

Roadmap for Rodin Platform

DEPLOY Tool-Building Team

www.deploy-project.eu

www.event-b.org



Rodin Tool for Event-B

- Extension of Eclipse IDE (Java based)
- Proof manager use a range of
- Rodin Eclipse *Builder* coordinates:
 - Well-formedness + type checker
 - Proof obligation generator
 - Proof manager
 - Propagation of changes



Rodin Proof Manager (PM)

- PM constructs proof tree for each PO
- Automatic and interactive modes
- PM manages used hypotheses
- PM calls *reasoners* to
 - discharge goal, or
 - split goal into subgoals
- Collection of reasoners:
 - simplifier, rule-based, decision procedures, ...
- Basic tactic language to define PM and reasoners



Rodin Plug-ins

- Linking UML and Event-B
- ProB: animation, consistency and refinement checking
- AnimB
- Brama
- Camille



Recent Additions

- Event extension
- Undo/redo
- Text editor
- Name completion
- Renaming
- Theorems everywhere
- Small changes to math lang (partition)



Rodin Release Policy

- Every 3 months with 2 week code freeze
- Announce release on developer mailing list then 2 days later on announce+user mailing list
- Plug-ins announced on announce+user mailing list + wiki page for plug-in status
- Plug-ins should strive to meet release date but release will not be held back
- Adopt Eclipse versioning policy



Theory component

- Supports mathematical extension and rule-based prover
 - Data types including inductive types
 - Polymorphic operators
 - Polymorphic basic predicates
 - Proof: theories, rewrites and inference rules
 - Soundness POs
 - Rule-based provers
 - Link to ProB model-checking
- Dates:
 - April 2010: theories, rules
 - June 2010: datatypes, operators, basic predicates



Verification

- Extend provers
 - Basic FO prover bridge (Early 2010)
 - Effectiveness evaluation framework (Mar 2010)
- Graphical tactic language (open)
- Model based testing (mid 2010?)



Scaling

- Team-based development
 - Parallel development: viewing conflicts / merge (October 2009)
 - Impact on proof (open)
- Composition + decomposition (early 2010)
 - Style A: shared variables
 - Style B: shared events (composition plug-in available)
 - Support for decomposing models and independent refinement



Code Generation

- Introduce *algorithmic* structures
 - introduced through refinement
 - sequential and concurrent
 - data types defined in theory components
 - Back-end to Ada/C
- Dates
 - Jan 2010: Alg Lang defn V1
 - June 2010: demonstrator tool for V1
 - Jan 2011: Alg Lang defn V2
 - June 2010: prototype tool for V2
- Event-B importer for AtelierB (Early 2010)



Other Deploy commitments

- Requirements tracing
 - Prototype plug-in exists
 - concepts still evolving
- Reuse:
 - Instantiation of generic developments (early 2010)
 - Refinement patterns (evolving)
- Tighter integration of UML-B and Event-B (early 2010)



Wish list

- Enabledness POs
- Automatic refinement
- Support for probability
- Automated provers/SMT for set theory
 - common context
 - used hypothesis
 - extensible operator
- Reasoned modelling support
- Flexible document management



Keep up to date / contribute

- www.event-b.org
- wiki.event-b.org
 - share your Event-B models
 - share your plug-in plans
 - suggest plug-in ideas

