

# Web Clients

*“Simplicity is the  
ultimate sophistication.”*

*Leonardo Da Vinci*

# Distance Learning

Try the chat (+++, --, ??, !!)

Try questions-answers, polling

Try asking a question verbally

# Before all else

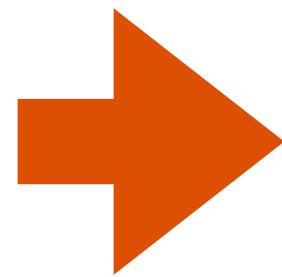
## Kleines CSS Goodie

# Punktevergabe

Was wollen wir beibehalten?

Was wollen wir anders probieren?

# Drehbuch (initial)



1 Drehbuch, Intro, Classic MVC	
2 Validation, Conversion, Attribute	
3 Attribute Projector	UI Architecture
4 Master-Detail	
5 Projector Pattern	
6 CSS++	
7 SVG and Canvas	Custom UI
8 Animation	Elements
9 Custom Elements, PEP Aufbau	
10 Big_UI_FW(TM) Integration	
11 Connecting to REST	
12 Service Abstraction	
13 Reactive, Stable Binding	Remoting
14 Applied Concepts	
15 Team App: Putting it all together	



# From Zero to Hero 1

Web Programming:  
Observable, ObservableList, Scheduler  
Testing  
Classic MVC

# From Zero to Hero 2

Attribute

Converter, Validator

Reichhaltige Attribute

Spezialisierte Projektoren

# Master-Detail

Klassisch: Liste plus Formular

Unoffensichtliche Master-Detail Views

Wie mit der Selektion umgehen?  
(wir machen es erstmal falsch...)



# Checkliste

Alle Tests grün

Alle nötigen Tests vorhanden

Demo läuft

Architekturkonzepte eingehalten

Performance, Speicherleaks?

Concurrency, Hysterese?

# From Zero to Hero 3

 Allgemeines Projector Pattern

# Projector Pattern

efficient creation of ambitious user interfaces

Dierk König

# Context

User interfaces with potentially many screens that can be classified into typical schemes

Widget creation and binding through UI toolkit

Presentation model abstraction

# Problem

- Implementing dedicated views for many screens including model binding leads to much code that needs to be created, tested, and maintained.
- Moreover, this code is UI-toolkit specific and needs to be replaced with any change of the toolkit. The sheer amount of code can make this prohibitively expensive.

# Forces

Static code generation and templating approaches often don't yield enough flexibility in the view construction:

- the model binding & interaction paradigm

- dynamic modifications and extensions

- compositional aggregates

Even more importantly, statically created structures are generally difficult to re-apply when the structure needs modification



presentation

projection

presentation  
models



projector



# Solution



Rich Presentation Models / Attributes

- Abstract Factory (GOF): **IProjector**
  - **Projection Methods** create **IPresentations**
  - IPresentations are composable
  - IPresentations reveal inner widget



# Richness

- Attributes: Value, BaseValue, -> dirty
- Bindable Tags: Label, Visible, Optional, Enabled, Editable, Regex, Valid, ValidationError, HelpUrl, Tooltip, WidgetHint, <custom>

# Solution

- Rich Presentation Models (@OpenDolphin)



Abstract Factory (GOF): **IProjector**

- **Projection Methods** create **IPresentations**
- IPresentations are composable
- IPresentations reveal inner widget

# Projector use



```
IProjector projector = new XXXProjector(controller, ...)
```

*projection*

```
IPresentation form = projector.createSimpleForm(model)  
IPresentation frame = projector.createFrame(form, 400, 200)
```

*composition*

# Composite Structure

The screenshot displays the SAP Composite Structure configuration interface for the 'IM Portfolio Management Cockpit (C2E) - S2P - Employee Portfolio Manager'. The interface is divided into several sections, with the main configuration area highlighted by a red border.

**Top Section: Cockpit Overview**

State	DRAFT	Version	1.0.0	Classification	CUSTOMIZABLE
Target Mandator	S2P - UBS IM Switzerland	Target Environment	ALL	Owner Mandator	S1P

**Second Section: Cockpit Details**

Cockpit	C2E - IM Portfolio Management Cockpit	Release	1
Target Mandator	S2P - UBS IM Switzerland	Target Environment	ALL
Profile	C2E-Profile	Entitlement (access right)	Employee Portfolio Manager

**Third Section: Rule Sets**

Rule Sets: 1 2

Functions and Views

Client Category

- ☒ Personnel : Grants access to all categories of clients including personnel
- ☐ Non-Personnel : Grants access to all categories of clients excluding personnel

**Bottom Section: Active Object**

Active Object

**Right Panel: Authorization**

Allowed functions and views for the authorization:

C2E, C2E-PROFIL, EMPLOYEE PORTFOLIO MANAGER

Default

Name

- ActiveRepositoryMgmtAdmin
- ClientInstructionAccess
- ClientInstructionRead
- ClientRead

Rows: 4

# Behavior: Validation

C2E - Employee Portfolio Manager (DRAFT) A0Z - Supervisor (ACTIVE) \*OpenDolphin is Groovy (DRAFT) \* F2F - - (DRAFT) X

### IM Reporting Cockpit (F2F) - S1P - -

State	DRAFT	Version	1.0.0	Classification	CUSTOMIZABLE
Target Mandator	S1P - UBS Mandate Business Headquarter	Target Environment	ALL	Owner Mandator	S1P

Cockpit	F2F - IM Reporting Cockpit	Release	1
Target Mandator	S1P - UBS Mandate Business Headquarter	Target Environment	ALL
Profile		Entitlement (access right)	

▼ Rule Sets 1 2 3 4 + -

+ -

Region	<ul style="list-style-type: none"><li><input checked="" type="radio"/> Allow : Access to data items allocated to any OU</li><li><input type="radio"/> MyOwnOU : Access to data items allocated to the deployment OU of the user</li><li><input type="radio"/> MyOwnOU+ : Access to data items allocated to the deployment OU of user and below</li></ul>
--------	--

► Active Object



# Flexibility

C2E - Employee Portfolio Manager (DRAFT) A0Z - Supervisor (ACTIVE) \*OpenDolphin is Groovy (DRAFT) x

### OpenDolphin is Groovy

Model Type: Client Category Rule Type: MATCH Owner Mandator: S1P

Identity Name: RuleDef.checkJavaLand Name: OpenDolphin is Groovy

Target Mandator: S1P - UBS Mandate Business Headquarter Target Environment: ALL

Model Type: Client Category Condition: ILIKE

Rule Type: MATCH

► Values (17)

► Description: 'CU @ Canoo booth'

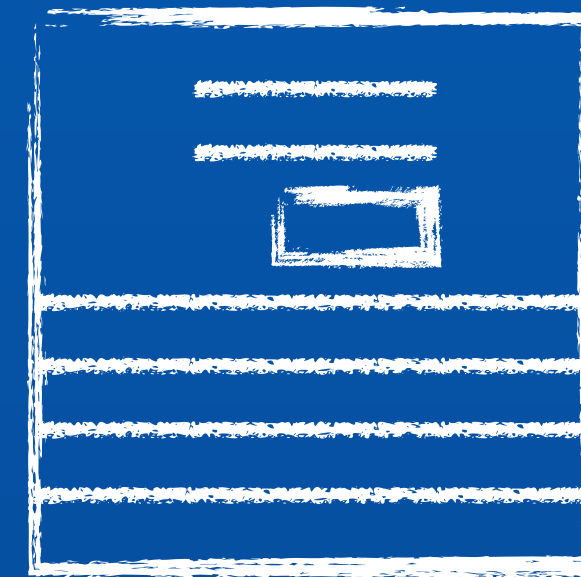
User Explorer User Group Explorer Authorization Explorer Rule Definition Explorer Functions/Views Explorer Reference Data Explorer

Code Domain	Code Value	Description	Short Description	Language	Long Description
R11003.3503	13	-	-	en	Personnel: wealth managem...
R11003.3505	14	-	-	en	Personnel: Wealth Managem...
R11003.3505	15	-	-	en	Self Directed Private Clients (...)
R11003.3505	16	-	-	en	Special Clients (NALO and U...

Rows: 17

# Your Catalog

Simple Form, 2-Column Form, Search Form,  
Navigation, Master-Detail, Foldable Groups,...



Not only layout but also **Interaction Paradigm!**

# Resulting Context

- Simple view creation by selecting a projection from a catalog
- Exchangeable Projectors enable quick and safe migration as well as multi-channel support
- Dramatically reduced code size, less structural duplication, reduced testing effort, and fewer bugs
- General, parameterized Projectors can be more complex to implement and test



# Known Uses

- OpenDolphin / Dolphin Platform
- UBS STMP
- KBS KKVS 4
- Some P5/P6 Projects (GroupHub, DuploFX)
- A variety of customer projects at former Canoo

# Related Patterns

- Components  
Dependency to data is reversed.  
Can be used as projection target.
- Abstract UI Toolkit  
Applicable in a limited context, where  
least common denominator between all  
UI technologies is OK

# Aufgaben

Baue einen Projektor, der die Liste der Personen als HTML table anzeigt mit Visualisierung der selektierten table row.