Transformations for Abstractions

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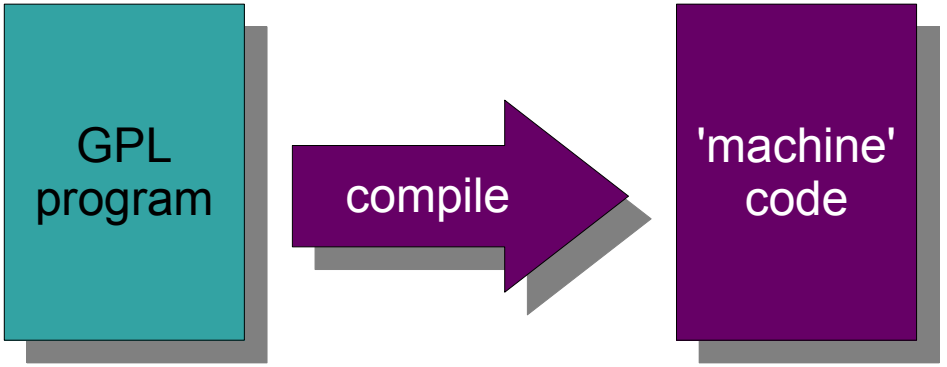
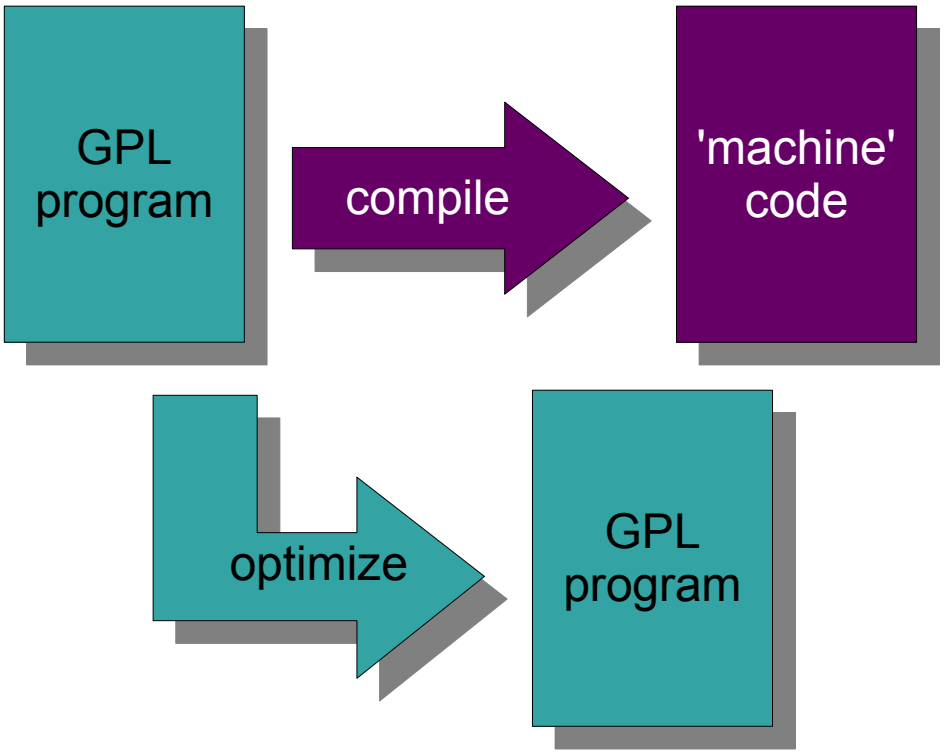
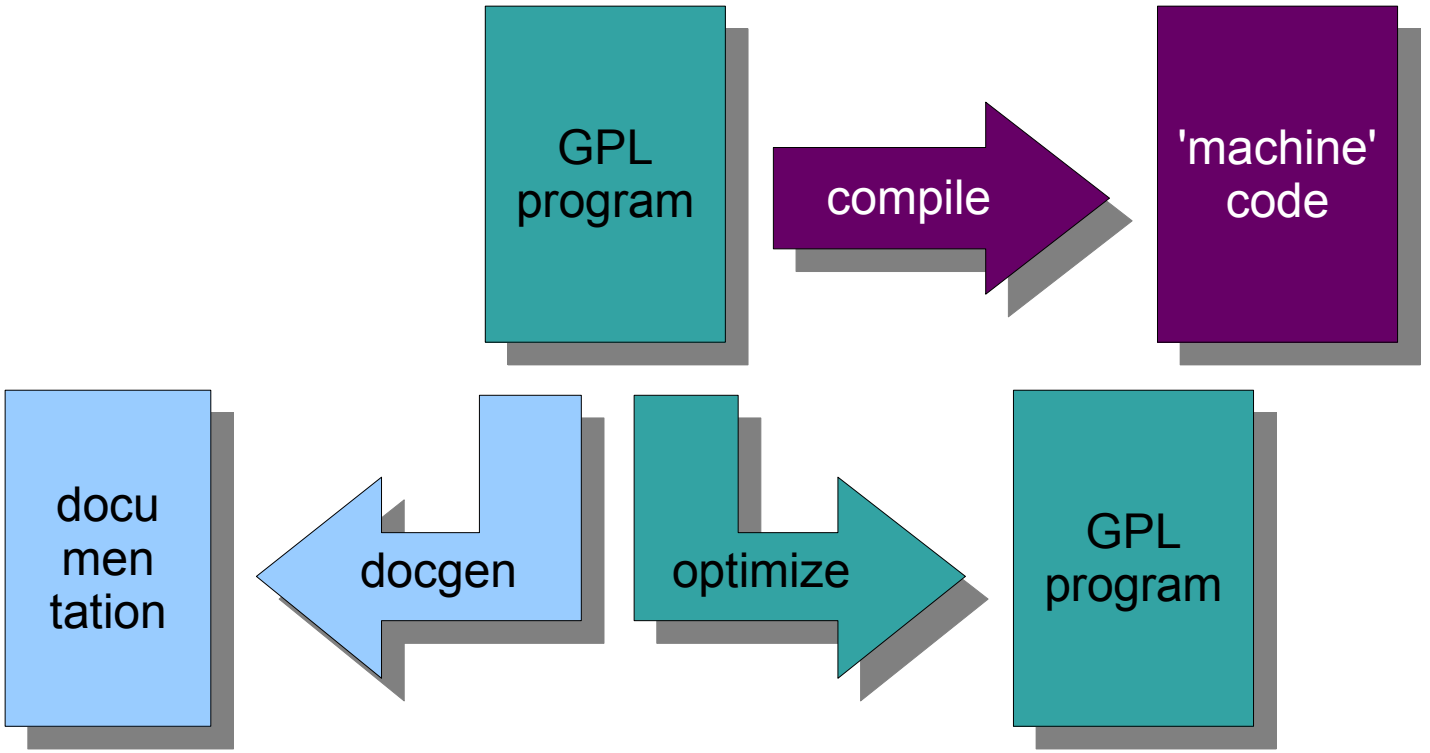
language = syntax + transformations



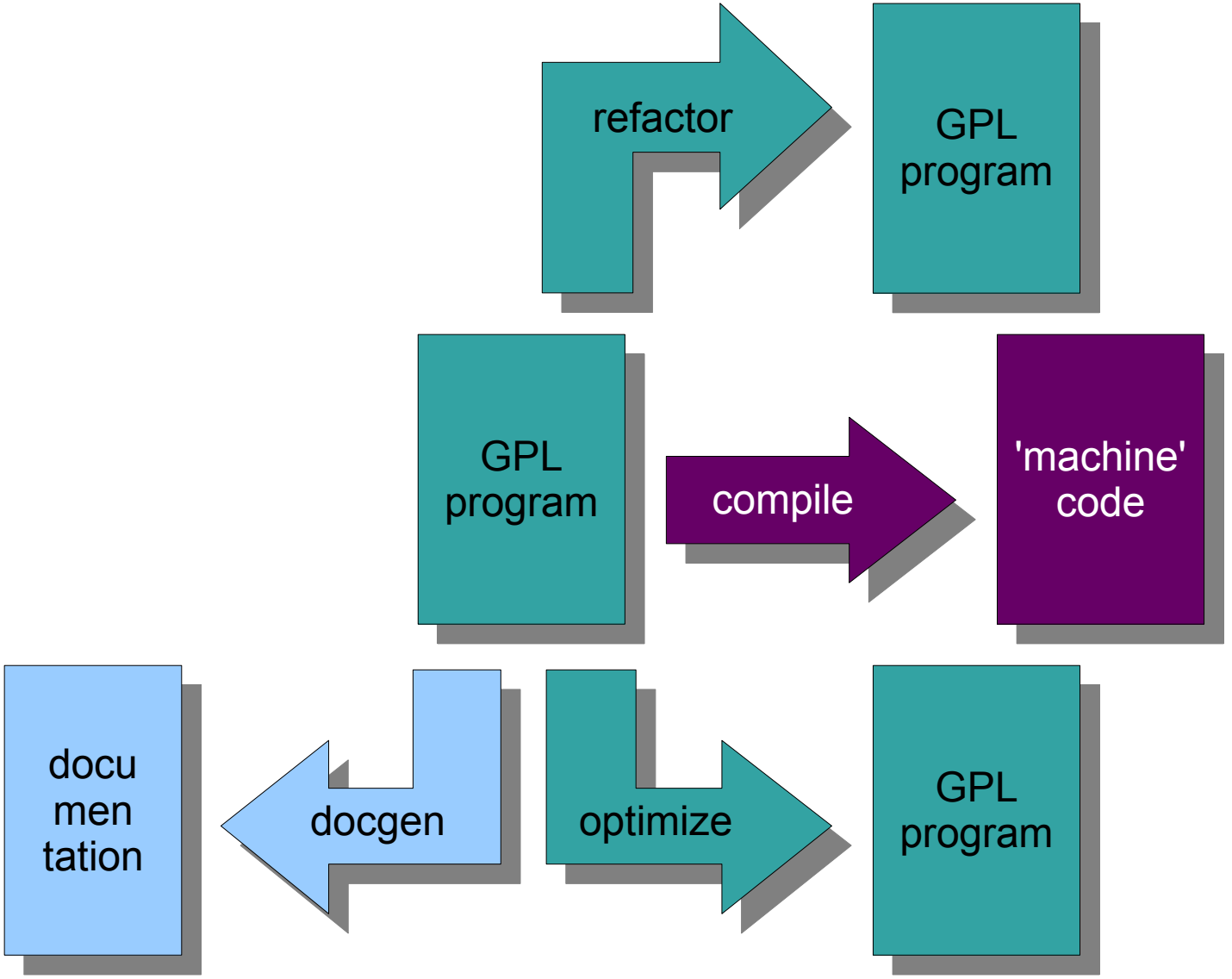
language = syntax + transformations



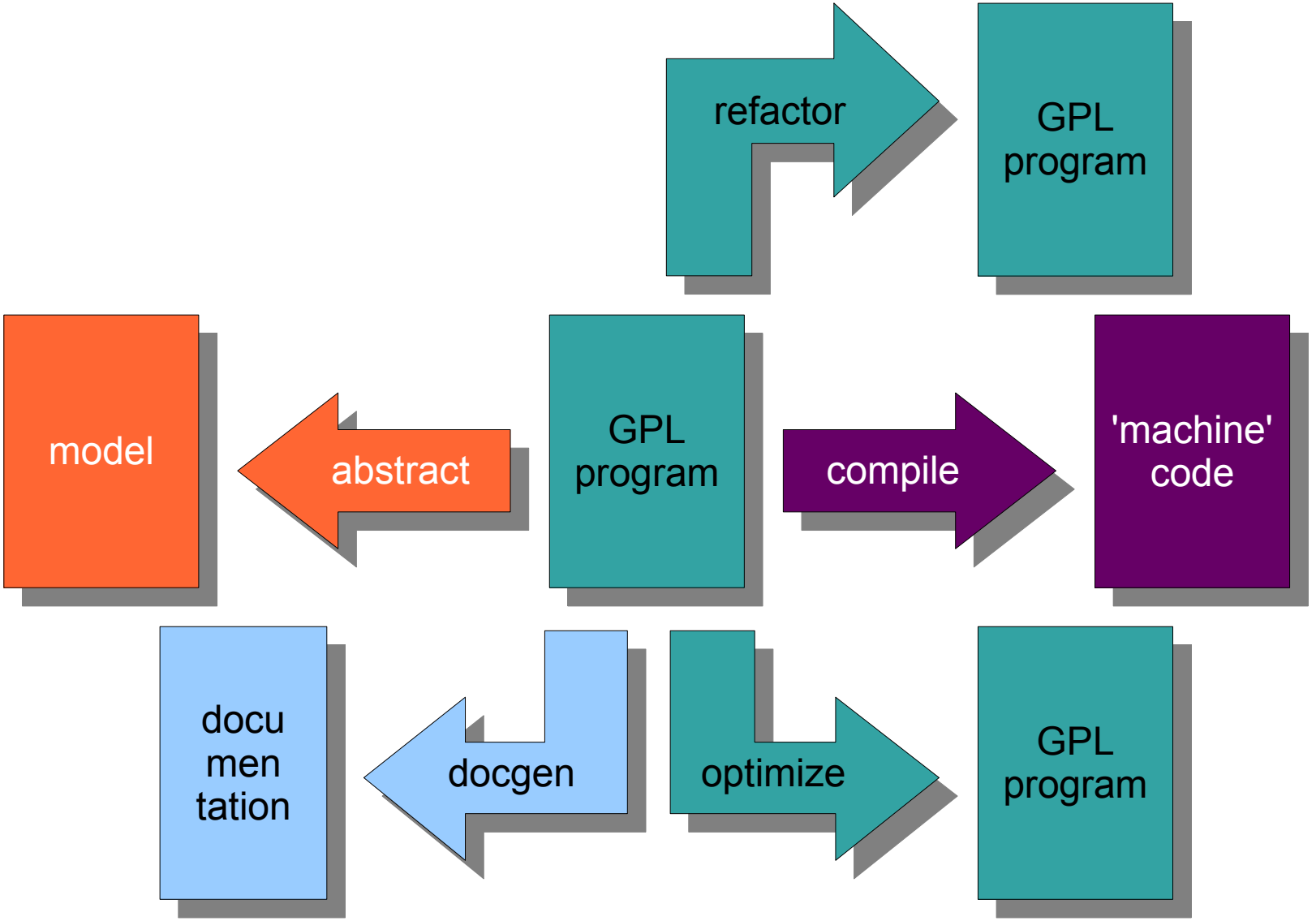
language = syntax + transformations



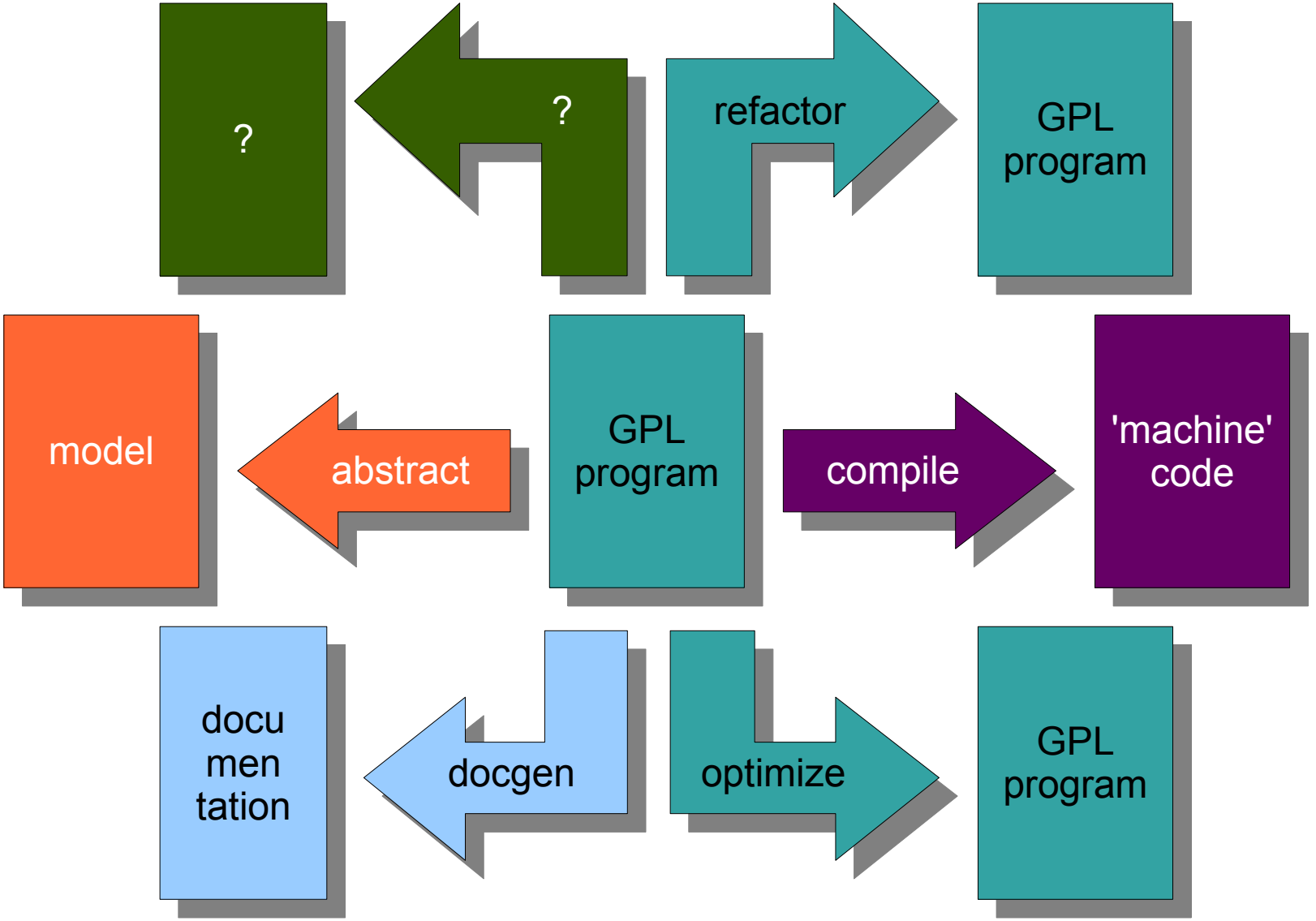
language = syntax + transformations



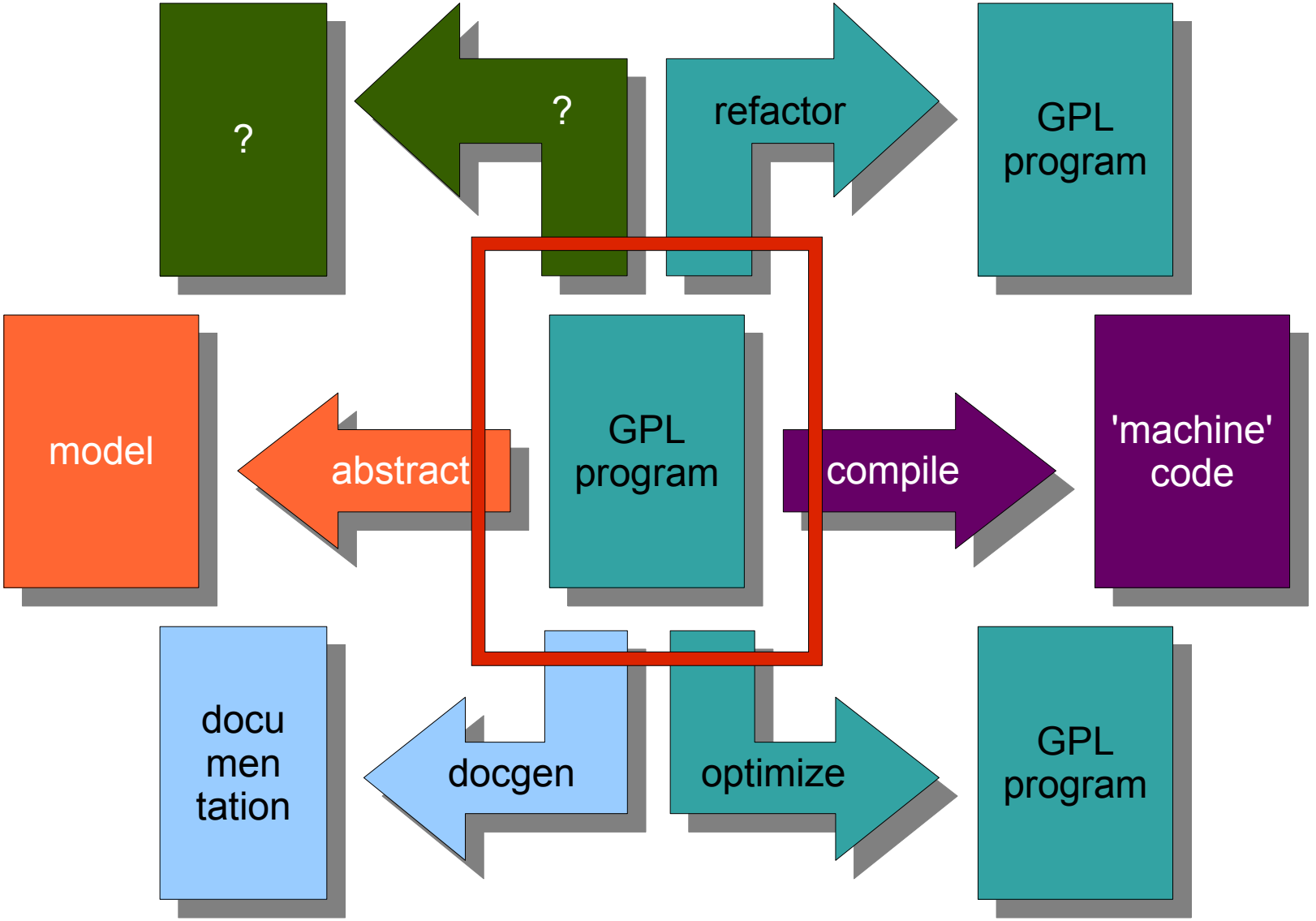
language = syntax + transformations



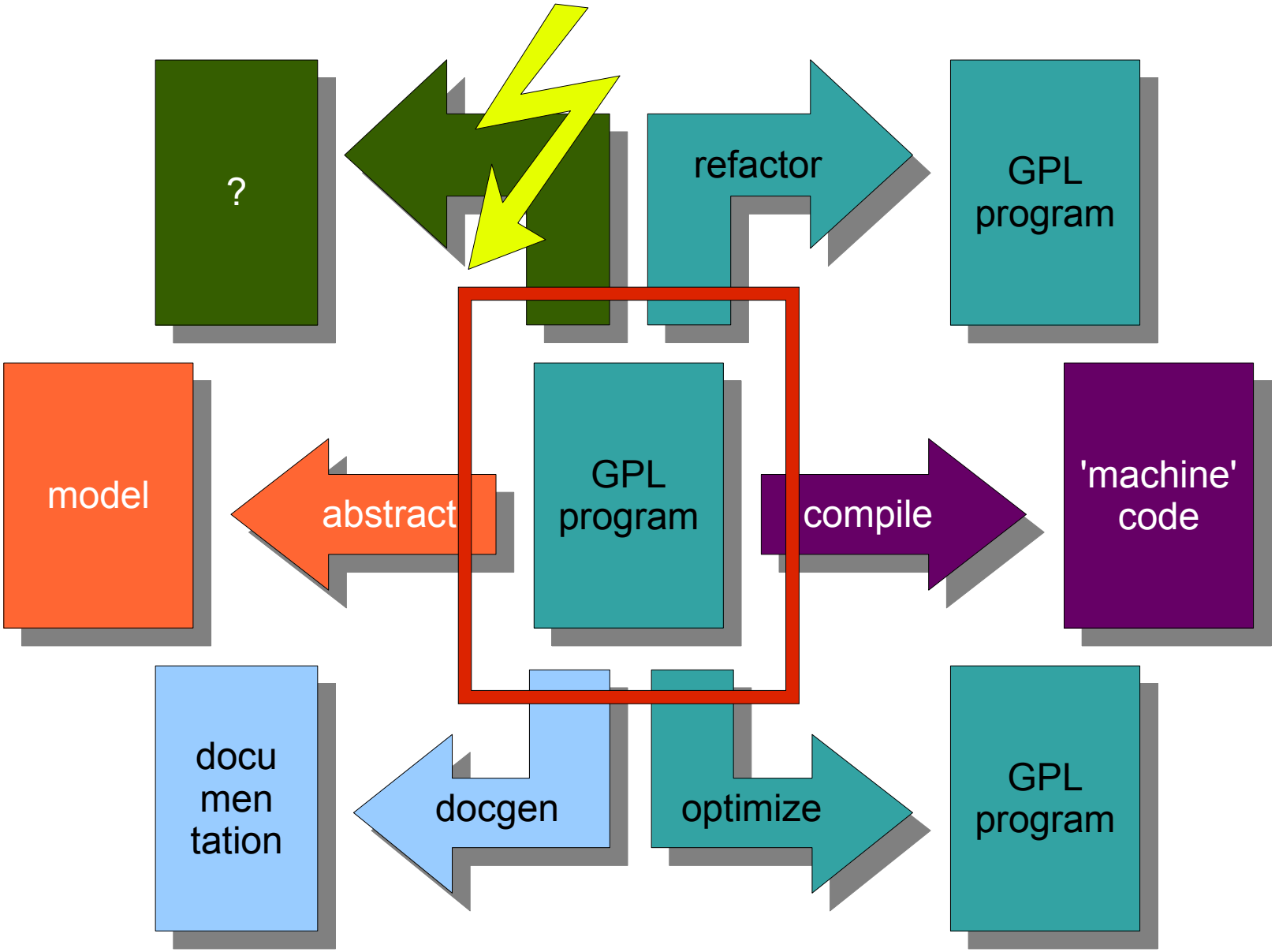
adding your own transformations



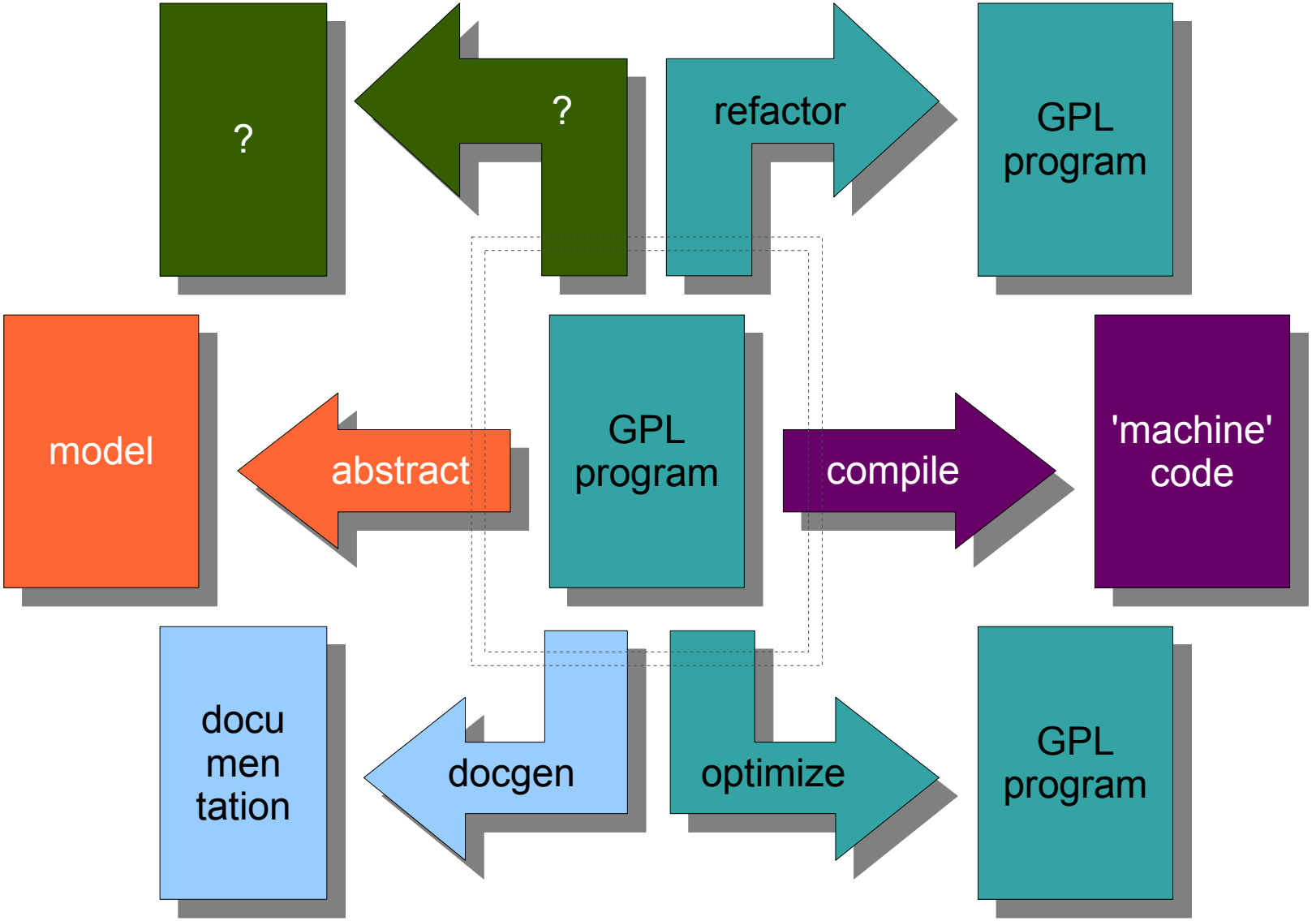
transformations provided by vendor



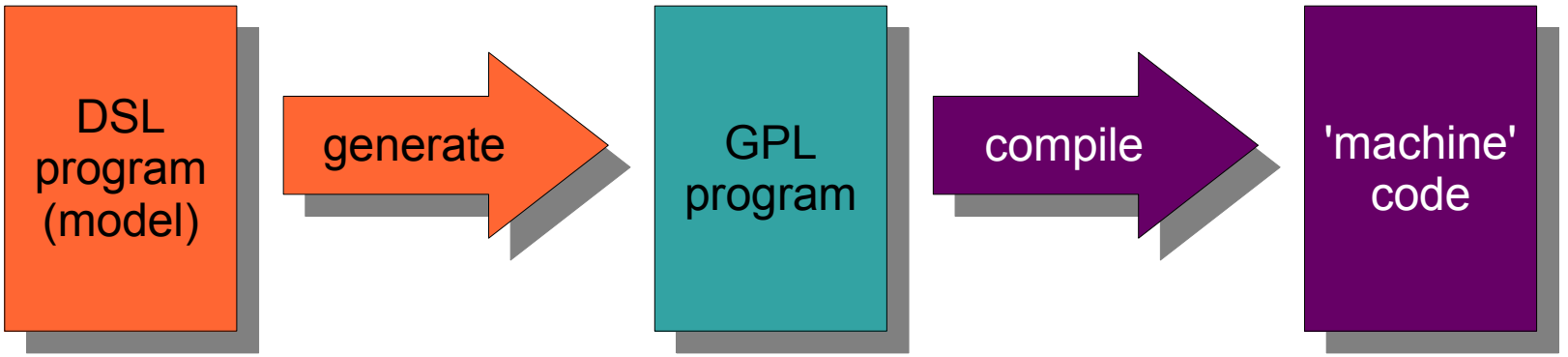
new transformations not first-class citizens



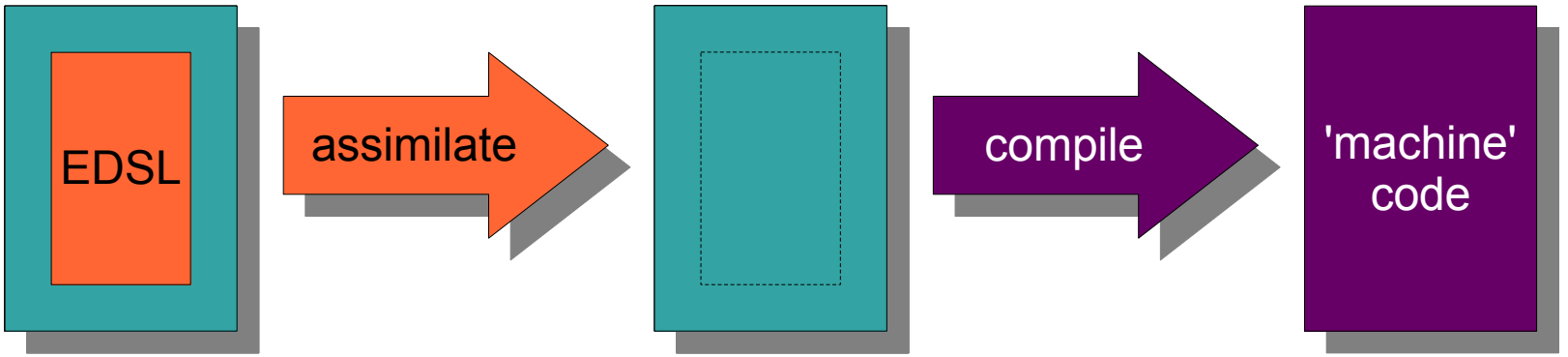
open prog env for new transformations



domain-specific languages

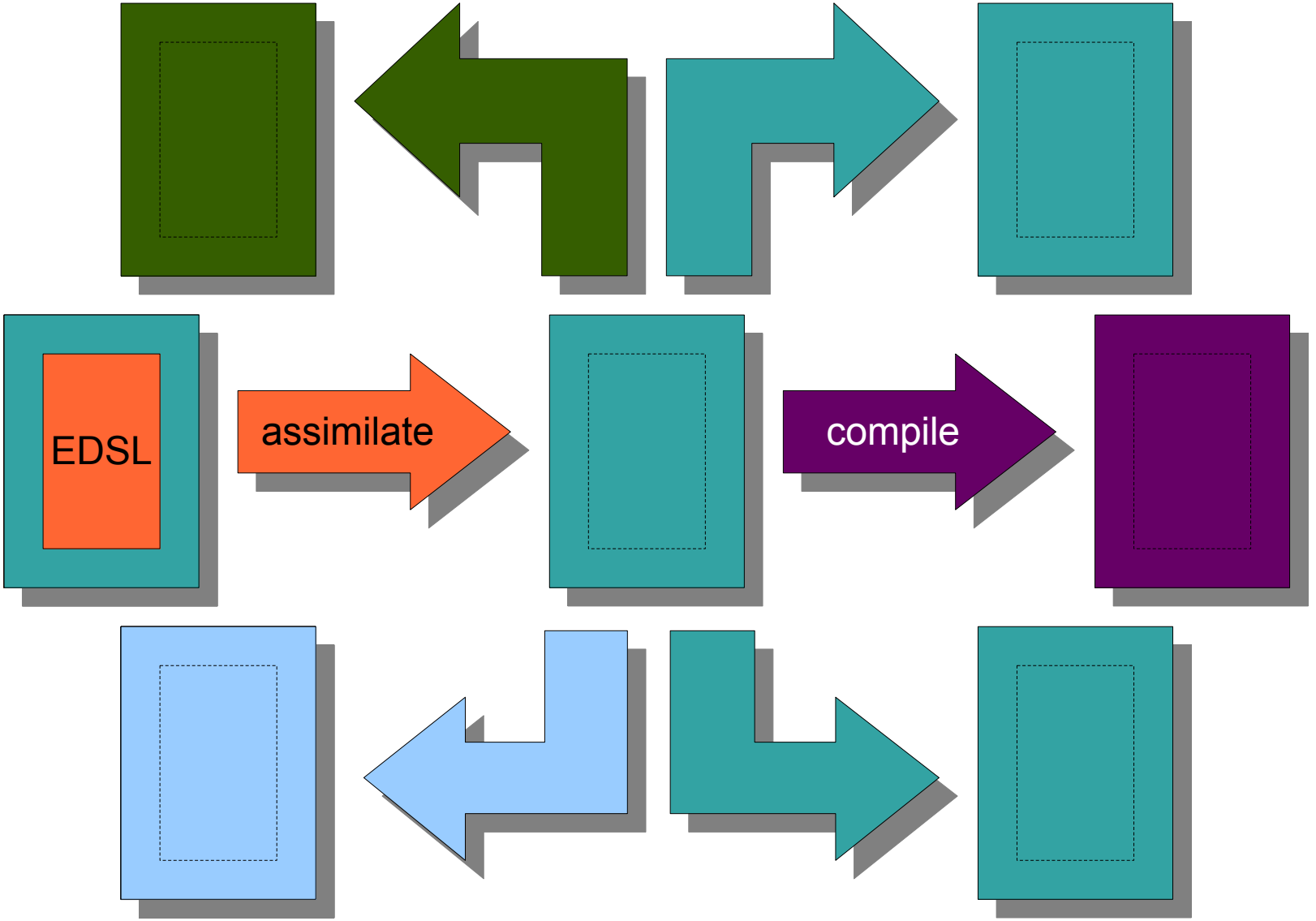


embedded domain-specific languages

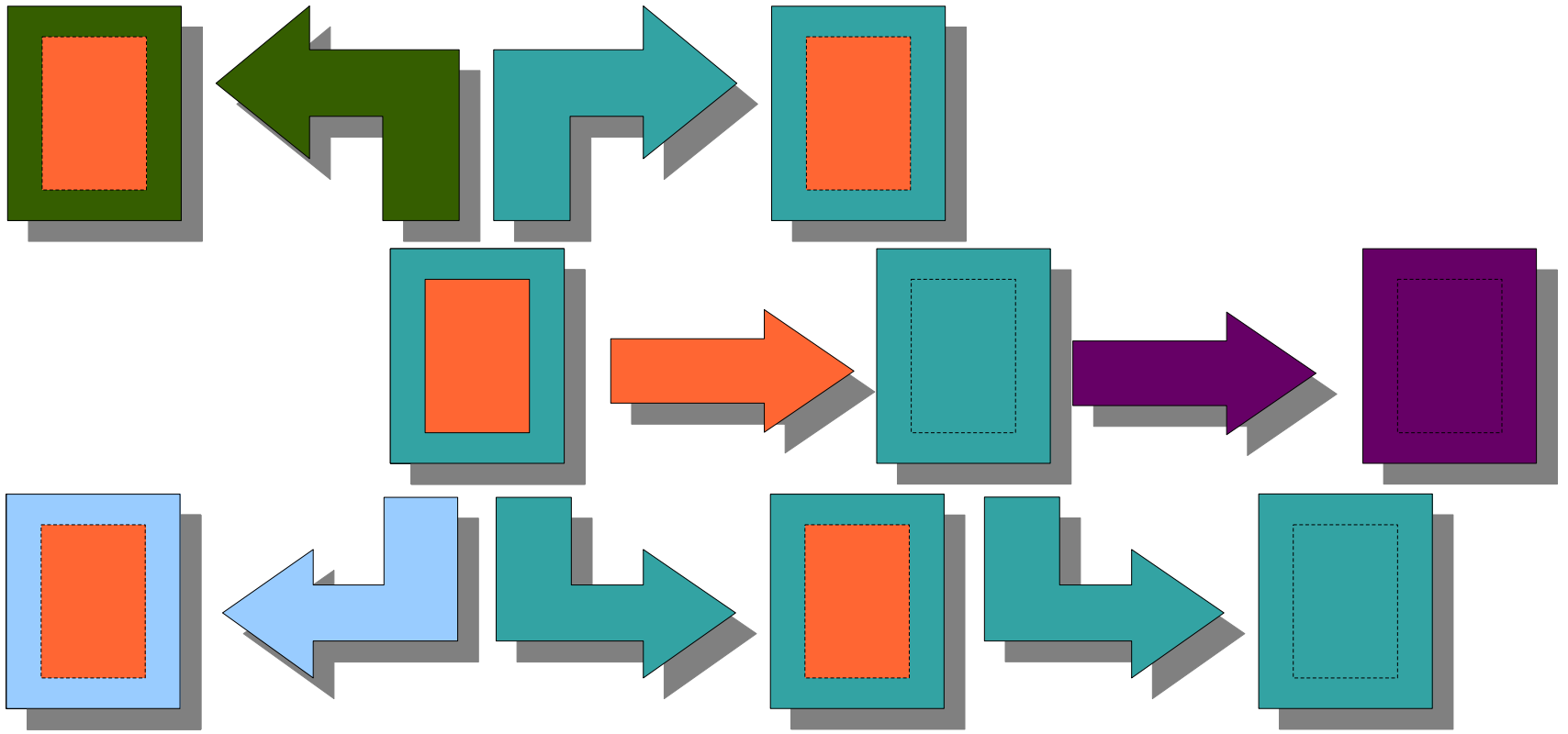


MetaBorg (OOPSLA'04)

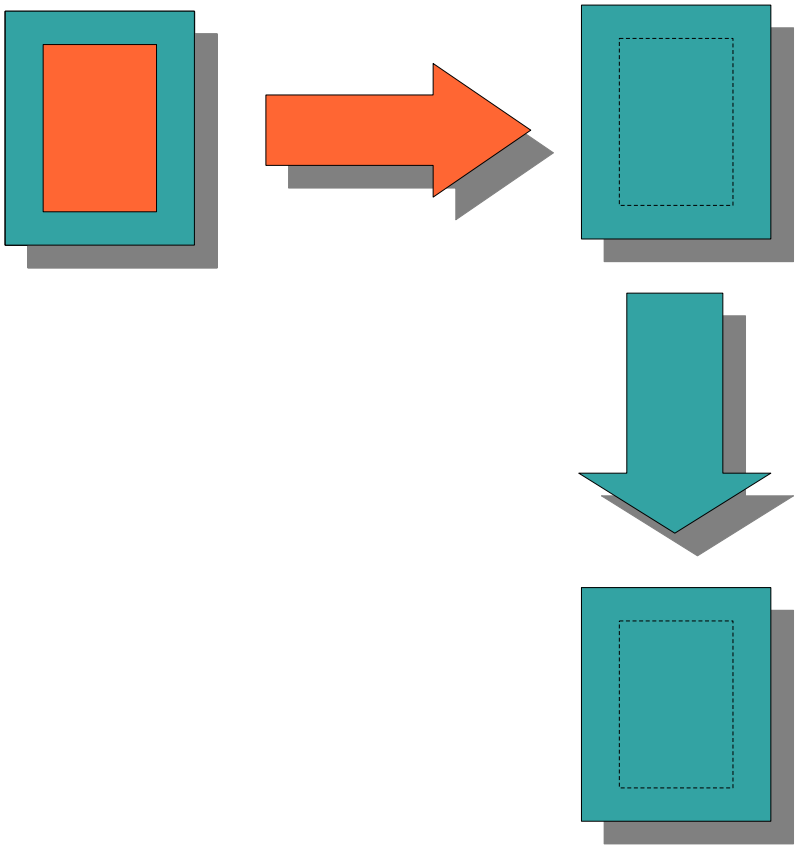
combining dsls and transformations



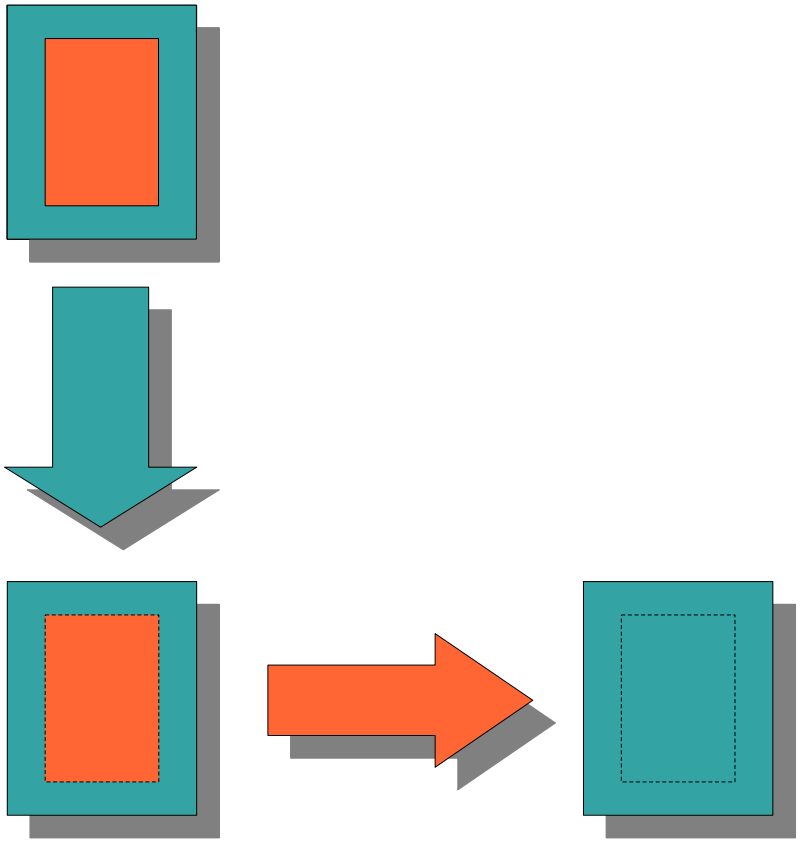
combining edsls and transformations



research: extensibility of transformations

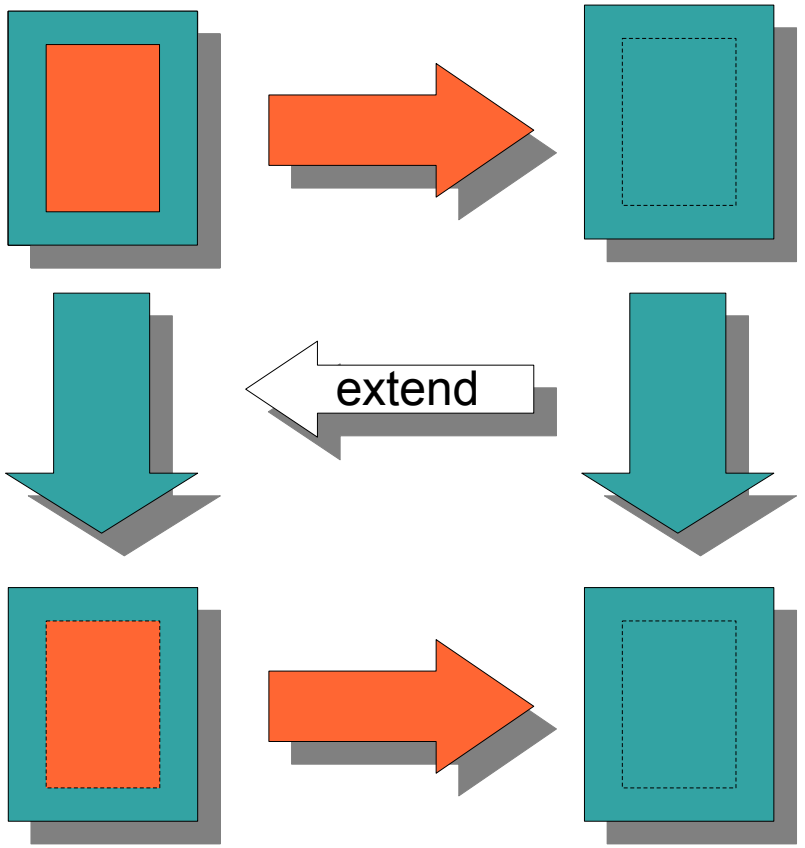


research: extensibility of transformations



apply transformation to host + guest language

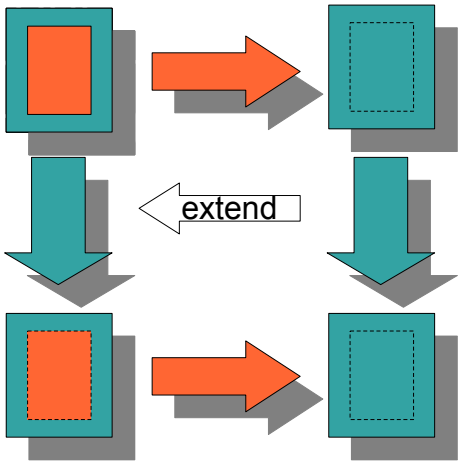
research: extensibility of transformations



extend transformation to edsl without code duplication

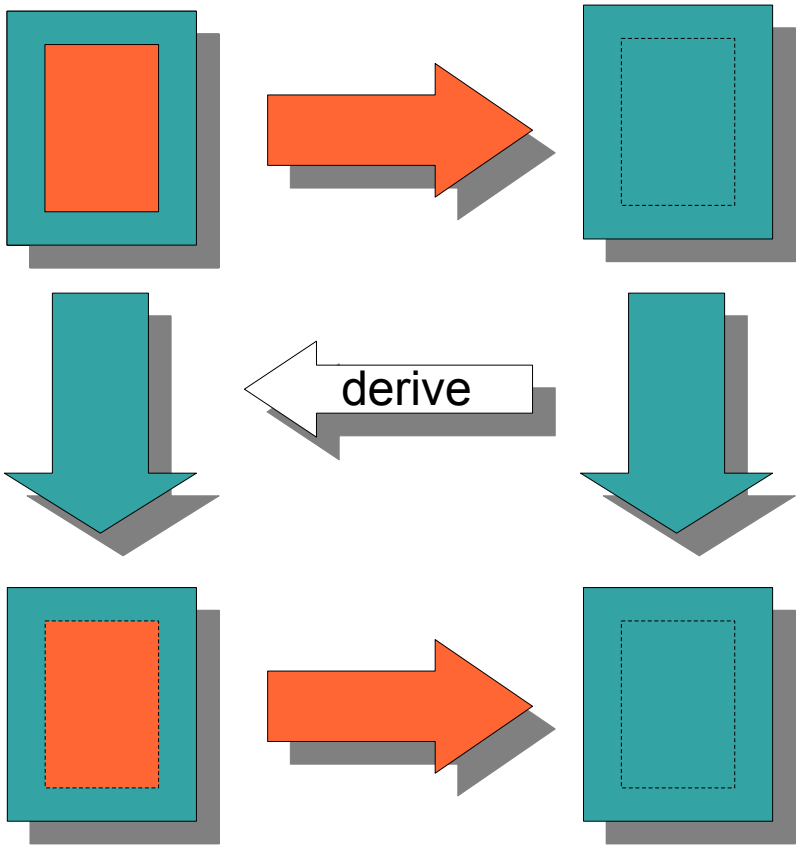
mechanisms for extensibility

- parameterization
  - explicit extension points
  - variants, not unanticipated extension
- recomposition
  - no reuse of composition
- modular open extensibility
  - stratego definitions, haskell typedefs
  - only one extension at a time
- open extensibility with concurrent variants
  - mixins?
  - dynamically scoped definitions?



independent extensibility

	Assimilation	Optimize	Refactor	Trafo?
Base	X	X	X	X
DSL1	X	X	X	?
DSL2	X	?	?	?
DSL3	X	?	?	?

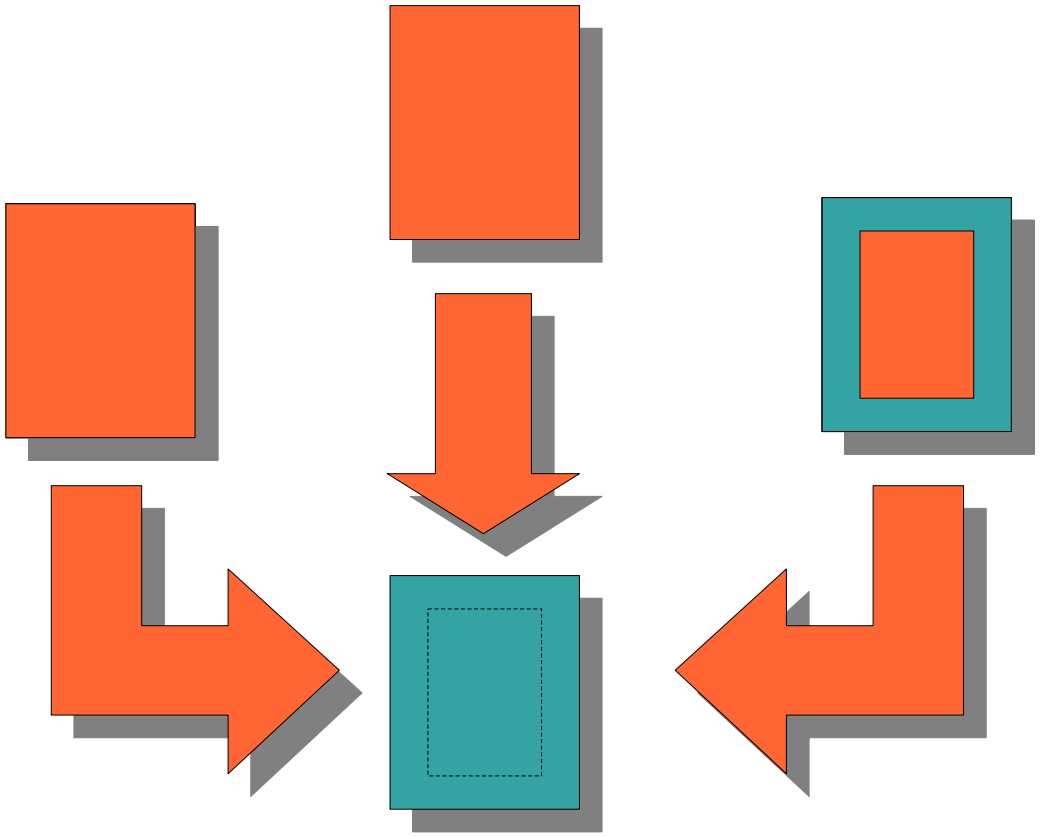


automatically derive extension of transformation?

project: transformations for abstractions

- Definition of domain abstractions
  - semantics of (embedded) domain-specific languages
- Mechanisms for open extensibility
  - open extensibility with concurrent variants
- Design of open transformations
- Independent extensibility
  - derivation of transformation extensions

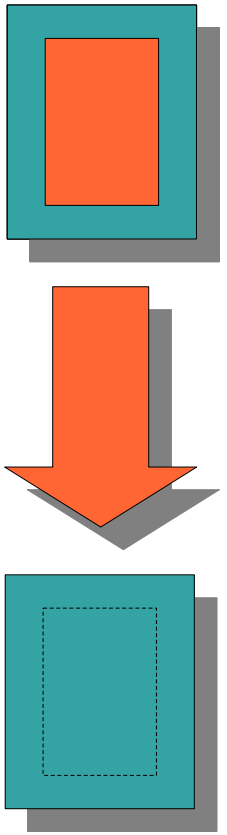
model-driven software evolution



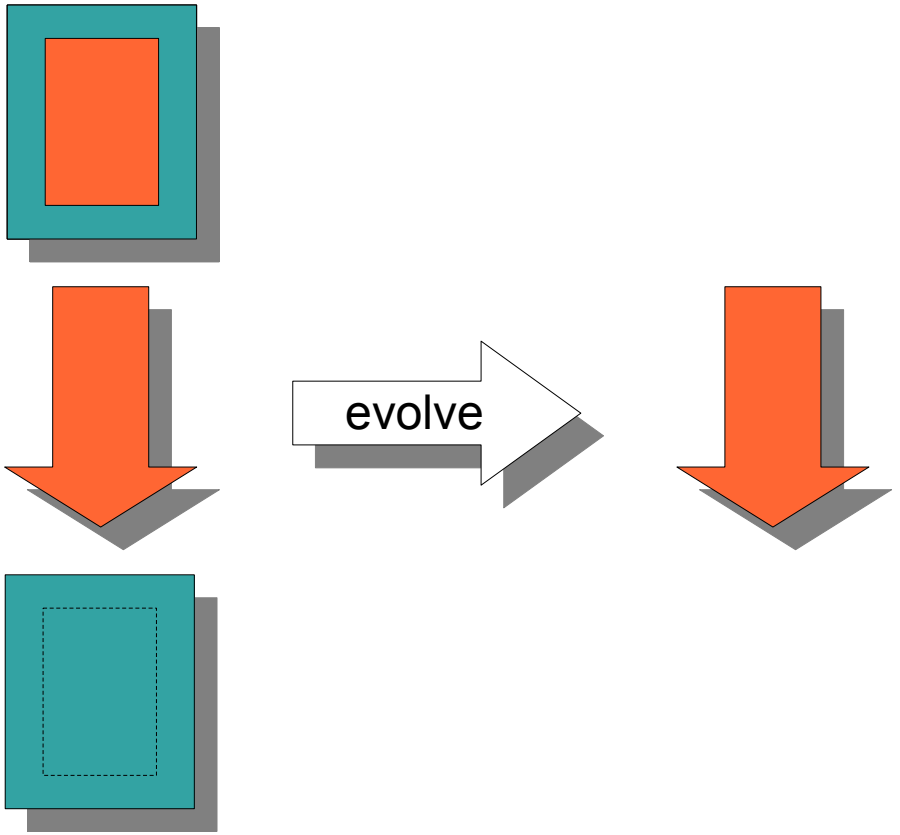
generate software from combinations of (embedded) domain-specific languages

issue: interaction between (embedded) DSLs

model-driven software evolution

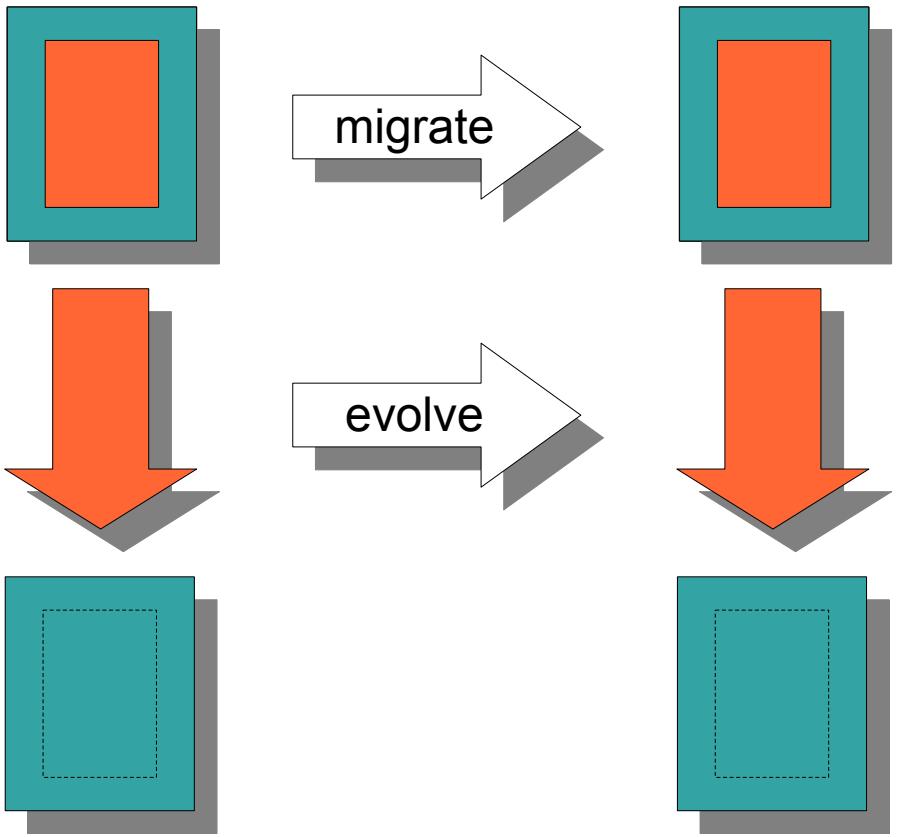


model-driven software evolution



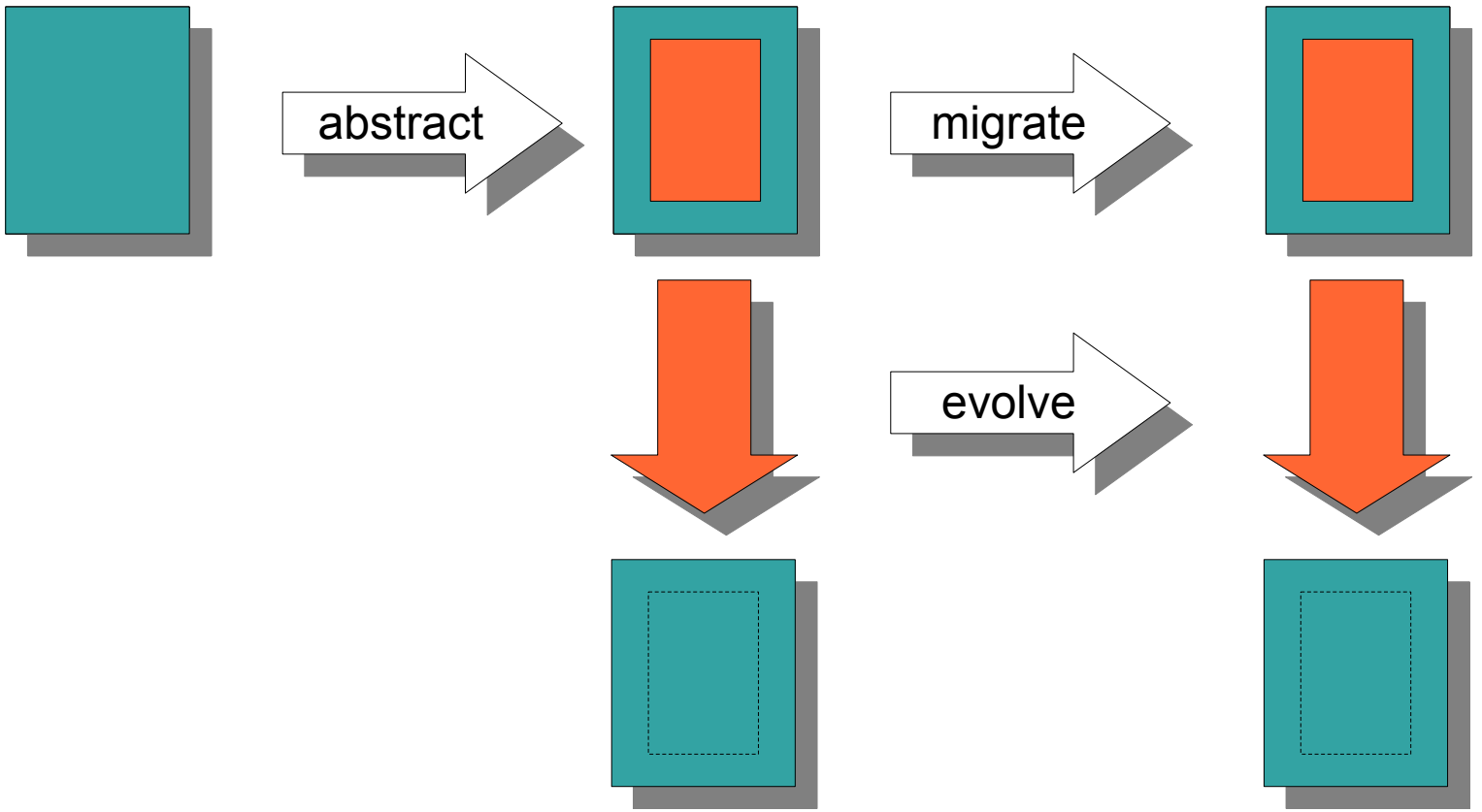
evolution of DSLs

model-driven software evolution



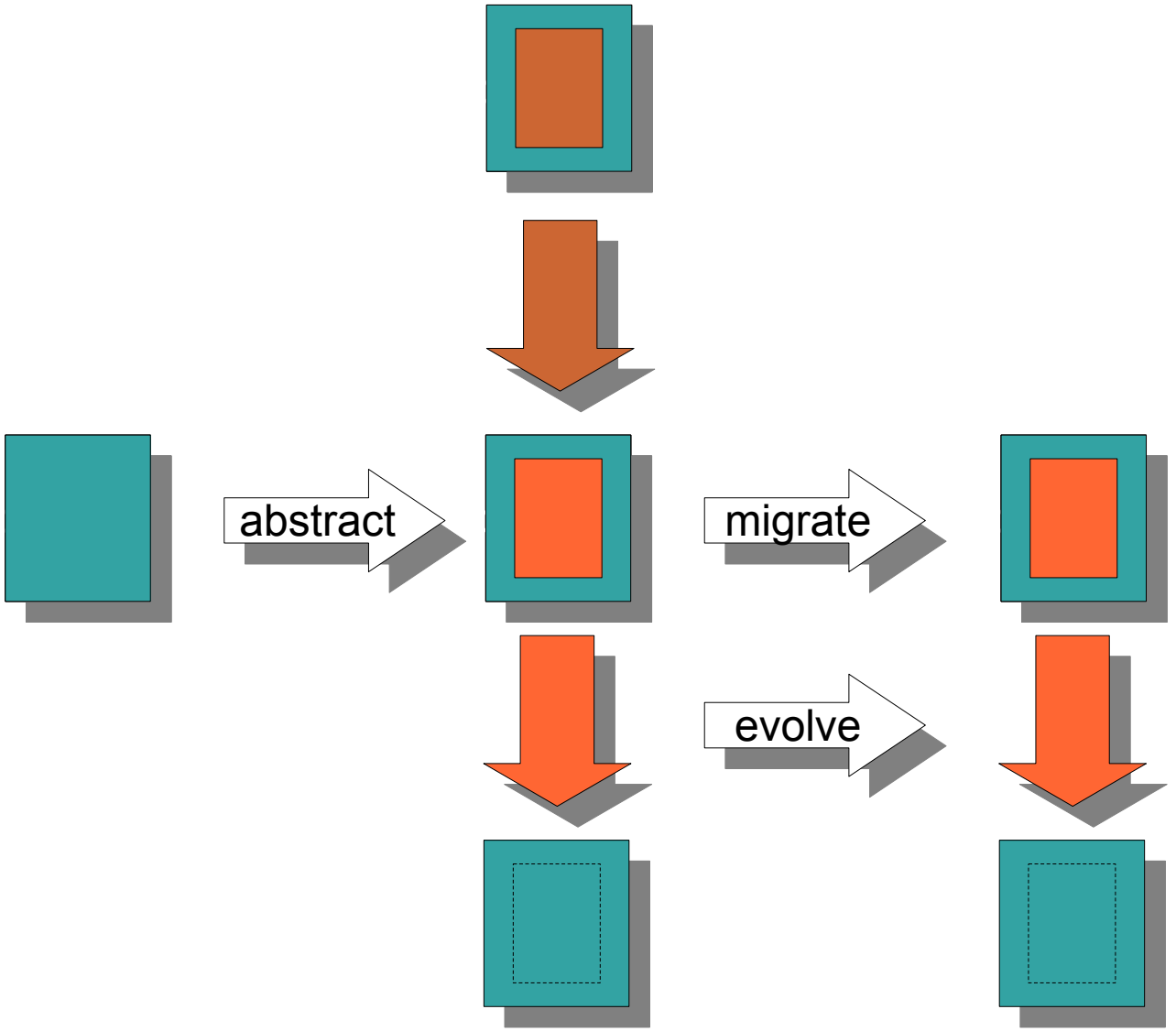
DSL evolution requires migration of DSL programs

model-driven software evolution



derive DSL programs from (legacy) GPL programs

model-driven software evolution



develop higher-level abstractions

Contribute

- Delft University of Technology
  - Software Enigeering Research Group
  - 4 job openings
- Transformations for abstractions
  - 1 postdoc position (3 years)
- Model-driven software evolution
  - 1 postdoc position (3 years)
  - 2 PhD student positions (4 years)