Model transformation and repair with *Echo*

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MDE

- In MDE models are the primary development artifact;
- Models must conform to their *metamodels*...
- ...and also *coexist* in a consistent manner;
- During the development process inconsistencies will indubitably be introduced;
- Automation of inconsistency *finding* and *repairing* is essential.

Echo

- *Echo* has been developed to promote the correct evolution of models;
- Repairs are guaranteed to *correct* and apply *minimal* changes;
- Support for rich *intra-* and *inter-model* constraints;
- Support for standard languages and developing environments:
    - Deployed as an *Eclipse* plugin;
    - Ecore metamodels, XMI models, OCL constraints, QVT-R transformations, (ATL underway).

Echo

- Model visualization;
- Model generation;
- Consistency check;
- Model repair;
- Inter-model consistency check;
- Inter-model generation (model transformation);
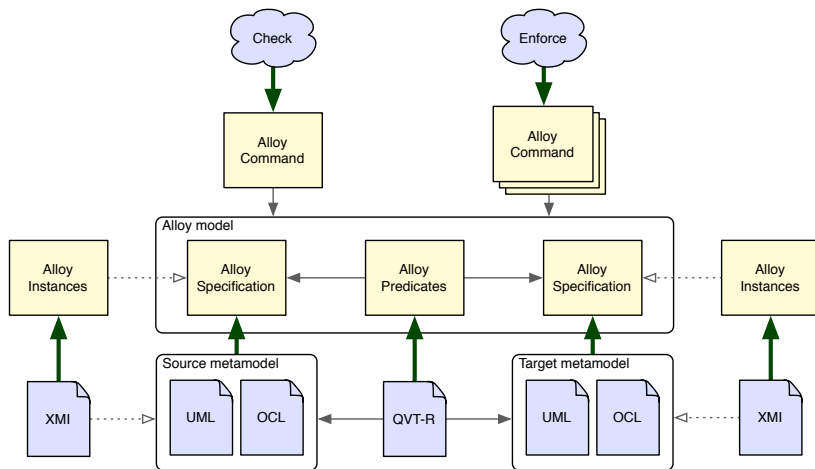- Inter-model consistency repair (bidirectional transformation).

Demo

Demo

Core

- Echo is built over the *Alloy* relational model finder;
- Minimal updates are attained by minimizing the model distance:
    - Graph edit distance (models are seen as graphs, automatically inferred from the metamodel);
    - Operation-based distance (parametrized by the user, finer control over the updates);
- Inter-model repairs are realized as *bidirectional transformations*.

Alloy embedding

Echo

Available at

http://haslab.github.io/echo