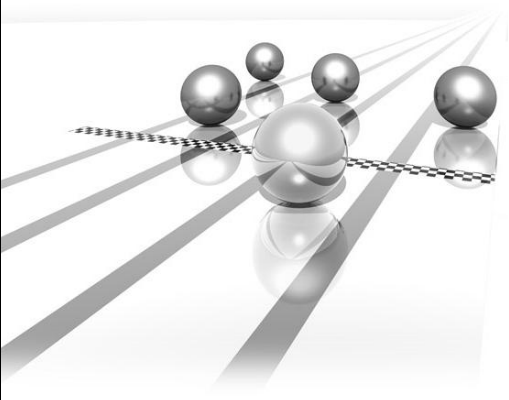
The ADOxx® Metamodelling Platform

Workshop "Methods as Plug-Ins for Meta-Modelling"
in conjunction with "Modellierung 2010", Klagenfurt

Dr. Harald Kühn
24.03.2010

www.boc-group.com

Agenda



1 Overview

2 Deployment and Integration Architecture

3 Selected Characteristics

4 Examples using ADOxx®

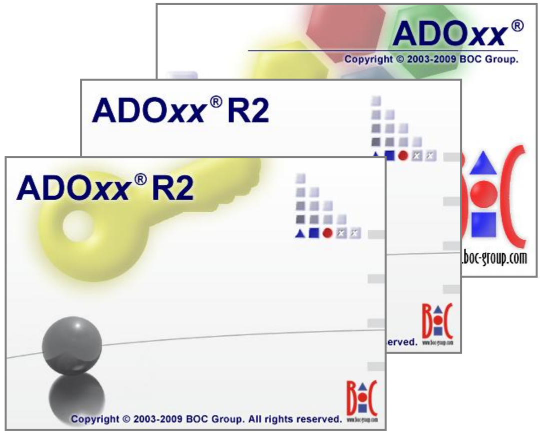
What is the ADOxx® Platform?
Definition and some Characteristics

The ADOxx® platform is a metamodelling-based development and configuration environment to create domain-specific modelling tools.

Scalability	▶ Openness ▶ Client-side and server-side components ▶ Multi-threaded
Multi Product Ability	▶ Extension Capabilities ▶ Component-oriented (incl. migrateable component settings)
Web-enabled	▶ Web Service interfaces using standards ▶ Web Client
Adaptability	▶ Metamodelling with a rich set of concepts ▶ Personalization, Scripting ▶ Multi-Level Customizing ▶ Event-based ▶ Flexible view concept
Extended Multi User Support	▶ Shared repository (incl. sophisticated search mechanisms) ▶ Role-based Access ▶ Extended Multi-Language Support and Unicode ▶ SSO support

The ADOxx® Workspaces

- ADOxx® (Product Workspace) – The Product Development Environment
  - Create new modelling products
  - Configure pre-defined components
  - Define new functionality by using the extension mechanisms
- ADOxx® (Administration Workspace) – The Configuration and Administration Environment
  - Create your own metamodel or DSL
  - Customer specific extensions via Scripting
  - Administration (user rights, model rights, rights on rights)
  - Import/Export (application libraries (= metamodels), repositories, models, objects, user)
- ADOxx® (Modelling Workspace) – The Modelling Environment
  - Separated in Rich Client and Web Client
  - Intuitive Usage
  - Sophisticated Repository Mechanisms
  - Powerful Analysis
  - Flexible Publishing
  - Multiple Languages Support and Unicode
  - Import/Export Mechanisms


ADOxx®
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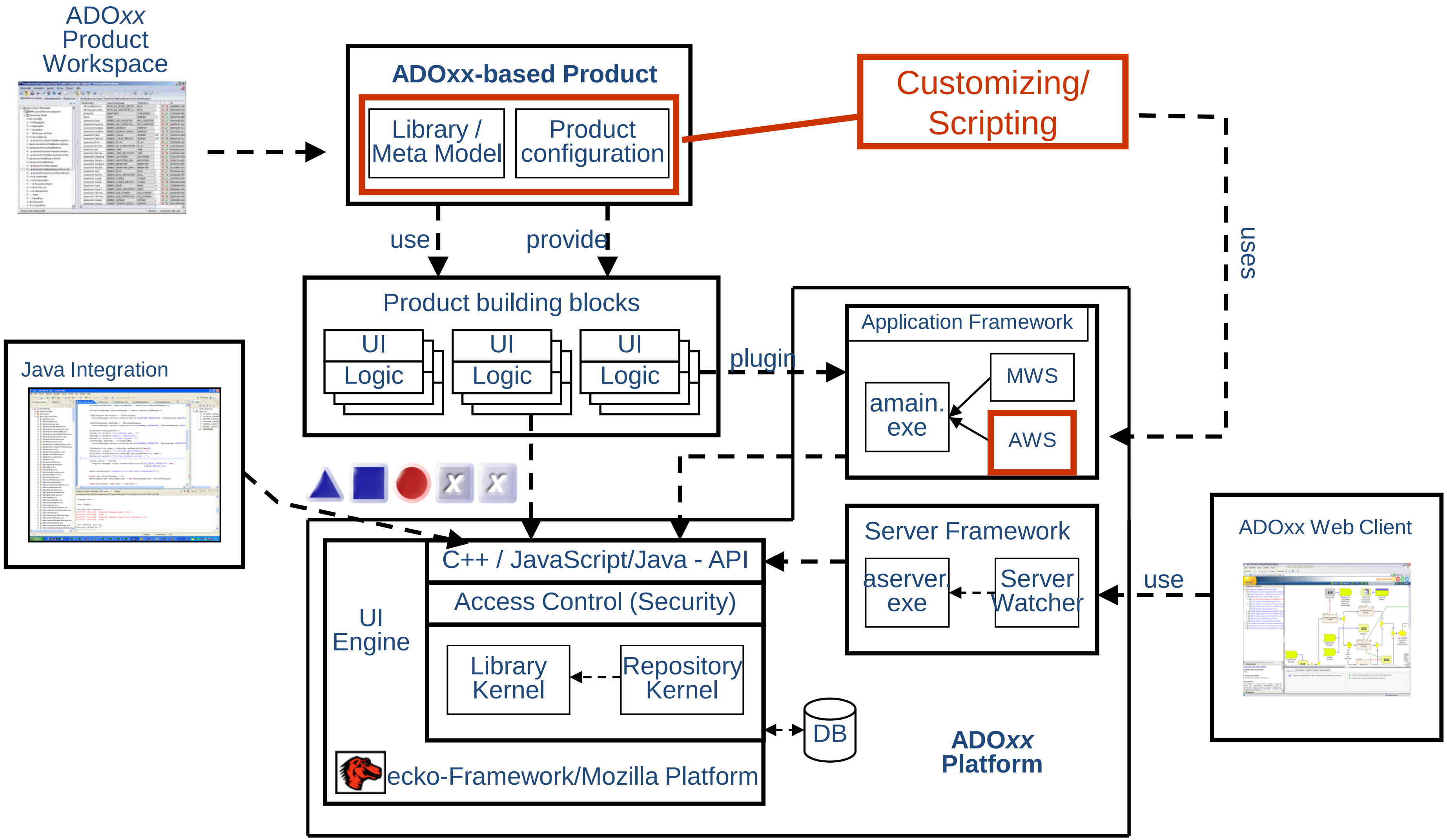
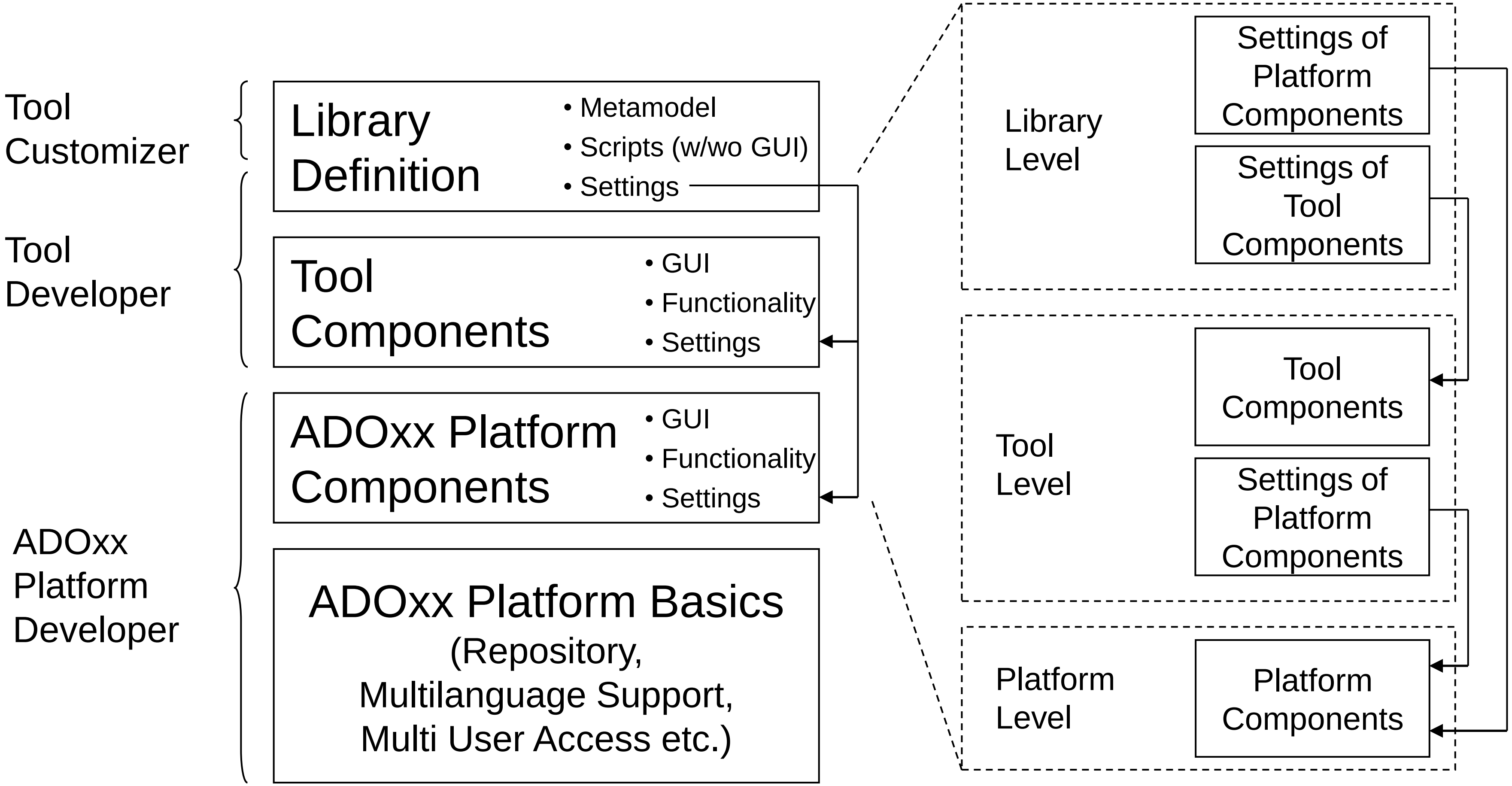
ADOxx® – Component-oriented Architecture

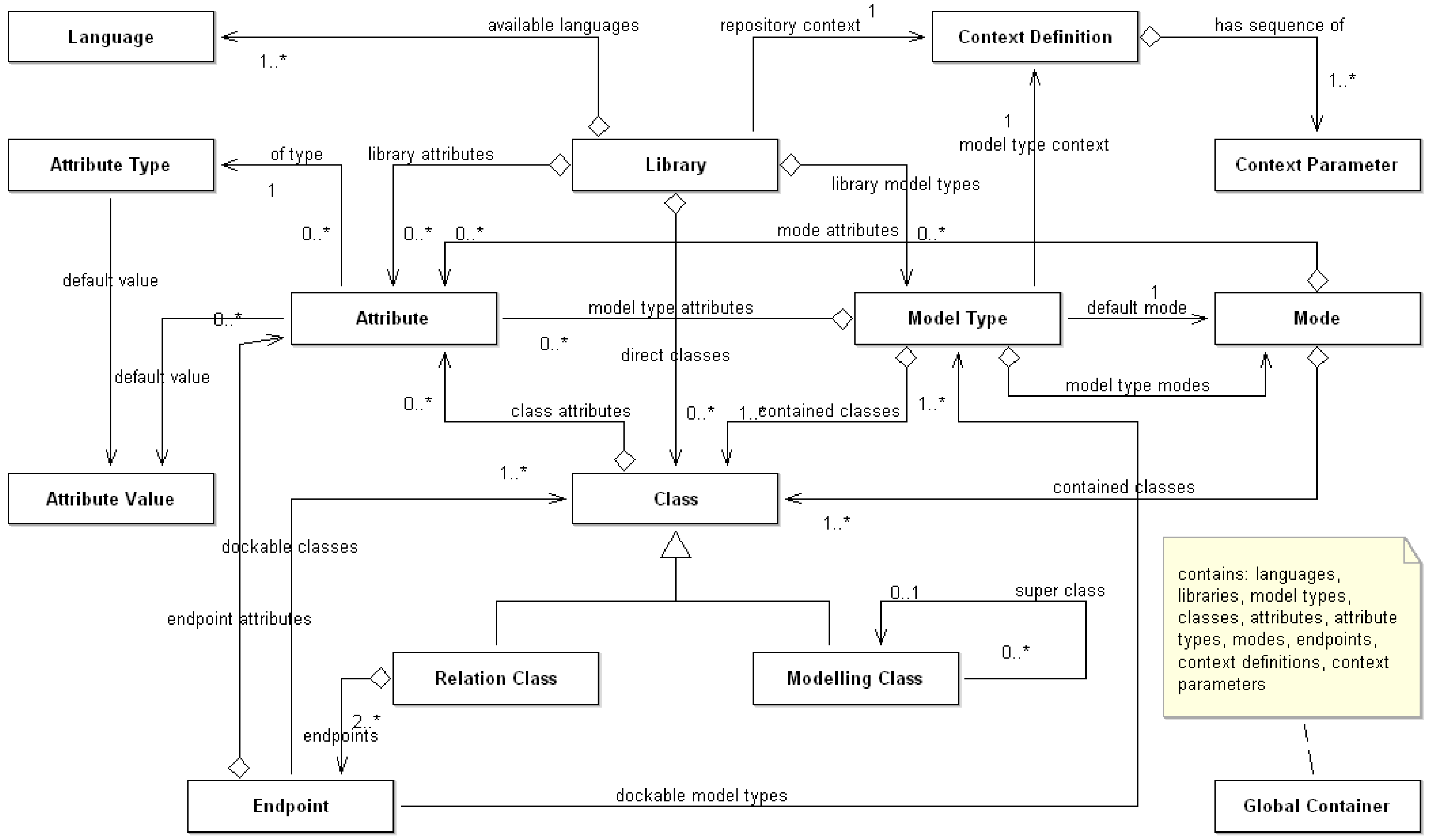


MWS: Modelling Workspace, AWS: Administration Workspace

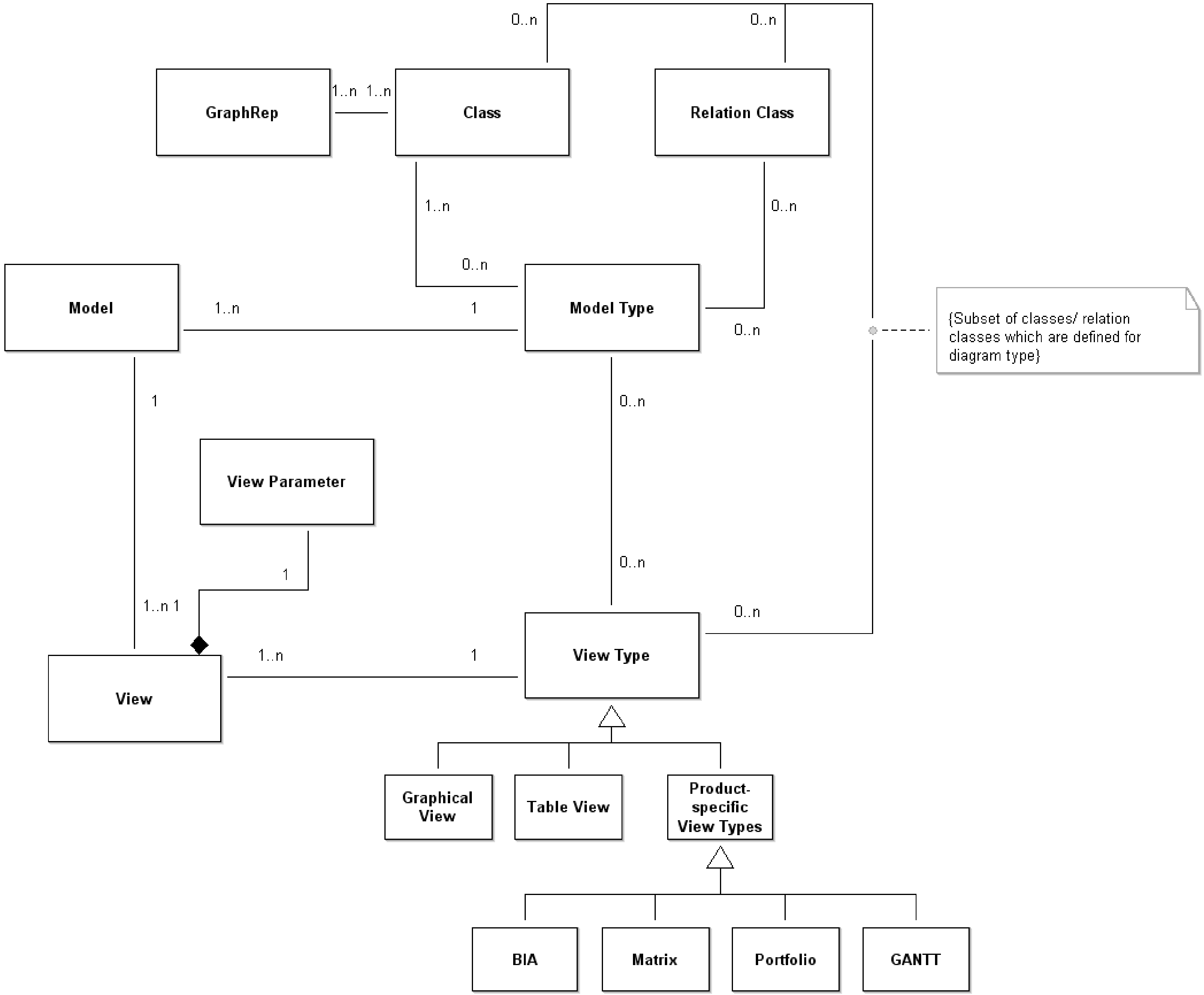
Architectural Levels and Responsibilities



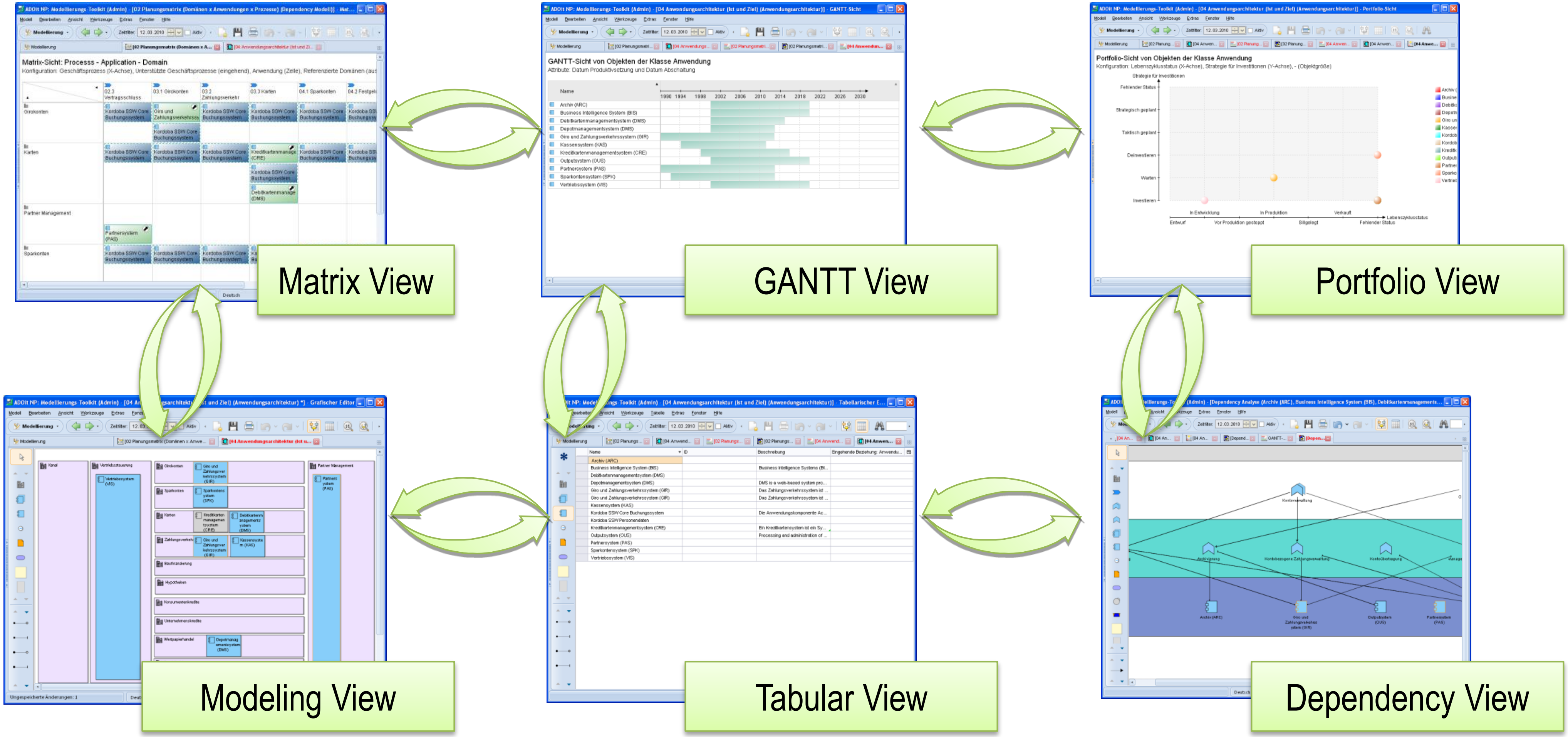
Extract of the ADOxx® Meta-metamodel



Extract of the ADOxx® Meta-metamodel: View Types



ADOxx® View Types: Selected Examples



Matrix View

ADOit NP: Modellierungs-Toolkit (Admin) - [02 Planungsmatrix (Domänen x Anwendungen x Prozesse) (Dependency Modell)] - Mat...

Matrix-Sicht: Processs - Application - Domain

Konfiguration: Geschäftsprozess (X-Achse), Unterstützte Geschäftsprozesse (eingehend), Anwendung (Zeile), Referenzierte Domänen (aus

GANTT View

ADOit NP: Modellierungs-Toolkit (Admin) - [04 Anwendungsarchitektur (Ist und Ziel) (Anwendungsarchitektur)] - GANTT-Sicht

GANTT-Sicht von Objekten der Klasse Anwendung

Attribute: Datum Produktivsetzung und Datum Abschaltung

Portfolio View

ADOit NP: Modellierungs-Toolkit (Admin) - [04 Anwendungsarchitektur (Ist und Ziel) (Anwendungsarchitektur)] - Portfolio-Sicht

Portfolio-Sicht von Objekten der Klasse Anwendung

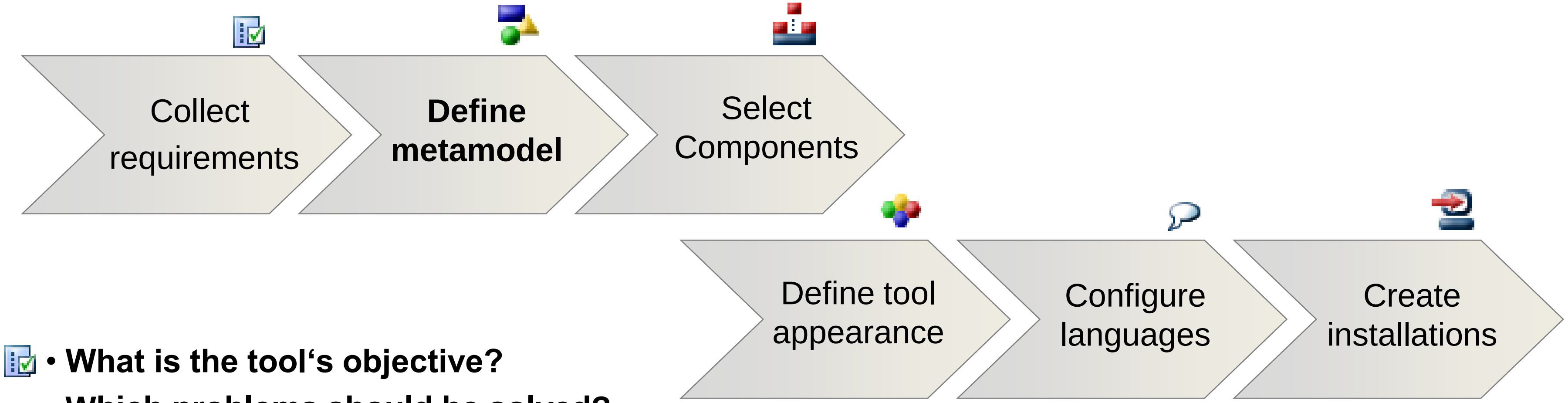
Konfiguration: Lebenszyklusstatus (X-Achse), Strategie für Investitionen (Y-Achse), - (Objektgröße)

Modeling View

Tabular View

Dependency View

Tool Development Lifecycle with ADOxx®



Collect requirements

Define metamodel

Select Components

Define tool appearance

Configure languages

Create installations

- **What is the tool‘s objective?**
- **Which problems should be solved?**

- **Which modelling constructs will be used?**
- **Definition of concrete and abstract syntax of the modelling language**

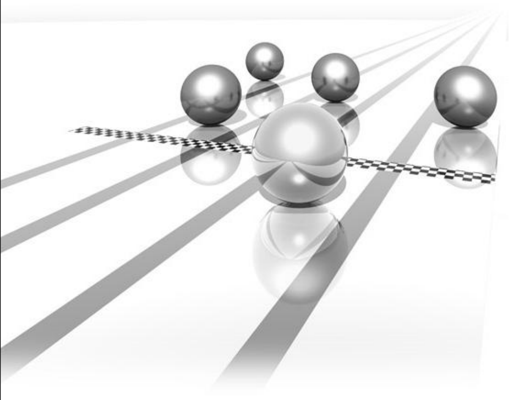
- **Which components build up the tool?**
- **Configure/define components, assemble components etc.**

- **How should the tool visually appear?**
- **Define product identity.**

- **Which languages should be supported?**
- **Translate language specifics, set required and mandatory languages**

- **Which tool parts are part of the installation package?**
- **Define installation package**

Agenda



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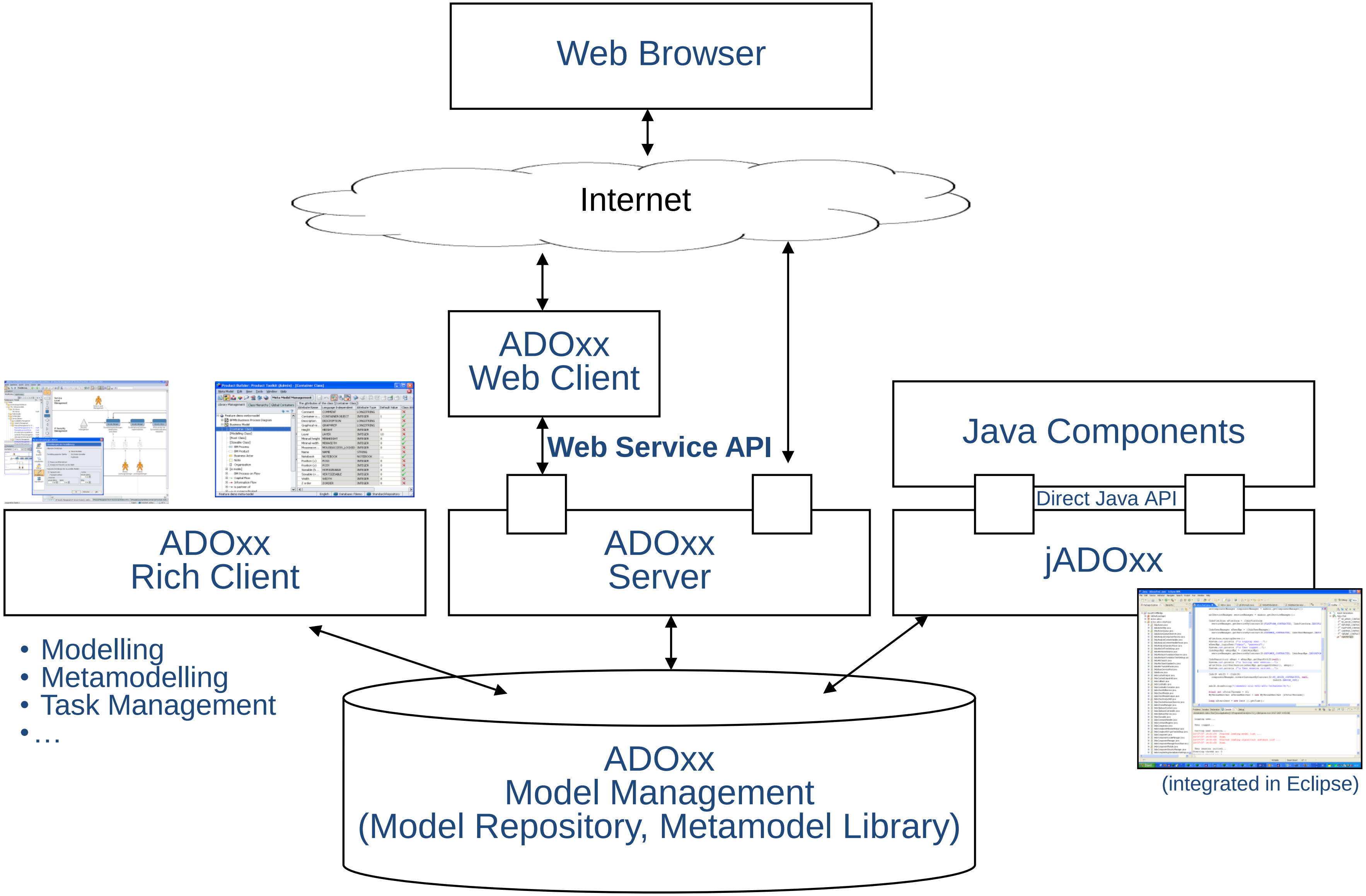
The ADOxx® Deployment Architecture

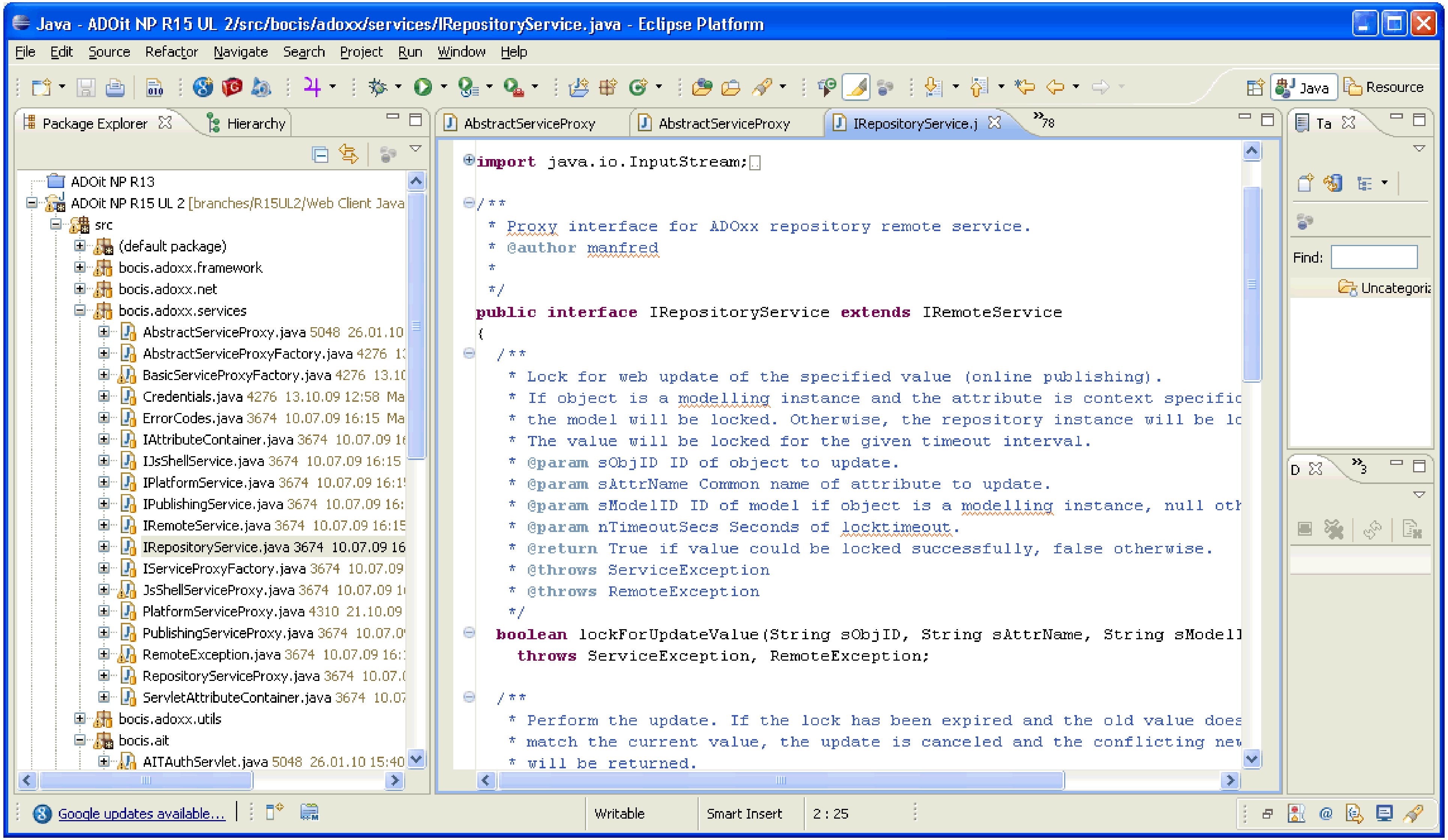


- Modelling
- Metamodelling
- Task Management
- …

ADOxx® – Supported Integration Scenarios

- Client-side integration
  - Call of third-party Java-based components via LiveConnect
  - JavaScript components (native support of JavaScript)
  - Call of external DLLs
  - COM-based client-side integration to ADOxx Rich Clients
- Server-side integration
  - Web Service-based integration
  - Distributed service components integrated via aServer to ADOxx Repository
- jADOxx as “Integration Bridge"
  - Build your own Java-based client for ADOxx (integration in Eclipse)
  - Note: jADOxx requires Windows operating system.
- File-based Repository Integration
  - APIs for XML import/export
  - APIs for XMI-based metamodel exchange

Integration Scenarios: Examples - jADOxx and Web Service API


Java - ADOit NP R15 UL 2/src/bocis/adoxx/services/IRepositoryService.java - Eclipse Platform
File Edit Source Refactor Navigate Search Project Run Window Help
Java
Resource
Package Explorer
Hierarchy
AbstractServiceProxy
AbstractServiceProxy
IRepositoryService.j
»78
Ta
Find:
Uncategoriz
D
»3
Google updates available...
Writable
Smart Insert
2 : 25

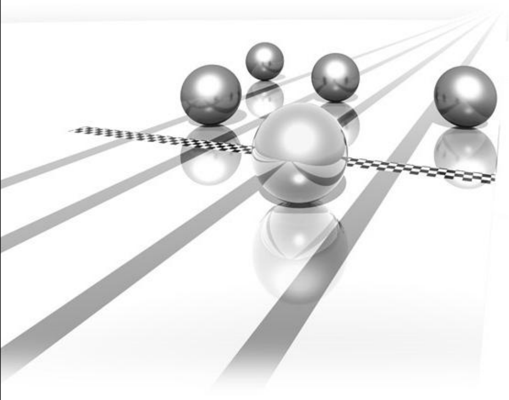
```
ADOit NP R13
ADOit NP R15 UL 2 [branches/R15UL2/Web Client Java
  src
    (default package)
    bocis.adoxx.framework
    bocis.adoxx.net
    bocis.adoxx.services
      AbstractServiceProxy.java 5048  26.01.10
      AbstractServiceProxyFactory.java 4276  1
      BasicServiceProxyFactory.java 4276  13.10
      Credentials.java 4276  13.10.09 12:58  Ma
      ErrorCodes.java 3674  10.07.09 16:15  Ma
      IAttributeContainer.java 3674  10.07.09 1
      IJsShellService.java 3674  10.07.09 16:15
      IPlatformService.java 3674  10.07.09 16:1
      IPublishingService.java 3674  10.07.09 16:
      IRemoteService.java 3674  10.07.09 16:15
      IRepositoryService.java 3674  10.07.09 16
      IServiceProxyFactory.java 3674  10.07.09
      JsShellServiceProxy.java 3674  10.07.09 1
      PlatformServiceProxy.java 4310  21.10.09
      PublishingServiceProxy.java 3674  10.07.0
      RemoteException.java 3674  10.07.09 16:
      RepositoryServiceProxy.java 3674  10.07.
      ServletAttributeContainer.java 3674  10.07
    bocis.adoxx.utils
    bocis.ait
      AITAuthServlet.java 5048  26.01.10 15:40
```

```java
import java.io.InputStream;

/**
 * Proxy interface for ADOxx repository remote service.
 * @author manfred
 *
 */
public interface IRepositoryService extends IRemoteService
{
  /**
   * Lock for web update of the specified value (online publishing).
   * If object is a modelling instance and the attribute is context specific
   * the model will be locked. Otherwise, the repository instance will be lo
   * The value will be locked for the given timeout interval.
   * @param sObjID ID of object to update.
   * @param sAttrName Common name of attribute to update.
   * @param sModelID ID of model if object is a modelling instance, null oth
   * @param nTimeoutSecs Seconds of locktimeout.
   * @return True if value could be locked successfully, false otherwise.
   * @throws ServiceException
   * @throws RemoteException
   */
  boolean lockForUpdateValue(String sObjID, String sAttrName, String sModelI
    throws ServiceException, RemoteException;

  /**
   * Perform the update. If the lock has been expired and the old value does
   * match the current value, the update is canceled and the conflicting new
   * will be returned.
```

Agenda



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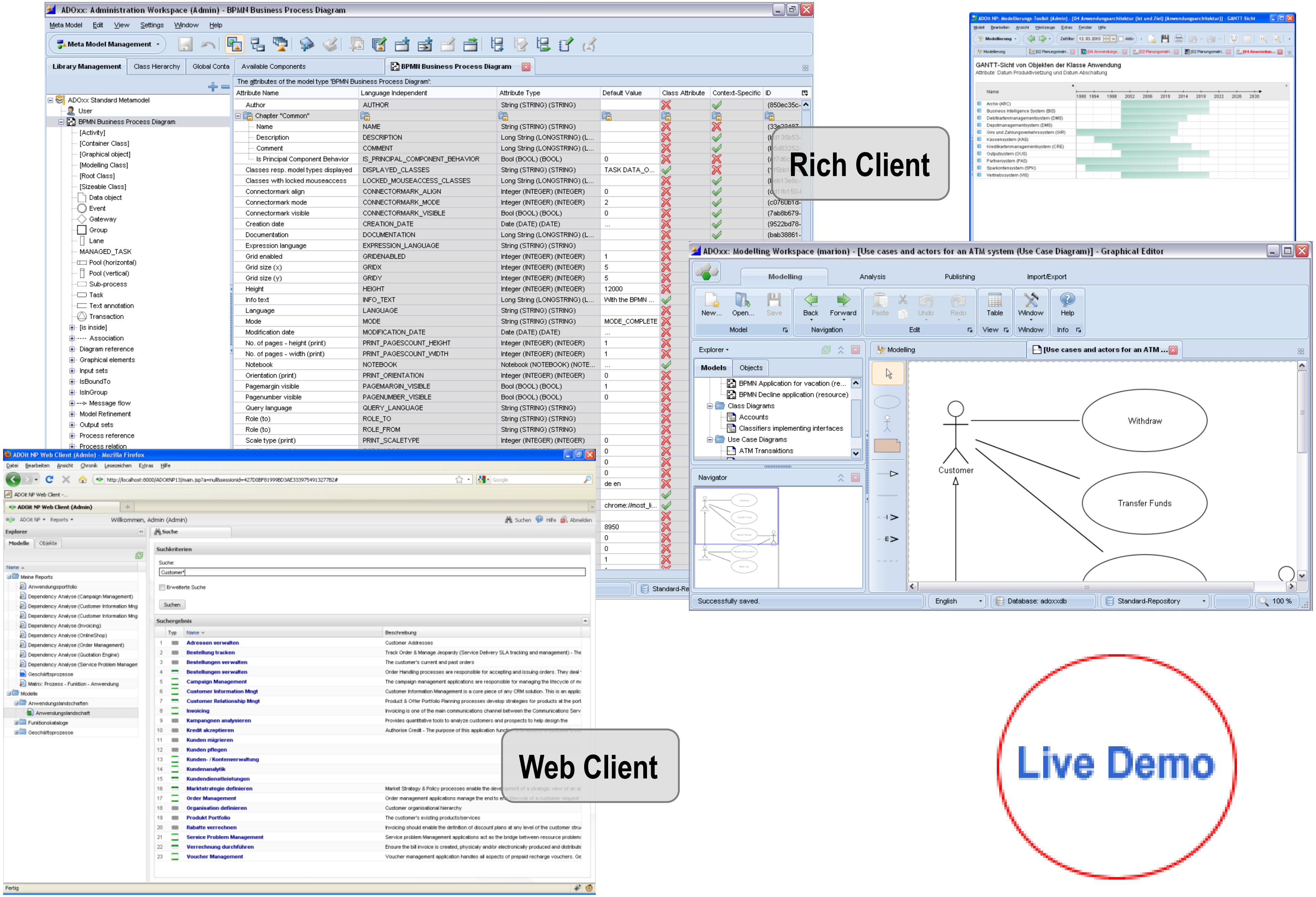
Selected Characteristics: Live Demo



ADOxx: Administration Workspace (Admin) - BPMN Business Process Diagram

The attributes of the model type 'BPMN Business Process Diagram':

Attribute Name	Language Independent	Attribute Type	Default Value	Class Attribute	Context-Specific	ID
Author	AUTHOR	String (STRING) (STRING)		☒	✓	{850ec35c-
Chapter "Common"						
Name	NAME	String (STRING) (STRING)		☒	☒	{33e23487
Description	DESCRIPTION	Long String (LONGSTRING) (L...		☒	✓	
Comment	COMMENT	Long String (LONGSTRING) (L...		☒	✓	
Is Principal Component Behavior	IS_PRINCIPAL_COMPONENT_BEHAVIOR	Bool (BOOL) (BOOL)	0	☒	☒	
Classes resp. model types displayed	DISPLAYED_CLASSES	String (STRING) (STRING)	TASK DATA_O...	✓	☒	
Classes with locked mouseaccess	LOCKED_MOUSEACCESS_CLASSES	Long String (LONGSTRING) (L...		☒	✓	
Connectormark align	CONNECTORMARK_ALIGN	Integer (INTEGER) (INTEGER)	0	☒	✓	
Connectormark mode	CONNECTORMARK_MODE	Integer (INTEGER) (INTEGER)	2	☒	✓	{c076ub1d-
Connectormark visible	CONNECTORMARK_VISIBLE	Bool (BOOL) (BOOL)	0	☒	✓	{7ab8b679-
Creation date	CREATION_DATE	Date (DATE) (DATE)	...	☒	✓	{9522bd78-
Documentation	DOCUMENTATION	Long String (LONGSTRING) (L...		☒	✓	{bab38861-
Expression language	EXPRESSION_LANGUAGE	String (STRING) (STRING)		☒		
Grid enabled	GRIDENABLED	Integer (INTEGER) (INTEGER)	1	☒		
Grid size (x)	GRIDX	Integer (INTEGER) (INTEGER)	5	☒		
Grid size (y)	GRIDY	Integer (INTEGER) (INTEGER)	5	☒		
Height	HEIGHT	Integer (INTEGER) (INTEGER)	12000	☒		
Info text	INFO_TEXT	Long String (LONGSTRING) (L...	With the BPMN ...	✓		
Language	LANGUAGE	String (STRING) (STRING)		☒		
Mode	MODE	String (STRING) (STRING)	MODE_COMPLETE	☒		
Modification date	MODIFICATION_DATE	Date (DATE) (DATE)	...	☒		
No. of pages - height (print)	PRINT_PAGESCOUNT_HEIGHT	Integer (INTEGER) (INTEGER)	1	☒		
No. of pages - width (print)	PRINT_PAGESCOUNT_WIDTH	Integer (INTEGER) (INTEGER)	1	☒		
Notebook	NOTEBOOK	Notebook (NOTEBOOK) (NOTE...	...	✓		
Orientation (print)	PRINT_ORIENTATION	Integer (INTEGER) (INTEGER)	0	☒		
Pagemargin visible	PAGEMARGIN_VISIBLE	Bool (BOOL) (BOOL)	1	☒		
Pagenumber visible	PAGENUMBER_VISIBLE	Bool (BOOL) (BOOL)	0	☒		
Query language	QUERY_LANGUAGE	String (STRING) (STRING)		☒		
Role (to)	ROLE_TO	String (STRING) (STRING)		☒		
Role (to)	ROLE_FROM	String (STRING) (STRING)		☒		
Scale type (print)	PRINT_SCALETYPE	Integer (INTEGER) (INTEGER)	0	☒		

GANTT-Sicht von Objekten der Klasse Anwendung

Attribute: Datum Produktivsetzung und Datum Abschaltung

ADOxx: Modelling Workspace (marion) - [Use cases and actors for an ATM system (Use Case Diagram)] - Graphical Editor

Successfully saved. | English | Database: adoxxdb | Standard-Repository | 100 %

ADOit NP Web Client (Admin) - Mozilla Firefox

Suche: Customer*

Suchergebnis

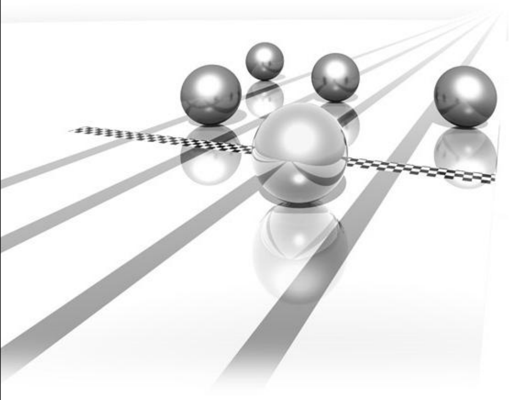
	Typ	Name	Beschreibung
1		Adressen verwalten	Customer Addresses
2		Bestellung tracken	Track Order & Manage Jeopardy (Service Delivery SLA tracking and management) - The
3		Bestellungen verwalten	The customer's current and past orders
4		Bestellungen verwalten	Order Handling processes are responsible for accepting and issuing orders. They deal
5		Campaign Management	The campaign management applications are responsible for managing the lifecycle of m
6		Customer Information Mngt	Customer Information Management is a core piece of any CRM solution. This is an applic
7		Customer Relationship Mngt	Product & Offer Portfolio Planning processes develop strategies for products at the port
8		Invoicing	Invoicing is one of the main communications channel between the Communications Serv
9		Kampagnen analysieren	Provides quantitative tools to analyze customers and prospects to help design the
10		Kredit akzeptieren	Authorise Credit - The purpose of this application func
11		Kunden migrieren	
12		Kunden pflegen	
13		Kunden- / Kontenverwaltung	
14		Kundenanalytik	
15		Kundendienstleistungen	
16		Marktstrategie definieren	Market Strategy & Policy processes enable the deve
17		Order Management	Order management applications manage the end to e
18		Organisation definieren	Customer organisational hierarchy
19		Produkt Portfolio	The customer's existing products/services
20		Rabatte verrechnen	Invoicing should enable the definition of discount plans at any level of the customer stru
21		Service Problem Management	Service problem Management applications act as the bridge between resource problems
22		Verrechnung durchführen	Ensure the bill invoice is created, physically and/or electronically produced and distribute
23		Voucher Management	Voucher management applications handles all aspects of prepaid recharge vouchers. Ge

Rich Client

Web Client

Live Demo

Agenda



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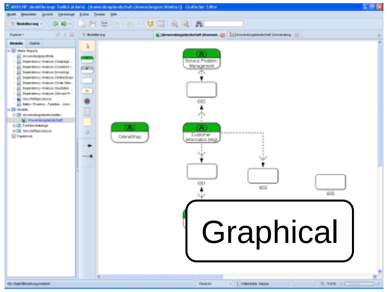
Some Tool Examples using ADOxx®: ADOit NP

Various editors/views using
a shared repository (Rich Client)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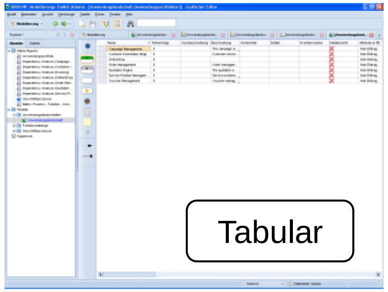
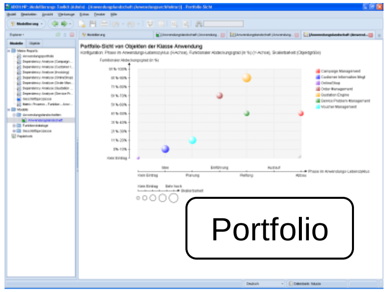
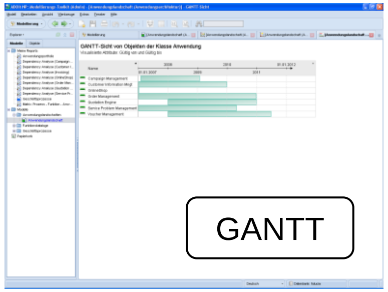
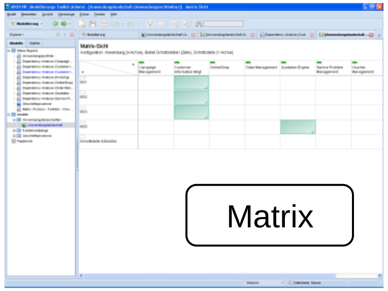
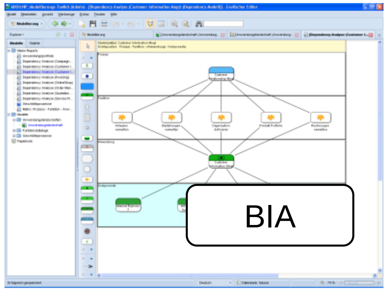

Tabular

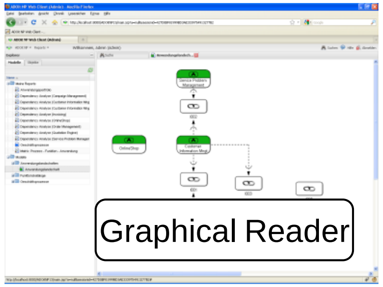

Portfolio

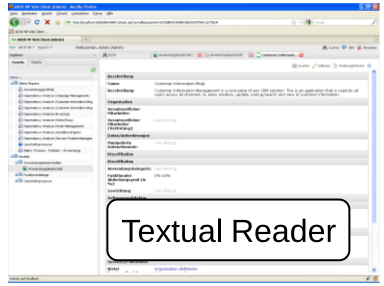

GANTT

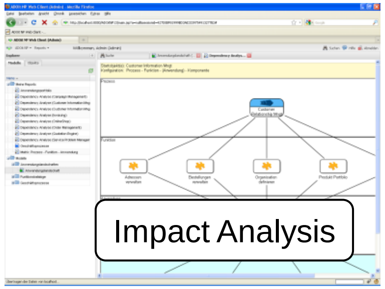

Matrix

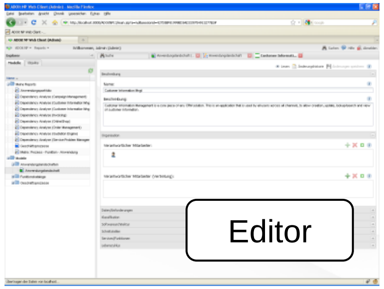

BIA

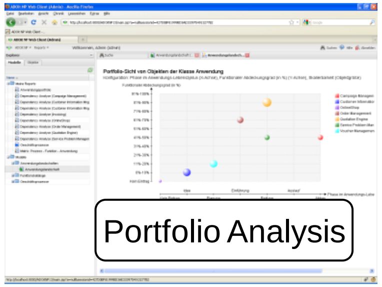
Role-based Web GUI
to shared repository (in Browser)

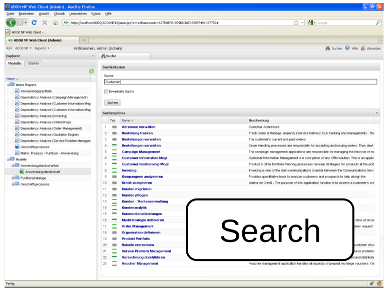

Graphical Reader


Textual Reader

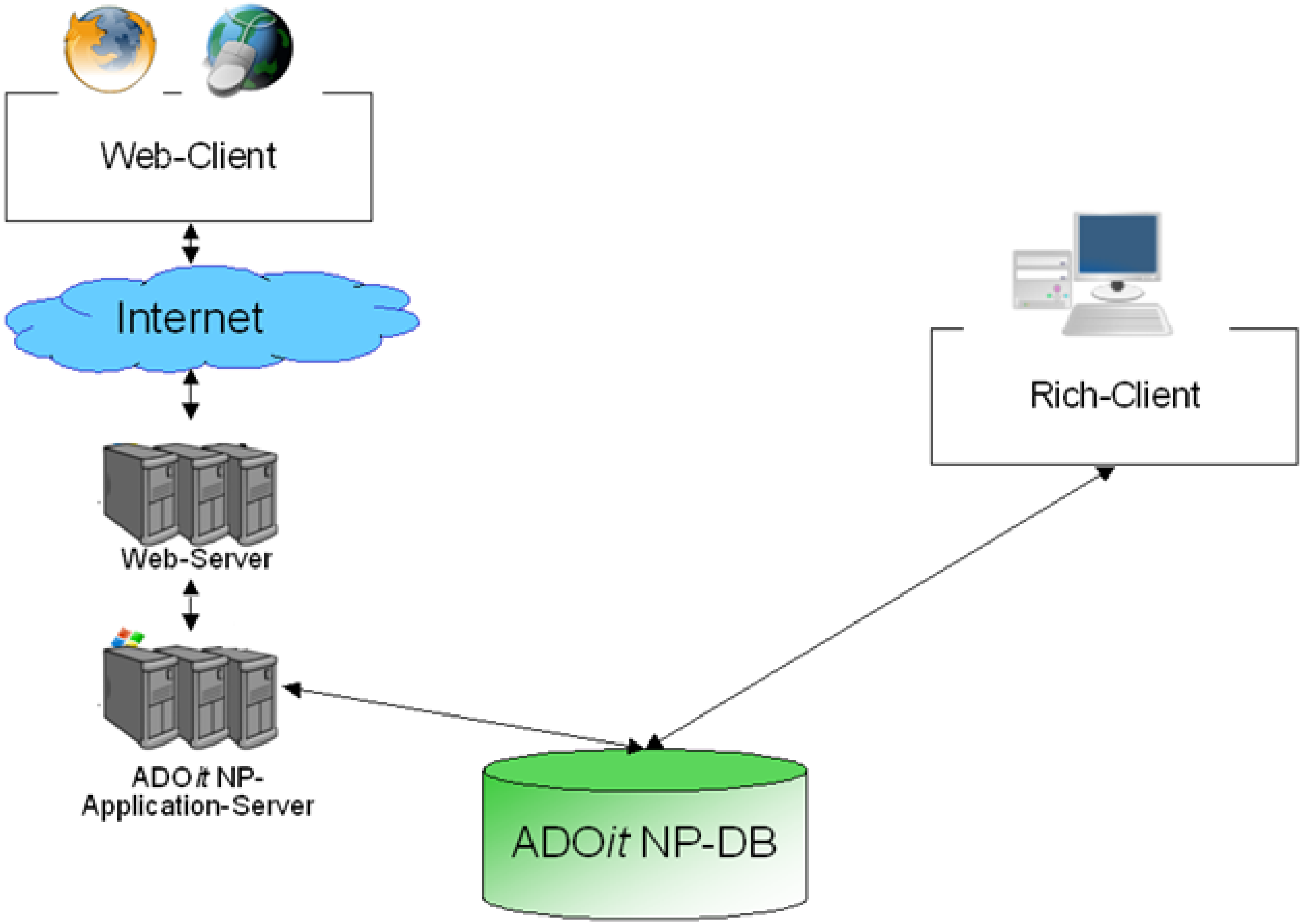

Impact Analysis


Editor

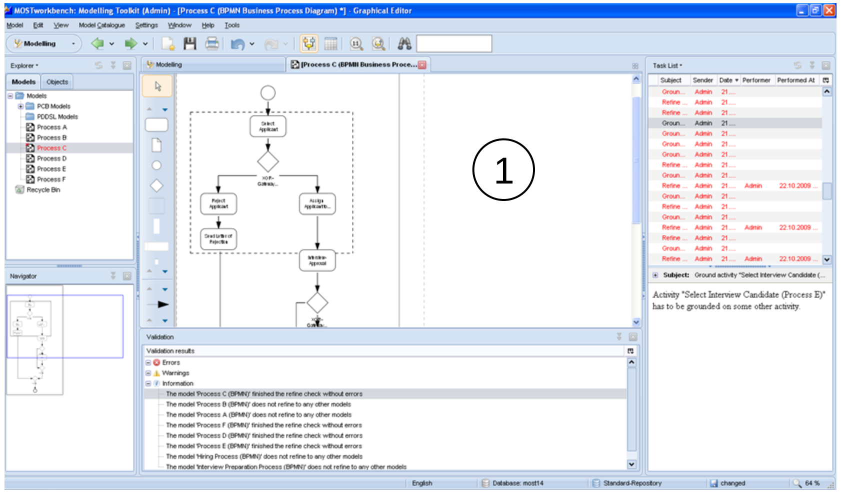

Portfolio Analysis


Search

Some Tool Examples using ADOxx®: ADOit NP



Some Tool Examples using ADOxx®: MOST Workbench



Subject	Sender	Date	Performer	Performed At
Groun...	Admin	21...		
Refine ...	Admin	21...		
Refine ...	Admin	21...		
Groun...	Admin	21...		
Groun...	Admin	21...		
Groun...	Admin	21...		
Groun...	Admin	21...		
Refine ...	Admin	21...		
Groun...	Admin	21...		
Refine ...	Admin	21...	Admin	22.10.2009 ...
Groun...	Admin	21...		
Refine ...	Admin	21...		
Groun...	Admin	21...		
Refine ...	Admin	21...	Admin	22.10.2009 ...
Refine ...	Admin	21...		
Groun...	Admin	21...		
Refine ...	Admin	21...	Admin	22.10.2009 ...

Subject: Ground activity "Select Interview Candidate (...

Activity "Select Interview Candidate (Process E)" has to be grounded on some other activity.

Validation

Validation results

- Errors
- Warnings
- Information
  - The model 'Process C (BPMN)' finished the refine check without errors
  - The model 'Process B (BPMN)' does not refine to any other models
  - The model 'Process A (BPMN)' does not refine to any other models
  - The model 'Process F (BPMN)' finished the refine check without errors
  - The model 'Process D (BPMN)' finished the refine check without errors
  - The model 'Process E (BPMN)' finished the refine check without errors
  - The model 'Hiring Process (BPMN)' does not refine to any other models
  - The model 'Interview Preparation Process (BPMN)' does not refine to any other models

English | Database: most14 | Standard-Repository | changed | 64 %

1

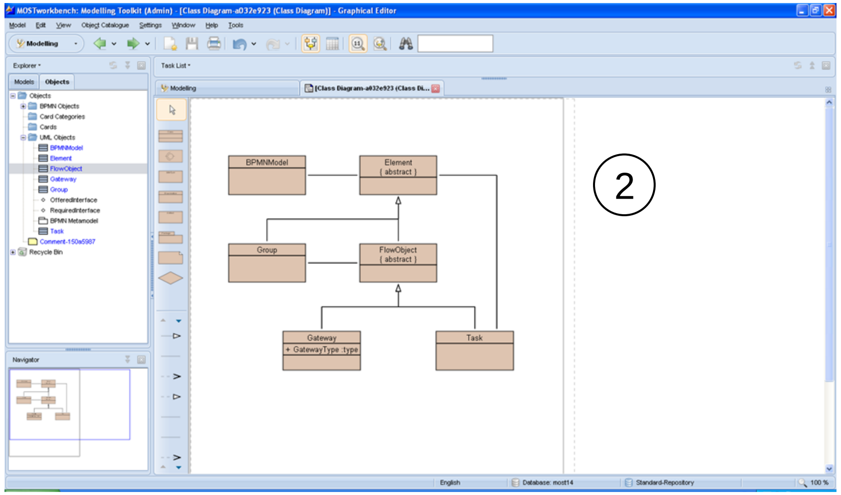
Business Process Definitions in BPMN
Third-party process refinement checks integrated

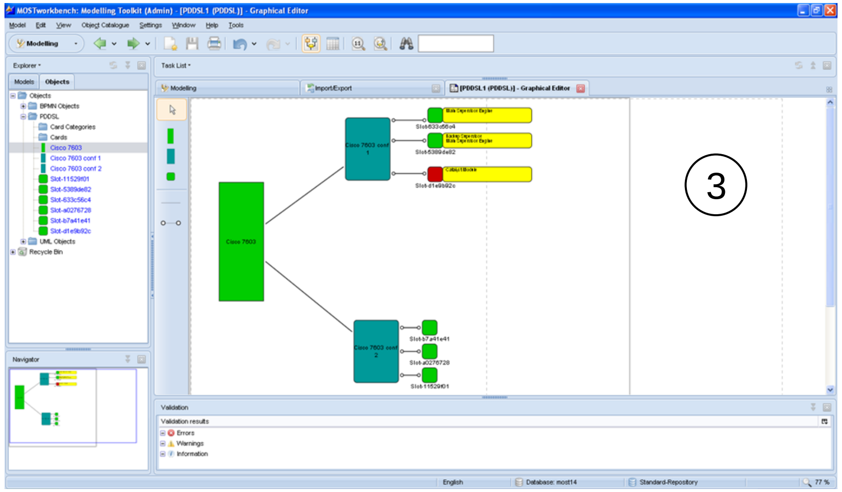
2

Data-oriented modelling using UML class diagrams
Interlinking process- and data models

3

Domain-specific model for device modelling
Third-party validation components integrated





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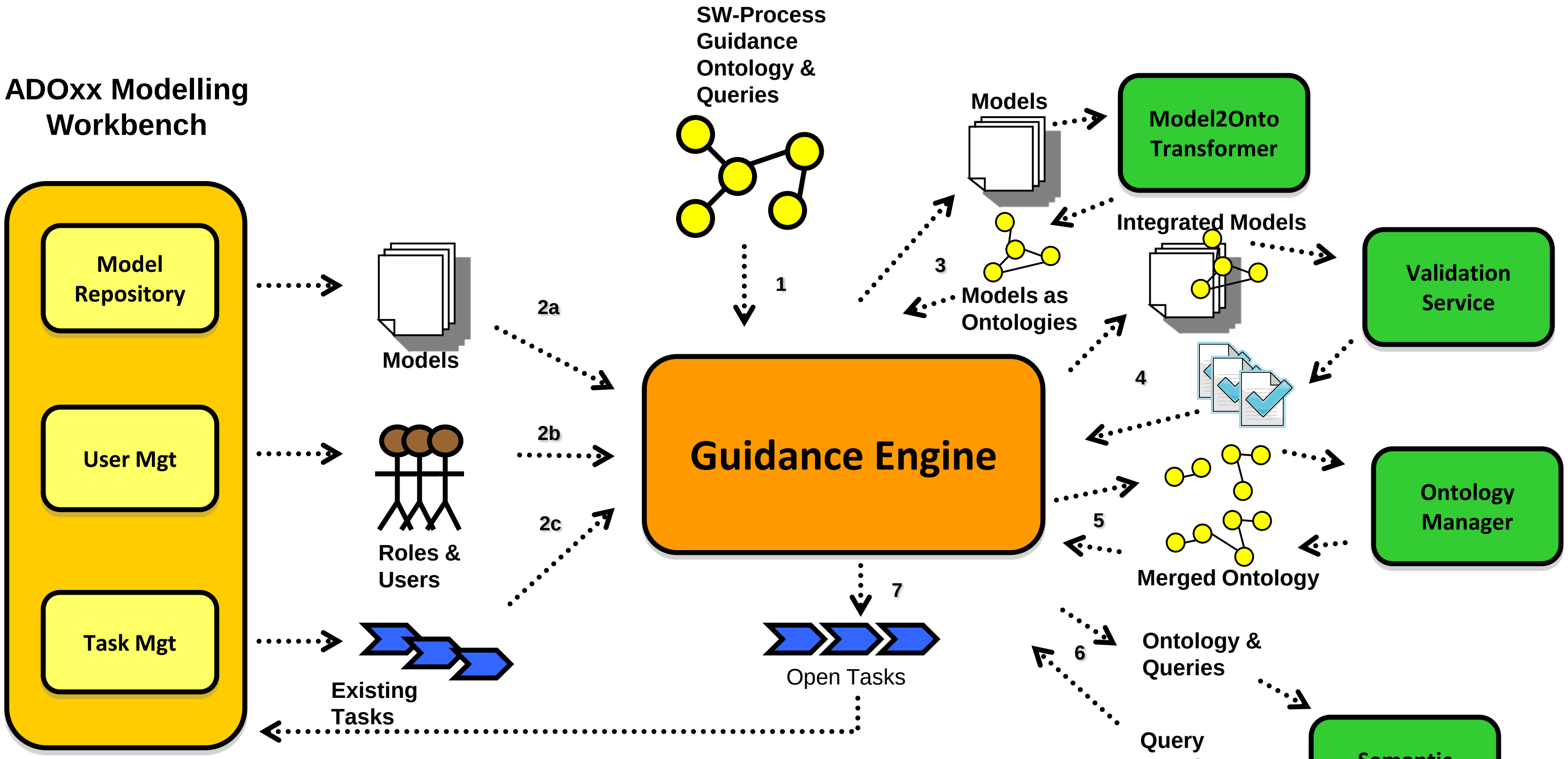
Some Tool Examples using ADOxx®:
MOST Workbench - Guidance Solution using Semantic Technology



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We thank you for your attention!

For further questions please contact:

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