Rascal: A DSL for SCAM

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The complexity of bridging an analysis tool to a transformation tool shadows the complexity of the analyses and transformations themselves
[Vinju & Cordy Dagstuhl 2005]

Every SCAM tool requires both "analysis" and "transformation" features

Refactoring

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Slicing

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Reverse Engineering

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Compilation

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Static checking

Most language parametric SCAM tools are geared towards either "analysis" or "transformation"

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StrategoXT

TXL

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ASF+SDF

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RScript

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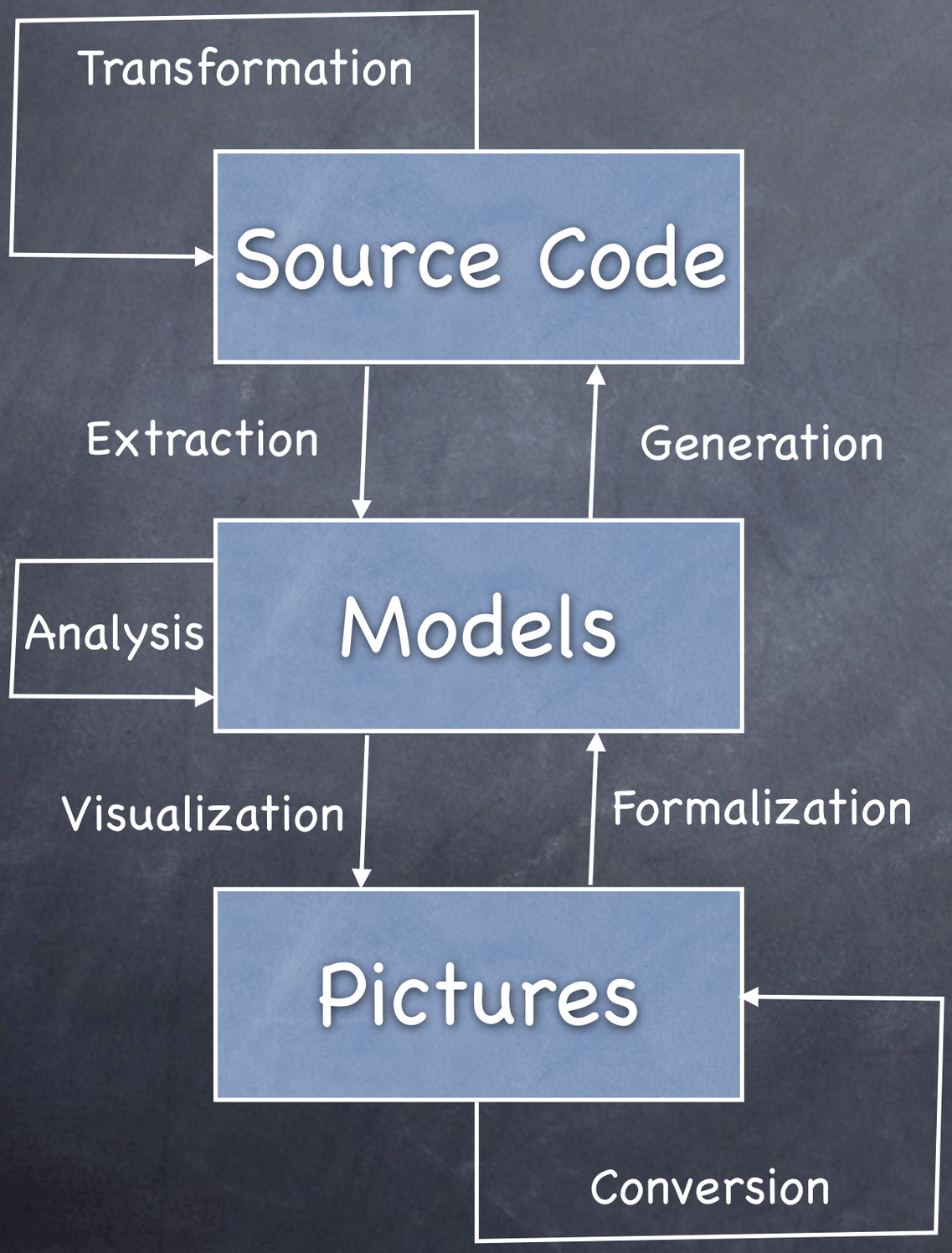
A DSL for SCAM?

- That **covers** SCAM
- That **scales down** and **scales up**
- That is **easier**

The SCAM domain



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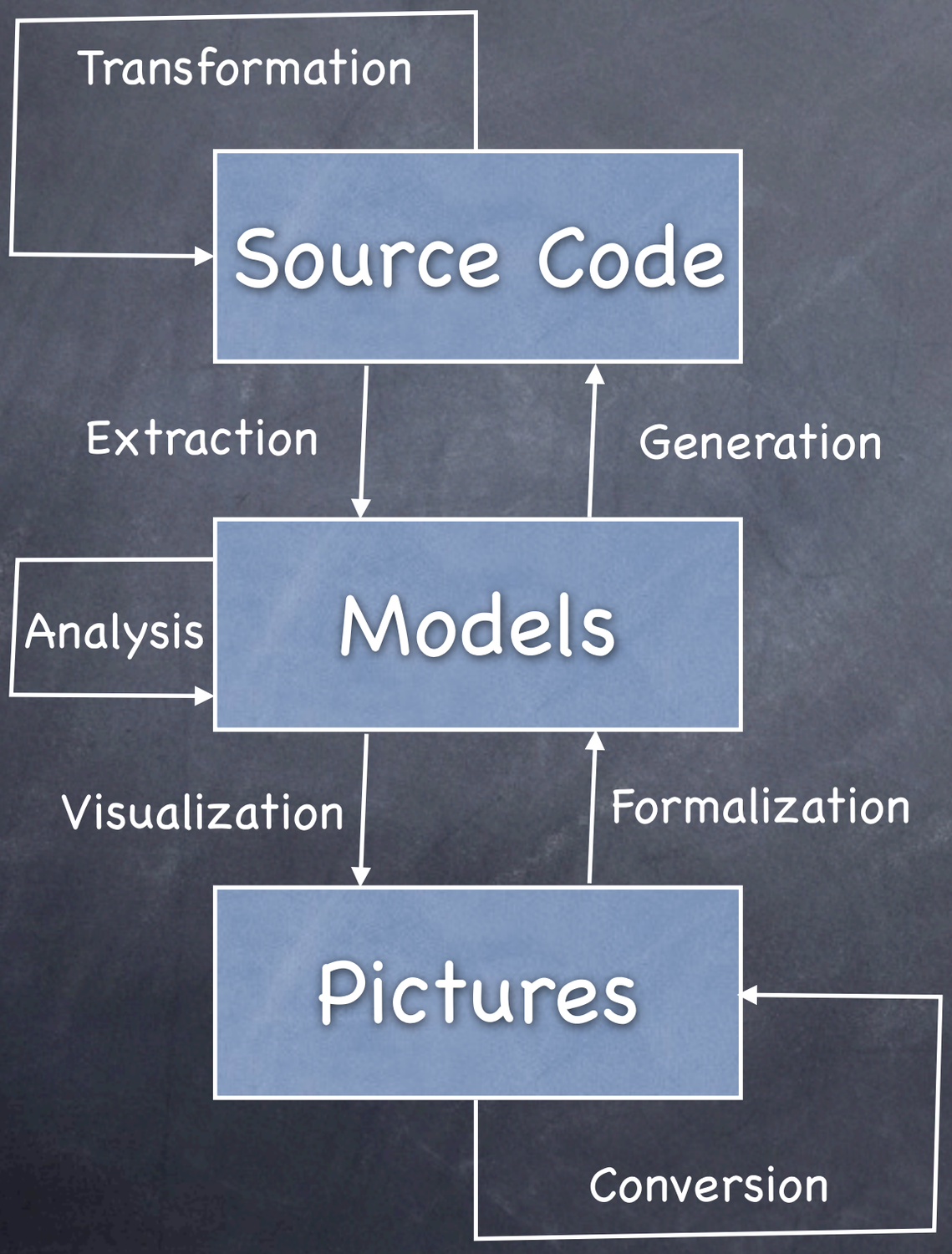

- Uses common...
  - Data-structures
  - Algorithms
- Nothing new! But still..
- Synthesize into a DSL
  - Conceptually
  - Syntactically
  - Semantically

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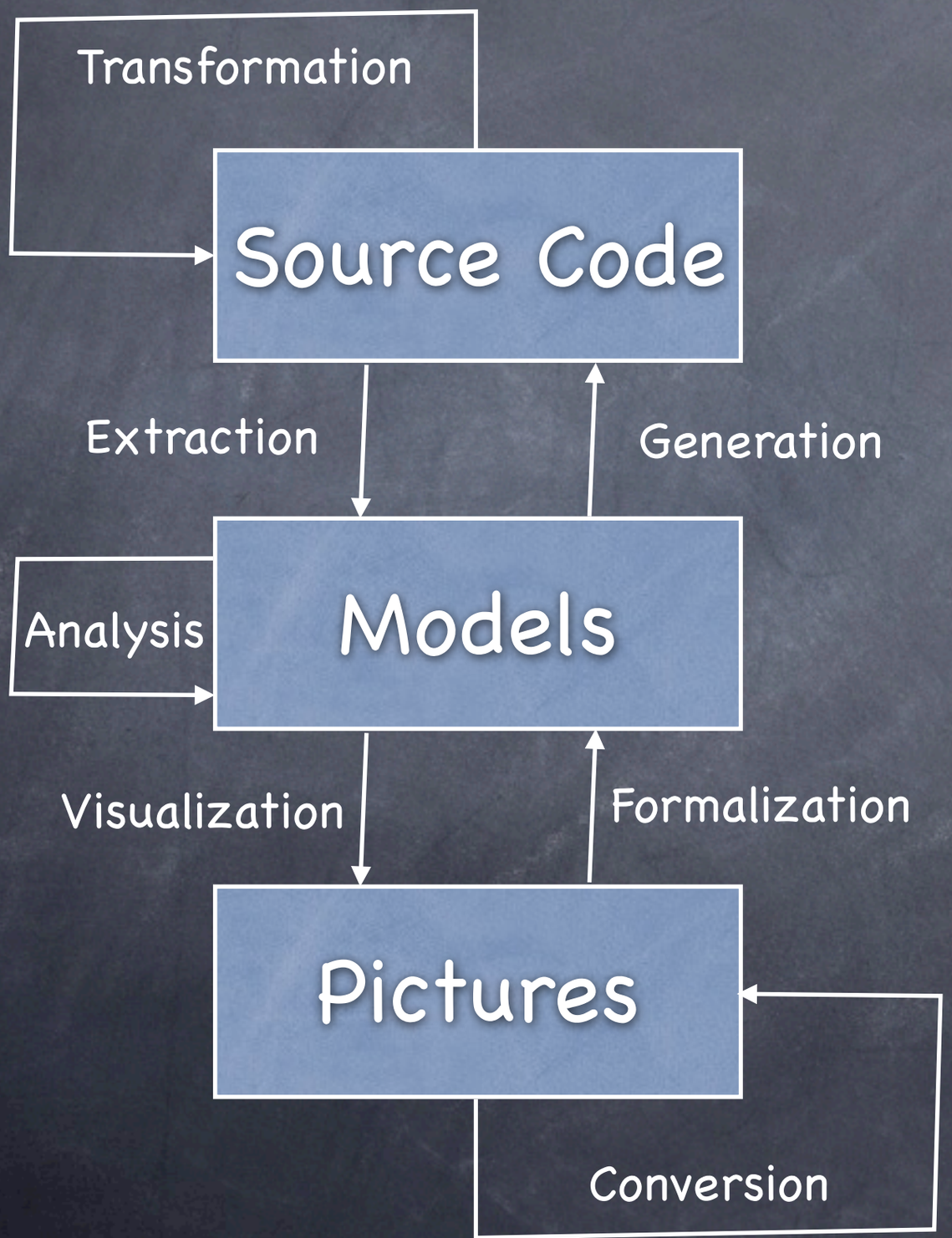

- Uses common...
  - Data-structures
  - Algorithms
  - Syntax
  - DSL
  - Syntactically
  - Semantically

Pattern Matching

Rascal has to scale down to make simple tasks short and easy to experiment with

Plain old REPL, no static type errors

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Complete & **domain specific**, expression language: visit, pattern matching, relational calculus

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First regexps, then CFG's

URI literals: files, projects, SVN, ...

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Rascal has to scale up to complex analysis and transformation algorithms that employ **reuse** of (library) functionality and allow **design** for maintainability

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h.o. parametric polymorphism, rank-1 and 2

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IDE support

bla

bla

bla

bla

bla

Concrete syntax

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We have implemented
Infer generic type arguments [Fuhrer et al. ECOOP2005]
on
Generic Featherweight Java [Igarashi et al. TOPLAS2002]

The size of the Rascal code is equal to the size of the formal definitions in the papers

Rascal

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We should think of them as one.

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http://www.meta-environment.org