

OOPSLA Workshop

Best Practices for

Model Driven Software Development

Workshop Goals and Themes

Object-oriented technology indisputably provided us with a better handle on complexity than previous technologies. Nevertheless, the growing size of applications and the demands for shorter time-to-market mean that many issues remain, and model-driven techniques can help us address them.

Model Driven Software Development (MDS) is a new software development paradigm for distributed project teams involving 20+ people, with roots in software product line engineering, which is the discipline of designing and building families of applications for a specific purpose or market segment.

What sets MDS apart from classical software product line engineering is the emphasis on a highly agile software development process. The relationship between MDS and software product line engineering can be compared to the relationship between Component Based Development and Object Technology: One builds on the other.

In recent years model driven approaches have been embraced by the Object Management Group (OMG) in the form of the Model Driven Architecture® (MDA®) initiative, Microsoft has started to work on software development tools that fully embrace the concepts of software factories and domain specific languages, and a whole number of Open Source projects are now focussed on building open tool platforms for MDS.

The model driven Open Source initiatives in particular may turn out to be critical in establishing MDS as a mainstream software development paradigm.

The workshop aims to bring together practitioners, researchers, academics, and students to discuss best practices for the development of model-driven software - and beyond the methodological aspect also to discuss the state-of-the-art Open Source tool support for MDS.

This workshop is a continuation of a highly successful series of workshops at OOPSLA04, OOPSLA03, and OOPSLA02, which each had over 30 participants.

Topics of interest include:

- industrial applications of MDS;
- synergy between MDS and Object/Component Technology;
- the agile aspect of MDS;
- Open Source tooling for MDS;
- influence of MDS on software architecture;
- MDS in distributed team environments (large projects, offshore development);
- implementing domain specific languages on the basis of the UML [2.0];
- notations for model-to-model transformations, and the development of a possible common standard notation for model transformations;
- modeling variability in functionality within product lines;
- model weaving and model transformation;
- pre and post-conditions for transformations;
- transformation and traceability;
- organization of hierarchical transformation libraries; transformations as assets;
- applications of higher level transformations (transformations generating transformations);
- verification of transformation systems;
- styles of model-driven generators;
- model-driven template languages (language design, template execution environment, debugging, template editors, management of template code);
- specification of heuristics and manual design decisions;
- generation of code and non-code artifacts (e.g. tests, measures, etc.).

The goal is to share experience, assess the state-of-the-art and the state-of-the-practice, consolidate successful techniques, and identify the most promising application areas and open issues for future work.

Potential participants are asked to submit a two-page (or longer) position paper detailing their experience with model-driven software development, their perspective on one or more of the above topics, and their planned contribution to the workshop. We seek concrete case studies and potential topics of discussion in order to ground the workshop in real-world issues. Please mail your submission (in PDF or Word) to Jorn Bettin (jorn.bettin@softmetaware.com).

Relevance to Object-Oriented Technology

Model-Driven Software Development is closely related to the OMG's Model-Driven Architecture. MDSD and MDA tools will improve the quality of object oriented systems, enable increases in productivity, and will allow us to:

- raise the level of abstraction of design models,
- represent domain knowledge in implementation neutral formats,
- retarget solutions for different platforms (different operating systems, middleware implementations, libraries, or even programming languages) in an efficient way,
- mix and match the use of frameworks and generation to optimize performance,
- implement aspectual and abstract features in a localized way,
- automate the repetitive parts of software development that are inherent in many of today's infrastructures.

Timeliness of the Workshop

Abstract modeling techniques and visual modeling notations have been in practical use for decades in various forms. However their impact this far has been limited by a lack of integration with sufficiently robust and affordable code generation/transformation engines.

MDSD is intended to provide a process framework that can be used in conjunction with today's MDA tools and that provides organizations with a set of best practices for the adoption of model-driven techniques. Best practices for developing model-driven software and high quality Open Source tools are urgently required to reduce the (real and perceived) risks of using such techniques in commercial software development projects.

Organizing Committee

Jorn Bettin, the founder of SoftMetaWare, is a software consultant with a special interest large-scale component systems and techniques to optimize the productivity of software development teams. SoftMetaWare provides CTO services and product line engineering expertise to software development organizations. Over the last decade Jorn has implemented automated, model-driven development in a number of software organizations. He has worked in methodology leadership roles in an IBM product development lab, and has written a range of articles and book chapters on various aspects of managing software development in the large. Together with Ghica van Emde Boas he started the Generative Model Transformer (GMT) Open Source initiative to develop an MDA tool platform in close collaboration with several universities (www.eclipse.org/gmt).

Ghica van Emde Boas is an independent IT-Architect (www.bronstee.com), after a 30-year career at IBM. She specializes in large Java frameworks and in PHP/MySQL frameworks for small projects. Together with Jorn Bettin she started the Generative Model Transformer (GMT) Open Source initiative to develop an MDA tool platform in close collaboration with several universities (www.eclipse.org/gmt). She developed a model-driven generative tool, FUUT-je (now on the GMT site).

Jean Bézivin is professor of Computer Science at the University of Nantes, France and a member of the new ATLAS research group created in Nantes (INRIA and IRIN). He has been very active in Europe in the Object-Oriented community, starting the ECOOP series of conference (with P. Cointe), the TOOLS series of conferences (with B. Meyer), the OCM meetings (with S. Caussariou and Y. Gallison) and more recently the <<UML>> series of conferences (with P.-A. Muller). He created at the University of Nantes in 1988, one of the first European Master Programs in Software Engineering completely based on object-technology. His present research interests include object-oriented analysis and design, product and process modeling, transitioning from pure object technology to general model engineering, and assessing the new emerging paradigm of model transformation.

Markus Völter works as an independent consultant and coach for software technology and engineering. He focuses on software architecture, middleware as well as model-driven software development. Markus is the author of several magazine articles, patterns and books. He is a regular speaker at various conferences world wide. Markus can be reached at voelter@acm.org or www.voelter.de.

Workshops on Related Topics

1. "Best Practices for Model Driven Software Development" was held at OOPSLA04 / GPCE04 in Vancouver. (Over 40 participants)
2. "Generative Techniques in the context of MDA" was held at OOPSLA03 in Anaheim and at OOPSLA02 in Seattle. (Over 30 participants in both years)
3. "Generative Techniques for Product Lines" was held at the First Software-Product Line Conference (SPLC1) in Denver, 2000; and was held in 2001 at ICSE in Toronto.
4. "Model Driven Architecture and Product Line Engineering" was held at the Second Software-Product Line Conference (SPLC2) in San Diego, 2002
5. "Graph Transformation and Visual Modeling techniques" will be held in Barcelona, Spain, 2004
6. "Application of Graph Transformations with Industry Relevance" was held at the University of Virginia, Charlottesville, Virginia, 2003
7. "Model Driven Architecture@: Foundations and Applications" will be held at Linköping University, Sweden, 2004
8. "Generative Programming" was held at ECOOP01 in Budapest, at ECOOP02 in Malaga, and at OOPSLA01 in Tampa.
9. "Visual Domain Specific Languages" was held at OOPSLA03 in Anaheim, at OOPSLA02 in Seattle, at OOPSLA01 in Tampa, and at OOPSLA04 in Vancouver.

Important Dates

Expected number of participants: 20-45

Cut-off point: 15 position papers, multiple authors per paper allowed. If more high quality submissions are received, the organizers may encourage submitters of papers on closely related topics to collaborate on a joint position paper.

- Workshop submission deadline (for initial versions): August 26, 2005
- Notification of acceptance: September 9, 2005
- OOPSLA'05 early registration deadline: September ???, 2005
- Publication of final versions of position papers: October 10, 2005
- Workshop at OOPSLA'05: October ???, 2005

Pre-Workshop Activities

Potential participants will be asked to submit a two-page (or longer) position paper detailing their experience with model-driven and/or generative techniques, their perspective on one or more of the workshop themes, and their planned contribution to the workshop. We encourage submitters to submit concrete software development problems and/or other challenging issues from the practice. We will interact with the potential participants via e-mail to select a set of problems and issues to be discussed in focus groups during workshop.

All accepted position papers will be published on this workshop page prior to the workshop, and the participants are encouraged to read the papers prior to the workshop.

Planned Workshop Activities

The workshop will aim to foster discussion and interaction rather than presentations. Presentations will serve to introduce a case study, provide triggers for discussion in the second part of the workshop by presenting a controversial point of view, or by introducing a new point of view. All participants will be given a chance to make a short presentation (5-10 min).

Morning Session [8:30 - 12:00]

1. Introductory material presented by the organizers (15 min)
2. Introduction round (15 min)
3. Short 10-minute presentations from the authors of the submitted position papers. A data projector will be available. Presenters may prepare slides in pdf or MS ppt format, or need to bring their own notebook and software if a different presentation format is used.

Afternoon Session [13:00 - 17:00]

1. Interactive discussion using the "Open Space" technique. To give all workshop attendees sufficient opportunities for active participation, the discussion will take place in two or three groups in parallel. Each group will present their results to the larger audience before the closing discussion.
2. Closing discussion.