

**Featuring  
Concept Models**  
ConceptSpeak™

# Business Rule Concepts

**Getting to the Point of Knowledge**

**Fourth Edition**

**by Ronald G. Ross**

Co-Founder, Business Rule Solutions, LLC  
Executive Editor, [BRCommunity.com](http://BRCommunity.com)  
Chair, Business Rules & Decisions Forum Conference



Business Rule Solutions, LLC [BRCommunity.com](http://BRCommunity.com)

Academy for Business Intellect & Innovation

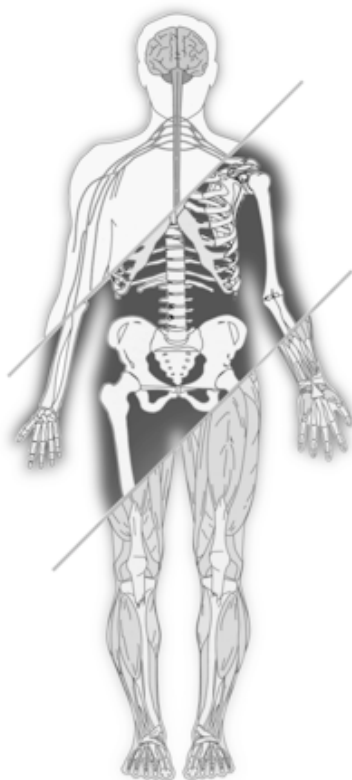
# Business Rule Concepts

Getting to the  
Point of Knowledge

Fourth Edition



#BRConcepts



by Ronald G. Ross

Co-Founder & Principal, Business Rule Solutions, LLC  
Executive Editor, BRCommunity.com  
Chair, Business Rules & Decisions Forum Conference



Business Rule Solutions, LLC

**BRCommunity.com**  
THE WORLD'S MOST TRUSTED RESOURCE FOR BUSINESS RULE  
AND ENTERPRISE APPLICATION PROFESSIONALS

Academy for Business Intellect & Innovation



# **Business Rule Concepts**

## **Getting to the Point of Knowledge**

**Fourth Edition**

*by Ronald G. Ross*

Copyright 2013, 2009, 2005, 1998. Business Rule Solutions, LLC and its licensors. All rights reserved. No part of this book may be reproduced in any form or by any means without permission of Business Rule Solutions, LLC.

10 9 8 7 6 5 4 3 2 1

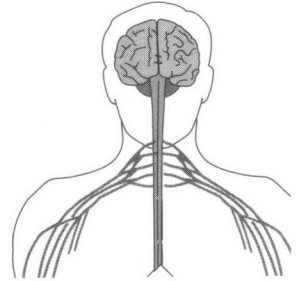
ISBN 0-941049-14-0

## Chapter 2

### ***What You Need to Know About Business Rules***

In the human body, control is provided by the nervous system, an organized collection of nerves that connect to the muscles. Business operations must have similar coordination of behavior. This coordination or *guidance* is supported by **business rules**.

In the human body, power is provided by the muscles; in business operations, it is supported by processes. Nerves and muscles are separate; business rules and processes should be separate too.



This principle of separation is called **Rule Independence**. Not embedding business rules in processes has huge benefits — not the least of which are for the processes themselves, as discussed in Chapters 11 and 12. The ideas underlying Rule Independence are enumerated in the *Business Rules Manifesto*, a copy of which can be found at the end of this book.

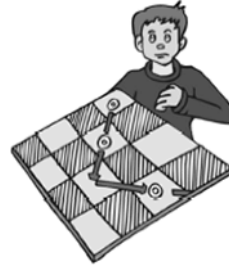
**Rule Independence means separating business rules  
from processes.**

**Rules** are familiar to us all in real life. We play games by rules, we live under a legal system based on rules, we set rules for our children, and so on.

Yet the idea of rules in business systems is ironically foreign to many people. Say “rules” and many IT professionals, for example, think vaguely of expert systems or artificial intelligence — approaches deemed appropriate for only very specialized or very advanced kinds of problems. Recognition has come only slowly about how central business rules actually are to basic, day-to-day business operations.

Not coincidentally, many business-side workers and managers have become so well indoctrinated in **procedural** views for developing requirements that thinking in terms of business rules might initially seem foreign and perhaps abstract. Virtually every methodology has been deficient in this regard, whether for **business process** analysis, system development, or software design.

That omission is *highly detrimental and very costly*. Thinking about the control aspect of any organized activity in terms of rules is actually very natural. For example, imagine trying to explain almost any game you can think of — chess, checkers, baseball, football, tennis, and so on — without explaining the rules on which the moves in the game are based. Even if it were possible (that's doubtful!), explaining things that way would certainly not be very *effective*.



Absence of business rules in IT methodologies is highly detrimental and very costly for the business.

In short, you need business rules. Without any exaggeration, good business rules are no less important to business operations than a robust, finely-tuned nervous system is to the human body.

You naturally want each business rule to be specified *once and only once*. One-place specification (**single-sourcing**) means the business rule will be easier to find — and to change quickly. If you want true agility, business rules are the ticket.



Collectively, the set of business rules represents a separate **rulebook** for the business game. This rulebook should, of course, be automated, to provide scalable support for the origination and management of the business rules. As discussed in Chapter 3, you need special tooling for the rulebook, which we call a **general rulebook system**.

The rulebook encompasses the rules of the business game.

Do business rules complicate matters for the business? *No!* Doing business is no more complicated by having independent business rules than are the games of chess, baseball, and football by having their own independent rulebooks.

Are business rules all that matter? *Of course not!* You still need artifacts for other needs, including process models, use cases, etc. These latter deliverables are needed to produce the raw power to do work — muscles for the business to flex. Business rules represent a well-developed nervous system, a way to ensure your business works *smart*.

Business rules ensure your business works smart.

## The Basics of Business Rules

A first step in understanding **business rules** is simply to relate them to the issue of guidance. The sidebar below presents a light sampling of typical business rules, each categorized informally according to the kind of guidance it provides. Note how far-ranging these categories really are. *Every* aspect of guidance for business operations can be addressed by business rules.

### Restriction

*A customer must not place more than three rush orders charged to its credit account.*

### Guideline

*A customer with preferred status should have its orders filled immediately.*

### Computation

*A customer's annual order volume is always computed as total sales closed during the company's fiscal year.*

### Inference

*A customer is always considered preferred if the customer has placed more than five orders over \$1,000.*

### Timing

*An order must be assigned to an expeditor if shipped but not invoiced within 72 hours.*

### Trigger

*'Send-advance-notice' must be performed for an order when the order is shipped.*



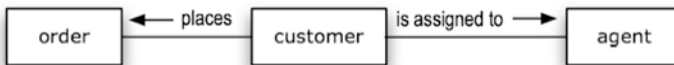
A second step in understanding business rules is to understand how they relate to a **structured business vocabulary**. Rules build *directly* on **verb concepts**. Basically, expression of a business rule simply adds a sense of obligation or necessity to **terms** and **wordings** already set up in the **concept model**.

### Terms, Facts, and Rules

The focus of **business rules** has often been described as *terms, facts, and rules*. Under the rigorous formal prescriptions of **SBVR** this mantra, which dates to the early 1990s work of the Business Rules Group ([www.BusinessRulesGroup.org](http://www.BusinessRulesGroup.org)), is not 100% technically accurate. Nonetheless it's memorable and certainly adequate for an initial understanding.

Here is a sample business rule: *A customer must be assigned to an agent if the customer has placed an order.* Figure 2–1 shows the relevant terms and wordings for this statement. Note how the verb concepts worded *customer places order* and *customer is assigned to agent* are used directly in the statement, with only minor adjustments in tense as appropriate for English grammar.

Figure 2–1. Terms and Wordings for the Agent-Assignment Business Rule.



In business problems involving hundreds or thousands of business rules — not at all uncommon — there is no way to achieve consistency across such large numbers of statements without a common base of terms and wordings. This vocabulary scaffolding is indispensable for *scaling up*.

Scaling up requires that business rules be expressed directly on a structured business vocabulary.

Basing verbalizations directly on wordings for verb concepts is a key feature of business-oriented notations for business rules such as **RuleSpeak**.

A third step in understanding business rules is appreciating the importance and power of expressing business rules **declaratively**. When statements are based directly on wordings for verb concepts, the result is always declarative. The Agent-Assignment Business Rule presented above illustrates. Expressing business rules declaratively is a key means of

liberating the business from the perils of IT-speak. The sidebar below explains how you can determine whether specifications are declarative.

### When Are Specifications Declarative?

In graduate school in the early 1970s, I learned this highly pragmatic test for determining whether specifications are **declarative**:

- Take each statement of the specification and type it on an individual punch card. (It's really hard to find punch cards these days, but for the sake of discussion, let's ignore that.)
- Assemble the deck.
- Test it to make sure it works.
- Throw the whole deck up in the air.
- Pick up all the cards in random order.
- Re-test it.

If the logic still works, the statements are declarative. If not, they are **procedural**. The point is that in declarative specifications no logic is lost 'between the lines' — i.e., none is intrinsic to the sequence of presentation. In other words, there is no hidden **semantics** (meaning).

Fully appreciating these ideas requires careful examination of the relationship between business rules and **events**. In general, business rules specified declaratively are free of any direct reference to events. More about that important topic in Chapter 8.

## Violation of Business Rules

Let's examine more closely what should happen when a business rule is **breached**. Consider the Agent-Assignment Business Rule. What happens when an event occurs that might violate this business rule?

1. The business rule needs to be evaluated with respect to the event. We call that a **flash point**.
2. If a **violation** is detected, appropriate intervention should ensue.
3. Assuming the user is authorized and knowledgeable, some explanation should be provided about what triggered the intervention. You might call that explanation an **error message**, but we prefer **guidance message**. The intent should be to inform and to shape appropriate business behavior, rather than simply reprimand or inhibit it.





What should that guidance message say? *The default guidance message can contain exactly the same text as given for the business rule.* For the Agent-Assignment Business Rule it could literally read: *A customer must be assigned to an agent if the customer has placed an order.* To put this more strongly, a business rule statement *is* a guidance message.

A business rule statement *is* a guidance message.

Now I overstated the case a bit to make the point. Obviously, additional or customized text can be provided to explain the relevance of the business rule to the specific event, to suggest corrective measures, to give examples, and so on. Also, in a truly-friendly business rule system, you often wouldn't want simply to present the message, then shut down the work. Instead, as discussed in Part 4, you might offer a **procedure** or **script** to the user to assist in taking immediate corrective action. But for now, let's stick to the main point.

And that main point is this: The guidance messages that business workers see once an operational business system is deployed can be the very same business rules that knowledgeable workers on the business side expressed during the capture of business requirements. Guidance messages, business rule statements, error messages from a business perspective — these are all *literally* one and the same. Well-expressed business rules during the requirements process provide the basis for well-expressed guidance messages; poorly-expressed business rules during the requirements process generally result in poorly-expressed guidance messages.

This approach has *proven* potential for closing the requirements gap between business people and IT that still plagues many companies today. In traditional approaches, much is usually lost in the translation of up-front requirements into the actual running systems. Using business rules, the business side participates directly in developing what it ultimately gets back as guidance messages — a truly business-oriented approach.



Direct assistance in expressing the business rules up-front will prove very valuable to the managers and workers involved in business rule capture. It will enable them to be far more articulate about their requirements. We see

the ability to assist in expressing business rules as a key skill for business analysts. Every business analyst should speak **RuleSpeak!**

Business rules help close the requirements gap.

## Decision Management and Decision Tables

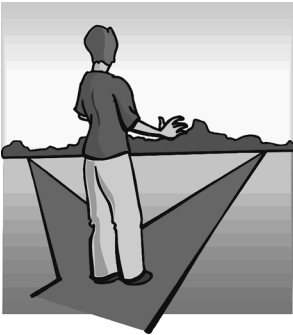
Business rules directly support business operations in at least three ways:

- Guide day-to-day business activity.
- Shape operational business judgments.
- Make operational business decisions.

The former two roles coordinate **business processes**; the third role leads to decision management and **decision tables** (refer to Chapter 9).

An **operational business decision** is where some minute-to-minute, day-to-day determination must be made in performing business activity.

Examples of operational decisions include whether or not to:



- Approve an application for automobile insurance.
- Pay a claim.
- Buy a stock.
- Declare an emergency.
- Accept a reservation.
- Indicate possible fraud.
- Give an on-the-spot discount to a customer.
- Assign a particular resource to a given request.
- Select a health care service for a patient.
- Certify a ship for safety.

As these examples illustrate, operational business decisions might have to do with configuration, allocation, assignment, classification, assessment, compliance, diagnosis, and so on.

## Business Activity vs. Specialized Know-How

You can expect business rules to generally align according to the kind of operational support they provide — to coordinate business activity or to apply specialized **know-how**.

Examples for three different organizations are given below.

### ***Internal Revenue Service (IRS)***

#### **Business Rule to Coordinate Business Activity**

- *A processed tax return must indicate the IRS Center that reviewed it.*

#### **Business Rule to Apply Specialized Know-How**

- *The calculated total income must be computed as tax return wages (line 1) plus tax return taxable-interest (line 2) plus tax return unemployment compensation (line 3).*

### ***Ministry of Health***

#### **Business Rule to Coordinate Business Activity**

- *A claim must be assigned to an examiner if fraud is suspected.*
- *An on-site audit must be conducted for a service provider at least once every five years.*

#### **Business Rule to Apply Specialized Know-How**

- *A claim involving comprehensive visits or consultations by the same physician for the same patient must not be paid more than once within 180 days.*
- *A claim that requests payment for a service event that is a provision of health service type 'consultation' may be paid only if the service event results from a referral received from another service provider.*

### ***Ship Inspection Agency***

#### **Business Rule to Coordinate Business Activity**

- *A ship inspection work order must include at least one attendance date.*
- *A ship must indicate a client who is financially responsible for inspections.*
- *An inspection due for a ship must be considered suspended if the ship is laid-up.*

#### **Business Rule to Apply Specialized Know-How**

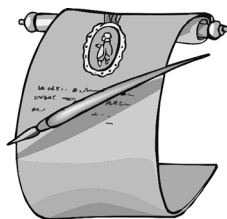
- *A ship area subject to corrosion must be inspected annually.*
- *A salt water ballast tank must be inspected empty if the ship is more than five years old.*
- *A barge must have an approved bilge system to pump from and drain all below-deck machinery spaces.*

Business rules concerning the company's product/service invariably involve the company's special area(s) of expertise. They often use more arcane (knowledge-rich) vocabulary. For that reason, such business rules are typically more difficult to capture and express. And there tends to be significantly more of them. Your approach needs to be prepared for that.

## Summary

**Business rules** should be externalized from processes and established as a separate resource. **Rule Independence** permits direct management of the business rules, so they can evolve at their own natural pace rather than that of the software release cycle.

Other benefits include better process models, and much closer tie-in to the business side (a.k.a. business alignment). Business rules put your company on the road to *true* agility.



Business rules put your company on the road to *true* agility.

When introduced to business rules, the first reaction some people have is that their business has far more **exceptions** to business rules than rules per se. They question how all these exceptions can be handled in any organized fashion. This is a valid concern.



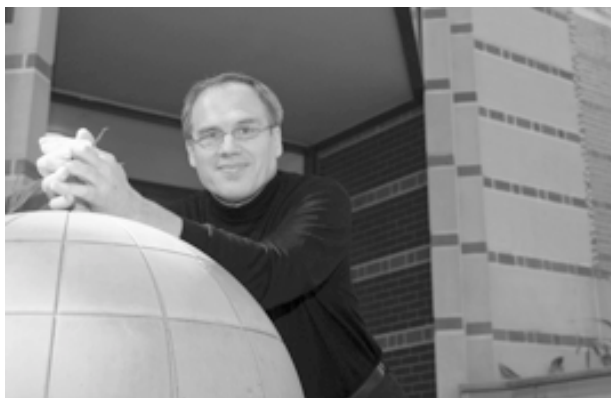
Exceptions to business rules, however, merely represent more business rules. Looking at it that way is crucial — *every business rule costs you something*.

Every business rule costs something.

The most significant cost of rules is not the direct cost of their implementation and maintenance in software systems (especially if you're using a rule engine). The real cost often lies hidden in the associated documentation, training, administration, and time — the *people* time it takes to communicate the business rules and to change them. Time, of course, is among the most precious of all commodities. Your business does not need *more* rules — it probably needs fewer (*good*) rules!

## About the Author

### Ronald G. Ross



Ronald G. Ross is recognized internationally as the “father of business rules.” He serves as Executive Editor of Business Rules Community ([www.BRCommunity.com](http://www.BRCommunity.com)) and its flagship publication, *Business Rules Journal*. He is a sought-after speaker at conferences world-wide. More than 50,000 people have heard him speak; many more than that have read his books. His popular seminars are given on-line through AttainingEdge and in Europe through IRM-UK.

Mr. Ross has served as Chair of the annual International Business Rules & Decisions Forum Conference since 1997. He was a charter member of the Business Rules Group (BRG) in the 1980s, and an editor of the two landmark BRG papers, “*The Business Motivation Model: Business Governance in a Volatile World*” and the “*Business Rules Manifesto*.” He is active in OMG standards development, with core involvement in SBVR.

Mr. Ross is Principal and Co-Founder of Business Rule Solutions, LLC. At BRS, Mr. Ross co-develops *IPSpeak*™, its groundbreaking methodology for business rules, decision logic, and business vocabulary (concept models), including the popular *RuleSpeak*® ([www.RuleSpeak.com](http://www.RuleSpeak.com)). Mr. Ross is the author of nine professional books, including the ground-breaking, first book on business rules *The Business Rule Book* (1994) and *Principles of the Business Rule Approach*, Addison-Wesley (2003). His newest is *Building Business Solutions: Business Analysis with Business Rules* with Gladys S.W. Lam (2011, An IIBA® Sponsored Handbook). He holds a BA from Rice University and an MS in information science from Illinois Institute of Technology. For more information about Mr. Ross, visit [www.RonRoss.info](http://www.RonRoss.info), which hosts his blog. Follow his tweets on [Ronald\\_G\\_Ross](https://twitter.com/Ronald_G_Ross).

## About...



**Business Rule Solutions, LLC**



**Business Rule Solutions, LLC** — Business Rule Solutions, LLC is the recognized world leader in the advancement of business rules and decision management. Co-founders Ronald G. Ross and Gladys S.W. Lam are internationally acclaimed as the foremost experts and practitioners of related techniques and methodology.

Since its inception in 1996, BRS has helped pilot the worldwide growth of business rules. BRS offers IPSpeak™, its groundbreaking methodology for business rules, decision logic, and business vocabulary (concept models), including the popular *RuleSpeak®*. Services include consulting, training, publications, and presentations. For more information about BRS, visit [www.BRSolutions.com](http://www.BRSolutions.com).



**BRCommunity** — Business Rules Community is a vertical, non-commercial community for business rule and decision management professionals, providing articles, expert commentary, panels, and a variety of other hands-on resources. BRCommunity.com and its flagship publication, *Business Rules Journal*, were established in 2000. Visit [www.BRCommunity.com](http://www.BRCommunity.com).



#BRConcepts