

Business Rules Solutions Ronald Ross with Gladys Lam

## **Business Rules Solutions: Pattern Questions for Harvesting Business Rules from Business Models of Milestones or States**

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*The instances of many operational business things have a life in that they can reach milestones or change states in some manner important to the business. Business rules offer a powerful tool for practitioners to understand and orchestrate business things with life – for examples, cases. Pattern questions pertaining to business models of milestones or states assist not only in capturing related business rules, but also in discussing and resolving related business issues with business stakeholders. This discussion presents a targeted set of pattern questions to assist in that regard and illustrates them with practical examples.*

When an operational business event happens in day-to-day business activity, an instance of an operational business thing – for example a case – can enter a new state. We call the initial point in that state a *business milestone*. Achieving a business milestone means that every relevant business rule has just then been satisfied for that instance. Many business rules<sup>1</sup> can be captured from business milestone (or state) models using the pattern questions presented and illustrated below.

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<sup>1</sup> All business rule statements in this discussion are expressed using *RuleSpeak*<sup>®</sup>. The *RuleSpeak* guidelines for expressing business rules in structured natural language are free on [www.RuleSpeak.com](http://www.RuleSpeak.com).

**What Are Pattern Questions?**

Over the past decade we have developed a series of well-structured pattern questions. These pattern questions represent thinking tools to help practitioners harvest business rules from different kinds of models (e.g., business process models, concept models, etc.). Each pattern question:

- focuses on a particular topical concern and some particular construct (pattern) found frequently in models of a given kind.
- typically leads to many business rules for the same model.

The pattern questions are designed to assist practitioners in asking the right kinds of questions in the right ways. Answers typically lead to more questions — and to more business rules. The answers also frequently prove useful in validating and refining the underlying models.

## Pattern Question for Milestone Imperatives

### Pattern Question M1: Milestone Imperatives

What criteria must be met for an instance of an operational business thing to achieve a business milestone?



#### Ask specifically:

What criteria must be met for an order to be deemed credit-checked? What criteria must be met for an order to be deemed shipped?

#### Sample business rule specifying a milestone imperative:

A credit-checked order must be verified by at least 3 references.

#### Sample business rule specifying a milestone imperative:

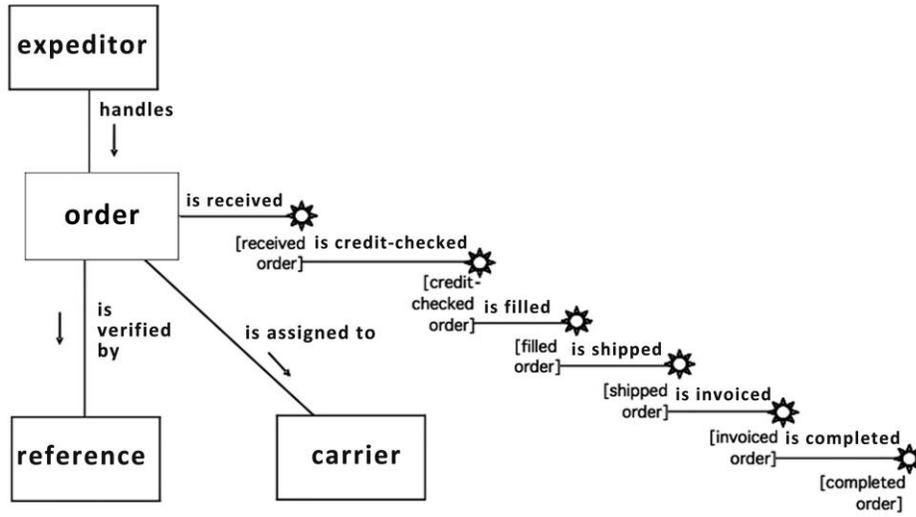
A shipped order must be assigned to a carrier.

### Comments:

- Any business rule that must be satisfied for an instance of an operational business thing – for example a case – to achieve a business milestone is called a *milestone imperative*. This first pattern question is basic to externalizing business rules from business process models in an organized and intelligible way.
- If a milestone imperative is meant to be applied only when a business milestone is first achieved, not continuously thereafter for the state, the business rule must be written that way. Event-specific applicability is never the default. In *RuleSpeak*<sup>®</sup>, the keyword *when* is used for that purpose. Example: Suppose the business intends the first business rule above to be applied *only* at the business milestone, not thereafter. In that case the business rule should be written: *A credit-checked order must be verified by at least 3 references when the order is credit-checked.*
- Models of business milestones or states can take a variety of forms. In Figure 1, states are represented in a concept model using unary verb concepts.<sup>2</sup> The associated state names (e.g., *credit-checked order*, *shipped order*, etc.) can be used directly in capturing milestone imperatives.
- Only the happy life of *order* is represented in Figure 1. (A *happy life* is a life consisting of states through which instances progress that complete

<sup>2</sup> The diagram snippets of concept models in this discussion follow the BRS *ConceptSpeak*<sup>™</sup> conventions. Refer to: *Business Rule Concepts*, by Ronald G. Ross, 4th ed, 2013.

successfully from the business’s point of view). Each state is dependent on the previous state having been achieved. An implication is that any business rule that applies to *credit-checked orders* also applies to *filled orders*, *shipped orders*, etc. A business rule should be associated with the first (earliest) state in the happy life to which the business rule applies.



**Figure 1. Business Milestone Model to Illustrate Basic Pattern Questions for Business Milestones**

## Pattern Question for Spontaneous Behavior

### Pattern Question M2: Spontaneous Behavior

Does satisfying some criteria enable an instance of an operational business thing to achieve a new business milestone spontaneously?



#### Ask specifically:

If the right circumstances arise, is an order immediately deemed completed?

#### Sample business rule specifying spontaneous behavior:

A shipped order paid-in-full must be considered completed.

**Comment:** The business milestone *completed* is spontaneously achieved if an order is both *shipped* and *paid-in-full*. Whether an order is *paid-in-full* might be derived by a set of computational business rules. Be careful about conflicts that might arise if other business rules (milestone imperatives) pertaining to *invoiced* and *completed* orders are not satisfied.

## Pattern Question for Suspense Criteria

### Pattern Question M3: Suspense Criteria

Is there a time limit for how long an instance of an operational business thing can remain in the same state?



#### Ask specifically:

How long can an order be shipped without being invoiced?

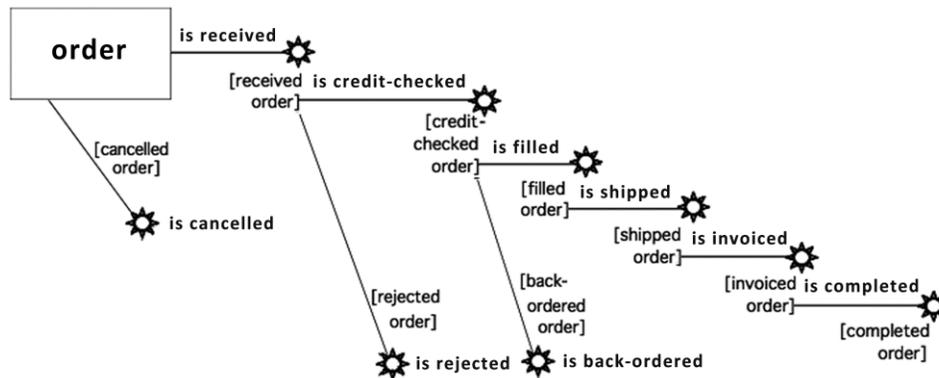
#### Sample business rule specifying a suspense criterion:

An order may be shipped but not invoiced at most for only a week.

### Comments:

- Sometimes an instance of an operational business thing gets hung up at a state. A business rule specifying a suspense criterion indicates how long is *too* long for the business to stand idly by (i.e., tolerate the instance remaining there).
- If a suspense criterion involves a happy path (as above), *two* states are usually referenced (e.g., *shipped* and *invoiced*), not just one. Caution should be exercised in specifying a suspense criterion that references just one state. The business often needs to talk about, or to write business rules about, whatever it is that *hasn't* been accomplished.

Figure 11-2 serves to illustrate additional pattern questions useful in capturing business rules from business milestone models.



**Figure 2. Business Milestone Model to Illustrate Additional Pattern Questions**

### *Pattern Question for Prohibited Antecedents*

**Pattern Question M4: Prohibited Antecedents**

Does achieving a business milestone require that some other state(s) not be achieved? Does achieving a business milestone preclude some other state(s) from being achieved?



**Ask specifically:**

Is there a state that precludes an order from being cancelled?

**Sample business rule specifying a prohibited antecedent:**

A cancelled order must not have been shipped.

**Comments:**

- The state *shipped* must not be antecedent to (have been achieved before) the business milestone *cancelled* for any given order.
- Severely unhappy states (such as *cancelled*) should be modeled outside the happy life. Otherwise, anomalies (e.g., conflicts) among the business rules almost always result.
- Be sure not to embed constraints about prohibited antecedents in any business process model. Such business rules apply to *all* business activity, and like all business rules, might change. Single-source them!

## Pattern Question for Interruptions in Life

### Pattern Question M5: Interruptions in Life

Is achievement of a business milestone in a happy life precluded by some prior sub-state?



#### Ask specifically:

Can an order be credit-checked if it is rejected? Can an order be filled if it is back-ordered?

#### Sample business rule specifying an interruption in life:

An order may be credit-checked only if not rejected.

#### Sample business rule specifying an interruption in life:

An order may be filled only if not back-ordered.

**Comment:** These business rules enforce possible interruptions in the life of individual orders. An interruption in the life of an operational business thing is not permanent unless a business rule in its life pattern makes it so. For example, unless specified otherwise, once an order is *un-rejected* it can then move forward. Once an order is *un-back-ordered* it too can move forward.

## Pattern Question for Afterlife

### Pattern Question M6: Afterlife

Are there any time limits on how long an instance of an operational business thing must or must not be retained once some terminal business milestone is achieved?



#### Ask specifically:

How long must a completed order be retained?

#### Sample business rule specifying a retention criterion:

A completed order must be retained for 7 years.

### Comments:

- The business rule above is meant to ensure the business will not 'forget' about a completed order for at least 7 years. The motivation might be that some external tax authority requires organizations to keep business records for at least that long.

- Be sure that the motivation for such a business rule arises from the business, and is not simply a choice made by IT in designing or optimizing a system.

## Ronald Ross



Ronald G. Ross is Co-Founder and Principal of Business Rule Solutions, LLC ([www.BRSolutions.com](http://www.BRSolutions.com)). BRS provides workshops, consulting services, publications, and methodology supporting business analysis, business rules, business vocabulary, and rule management. His popular public seminars on business rules and business analysis, the first on business rules (starting in 1996) and the longest-running in the industry, are given through AttainingEdge ([www.AttainingEdge.com](http://www.AttainingEdge.com)). At BRS, Mr. Ross co-develops Proteus®, its landmark business analysis and business rules methodology, which features numerous innovative techniques including the popular RuleSpeak® (available free through [www.BRCommunity.com](http://www.BRCommunity.com)). These are the latest offerings in a 30-year career that has consistently featured creative, business-driven solutions. Mr. Ross also serves as Executive Editor of [www.BRCommunity.com](http://www.BRCommunity.com) and its flagship on-line publication, *Business Rules Journal*. He is a regular columnist for the *Journal's Commentary* section which also features John Zachman, Chris Date, Terry Halpin, and Roger Burlton. *BRCommunity.com*, hosted and sponsored by BRS, is a vertical community for professionals working with business rules and related areas. Mr. Ross was formerly Editor of the *Data Base Newsletter* from 1977 to 1998. Mr. Ross is recognized internationally as the "father of business rules." He has served as Co-Chair of the annual Business Rules 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*" (2000, revised 2005) and the "Business Rules Manifesto" (2003). He is also active in OMG standards development for business rules and business models. Mr. Ross is the author of eight professional books. His newest are: *Business Rule Concepts* (2005), a second edition of his popular, easy-to-read 1998 handbook, and *Principles of the Business Rule Approach*, Addison-Wesley (2003), featuring the business rationale and opportunity for business rules. An earlier work, *The Business Rule Book* (1994, 1997), was the seminal work in the field. Mr. Ross received his M.S. in information science from Illinois Institute of Technology, and his B.A. from Rice University.