

How to cook an Agile Web Based Model Driven Environment in a night

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Abstract. The tutorial session delivered at ICWE 2018 focuses on the introduction of Model Driven Development (MDD) in real world applications and work-flows via Agile Web Based Model Driven Environments built upon the ALMOst.js set of tools. The tutorial covers the motivation behind ALMOst.js, discusses how such a tool can reduce the friction between developers and the MDD approach, and guides the audience through the steps required to bootstrap their own MDD projects.

Keywords: Model Driven Development, Model Transformation, Agile Development

1 Introduction

Model Driven Development (MDD) is the branch of software engineering that advocates the use of *models*, i.e., abstract representations of a system, and of *model transformations* as key ingredients of software development. Developers use a general purpose (e.g. UML) or domain specific (e.g. IFML) modeling language to portrait the essential aspects of a system, under one or more perspectives, and use (or build) suitable chains of *transformations* to progressively refine the models into a final product (e.g. executable code). General purpose modeling languages have a high expressive power which gives them the ability to be applied to various domains, at the cost of higher expertise required to manage models. Domain specific modeling languages on the other side have a reduced expressive power that can be tailored to the problem at hand with a positive impact on time and expertise requirements. It is hardly the case that developers can afford building their own MDD development environment, including such aspects as model editing, verification and code generation, because such a task could easily exceed the effort of the actual application to be delivered. The ability of building a Web Based MDD environment, which can be integrated inside preexisting tools, the possibility to exploit a preexisting expertise in web technologies, and the modular and extensible architecture make ALMOst.js[1] a viable solution for both MDD experts and newcomers. The former can reduce friction correlated with complex tool installation and reduce the time required to get productive on the code-base. The latter can start experimenting the MDD approach with close-to-zero effort, and gradually integrate it in preexisting work-flows.

2 Tutorial

The format of the tutorial integrates lecturing and practical work. Special attention will be given to the exploitation of preexisting knowledge of attendees and to the interoperability with their current web development standards and practices.

2.1 Concrete learning objectives/outcomes

At the end of the tutorial, attendees will get a hands-on knowledge about how to develop a full fledged MDD environment with the ALMOsT.js framework. They will be able to develop M2M and M2T transformations and bootstrap a novel MDD Web Based environment or integrate ALMOsT.js in an existing project. This will let them appreciate the advantages of integrating MDD in their work-flows, by exploiting preexistent knowledge.

2.2 Intended audience and assumed background

The tutorial is aimed at both **industrial and academic attendees**, including Ph.D. students. Prerequisite for attending the tutorial is a basic knowledge about web technologies, in particular JavaScript.

3 Presenter

Carlo Bernaschina is a Ph.D. Candidate at Politecnico di Milano. He graduated cum laude in Information Engineering in 2014. He is the main curator of various Open Source projects; in particular ALMOsT.js¹, which is the main framework presented during this tutorial, and IFMLEdit.org[2]², which is one of the main project developed with ALMOsT.js and was used during the development for a new reactive semantics for the Interaction Flow Modeling Language (IFML) targeting Web and Mobile applications[3].

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¹ <http://npmjs.com/almost>

² <http://ifmledit.org>