

Open Source Open Systems Open Minds



Bug prevention using code
generators: a J2EE 1.4 case study

Francesco Aliverti-Piuri
CEO

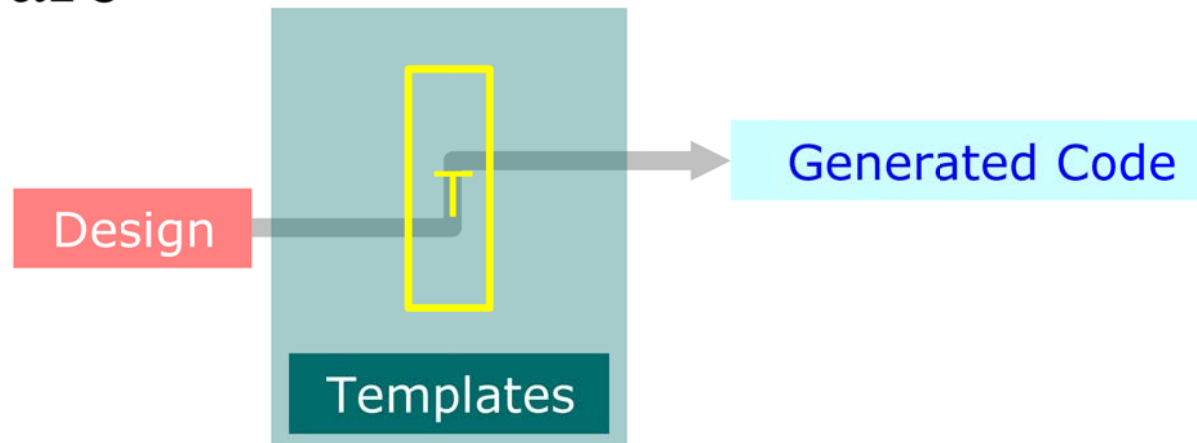
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Code Generation: Basic Concept

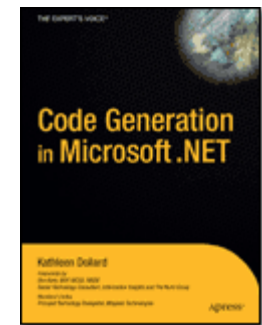
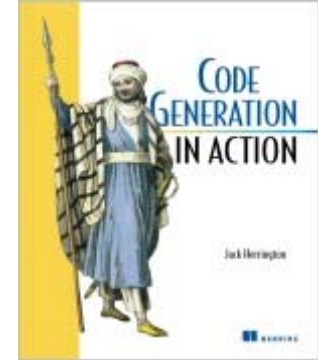
- A template-driven, *repeatable* transformation T translating a model into software



- Design and templates separate the model from the technology

Code Generation: What's New

- Jack Herrington 2003:
“Code Generation in Action”
 - General treatise of techniques and practices
- Kathleen Dollard 2004:
“Code Generation in MS.NET”
 - Process analysis with CG, integration of *handcrafted* code
 - “Brute-force” vs. CodeDom vs. XSLT

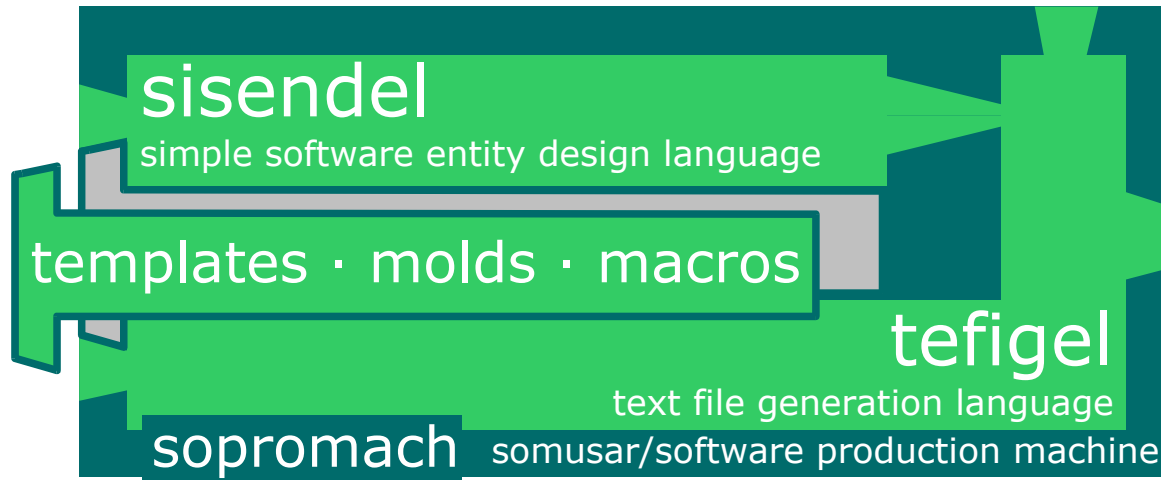


Code Generation: Future?

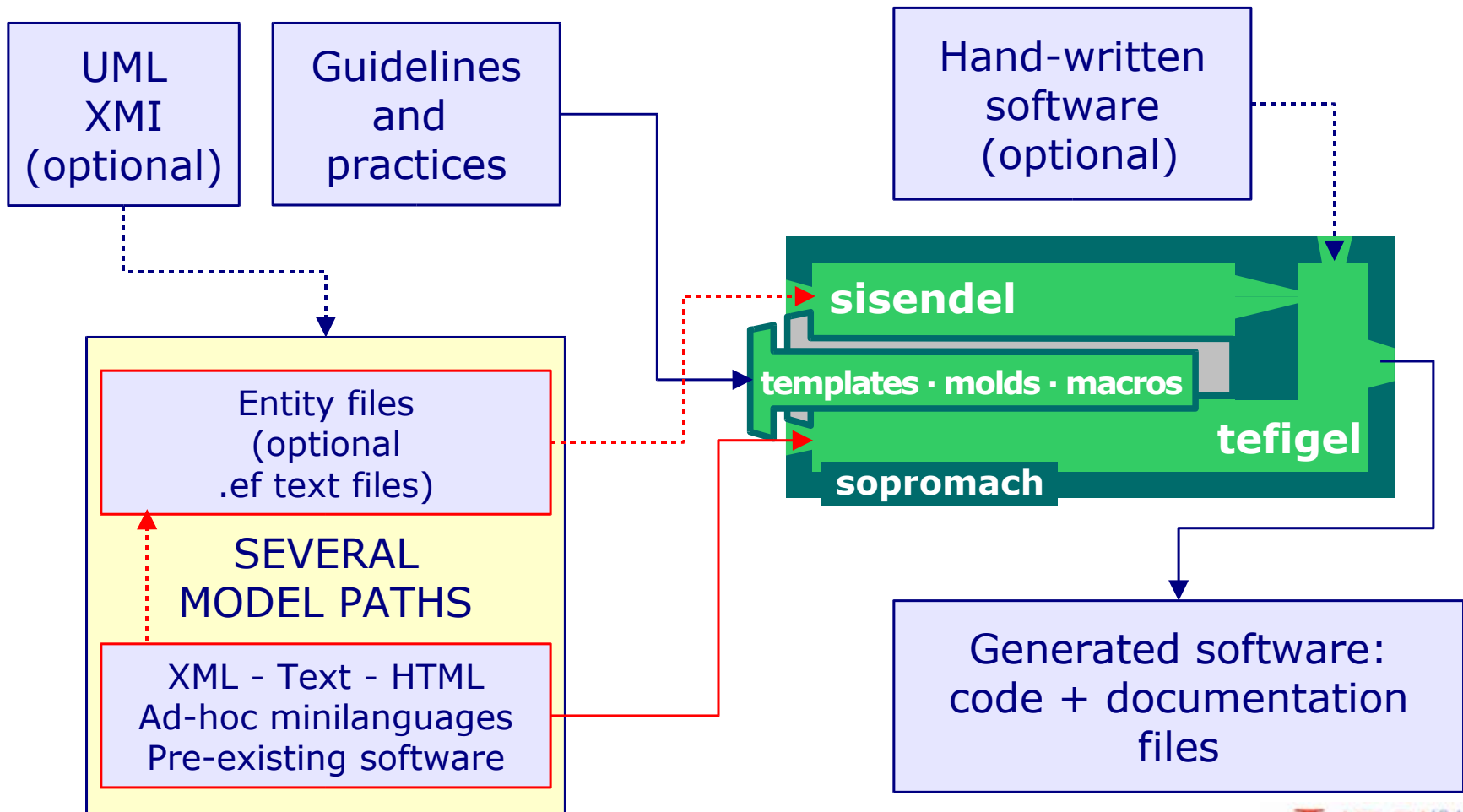
- **OMG: Model-Driven Architecture**
 - “How Systems Will Be Built” (www.omg.org/mda)
- **MDA: UML + MOF + XMI + CWM**
 - UML: Unified Modeling Language
 - MOF: Meta-Object Facility
 - XMI: XML Meta-Data Interchange
 - CWM: Common Warehouse Meta-Model
 - Main standards, there is much more
 - High-profile products, divided industry

Code Generation: Present

- SoProMach:
compact, generalized generator

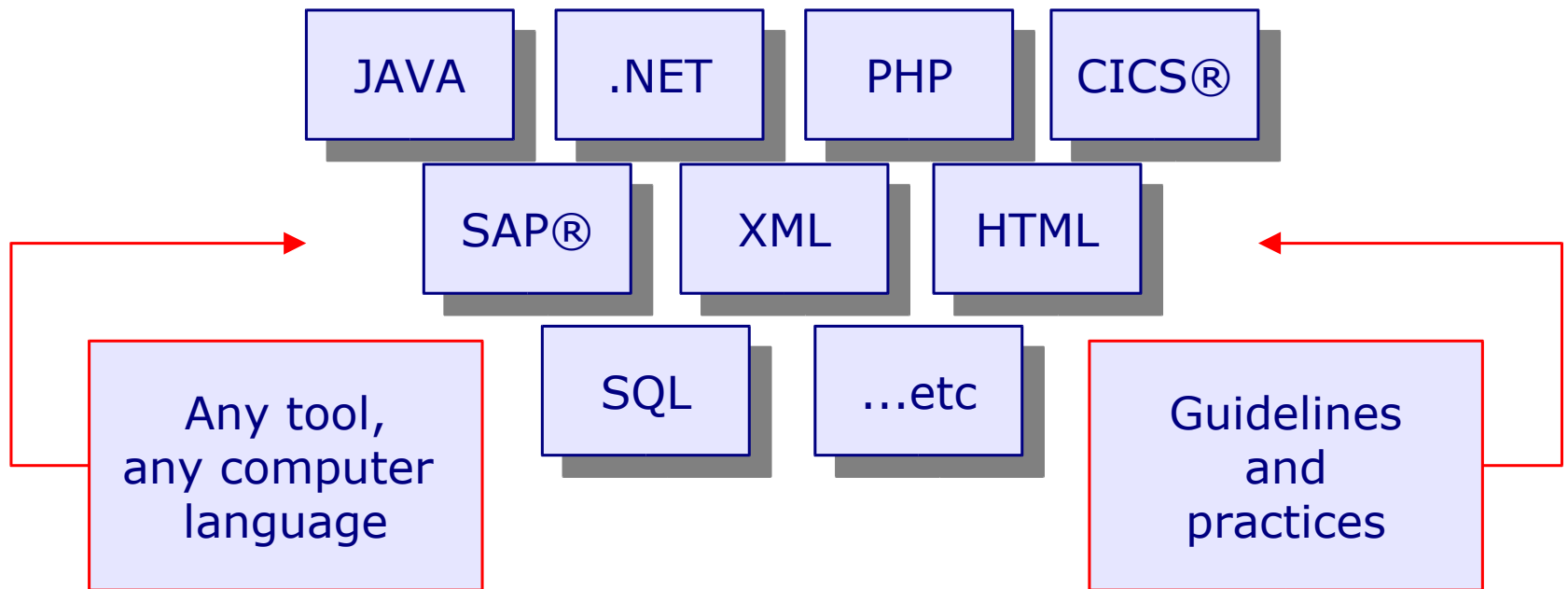


SoProMach: Inputs and Outputs



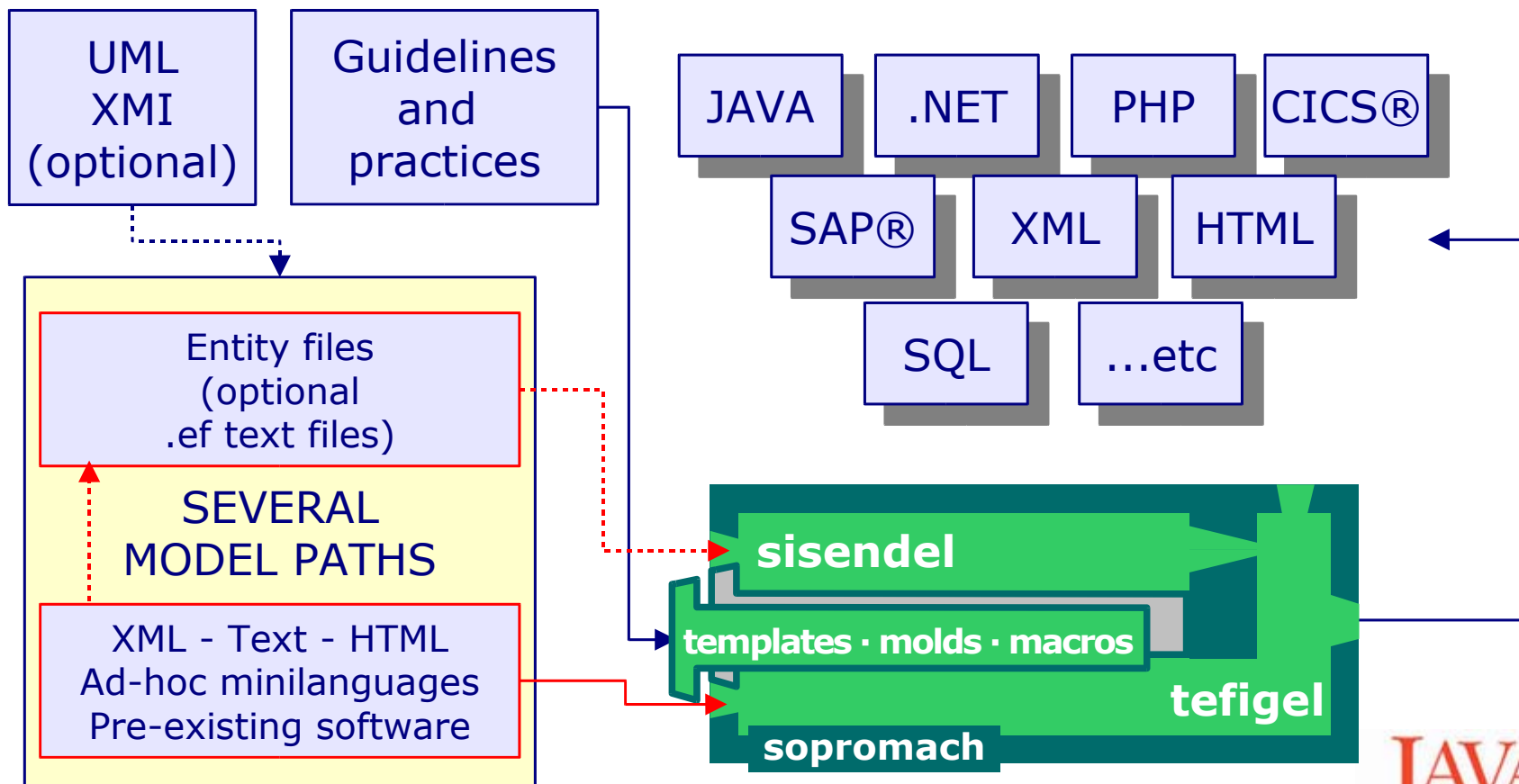
Code Generator Building - 1

- From *Your* code samples and *Your* guidelines...



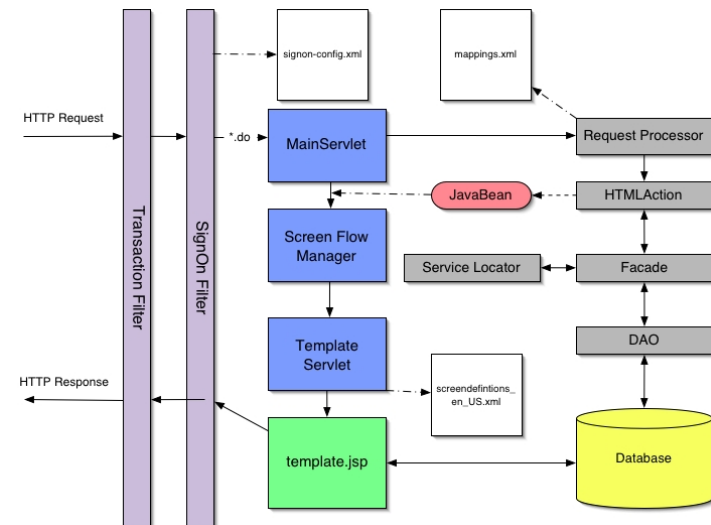
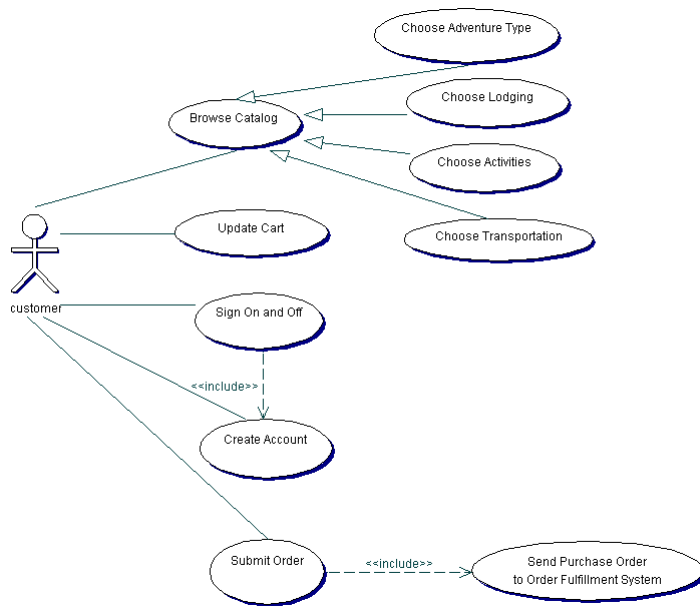
Code Generator Building - 2

- ...the generator suited for *Your* projects



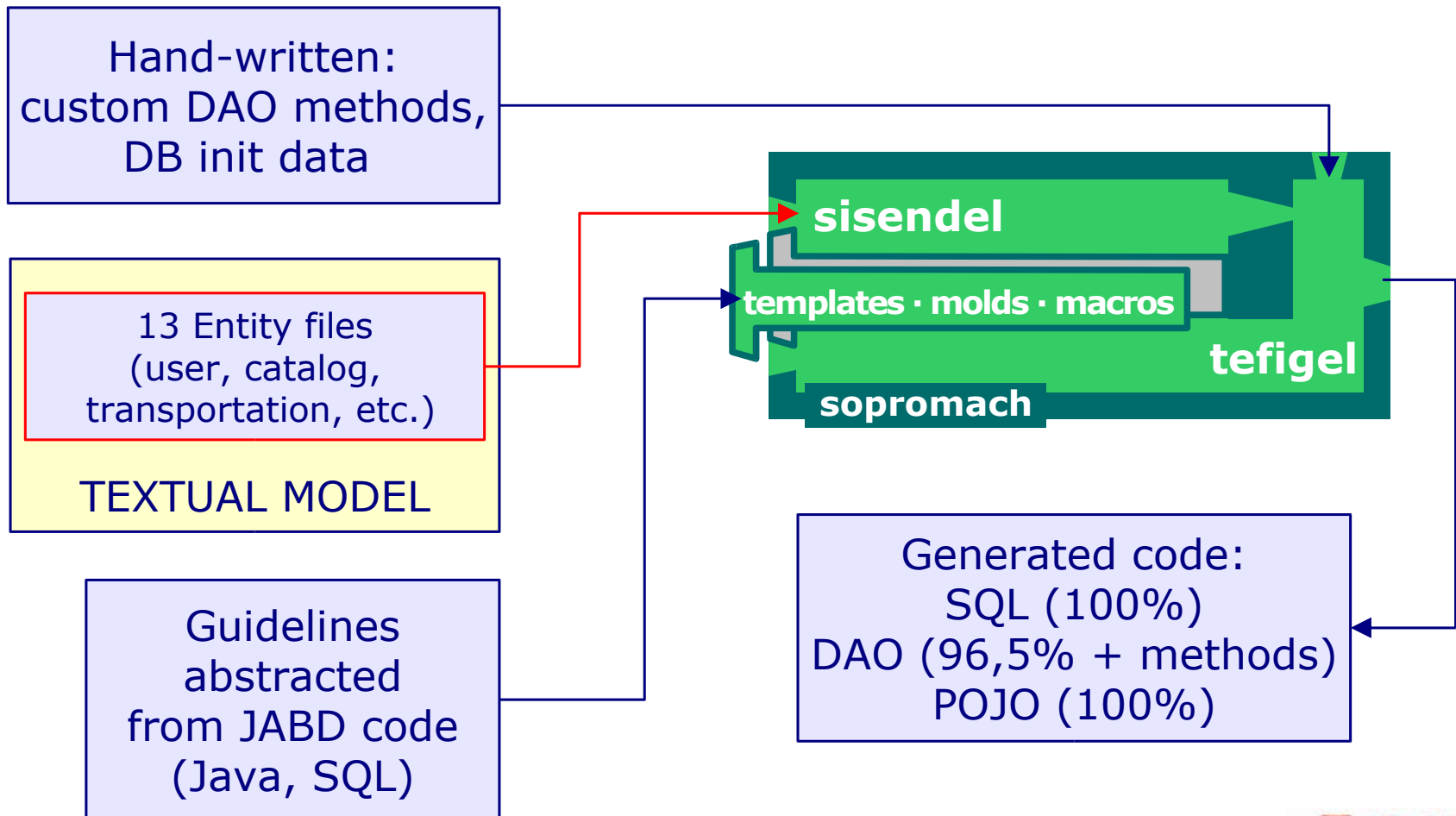
Java Adventure Builder Demo

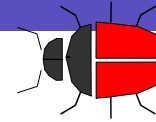
- Blueprint application for J2EE 1.4



- DAO, POJO, SQL: 98,1% generatable

Architecture of J2EE generator

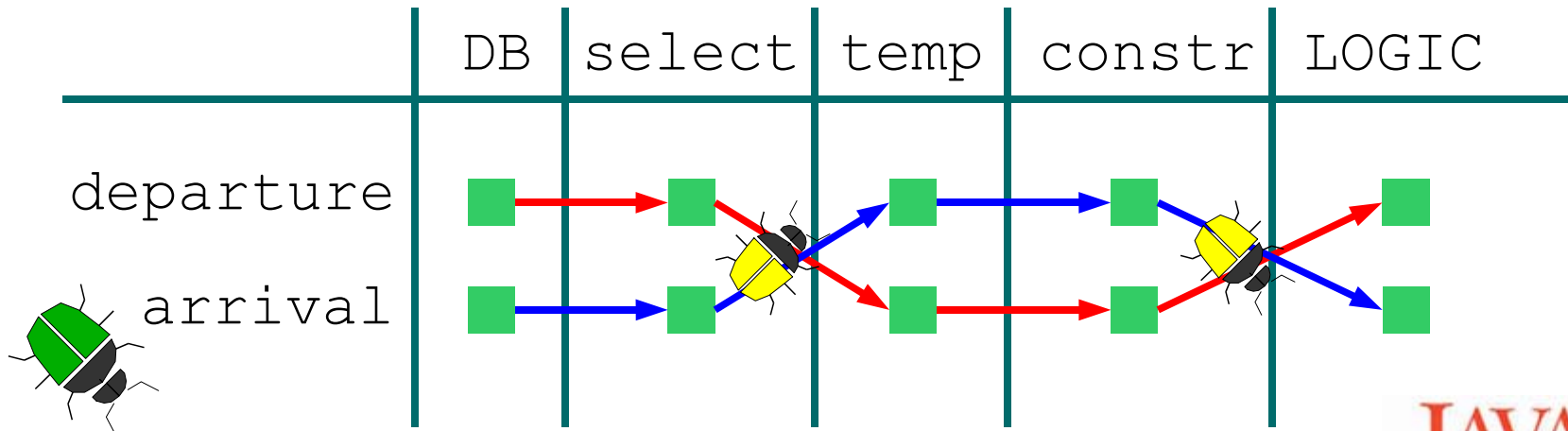




Surprise!



- Funny differences between original and generated code
- Difference analysis: bugs (harmless and self-neutralizing) in the original code



J2EE Generation Demo

- Part I: Code generation
 - Introduction to entity files (.ef) and software molds
 - SQL, DAO, POJO generation
- Part II: Extending the model
 - Apply change to entity file “contact_information.ef”
 - Re-generate SQL, DAO, POJO
 - Compare files generated in I and II

Info and links

- info@somusar.com
- www.somusar.com/
 - doc/articles
 - doc/booklets/cg_somusar
 - doc/slideware
- www.codegeneration.net
- ONjava.com
 - Search “Bug prevention”

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francesco.aliverti AT somusar.com

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