Demo of MYNG 1.01

Authors: Tara Athan (http://athant.com) , Harold Boley (http://www.cs.unb.ca/~boley/)

This page (http://wiki.ruleml.org/index.php/Demo_of_MYNG_1.01) provides a quick demonstration of MYNG 1.01 for customizing sublanguages of Deliberation RuleML 1.01 (http://deliberation.ruleml.org/1.01) . Annotated slides (http://ruleml.org/talks/MYNGDemo1.01) were created from a version of this wiki page for presentation at RuleML 2014. The paper (http://ceur-ws.org/Vol-1211/paper7.pdf) [1] gives theoretical underpinnings.

Key new features in MYNG 1.01 include:

- Integration of new Relax NG schema modules -- and the RuleML sublanguages they define -- into MYNG, e.g.
  - Datalog^{+}, Hornlog^{+}, and their many extensions
- Improved functionality of the MYNG GUI and REST interface, e.g.
  - GUI access to automatically-generated monolithic XSD schemas that are compatible with XML tools, e.g. JAXB.
  - Display of myng-code and myng-code-based schema URLs.

Contents

Datalog+

1 Quick Tour of the GUI

- Open the MYNG GUI at http://deliberation.ruleml.org/1.01/myng.
- The selection form opens with the supremum language pre-selected:
  - Clicking the Reset Form button will always return to this selection.
  - The RNC field gives the myng-code for this language (myng-b3f-d7-a7-11-p3ff-i7f-tf3f-q7-ef-sf).
  - The XSD field gives the name of the best approximating anchor language for the selected language (naffologeq).
  - The two rows of five boxes with blue backgrounds group the configuration options into semantically-related facets, which will be discussed in greater detail below.

Start (Supremum)

- Below the facets, two URLs are given:
  - Relax NG Schema URL = http://deliberation.ruleml.org/1.01/relaxng /schema_rnc.php?backbone=x3f&default=x7&termseq=x7&lng=x1&propo=x3ff& implies=x7f&terms=xf3f&quant=x7&expr=xf&serial=xf
    This is the MYNG "REST call with query string" to obtain the driver schema corresponding to the selections, which can also by reached using the myng-code (http://deliberation.ruleml.org/1.01/relaxng#myng-code) URL http://deliberation.ruleml.org/1.01/myng-b3f-d7-a7-l1-p3ff-i7f-tf3f-q7-ef-sf.rnc.
  - XSD Anchor Schema URL = http://deliberation.ruleml.org/1.01/xsd/naffologeq.xsd
    This is the URL for the monolithic XSD schema of the anchor language naffologeq.
- Clicking the Generate Schema button initiates a request to the MYNG REST interface which produces a copy of the Relax NG Schema at the bottom of the page (scroll down as needed).
- Buttons are also available for downloading the indicated RNC and XSD schemas.

Generate Schema
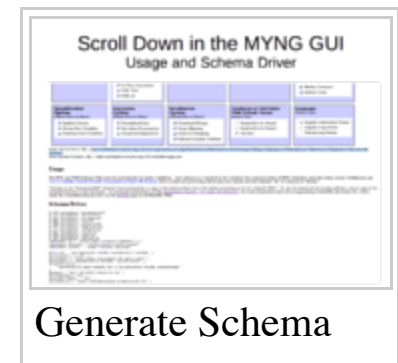
2 Configuring a Custom Relax NG Schema

We will configure the RuleML sublanguage called "disdatalogplus_mid". Its features include Disjunctive Rules ("dis"), Datalog Expressivity ("datalog"), Conjunctive Rules, Existential Rules, and Equality ("plus"), and an assortment of Deliberation RuleML extras such as reification and annotation ("_mid").

- Expressivity "Backbone":
    - This is a radio button input where we Select One level of the Expressivity "Backbone".
    - For our example, we select the Datalog level of Expressivity, corresponding to function-free Horn Logic.
    - Also, all the Expression Options (second row of facets) become disabled, because Datalog is function-free, so those options are irrelevant.
    - Notice that the "b" (backbone) and "e" (expressions) components of the myng-code change (from b3f to b7 and from e7 to e0).
    - Notice that the anchor language changes from "naffologeq" to "nafnegdishornlogplus". This anchor language is not an exact approximation of the selected language.

Datalog

- Propositional Options:
  - Let's disable the Degree of Uncertainty option, which is only needed for Fuzzy Logic.
  - We'll also disable Rulebases and both kinds of Negation.
  - Notice that the "p" (propositional) component of the myng-code changes from p3ff to p3c1.
- Implication Options:
  - We'll disable Equivalences.
  - New in Version 1.01: Disjunctive Logic is not a level on the Expressivity "Backbone", as it was in Version 1.0. Disjunction (Or) in the heads of rules now may be mixed-in with any Expressivity level.
  - Notice that the "i" (implication) component of the myng-code changes from i7f to i7e.


Propositional

Options

Implication Options

- Term Sequences
  - We keep Polyadic Term Sequences.
- Term Options
  - We disable the frame-like options: Object Identifiers and Slots.
  - Notice that the "t" (terms) component of the myng-code changes from tf3f to tf30.
- Quantification Options
  - We disable all of them.
  - Notice that the "q" (quantification) component of the myng-code changes from q7 to q0.
- The anchor language now reads "disdatalogplus_mid".
  - This is one of the RuleML sublanguages that is newly available in Version 1.01.
  - Recent research[2] has shown that with some additional constraints, querying becomes decidable in these languages.
  - The additional constraints are too complex to implement directly in Relax NG or XSD, but may be possible via Schematron.

Term Options
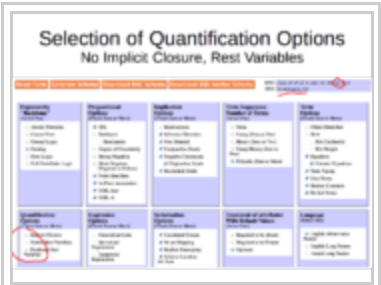
Quantification Options

3 Usage of Customized Schemas

- Instructions for online validation of RuleML instances against the Relax NG schemas are presented at Validating with Relax NG for RuleML 1.01 (http://wiki.ruleml.org/index.php /Validating_with_Relax_NG_for_RuleML_1.01) .
- Example in Validator.nu: against the smallest Relax NG schema (disdatalogplus_min, a sublanguage of the above-introduced disdatalogplus_mid) for this instance, referenced using its myng code.

Validator.nu

4 References

1. ↑ Tara Athan and Harold Boley. The MYNG 1.01 Suite for Deliberation RuleML 1.01: Taming the Language Lattice. In Theodore Patkos, Adam Wyner, and Adrian Giurca, editors, Proceedings of the RuleML 2014 Challenge, at the 8th International Web Rule Symposium. CEUR, August 2014.
2. ↑ Georg Gottlob, Giorgio Orsi, Andreas Pieris, and Mantas Šimkus. Datalog and its extensions for semantic web databases. In Thomas Eiter and Thomas Krennwallner, editors, Reasoning Web. Semantic Technologies for Advanced Query Answering, volume 7487 of Lecture Notes in Computer Science, pages 54–77. Springer Berlin Heidelberg, 2012.