

What is SBVR?

Summary

An overview of: *Semantics of Business Vocabulary and Business Rules* (SBVR)¹ as a body of shared knowledge documented as a terminological dictionary, and how it is used for defining business vocabulary and business rules for specific subject fields, such as individual businesses, or standards for industries and professions.

SBVR is an OMG Specification

SBVR is a specification developed by the Object Management Group (OMG, www.omg.org) for creating and maintaining:

- Definitions of concepts of things in a business, in the natural language that people in the business use for talking and writing about these things. The definitions are of things in the real world of the business – not of the data specifications that will represent them in information systems.
- Business rules based on these concepts.

SBVR is a Terminological Dictionary

A *conventional dictionary* (such as Merriam-Webster or Oxford) is *term-centered*. Each entry in the dictionary has its own definition, and synonyms are near-approximations of each other. For example, Oxford Dictionaries Online gives *black* and *obscure* as synonyms for *dark*. But *black* and *obscure* aren't synonyms for each other. Using approximate synonyms – as people often do – can lead to inaccuracy, ambiguity and misunderstanding.

A *terminological dictionary* (see [Terminological Dictionary](#) for an introduction) is *concept-centered*. Synonyms refer to the same definition. Figure 1 illustrates four synonyms for a concept commonly used by financial businesses engaged in derivatives trading:

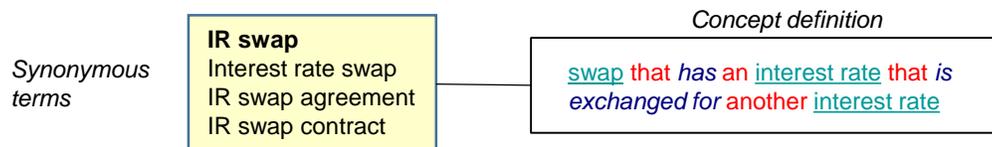


Figure 1: Synonyms in a terminological dictionary

SBVR is a terminological dictionary. It defines the concepts needed for defining business vocabularies (business-specific terminological dictionaries) and business rules.

SBVR is defined in its own terms

Like most dictionaries, SBVR defines its entries using concepts and terminology that it also includes. For example, SBVR's definition of *instance* is 'thing that is in an extension of a concept' (e.g. the actual city of Los Angeles is an instance of the concept *city*) and *thing*, *extension*, *concept* and *concept has extension* are all defined in SBVR.

Some definitions include concepts that are taken to be implicitly understood from the everyday meaning of the words used for them. For example, SBVR's definition of *meaning* is: 'what is meant by a word, sign, statement (natural language meaning), or description; what someone intends to express or what someone understands'.

Of this definition, only *statement* and *description* are explicitly defined in SBVR, and this definition makes it clear that it's the everyday meaning of 'statement' that is intended – not the narrower, explicit definition within SBVR.

¹ The current SBVR specification is downloadable (free) from www.omg.org/spec/SBVR/1.2. SBVR Revision 1.3 has been accepted by OMG and is in progress to publication.

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SBVR adopts existing meanings

SBVR has adopted several external vocabularies, including:

- [ISO 639-2 \(English\)](#): the vocabulary of English language names of languages
- The [Uniform Resource Identifiers Vocabulary](#) for the World Wide Web

SBVR has also adopted concepts without adopting entire vocabularies. SBVR's foundation is 21 concepts adopted from ISO standard *ISO 1087-1_2000 Terminology work - Vocabulary - Part 1: Theory and application*², without adopting ISO 1087-1 in its entirety.

When a concept is adopted, it's actually the definition that's adopted, and it can be given a local term. For example, SBVR has adopted the definition of *object* from ISO 1087-1, but calls it 'thing'.

SBVR is a vocabulary for business dictionaries and rulebooks

An SBVR *rulebook* is a specification for business governance. A rulebook would usually govern a business or similar organization, but could be, say, an industry vocabulary plus good practice guidance. A rulebook has two parts: a business vocabulary and a collection of behavioral rules³ constructed from concepts in the business vocabulary. They have different purposes, owners and maintenance processes:

- The behavioral rules *govern what the business does*. They are usually organized as rule sets⁴ that govern functional areas of the business, such as sales, accounts, purchasing, distribution, HR. The people responsible for a governed area own the rule sets that govern it, in the sense of ensuring that the rules are fit for purpose – consistent with business policies, ensuring compliance with relevant regulations, etc. Rule owners typically work within narrow scopes (e.g. 'What rules do I need for recruitment?', 'What rules do I need to run dispatch and delivery effectively?'), but also need to recognize the importance of consistent terminology and meaning across the whole business. We've all heard of companies that have problems because they've grown a dozen or more different meanings for 'customer'.
- The business vocabulary (a business-specific terminological dictionary) *defines what the business is*, from the perspective of the people in it. The vocabulary is maintained by terminologists, who have to provide consistent, enterprise-wide terminology and definitions. One major part of this is getting consensus on, and documenting, what the people in the business mean by the words they already use.

Another is responding to requests from rule owners for addition of new concepts. This requires: checking that the requested concepts aren't already defined, perhaps with different terminology; and ensuring that new terminology is suitable for use across the whole business, and not just within the perspectives of the rule owners.

As illustrated in Figure 2, you would start by adopting SBVR into the business vocabulary.

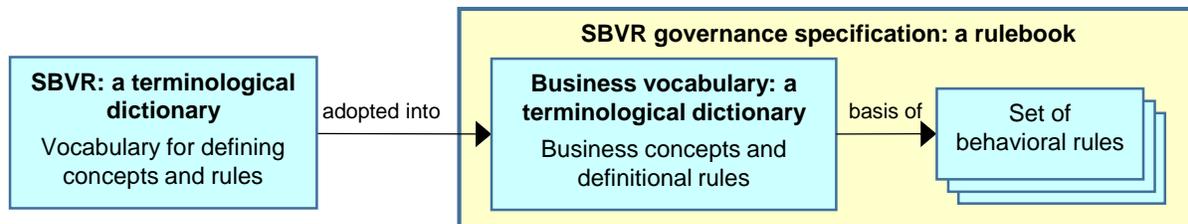


Figure 2: SBVR is adopted into the terminological dictionary for a business

You can also adopt other vocabularies, such as your in-house business dictionary (not your IT data dictionary), industry glossaries, and term definitions from sources such as contracts and regulations.

² www.iso.org/iso/catalogue_detail.htm?csnumber=20057 (payment required)

³ It could be just a terminological dictionary, but this note is about SBVR in a governance context.

⁴ In SBVR, rule sets are simply sets of rules – related to, but not the same as rule sets as used in business rule engines.

What is SBVR?

SBVR contains the vocabulary for defining behavioral rules, but doesn't itself contain any. Behavioral rules would govern how you use SBVR. Tool vendors, methodologists, trainers and business users will develop practice guidance and methodology for their own environments - using the vocabulary provided by SBVR.

We'll return to concepts and rules a little later.

Semantic Communities and Speech Communities

When you use SBVR to define how people think and talk about their business (or similar organization), you document a *body of shared concepts* and rules based on them. SBVR calls the people who share the concepts a *semantic community*. Concepts are ideas in people's heads. People share them by agreeing on definitions and documenting them.

You'd expect to find three kinds of member in a semantic community:

- Governance authors: the people in an organization who define the concepts and produce governance documents (such as policies, contracts, procedures, compliance obligations) using the concepts.
- Governed users: people in the organization whose activities are guided and constrained by the governance documents
- External associates: people outside the organization (such as customers, suppliers and regulators) who need to understand the governance documents that are relevant to their dealings with the organization.

You have to write the definitions in some natural language. When you do, they provide a vocabulary for a *speech community* that uses that natural language. But people in the organization can write the definitions in more than one language, so a *semantic community* can include more than one *speech community*.

You may also find several speech communities who share the same concepts in the same natural language, but with different vocabularies. For example:

- The vocabulary used by employees often includes jargon, transaction codes, form numbers and so on
- The vocabulary for legal documents (such as contracts, product and service specifications, regulatory reports and filings) is formal, usually rigorously policed by the legal department, and often contains industry-standard and legal terminology
- The vocabulary for marketing and advertising usually needs to be in more everyday language, understandable by the people you want to sell to – also usually rigorously policed by the legal department

Although these vocabularies use different terminology they are (or should be) referring to the same concepts,

Elements of SBVR Terminological Dictionaries and Rulebooks

An SBVR rulebook has a three-tier structure of *noun concepts*, *verb concepts* and *elements of guidance*, as illustrated in Figure 3:

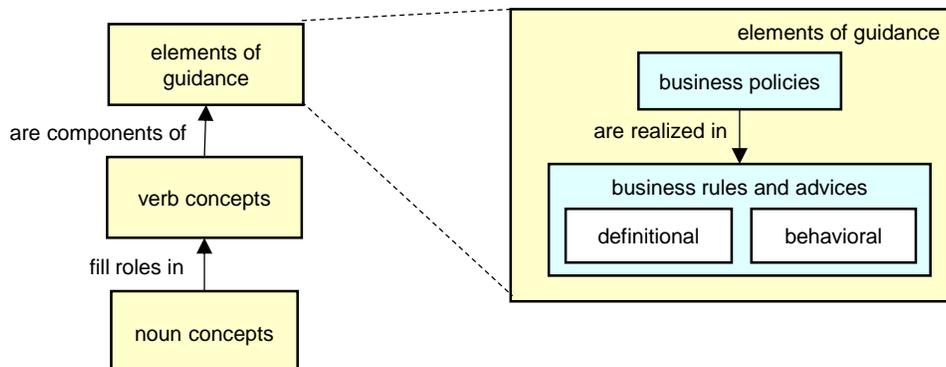


Figure 3: Elements of an SBVR rulebook

What is SBVR?

SBVR builds on the Terminological Dictionary as defined in *ISO 1087-1_2000 Terminology work - Vocabulary - Part 1: Theory and application*⁵ (see [Terminological Dictionary](#)), using *noun concepts*, *verb concepts* and *definitional business rules and advices*.

Business policies and *behavioral business rules and advices* serve purposes different from those of *definitional business rules and advices*. They are shown together in Figure 3 because they have similar logical structures and are constructed from verb concepts in similar ways.

Noun Concepts

Noun concepts are *concepts* as defined in ISO 1087-1. They are concepts of things [objects] or sets of things in the real world of the business. There are three kinds:

- *individual noun concept* (*individual concept* in ISO 1087-1): corresponds to at most one *thing*, e.g. [Medicare](#), [Paris, France](#), [Steve Jobs](#). They are denoted by *names*.
- *general concept* (as in ISO 1087-1): classifies *things* on the basis of their common properties, e.g. [rental car](#), [airport](#), [contract](#). They are denoted by *terms*.
- *unitary noun concept* (SBVR special case, not in ISO 1087-1): corresponds to at most one thing at a time, e.g. [Air Force 1](#), [The Secretary-General of the United Nations](#), [highest \\$US-Euro exchange rate since 2007](#). They are denoted by *terms*.

Verb Concepts

SBVR's *verb concepts* correspond to *relations* in ISO 1087-1. For example, SBVR's *partitive verb concept* (e.g. [project team includes employee](#)) and *association* (e.g. [provider delivers service](#)) correspond, respectively, to *partitive relation* and *associative relation* in ISO 1087-1.

Relations in ISO 1087-1 are binary: they connect pairs of concepts. SBVR is broader: you can create verb concepts with as many roles as you need; for example: [supplier delivers consignment to customer on date](#). You need to define meanings for entire verb concepts – not just the verbs. For example, *runs* has different meanings in [person runs race](#) and [person runs company](#), and *person* plays a different role in each.

SBVR also handles verb concepts more formally than ISO 1087-1 handles relations. Verb concepts can be specialized – just like noun concepts. For example, you could define [loyalty program member redeems awards flight](#) as a specialization of [customer purchases flight](#).

In SBVR you can also objectify a verb concept – turn it into a noun concept that can fill roles in other verb concepts. For example, you could objectify the '[supplier delivers ...](#)' example, above, as [delivery](#) and use it in verb concepts such as [account pays for delivery](#).

Business Rules and other Elements of Guidance

Business rules⁶ govern businesses. SBVR distinguishes two kinds: *definitional business rules* and *behavioural business rules*.

Definitional Business Rules

Definitional rules state constraints on definitions. SBVR has several forms for representing them, and many authors like the *Necessity* style. Some examples are:

- Necessity: Exactly one [renter](#) is responsible for a given [rental](#).
- Necessity: Each [rental](#) has at most 4 [authorized drivers](#).
- Necessity: The [renter](#) who is responsible for a [rental](#) is an [authorized driver](#) of the [rental](#).

⁵ www.iso.org/iso/catalogue_detail.htm?csnumber=20057 (payment required)

⁶ Many business rules may be applied by information systems that support business activities. This note is about defining the vocabulary and rules from the business perspective before deciding what information systems will be required to do.

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You'd almost certainly need to include some definitional rules in the 'Terms and Conditions' section of a governance document such as a contract, and would expect to find a lot of them in regulations.

Definitional rules are logical necessities. They are (as you might expect) *true by definition*. They can't be broken.

Suppose you had the examples above as rules in the contract in your car rental business. If you had a document that was apparently a rental contract but didn't comply with all the definitional rules - say, it had more than one person named as renter, or had one renter but he/she wasn't one of the authorized drivers - you wouldn't have a rental contract with 'broken rules'. You'd have a document that - by definition - isn't a rental contract, and you shouldn't hand the car over until you have a rental contract.

Behavioral Business Rules

Behavioral rules govern business activity - what a business does and how it does it. *Being forbidden to hand over a car without having a rental contract signed by the renter* is a behavioral rule.

Behavioral rules can be broken by people. The rules need an enforcement regime, processes that: detect that a rule has been breached; take action to bring the business back into compliance with the rule; and (perhaps) apply some penalty to the person or business unit responsible for the breach.

An *open rental* is one in which the customer has the rental car. Some examples of behavioral rules about *open rentals* are:

A given renter may be responsible for at most one open rental.

A rental contract document that is signed by the renter who is responsible for the rental must be held for each open rental.

Each authorized driver of an open rental must hold a driver license that is valid for the rental.

You can assign enforcement levels to behavioral rules that define how strictly the rules are applied. For example: strict and immediate enforcement (the default); enforcement can be delayed; enforcement may be waived with permission from a manager. You can vary enforcement levels without changing the rules themselves.

Business Advices

Advices supplement rules. Sometimes, rules are misinterpreted, or people in a business assume rules that don't exist, perhaps based on experience elsewhere. Advices help to ensure that rules are applied as intended.

Definitional advices are *possibilities*. For example:

Possibility: The renter who is responsible for an open rental is an authorized driver for another open rental.

So (for any staff who were in doubt): your rental contract constrains a renter to renting only one car at a time, but doesn't prevent him or her, while renting a car, from also being authorized to drive cars rented by other people.

Behavioral advices are *permissions*; for example (where a *returned rental* is one for which the rented car is back in your rental company's possession at the end of the *open* period):

The renter who is responsible for a returned rental may pay cash for the rental.

So, although an *open rental* must be guaranteed by a credit card, the renter *may* ('is permitted to') pay in cash after returning the car.

Advices are often produced to deal with problems in understanding or applying rules. When these problems have been fixed, it's good to withdraw the advices. You don't want your governance documents to be cluttered with out-of-date advice about problems that no longer exist.

Business Policies

A business policy states a broad requirement that is to be realized in business rules. For example, suppose you were in the business of providing financing for residential property. One of your business policies might be:

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Each mortgage loan must *be repayable*.

You can't just leave this for individual staff members to decide what it means. You need to provide rules such as:

The monthly repayment of a mortgage loan must not *be greater than 40%* of the monthly income of the borrower of the mortgage loan.

The term of a mortgage loan must *end before the 70th birthday of the borrower of the mortgage loan*.

A business rule is directly enforceable: you could look at what your business is doing and decide directly whether or not it's complying with the rule. To see if your business is operating your business policy you have to see whether or not it's complying with all the rules that realize the policy.

SBVR models are connected and consistent

If you have tried rule-based governance, you may have noticed that what SBVR calls *verb concepts* are often the poor relations. This seems to be especially so in regulations, where typically there are definition sections (almost all noun concepts) and rules about what must or must not be done, with scant mention of what the verbs mean.

The verb concepts make for consistency. In SBVR:

- a verb concept has a *verb symbol* (a phrase) with placeholders for roles filled by noun concepts. Each role in each verb concept should be filled by a noun concept that is: defined; or adopted; or acknowledged as being implicitly understood.
- Each rule is based on a single, defined verb concept, with (if needed) additional verb concepts that qualify the roles filled by the noun concepts.

Verb concepts are what makes SBVR models coherent.

SBVR Mark-up

SBVR does not use guillemets ('<' and '>' angle brackets) for mark-up. As you've probably noticed, it has, instead, a convention for representation called SBVR Structured English (SE) that uses four colored text styles:

- name, in green, bold, double-underlined
- term, in teal, single underlined
- *verb*, in blue italic
- **keyword**, in orange

You have a degree of choice about how much you mark up your governance documents. SBVR accommodates free natural-language text (although it doesn't support any syntactic or semantic analysis of it) and SBVR's normative specification contains a substantial amount. The trade-off is: the more investment in mark-up formality, the better the support from SBVR-aware tools.

SBVR SE is described in the SBVR Specification, and is used for SBVR itself, but it is not mandatory. You could use any representational grammar with the same capability for representation. See Annex A of the SBVR Specification for an introduction to SBVR SE, and see the SBVR Specification for a description of interchange files - which are defined using conventional XML guillemets.

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