

Magritte

**A Meta-Driven Approach to Empower
Developers and End Users**

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University of Bern, Switzerland

Software Composition Group

Roadmap

Problem

Demo

Implementation

Evaluation

Questions

What is the problem?

**Rapidly changing
requirements**

**End users would
know their requirements**

[Welcome](#) > [Introduction](#)
[Introduction](#) , [Environment](#)

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[René Magritte, 1966] Decalcomania

[View](#) | [Edit](#) | [Edit Meta](#)

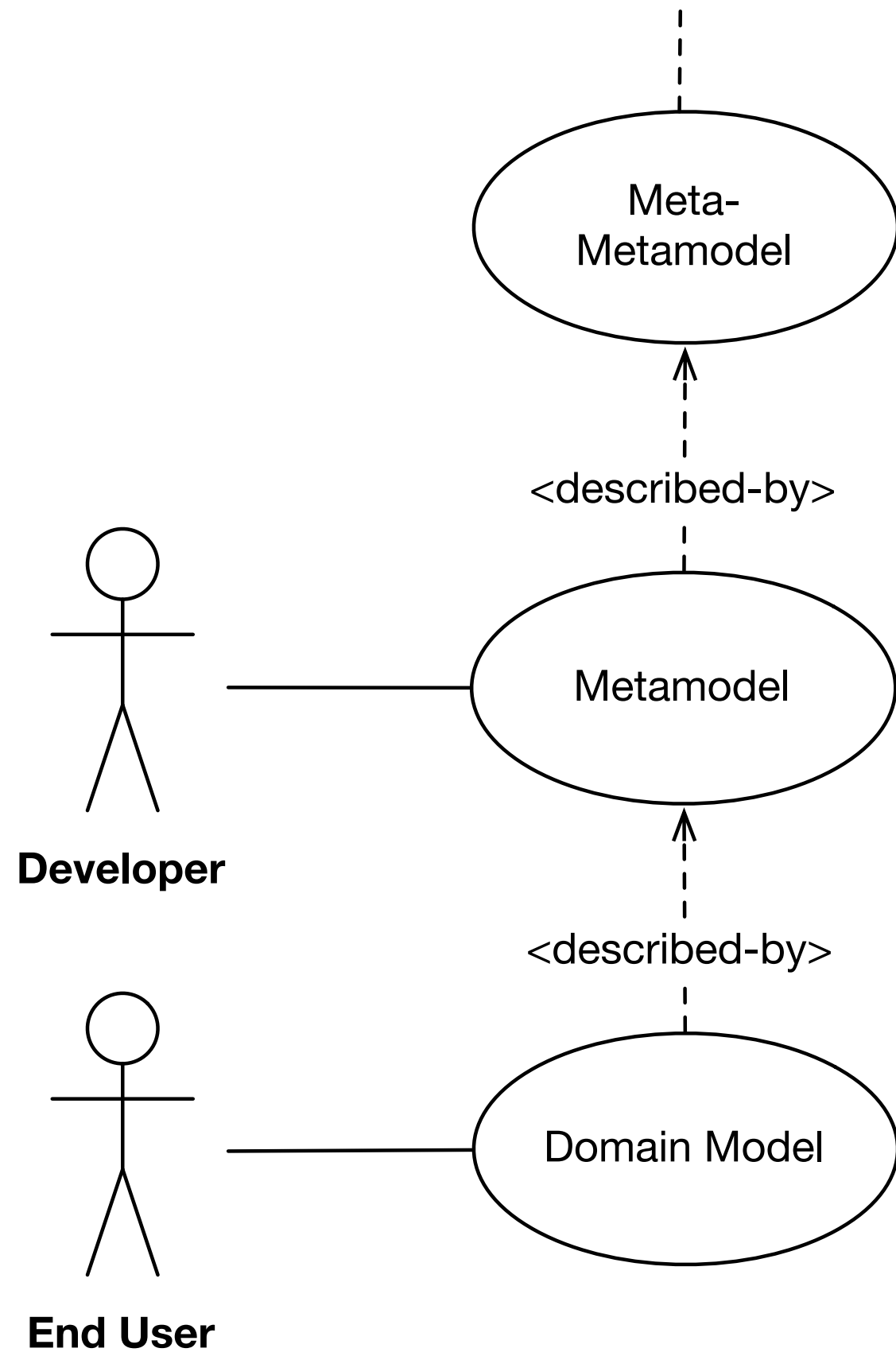
What did we see?

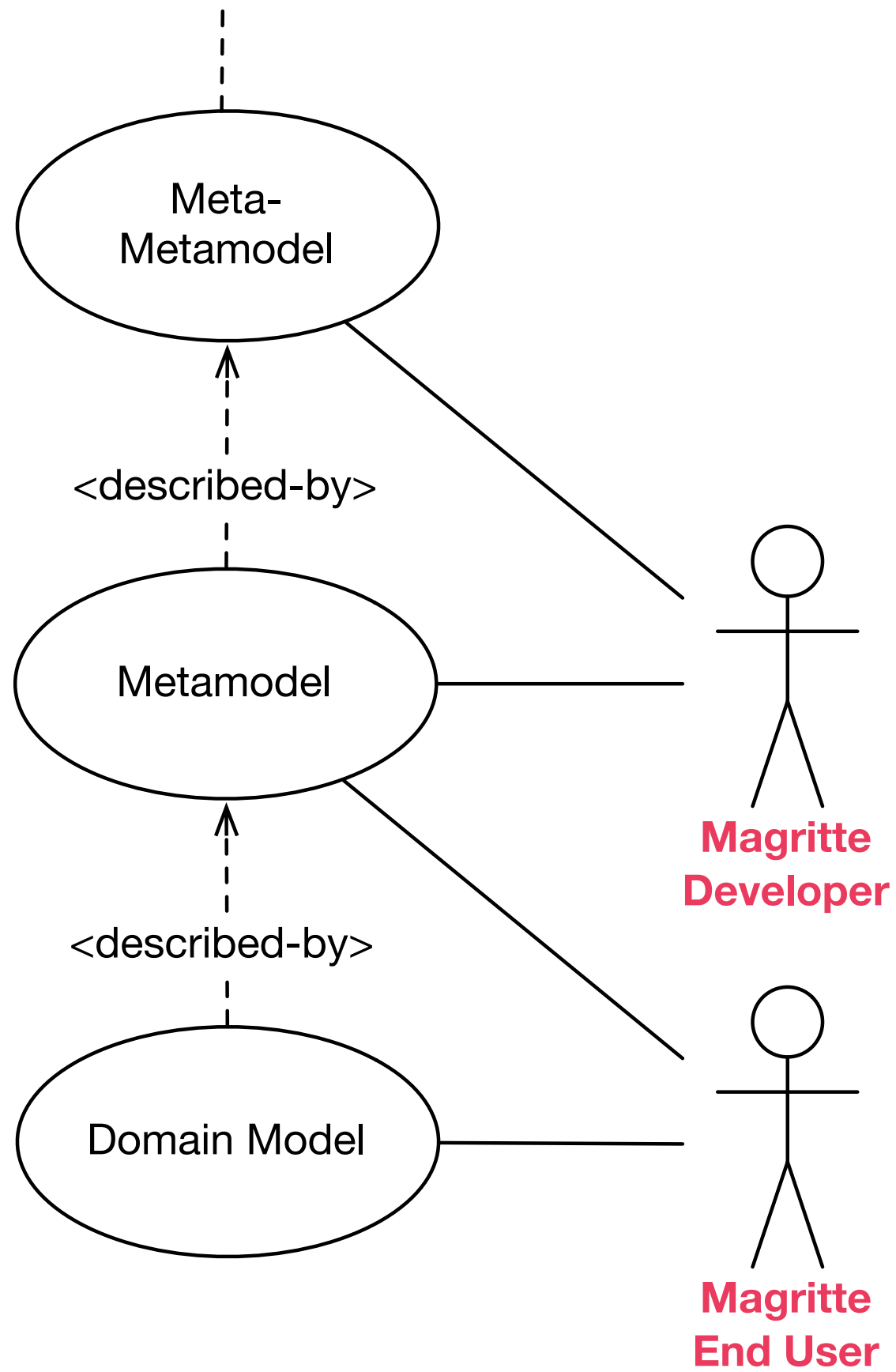
Meta-driven software

Developer defined
meta-model

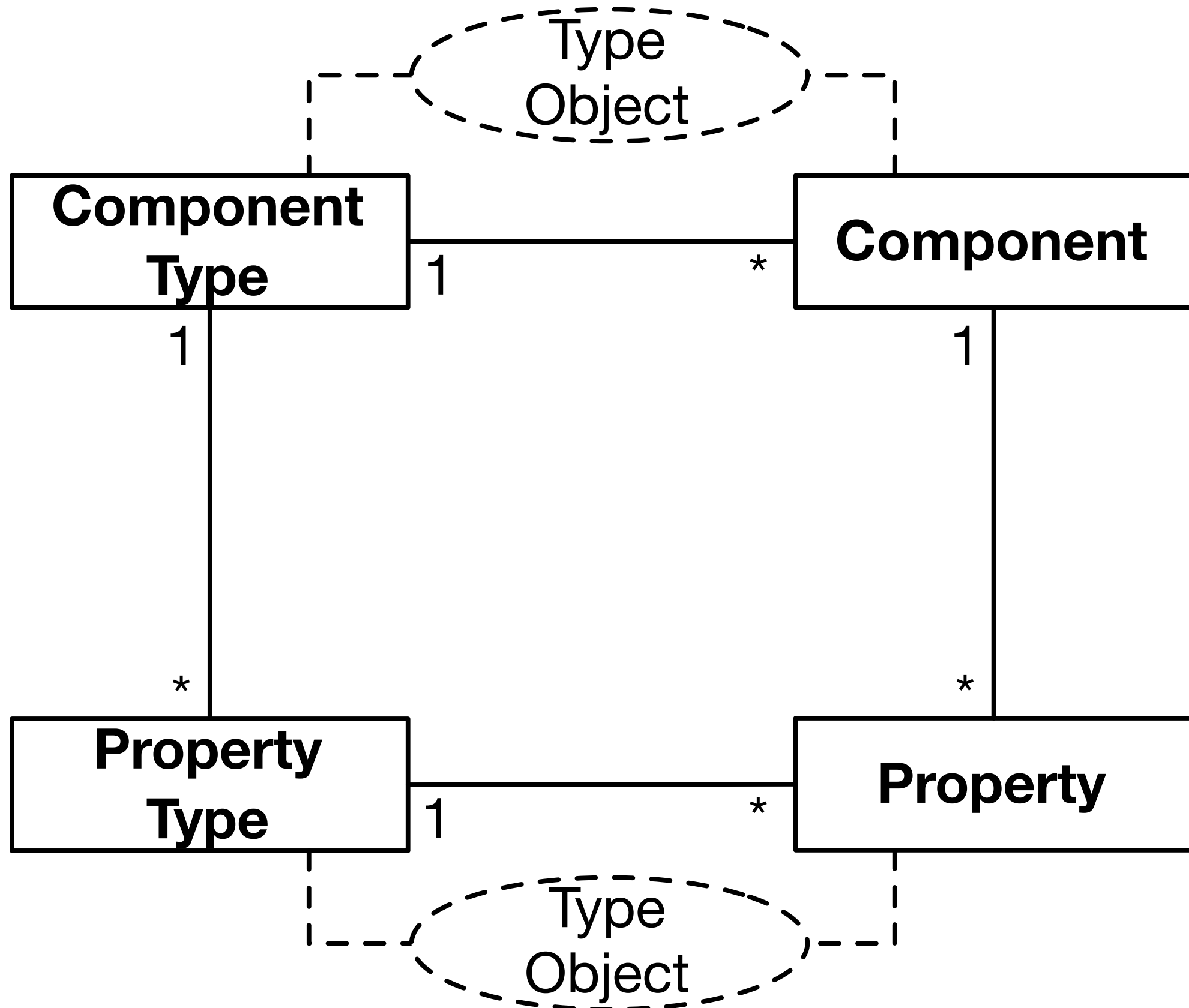
End user defined
meta-model

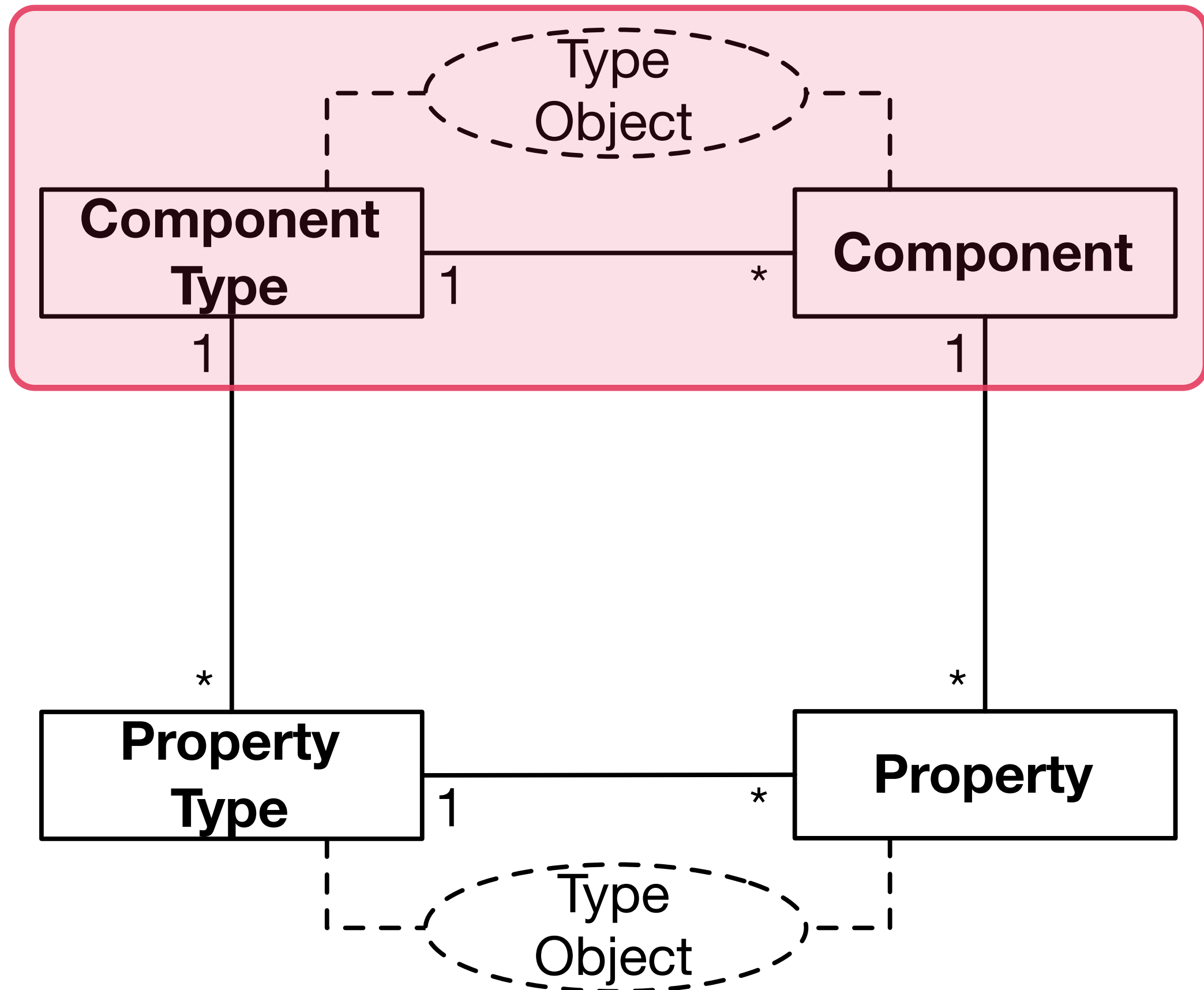
Run-time dynamic **meta-model**

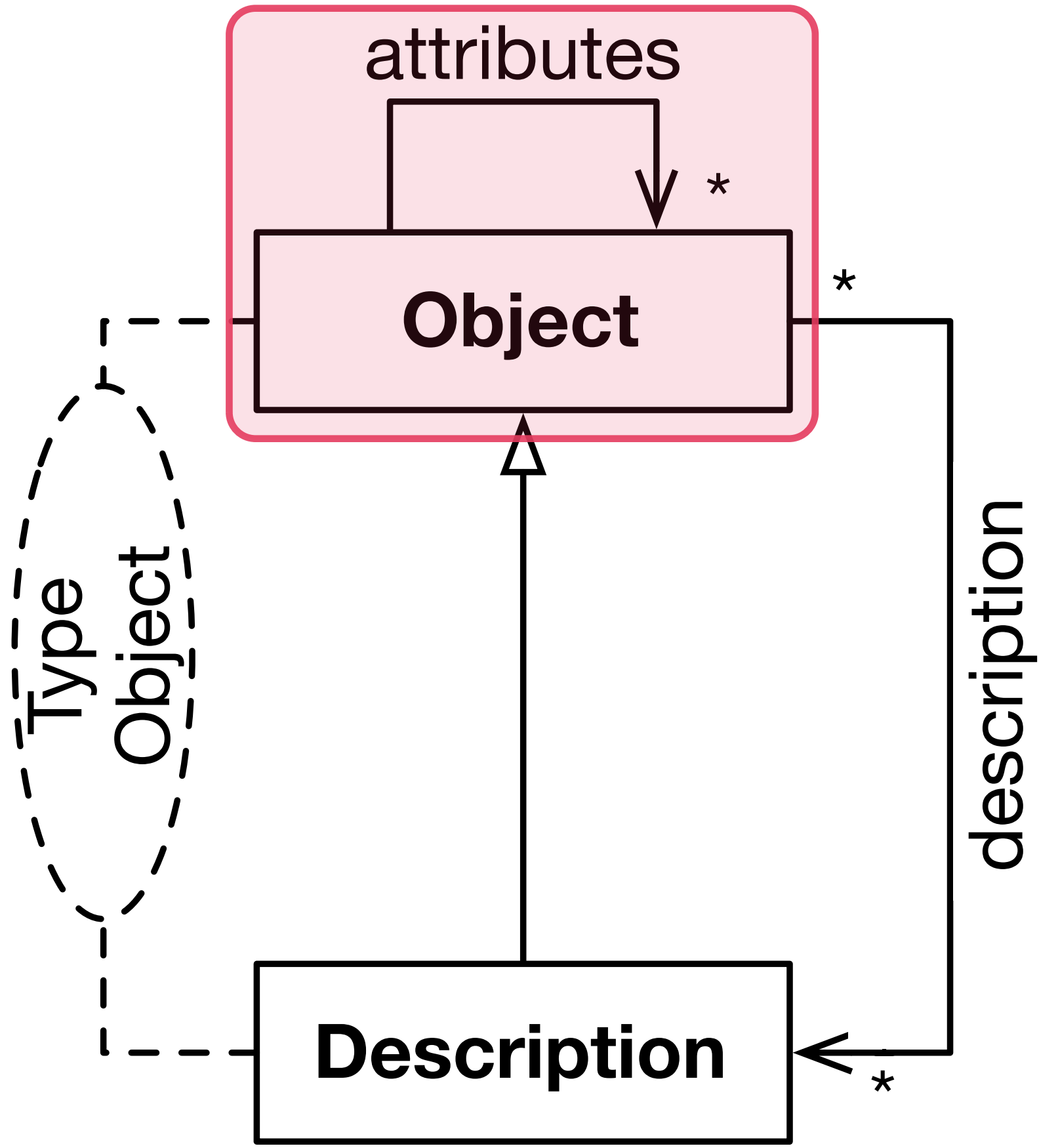


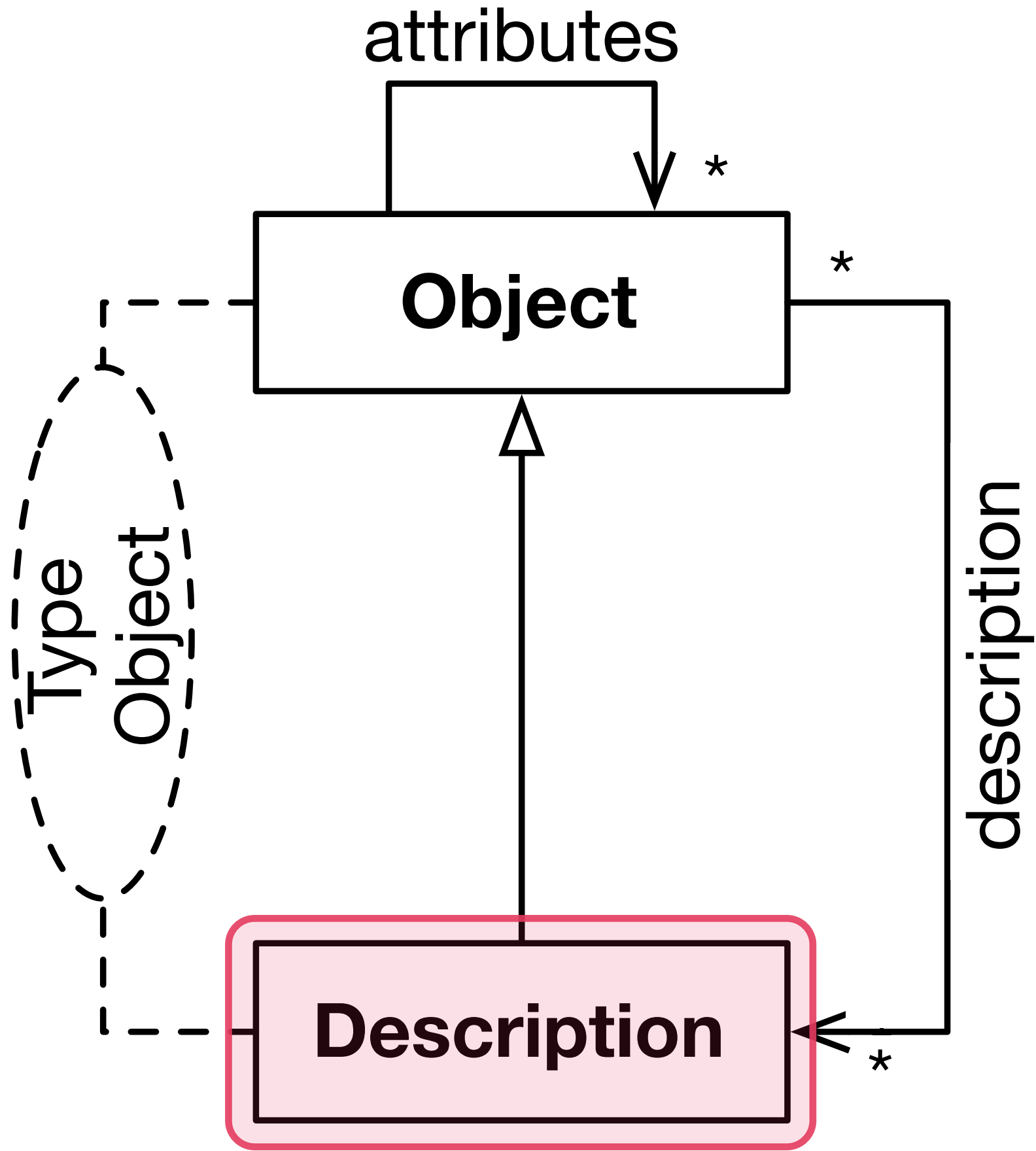


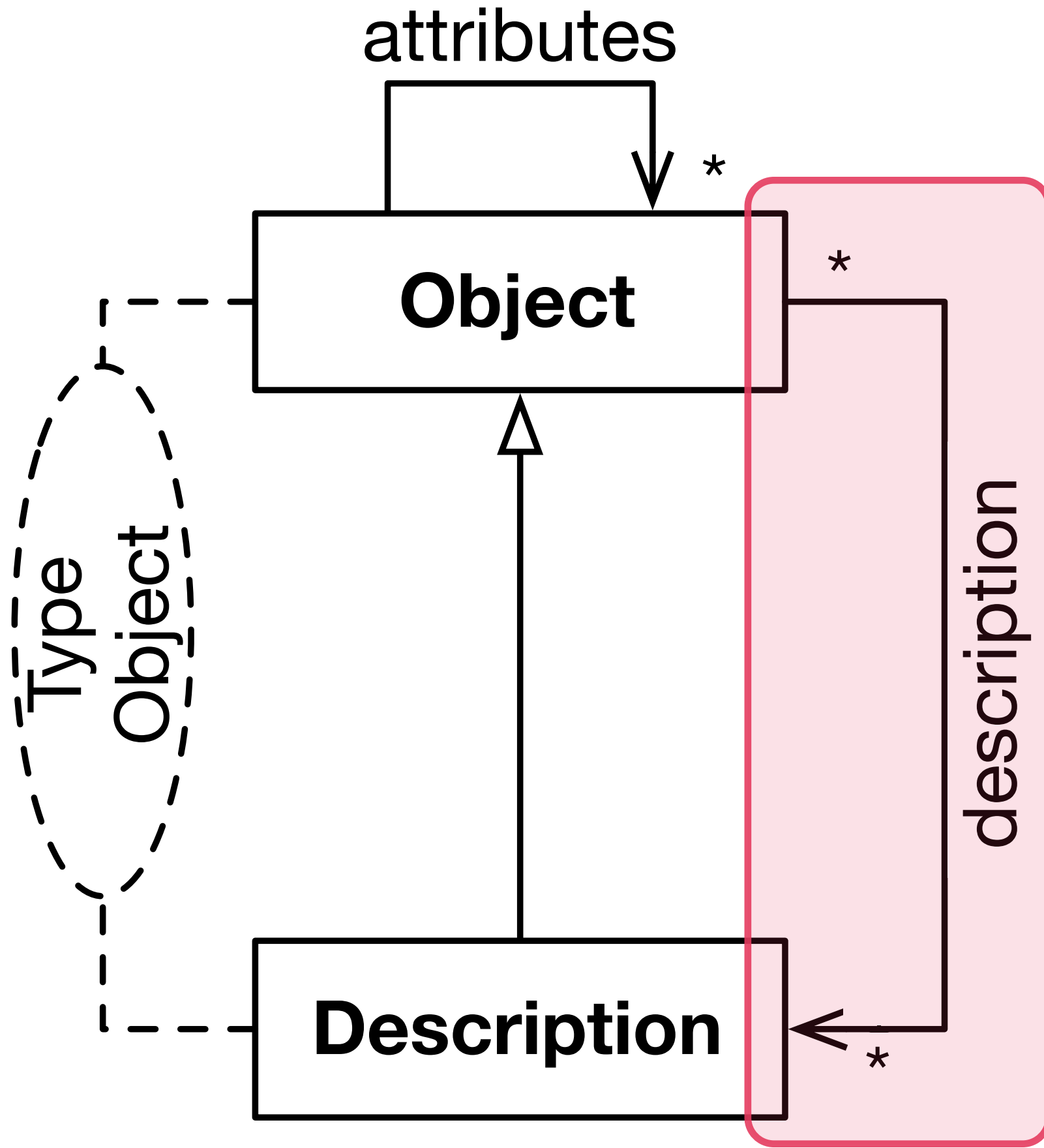
How does it work?











Describe Objects

Describe Descriptions

Describe Constraints

Describe Behavior

Smalltalk

www.squeak.org



Reflection

Integration with Tools

Class Extension

What can we do with it?

Automatic Views

[Welcome](#) > [Introduction](#)
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Automatic Editors

[Welcome](#) > [Introduction](#)


[Introduction](#) , [Environment](#) , [Information](#) , [System](#)

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Edit

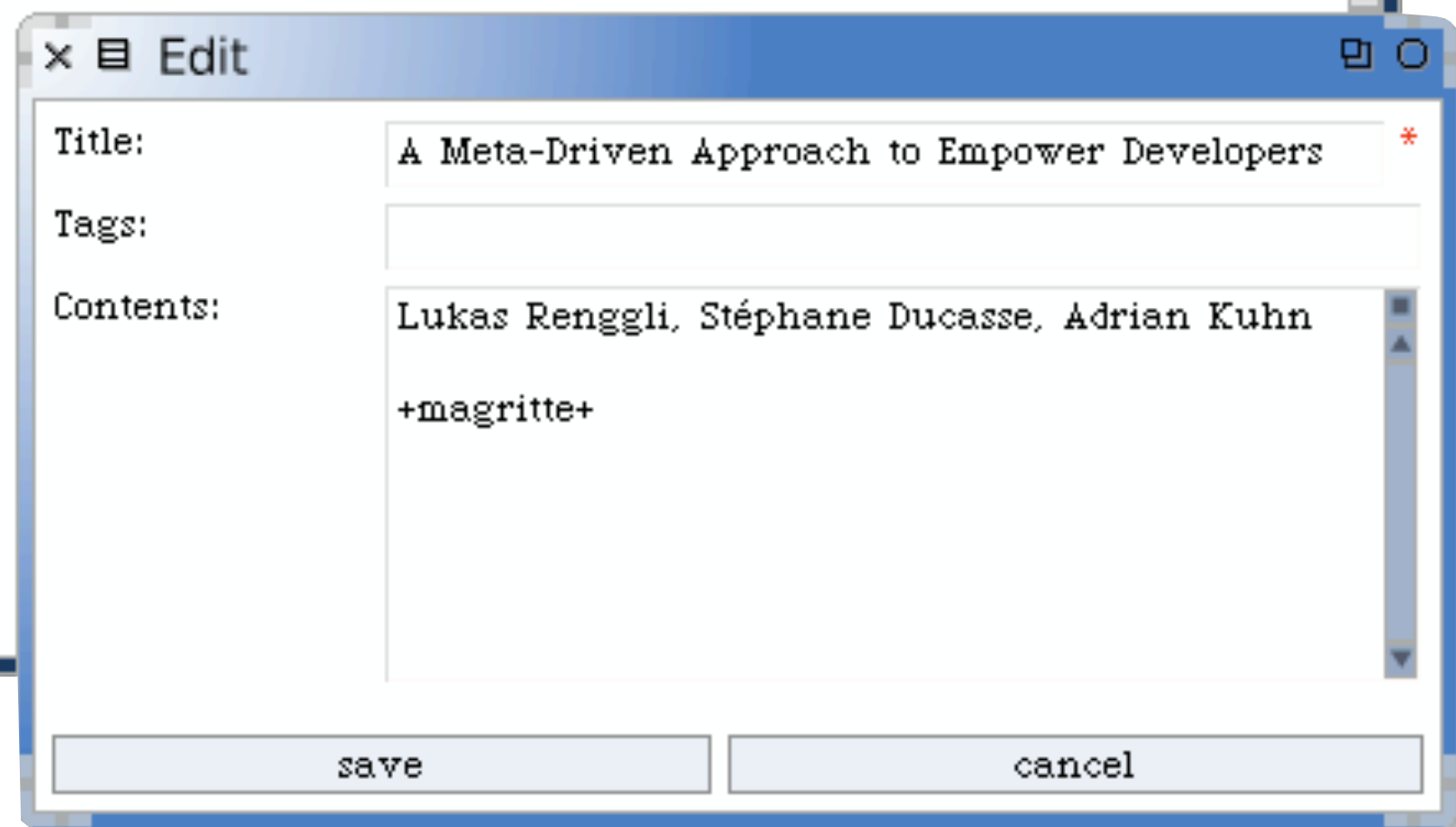
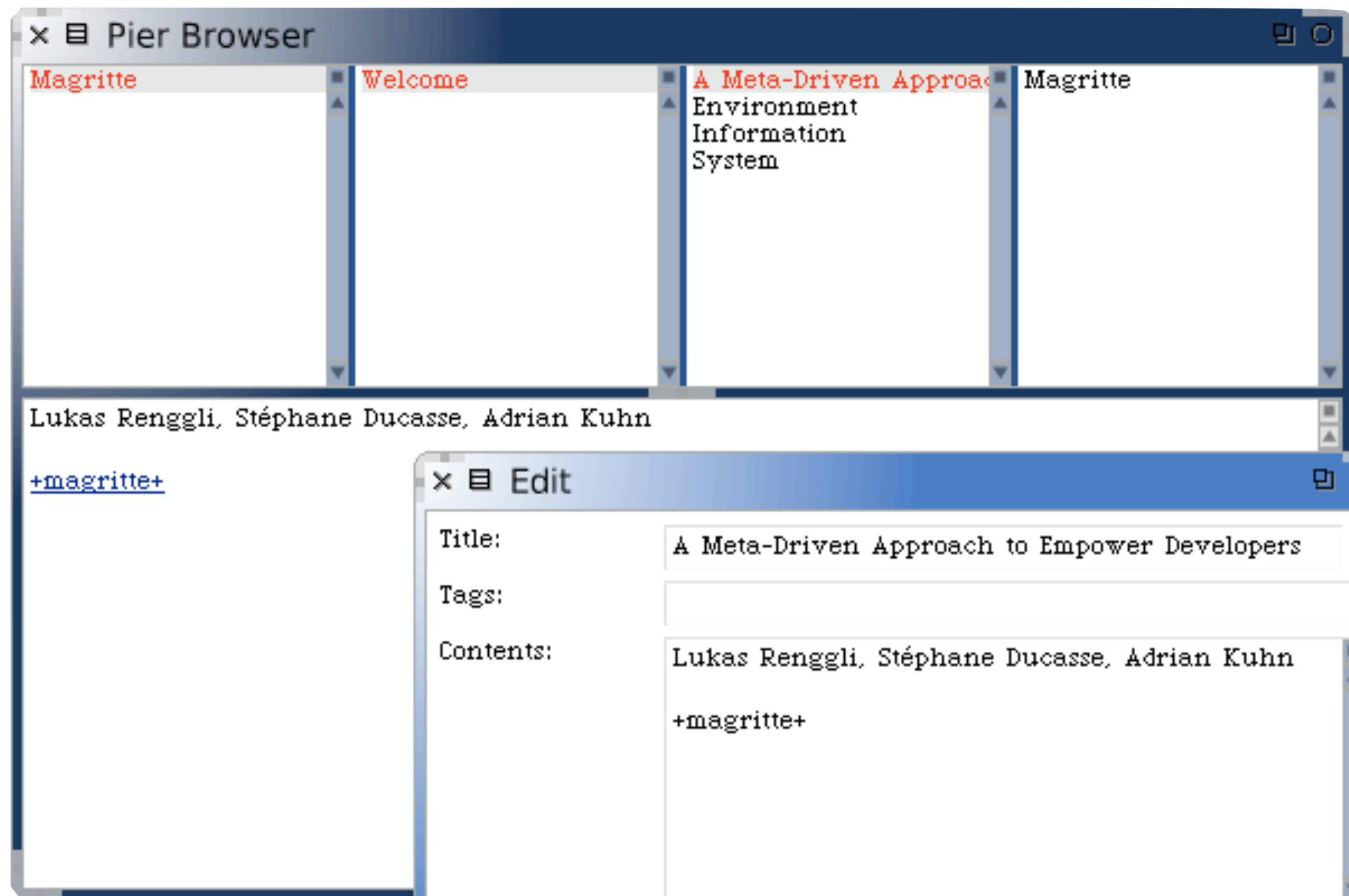
Title: *

Tags:

Contents: 
Lukas Renggli, Stéphane Ducasse, Adrian Kuhn

+magritte+

[View](#) | [Edit](#) | [Edit Meta](#) | [Settings](#) | [Add](#) | [Remove](#) | [Copy](#) | [Move](#)



Automatic Validation

[Welcome](#) > [Introduction](#)
[Introduction](#) , [Environment](#)

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Move Page

- Target: Input is required but no input given
- Name: Invalid structure name

Target: *

Name: *

[View](#) | [Edit](#) | [Edit Meta](#)

Automatic Reports

[Welcome](#)

[Introduction](#) , [Environment](#) , [Information](#) , [System](#)

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Report

Name	Visibility		Title
introduction	false	Introduction	A Meta-Driven Approach to Empower Developers and End Users
magritte	false	Magritte	Magritte
environment	false	Environment	Environment
children	false	Children	Children
commands	false	Commands	Commands
header	false	Header	Header
contents	false	Main	Main
path	false	Path	Path
search	false	Search	Search
tree	false	Tree	Tree

<< 1 [2](#) >>

[View](#) | [Edit](#) | [Edit Meta](#) | [Settings](#) | [Add](#) | [Copy](#)

Automatic Querying

Automatic Persistence

What did we gain?

Get rid of

~~Reduce~~ recurrent work

**Describe once,
get everywhere**

Extensible **Object Model**

Run-time

Adaptive object model

~~Code Generation~~

End users
customizability

Industrial Users



European Smalltalk User Group

European [|] Smalltalk User Group

ESUG 2007: Personal Information (1/4)

First Name:*	<input type="text" value="Lukas"/>
Last Name:*	<input type="text" value="Renggli"/>
Address:*	<input type="text" value="Tillierstrasse 17"/>
Country:*	<input type="text" value="Switzerland"/>
Email:*	<input type="text" value="renggli@iam.unibe.ch"/>
Password:	<input type="password" value="....."/>
Job:*	<input type="text" value="Student"/>
Organization:	<input type="text" value="University of Bern"/>



European Smalltalk User Group

European [1] Smalltalk User Group

ESUG 2007: Conference Registration (2/4)

T-Shirt Size:*

Vegetarian:*

☐ Vegetarian

Conference Days:*

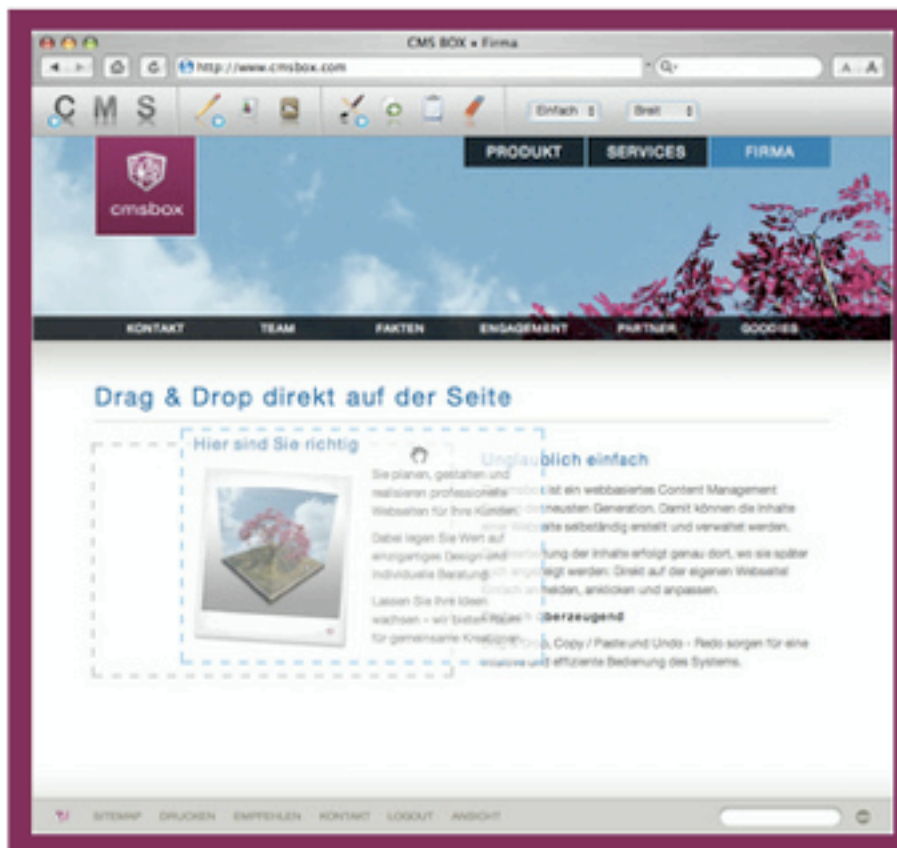
- ☒ Monday, 27 August
- ☒ Tuesday, 28 August
- ☒ Wednesday, 29 August
- ☒ Thursday, 30 August
- ☒ Friday, 31 August

Additional Information:

Next

Cancel

Das moderne Content Management System (CMS)



Unglaublich einfach

Die cmsbox ist ein Content Management System (CMS) der neuesten Generation. Mit der intuitiven Benutzeroberfläche werden die Inhalte direkt auf der eigenen Webseite bearbeitet.

Die Webseite besteht aus mehreren Elementen, welche vom Benutzer selbstständig erstellt und angepasst werden können: Einfach 1) anmelden 2) bearbeiten und 3) publizieren.

Einfach logisch

Alle Elemente (z. B. Titel, Texte, Bilder oder Links) werden als einzelne Objekte mit spezifischen Eigenschaften behandelt.

Mit Drag & Drop, Copy / Paste und Undo – Redo können die Elemente beliebig angeordnet und schnell bearbeitet werden.

– Demo Movie PC (5mb)

– Demo Movie MAC (6mb)



SYSTEM

SERVICES

FIRMA

KONTAKT

TEAM

LEITBILD

ENGAGEMENT

PARTNER

GOODIES

Wie Sie uns erreichen

Kontaktieren Sie uns

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3012 Bern

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FAX +41 31 356 42 50

mail@cmsbox.com

Schreiben Sie uns

Name

E-Mail

Empfänger

Betreff

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Absenden

Edit Workflow

Close

Save

Export

Roles

Run

Help

General

Graph

Diagram

Activities

Versions

Edit Activity: New Activity

Close

Help

General

Documents

Form

Conditions

Transitions

Versions

Label	Default	Type	
Name		Text Field	[remove] [up] [down]
Income	EUR 0.00	Money Field	[remove] [up] [down]
Age		Number Field	[remove] [up] [down]

✓ Text Field

Memo Field

Number Field

Money Field

Check-Box

Option-Box

Date Field

Time Field

Timestamp Field

Duration Field

Simple Document

Managed Document

Nested

Table

Add

Preview

Aare

Workflow definition

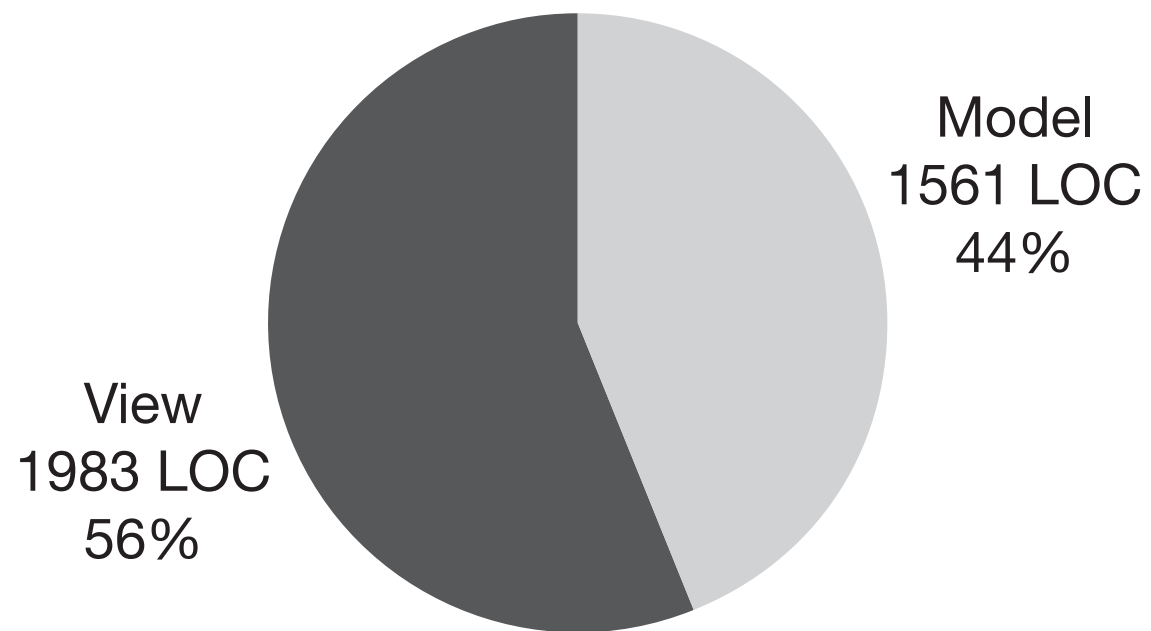
and runtime system

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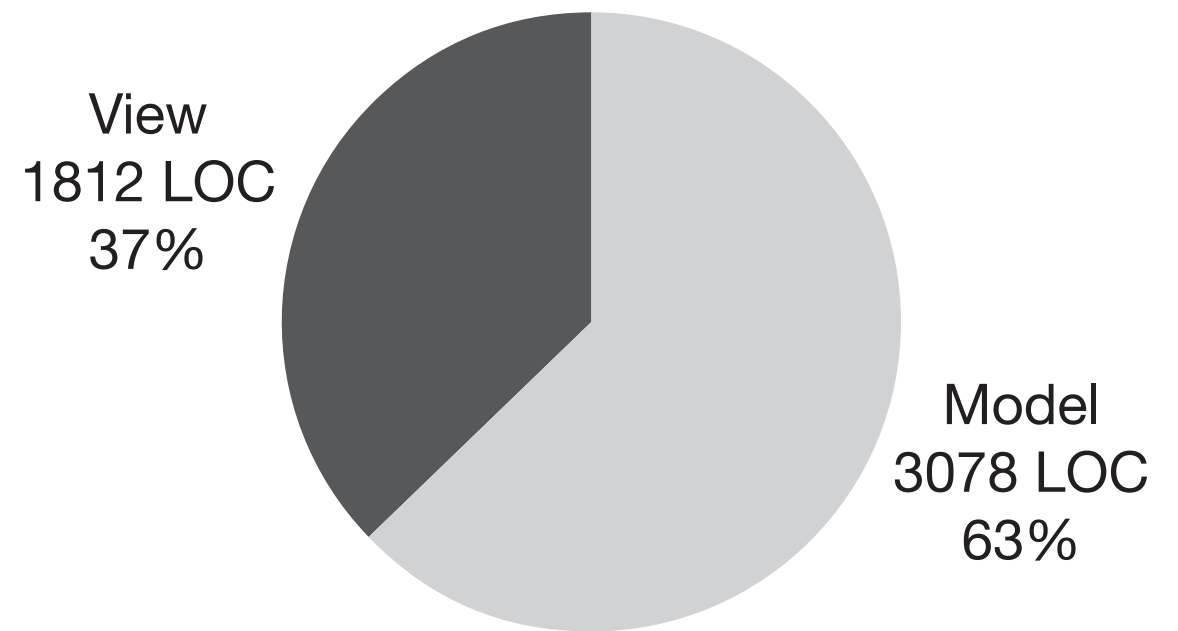


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LOC Comparison



Traditional



Meta-described

Speed Comparison

