

# Implementing Domain-Specific Languages with Xtext and Xtend

Learn how to implement a DSL with Xtext and Xtend using easy-to-understand examples and best practices



# Implementing Domain Specific Languages With Xtext And Xtend By Bettini Lorenzo 2013 Paperback

**Yi-Tong Ma** 

### Implementing Domain Specific Languages With Xtext And Xtend By Bettini Lorenzo 2013 Paperback:

Implementing Domain-Specific Languages with Xtext and Xtend Lorenzo Bettini, 2016-08-31 Learn how to implement a DSL with Xtext and Xtend using easy to understand examples and best practices About This Book Leverage the latest features of Xtext and Xtend to develop a domain specific language Integrate Xtext with popular third party IDEs and get the best out of both worlds Discover how to test a DSL implementation and how to customize runtime and IDE aspects of the DSL Who This Book Is For This book is targeted at programmers and developers who want to create a domain specific language with Xtext They should have a basic familiarity with Eclipse and its functionality Previous experience with compiler implementation can be helpful but is not necessary since this book will explain all the development stages of a DSL What You Will Learn Write Xtext grammar for a DSL Use Xtend as an alternative to Java to write cleaner easier to read and more maintainable code Build your Xtext DSLs easily with Maven Tycho and Gradle Write a code generator and an interpreter for a DSL Explore the Xtext scoping mechanism for symbol resolution Test most aspects of the DSL implementation with JUnit Understand best practices in DSL implementations with Xtext and Xtend Develop your Xtext DSLs using Continuous Integration mechanisms Use an Xtext editor in a web application In Detail Xtext is an open source Eclipse framework for implementing domain specific languages together with IDE functionalities It lets you implement languages really quickly most of all it covers all aspects of a complete language infrastructure including the parser code generator interpreter and more This book will enable you to implement Domain Specific Languages DSL efficiently together with their IDE tooling with Xtext and Xtend Opening with brief coverage of Xtext features involved in DSL implementation including integration in an IDE the book will then introduce you to Xtend as this language will be used in all the examples throughout the book You will then explore the typical programming development workflow with Xtext when we modify the grammar of the DSL Further the Xtend programming language a fully featured Java like language tightly integrated with Java will be introduced We then explain the main concepts of Xtext such as validation code generation and customizations of runtime and UI aspects You will have learned how to test a DSL implemented in Xtext with JUnit and will progress to advanced concepts such as type checking and scoping You will then integrate the typical Continuous Integration systems built in to Xtext DSLs and familiarize yourself with Xbase By the end of the book you will manually maintain the EMF model for an Xtext DSL and will see how an Xtext DSL can also be used in Intellij Style and approach A step by step tutorial with illustrative examples that will let you master using Xtext and implementing DSLs with its custom language Xtend Domain-Specific Languages in Practice Antonio Bucchiarone, Antonio Cicchetti, Federico Ciccozzi, Alfonso Pierantonio, 2021-06-24 This book covers several topics related to domain specific language DSL engineering in general and how they can be handled by means of the JetBrains Meta Programming System MPS an open source language workbench developed by JetBrains over the last 15 years The book begins with an overview of the domain of language workbenches which provides perspectives and motivations

underpinning the creation of MPS Moreover technical details of the language underneath MPS together with the definition of the tool s main features are discussed The remaining ten chapters are then organized in three parts each dedicated to a specific aspect of the topic Part I MPS in Industrial Applications deals with the challenges and inadequacies of general purpose languages used in companies as opposed to the reasons why DSLs are essential together with their benefits and efficiency and summarizes lessons learnt by using MPS Part II about MPS in Research Projects covers the benefits of text based languages the design and development of gamification applications and research fields with generally low expertise in language engineering Eventually Part III focuses on Teaching and Learning with MPS by discussing the organization of both commercial and academic courses on MPS MPS is used to implement languages for real world use Its distinguishing feature is projectional editing which supports practically unlimited language extension and composition possibilities as well as a flexible mix of a wide range of textual tabular mathematical and graphical notations The number and diversity of the presented use cases demonstrate the strength and malleability of the DSLs defined using MPS The selected contributions represent the current state of the art and practice in using JetBrains MPS to implement languages for real world applications

Creating Domain-Specific Languages With Eclipse Xtext Mirko Raner, 2015-07-15 Using Domain Specific Languages DSLs you can solve a wide spectrum of problems more rapidly and effectively than ever before However early adopters have struggled with the absence of sophisticated IDE tools for their new languages Eclipse Xtext solves this problem offering complete infrastructure for your DSLs from parsers linkers compilers and interpreters to developer productivity features like validation and code completion Now for the first time there s a comprehensive guide to developing industry strength DSL projects with Xtext Creating Domain Specific Languages with Eclipse Xtext covers all you need to know to succeed with the widely anticipated new Xtext 2 release You ll learn How Xtext works and how it relates to other Eclipse frameworks How to create your own DSLs with Xtext How to implement custom DSL editors that maximize user productivity How to write Xtext grammars for existing legacy DSLs How to integrate Xtext DSLs with other EMF models and Eclipse based technologies How to solve industrial strength problems including scalability of large grammars and models advanced customization and proper build and continuous integration set up Xtext 2 0 isn t just another DSL creation tool it s a breakthrough enabler that will bring DSLs into far wider usage This guide will help you get results with Xtext 2 0 fast whether you re just started working with DSLs or you ve been pioneering them for years **Domain Specific Languages** Martin Fowler, 2010 **Building User-Friendly DSLs** Meinte Boersma, 2024-12-17 Craft domain specific languages that empower experts to create software themselves Domain specific languages put business experts at the heart of software development These purpose built tools let your clients write down their business knowledge and have it automatically translated into working software no dev time required They seamlessly bridge the knowledge gap between programmers and subject experts enabling better communication and freeing you from time consuming code adjustments Inside Building User Friendly DSLs you ll learn how

to Build a complete Domain IDE for a car rental company Implement a projectional editor for your DSL Implement content assist type systems expressions and versioning language aspects Evaluate business rules Work with Abstract Syntax Trees Reduce notated DSL content in concrete syntax into abstract syntax Building User Friendly DSLs takes you on a carefully planned journey through everything you need to create your own DSLs It focuses on building DSLs that are easy for busy business experts to learn and master By working through a detailed example of a car rental company you ll see how to create a custom DSL with a modern and intuitive UI that can replace tedious coding activities About the technology Here's the central problem of software development business users know what they need their apps to do but they don't know how to write the code themselves As a developer this means you spend a lot of time learning the same domain specific details your user already knows Now there s a way to bridge this gap You can create a Domain Specific Language DSL that empowers non technical business users to create and customize their own applications without writing any code About the book Building User Friendly DSLs teaches you how to create a complete domain specific language that looks and works like a web application These easy to use DSLs put the power to create custom software into the hands of business domain experts As you go you ll cover all the essentials from establishing structure and syntax of your DSL to implementing a user friendly interface What's inside Implement a projectional editor for your DSL Work with Abstract Syntax Trees Evaluate business rules About the reader For developers with JavaScript and web development experience About the author Meinte Boersma is a senior developer and an evangelist of model driven software development and DSLs Table of Contents 1 What is a domain specific language 2 Representing DSL content as structured data 3 Working with ASTs in code 4 Projecting the AST 5 Editing values in the projection 6 Editing objects in the projection 7 Implementing persistence and transportation of ASTs 8 Generating code from the AST 9 Preventing things from blowing up 10 Managing change 11 Implementing expressions Binary operations 12 Implementing expressions Order of operations 13 Implementing a type system 14 Implementing business rules 15 Some topics we didn t cover **Domain-specific Languages** ACM. Special Interest Group on Software Engineering, ACM. Special Interest Group on Programming Languages, USENIX Association. Berkeley (CA US), 1999

Unveiling the Magic of Words: A Report on "Implementing Domain Specific Languages With Xtext And Xtend By Bettini Lorenzo 2013 Paperback"

In some sort of defined by information and interconnectivity, the enchanting power of words has acquired unparalleled significance. Their capability to kindle emotions, provoke contemplation, and ignite transformative change is truly awe-inspiring. Enter the realm of "Implementing Domain Specific Languages With Xtext And Xtend By Bettini Lorenzo 2013 Paperback," a mesmerizing literary masterpiece penned by a distinguished author, guiding readers on a profound journey to unravel the secrets and potential hidden within every word. In this critique, we shall delve to the book is central themes, examine its distinctive writing style, and assess its profound affect the souls of its readers.

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