



J-Spring

16 april 2008 Spant! - Bussum



xText: DSL's made easy!

Jeroen Benckhuijsen
Meinte Boersma





Even voorstellen...

- Meinte Boersma (31)
 - MDA/ADM Specialist
 - Atos Origin Utrecht
 - Model-transformatie en discovery technieken
- Jeroen Benckhuijsen (28)
 - Software Architect
 - Atos Origin Eindhoven
 - Pragmatic MDA/MDSD





Domain Specific Languages

General Purpose Language

Algemeen toepasbaar
Java, C#, enz

Pragmatic MDA
16.40 – 17.30
Jos Warmer



HTML, SQL
Custom DSL's
Specifiek domein
Domain Specific Language



Typologie

Apache Camel
15.45 – 16.35
Tijs Rademakers

- **Tekstueel:**
 - **SQL**
 - **HTML**
- **Grafisch:**
 - **BPEL/jPDL**
 - **JSF Faces-Config**

Grafische procesbouw met de Eclipse BPEL designer
16.40 – 17.30
Andy Verberne

- **Internal:**
 - **Binnen een bestaande “gasttaak” (Ruby/Java)**
 - **Apache Camel**
- **External:**
 - **Custom taal**
 - **SQL, properties files**

Syntax

Gebruik

- **Generatie:**
 - **Design-time**
 - **IBM WPS**
- **Configuratie:**
 - **Run-time**
 - **jBPM**

Implementatie



Definitie van DSL's

- Gebruik van DSL's heeft veel voordelen
- Implementatie vaak lastig en tijdrovend:
 - Parser
 - Editor (code completion, errors & warnings, outline, navigation, etc.)
 - Model





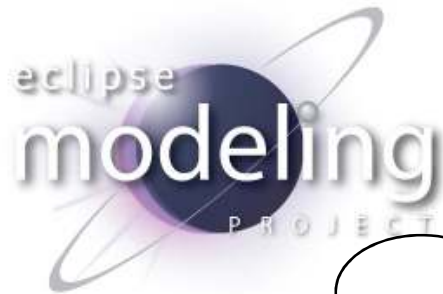
xText: DSL's made easy



- openArchitectureWare (oAW) is een lichtgewicht open source MDA framework:
 - Xpand: templates language & engine
 - Xtend: model tranformation language & engine
 - Xtext: DSL support
 - Geadopteerd door EMF



xText: DSL's made easy



*Eclipse
plugin: RCP*

- Features xText:
 - Generatie parser, EMF model en Eclipse editor
 - Errors & warnings in Eclipse Problems View
 - Code completion, Outline, Navigation



xText: Agreement DSL

- Demo: Agreement DSL
 - Martin Fowler
 - Specificatie afrekening elektriciteitsgebruik naar journaalposten

```
plan Regular

rate BASE_RATE
  1999 - 10 - 12 : 10.0 [USD/KwH]
  1999 - 12 - 01 : 10.0 [USD/KwH]

event USAGE
  1999 - 10 - 01 : amount : BASE_RATE * usage
                  account : base-usage

event SERVICE_CALL
  1999 - 10 - 01 : amount : fee * 0.5 + 10.0 [USD]
                  account : service
  1999 - 12 - 01 : amount : fee * 0.5 + 15.0 [USD]
                  account : service

event TAX
  1999 - 10 - 01 : amount : fee * 0.055
                  account : tax
```

- Concepten van de DSL: *plan*, *event*, *temporal property*, *posting rule*
(<http://martinfowler.com/articles/mpsAgree.html>)
- Gebaseerd op v4.2 (mid april: v4.3)



Demo xText en gebruik DSL

- **Tekstueel**
- **Grafisch**

Syntax

- **Internal**
- **External**

Implementatie

- **Generatie**
- **Configuratie**

Gebruik



xText: Details



Model

- ValueDecl
- EventRulesDecl
- TemporalPostingRule
- Amount
- Date
- AmountRule

Parser

```
grammar Java;
options {k=2; backtrack=true;
@lexer::members {
protected boolean enumIsKeywo:
}
// starting point for parsing
compilationUnit
: annotations? packageDeclar:
importDeclaration*
typeDeclaration*
packageDeclaration
: 'package' qua:
```

```
String Double:
  INT ("," INT)?;

String Unit:
  ID ("/" ID)*;

Enum EventType:
  Usage="USAGE" | ServiceCall="SERVICE_CALL"

Date:
  (year=INT) "-" (month=INT) "-" (day=INT);
// Unfortunately, we have to write dates now a

Enum AccountType:
  BaseUsage="base-usage" | Service="service"
```

Language definition

Editor

```
plan LowPay
rate BASE_RATE
1999 - 10 - 01 : 10.0 [USD/KwH]
rate REDUCED_RATE
1999 - 10 - 01 : 5.0 [USD/KwH]
rate CAP
1999 - 10 - 01 : 50.0 [USD/KwH]
event USAGE
1999 - 10 - 01 : amount : IF usage > CAP TH
account: base-usage
```





xText: DSL's made easy

- Hands-on xText:
 - Definitie van de DSL grammatica
 - Genereren parser en editor
 - Customizing:
 - Constraints
 - Outline
 - Code completion





xText: DSL's made easy

- Hands-on gebruik DSL:
 - Run-time configuratie op basis van plan file
 - Verwerken gebruiksgegevens uit een backend





Simulator overview



CASH RECEIVED		CASH PAID	
...

```
plan Regular
  rate BASE_RATE
    1999 - 10 - 12 : 10.0 [USD]
    1999 - 12 - 01 : 10.0 [USD]
  event USAGE
    1999 - 10 - 01 : amount :
                      account :
  event SERVICE_CALL
    1999 - 10 - 01 : amount :
                      account :
```





xText: DSL's made easy

Links:

- <http://www.openarchitectureware.org/> (forum)
- <http://www.eclipse.org/gmt/oaw/>
- <http://www.eclipse.org/modeling/emf/>

.nl.
jug



xText: DSL's made easy





xText: DSL's made easy

***Dank voor de
aandacht!***