



J-Spring

16 april 2008 Spant! - Bussum



Did We Spoil the End User? Building Personalization into JavaServer Faces.

Lucas Jellema

AMIS

<http://technology.amis.nl/blog>





Overview

- Demonstration of “FootieFans” application
- Discussion of Trends in Application Development and Deployment
- Run-time Customization of JSF Applications
 - Dynamic Menu, Configurable Text, Application Settings, ...
- The SaaS (single instance) deployment
- Personalization of the application



With (in order of appearance)

JSF PhaseListener

AJAX

Faces-Config.xml

JSF Converter

Partial Page Rendering

EL Expressions

SQL

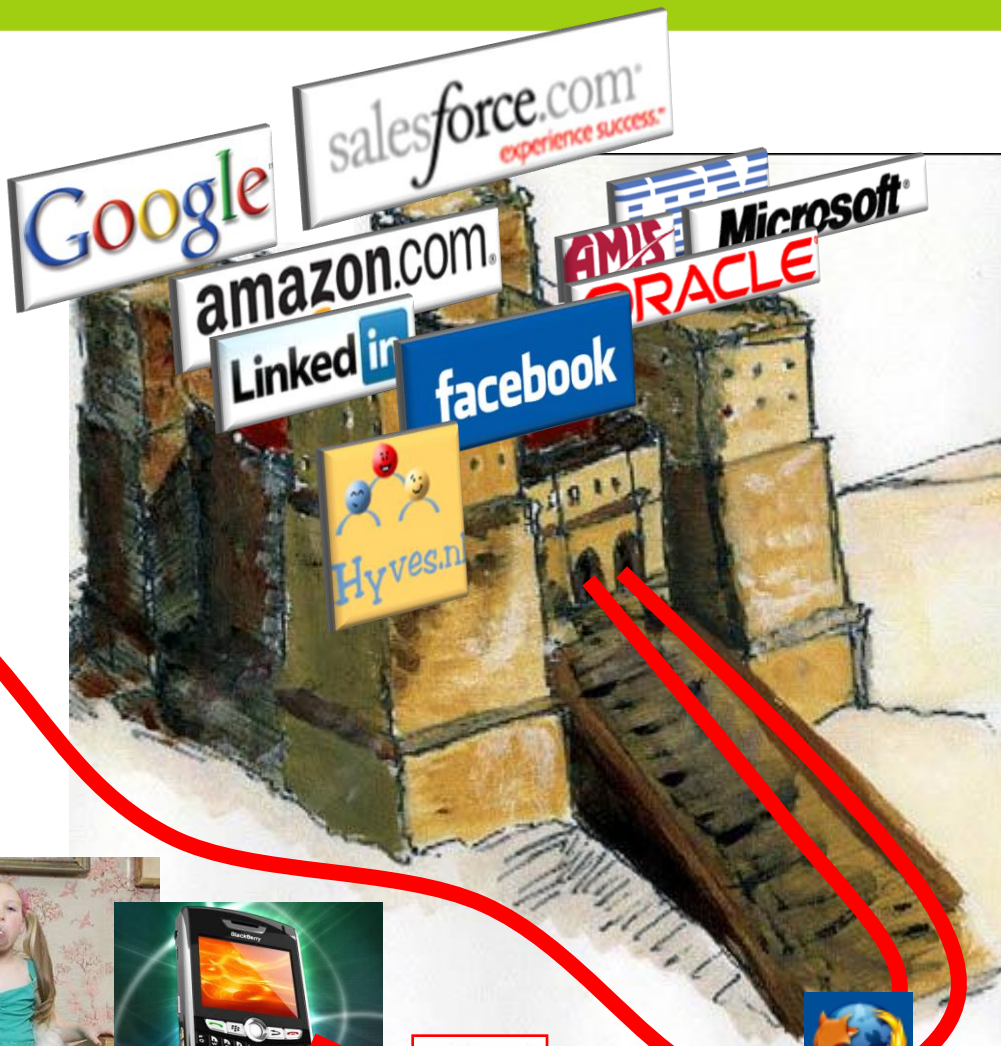
Personalization

SaaS!



Implementation MyHistory

- PhaseListener on Before Render Response
 - If the page to render is one to add to the history, then call ...
- HistoryController bean (session scope) that manages the collection of navigation events
 - Display Label, Entity Type and Primary Key
 - bean calls ...
- BusinessService to record event in database for this user
 - Also remove events for deleted records!





Trends in Business Applications

- Web based deployment, SaaS model (fka ASP):
 - single instance with multiple customers
- Web 2.0, AJAX, RIA, 'internet savvy' users
 - Social Networks
- Personalization features: My....
 - My favorites, my history, my preferences
- Standard applications – reduced custom development
 - However: customization (configuration)



Modules and Menus

- Module & Menu management for FootieFans
- Application Manager can create “Modules”:
 - Custom combinations of Menu Tab Items
 - Combining Standard Application Tabs and Custom Tab Items (associated with URLs)
 - Modules can be granted to users



Module & Menu Management

FootieFans Custom

Modules

Direct naar: [Menu Tab Items \(6\)](#)

Module

* = Required Field [Verwijderen](#)

* Name

Module Name Key

* Type

Start Tab Item

Description

[Annuleren](#)

[Opslaan](#)

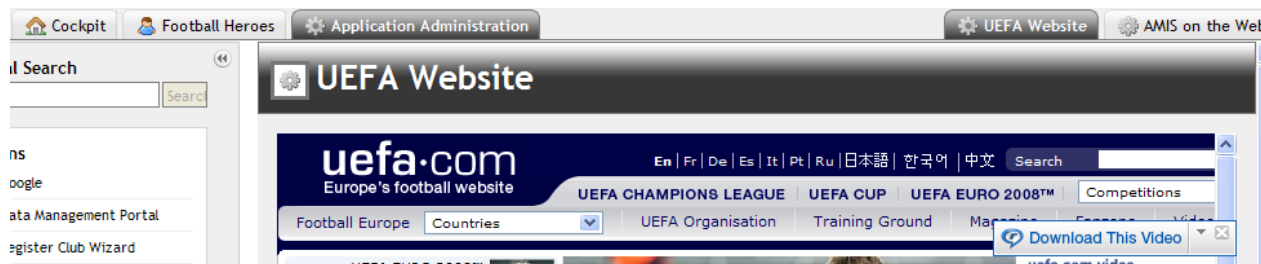
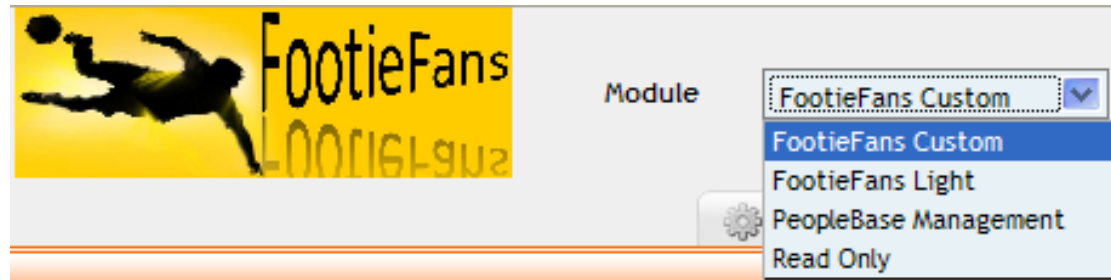
Menu Tab Items (6)

[Nieuw](#)



Demonstration of Customization

- At run-time, the user picks one of the available Modules to work in a tailored setting



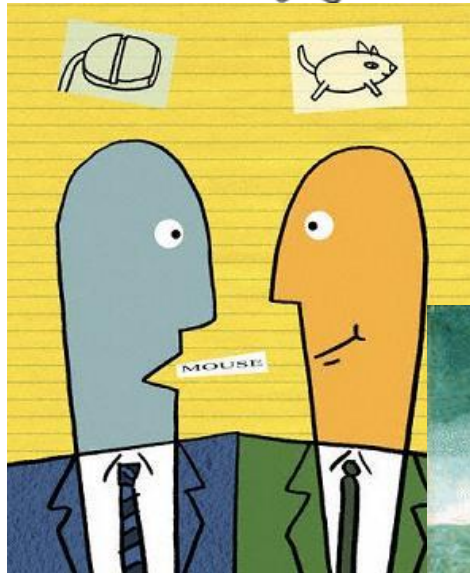


Dynamic Menu Implementation

- Database Tables for Modules & Menu Items
- Business Service reads *applicable* set
- Global Menu component (reusable) leverages ModuleManager bean
 - Bean retrieves Module list from service
 - Bean exposes Items for selected Module
 - Handles change of Module
 - refresh menu items and re-render the page
- JavaScript (document.write) renders HTML



Tower of Babel





On the fly Customizing Text

- Internationalization of all boilerplate text items is done via ResourceBundles
 - Locale specific property sets: en, fr_ca, nl_be
- The application contains hundreds of references like: `label="#{nls['someKey']}"`
 - That at runtime are resolved based on the current locale and the available bundles
- Typically, resource bundles are implemented in property files but they do not have to be!



Databased ResourceBundle

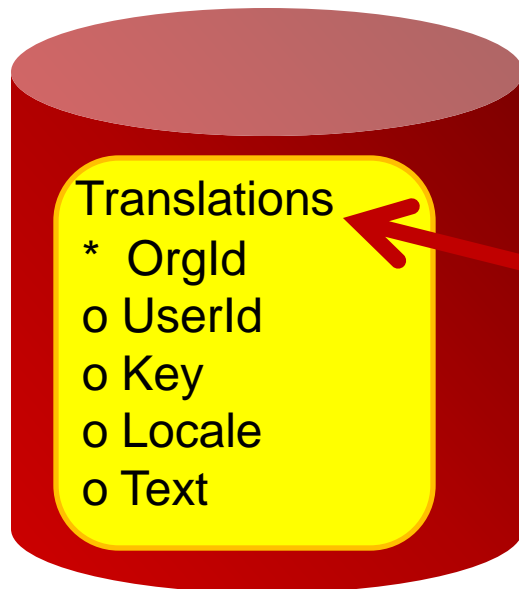
- Allows for run-time management of Text
 - via the application's User Interface
 - text entries specific for an organization
- Custom class that extends ListResourceBundle
 - Overriding method `Object [][] getContents()`
 - Reading the contents from the database
- *Force refresh* “trick” to load changes from database into the in memory resource bundle



RDBMS backed ResourceBundle

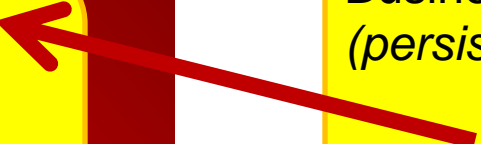
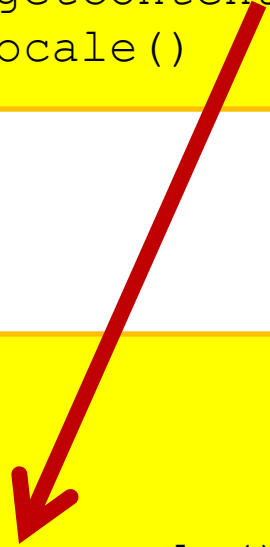
Class DBResourceBundle
extends ListResourceBundle

```
Object[][] getContents()  
Locale getLocale()
```



Business Service
(*persistence layer*)

```
Map getTranslationsForLocale()
```





Application 'levels of reality'

Factory

Customer



FootieFans Inc.

End User



Mark



Linda



Customer



IT HistoryBase

End User



Jessica



Application Rollout process...



- Development in the Factory
- Production-time refining



- Customer (organization) specific implementation

- By SaaS Helpdesk, on site consultant, Application Admin

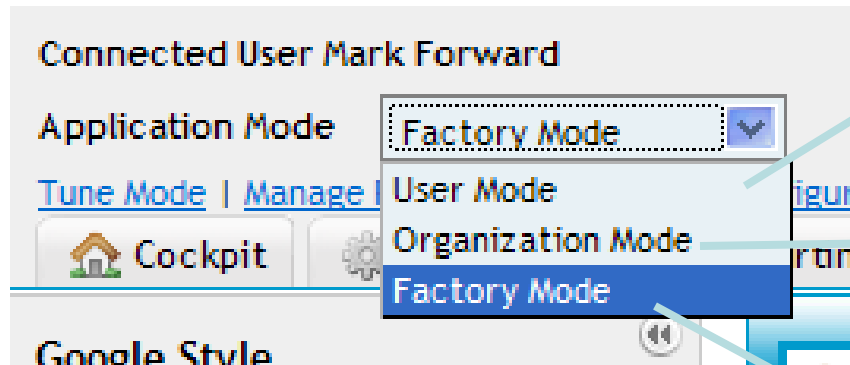


- End User (dynamic, run-time) Personalization



Application Mode Switcher

- Application Managers can switch between Application Modes
 - To view and manipulate the application at the selected level





Application Modes explained

- Application Modes can be used to review the various levels of customization



- Factory level = as shipped (the original standard application - PeopleBase)



- Organization level = as customized during implementation and/or by application administrator – FootieFans)

- Also contains Factory Level where not overridden

- User level = all personal settings and options applied by an individual user



- Also Factory and Organization level



Application Settings

- Some Application Behavior is developed as *dynamically configurable*
 - Next to Data itself, NLS and Modules/Menus
 - Preferences (Application Settings)
 - Such as Locale, Use Pictures for People, Units for Height and Weight, Default Value, Validation parameters, Date Format etc.
- Settings can be configured at Factory (default), Organization and User level



Application Settings Data Model

Application Settings









- * Name
 - o Factory Value
 - o Allowable Values
 - o Description
 - o Data Type

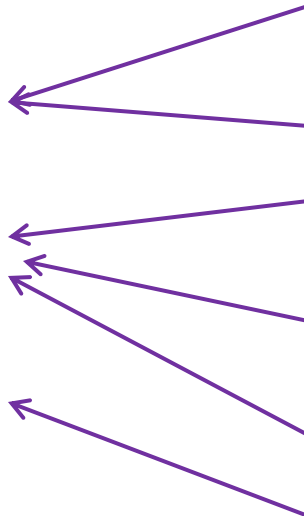
Customized Settings

- * OrgId
 - o Value
 - o UserId
 - o Comment



Date Format	dd-mm-yyyy
Use Photo	Y
Metric/ Imperial	m
...	

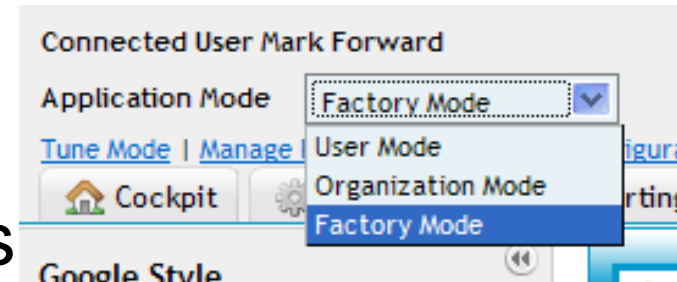
	mm/dd/yyyy
	dd-mm-yy
	N
	Y
	N
	i





Determining application settings

- Query all Application Settings & Factory Values
 - Store them in the map `user.settings`
- If Application Mode is *user* or *organisation*
 - Query Org-level Customizations and apply to the same map (factory values are overridden)
- If Application Mode is *user*
 - Query User-level Customizations and apply to same map (overriding factory & org values)





Configuring Application Settings



Organization Specific Application Settings (3)

Application Setting	Value	Description
LOCALE	nl	The preferred locale for displaying text such as titles, prompts and button labels.
SUPPORT PEOPLE PICTURE	n	Whether or not the application should support uploading and displaying pictures for people.
DEFAULT PERSON GENDER	m	The Gender that should be assigned as default value to a new person

mark	Footiefans	mark@footiefans.com	Selectievakje 'Alleen-lezen' uitgeschakeld	✓
Linda	Goalie	linda@footiefans.com	Selectievakje 'Alleen-lezen' uitgeschakeld	✗

Organization Specific Application Settings (3)

[Nieuw](#)

Application Setting	Value	Description	Opties
LOCALE	nl	The preferred locale for displaying text such as titles, prompts and button labels.	✗
SUPPORT PEOPLE PICTURE	n	Whether or not the application should support uploading and displaying pictures for people.	✗
DEFAULT PERSON GENDER	m	The Gender that should be assigned as default value to a new person	✗



Integrating Application Settings during development


`#user.settings['NAME']`



Date Pattern Application Setting

1

Additional Person Characteristics

Date Of Birth  dd-MM-yyyy

2


```
<af:panelGroup layout="horizontal">
  <af:selectInputDate id="PeopleDateOfBirth" value="#{bindings.PeopleDateOfBirth}" />
  <af:convertDateTime pattern="#{jhsUser.settings['DATE_FORMAT_PATTERN']}" />
</af:selectInputDate>
<af:outputText value="#{jhsUser.settings['DATE_FORMAT_PATTERN']}" styleClass="text-align: center;" />
</af:panelGroup>
```

3

Organization Specific Application Settings

* = Required Field

Application Setting

DATE FORMAT PATTERN 

Lkp Asg Allowable Values

Value

MM/dd/yy

Factory Value

dd-MM-yyyy

Description

The format used for entering an

Comment on Customization

4

Additional Person Characteristics

Date Of Birth  MM/dd/yy



Height & Weight Converter

1

Weight (lbs) 168,1
Height (ft) 5,77

2

```
<af:inputText id="PeopleWeight" value="#{bindings.PeopleWeight.inputValue}"
  label="#{nls['PEOPLE_WEIGHT']} #{jhsUser.settings['UNIT_OF_WEIGHT']=='m'? (kg)':' (lbs)'}">
  <f:converter converterId="WeightConverter"/>
</af:inputText>
<af:inputText id="PeopleHeight" value="#{bindings.PeopleHeight.inputValue}"
  label="#{nls['PEOPLE_HEIGHT']} #{jhsUser.settings['UNIT_OF_HEIGHT']=='m'? (m)':' (ft)'}" >
  <f:converter converterId="HeightConverter"/>
</af:inputText>
```

3

Organization Specific Application Settings

* = Required Field

Application Setting UNIT OF HEIGHT
Value m
Description Should height we displayed in the

Lkp Asg Allowable Values m,i
Factory Value m
Comment on Customization

4

Weight (kg) 76,4
Height (m) 1,76



Weight Converter – lbs to kg

- Implement Converter interface
 - getObject() – from request (UI) to model
 - getString() – from model to User Interface
 - *Read Application Setting from user object to determine conversion factor*
- Register in faces-config.xml

```
<converter>
  <converter-id>WeightConverter</converter-id>
  <converter-class>nl.amis.jsf.WeightConverter</converter-class>
</converter>
```

- Associate Converter with InputText

```
<af:inputText id="PeopleWeight" value="#{binding.
  label="#{nls['PEOPLE_WEIGHT']} #{jhsUser.
  <f:converter converterId="WeightConverter"/>
```



Convert using Application Setting

- Get Application Setting

```
private String getUnitOfWeight() {  
    FacesContext ctx = FacesContext.getCurrentInstance();  
    ValueBinding vb = ctx.getApplication().createValueBinding("#{jhsUser}");  
    AppUser appUser = (AppUser)vb.getValue(ctx);  
    return (String)appUser.getSettings().get("UNIT_OF_WEIGHT");  
}
```

- Implement getAsString()

```
public String getAsString(FacesContext facesContext,  
    UIComponent uiComponent, Object object) {  
    try {  
        if (null == object || ((Number)object).compareTo(0)==0)  
            return null;  
        float floatValue = ((Number)object).floatValue();  
        if ("i".equalsIgnoreCase(getUnitOfWeight())) {  
            floatValue *=METRIC_TO_IMPERIAL_WEIGHT_CONVERSION_FACTOR;  
        }  
        return this.getNumberFormat().format(floatValue);  
    } catch (Exception e) { throw new ConverterException(e);}  
}
```



Application Personalization

We are *all* individuals

I'm not...





Personalization Features

- My Navigation History
- My Favorites (quick links, bookmarks)
- My own custom properties ('flex fields')
- My flavor of Date Format, Units for Weight, Height, Currency, Default Values
- My lingo in titles, labels, prompts & messages
- Personalized Menu-structure
- ... (my logo!)



The “Personal Touch”

Aangemeld als Linda Goalie

[Customize Mode](#) | [Record Page Text](#) | [Personal Settings](#) | [Help](#)

Module: FootieFans Custom

Cockpit Football Heroes Clubs UEFA Website

Aangemeld als Mark Forward

Application Mode: User Mode

[Customize Mode](#) | [Record Page Text](#) | [Personal Settings](#) | [Help](#) | [Log Out](#)

Cockpit Football Heroes Clubs UEFA Website

Aangemeld als Mark Forward

Application Mode: Organization Mode

[Customize Mode](#) | [Record Page Text](#) | [Personal Settings](#) | [Help](#) | [Log Out](#)

Cockpit Football Heroes Clubs UEFA Website



Chances are that a standard application is not perfect!

- Some fields are never used by some organizations (or even legally forbidden!)
- Other fields are sorely missed
- To allow optimal customization, an application ideally allows
 - Customization of standard items
 - Addition of custom items
 - Associated with data records
 - Integrated in the application's pages, indiscernible from 'regular' items



Adding the “Caps” flex item

1

Additional Person Characteristics

Date Of Birth	<input type="text" value="05/01/81"/>		MM/dd/yy	City of Birth	<input type="text" value="Minsk"/>	
Shoe Size	<input type="text"/>	Position on Pitch		<input type="text"/>		
Website of Fanclub	<input type="text"/>					

2

Application Mode

[Customize Mode](#) | [Record](#)

Cockpit Fan

3

[Define Flex Region PeopleFlexRegion](#)

Shoe Size	<input type="text"/>	Position on Pitch	<input type="text"/>
Website of Fanclub	<input type="text"/>		





Adding “Caps” item (2)

4

Flex Region Definition [PeopleFlexRegion](#)

Opslaan OK Annuleren

* Display Sequence	20	* Display Type	Text Input
* Name	Caps	Display Width	4
* Label	Caps	Display Height	1
Label Translation Key	CAPS_PROMPT_KEY	Depends On Item	
Hint Text		Roles	
Hint Text TranslationKey		Rendered Expression	

5

Additional Person Characteristics

Date Of Birth MM/dd/yy City of Birth

Shoe Size

Website of Fancub

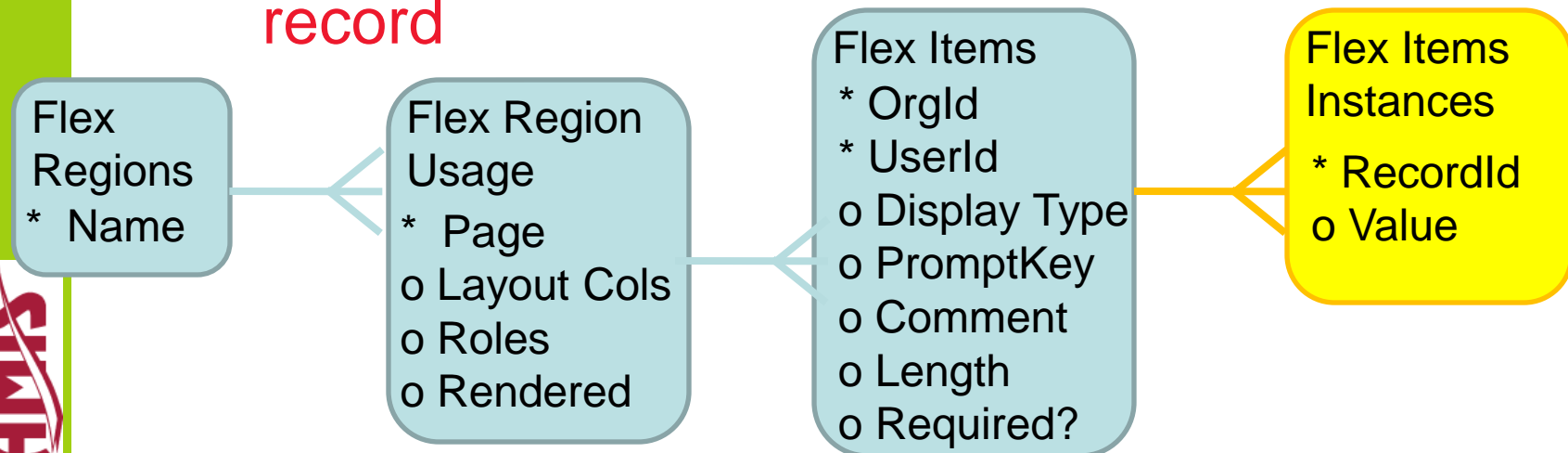
Position on Pitch

Caps



Implementation of Flex Items

- Database:
 - Meta: tables for Flex Regions (containers for Flex Items to be page-linked) and Flex Items
 - Data: Flex Item Data Instances: based on Flex Item and associated with Primary Key of record





Implementation of Flex Items

- Every JSF Page that is flex item enabled:
 - **PanelGroup** per FlexRegion with loop over FlexItems as
 - returned by the **FlexItemManager** bean for the page, region and Record Identifier
 - as retrieved from the **Meta Data Service**
 - Render proper component with data when available
 - inputText, selectOneChoice, inputFile,...
 - set attributes such as Rendered, Required, Label..



Login as LINDA...

Aangemeld als Linda Goalie
[Customize Mode](#) | [Record Page Text](#) | [Personal Settings](#) | [Help](#)

Module

FootieFans Custom

Cockpit

Football Heroes

Clubs

▶

UEFA Website

AMIS on the Web

Global Search

Search

Actions

Google

Data Management Portal

Register Club Wizard

Fabregas

+

Direct naar: [Contracts](#)(1)

Person

* = Required Field

Verwijderen

Additional Person Characteristics

My Histor

Fabregas

Date Of Birth

05/04/87

MM/dd/yy

City of Birth

Arenys de Mar

Color of his eyes

b



PeopleBase is not a Football App

IT HistoryBase



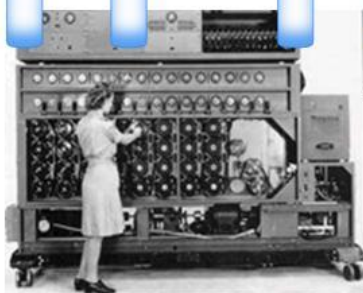
- Organization
IT HistoryBase has customized the PeopleBase application under FootieFans
 - For creating IT HistoryBase
- With the most important IT companies in the World and their top employees
 - Pictures of logos and HQ
Photographs of IT hotshots





Demo

IT HistoryBase





IT HistoryBase

Logged in as Jessica Fletcher

Application Mode User Mode

[Customize Mode](#) | [Record Page Text](#) | [Personal Settings](#) | [Help](#) | [Log out](#)

[Cockpit](#) | [Management of Supporting Data](#)

IT HistoryBase

Module FootieFans Light

[IT VIPs](#) | [IT Corporations](#)

Global Search

Search

Actions

[Google](#)

[Data Management Portal](#)

[Register Club Wizard](#)

My History

[Apple](#)

[Oracle](#)

[Gates](#)

[Microsoft](#)

[Schwartz](#)

[Sun Microsystems](#)

[McNealy](#)

[Ballmer](#)

[Jobs](#)

[Ellison](#)

Dashboard [Dashboard Configurator](#)

Overview of IT stars per Nation

Nation	Number of People
United States of America	7
The Netherlands	1

Upcoming Birthdays

Number Of Days Until Birthday	Name	Birthday	Current Age
123	Lawrence Ellison	17 Aug	64
151	Lucas Jellema	15 Sep	39
186	Jonathan Schwartz	20 Oct	43
194	Bill Gates	28 Oct	53
210	Scott McNealy	13 Nov	53

IT staff per age category

Age Category	Percentage
40+	87.50%
29-35	12.50%

My Favorites [Refresh](#)

Apple

Bill () Gates

Jonathan () Schwartz



Summary

- Trends in Application Development & Deployment and Administration
 - Web 2.0, RIA, Social Networking => *internet trends enter the enterprise*
 - Software as a Service
 - Customization at Organization Level
 - Personalization to fine-tune preferences
- JSF lends itself to run-time customization
 - Thanks to extensibility, programmatic control and EL expression bound attributes



Want to hear it again?

- JavaOne 2008 (5-9 May, San Francisco)
 - Birds of a Feather (BOF) session BOF-5224
- Anyone coming to work for AMIS is invited to come to JavaOne 2008
 - Or Oracle Open World (September, San Francisco)



<http://technology.amis.nl/blog>