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► **To cite this version:**

Germain Faure, Antoine Reilles. Tom illustrated on an implementation of the explicit rewriting calculus. Workshop on Rewriting Techniques and Applications, Apr 2006, Vienna /Austria. inria-00096026

HAL Id: inria-00096026

<https://inria.hal.science/inria-00096026>

Submitted on 18 Sep 2006

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Tom illustrated on an implementation of the explicit rewriting calculus

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Following the experience of Elan [KM01], the Tom [MRV03] language was developed to provide rewrite tools for implementation of calculi, for compilation and for XML-transformations. We will focus here on the former. Tom provides a language to define a syntax (a signature) embedded into Java. Then, we can perform pattern matching with support of associative matching modulo neutral element (also known as list-matching). Finally, we can guide the application of rules with a strategy language defining term traversals (namely evaluation/rewriting strategies).

The originality of Tom is the combination of formal aspects with a general purpose language (such as Java). This combination leads to an agile language. At the same time, the strategy language inspired by Elan and Stratego [Vis01] gives the opportunity to reduce the code written in the general purpose language (and thus increase the formal parts).

We will illustrate the presentation by an implementation of the explicit rewriting calculus, introduced at the last WRLA [CFK04]. This running example will demonstrate the adequacy of Tom for such a development, offered by the integration in a general purpose language and by the strategy language.

References

- [CFK04] H. Cirstea, G. Faure, and C. Kirchner. A rho-calculus of explicit constraint application. In *Proceedings of the 5th workshop on rewriting logic and applications*. vol. 117 of Electronic Notes in Theoretical Computer Science, 2004.
- [KM01] H. Kirchner and P.-E. Moreau. Promoting rewriting to a programming language: A compiler for non-deterministic rewrite programs in associative-commutative theories. *Journal of Functional Programming*, 11(2):207–251, 2001.
- [MRV03] P.-E. Moreau, C. Ringeissen, and M. Vittek. A Pattern Matching Compiler for Multiple Target Languages. In G. Hedin, editor, *12th Conference on Compiler Construction, Warsaw (Poland)*, volume 2622 of *LNCS*, pages 61–76. Springer-Verlag, MAY 2003.

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- [Vis01] E. Visser. Stratego: A language for program transformation based on rewriting strategies (system description). In A. Middeldorp, editor, *Rewriting Techniques and Applications, 12th International Conference*, LNCS 2051, pages 357–362, Utrecht, The Netherlands, May 22–24, 2001. Springer.