

***Response to MDC/Microsoft Business Rules Metamodel
by the Business Rules Group (BRG)***

presented at the Nov. 1999 MDC working session
by Keri Anderson Healy and Michael Eulenberg

A. Introduction / Overview

1 The Business Rules Metamodel ~ Background

- Developed originally as a GUIDE project deliverable
- Published in 1995; revised in 1997
- Widely-adopted (defacto) standard for the definition of a "business rule"
- Uses the Zachman Framework as a context
 - specifically "row-3" (the I/S Perspective)
- The Business Rules Group (the model's original author) continues to evolve and expand these definitions
 - more information: www.evergreen.edu/businessRules/

2 The Business Rules Group & the MDC

- The Business Rules Group (BRG) reviewed the MDC Business Rules metamodel at our last working meeting (Aug. 1999).
 - Our members agreed to provide a response to the MDC.
- Contact was made with Thomas Bergstraesser (Microsoft), who invited us to attend today's meeting.
 - objective: understand the format & timing of our response
- An invitation has been extended to the MDC to attend our next working meeting.
 - Orlando, FL
 - February 2000

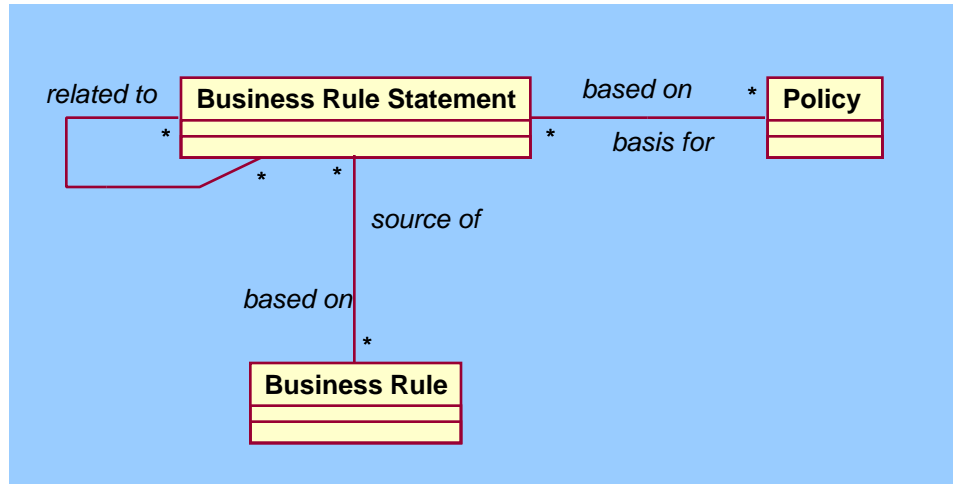
3 Feedback and Initial Review

- Terry Moriarty (a BRG member) was asked by Microsoft to review the MDC Business Rules submodel.
 - Her independent response was provided to Microsoft/MDC and was used by the BRG to prepare this response.
- We have begun to compile a point-by-point response to the MDC Business Rules model (Review Draft 7/15/99).
 - Some initial comments are provided here.
 - The notation of the BRG metamodel is represented here in UML form for ease of comparison.
- Our current work has developed a metamodel that covers several of the constructs in the MDC Business Engineering Model (e.g., Goal, Objective, Mission, Vision, etc.).
 - Our input on these constructs is also relevant.

B. Metamodel Response Points

This section contains the point-by-point response (comparison) between the two metamodels.

1. The Origins of a Business Rule ~ part 1



from [GBRP Figure 3]

| | | |
|------------|-----------------------------------|----------------|
| 1.1 | Relating rules to policies | rating: |
|------------|-----------------------------------|----------------|

The BRG model permits business rules to be related to policy.

The MDC model does not appear to provide this relationship.

| | | |
|------------|--|----------------|
| 1.2 | Business Rule Statement vs. Business Rambling | rating: |
|------------|--|----------------|

The BRG model uses the term "Business Rule Statement" for the concept.

The MDC model uses the term "Business Rambling" for the concept.

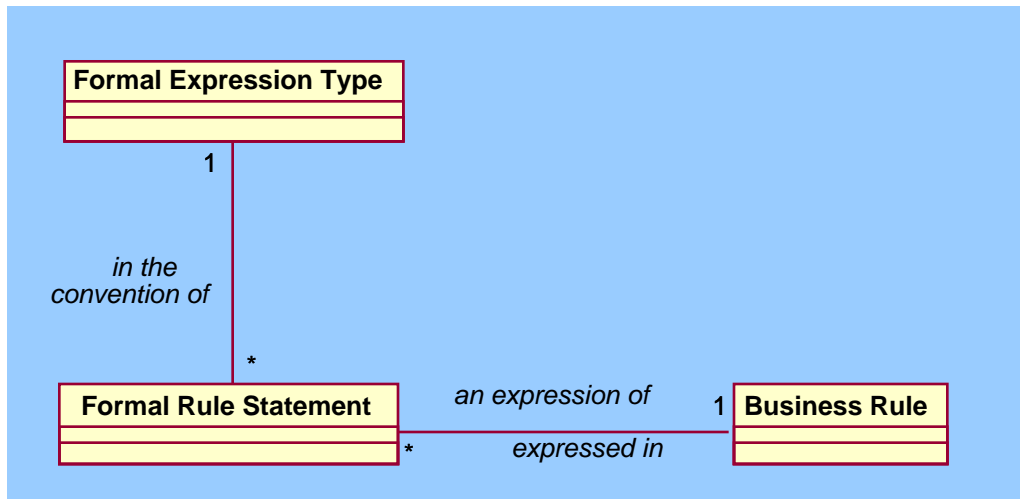
We initially considered the popular 'rambling' term for the concept but discarded it (because of its somewhat negative tone).

| | | |
|------------|--|----------------|
| 1.3 | Business Rambling to Business Rule multiplicity (MDC model) | rating: |
|------------|--|----------------|

The BRG model permits a Business Rule Statement to be related to many Business Rules (and vice versa).

The MDC model restricts the multiplicity of Business Rambling to Business Rule to "at most 1"; this is incorrect (ref. MDC definition text).

2. The Origins of a Business Rule ~ part 2



From [GBRP Figure 3]

2.1 Formal Expression Type/Formal Rule Statement vs. the MDC Grammar Model rating:

If we understand the nature of the MDC's proposed Grammar Model, it appears to correspond to the intent of this portion of our model, but in more detail.

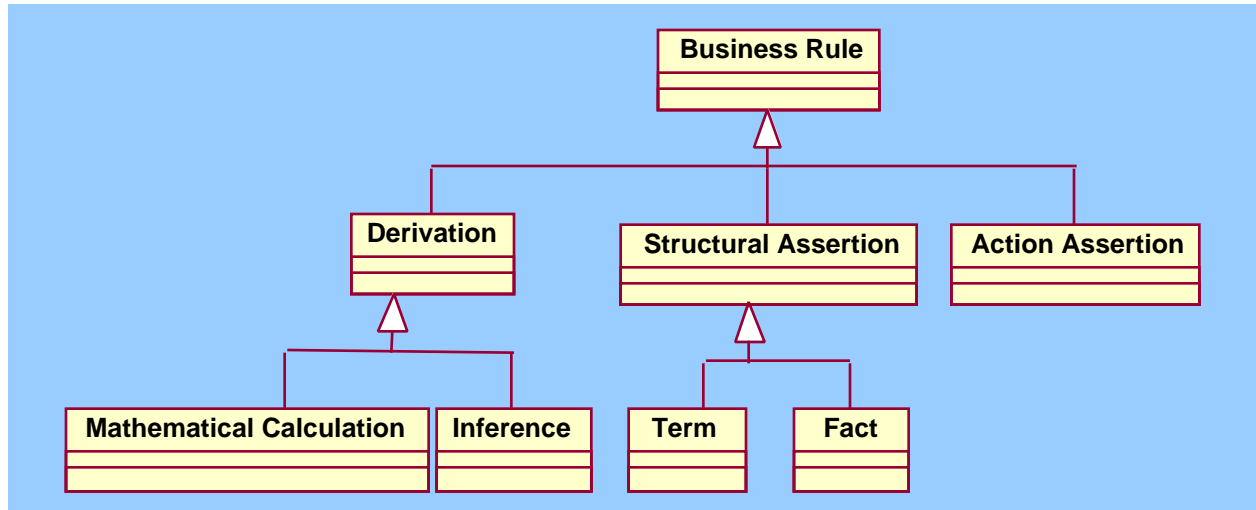
During the development of our model, we spent some time modeling grammars but abandoned that activity. Instead, the main point we chose to emphasize in our model is that

- (a) one business rule may be expressed in multiple (language-specific) grammars, and
- (b) this submodel does not impact or determine the essential statement (specification) of the business rule.

In other words, we would treat "grammar" as a set of language bindings. There is no one, single grammar.

Rather, we consider the essential statement of the business rule is in its conceptual model (i.e., the detail of its definition in terms of the metamodel constructs of "Business Rule.")

3. Business Rule Types ~ Core Taxonomy



From [GBRP Figure 4; Figure 13]

3.1 Kinds of Business Rule

rating:

The BRG model subtypes "Business Rule" into: Structural Assertion, Action Assertion, and Derivation, and then further subtypes Structural Assertion into Term and Fact.

The MDC model has flattened the initial set of types to: TermRule, FactRule, ActionRule, and InferenceRule. This omits our generalization of Term and Fact into Structural Assertion. Therefore, there is no explicit representation of the "Structural Assertion" concept on the MDC model.

3.2 Derivation (BRG) vs. InferenceRule (MDC)

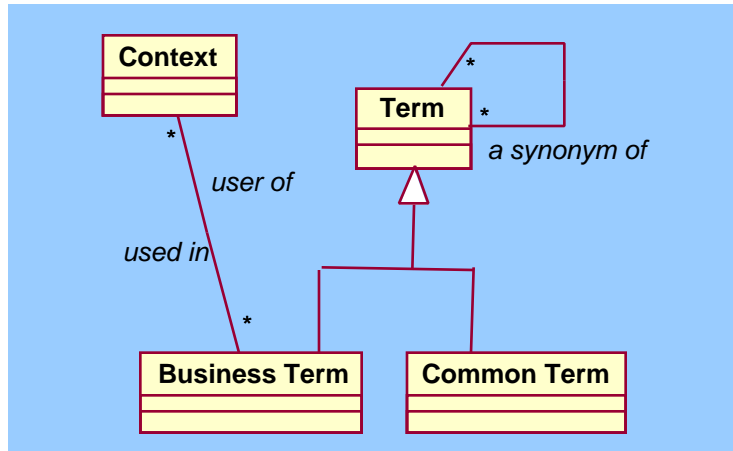
rating:

The BRG model subtypes Derivation into Mathematical Calculation and Inference.

The MDC model appears to have removed the distinction between the concepts of deriving knowledge by algorithm (Mathematical Calculation) vs. by reasoning (Inference).

Furthermore, the MDC model has relabeled the general (supertype) concept as "Inference" -- i.e., uses the label of one of its subtypes on the BRG model.

4. Structural Assertions ~ Term in Context



From [GBRP Figure 5]

4.1 Terms in Context

rating:

The BRG model provides for the ability to define a term in various contexts. (It also provides for common terms -- those which have a generally-understood interpretation, regardless of context.)

The ability to relate a term to one or more contexts was mentioned in the Workshop but is not evident on the MDC model.

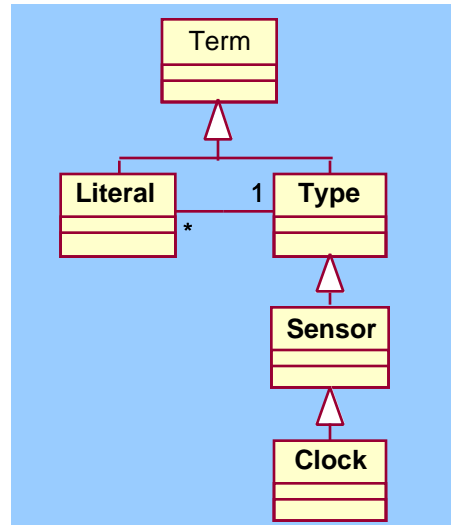
4.2 Terms and Synonyms

rating:

The BRG model provides for a term to be a synonym of another term.

The ability to define multiple terms for a concept (I.e., terms as synonyms) was mentioned in the Workshop but is not evident on the MDC model.

5. Structural Assertions ~ Kinds of Term



From [GBRP Figure 7]

5.1 Terms as Types or Literals

rating:

The BRG model makes explicit the ability to distinguish a term as either a 'type' or a 'literal.'

The MDC model does not appear to reflect this.

5.2 Further subtypes of Type

rating:

The BRG model further subtypes 'Type' into additional concepts that are often used in expressing rules (especially the notion of the system 'clock').

The MDC model does not appear to reflect this.

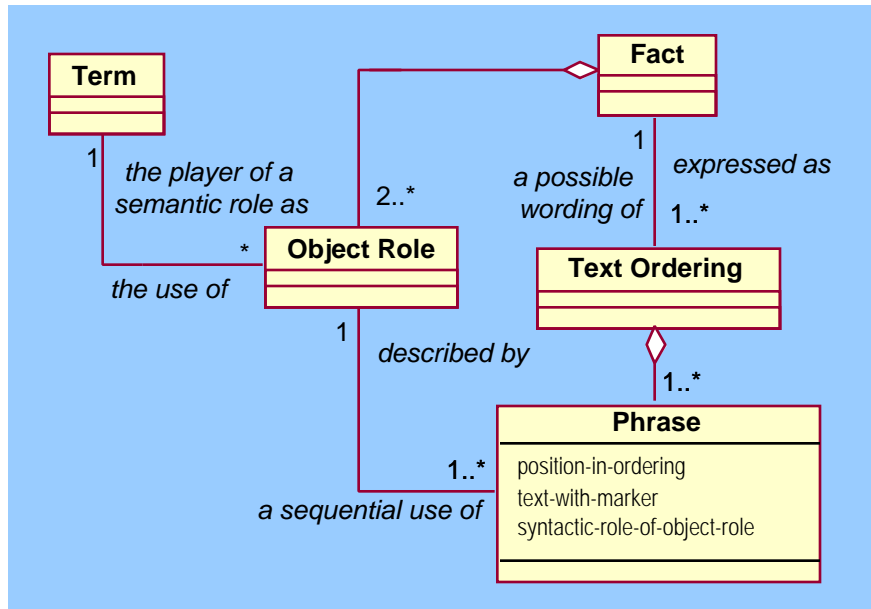
5.3 Relating Type and Literal

rating:

The BRG model expresses the ability to relate a 'type' with one or more 'literals' (i.e., to declare the set of 'valid values' for a datatype/domain).

The MDC model does not appear to reflect this.

6. Structural Assertions ~ Terms and Facts



From [GBRP Figure 5]

6.1 The structuring of Terms into Facts

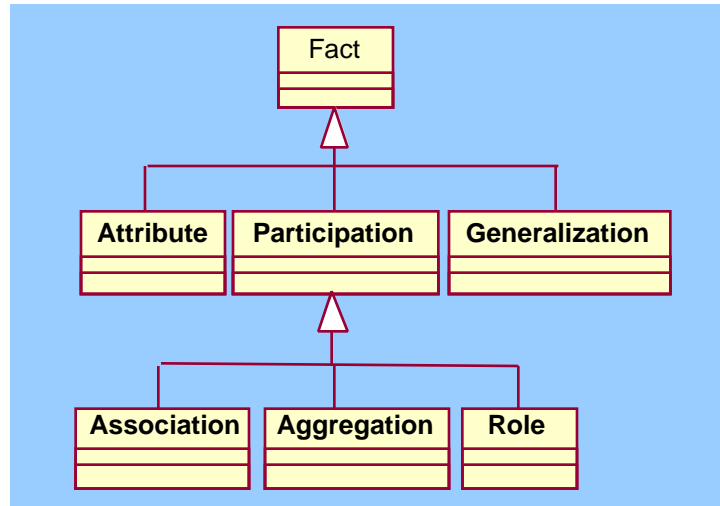
rating:

The BRG model permits the deep-structured semantics of a Fact to be captured in the conceptual model.

The MDC model appears to omit this.

(Note: during the Workshop, reference was made to another OIM submodel -- the Semantics Model. This additional submodel should be reviewed to see if these important constructs are accommodated in another part of the OIM.)

7. Structural Assertions ~ Kinds of Fact



From [GBRP Figure 8]

7.1 Fact taxonomy

rating:

The BRG model classifies Fact into subtypes: Attribute, Generalization, and Participation. It further subtypes Participation into Association, Aggregation, and Role.

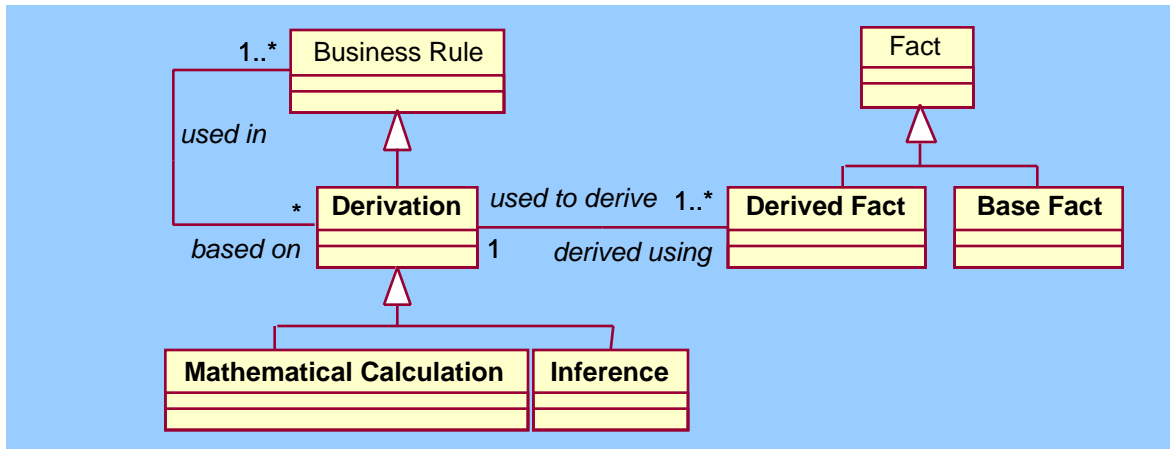
While not called out as explicit types on the MDC model, the MDC's documentation indicates that this general capability is provided via a property of FactRule. The documentation implies that the valueset of this property is extensible.

7.2 Operation as a kind of Fact

rating:

The MDC model includes "Feature" which is either an Attribute or an Operation. The BRG model omits Operation as a kind of Fact.

8. Derivations & Facts



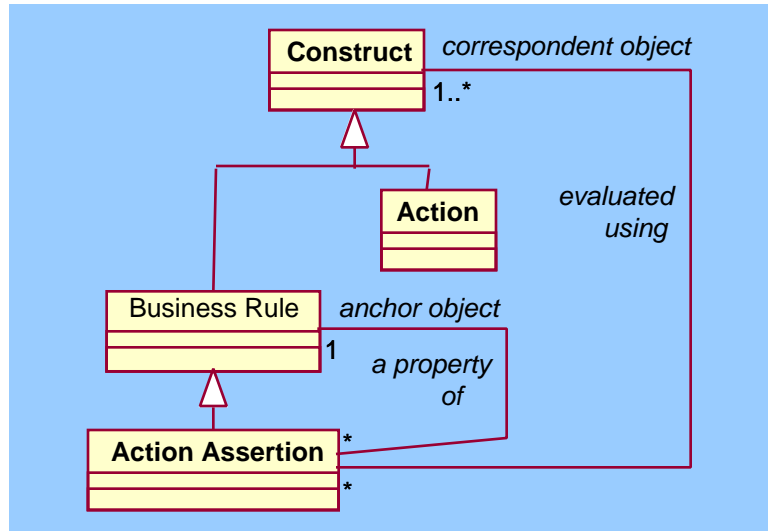
From [GBRP Figure 13]

| | |
|---|----------------|
| 8.1 Derivation (AKA the MDC model's InferenceRule) | rating: |
|---|----------------|

The BRG model includes relationships that permit the composition of the derivation to be specified.

The MDC model does not appear to support this.

9. Action Assertions



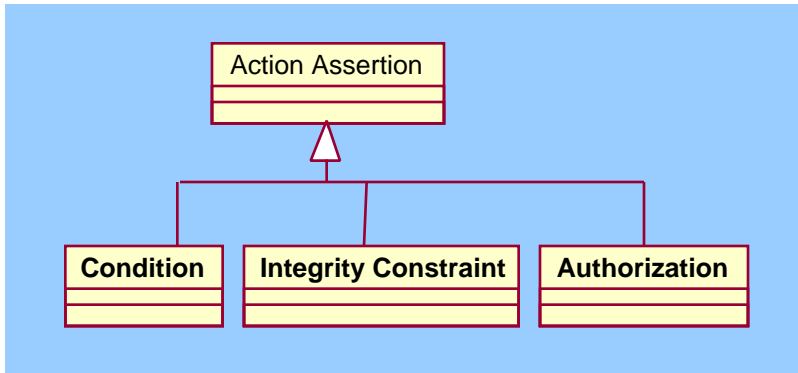
From [GBRP Figure 9]

| | | |
|------------|--|----------------|
| 9.1 | Action Assertion (AKA the MDC model's ActionRule) | rating: |
|------------|--|----------------|

The BRG model includes relationships that permit the statement of an Action Assertion to be specified.

The MDC model does not appear to support this.

10. Action Assertions ~ Categorization (1)

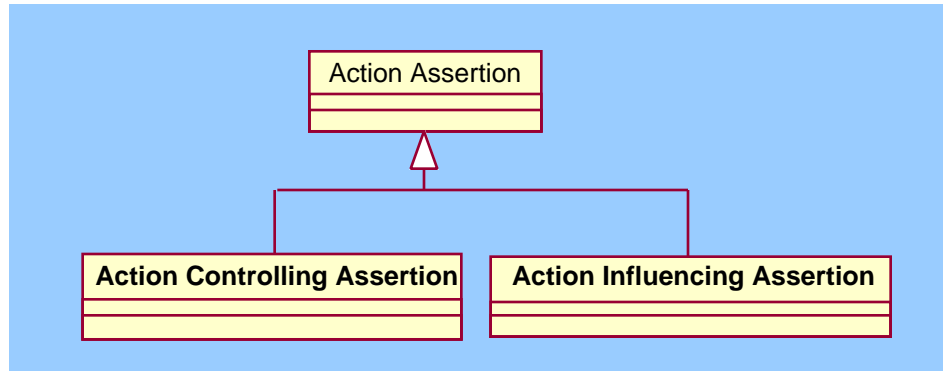


From [GBRP Figure 10]

| | |
|--|----------------|
| 10.1 Action Assertion: basic classification | rating: |
|--|----------------|

The BRG model supports three basic types of Action Assertion.

This basic classification appears to be recognized in the MDC model (it is discussed in the narrative), but it is not apparent how this is handled.

11. Action Assertions ~ Categorization (2)

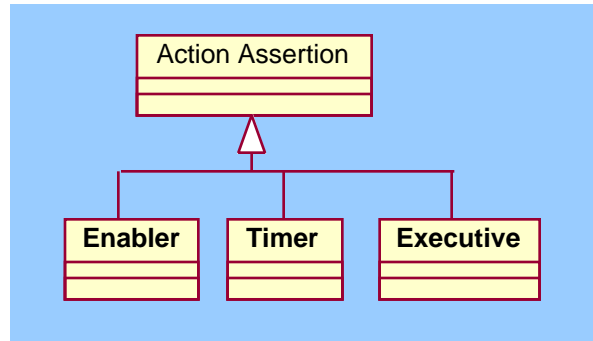
From [GBRP Figure 12]

11.1 Action Assertion: classification of the degree of control rating:

The BRG model provides for distinguishing Action Assertions that are controlling in the system from those that merely provide guidance.

The MDC ActionRules does not appear to support this distinction.

12. Action Assertions ~ Categorization (3)



From [GBRP Figure 11]

| | |
|---|----------------|
| 12.1 Action Assertion: alternative classification(s) | rating: |
|---|----------------|

The BRG model illustrates that Action Assertions need to be classified in various other kinds of classification schemes. We have illustrated this on the model with a selection of the subtypes from the taxonomy of the Ross Method.

The MDC ActionRules does not appear to support this ability to have user-defined classification schemes for "rules."

C. Responses to MDC "Issues"

Four issues were raised in the MDC's business rules draft. Below are the responses by the BRG on these points.

C1. The InferenceRule Construct

C1.1 MDC: Where does the text of the inference rule go?

For any business rule (not just Derivation/InferenceRule), there is a narrative text property in the supertype (Business Rule) that can be used to express the rule informally.

C1.2 MDC: Should there be generic text in the InferenceRule class...?

The full definition of a Derivation (InferenceRule) is expressed in terms of its associated constructs (refer to response point 8 above).

C2. Domain Constraints

C2.1 MDC: is there some ... way to accommodate such a constraint?

In the BRG model, a domain (AKA value class, datatype, etc.) is defined as a Term (subtype 'Type'). To enumerate specific values for the domain, each value is defined as an additional Term (subtype 'Literal') and associated with the Literal that is its Type, using the association under response point 5, above.

Using the Fact constructs of the model, an attribute (and its associated domain) can be defined either as two binary Facts (entity class to attribute, and attribute to domain) or as one ternary Fact (entity class, attribute, domain).

C3. Unary Facts

C3.1 MDC: Some Business-Rule products ... recognize a "Unary" relationship.... UML, unfortunately, does not accommodate unary relationships....

Neither model (MDC or BRG) currently supports the definition of a "unary" relationship. However, removal of the "at least 2" constraint is on our list to consider in the next revision of the BRG model. This would provide better support for languages that do support unary Facts (e.g., NIAM, ORM). If the user community has a legitimate need to represent unary facts then the conceptual model must support this construct. (The question of whether or not UML supports a particular construct should be irrelevant to the conceptual model.)

C4. Derived Facts

C4.1 MDC: we could have a DerivedFact that specializes both FactRule and InferenceRule ... which is the preferred way to do this?

The BRG model supports the example you have provided (refer to the model shown with response point 8, above).

The Fact itself is classified as a DerivedFact (a subtype of Fact). This DerivedFact is related to the (separate) BusinessRule that specifies its derivation. Any other BusinessRules that participate in the derivation are associated with the Derivation (InferenceRule).