

The Do's and Don'ts of Expressing Business Rules

BRS *RuleSpeak*TM

by Ronald G. Ross and Gladys S. W. Lam

Principals, Business Rule Solutions, LLC

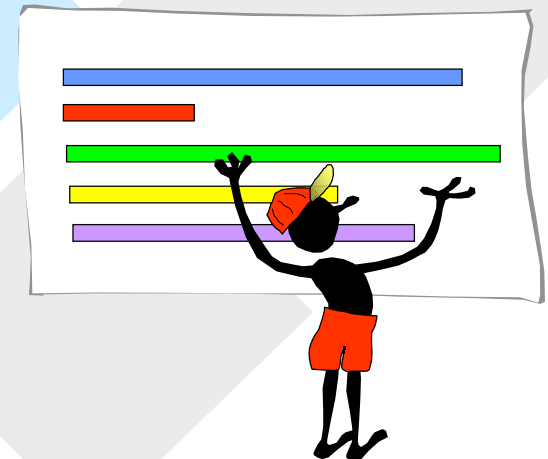
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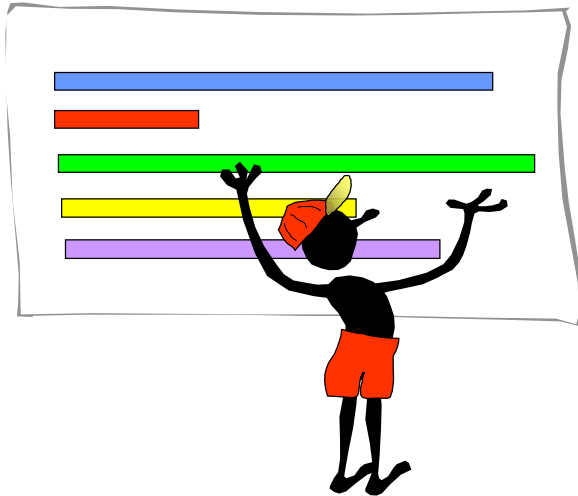
Version 1.0

*RuleSpeakTM is a technique of BRSolutions,
the BRS Business Rule Methodology*

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BRS *RuleSpeak*™ is a set of practical guidelines for...

- Expressing rules in clear, unambiguous, well-structured business English.
- Improving communication about business rules between the business side and IT.
- Finding a middle ground between high-level policy directives, and technical specification of rules at an implementation level.
- Bridging between analysis and design.

Comments ...

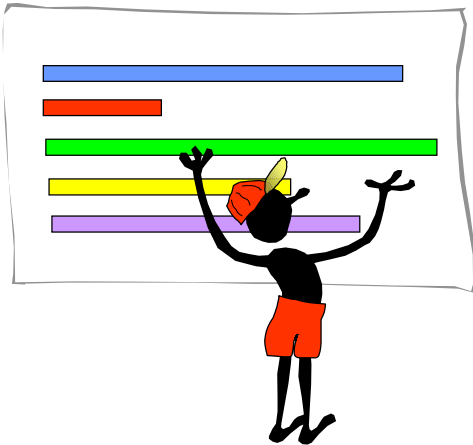
In the words of an experienced practitioner...

“Another chronic problem is the difficulty of finding a common language to assure...business clients, analysts and developers could truly communicate. Asking clients to sign-off on a project is meaningless if the proposed database structure or process logic is presented in a form that they are not trained to understand. For developers, the communication medium must allow sufficient rigor to support system design and the creation of code.”

This is the problem that BRS *RuleSpeak™* addresses.

Many users of BRS *RuleSpeak™* will be in IT; however, it can be understood and “spoken” by large segments of the business community.

The structured English of BRS *RuleSpeak™* also helps clarify the “logic” of complicated rules.



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Governing Rule...A legal statement (e.g., law, act, statute, etc.), formal regulation, binding agreement (e.g., contractual obligation), higher-level business policy or directive, etc. Governing Rules are often aimed at guiding or constraining the business, regulating its interactions with external Parties, and/or limiting its exposure to risks or threats. Governing Rules often must be interpreted into one or more Operating Rules to be applied in an actual business process or used for system design.

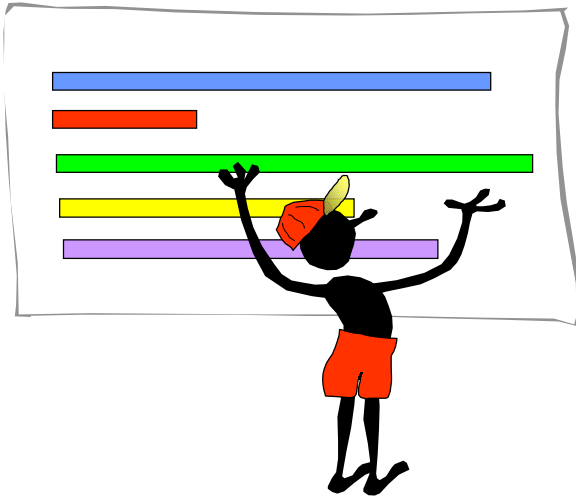
Operating Rule... A declarative Statement in well-structured business English, suitable for direct application to a business process and for consideration in a system design. An Operating Statement should be unambiguous and stated in a manner directly relevant to the internal workings of the business. Operating Rules may sometimes be derived or interpreted from Governing Rules, or reverse-engineered from Automated Rules.

Automated Rule...A specific rule of the business, stated in a form recognizable by a rule engine, programming language, application generator, or similar technology. An Automated Rule is often the implementation counterpart to an Operating Rule.

Comments ...

BRS *RuleSpeak™* is aimed at expressing *Operating Rules*.

This is the critical transformation stage between Governing Rules as handed down from the business side, and rules suitable for implementation by rule engines or other technologies (i.e., Automated Rules).



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*Not
How!*

*Not
Where!*

*Not
Who!*

*Not
When!*

Example:

117. A group must not include any union members if it includes any non-union members, and vice versa.

Comments ...

Not How... There is no indication in the Rule Statement about how the rule will be enforced.

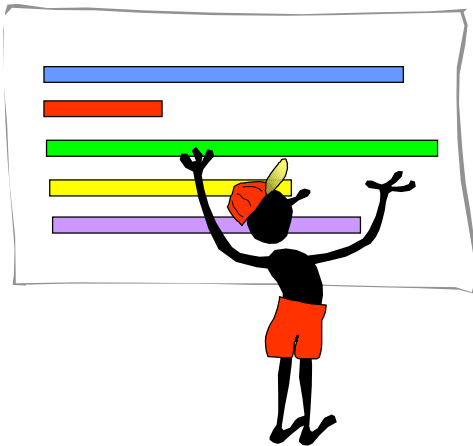
Not Where... There is no indication in the Rule Statement about where the rule is to be enforced (e.g., within what implementation components).

Not Who... There is no indication in the Rule Statement about what actor(s) may be responsible for enforcing the rule.

Not When... There is no indication in the Rule Statement about what events should cause the rule to be tested.

Removing the how, where, who, and when produces rules in *declarative* form.

Declarative expression of rules allows the most flexible rethinking about requirements and re-engineering of business processes.



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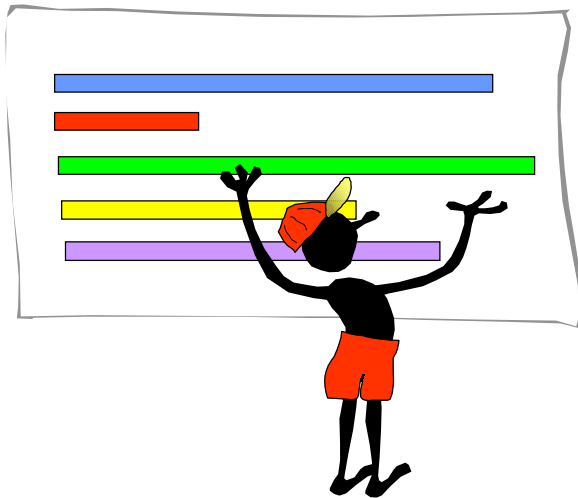
... Not Procedural!

Example:

99. Check the product number in database SRU [the Sandals ‘R’ Us database].
If the product number is equal to 422 [the part number of flip-flops]
and the product description is equal to “plastic flip-flops”,
 then set the new product number in database ASC
 [The Athens Sandal Company database] equal to 1547
 and set the product description equal to “Fun-in-the-Sun Flip-Flops”
else if the product number in database is equal to 423 through 495
[the part numbers of all orthopedic sandals]
 then set the new product number equal to 1647
 and set the product category equal to “Good for You, Too Sandals”
else if ...

Example of “Business Rules” from a Recent Software Vendor White Paper

Comments ...



This “rule” is obviously not in declarative form. It outlines processing logic, rather than business logic. Use of the control word “else”(among other things) is a dead give-away in that respect.

This type of “flowing” statement for expressing Operating Rules should be *avoided* at all costs. It does not communicate well at the business level. It does not isolate individual pieces of business logic. Its use is strongly discouraged by *RuleSpeak™*.

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... And Not Inscrutable!

Examples:

101. No savings and loan holding company, directly or indirectly or through one or more transactions, shall acquire control of an uninsured institution or retain, for more than one year after other than an insured institution or holding company thereof, the date any insured institution subsidiary becomes uninsured, control of such institution.

From the Code of Federal Regulations

Chosen as the winner of the annual “Legaldegook” contest by the Plain Language Committee of the State Bar of Texas

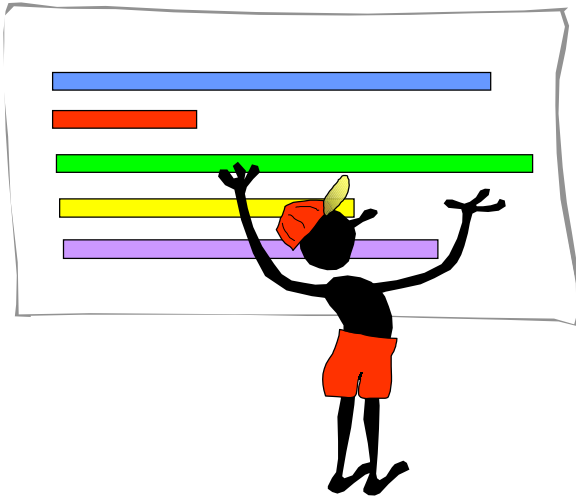
103. These items may or may not be available at all times, and sometimes not at all and other times all the time.

Menu Item in Restaurant

Ft. Bragg, CA

Comments ...

The most basic test for a good Rule Statement is that it can be readily understood by any business party who reads it...and always with the same interpretation.



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... Or impossible!

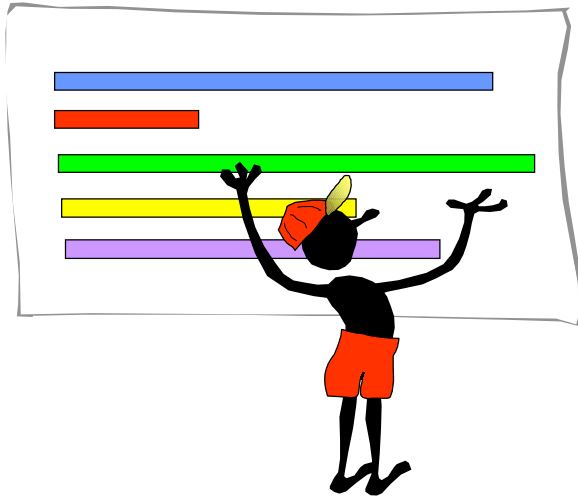
Example:

105. Regardless of anything to the contrary in this booklet, if your medical insurance terminates for any reason including death, you ... may elect within 30 days ... to continue such medical insurance.

*From the booklet “Group Insurance for I-14 Employees”
Consolidated Group Trust, The Hartford*

Comments ...

Rules can be “impossible” for many reasons...“state” issues (as above), time constraints, direct conflicts, etc.



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Rules about rules...

- A rule always contains one of the following “rule words”...

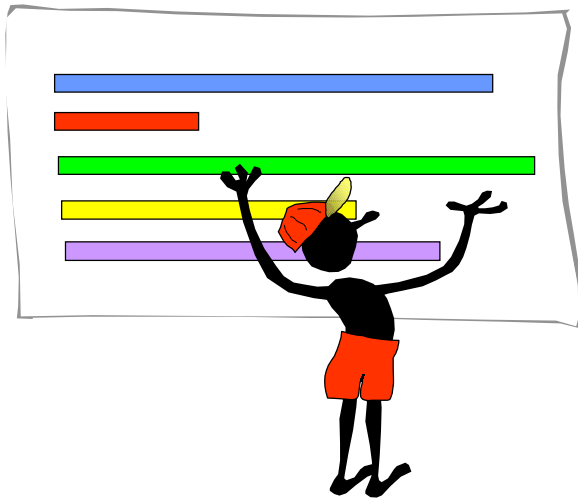
- υ “must” (or “should”)
- υ “no”
- υ “not”
- υ “only if”

A rule adds a “rule word” to terms and facts.

- A rule always constrains.
If not, then it may be a Permission Statement.



Comments ...



The Business Rule Approach prescribes that rules always build on facts, and that facts always build on terms. Therefore, a Rule Statement is really one or more facts to which one of the “rule words” above has been added.

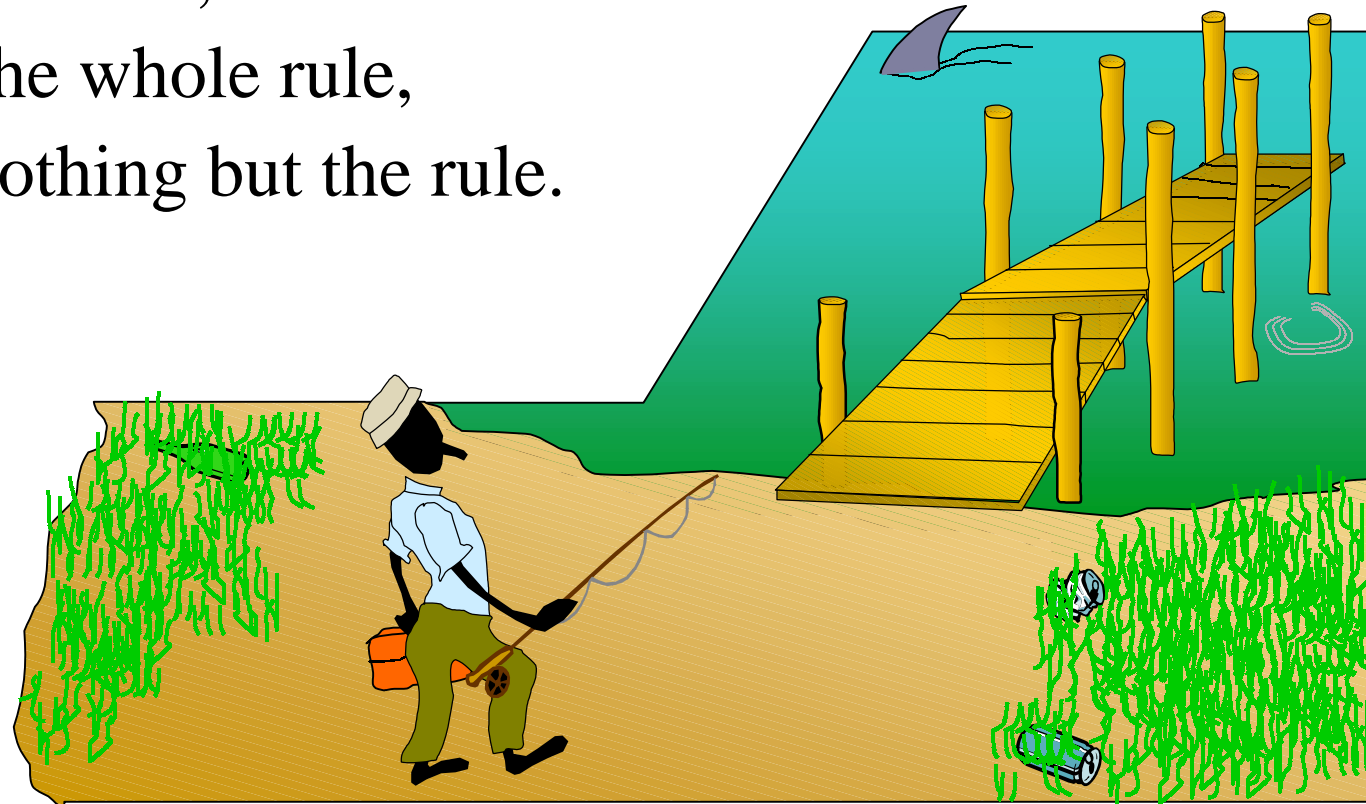
The “rule” really lies in the “must-ness” (or the “should-ness”) of the expression.... everything else in the Rule Statement pertains to terms and facts.

A Permission Statement says what you *can* do...not what you can't. A Permission Statement is more or less the “mirror image” of a rule.

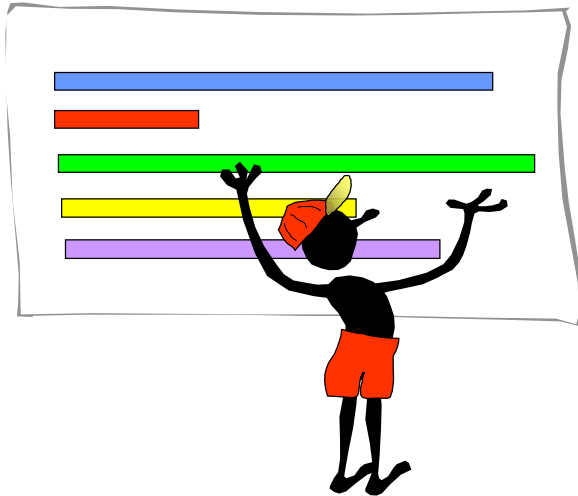
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A good business rule analyst...

- ▶ always knows how to get...
 - ◆ The rule,
 - ◆ The whole rule,
 - ◆ Nothing but the rule.



Comments ...



Since rules always build on terms and facts, knowing what the terms and facts are is critical to specifying “good” rules.

The guidelines that follow in this Component (collectively called BRS *RuleSpeak™*) are grouped into 3 sections, as follows...

- Getting the Rule
- Getting the Whole Rule
- Getting Nothing But the Rule

The guidelines start off relatively basic; the more advanced come later.

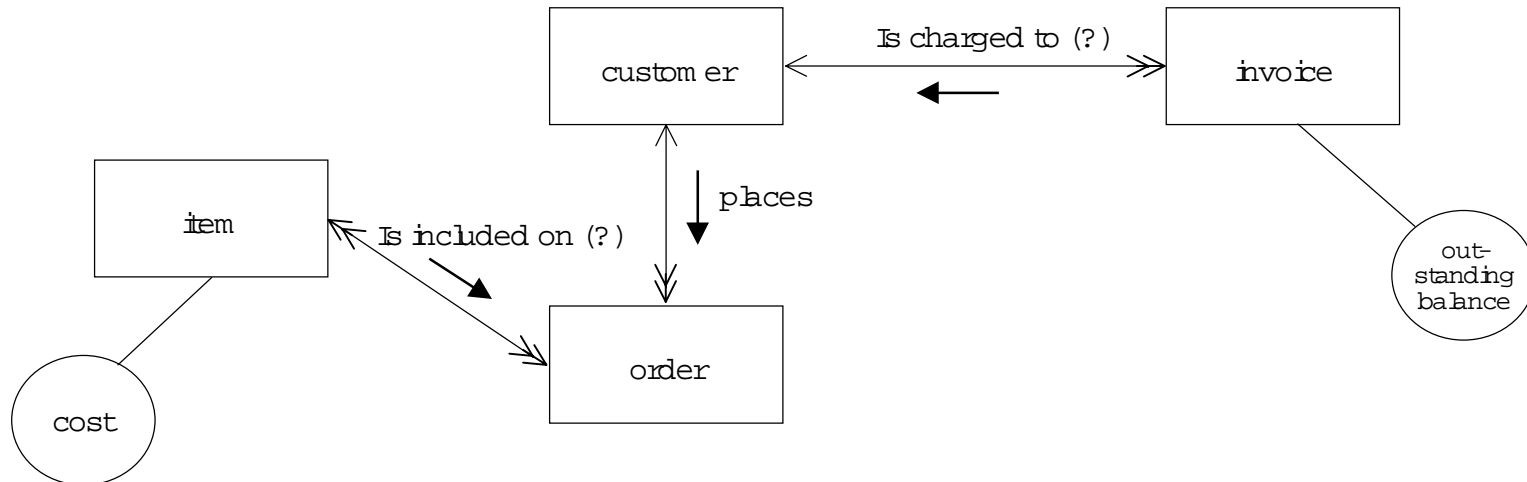
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Knowing the Terms and Facts

Example:

730. A customer whose outstanding balance exceeds \$1,000 on their last three successive invoices may not place an order for an item whose cost exceeds \$500.

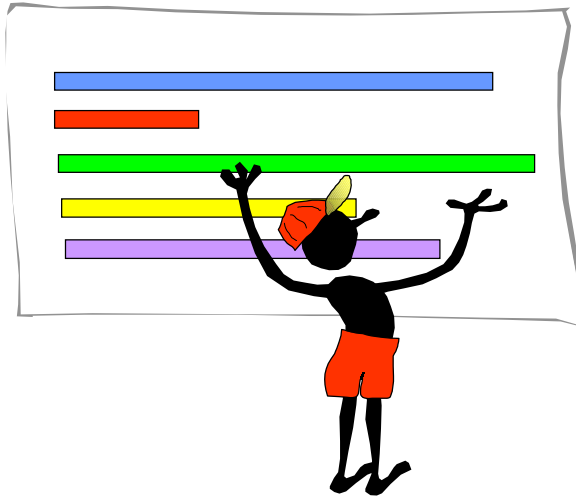
Ask: What things are referenced?
What facts are they involved in?



Comments ...

Knowing your terms and facts is critical to expressing rules well.

A structure for the underlying terms and facts (BRS calls this a *Fact Model*), or high-level data model, is an essential tool in this regard, as illustrated above.



Reference:

The BRS Fact Modeling Practitioner's Guide:
Developing the Business Basis for Data Models,
by Ronald G. Ross and Gladys S.W. Lam,
Business Rule Solutions, LLC, 2000.

*A technique of BRSolutions,
the BRS Business Rule Methodology*

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Getting the Rule

*“Can”...
...is not good!*

Example:

- 43.1 A customer can purchase a pesticide from a supplier.

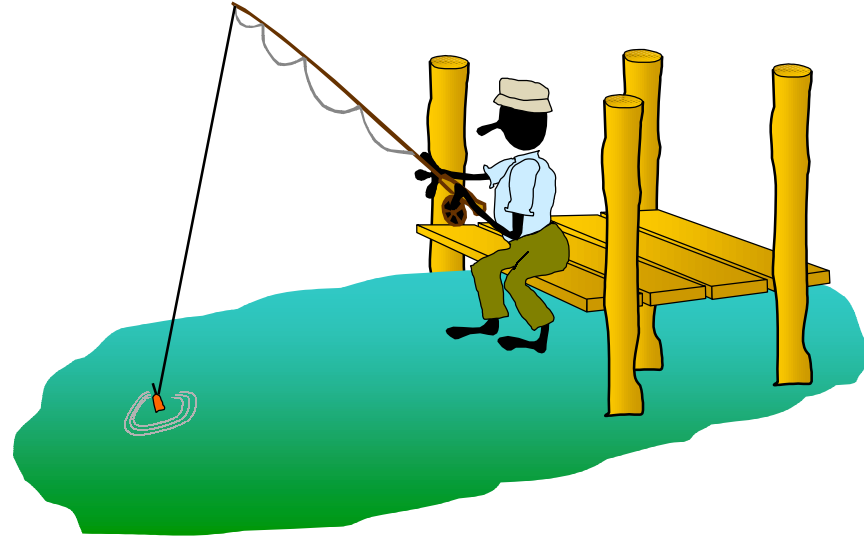
This is a fact.

- 43.2 A customer may purchase a pesticide from a supplier *only if* the supplier actually sells that pesticide.

This is a rule.

Ask: Does the statement refer to *capacity* (i.e., *can...*), or to a *constraint* on capacity (i.e., *may... only if*)?

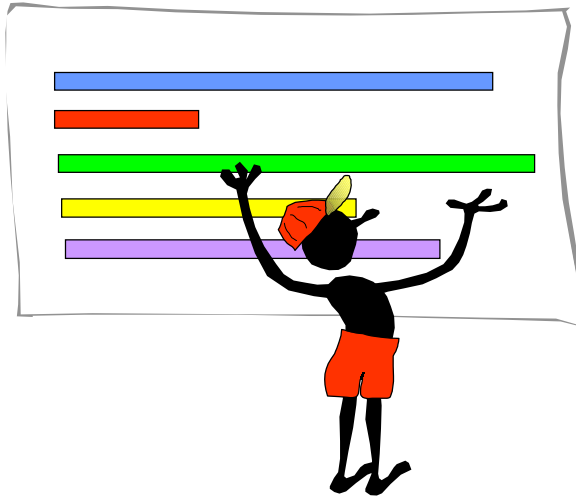
Rules always constrain!



Comments ...

Reserve the word “can” for facts.

Use the word “may” (where appropriate)
for rules.



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Getting the Rule

*'Free form' ...
...is not good!*

The *form* of a rule statement should follow the *form* of fact statements(s).

Example:

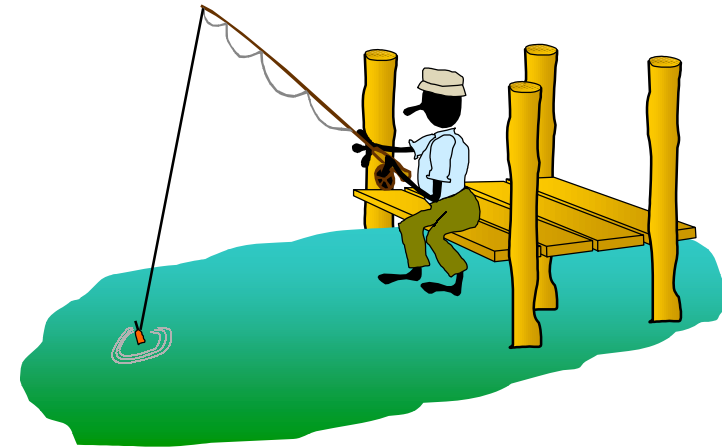
Fact: A customer *can* place an order.

Rule: A customer *must* place an order.

Example:

Fact: A customer *can* place an order.
A customer *can* have an account.

Rule: A customer *may* place an order *only if* the customer has an account.



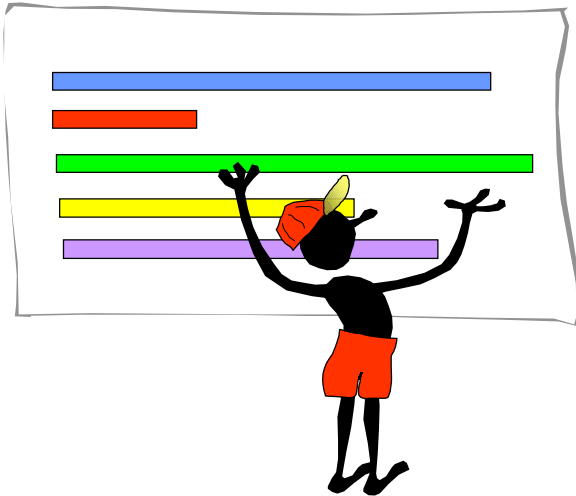
No rules without facts!

Comments ...

The *Fact Model* or high-level data model is your source for standard fact names.

Use these fact names in expressing rules to ensure consistency and to avoid ambiguities.

This becomes more and more important as the set of rules grows larger in number.



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Getting the Rule

Hidden Facts...

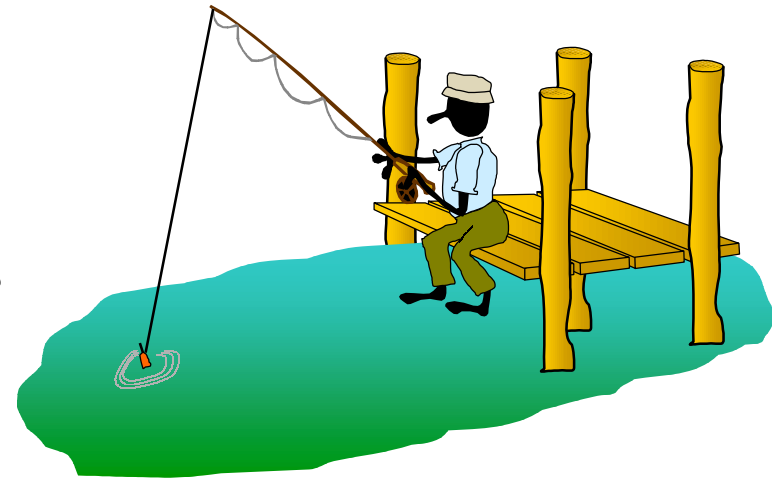
...are not good!

Example:

301. A team must have a manager.

Ask: What does “to have” mean?

- ▶ be managed by a manager?
- ▶ be sponsored by a manager?
- ▶ be approved by a manager?



Revised Version:

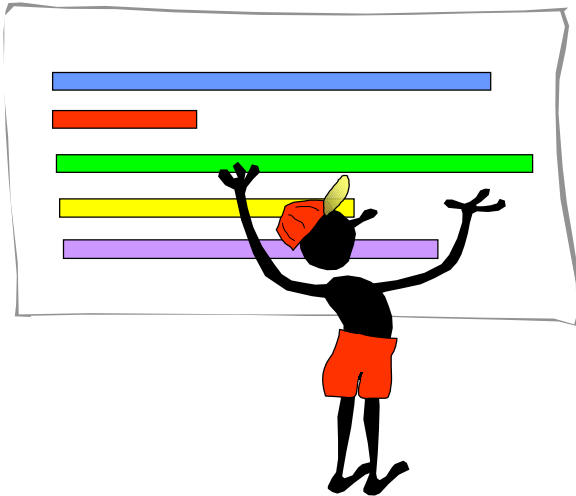
Fact: A team *is managed by* a manager.

302. A team must be managed by a manager.

Use the facts explicitly in the rules!

Comments ...

The verb “to have” is usually not very precise.
Use a more explicit alternative where possible.
If the relevant fact for rule #301 is “is managed by,” then use that fact explicitly in the rule (e.g., as in the revised version of the rule, #302, above).



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Getting the Rule

*Overkill...
...is not good!*

25. Freshmen [are not allowed] to participate in honors clubs.

Revised Version:

26. Freshmen must not participate in honors clubs.

27. Programmers must [always] work on a system.

Revised Version:

28. Programmers must work on a system.

29. [All] orders must indicate the customer who places them.

Revised Version:

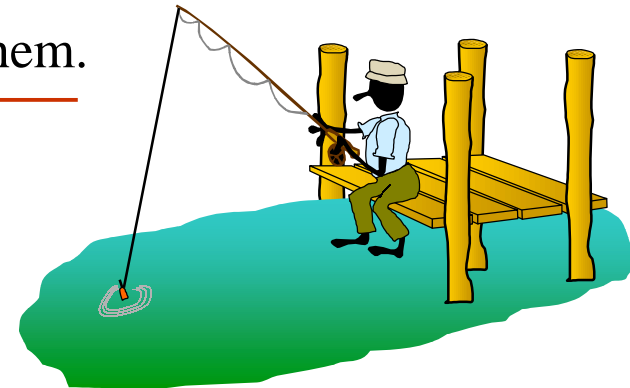
30. Orders must indicate the customer who places them.

31. Shipments must have a status [at all times].

Revised Version:

32. Shipments must have a status.

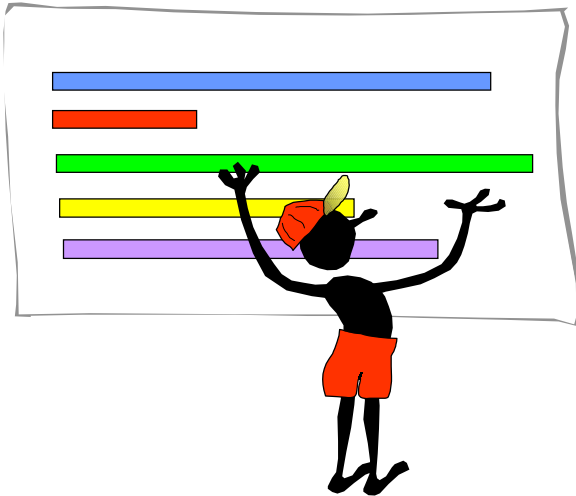
“Must” makes the point!



Comments ...

Words and phrases added for emphasis just add clutter.

They should be avoided to keep the Rule Statements succinct.



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Getting the Rule

*Plural subjects...
...are not good!*

26. Freshmen must not participate in honors clubs.

Revised Version:

36. A freshman must not participate in honors clubs.

28. Programmers must work on a system.

Revised Version:

38. A programmer must work on a system.

30. Orders must indicate the customer who places them.

Revised Version:

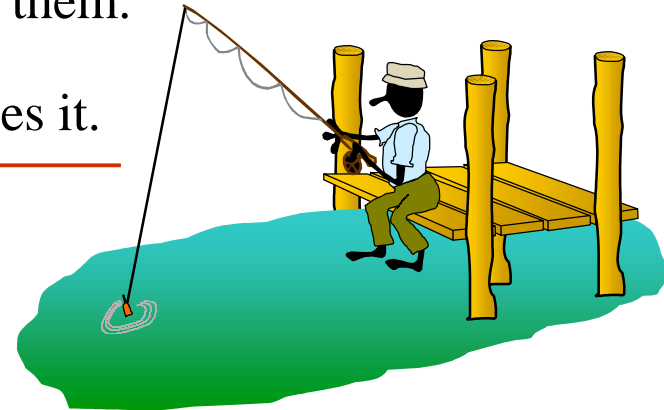
40. An order must indicate the customer who places it.

32. Shipments must have a status.

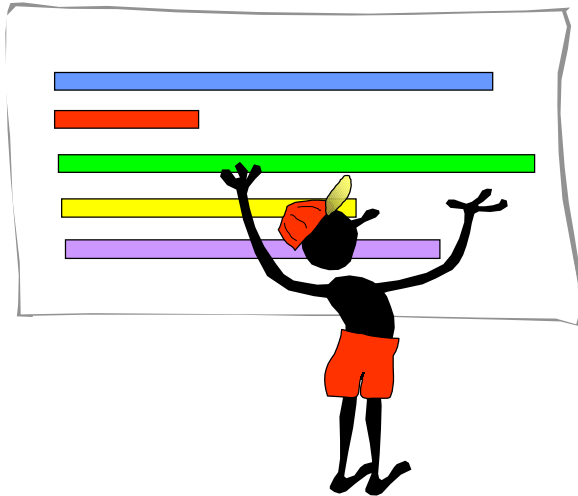
Revised Version:

42. A shipment must have a status.

Rules apply to individual instances!



Comments ...



Use a singular subject for all rules.

Since rules always apply at the instance level, the word “each” can be added to the subject for clarity.

This is the first of many points below about the importance of carefully identifying and expressing the subject for all rules.

Selecting the appropriate subject is actually the most critical step in expressing rules well.

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Getting the Rule

Plural objects...

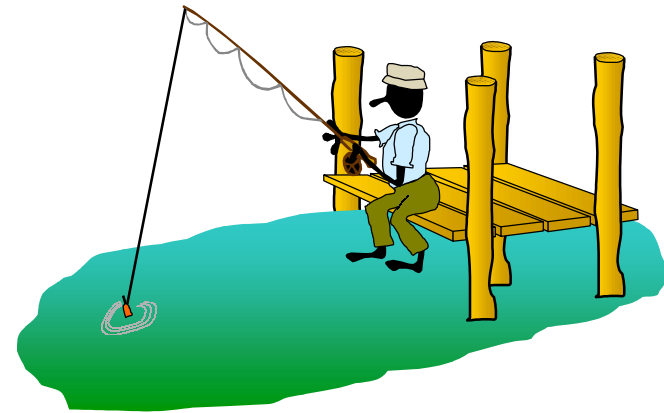
...are sometimes not good!

36. A freshman must not participate in honors clubs.

Revised Version:

37. A freshman must not participate in any honors club.

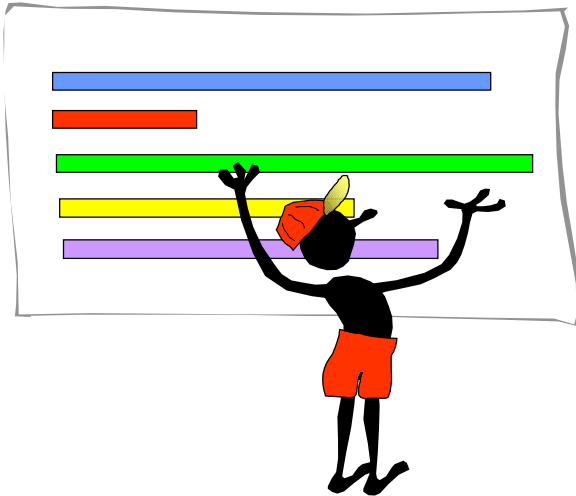
Say not “any” if you mean not any!



Comments ...

There is no hard and fast rule about singular vs. plural form other terms (i.e., objects) in the rule.

However, the singular form is preferred where appropriate -- such as in the case of “not any,” as above.



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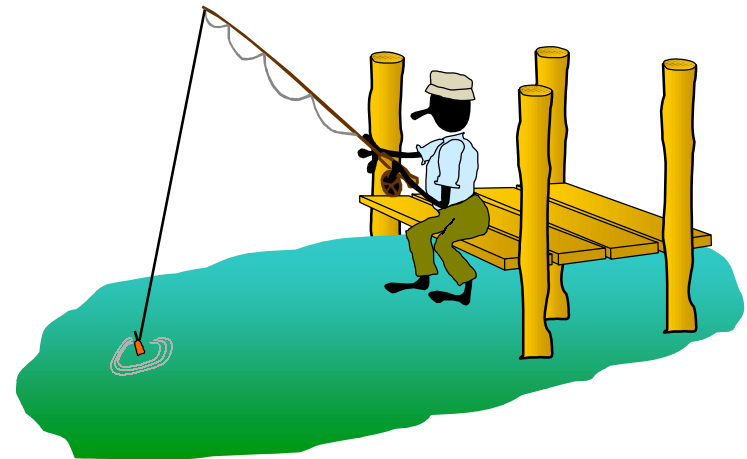
Getting the Rule

*Starting with 'if'...
...is not good!*

Incorrect: If an employee is retired, then he must not have an employment counselor.

Correct: A retired employee may not have an employment counselor.

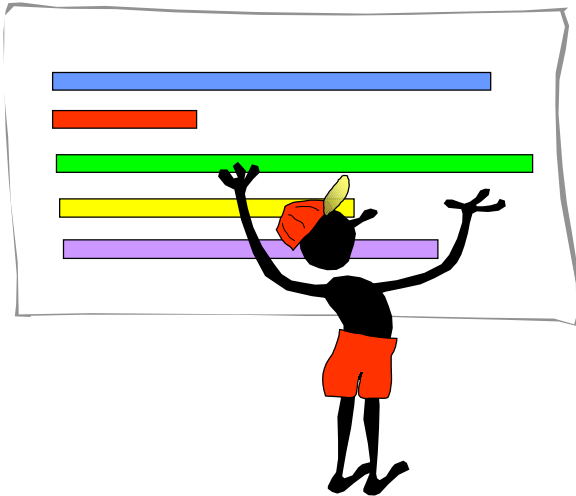
What's the real subject?!



Comments ...

Always try to pick an appropriate subject.

If a qualification (i.e., “if” clause) is necessary, it can be placed at the end of the rule.



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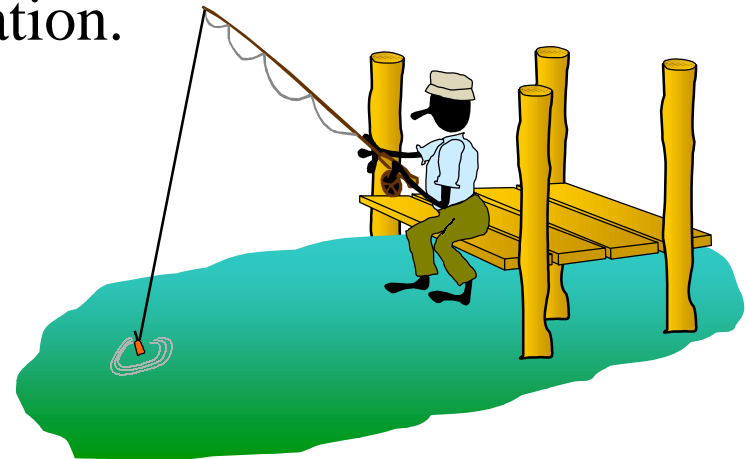
Getting the Rule

*Time as a subject...
...is not good!*

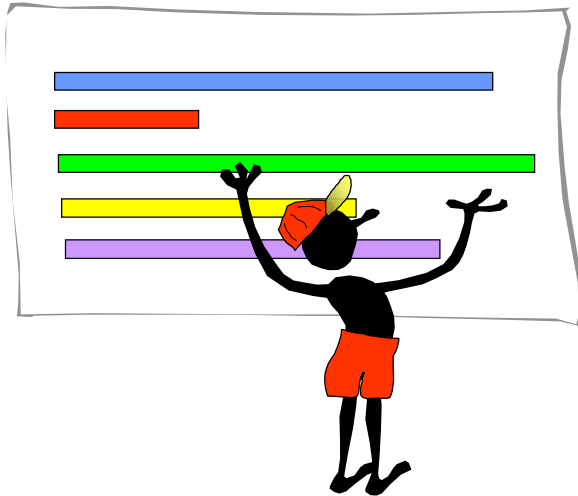
Incorrect: By the close of registration, a student must be enrolled in at least 2 courses.

Correct: A student must be enrolled in at least 2 courses by the close of registration.

What's the real subject?!



Comments ...



“By the close of registration” is really an event.

An event is a “when,” which is not appropriate as the subject of a rule. The rule therefore should be revised.

The event remains valid for the rule, of course, since it designates the point in time when enforcement of the rule is to begin. The event (point in time) can be included in the rule as a qualification, as illustrated above.

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Getting the Whole Rule

*AWOL facts...
...are not good!*

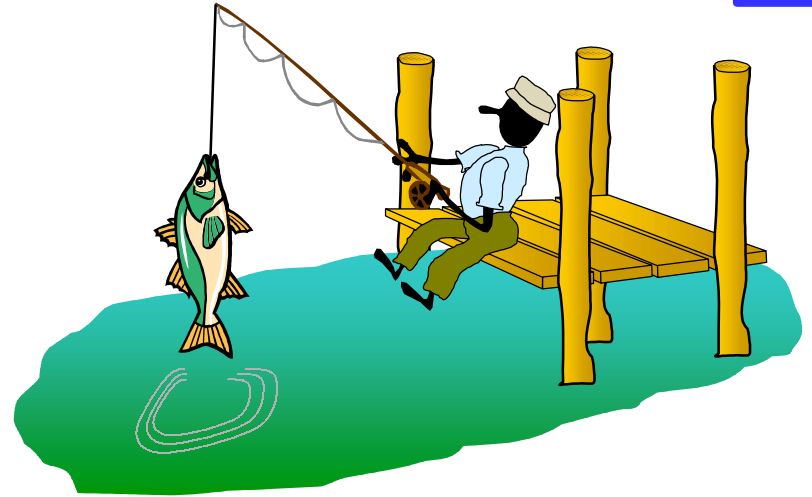
Example:

682.2 An order must not be shipped if the outstanding balance exceeds credit authorization.

...there seems to be hidden or missing facts!

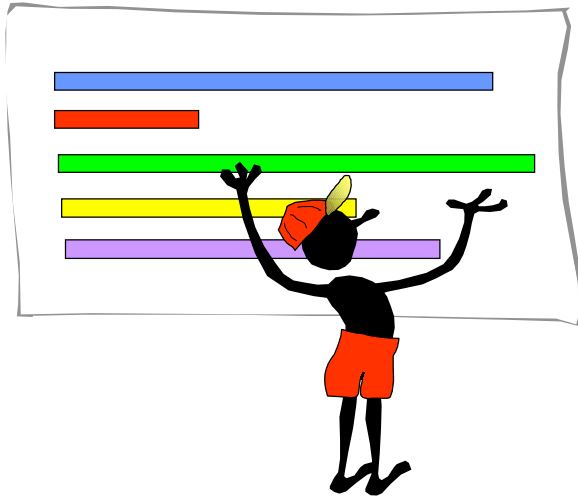
Ask: Outstanding balance *of what?*
(...order?, customer?, account?, shipment?)

Credit authorization *of what?*
(...order?, customer?, account?, shipment?)



Comments ...

Ambiguities will result when relevant facts are omitted from a rule.



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Getting the Whole Rule

Original Rule:

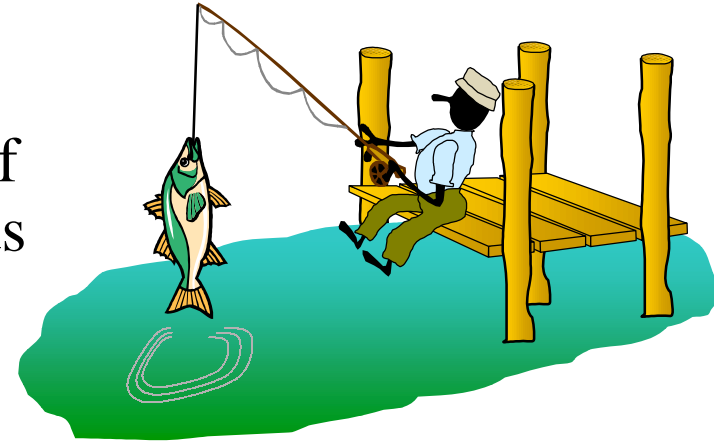
682.2 An order must not be shipped if the outstanding balance exceeds credit authorization.

Clarified Facts:

- 684.1 Customer has credit authorization.
- 684.2 Customer has account.
- 684.3 Account has outstanding balance.

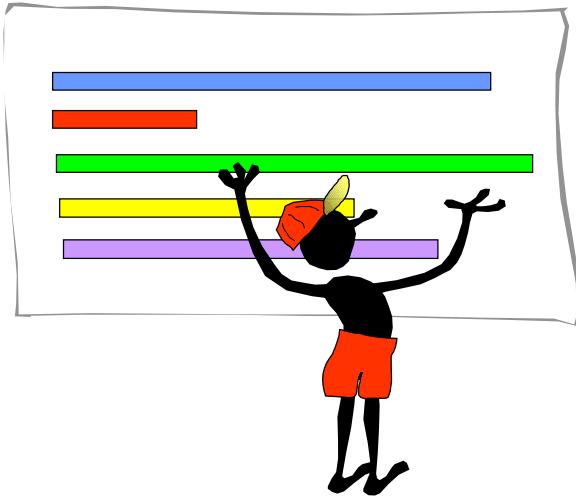
Revised Version:

684.5 An order must not be shipped if the outstanding balance of the customer's account exceeds the customer's credit authorization.



Comments ...

Identify all the facts relevant to the rule,
and insert them into the Rule Statement
as appropriate.



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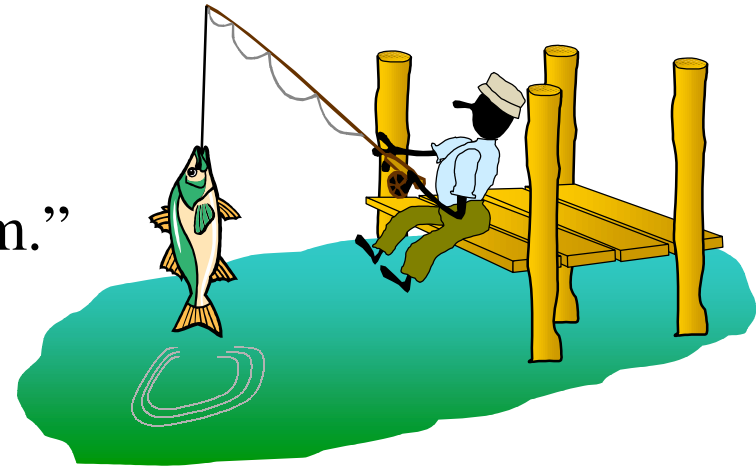
Getting the Whole Rule

AWOL subjects...
...are not good!

Example:

“No less than two people in
booths between 9 am and 1 pm.”

Tilly’s Restaurant
Alameda, CA

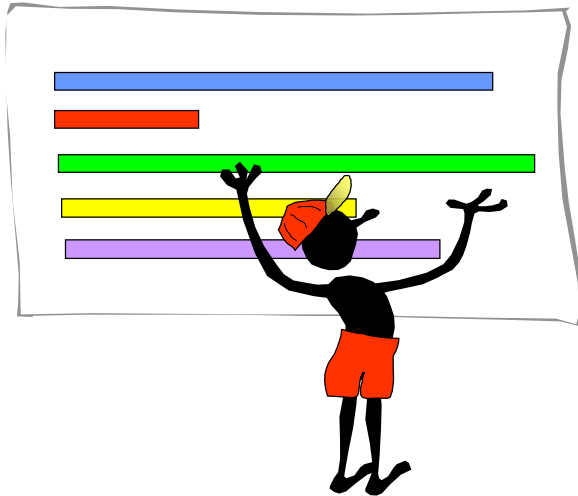


Ask: What is the *subject*?
(“*There may be...*” is not a subject!)

Improved Version:

A booth may be occupied by no less than two
people between 9 am and 1 pm.

Comments ...



Every rule should have an explicit subject.

Identifying the appropriate subject is an important step in moving from informal expression of a rule, where the context is obvious, to more formal expression.

Note that this often leads to additional insights about the true meaning or implications of a rule.

For example, in the rule above, “zero” number of people is probably an acceptable (and necessary) clarification.

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Getting the Whole Rule

*Actor subjects...
...are not good!*

Example:

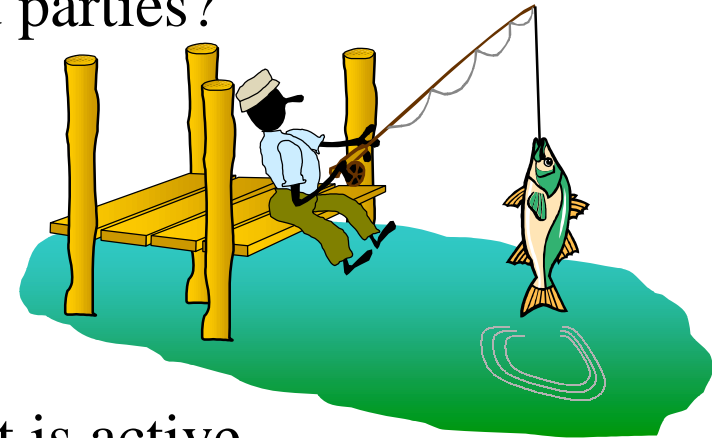
564. A customer may make a withdrawal only if their account is active.

Ask: What about pre-authorized third parties?
What about the bank itself?
What about other actors?

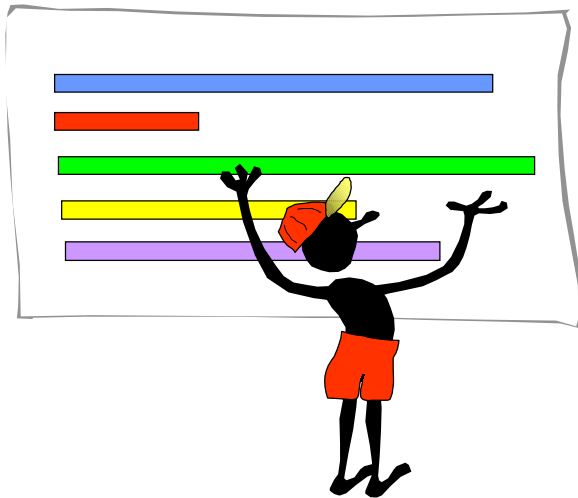
Improved Version:

566. A withdrawal for an account may be made only if the account is active.

Note: Use scripts, procedures, etc. to indicate which actors take which actions!



Comments ...



A rule that indicates an actor as a subject should be scrutinized carefully.

Does the rule really pertain only to that actor?

Often, the answer is no.

If not, substitute a non-actor subject (e.g., withdrawal).

Don't confuse rules, which express constraints or guidance for behavior, with scripts or procedures, which should be used to indicate what actors actually do.

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Getting the Whole Rule

Command verb forms...
...are not good!

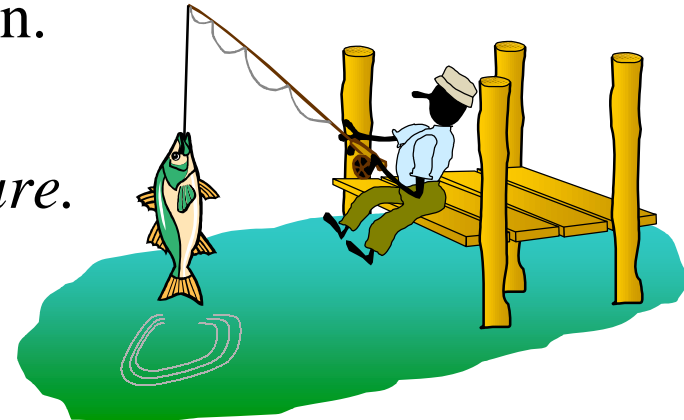
Example:

682.1 Don't *ship* orders if the outstanding balance of the order exceeds credit authorization.

...the implied subject is "you."

...probably represents a procedure.

Ask: What *term* is subject to the rule?



Improved Version:

682.2 An order must not be shipped if the outstanding balance of the order exceeds credit authorization.

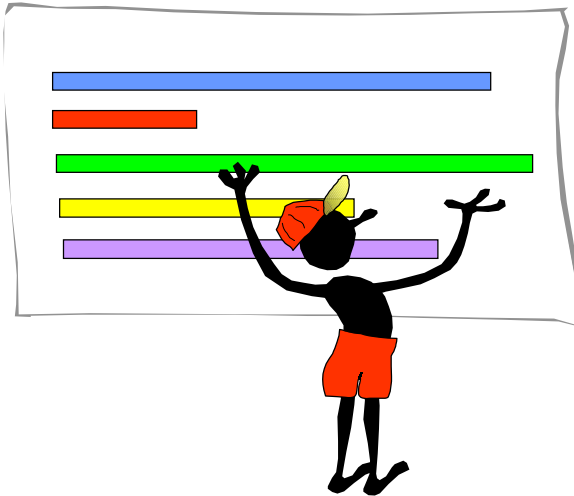
Rules should be you-less!

Comments ...

Every rule should have an explicit subject.

The “command” form is how actors might communicate with one another in performing the work.

However, rules should be expressed independently of communication between actors.



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Getting the Whole Rule

CRUD...

...is not good!

Example:

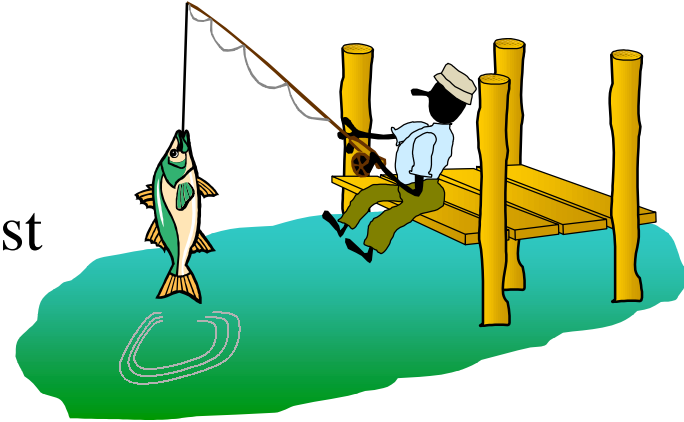
- 685.1 Update product cost when the cost of any component changes.
...the implied subject is “you.”
...probably represents a procedure.

Ask: What *term* is subject to the rule?

Improved Version:

- 685.2 A product's cost must be computed as the sum of the cost of all its components.

Rules should be event-less!



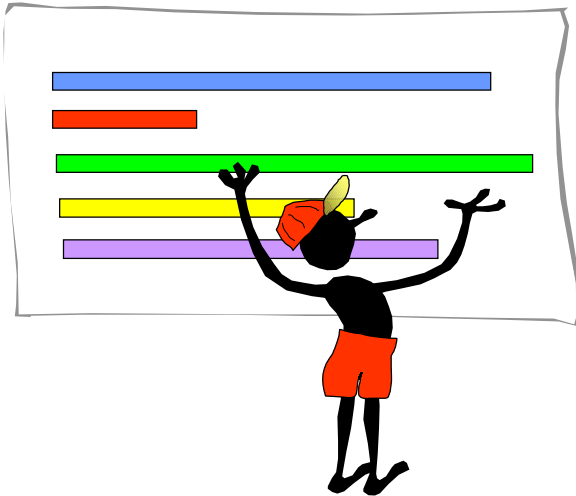
Comments ...

“CRUD” stands for “create, retrieve, update, or delete.”

These represent system or database *events*.

Events should never be used as the subjects for rules.

For computations, the result of the computation should always be identified as the subject of the rule.



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The Business Rule Technique Company

Getting the Whole Rule

CRUD...

...is not good!

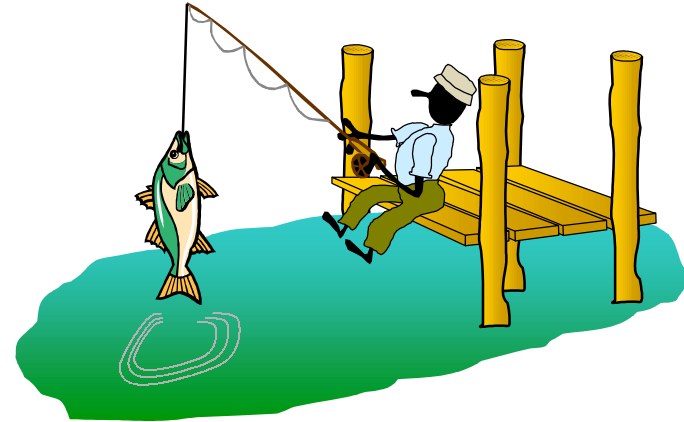
Example:

110.1 Don't delete a customer that
has any open orders.

...the implied subject is "you."

...probably represents a procedure.

Ask: What *term* is subject to the rule?
What *other* events should be considered?

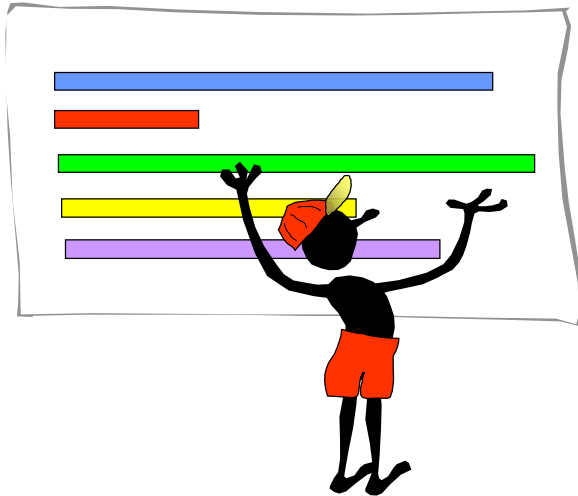


Improved Version:

110.2 An open order must be placed by a customer.

Rules should be event-less!

Comments ...



One problem with referencing an event as the subject of a rule is that most rules can be violated during *more* than one event.

If a particular event is referenced as the subject of a rule, the other events may be missed in interpreting or enforcing that rule.

In the example above, the additional event “actor opens order” is probably also relevant to the rule.

The revised version of the rule covers this other event as well.

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Getting the Whole Rule

“When”...

...is usually not good!

Example:

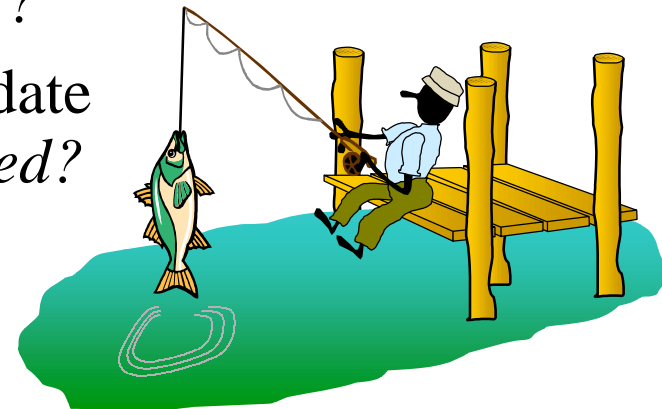
599.1. When an order is created, it must have a promised shipment date.

...this is particular to a procedure!

Ask: Is the rule enforced for *other* procedures, or when *other* business events occur?

e.g., Can the promised shipment date of an order subsequently be *deleted*?

Rules should be when-less!

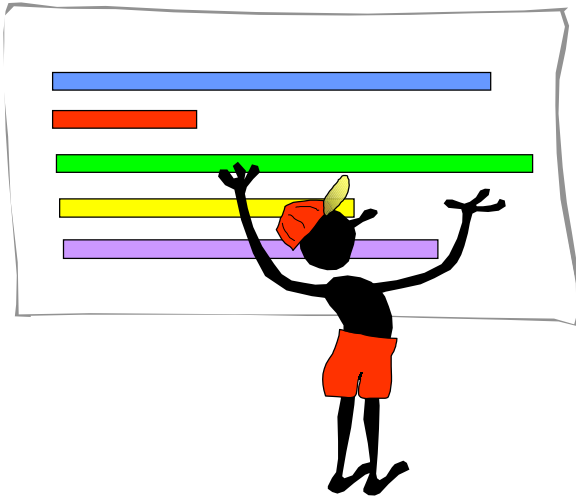


Comments ...

“When” always indicates an event.

Rules are usually not specific to a single event.

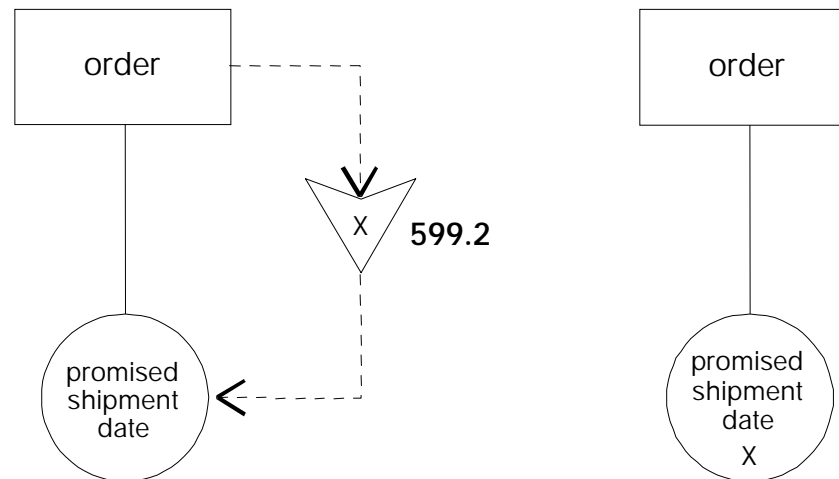
Therefore the “when” should be removed from the Rule Statement.



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Getting the Whole Rule

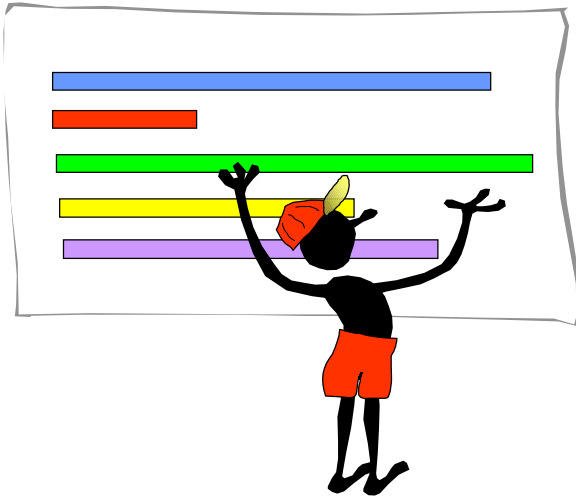
Revised Version:



599.2 An order must have a promised shipment date.

Reference: *The Business Rule Book* (Second Edition), by Ronald G. Ross, Business Rule Solutions, LLC, 1997.

Comments ...



Even this very simple rule probably can be violated during two distinct events:

- When the order is created.
- When an attempt is made to delete the promised shipment date.

The rule can be stated in such manner to cover both events by removing the “when” and restating it.

Note that the two events might appear in different use cases, scripts, procedures, programs, GUIs, etc.

Stating the rule in an event-less fashion is an important step in ensuring consistent and complete enforcement across all events where it might be violated.

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Getting the Whole Rule

“When”...
...*is usually not good!*

Example:

When an advisor is selected to advise a student, that advisor must be a teacher teaching some course that student is recorded as taking.

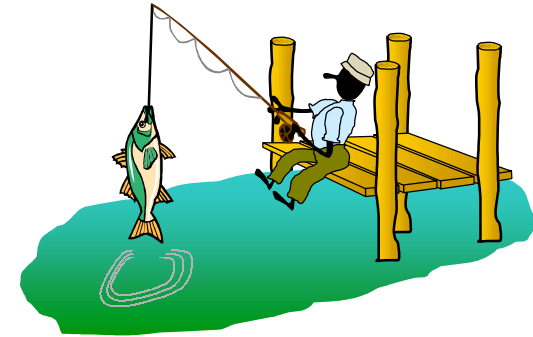
...*this is particular to a procedure!*

Ask: Is this rule enforced for *other* procedures,
or when *other* business events occur?

e.g., What if the only course the advisor
teaches that the student has taken is *deleted*?

Revised Version:

5130. The advisor who advises a student must be a teacher teaching some course that student is recorded as taking.

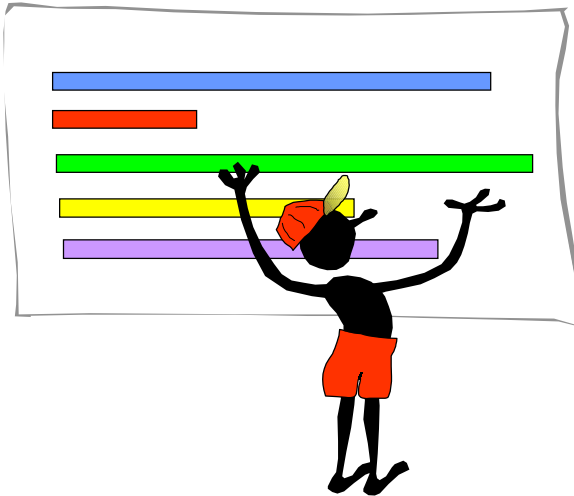


Comments ...

Removing the “when” is always an important step in ensuring the rule will be consistently enforced for all relevant events.

As this example suggests, the “other” events are often less obvious than the event implied by the “when.”

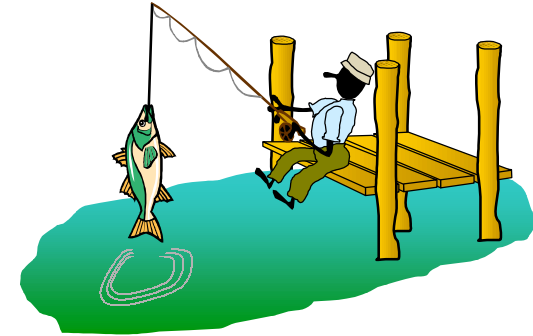
Also, more complex rules often involve *numerous* “other” events.



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Getting the Whole Rule

*Action verbs...
...are not good!*



Incorrect: A game must not finish if tied.

Correct: A finished game must not be tied.

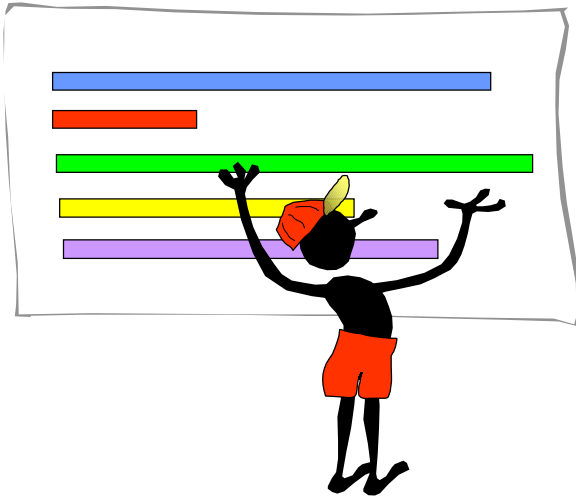
Rules should constrain states, not processes per se!

Comments ...

Removing the “when” is always an important step in ensuring the rule will be consistently enforced for all relevant events.

As this example suggests, the “other” events are often less obvious than the event implied by the “when.”

Also, more complex rules often involve *numerous* “other” events.



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Getting the Whole Rule

Ambiguous states...
...are not good!

Example:

297. A project team member should not be rotated off the project *until finished*.

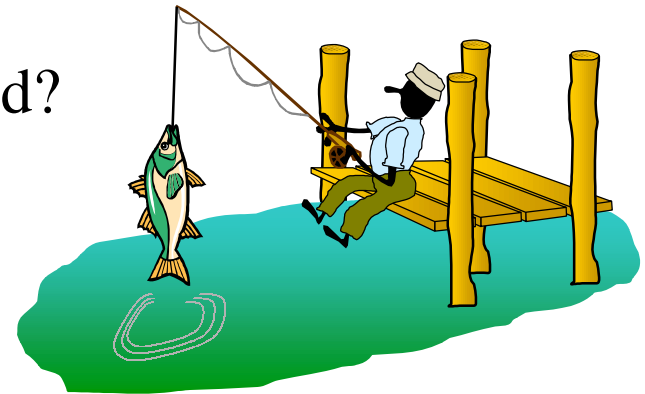
Ask: What does the state apply to?

The *project team member* is finished?

The *project* is finished?

Revised Version:

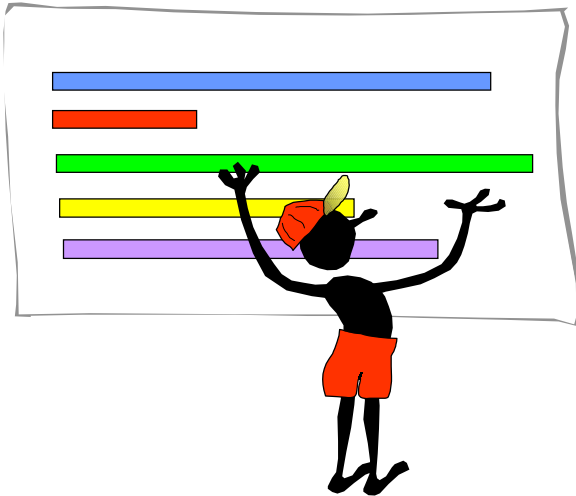
298. A project team member should not be rotated off the project until *the project* is finished.



Comments ...

Be careful about a qualification (e.g., “finished”) relative to the term it logically qualifies.

Make that term explicit to avoid ambiguity.



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Getting the Whole Rule

Ambiguous timeframes...
...are not good!

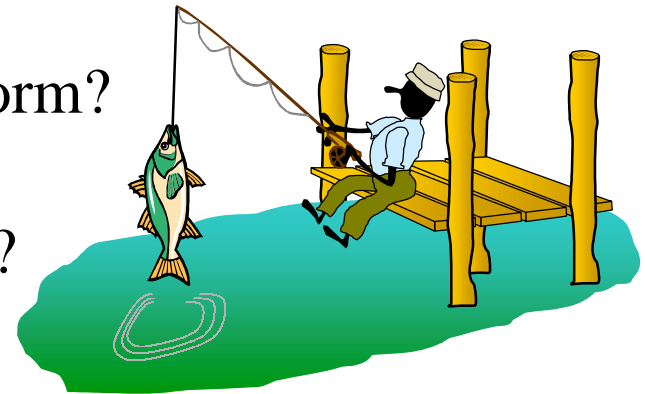
Example:

301. A purchase order must be approved by at least two managers *during a snowstorm*.

Ask: What does the timeframe apply to?

Must be *approved* during a snowstorm?

A purchase order *created* during a snowstorm must be approved by...?



Revised Version:

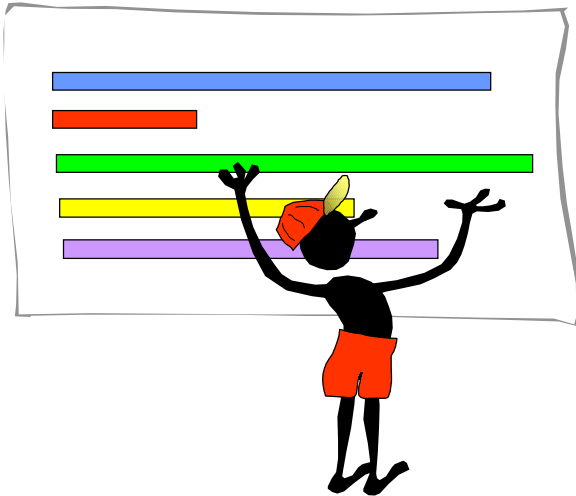
302. A purchase order *taken* during a snowstorm must be approved by at least two managers.

Comments ...

Be careful about time-based qualifications (e.g., “during a snowstorm”).

To avoid ambiguity, include a reference to the event being qualified (e.g., “taken”).

Note that as always, the referenced event should not be indicated as subject of the rule.



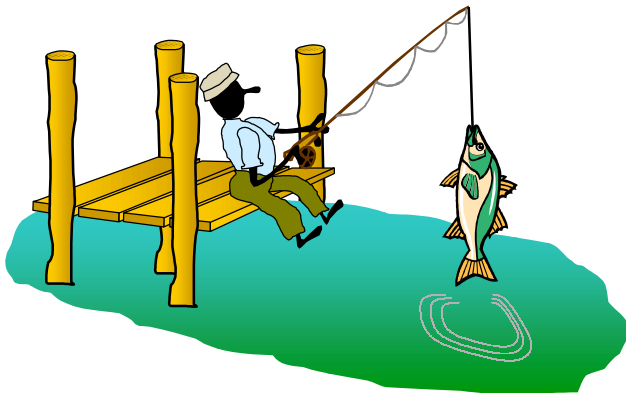
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Getting the Whole Rule

*Avoiding 'Eachness' ...
...is sometimes not good!*

Incorrect: A team must be managed by a manager,
effective January 1, 1999.

Correct: Each team must be managed by a manager,
effective January 1, 1999.

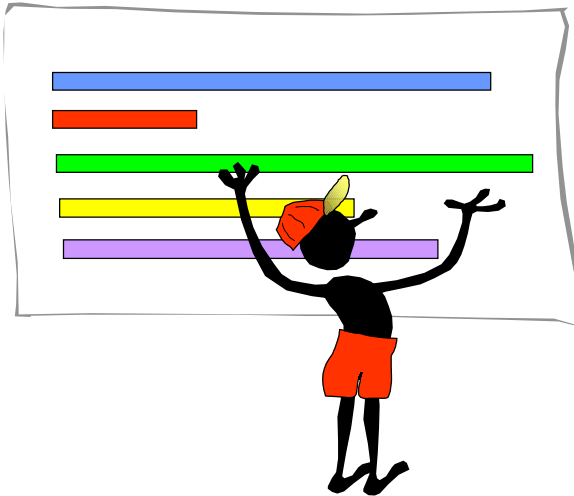


If all, say each!

Comments ...

Rules always apply at the instance level.

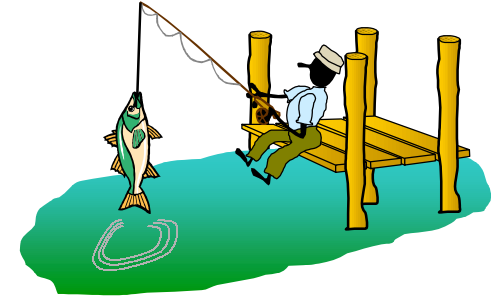
To emphasize this, and to avoid ambiguities in cases such as the above, include the word “each” to qualify the subject of the rule.



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Getting the Whole Rule

*Hiding a computation...
...is not good!*



Example:

305. A course section may include no more than 30 seats.

Ask: What needs to be computed?

Revised Version:

306. The number of seats for a course section must not exceed 30.

Example:

309. A course may have no more than 5 teachers and advisors combined.

Ask: What needs to be computed?

Revised Version:

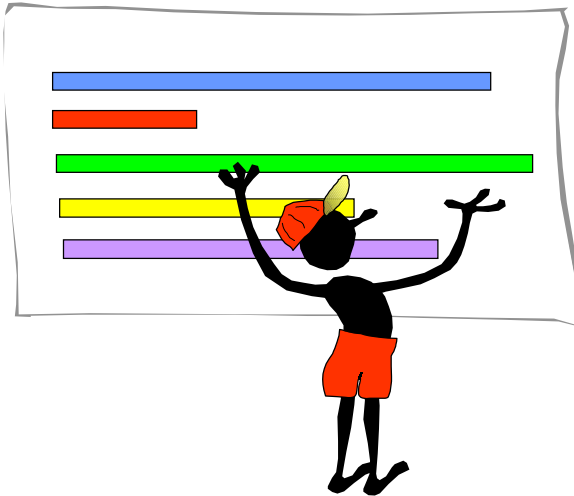
310. The combined total of teachers who teach a course, and advisors who advise a course, must not exceed 5.

*The subject of a rule involving a computation
should be the result of the computation!*

Comments ...

The examples above imply computations -- in these cases to “count” the number of relevant instances.

The result of a computation should always be given as the subject of the rule.



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Getting the Whole Rule

“OR”...

...is usually not good!

Example:

720. A project must be considered active if it has a manager, a budget, *or* a sponsor.

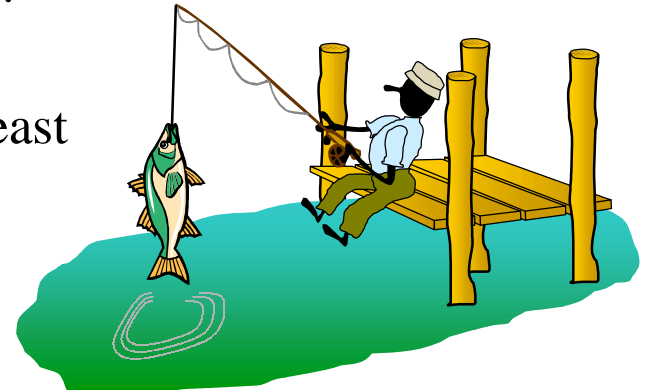
Ask: How many?

- ▶ At least one?
- ▶ Exactly one?
- ▶ What if the rule changes to “2 of the 3”?

Revised Version:

720.1 A project must be considered active if at least one of the following is true:

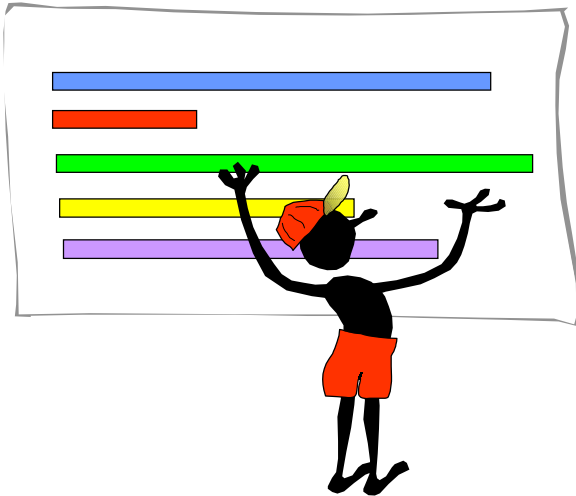
- ▶ It has a manager.
- ▶ It has a budget.
- ▶ It has a sponsor.



Comments ...

Eliminate “or” by listing the “or-*ed*” conditions, then making the number of required conditions explicit (e.g., “at least one”).

This avoids potential ambiguity, and allows for easier modification of the rule.



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Getting the Whole Rule

“etc.”...

...is not good!

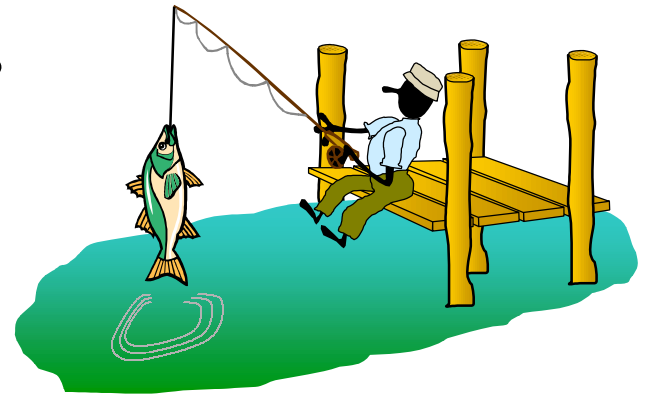
Example:

217. A territory must not include any non-candidate traditional gas station if it includes any ultra-service or food outlet; must not include any ultra-service if it includes any non-candidate traditional gas station or food outlet; etc.

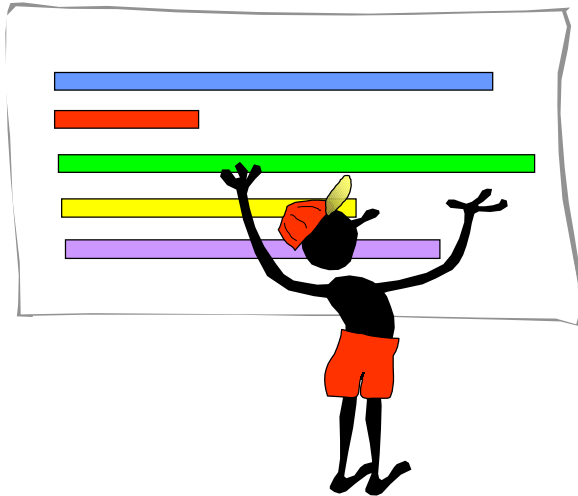
Ask: Is there an *implicit* “or”?
What *other* things does the “etc.” refer to?

Revised Version:

- 217.1 A territory may include no more than one of the following:
- ▶ Non-candidate traditional gas station.
 - ▶ Ultra-service.
 - ▶ Food outlet.



Comments ...



Including “etc.” (or equivalent words) is often a sign of problems in a Rule Statement, and an open invitation to misinterpretation.

Often, a much simpler way can be found to express such a rule -- as illustrated above.

If no simpler way of expressing the rule is forthcoming, this may indicate the need for some new or revised term that covers the entire list of things and/or conditions implied by the rule. Consider what the list is actually about as a whole, and identify what term best suggests that meaning. Be sure to coordinate the selected term with the set of existing terms and facts.

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Getting Nothing But the Rule

Non-atomic rules...

...are not good!

Example:

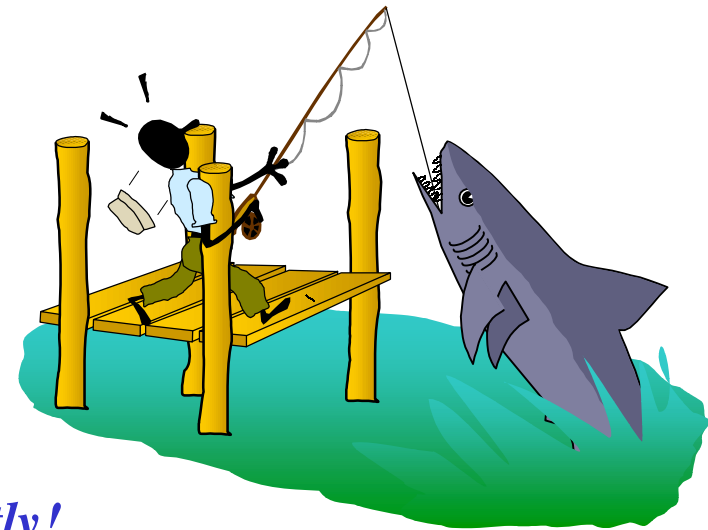
710. A withdrawal from an account may be made only if the account is active *and* the account balance is greater than zero.

Ask: Is the “and” essential to the rule?

Atomic Rules:

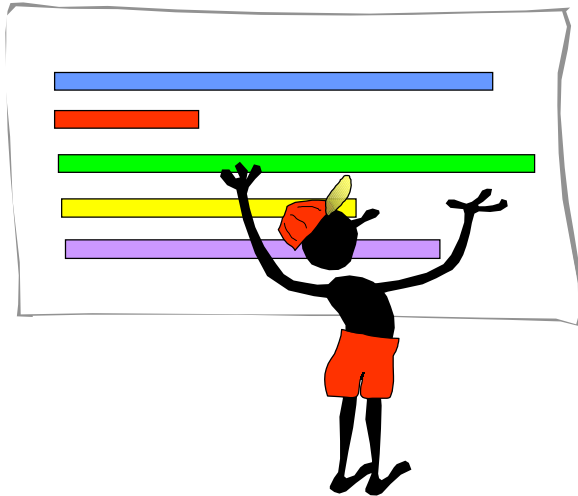
710.1 A withdrawal from an account may be made only if the account is active.

710.2 A withdrawal from an account may be made only if the account balance is greater than zero.



Rules may change independently!

Comments ...



The “AND” above is not essential to the rule.

Assume all rules will be effectively “ANDed” for enforcement purposes.

Unessential “ANDs” therefore should be removed from Rule Statements.

The result is separate rules that can be changed independently of each other.

This is one aspect of achieving “atomic” rules.

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Getting Nothing But the Rule

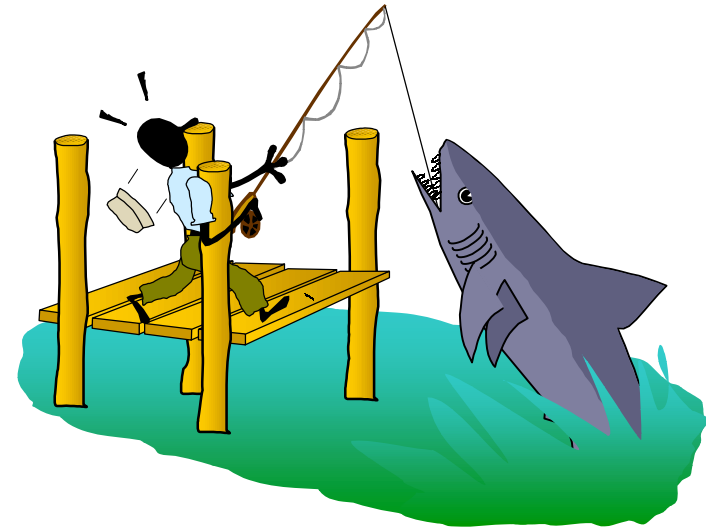
*Embedded computations...
...are not good!*

Original Rule:

898. The sum of all payment amounts applied to an order must be greater than or equal to the amount due for the order.

Revised Rules:

- 898.1 The amount paid for an order must be computed as the sum of all payment amounts applied to the order.
- 898.2 The amount paid for an order must be greater than or equal to the amount due for the order.



Computation formulas can change independently!

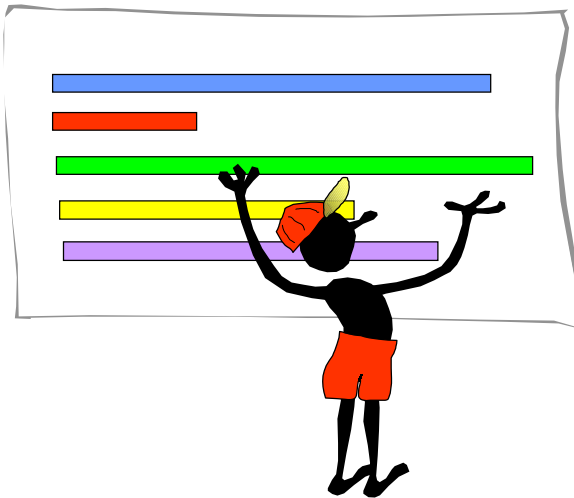
Comments ...

The original rule is actually not atomic — it includes a computation, and a constraint on the result of that computation.

Rules in atomic form are always desirable.

Therefore, the computation should be expressed as one rule (with the result of the computation as the subject).

The constraint on that result (“greater than or equal to”) should be expressed as a second rule.



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Getting Nothing But the Rule

Embedded rules...

...are not good!

Example:

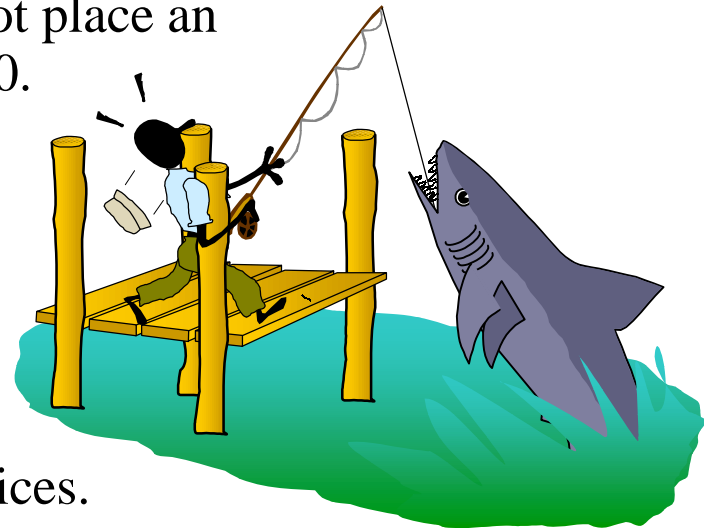
730. A customer whose outstanding balance exceeds \$1,000 on each of their last three successive invoices may not place an order for an item whose cost exceeds \$500.

Ask: Can the conditions be named?
Do they appear in *other* rules?

Revised Version:

- 730.1 A customer must be considered *high-risk* if the outstanding balance exceeds \$1,000 on each of their last three successive invoices.
- 730.2 An item must be considered *big-ticket* if its cost exceeds \$500.
- 730.3 A high-risk customer may not place an order for a *big-ticket* item.

Rules may change independently!



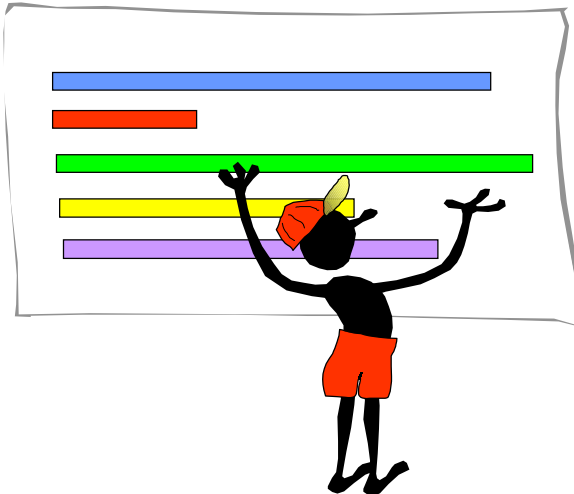
Comments ...

Conditions often can be named (e.g., “high-risk,” “big-ticket,” etc.). Sometimes a “standard” or common-use name already exists in the business.

The named conditions should be broken out as separate rules, then the names of the conditions substituted for the conditions in the original rules.

This has several important advantages:

- The original rule is simpler.
- The conditions can be validated and changed independently (i.e. the resulting rules are more atomic).
- The names of the conditions can be re-used in other rules, producing consistency in meaning and evaluation in a larger set of rules.



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The Do's and Don'ts of Expressing Business Rules

BRS *RuleSpeak*TM

*“Get the rule, the whole rule,
and nothing but the rule!”*

*RuleSpeakTM is a technique of BRSolutions,
the BRS Business Rule Methodology*

