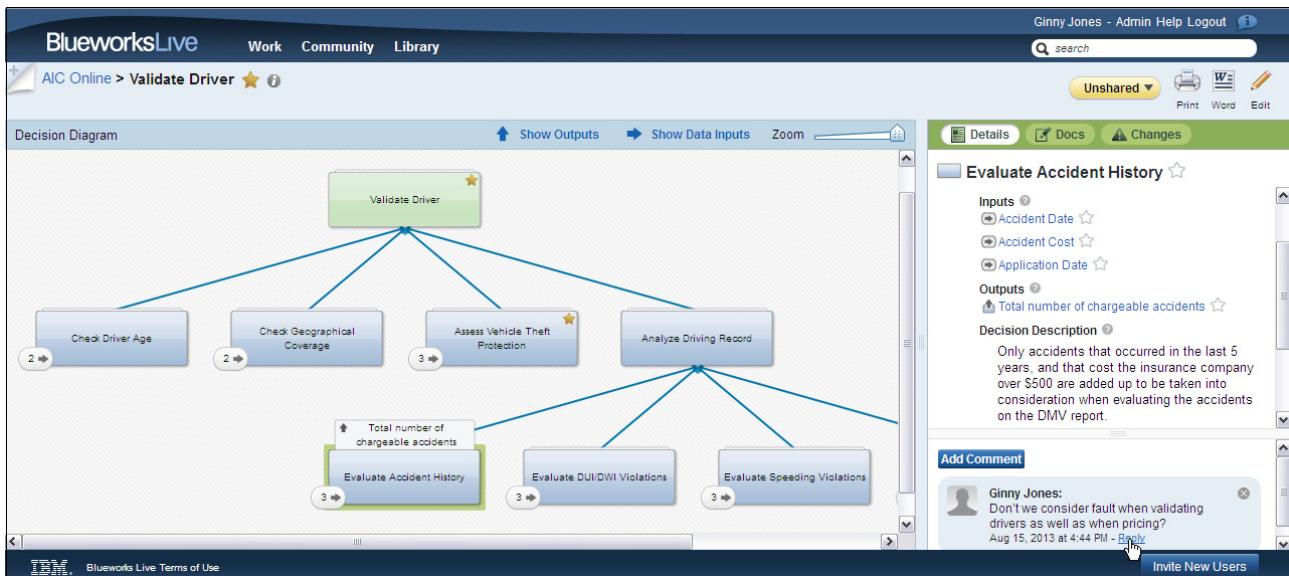


Figure 4-62 Comments show up in context, when navigating a decision diagram in View mode

4.6.2 Revising and refactoring decisions

Soliciting feedback from others during collaboration, decision review, and validation frequently results in updates being made to a decision. Sometimes the changes are minimal, other times major, and the impact of those changes usually needs to be carefully assessed before the changes are made. Especially once a stable, approved version of the decision exists. This becomes even more important if the decision has been automated, as the potential negative

impact of the unforeseen side-effects of a change that was not thoroughly thought through could be significant.

Impact analysis

In the last section, we saw an example of the kind of feedback you might receive during the informal review of decisions. Ginny left a comment on the Validate Driver decision diagram asking if the determination of fault was being considered when evaluating accidents on the driver's record. Sue does not remember, and she is not sure how that was handled in the Pricing area. So she goes to the Blueworks Live Glossary to do some *impact analysis* and refresh her memory.

The Blueworks Live Glossary provides visibility into the values of properties defined for decisions, processes, spaces, and tags. Particularly useful is the ability to see the values of all of the inputs and outputs of decisions and process activities. Also very useful is the "Where Used" capability, which allows you to see which spaces, processes, activities & decisions any given input or output value is being used in.

Sue opens the Glossary tab of the Library in Blueworks Live, and types in "fault" as a Filter string as shown in Figure 4-63. Blueworks Live shows the number of items that contain the string "fault" on the right of the screen, in the blue ovals. She expands the Inputs & Outputs section and sees the term "Driver at Fault" along with its definition, which jogs her memory. She recalls that there is a boolean field on the DMV report for every accident indicating whether the driver was at fault or not. She is curious as to how and where that is being referenced within AIC's documented business processes, so she selects the Where Used tool, to the right of the glossary term as shown in Figure 4-63, and learns that the Driver at Fault term is being used within the Pricing Additions and Subtractions decision. Blueworks Live lists the actual sub-decision that uses this term as a data input, and provides a link to it, as shown in Figure 4-63.

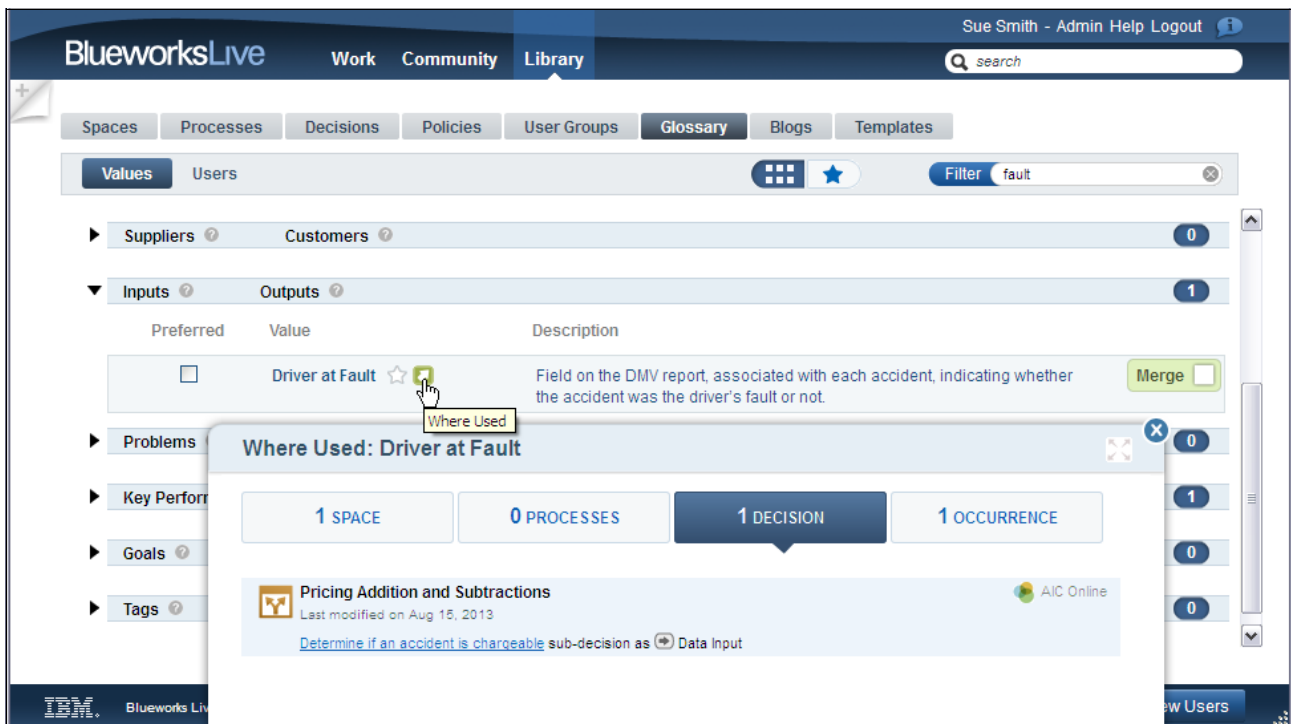


Figure 4-63 Filtering business terms in the Blueworks Live Glossary, and seeing where they are used

Sue clicks this link and navigates to this sub-decision in the decision diagram, and sees that the Driver at Fault term is used as a data input. As she reviews the diagram, it is clear to her how fault is factored into the assessment of accidents used to adjust the premium price. This decision diagram is shown in Figure 4-64.

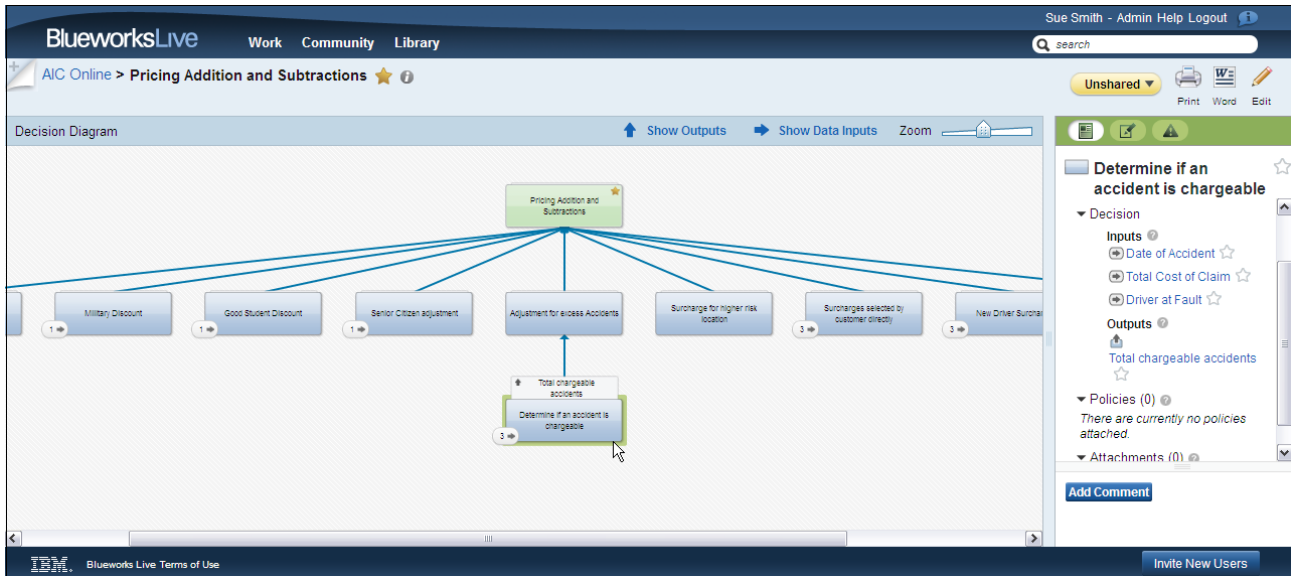


Figure 4-64 Linking directly to the sub-decision where the “Driver at Fault” term is used

Now that she has seen how driver fault has been factored into this pricing decision, she updates Validate Driver to do the same. This is very straightforward because she only has to change one sub-decision. She is glad she created a separate sub-decision for each incident type as it definitely makes it easier to figure out what exactly needs to be changed. It is also easier to make the change because the impact is isolated to a single sub-decision. She navigates to the Evaluate Accident History sub-decision, adds “Driver at Fault” as a data input and inserts a new column for it in the decision table, as shown in Figure 4-65.



Figure 4-65 Inserting a new column into the decision table for the “Driver at Fault” data input

Now Sue feels confident that the Validate Driver decision is properly taking fault into consideration when evaluating the driver’s accident history.

Major refactoring of a decision

Sometimes revisions can result in significant reorganization of the structure of a decision. It is fairly easy to add a sub-decision to a decision diagram if needed, or a data input. But sometimes structural changes may occur at higher-levels of the decision diagram impacting the top-level decision, or in the process diagram impacting the decision task.

This happened during the AIC decision discovery project, while Sue was in a review session with Paul, Megan, and Ginny.

Paul asked, “Sue, I understand why we do pre-qualification before we do validation. That is so we will not spend money on DMV reports when we do not have to. And I understand why we prequalify drivers before we prequalify vehicles. It is more complex to get the vehicle information: VIN numbers, dates, and so on. We do not want to ask these questions of drivers if we are not qualifying them. It is annoying and they leave with a bad feeling. They are potential future clients, if the issues that currently make them ineligible change. But I cannot understand why, when we already have all the information, including DMV reports, we validate drivers before we validate vehicles. Is there something produced by Validate Driver that the Validate Vehicle decision needs?”

“I am really not sure,” Sue replied. “I never thought about that. I just knew we did it that way, not exactly why. When we are reading the validation report, it is in that order. But I do not know of anything in Validate Vehicle that requires anything from Validate Driver.”

Ginny spoke up, a little sheepishly. “Actually, I think I know the answer to this one. When Steve, one of the original programmers, came back from retirement to help us with the Y2K updates back in 2000, I took the opportunity to walk through the system and learn some of the reasons some design choices were made. It happens that these two decisions are implemented in two different programs that were written by two different programmers. They just decided it was easier to execute one before the other. There is no dependency that I know of. We always do both steps, and it does not matter what order they are in.”

“So what we are really doing is validating the whole application, right?” Paul asked.

“Right.” Sue and Ginny spoke almost in unison.

“Sue,” Megan asked, “Is there any sort of time dependency? Would it work if we validated the vehicle first?”

“Yes, Megan,” Sue replied, “we could do the vehicle first. In fact, sometimes I do when I am auditing these. We have to validate each driver on the application, and we have to validate each vehicle on the application. But maybe those should actually be sub-decisions? I guess the ultimate decision that we are making here is whether or not we are going to approve the application, and that is not reflected anywhere in the decision discovery work we have done.”

“That makes a lot of sense.” said Paul. “Can you go ahead and make those changes?”

“Oh, sure,” said Sue, wondering how she would do it.

As you can see from this interaction, many ideas come into play when collaborating, reviewing and validating decisions. At AIC, a number of people at different levels of the organization were involved at different points in the project to collaborate, review work, and provide feedback. We had the business owner, Paul, the IT director, Ginny, and a peer, Megan, each with their own point of view. They brought their different perspectives, expertise, and experience to the table to help ensure that AIC’s documented decisions were correct and complete. And they applied the best practices that they had been learning to their decision discovery work. This is quite typical of what you might actually experience when collaborating, reviewing, and validating decisions on a real decision discovery project.

So, we follow Sue as she goes about refactoring her decisions to create the new Validate Application decision.

The first thing she did was to make a copy of the “Validate Driver” decision, as shown in Figure 4-66, which she will use as the basis for her new decision. This way, she still has the original decisions intact and can refer or even revert back to them if she needs to. Because Sue was a little unsure of what she was doing, she wanted the older decisions to remain as references. She might archive them later.

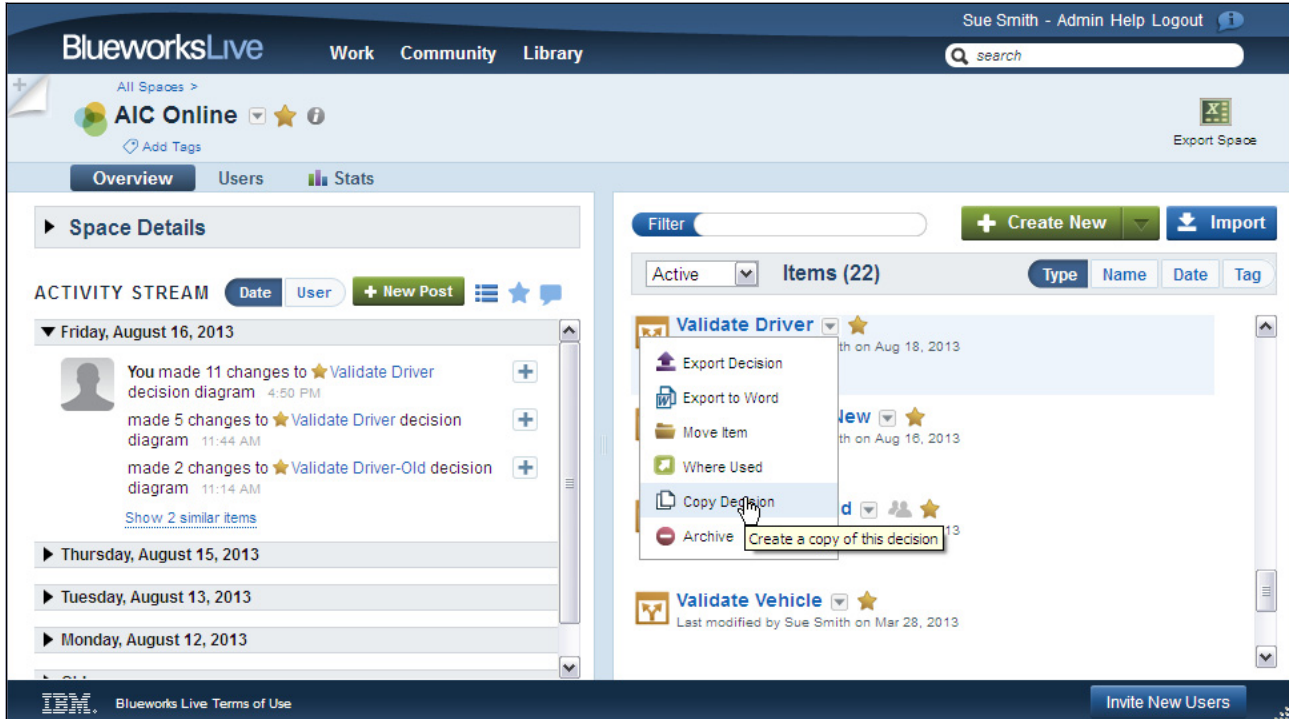


Figure 4-66 Copying the Validate Driver decision

Sue renames the copied decision “Validate Application” and saves it in the AIC Online space, as shown in Figure 4-67.

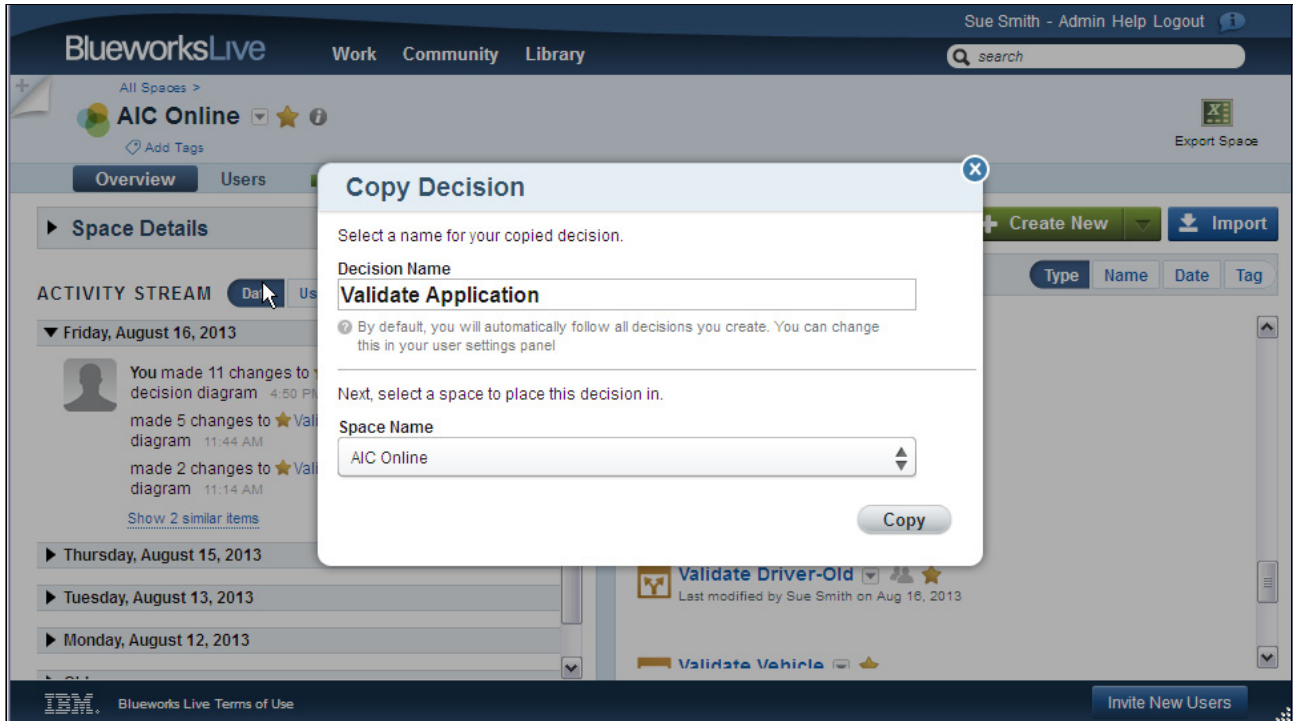


Figure 4-67 Renaming the copied decision

Sue opens the decision diagram in edit mode, as shown in Figure 4-68 on page 105, and begins to modify the top level decision, changing the name of the output to “Application is Valid”, and updating the high-level characteristics as needed (Description, KPIs, and so on). She needs to re-create Validate Driver and Validate Vehicle as sub-decisions underneath the Validate Application decision, and she would like to do this with as little rework as possible.

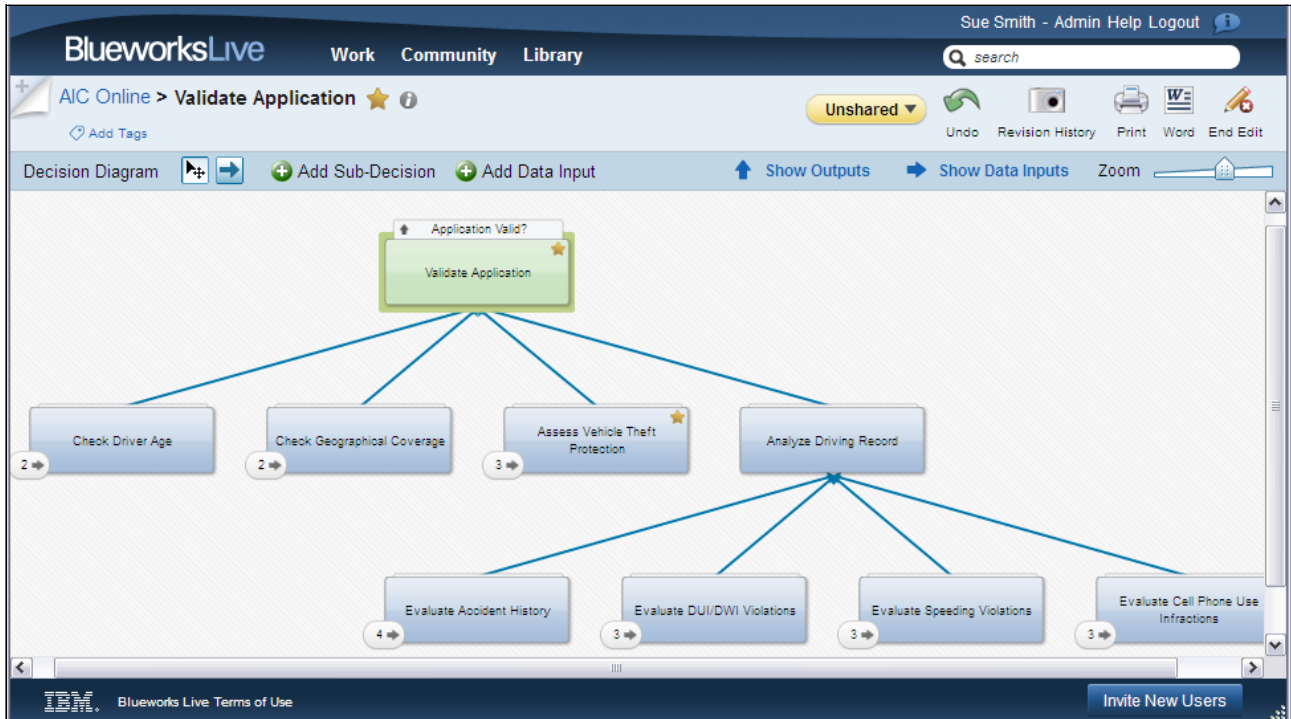


Figure 4-68 Sue begins to refactor the new Validate Application decision

She adds a new sub-decision under Validate Application as shown in Figure 4-69.

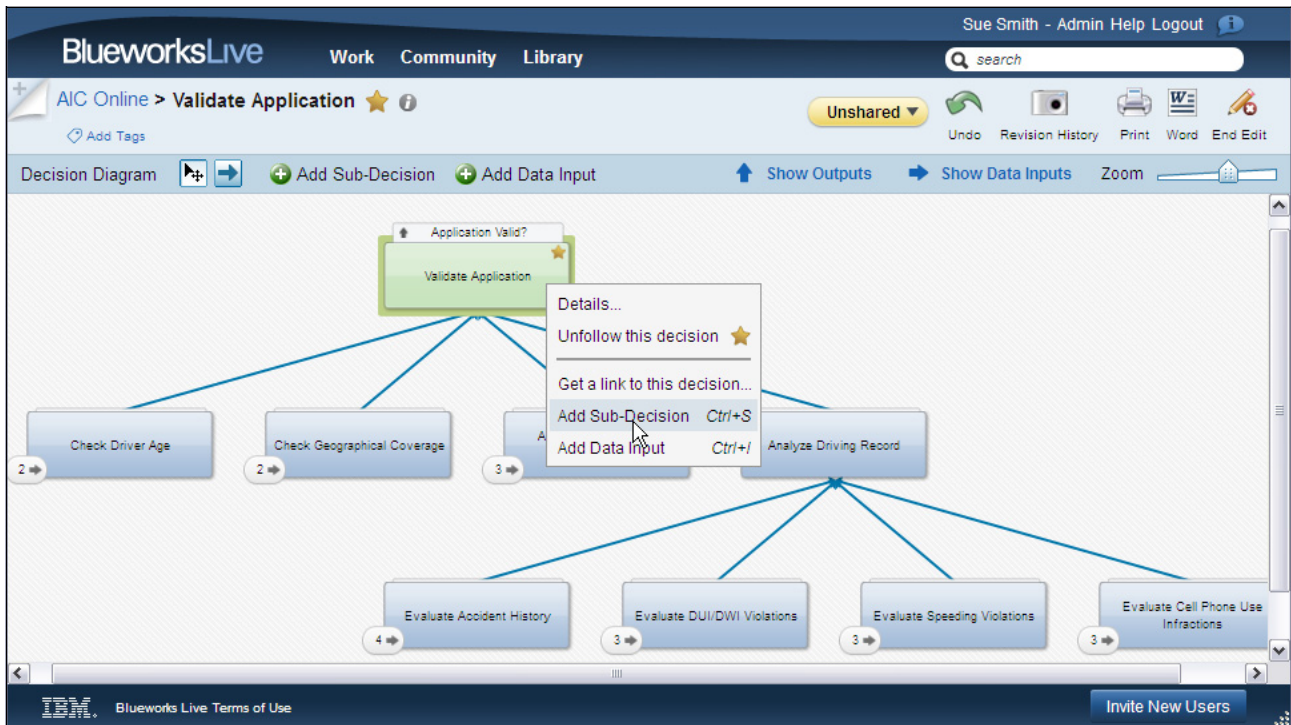


Figure 4-69 Adding a new-sub-decision to Validate Application

She renames the sub-decision “Validate Driver” and updates the name of the decision output to “Driver eligible for coverage?”, as shown in Figure 4-70. Now she will move all of the sub-decisions that are underneath Validate Application so that they are under Validate Driver, thus re-creating the same structure that the Validate Driver decision had before it became a sub-decision of Validate Application.

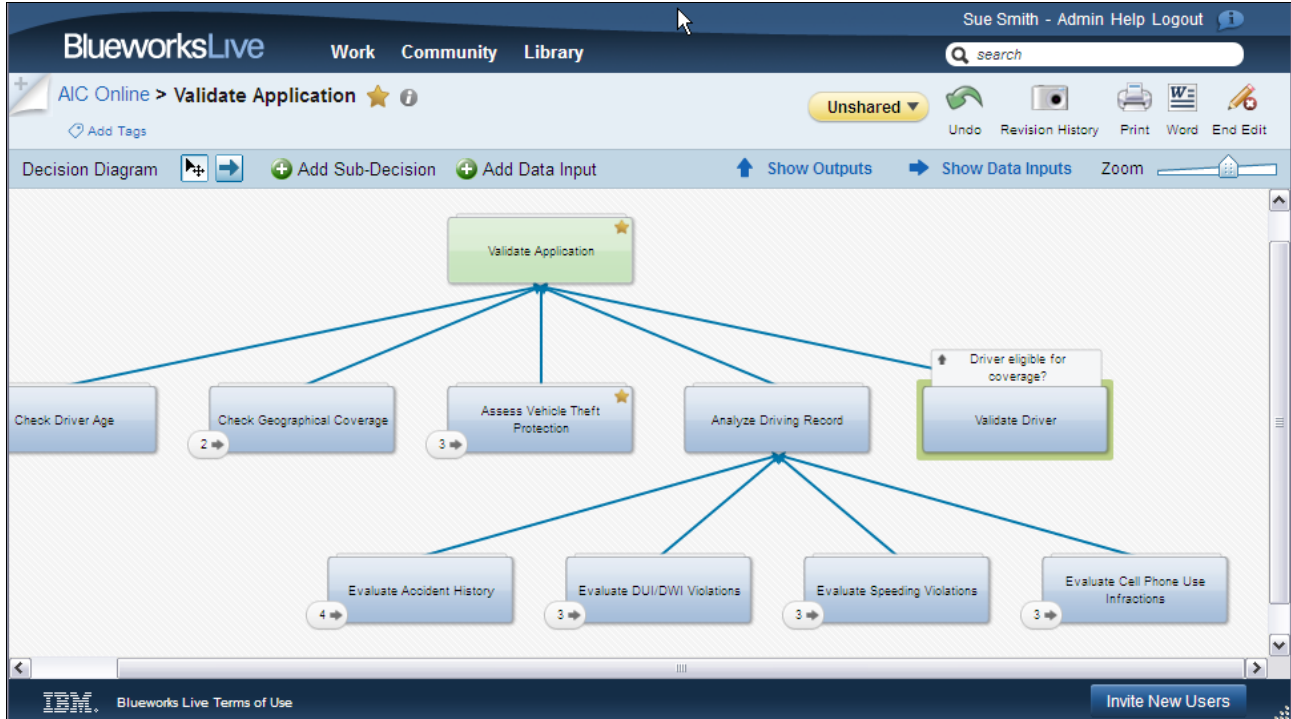


Figure 4-70 Creating the Validate Driver sub-decision under Validate Application

To accomplish this, she simply drags and drops each sub-decision onto Validate Driver, and it automatically becomes a sub-decision underneath it. When the border around the dragged sub-decision becomes green, and the border around the target sub-decision becomes orange in the Blueworks Live decision diagram, this means that the sub-decision can be dropped, as shown in Figure 4-71 on page 107.

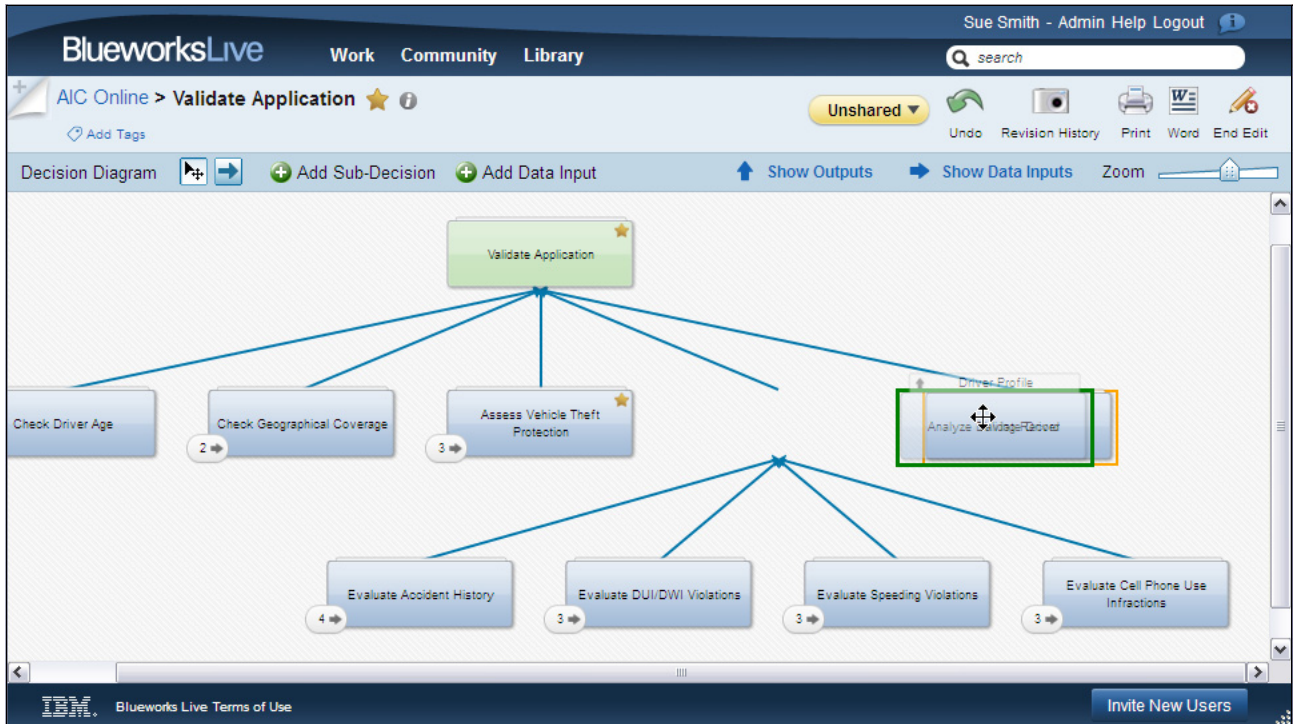


Figure 4-71 Dragging and dropping one sub-decision onto another

Once the sub-decision is dropped, the decision diagram looks like the figure below. To remove the extra dependency line Sue right-clicks the orange line and selects “Delete” as shown in Figure 4-72.

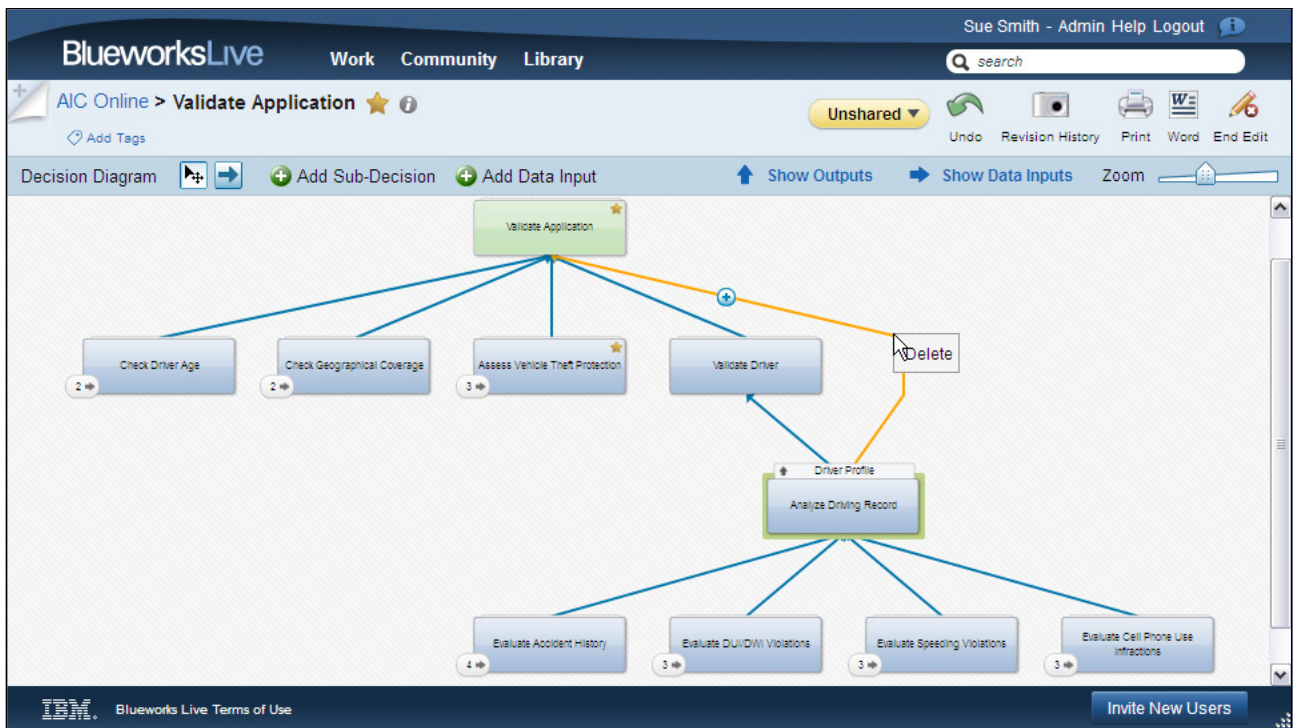


Figure 4-72 Deleting the extra dependency line from the Analyze Driving Record sub-decision

Once Sue removes the dependency line, the decision diagram looks like Figure 4-73.

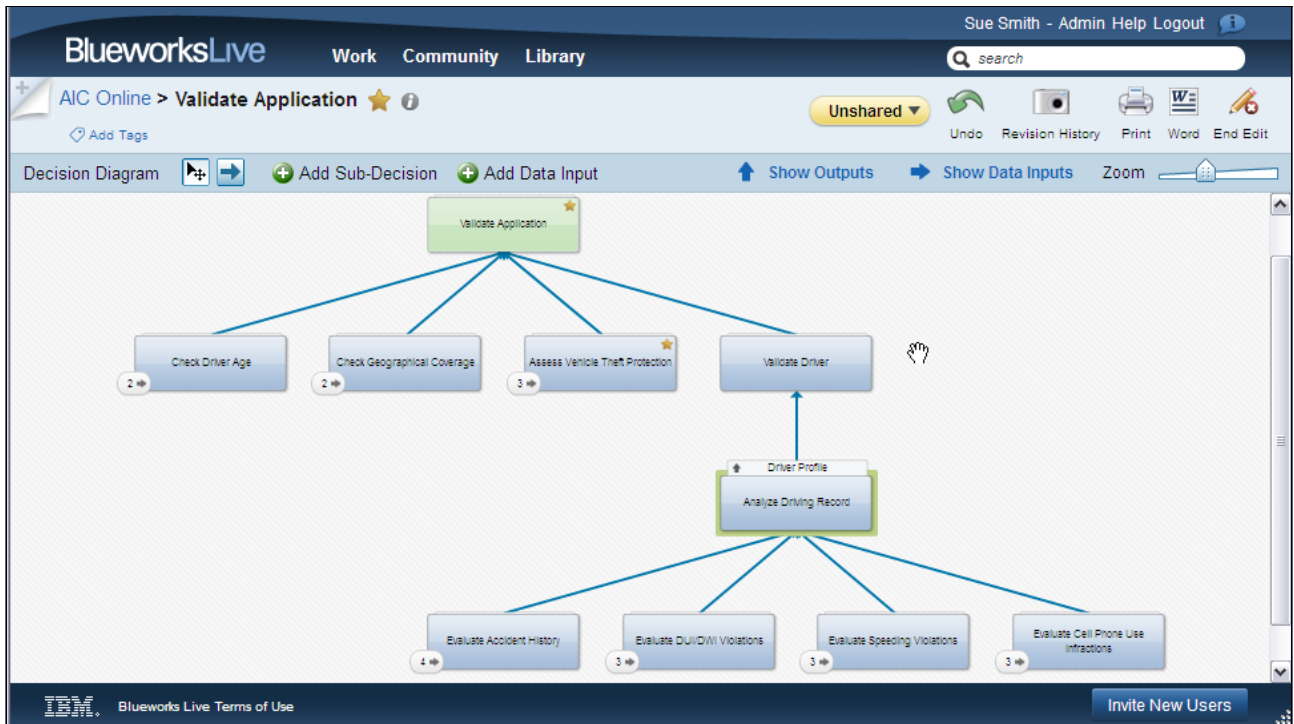


Figure 4-73 The refactored Analyze Driving Record sub-decision

Sue continues dragging and dropping the other sub-decisions, and deleting the extra dependency lines until her diagram looks like Figure 4-74.

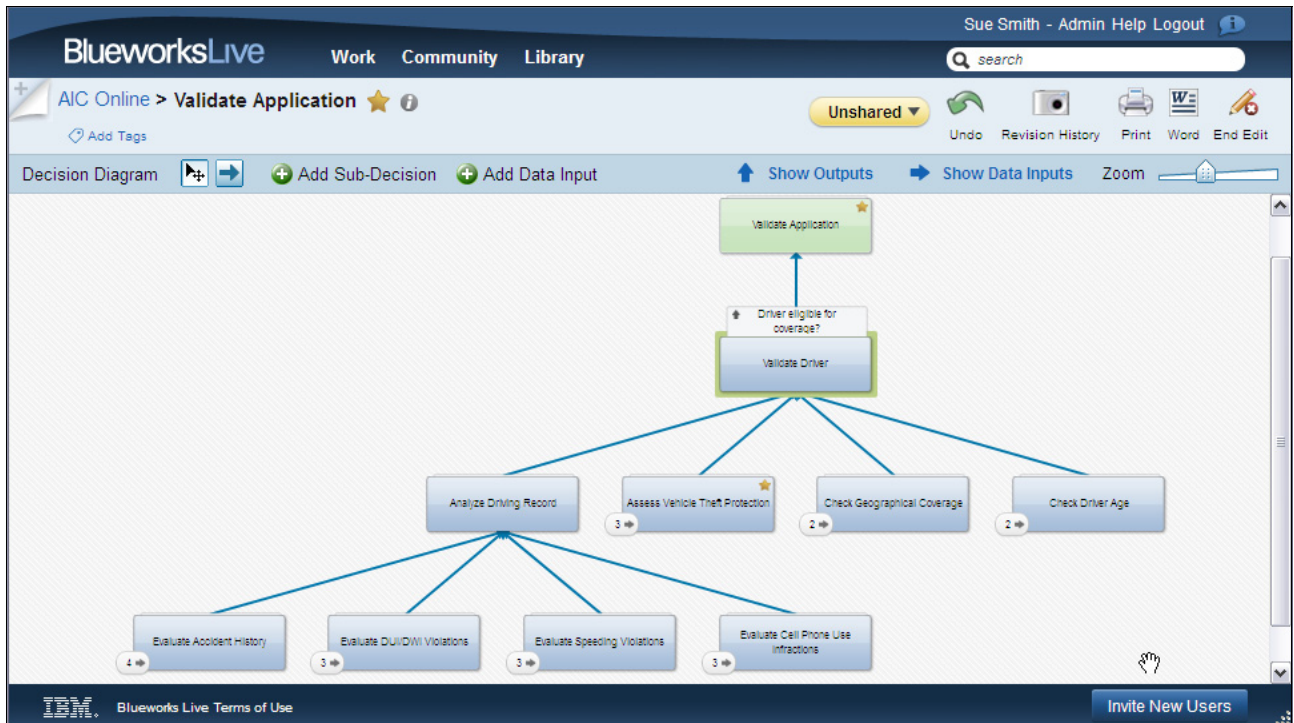


Figure 4-74 The refactored Validate Driver sub-decision

Finally, Sue generates the decision table for Validate Driver and enters in the decision rules, once again, as shown in Figure 4-75.

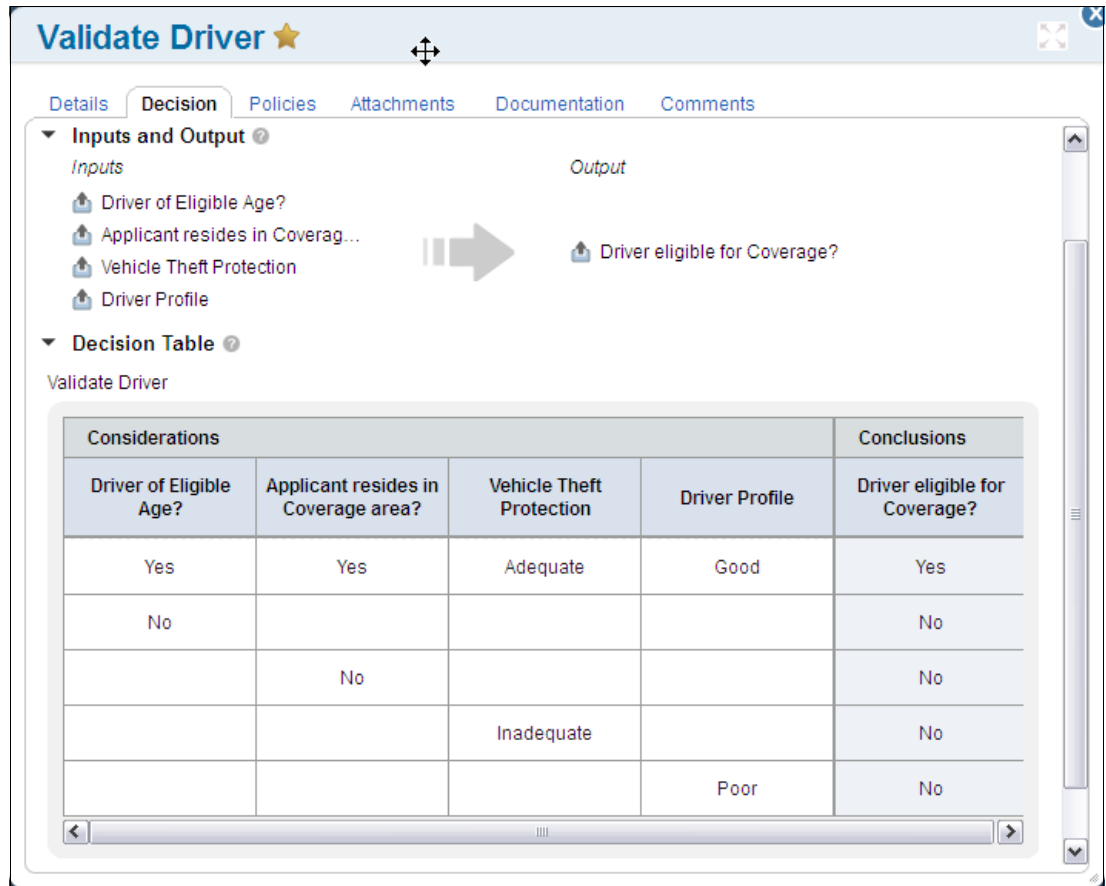


Figure 4-75 Re-creating the decision table for the new Validate Driver sub-decision

Sue goes through a similar exercise, incorporating the Validate Vehicle decision into this diagram as a sub-decision of Validate Application. She reviews her work and checks the new Validate Driver and Validate Vehicle sub-decisions against the original versions to make sure they are correct.

The final, refactored Validate Application decision is shown in Figure 4-76.

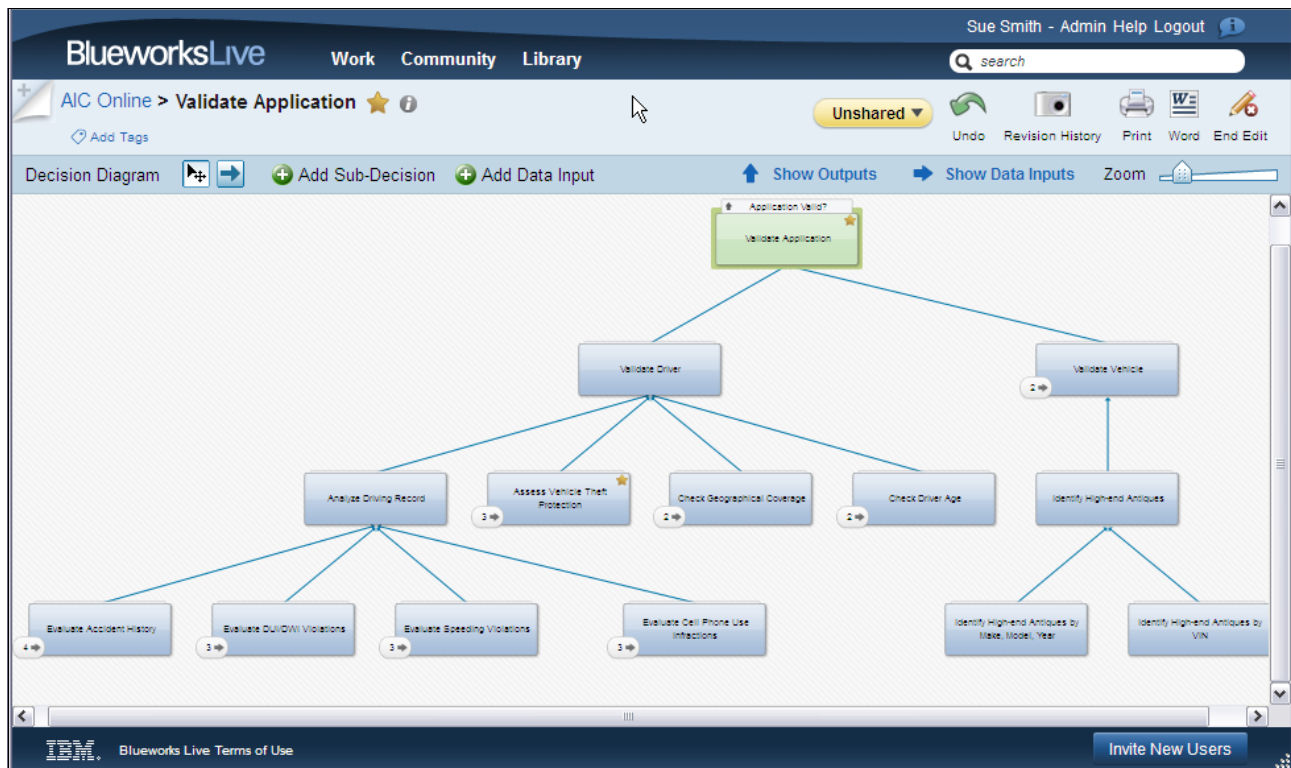


Figure 4-76 Figure x: Refactored “Validate Application” decision

4.6.3 Versioning decisions

After all of the hard work and collaboration that the AIC decision discovery team has put into discovering and documenting the Validate Application decision, Sue feels that they finally have a solid version of the decision that can be sent out for formal review and approval. But before doing so, she wants to create an “official” version of this decision that reflects the work done up to now. And this is the version that she wants the stakeholders to review and approve.

Blueworks Live has a Revision History feature that enables you to take a snapshot of a decision at any point in time, and give that snapshot a name. The snapshot is saved in the Blueworks Live repository and can be previewed at any point. It can also be restored, in which case it again becomes the current version of the decision.

Throughout the course of the project, Sue has occasionally taken personal snapshots of her work as backup, in case she made mistakes and needed a way to easily back them out. Blueworks Live has an “Undo” button, which lets her back out one change at a time, but having her personal snapshots made her feel more comfortable when making a large number of changes. At this point, however, she is ready to create a project snapshot that will be the version of the decision that everybody reviews and works with going forward. Sue clicks the “Revision History” button on her Validate Application decision diagram and creates a snapshot that she names “Version 0.9 – Out for Review”, as shown in Figure 4-77 on page 111 and Figure 4-78 on page 111. When she has gotten the official sign-off from the key stakeholders, she will create a 1.0 version of the decision. Now she is ready to send the decision out for formal review and approval.

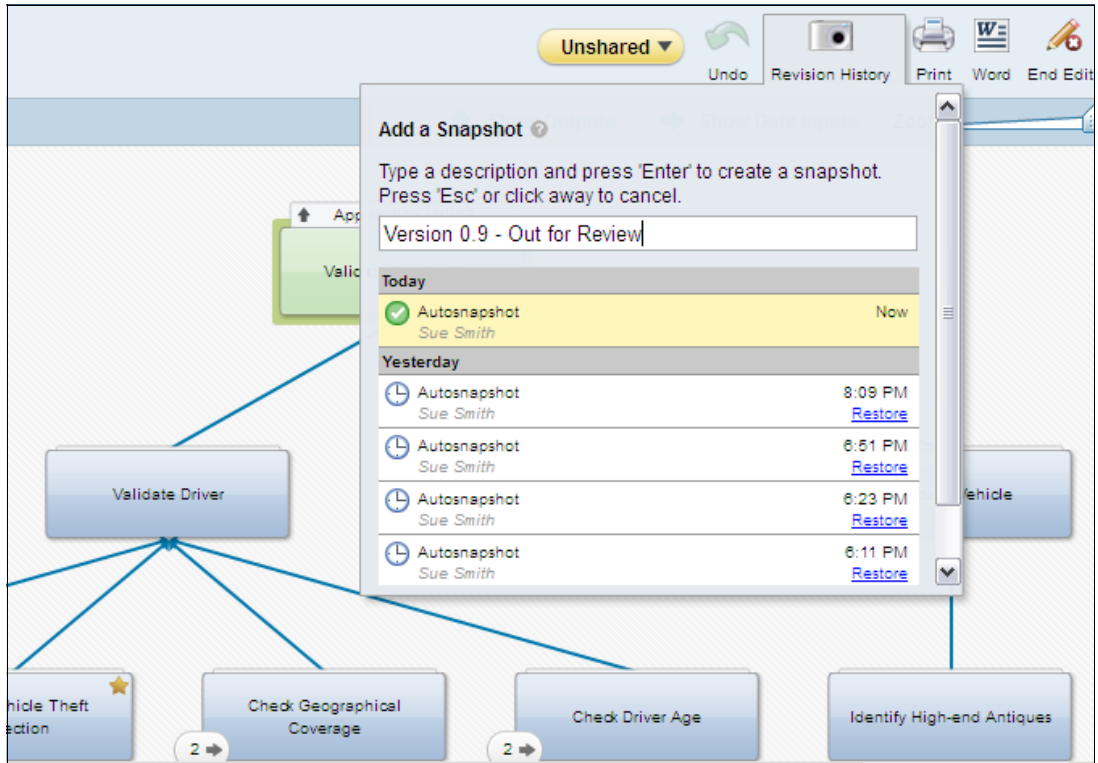


Figure 4-77 Creating a named snapshot in Blueworks Live

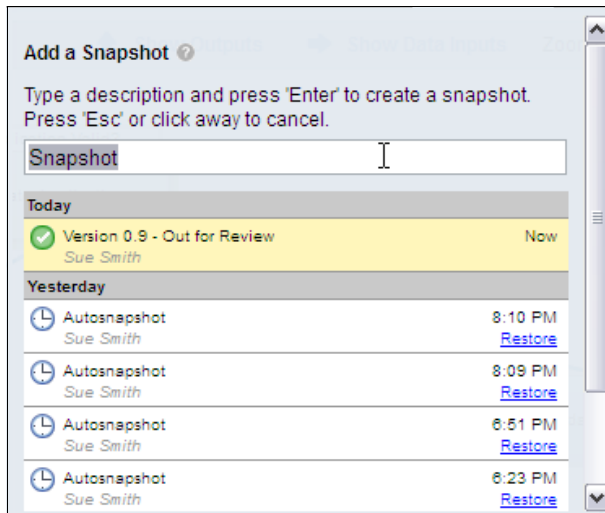


Figure 4-78 The new snapshot becomes the new version of the decision

4.6.4 Sharing decision information

There are many situations where it can be useful to access or share decision information outside of Blueworks Live. For example, Sue may need to work somewhere where she does not have access to the Internet. She may need to interact with co-workers who do not have access to Blueworks Live. The AIC team may be holding a decision discovery workshop where they want to have larger printouts of the decision diagrams up on the walls for everybody to be able to easily see and discuss. There are several tools in Blueworks Live that can help with this.

Creating a PDF version of the decision diagram

You can generate a PDF version of any decision diagram in Blueworks Live, then choose to either share the PDF file or print it. In Figure 4-79, you can see how Sue navigated to the upper right corner of the decision diagram, and is clicking the Print button.

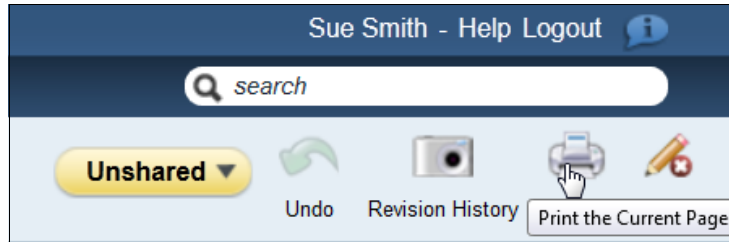


Figure 4-79 Printing the decision diagram

Blueworks Live will generate a PDF version of the diagram, which she can either save to distribute or to view later, or she can go ahead and print. She has the option of choosing various sizes when printing the diagram as shown in Figure 4-80.

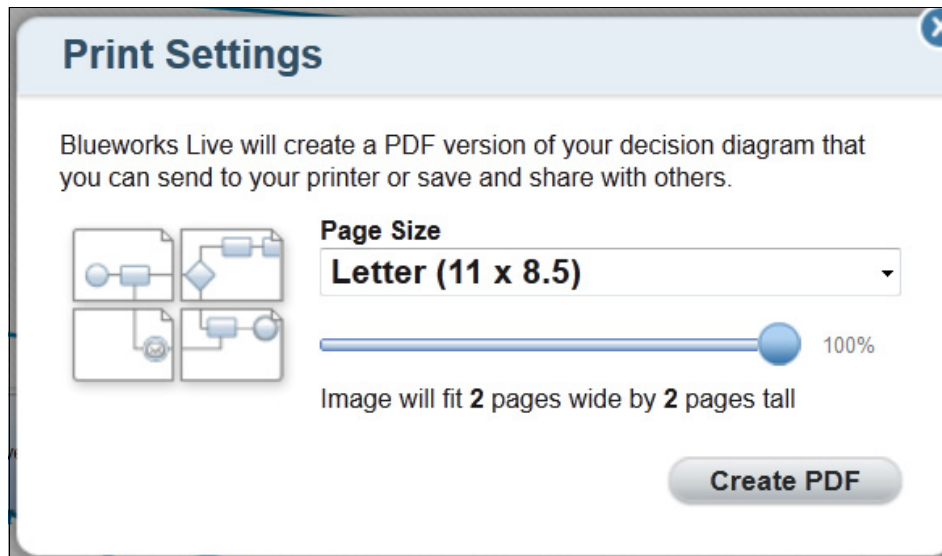


Figure 4-80 Printing the PDF

Exporting a decision to Excel

Blueworks Live can also export all of the individual elements that make up a decision to Excel. This includes everything from the high-level decision properties (KPIs, Decision Volume, Change Frequency, and so on) to the data inputs, sub-decision outputs, and decision tables.

As the decision discovery project at AIC nears completion, Ginny schedules a meeting with her IT lead, Prasad, to discuss the possibility of improving their system by automating some of the decisions that they have documented. To prepare for this discussion, she exports the Validate Application decision to Excel by selecting from the drop-down menu immediately to the right of the decision, as shown in Figure 4-81 on page 113. She can do this from either the Space view or the Decision tab of the library.

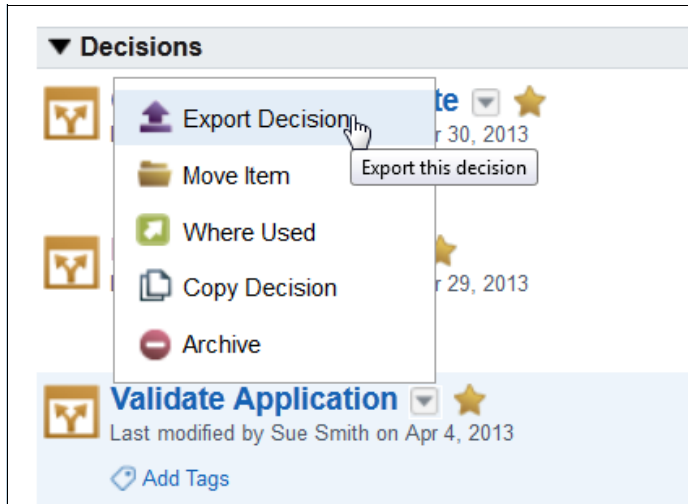


Figure 4-81 Exporting Validate Application Decision information to Excel

There is quite a bit of information available in the exported Excel spreadsheet. In Figure 4-82, you can see the Decision Tables tab, which Ginny finds particularly useful for her discussion with Prasad.

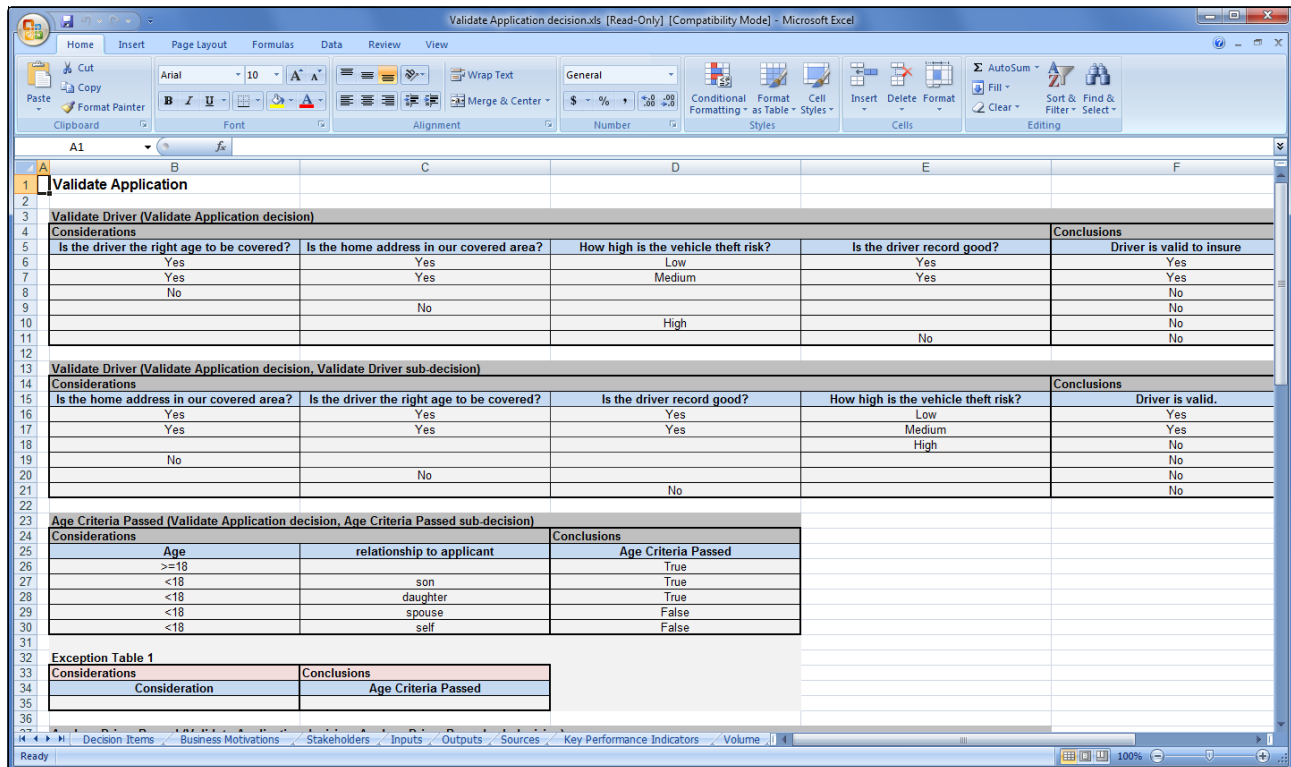


Figure 4-82 The exported decision information in Excel

Exporting a decision to Word

Decision information can also be exported in the form of a Microsoft Word document. The generated Word document is organized more like a report than the Microsoft Excel export, so can be more suitable when distributing a decision for review.

You can export to a Word document either from the right-click menu of a decision in the library, or from the upper right corner of the decision diagram, as shown in the Figure 4-83 and Figure 4-84.

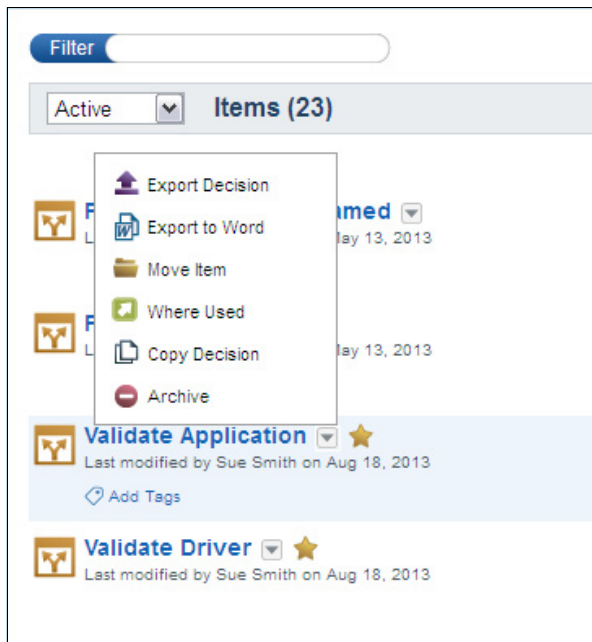


Figure 4-83 Exporting to Word from the right-click menu in the library

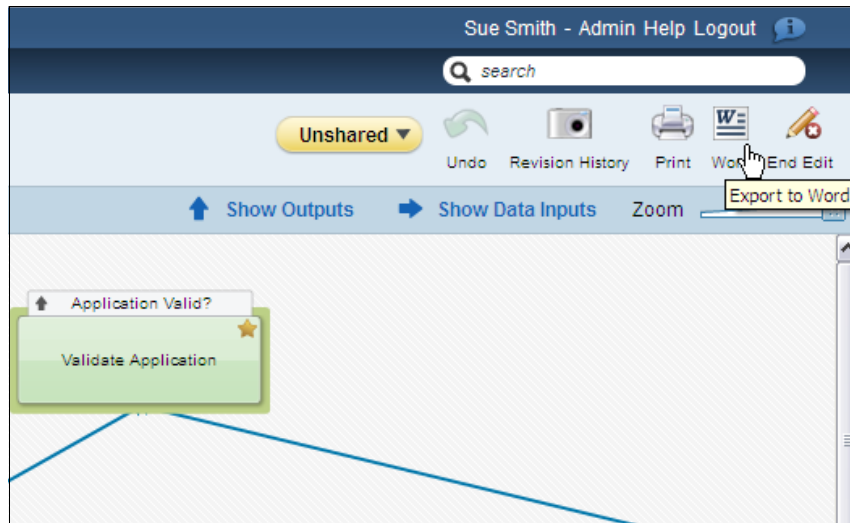


Figure 4-84 Exporting to Word from the decision diagram

The exported Word document contains all of the decision details.

Getting a link to a decision

Sharing a link to a decision can be very useful because it enables the recipient to navigate right into Blue works Live and view the decision directly. Of course, the person you are sharing the link with must have access to Blueworks Live in order to be able to access the decision diagram. To get a link, right-click the top-level decision, or any sub-decision or data input on the Blueworks Live decision diagram.

In Figure 4-85, you can see Ginny getting a link to the Validate Application decision. She will then copy and paste that link into the meeting invite that she sends Prasad so that he can familiarize himself with the decision before their meeting.

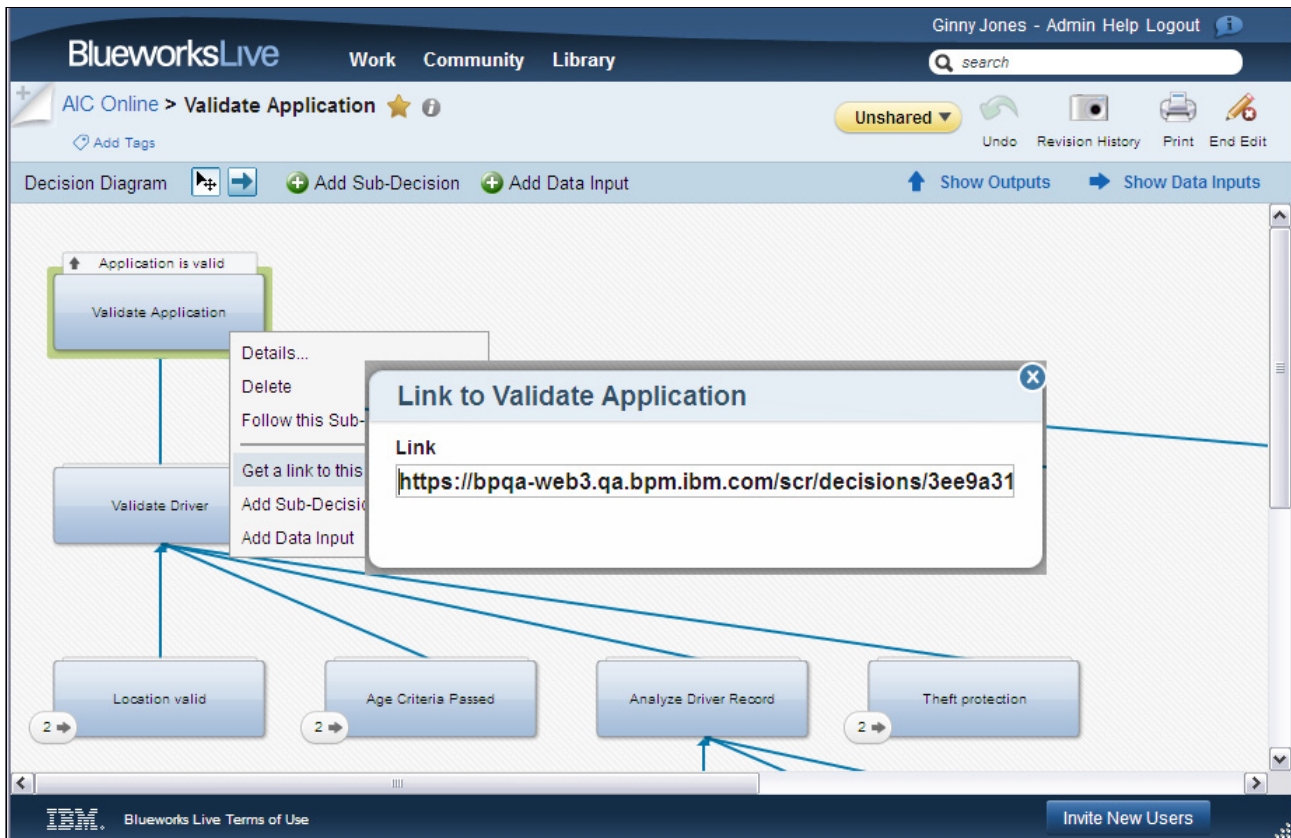


Figure 4-85

4.6.5 Formal validation of decisions

Sue has collaborated with a number of people within AIC throughout the decision discovery project and some of them have been involved informally validating her work on an ongoing basis. Now, as she considers who should provide formal validation of the Validate Application decision, she identifies the following people:

- ▶ Paul: Her boss and CEO. In this small company, he is also the business owner of this decision.
- ▶ Mark and Megan: Fellow underwriters with knowledge of the decision.
- ▶ Ginny: The head of IT, who is also the owner of the decision discovery project.

Of course, Paul and Ginny are quite busy running AIC and will likely delegate some of their review. But they are ultimately the ones that will have to sign off on the final decision, thus assuming ownership and accountability for it.

Decision validation with Blueworks Live

Blueworks Live provides the ability to configure, launch, and monitor simple workflows. Users can select and configure an existing process template, such as an approval or checklist from the supplied library. This capability can be very useful for initiating and tracking the review and approval of decisions. Let us look at how this works.

Configuring a review and approval workflow

The Work page in Blueworks Live is where you go to automate simple processes, see any tasks assigned to you, and to check the status of any workflows that you initiated. To configure a review and approval workflow, press the **Automate a Process** button on the right side of the Work page as shown in Figure 4-86.

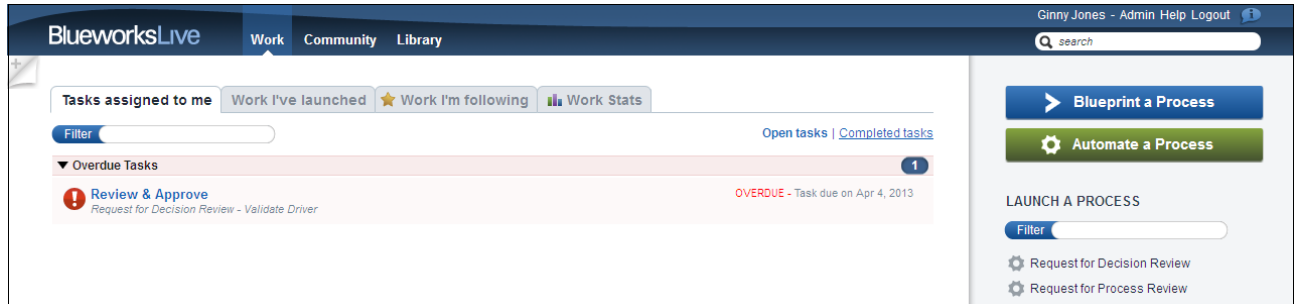


Figure 4-86 Automating a process

You can also do this from the Library or Space view by pressing the **Compose New** button and selecting **Process App** from the drop-down list box. In either case, the following dialog will appear and prompt you for the name and the type of Process App you would like to configure. For a review and approval workflow, you select “simple workflow” as shown in Figure 4-87.

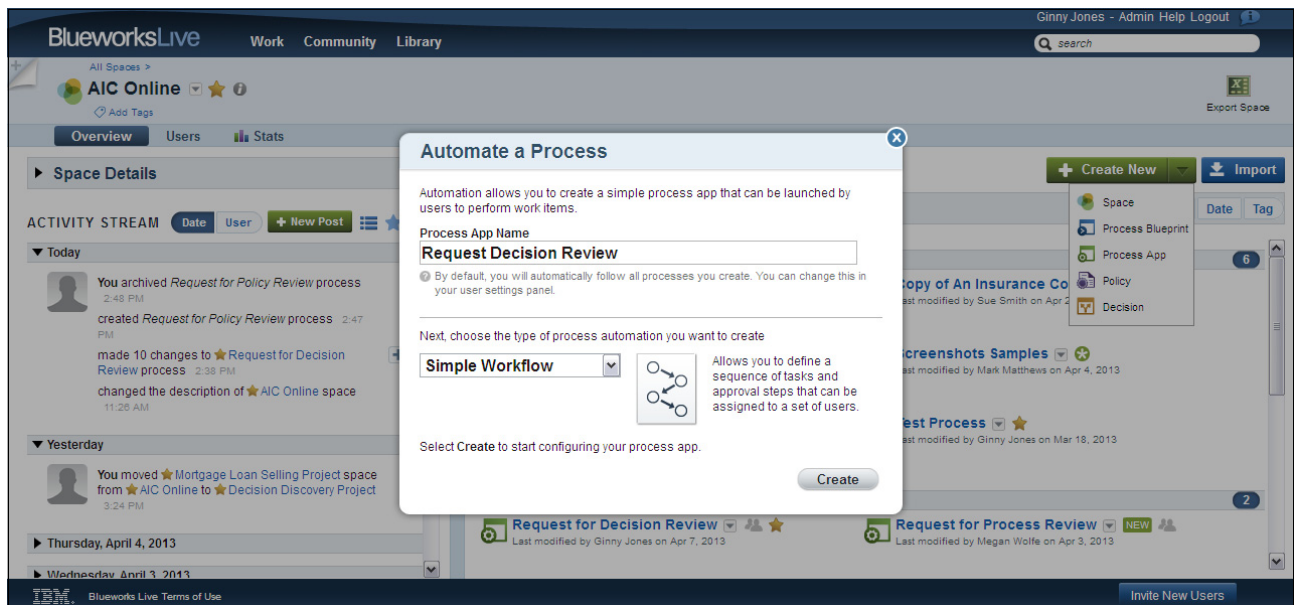


Figure 4-87 Creating a process app

You will then be asked to configure the Process App and will be presented with a template to complete. As you can see in the following diagram, we are configuring the “Request for Decision Review” process app. Each piece of information required by the template is described in the callout to the left of each field in Figure 4-88 on page 117.

BlueworksLIVE Work Community Library

AIC Online > Request for Decision Review

Configure Work

Configure the Process App

Configure the process app information and details below. Once configured, the app can be shared as an action on the work page. Users can choose this action to launch the process app to create, assign and manage tasks.

This is the link a user will select to launch the process app. Select a name that accurately describes the process.

Action Label

Additional information for the user who launches the process app. Keep it brief. (200 chars max.)

Launch Instructions

The Work Subject and Details sections are completed by the user who launches the process app. You can modify the labels for these sections to suit your needs.

Decision:

Comments

You can attach files that will be included when the process app is launched. Users can attach additional files at launch.

Attachment(s)

There are currently no files attached.

Define the tasks for the process app's workflow assignment and approvals. Leave sections blank if they are to be completed by the user launching the process app.

Workflow Tasks

Order	Task description	Task assigned to	Approval step
1	Review	Megan Wolfe	<input checked="" type="checkbox"/> <input type="button" value="+"/> <input type="button" value="-"/>
2	Review	Mark Matthews	<input type="checkbox"/> <input type="button" value="+"/> <input type="button" value="-"/>
3	Review	Sue Smith	<input type="checkbox"/> <input type="button" value="+"/> <input type="button" value="-"/>
4	Approve	Ginny Jones	<input type="checkbox"/> <input type="button" value="+"/> <input type="button" value="-"/>

Figure 4-88 Configuring a process app

Once configured, the process app can be shared and appears as an action on the right side of the Work page. The name of the action will correspond to whatever action label was provided in the template. Users can then choose this action to launch the process app to create, assign, and manage tasks as is described in the following section.

Launching a review and approval workflow

The “Request for Decision Review” process app has already been pre-configured by somebody on Ginny’s team. Now that Sue is ready to send the “Validate Application” out for final validation, she finds this process app in the “Team Sandbox” space and opens it up for work, as shown in Figure 4-89.

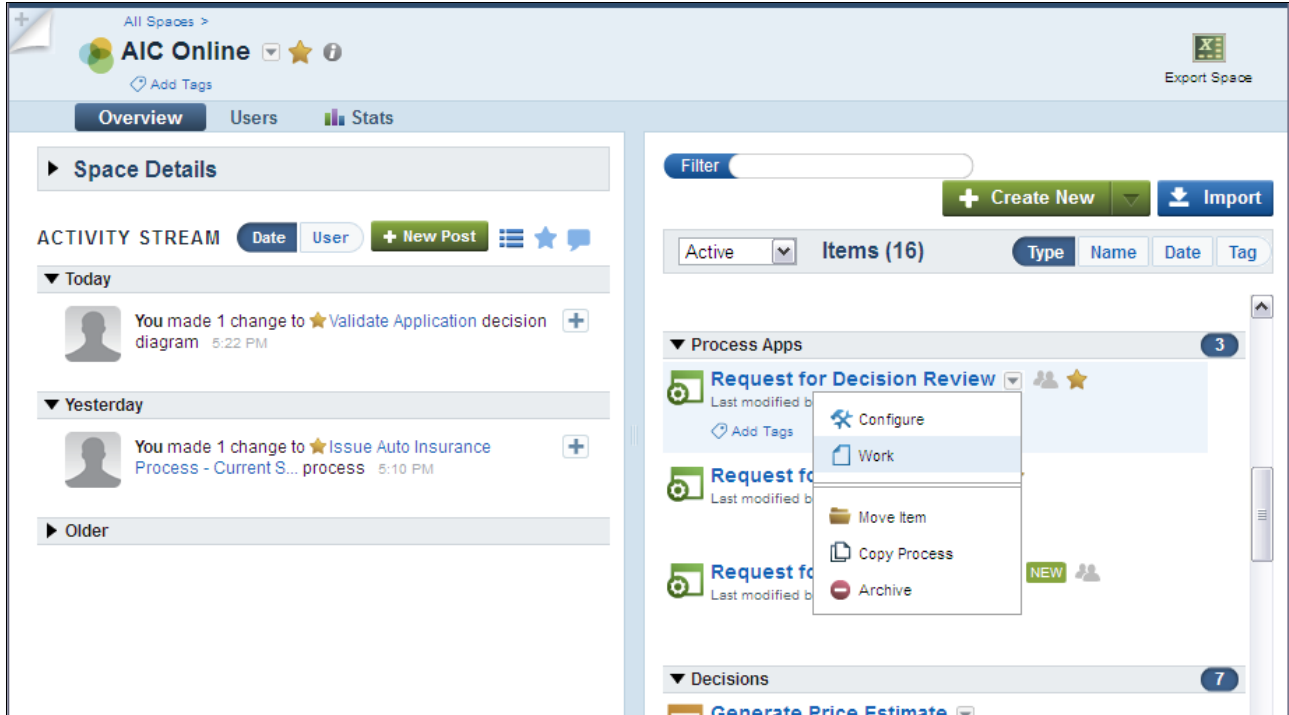


Figure 4-89 Finding the Request for Decision Review process App

Sue completes the request by providing the decision name, a brief message to the reviewers and approvers, and a link to the decision (which she copied and pasted from the decision diagram). She selects the names of the individuals that she is requesting review or approval from, specifies the deadlines and launches the process app. You can see Sue’s request in Figure 4-90 on page 119.

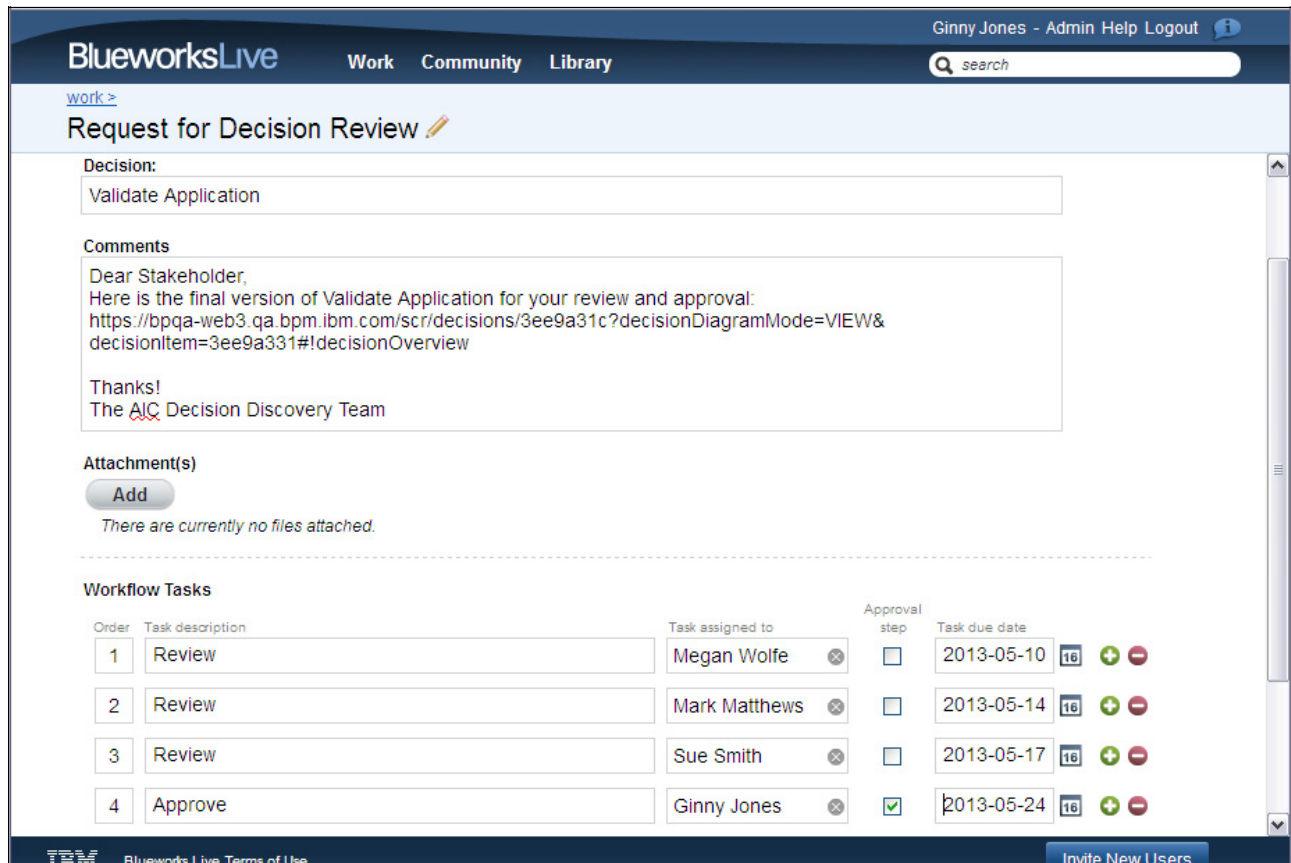


Figure 4-90 Launching a Decision Review Request

When Sue presses **Launch** at the bottom of the window, this kicks off the workflow and sends out task assignment notifications via email to the designated individuals. Once notified, they can manage their tasks in the Blueworks Live Work pages. Here they can view and complete tasks that have been assigned to them, leave comments, attach documents, and reassign their tasks if need be. The other participants will be able to see these comments and attachments. And Sue can monitor the progress of tasks in this workflow from the Work pages to make sure that everybody completes their tasks on time, so they can meet their project deadlines.

Once any reviewer feedback has been incorporated into the decision, Sue will create a baseline 1.0 version of it and notify the extended team. She feels that this has been a really interesting project. She has learned a lot, and thinks that having the documented decisions available along with AIC's documented business processes in Blueworks Live will improve their business operations going forward. And when they are ready to automate those decisions, she is sure this decision discovery work will prove to be invaluable.

4.6.6 Next steps at AIC

Once a decision has been validated, it is important to govern (that is, manage) any changes made to it. The next step for AIC, now that they have discovered, documented, and validated their key decisions, will be to set up some sort of governance framework for the discovered decisions:

- ▶ They will need to put in place a well understood lifecycle for future decision changes.

- ▶ They will need to identify the specific individuals and organizational roles that will be allowed to make changes to decisions.
- ▶ They will need to formally define the validation process for future decision changes.
- ▶ They will need to log and retain a record of updates to their key decisions.

We will not be following AIC on this next step of their journey because this paper is focused on decision discovery and we have reached the end of that topic.

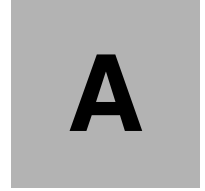
4.6.7 Conclusion

We hope that this Redpaper publication has equipped you with a basic understanding of some of the fundamental concepts, techniques, and benefits of decision discovery. We also hope that you have gained an appreciation for how a tool like Blueworks Live can help facilitate the decision discovery process.

We began with an overview of decisions, and an introduction to Blueworks Live. You learned how to identify the decision points in your business processes and how to capture the high-level decision characteristics. You were introduced to decision modeling and learned about the importance of decision validation. We followed Sue, the head underwriter at AIC, as she applied these techniques to the fictitious auto insurance company's first decision discovery project. We hope that this will enable you to get started discovering the decisions within your organization.

In the appendix, you will find some references that will provide you with a deeper and broader understanding of decision modeling, as well as a summary of automation considerations.

Best of luck in your decision discovery journey.



Automation considerations

Once your decisions have been discovered and documented, you might become interested in automating them. Whether it is as part of a Decision Management or a Business Process Management implementation project, this section provides a very high-level overview of some of the key considerations.

Operational Decision Management and Business Process Management

To manage both processes and decisions, there are approaches, or disciplines, that consider the needs of business process and operational decision governance and administration.

Operational Decision Management and Business Process Management are business disciplines focused on managing business operations. Business operations include both core and supporting areas of the enterprise, but it is aligned to the day-to-day running of the business, rather than setting new direction and strategy.

Operational Decision Management is a business discipline that empowers organizations to discover, design, automate, optimize, and govern repeatable operational business decisions.

Business Process Management is a business discipline that enables organizations to combine people, process, knowledge, and technology to achieve business value.

Figure A-1 on page 123 highlights the confusion, disorder, and rework that can develop in many organizations due to the interaction of disparate existing systems and multiple business roles. There are a number of issues that commonly induce process chaos, this diagram highlights a few of them:

1. Informal tasks and communication (for example, paper or email)
2. Inefficient working environment that spans systems
3. Inconsistent prioritization and decision making
4. Incomplete or inaccurate data flow between systems
5. Lack of control over system and business events (exceptions)
6. Poor visibility into process performance

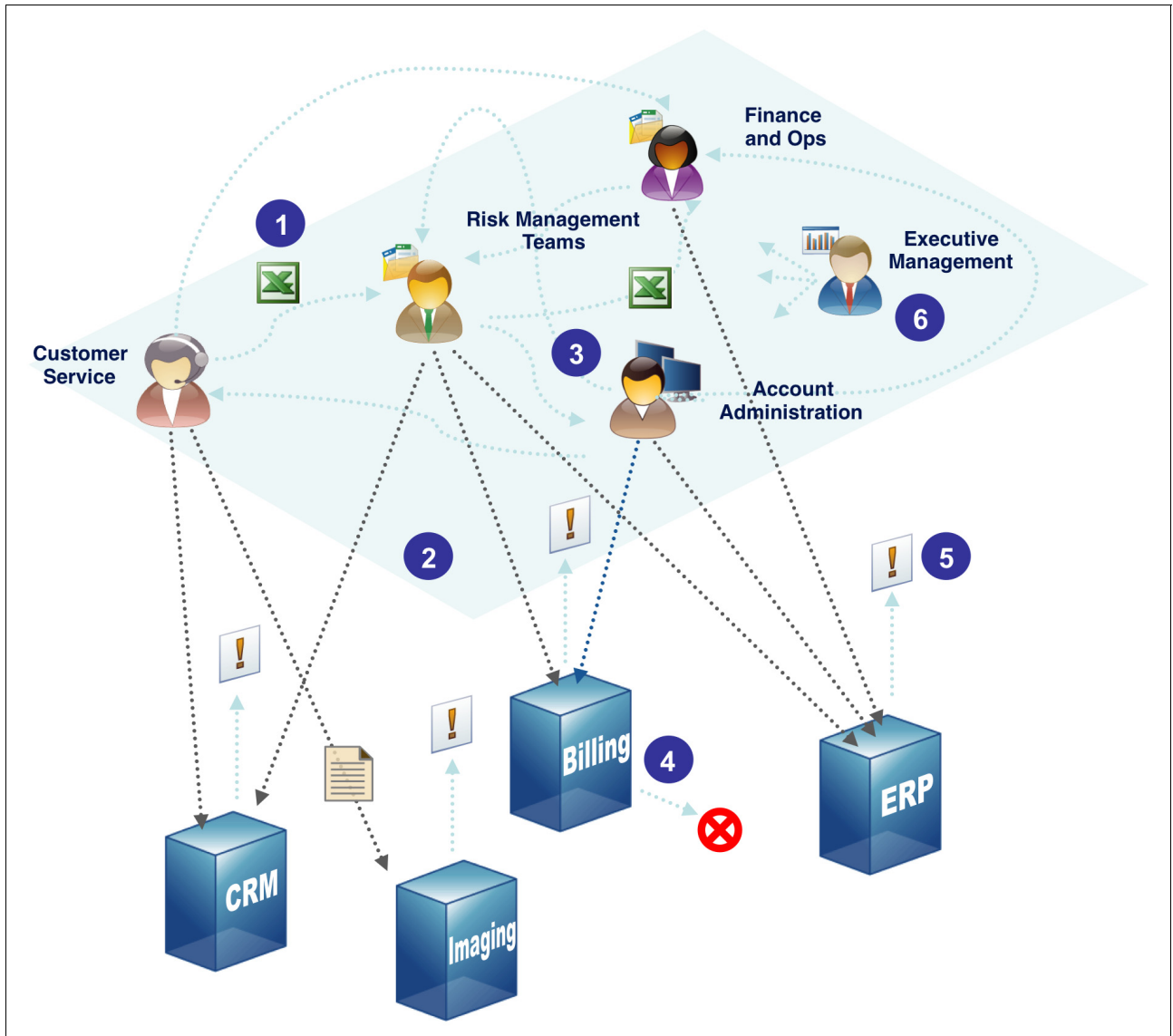


Figure A-1 Process chaos

Figure A-2 on page 124 illustrates how the application of Business Process and Operational Decision Management can restore order to this chaos. This is achieved as a result of the visibility, flexibility, standardization, and control gained through the workflow and decision automation while continuing to leverage existing systems, roles, and information.

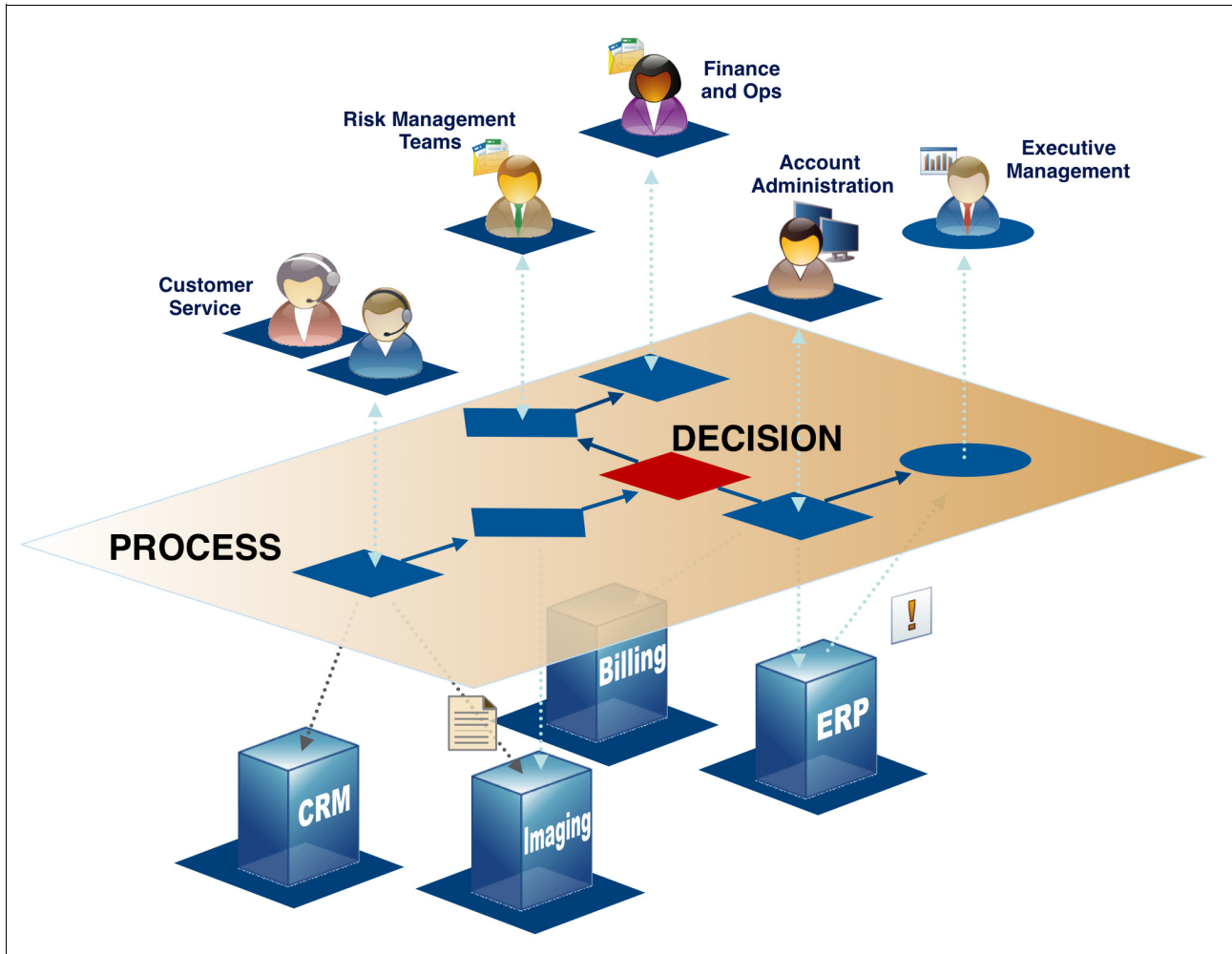


Figure A-2 Process and decisions bring order to chaos

Business Process Management and Operational Decision Management applied together represent a two-pronged approach to business operations improvement. Table A-1 describes the perspectives of both approaches.

Table A-1 Comparing Business Process Management and Operational Decision Management

Business Process Management Smart	Operational Decision Management Smarter
<ul style="list-style-type: none"> ▶ Focuses on <i>breadth</i> of solution ▶ <i>Defines and orchestrates</i> the end-to-end process ▶ Combines automation with user interaction ▶ Allows for <i>visibility</i> ▶ Is fundamentally concerned with the <i>operational efficiency</i> of the organization 	<ul style="list-style-type: none"> ▶ Focuses on <i>depth</i> of solution ▶ <i>Defines and executes</i> specific <i>decision points</i> in processes and applications ▶ Is focused on automating and improving decisions ▶ Allows for <i>flexibility</i> ▶ Is fundamentally concerned with the <i>operational intelligence</i> of the organization

Business Process Management has a broad focus on orchestration and management of disparate tasks, actors, and services that comprise the end-to-end operations of organizations.

Operational Decision Management, however, has a deeper focus on managing automated decisions at specific points in the process. Operational Decision Management is not simply

about handling routing rules inside a business process, rather it is used to potentially automate complex, highly-variable decisions at different points in a process, as well as in other systems that may not be involved in orchestrated processes.

Use Business Process Management and Operational Decision Management together to create smarter, more agile, and dynamic processes; processes that form an extensible foundation for future innovation. This foundation enables business agility, and allows processes to be continually improved over time.

Decision automation: Some considerations

As discussed in the introduction to this paper, automating repeatable, high volume decisions using Decision Management technology can enable organizations to make better decisions faster. The potential exists for dramatically improving business outcomes with this technology, when the *right decisions* are selected for automation. Whether it is about increasing profitability, decreasing risk, improving compliance, or achieving many other wanted business objectives, decision automation projects can produce a significant ROI. In this section, we touch on some of the key factors to consider when evaluating a decision for potential automation. And then we take a very high-level look at some of what is involved in taking a discovered decision through to automation.

Identifying candidates for automation

Not all decisions are good candidates for automation. As discussed earlier in this paper, strategic, *one-off* decisions that require intensive data analysis, human collaboration, and interaction are usually not good candidates. Consider instead automating repeatable decisions that are made frequently and that may be complex. Decisions where the business logic changes frequently, or where the time window for making changes is very short, can also be excellent candidates.

When organizing your decision discovery project, prioritize efforts to focus first on those decisions that have a high impact on key business objectives: cost, revenue, customer satisfaction, profitability, quality, and so on, because the potential for a high ROI is there. It can also be wise to start with decisions where the subject matter expertise is readily available. With access to experts and high-quality sources of documented business knowledge, the project's chances of success will be higher and the job of the discovery team will be easier. It is good to start with some quick wins, as the team ramps up and gains experience with initial decision discovery efforts. Then, the more challenging decisions can be tackled later with confidence.

Decision management technology

Decision management platforms, like IBM Operational Decision Manager (ODM), have become widely used over the last decade to automate decisions. They are perfectly suited for automating decisions that need to be easily updated and quickly deployed, bringing increased agility to the business. They provide a rich set of tools for defining, managing, deploying, and governing decisions. IBM ODM¹, for example, consists of:

- ▶ IBM Decision Center, which features a common repository and tools for business users and analysts to author, change, and manage business rules.

¹ You can learn more about IBM ODM at the following location:

<http://www.ibm.com/software/decision-management/operational-decision-management/websphere-operational-decision-management/about>

- ▶ IBM Decision Server, which provides a robust and scalable runtime environment, along with an Eclipse-based development environment for developing, managing, and deploying decision services.

Transition from decision discovery to automation

As shown in Figure A-3, there are a variety of roles, skill sets, tools, and techniques that are needed at different points in the decision discovery and automation process.

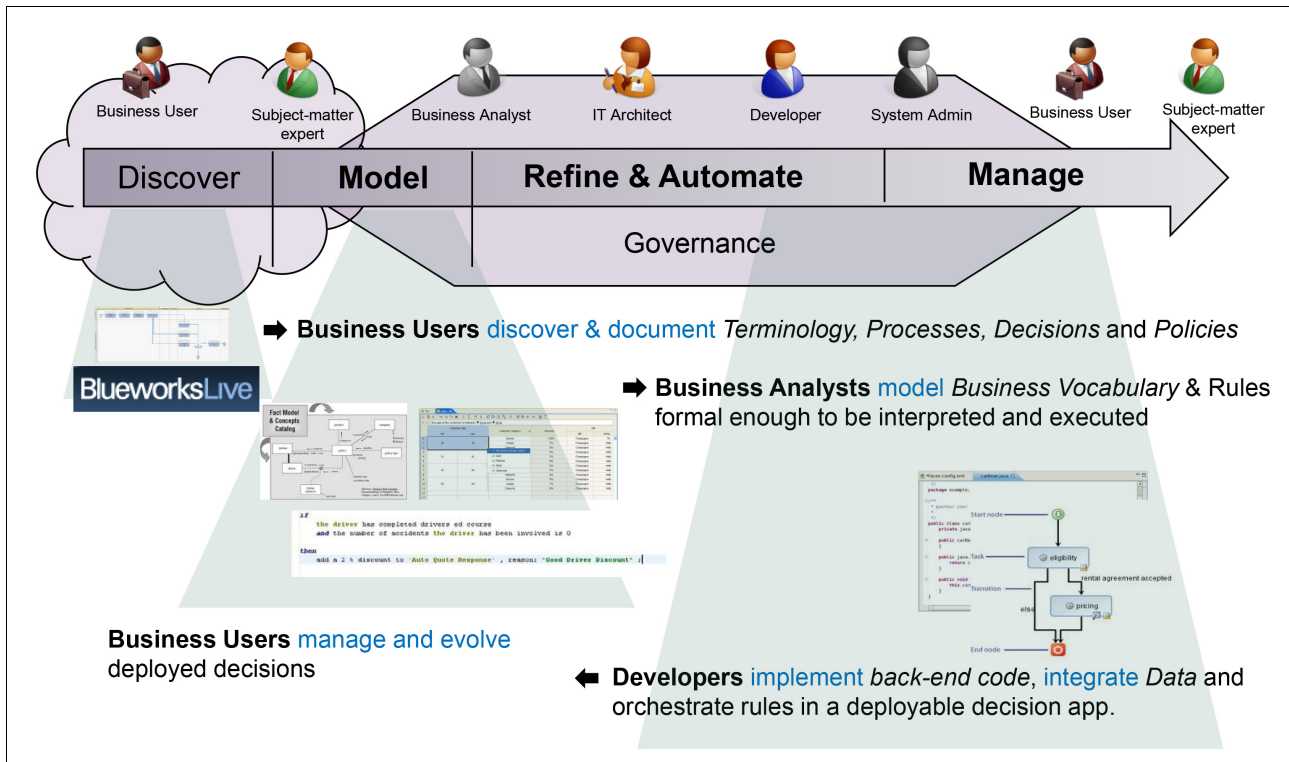


Figure A-3 Decision discovery and automation

Once a decision has been discovered, documented, and validated in Blueworks Live, there are a number of things that need to happen before it can be automated:

- ▶ Data analysis must be done to identify the data structures that are required by the decision, and to map those onto the appropriate enterprise data sources.
- ▶ The decision logic must be formalized. It needs to be unambiguous and based on a structured vocabulary and formal language in order for it to be implemented. Decision logic, when documented in Blueworks Live does not *have* to follow any formal syntax. It can be unstructured text, domain-specific pseudo-code, or whatever form is best understood by the business users documenting, collaborating, and reviewing the decision. To prepare to automate the decision, that logic must be formalized—a task usually performed by the business analyst.
- ▶ The overall solution implementation must be designed. A decision will typically be implemented as a *decision service*, and integrated into a business application or process application (when a Business Process Management System is being used).

A *decision service* is the encapsulation of a decision. It provides a definition of the interfaces that will be exposed to consuming applications, and is reusable by definition.

- Maintenance of decisions should be considered in advance. Governance and change management strategies must be defined and put in place so that decisions can be easily changed and quickly updated once they have been deployed.

A development methodology of some sort is typically used to develop a Decision Management system. Figure A-4 outlines the steps prescribed by one of the more popular IBM ODM implementation methodologies: Agile Business Rule Development (ABRD).

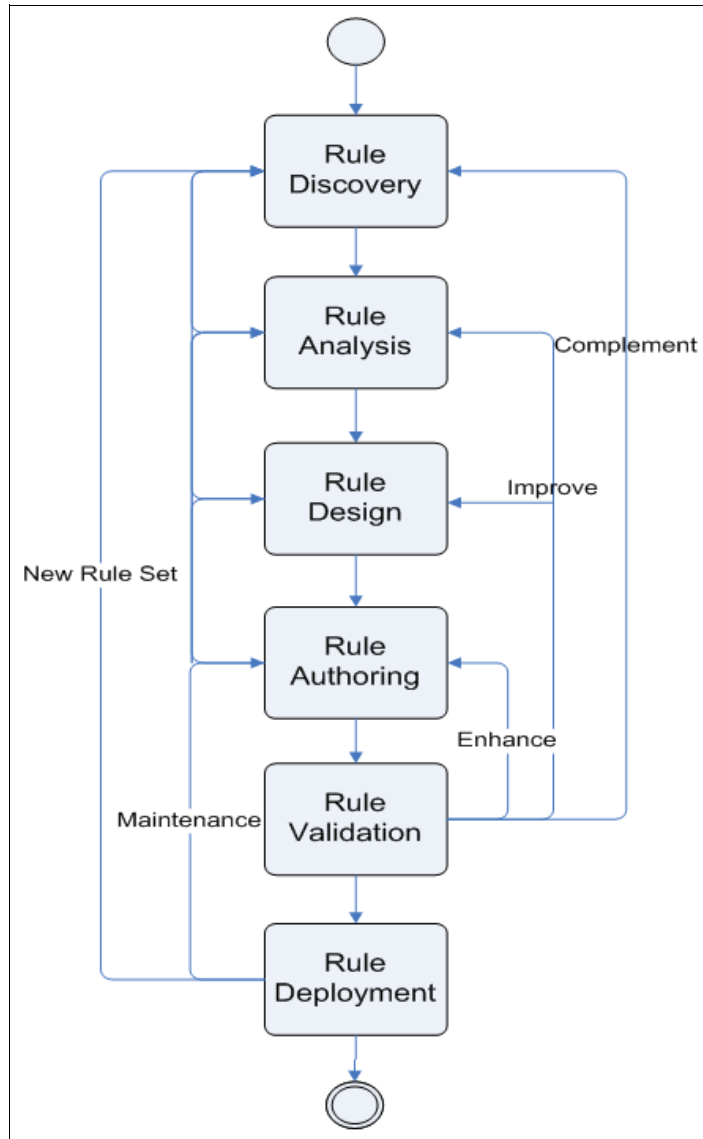


Figure A-4 Agile Business Rule Development

From Blueworks Live to IBM ODM

The specifics of implementing a Decision Management system can differ significantly depending on your choice of technology. Here is a brief overview of some of the steps that are needed to automate decisions discovered with Blueworks Live using IBM ODM.

1. Define a conceptual model representing the inputs and outputs of the decision.
 - This is typically done by creating a UML class diagram. This task is performed by a business analyst.
2. Transform the conceptual model into an execution object model (XOM).

This is the set of Java classes or the XML schema that will be instantiated at runtime. This task is typically performed by a developer.

3. Define the business object model (BOM) based on the XOM.

This provides a layer of business vocabulary on top of the XOM, so that the rules can be understood and potentially authored by business users. The business terminology used should reflect the names of the decision inputs and outputs documented in the Blueworks Live decision diagram, and described in the Blueworks Live glossary.

4. Define the decision signature.

This is the interface that describes the inputs and outputs to the decision. It is defined by the rule set parameters that are associated with the rule project.

5. Map the decomposed decision into rule tasks in a rule flow.

This is done using a graphical editor and diagram in IBM ODM that resembles a miniature (and very simple) process flow.

6. Author the business rules in the Business Action Language (BAL).

These business rules should correspond to the decision rules documented in the decision tables in Blueworks Live for the decision and its sub-decisions.

7. Deploy the decision service

To do this, a developer extracts a rule set from the rule project and associates it with a RuleApp. The RuleApp is then deployed to ODM's Rule Execution Server, at which point it is available for invocation.

8. Manage changes to the decision service.

In order to accommodate future changes to the deployed decision, governance strategies should be put in place:

- Establish a governance strategy for managing changes to the decision. This is focused on the business lifecycle of decision change:
 - Who are the business stakeholders with permission to update, review, and approve changes to decision metadata, structure, and logic?
 - What are the various states that a decision passes through between the point that the need for a change has been identified, until a final, valid version of the updated decision is available?
 - How do we keep track of these changes, and keep our business artifacts organized throughout the process?
- Establish a governance strategy for managing changes to the decision service. This will be focused on the IT lifecycle of deploying updates to decision services when business changes are made to the decision:
 - This involves setting up and following a safe, controlled, and auditable change management process for the deployed software artifacts.
 - This process will need to be synchronized with the business change lifecycle of the decision, described above. In order to coordinate these lifecycles, it will be very important for IT and the business stakeholders to collaborate closely.

This was a very high-level summary.

Additional information: If you are interested in reading more about automating decisions with IBM ODM, the IBM Redbooks publication *Making Better Decisions Using IBM WebSphere Operational Decision Management*, REDP-4836, is an excellent resource.

Process improvement and automation: Some considerations

As discussed in the introduction to this paper, automating business processes using business process management technology can enable processes to become more visible, repeatable, and manageable. When a business decision is automated, the decision achieves similar qualities to the process, but it also becomes more flexible. Decision management software enables quick, easy, yet managed, updates to decision criteria. Processes that have their decisions extracted and automated separately from the process gain this quality of flexibility.

Automation of processes and decisions with management software can immediately accrue business value by increasing efficiency, reducing errors, eliminating uncontrolled process variation, reducing rework, improving decision quality, and enabling managed change, when the right process and decisions are selected for automation. In this section, we touch on some of the key factors to consider when evaluating a process for potential automation. Then, we take a very high-level look at some of what is involved in taking a discovered process, with its decisions, through to automation.

Identifying candidates for automation

Not all processes are appropriate for automation. A process that has a business case and an ROI in alignment with enterprise goals is a potential candidate for automation. There are a number of aspects to examine to determine suitability for analysis and possible automation:

- ▶ Scope and complexity
- ▶ Business value
- ▶ Readiness for change

Scope and complexity

A business process can involve numerous participants, process owners, and experts. It may have many suppliers, customers, inputs, and outputs and it can use various systems. You can use the analyze tool in IBM Blueworks Live to estimate the complexity of the process related to these attributes. A more complex process might not be an ideal candidate for an initial automation project. For an experienced organization, however, automation of a complex process may be attempted through a phased approach. In this case, the scope should be considered so that value can be achieved with a limited scope for each phase.

Business value

A business process selected for automation should provide value to the business. The impact can involve the elimination of pain points in the current process, and the achievement of business goals. Assess the pain points and the goals that have been documented for the process in IBM Blueworks Live to determine if they are attainable through process improvement and automation.

Readiness for change

A process automation initiative cannot be successful without business support and readiness for change. Improving the process and decisions means abandoning the status quo. The relevant process and decision SMEs, participants and experts, need to be available and engaged, for the project to be successful. Continual improvement through Business Process Management (BPM) is an on-going journey, so resources need to be committed beyond the short term.

Change cannot occur without leadership. The process ownership needs to be clearly identified to successfully and proactively guide the improvements. A process owner provides stewardship, direction, and oversight, and, most importantly, is the champion for the end

solution. Embarking on a BPM journey without an owner introduces risk; risk that the end solution will not deliver business value due to a lack of vision and accountability.

Additional information: For more information about selecting processes for analysis and automation, see the IBM Redbooks publication *Scaling BPM Adoption: From Project to Program with IBM Business Process Manager*, SG24-7973.

Business Process Management technology

Business Process Management (BPM) suites, like IBM Business Process Manager, are generally used to automate process orchestration. BPM suites are appropriate for automating processes that need to manage people and systems together in cohesive workflows. They provide a comprehensive set of tools for defining, managing, and deploying processes and services. IBM Business Process Manager, for example, consists of two major editions:

- ▶ *IBM Business Process Manager Standard* provides human-oriented process orchestration with service integration capabilities.
- ▶ *IBM Business Process Manager Advanced* provides both human-oriented process orchestration and enterprise-level integration capabilities.

Additional information: You can learn more about IBM Business Process Manager here: <http://www.ibm.com/software/integration/business-process-manager>

Service-oriented architecture

Service-oriented architecture (SOA) is a business-oriented architectural approach for IT. It enables your business through integrating business tasks as services. Automated processes are a form of business task integration. An automated decision task is a form of service, a decision service. Decision services can be reused, together with other business services, across multiple automated business processes in a service-oriented architecture.

Additional information: You can learn more about SOA from IBM at the following site: <http://www.ibm.com/software/solutions/soa/what-is-soa.html>

Transition from process discovery to automation

Once the business process discovery provides an adequate representation of the business needs and scope, you can start planning for implementation. In the Implementation phase, a business process is iteratively developed. It starts as a concept in IBM Blueworks Live and ends up as a running business process solution.

A key component of a successful BPM implementation project is the employment of a playback at the end of each development iteration. A *playback* is an opportunity for the process owner and other process SMEs to walk through the evolving process solution to validate that it is meeting their requirements. It is not a demonstration by BPM developers. Playbacks promote the ownership, sponsorship, and eventual acceptance of the solution by the business.

In a typical BPM implementation project, there are at least four playbacks. Each playback has its own specific validation goals.

- ▶ Playback 0: Validate the design of the analyzed process
- ▶ Playback 1: Validate the design of the user interface
- ▶ Playback 2: Validate the definition of the integrations
- ▶ Playback 3: Validate the cohesive process solution

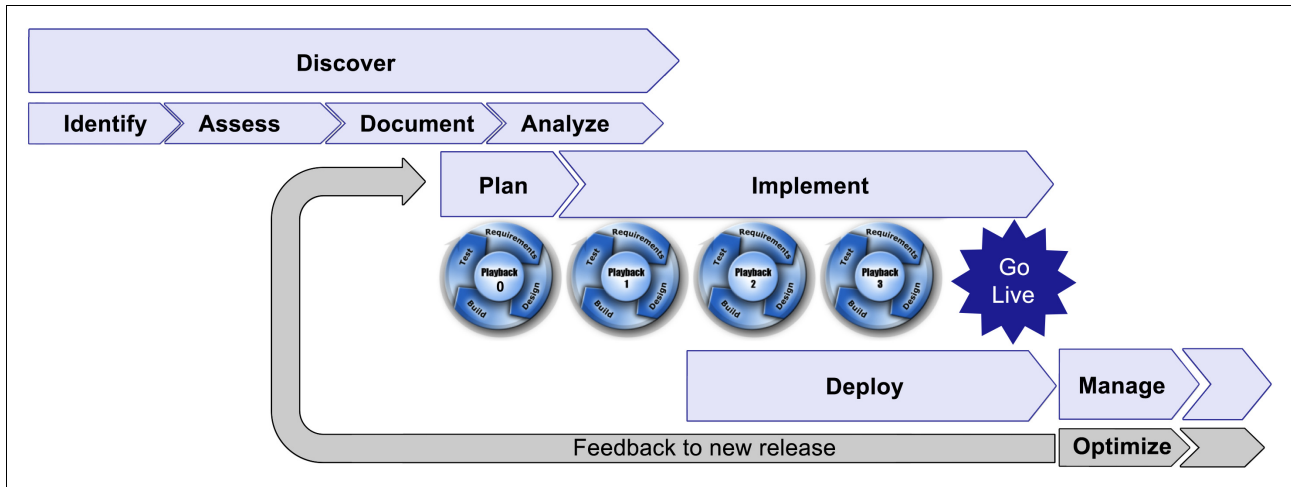


Figure A-5 Process improvement lifecycle

Figure A-5 shows the planning of the BPM implementation that takes place at the end of the Discover and Document phase (usually performed in IBM Blueworks Live). The actual implementation follows the planning and starts after Playback 0. Implementation will require BPM Developers to participate to build the solution with the BPM suite of software, such as IBM Business Process Manager.

IBM Business Process Manager provides a Process Center (a central repository for BPM project assets) and authoring tools: Process Designer (to model, implement, and demonstrate business processes) and Integration Designer (to implement integrations to external systems), to support collaborative process and integration service development.

Implementation starts from an initial process model design. Usually this is the process documented in IBM Blueworks Live. An implementation is built from this process definition. Then, in the Process Designer tool, you build and refine the process application. At any time during development, the process application can be run to validate it. This will always be done during playbacks, but it is also often done to informally demonstrate and discuss the process application with business users and get their direct feedback on the running solution.

Figure A-6 shows that the build, refine, and demo of the process application is a continuous cycle of feedback. This occurs over the number of defined iterations, each ending in a playback, which is identified during the planning phase. Once the overall process application has been developed, you can test and review it. The outcome of this testing may introduce changes to the implementation and even to the initial process definition. The final stage is to install the process application into an environment where it can be deployed to business users.

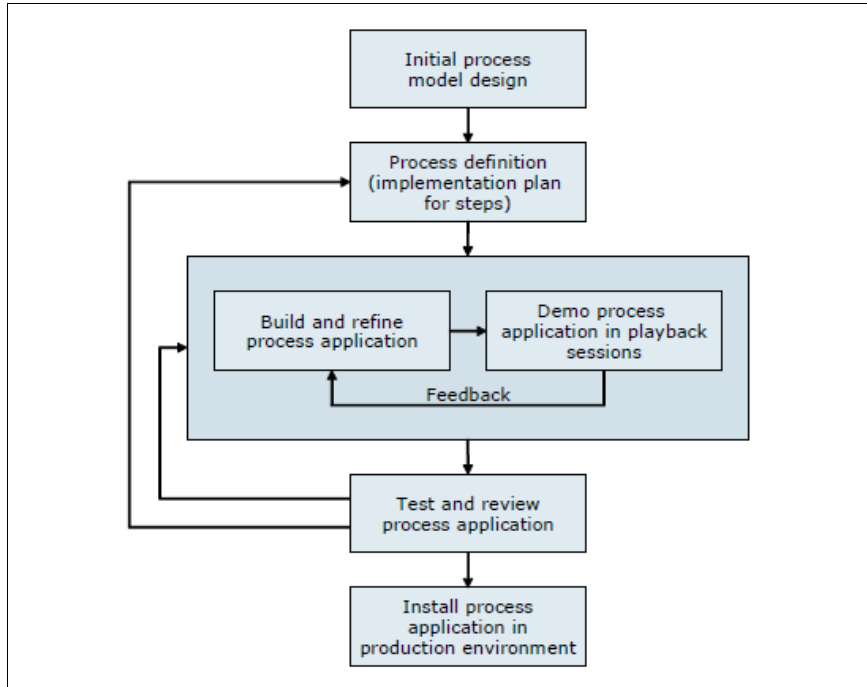


Figure A-6 Process implementation

Additional information: For more information about taking your process from discovery through to automation, see the IBM Redbooks publication *Scaling BPM Adoption: From Project to Program with IBM Business Process Manager*, SG24-7973.

Conclusion

In this appendix, we introduced some of the key factors to consider when automating decisions. We touched on Decision Management and Business Process Management technology. And we provided an overview of the transition from decision and process discovery to decision and process automation. For a deeper understanding of these topics, explore some of the additional resources that are highlighted in the next section.

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 Blueworks Live

To learn more about IBM Blueworks Live:

- ▶ Sign up for a trial account at no charge at the following site:
<https://www.blueworkslive.com>
- ▶ Once you have your trial account, you can access various forms of help: Product overview pages, video tutorials and more at the following Help site:
<https://www.blueworkslive.com/scr/help>

Decision Modeling

To learn more about decision modeling, decision analysis, and decision tables:

- ▶ OMG Decision Model and Notation (DMN):
<http://www.omgwiki.org/dmn-rfp/doku.php>
- ▶ “The Decision Model” - by Barbara von Halle and Larry Goldberg of Knowledge Partners International (book and website):
<http://www.kpiusa.com/index.php/The-Decision-Model/the-decision-model.html>
- ▶ Business Rule Solutions provides many resources for learning about Decision Analysis:
<http://www.brsolutions.com/publications.php#primers>
- ▶ Jan Vanthienen provides many learning resources for decision tables:
<http://www.econ.kuleuven.ac.be/tew/academic/infosys/members/vthienen/default.htm>
- ▶ “More on Decision Tables and the Decision Model in Practice” by Barbara von Halle and Larry Goldberg of Knowledge Partners International, which is published in Modern Analyst:
<http://www.modernanalyst.com/Resources/Articles/tabid/115/articleType/ArticleView/articleId/2376/More-on-Decision-Tables-and-The-Decision-Model-in-Practice.aspx>

Decision Management

To learn more about IBM ODM and Decision Management:

- ▶ James Taylor at Decision Management Solutions provides books and other materials for learning about Decision Management:
<http://www.decisionmanagementsolutions.com>
- ▶ IBM ODM Overview:
<http://www-01.ibm.com/software/decision-management/operational-decision-management/websphere-operational-decision-management/about>
- ▶ IBM Redbooks Publication: “Making Better Decisions using IBM WebSphere® Operational Decision Management”:
<http://www.redbooks.ibm.com/abstracts/redp4836.html>
- ▶ “Agile Business Rule Development – Process, Architecture and JRules examples” (Boyer and Mili, 2011, Springer Press):
<http://link.springer.com/book/10.1007/978-3-642-19041-4/page/1>
- ▶ ABRD Eclipse plug-in download site:
http://www.eclipse.org/epf/downloads/configurations/pubconfig_downloads.php

Business Process Management

To learn more about IBM BPM and Business Process Management:

- ▶ IBM Business Process Manager Overview:
<http://www.ibm.com/software/integration/business-process-manager>
- ▶ IBM Redbooks Publication “Scaling BPM Adoption: From Project to Program with IBM Business Process Manager”:
<http://publib-b.boulder.ibm.com/abstracts/sg247973.html>

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IBM Global Services

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Discovering the Decisions within Your Business Processes using IBM Blueworks Live



**Uncover the decisions
within your business
processes**

**Learn to use IBM
Blueworks Live to
discover and
document decisions**

**Leverage decisions to
create smarter
business processes**

In today's competitive, always-on global marketplace, businesses need to be able to make better decisions more quickly. And they need to be able to change those decisions immediately to adapt to this increasingly dynamic business environment. Whether it is a regulatory change in your industry, a new product introduction by a competitor that your organization needs to react to, or a new market opportunity that you want to quickly capture by changing your product pricing. Decisions like these lie at the heart of your organization's key business processes.

In this IBM Redpaper publication, we explore the benefits of identifying and documenting decisions within the context of your business processes. We describe a straightforward approach for doing this by using a business process and decision discovery tool called *IBM Blueworks Live*, and we apply these techniques to a fictitious example from the auto insurance industry to help you better understand the concepts.

This paper was written with a non-technical audience in mind. It is intended to help business users, subject matter experts, business analysts, and business managers get started discovering and documenting the decisions that are key to their company's business operations.

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