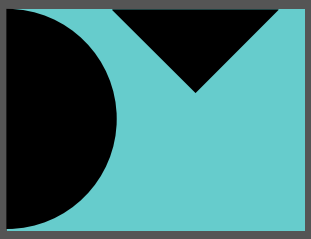

DECISION MANAGEMENT SOLUTIONS

An Introduction to Decision Modeling with DMN

Building a Decision Requirements Model using the new Decision Model and Notation (DMN) makes for better business analysis and improved system requirements.

The Object Management Group has recently adopted the Decision Model and Notation[1] standard. Here's why you should use it to define your decision requirements.

Why Model Decisions

Experience shows that there are three main reasons for defining decision requirements as part of an overall requirements process:

1. Current requirements approaches don't tackle the decision-making that is increasingly important in information systems.
2. While important for all software development projects, decision requirements are especially important for projects adopting business rules and advanced analytic technologies.
3. Decisions are a common language across business, IT and analytic organizations improving collaboration, increasing reuse, and easing implementation.

Gaps in Current Requirements Approaches

Today organizations use a variety of techniques to accurately describe the requirements for an information system.

Most systems involve some workflow and this is increasingly described by business analysts in terms of business process models. Experience shows that when process modeling techniques are applied to describe decision-making, the resulting process models are over complex. Decision-making modeled as business process is messy and hard to maintain. In addition, local exceptions and other decision-making details can quickly overwhelm process models.

By identifying and modeling decisions separately from the process, these decision-making details no longer clutter up the process. This makes business processes simpler and makes it easier to make changes.

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[1] The current spec can be found at http://www.omg.org/spec/DMN/Current

However identify decision-making as a task in a process (or as a step in a use case or as a requirement) can result either in long, detailed descriptions that are confusing and contradictory or short descriptions that lack the necessary detail. All this has to be sorted out during development, creating delays and additional costs.

By modeling the decisions identified, a clear and concise definition of decision-making requirements can be developed. A separate yet linked model allows for clarity in context.

Decision modeling is a new technique in the International Institute of Business Analysts (IIBA) Business Analyst Body of Knowledge (BABOK® 3.0).

Business Rules & Advanced Analytics Projects

Successful business rules and analytic projects begin by focusing on the decision-making involved. For business rules projects, clarity about decision requirements scopes and directs business rules analysis. Today, many business rules analysis can seem never-ending, with teams trying to capture all the rules in a business area. The result is often a "big bucket o'rules" that are poorly coordinated and hard to manage. Instead, by understanding which decisions will be made, when and to what purpose, it is now easy to tell when business rules analysis is complete.

For advanced analytic projects a clear business objective is critical to success. Evidence is growing that specifying this objective in terms of the decision-making to be improved by the analytic is one of the most effective ways to do this. Established analytic approaches such as CRISP-DM stress the importance of understanding the project objectives and requirements from a business perspective, but to date there are no formal approaches to capturing this understanding in a repeatable, understandable format. Now business analysts have the tools and techniques of decision requirements modeling to identify and describe the decisions for which analytics will be required. How the data requirements support these decisions, and where these decisions fit, is clarified and the use of analytics focused more precisely.

The value proposition of analytics is almost always to improve decision-making. Read our white paper, Framing Analytic Requirements, for more information.

In both cases, then, it is essential to first define the decision-making required and only then focus on details like the specific business rules or predictive analytic models involved. Specifying a decision model provides a repeatable, scalable approach to scoping and managing decision-making requirements for both business rules and analytic efforts.

A Shared Framework and Implementation Mechanism

Decision modeling provides a framework that teams across an organization can use. It works for business analysts, business professionals, IT professionals and analytic teams. Decisions are also easily tied to performance measures and the business goals of a project. This makes it easier to focus project teams where they will have the highest impact and to measure results.

Many business analysts have known all along that decisions, and decision-making, should be a "first class" part of the requirements for a system. Systems that assume the user will do all the decision-making fail to deliver real-time responses (because humans struggle to respond in real-time), fail to deliver self-service or support automated channels (because there is no human available in those scenarios) and fail front-line staff because instead of empowering them with suitable actions to take it will require them to escalate to supervisors. What business analysts have lacked until now is a standard, established way to define these requirements.

Enterprise Architects meanwhile are chartered with fitting business rules and analytic technologies like data mining and predictive analytics into their enterprise architecture. A service oriented platform and architecture, supported by integration and data management technology does not have obvious "holes" for these technologies. Decisions are both the shared framework and the technical mechanism to easily implement these technologies.

Decision modeling is a powerful technique for business analysis and for enterprise architecture. Using the standard DMN notation to specify Decision Requirements Diagrams and so specify a Decision Requirements Model allows the accurate specification of decision requirements. Decision Modeling is also central to Decision Management, a proven framework that ties business rules and analytics to business objectives.

Most process models today are developed using the Business Process Model and Notation (BPMN) standard published by the Object Management Group. The DMN standard has been designed to work alongside BPMN, providing a mechanism for modeling the decision-making represented in a Task within a process model. DMN need not be used with BPMN but it is highly compatible.

By focusing on the decisions that matter to an organization Decision Management accelerates adoption of a Business Rules Management System or Predictive Analytic Workbench, focuses you where you will have the highest impact, ensures business ownership of the business rules, and delivers agility and continuous improvement of the decisions across the company.

Decision modeling is an iterative approach to defining the requirements for decision-making in your systems.

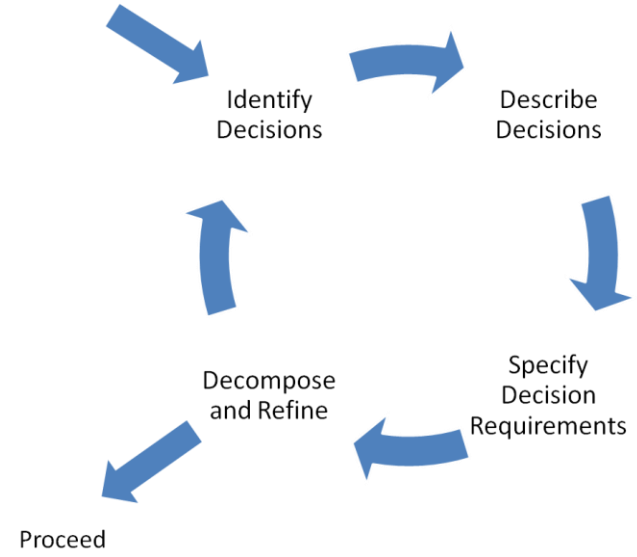
An Overview of Decision Modeling

Decision modeling has four steps that are performed iteratively:

1. Identify Decisions.
   Identify the decisions that are the focus of the project.
2. Describe Decisions.
   Describe the decisions and document how improving these decisions will impact the business objectives and metrics of the business.
3. Specify Decision Requirements.
   Move beyond simple descriptions of decisions to specify detailed decision requirements. Specify the information and knowledge required to make the decisions and combine into a Decision Requirements Diagram.
4. Decompose and Refine.
   Refine the requirements for these decisions using the precise yet easy to understand graphical notation of Decision Requirements Diagrams. Identify additional decisions that need to be described and specified.

This process repeats until the decisions are completely specified and everyone has a clear sense of how the decisions will be made.

Figure 1: Iterative Decision Modeling Cycle



At this point you can generate a requirements document, packaging up the decision-making requirements you have identified. This can act as the specification for business rules implementation work or for the development of predictive analytics.

Alternatively you can extend the model with decision logic, such as decision tables, to create an executable specification of your decision-making.

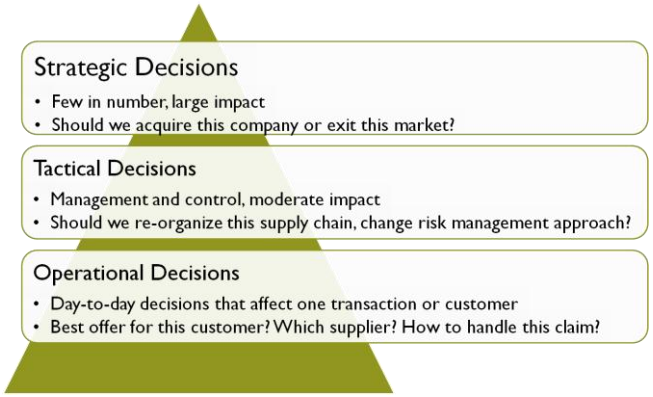
For a detailed discussion of decision modeling with DMN, download our white paper "Decision Modeling with DMN".

Not every decision is equally appropriate for decision modeling as we will see in the next section.

Suitable Decisions for Decision Modeling

Organizations make decisions of various types as shown in Figure 2.

Figure 2: Different Types of Decisions



They make infrequent but large impact strategic decisions. Much analysis is done before the decision is made and the implications for a business can be dramatic. Regular tactical decisions involving management and control are also made. There is generally still time and energy for significant analysis but there is time pressure too, a need for consistency and the opportunity to learn what works. Finally every organization makes large numbers of operational decisions about individual transactions or customers. Time pressure is often extreme and these decisions must generally be embedded into operational systems and processes.

Characteristics of Suitable Decisions

Decision Requirements Modeling can be used for any decision. Because Decision Requirements Models take some time and energy to build most organizations will only do so when a number of things are true of the decision:

- There is clear value to defining them because they will be made multiple times (often many, many times) and have enough complexity to warrant modeling. Some combination of being complexity and repetition is what generally makes it worth building a Decision Requirements Model.
- They are non-trivial because many policies or regulations apply, there is a wide range of options to select from or lots of data to consider for instance. If the way a decision is made must change often, if it is very dynamic, or if there is a mix of drivers combined with a more modest pace of change then that will also make the decision non-trivial. Almost any decision that involves an assessment of fraud, risk, customer opportunity or similar through the analysis of historical data is non-trivial.
- The value of the decision must be measurable and should be definable in advance. We should be able to identify the KPIs and metrics that will be improved by a better decision or weakened by a poor one.

Decision Categories

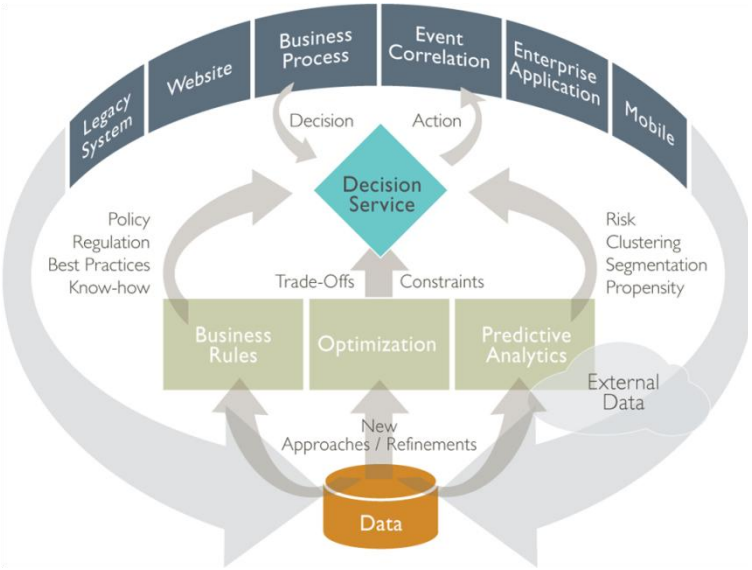
We can categorize operational decisions into various types, though some decisions include characteristics of several types. For instance:

- **Eligibility or Approval**—Is this customer/prospect/citizen eligible for this product/service?
- **Validation**—Is this claim on invoice valid for processing?
- **Calculation**—What is the correct price/rate for this product/service?
- **Risk**—How risky is this supplier's promised delivery date and what discount should we insist on?
- **Fraud**—How likely is this claim to be fraudulent and how should we process it?
- **Opportunity**—What represents the best opportunity to maximize revenue?
- **Maximizing**—How can these resources be used for maximum impact?
- **Assignment**—Who should see this transaction next?
- **Targeting**—What exactly should we say to this person?

Decision Services

Having identified high-ROI operational decisions and modeled them so you know what to do to improve them, your next step is to design and build an automated decision making solution. The aim is to create independent Decision Services to replace the decision points currently embedded in business processes and operational systems.

Figure 3:Decision Services At The Center



For a detailed discussion of the decision management architecture, download our Decision Management Systems Platform Technologies Report.

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Contact Us

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