

# Red Hat Process Automation

## Introduction

Businesses today are looking for new ways to engage with their customers, partners, and suppliers, and respond to changing market needs. Business applications that automate operations and interact with internal and external enterprise systems are at the forefront of this effort, and new approaches to application development and integration have become critical to business success. One such approach recognizes that models of business processes and decisions can form the basis of new business applications, and that model-driven applications can be more quickly and easily developed than those built from traditional programming languages. To support this approach, new development tools are required, along with business modeling languages such as Business Process Modeling Notation (BPMN)<sup>1</sup> and Decision Model and Notation (DMN)<sup>2</sup>.

Red Hat® Process Automation addresses the need for model-driven applications that can be developed more quickly through an integrated set of products that includes:

- ▶ Developer tools and runtimes.
- ▶ Business modeling tools for process and decision management.
- ▶ Automated DevOps pipelines.

Red Hat Process Automation allows business and IT teams to collaborate and develop applications that automate operations while adapting to changing market needs.

## Challenge

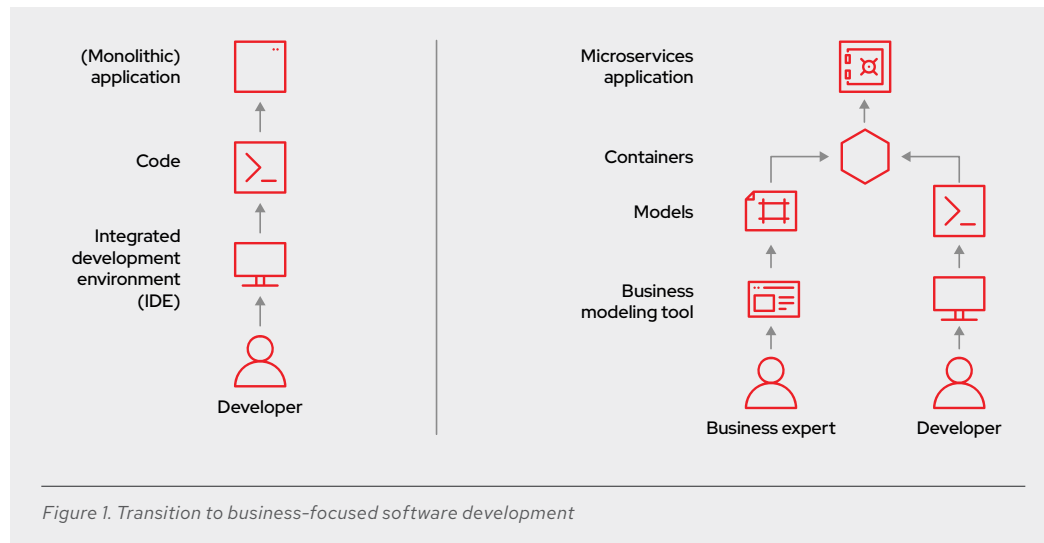
Modern application development projects present many technological and organizational challenges. Applications must automate critical business processes and decisions while operating in a modern cloud environment and connecting to a wide range of external and internal systems and datastores. Creating these applications requires a radical change in how software is built—moving away from traditional software development to a process that lets developers and business experts contribute directly to application logic.



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<sup>1</sup> "Business Process Model and Notation." Object Management Group. <https://www.omg.org/bpmn/>  
<sup>2</sup> "Decision Model and Notation." Object Management Group. <https://www.omg.org/dmn/>



New application development platforms serve the needs of both business experts and IT developers. Such platforms support the creation of business models alongside program code, and can support continuous integration and continuous delivery (CI/CD) pipelines that deploy models as scalable, secure, microservices-based applications.

## Red Hat's approach

Red Hat Application Services Portfolio includes a business automation solution, Red Hat Process Automation. Red Hat Process Automation is a set of products for developing containerized microservices and applications that automate business operations.

### Red Hat OpenShift Container Platform

Red Hat OpenShift® Container Platform is a trusted Kubernetes enterprise platform and includes enterprise-grade Linux® operating system, container runtime, networking, monitoring, container registry, authentication, and authorization solutions. These components are tested together for unified operations on a complete Kubernetes platform spanning every cloud.

### Red Hat Runtimes

Red Hat Runtimes is a set of products, tools, and components for developing and maintaining cloud-native applications. It offers lightweight runtimes and frameworks (like Quarkus) for highly distributed cloud architectures, such as microservices.

### Red Hat Process Automation Manager

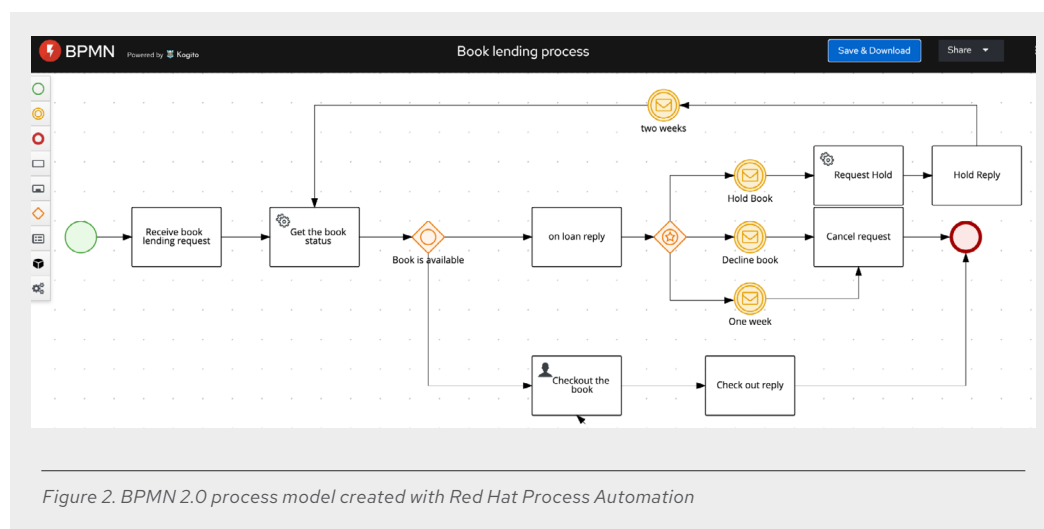
Red Hat Process Automation Manager provides tools and runtimes that let developers build applications that automate business decisions and processes. Process Automation Manager supports standard notations for describing models of business processes and decisions, which can be deployed as executable automated services. Such services can be modified by changing the underlying models, allowing business users to adapt services to changing requirements without needing IT support to update application code.

Process Automation Manager includes business process management (BPM), business rules management (BRM), and complex event processing (CEP) technologies, and is compliant with industry standards like BPMN 2.0 and DMN 1.3 for process and decision management.

## Key capabilities

### Process modeling

Red Hat Process Automation includes tools for creating models of business processes using the BPMN 2.0 standard. These models include the steps within a process, as well as decisions taken along the way. The process designer lets users see all the different paths and options a process can follow, depending on decisions made across its execution.



Red Hat Process Automation also supports dynamic case management, a less-structured approach to business processes suitable for use cases too complex to lay out all possible process paths in advance. In these scenarios, the modeling tools lets users describe typical steps taken, with the actual paths determined at runtime depending on the content of each case.

### Decision modeling

Red Hat Process Automation includes tools for creating models of operational decisions using the DMN 1.3 standard. These models describe the inputs, outputs, and rules governing how a decision is made in a standard graphical format. Full support is provided for DMN decision tables and friendly enough expression language (FEEL), allowing for even complex decision logics to be accurately modeled.

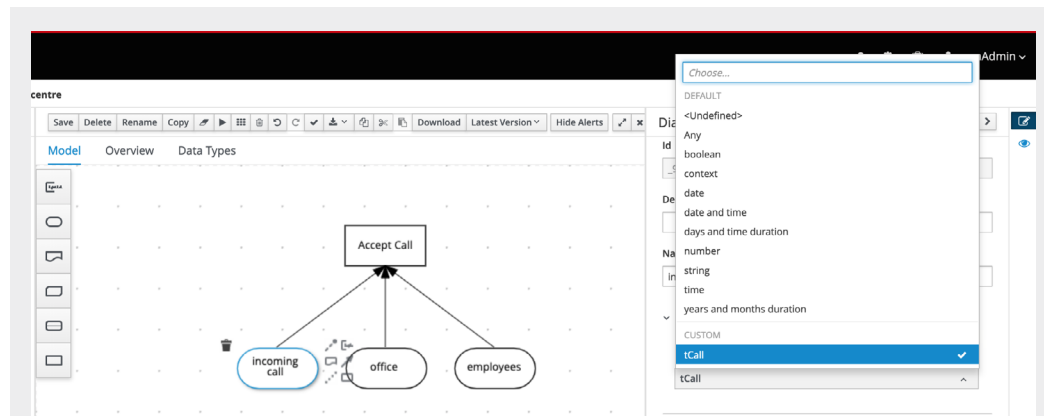
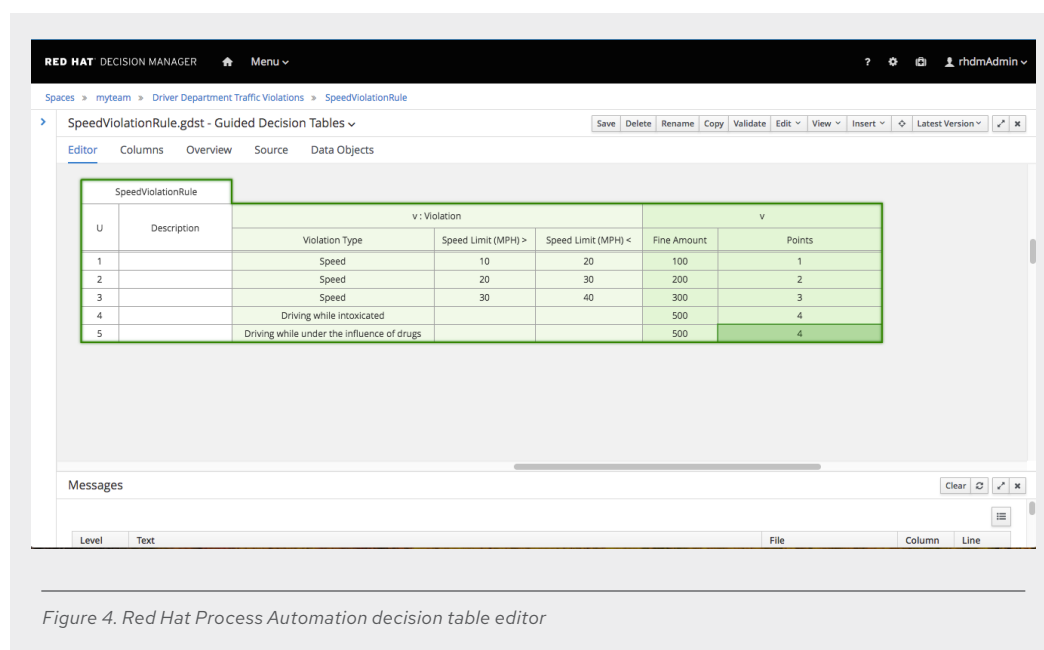


Figure 3: A DMN decision model created with Red Hat Process Automation

In addition to DMN support, Process Automation includes alternative mechanisms for modeling business decisions including:

- ▶ Decision tables, which provide an easy-to-use, spreadsheet-like mechanism for defining the business rules that govern a decision.
- ▶ A guided rule editor, which provides a powerful approach for modeling more complex decisions via a high-level rule language.



SpeedViolationRule		v: Violation				
U	Description	Violation Type	Speed Limit (MPH) >	Speed Limit (MPH) <	Fine Amount	Points
1		Speed	10	20	100	1
2		Speed	20	30	200	2
3		Speed	30	40	300	3
4		Driving while intoxicated			500	4
5		Driving while under the influence of drugs			500	4

Figure 4: Red Hat Process Automation decision table editor

Runtime evaluation of decision models is performed by the open source Drools 7 rules engine, a highly scalable, forward- and backward-chaining inference engine capable of efficiently processing massive rule and data sets. The open source Java™ business process management (jBPM) 7 business process management engine is used to automate process and case models, and can efficiently support many thousands of process and case instances.

## Data modeling and forms

To enable process and decision models to be included in an application, Process Automation provides tools for users to define additional artifacts needed for execution, including data models and the user interface for manual steps. Several scripting languages are also provided.

A data modeling tool provides a simple drag-and-drop mechanism for defining the data items accessed by a process. These items could be as simple as a single variable—such as the price of a product—or as complex as an entire document, such as an insurance application.

For user interface design, a form builder provides a quick way to lay out form content, input fields, and basic validation.

## Dashboards

Red Hat Process Automation includes facilities for users to create sophisticated dashboards for the display of business data. Dashboards can contain indicators that are connected to data sources in disparate systems. With customization, business users can easily create a view of key performance indicators (KPIs) needed for agile decision making.

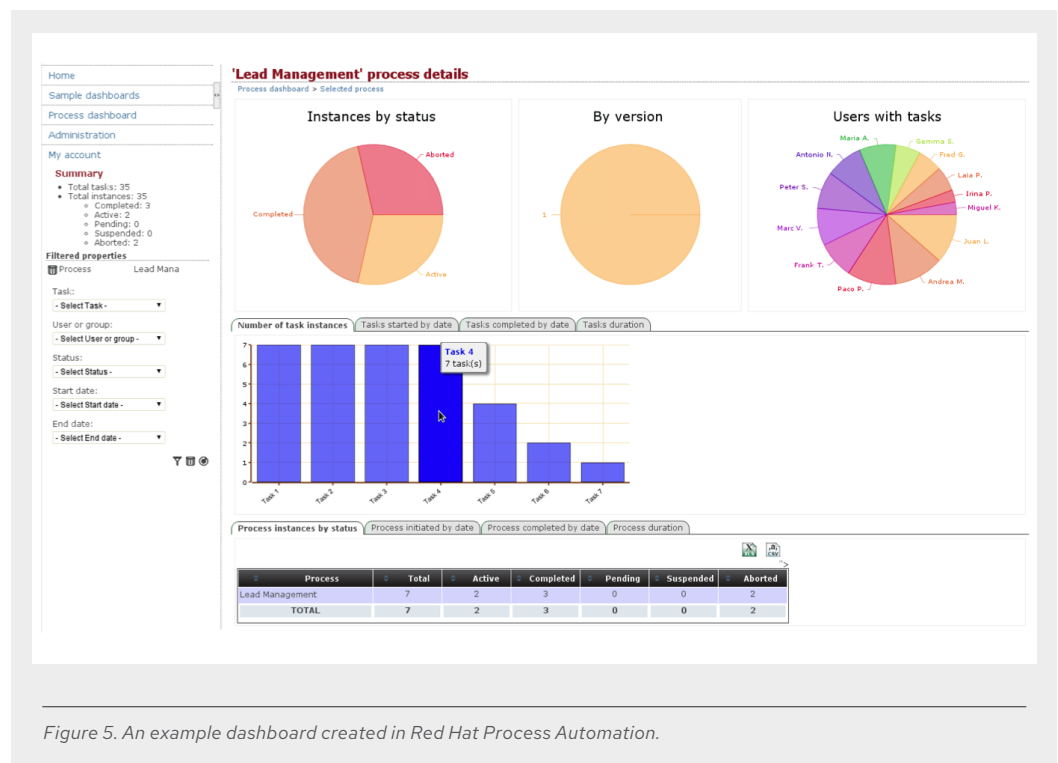


Figure 5. An example dashboard created in Red Hat Process Automation.

## Conclusion

Red Hat Process Automation provides the tools needed by developers and business experts to develop and deploy modern cloud-native business applications based on models of business decisions and processes. When used with OpenShift Container Platform, the toolset supports a DevOps approach to application development and provides a full CI/CD pipeline to ensure proper governance of the development life cycle.

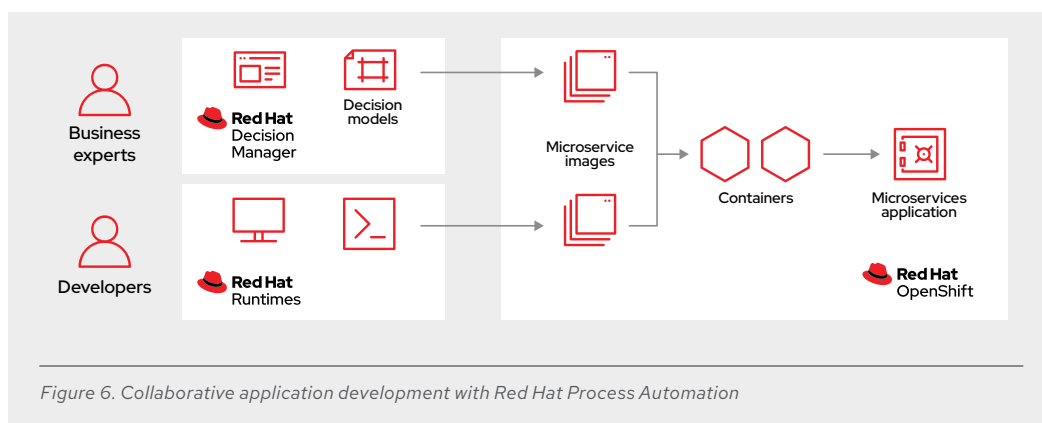


Figure 6. Collaborative application development with Red Hat Process Automation

Modern digital businesses need engaging and flexible customer-facing applications, and technologies like Red Hat Process Automation provide the tools needed by developers and business users to create these new applications.

If you are undertaking a digital transformation project, Red Hat's extensive global partner network can help you support business automation projects. Red Hat partners are certified in Process Automation, BPM approaches, business rules implementation, and system integration.

To learn more, [contact Red Hat](#) or [find a partner](#).



## About Red Hat

Red Hat is the world's leading provider of enterprise open source software solutions, using a community-powered approach to deliver reliable and high-performing Linux, hybrid cloud, container, and Kubernetes technologies. Red Hat helps customers integrate new and existing IT applications, develop cloud-native applications, standardize on our industry-leading operating system, and automate, secure, and manage complex environments. Award-winning support, training, and consulting services make Red Hat a trusted adviser to the Fortune 500. As a strategic partner to cloud providers, system integrators, application vendors, customers, and open source communities, Red Hat can help organizations prepare for the digital future.



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