**INTERFACES**

- Seamless integration with the Eclipse Modeling Framework ecosystem
- Dedicated DSLs and abstract (e.g., metamodel)
- Experienced in the Clarity project to design an executable extension of UML
- Experienced in the ANR GEMOC project to support language extension
- Experienced in the ITEA2 MERgE project to extend the UML language
- The definition of a DSL and its tooling is costly considering its limited audience
- The lack of abstraction and generality in the manipulation of languages and models hinders evolution, maintainability, and reusability capabilities

**LANGUAGE INTERFACES**

- Language interfaces enhance abstraction and generality
  - Abstract the intrinsic complexity of language implementation
  - Expose meaningful information
  - Concerning an aspect of a language (e.g., abstract syntax)
  - For a specific purpose (e.g., composition or reuse)
  - In an appropriate formalism (e.g., metamodel)
- Binding relation between language implementations and interfaces
- Ease the definition of operators between the interfaces

**CONTEXT & MOTIVATION**

- Model-Driven Engineering (MDE) proposes to address each aspect of a system with dedicated DSLs closely tied to the needs of stakeholders
- DSLs evolve as the experts understanding of the domain evolve, and may eventually be replaced with alternatives DSLs
- MDE strongly relies on the conformance relation which hinders reuse
- Model types as an explicit typing interface on top of DSLs metamodels
- Provides model substitutability and polymorphism
- Leveraging type group polymorphism and structural typing

**MODEL TYPE: A STRUCTURAL INTERFACE**

- DSLs to multiple, constantly evolving DSLs to address multiple concerns
- Model types as explicit required and provided interfaces for the design

**MELANGE**

- A language-based, model-oriented programming language
- Models as first-class, typed citizens
- Model-oriented type system providing model polymorphism
- Handy operators for language engineering (inheritance, merge, slicing, aspect weaving, etc.)
- Seamlessly integrated with the Eclipse Modeling Framework ecosystem

**EXPERIMENTS & FUTURE WORK**

- Families of syntactically and semantically diverse languages (e.g., FSM)
- Integrated in the ANR GEMOC project to support language extension and model polymorphism in the context of heterogeneous model execution and coordination
- Experienced in the Clarity project to design an executable extension of the Capella system engineering language
- Experienced in the ITEA2 MERgE project to extend the UML language with domain-specific metrics for evaluation of architecture variants
- Model types as a support for viewpoints engineering. Investigated for designing task-oriented viewpoints that span multiple DSLs
- Model types as explicit required and provided interfaces for the design and composition of language units
- Generic meta-programming through the reuse of generic analyses on close programming languages

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Get it, try it, hack it! – http://melange-lang.org