

Modalities to Implement the Multilinguality in Web DYNPRO ABAP

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Abstract

The integrated platform SAP Netweaver is a platform that offers support in realizing Web bussiness applications that use the Model View Controller (MVC) concept. The *Multilinguality* being a property of this platform. The purpose of this article is to highlight the modality to internationalize a Web Dynpro ABAP project. The techniques used for the internationalization of a Web Dynpro ABAP application are: the OTR [Online Text Repository] translations, the implementation of the assistance class and the technique of information internationalization in a database. The case study has been performed on the trial "SAP Netweaver 7.0 Application Server ABAP" that offered the possibility to log-in in English and German languages.

Keywords: Computer programmes, software

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1. The Web Dynpro ABAP concept

The "Web Dynpro ABAP" is the SAP Netweaver concept for developing interfaces with the user. It represents the current standard for performing the Web bussiness applications in the ABAP environment. The Web Dynpro ABAP framework includes an execution environment and a graphical development environment, by using special Web Dynpro tools integrated in the ABAP Workbench (SE80 transaction). It provides a uniform interface for different application scenarios.

This framework is realized according to the Model View Controller (MVC) paradigm. MVC is an architectural model that divides the application implementation in three components: model, view and controller. The *model* component includes the logical part of the application, the *view* component ensures the display on screen, and the *controller* component realizes the link between the model and the view, defining how the user interface reacts to the user's actions. The benefit of this MVC architecture is the separation of the project logic from the presentation logic.

In case of a Web Dynpro framework (Fig.1 [1]), the design data separation is realized through objects that generate data and objects that consume data, the entire structure being made of components [2].

The client's implementation can be defined for the web browser (Server-Side Rendering) (Fig. 1), with the implementation of the metadata and the generation of the HTML pages with integrated JavaScript functionalities. It can be also defined a XML implementation that is currently used for

eCATT (extended Computer Aided Test Tool) scenarios, and for client's integration - SP Smart Board type [3].

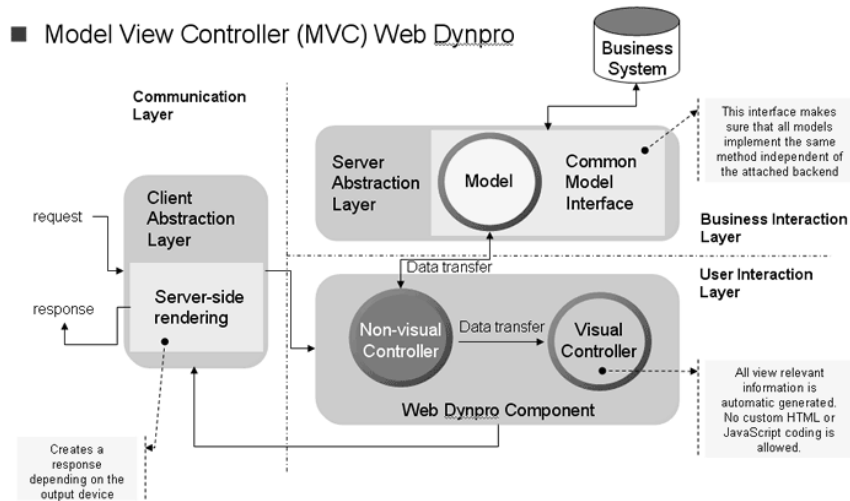


Fig.1 Web Dynpro ABAP Architecture

One of the advantages offered by the Web Dynpro in developing the web applications is the internationalization. Its purpose is to ensure the technical base required to allow the web applications to run in the log-in language. When a user logs-in in a certain language, the system must run the application in the respective language.

2. Internationalization techniques for a Web Dynpro ABAP application

Any Web Dynpro ABAP component is created in the log-in language (e.g. in English). When testing the application based on this component, the display language is English. For making this application to run in a different language, the interface information shall be displayed in this language. All the components of a WebDynpro application can be independently internationalized and displayed. There are some standard techniques used to internationalize the Web Dynpro applications.

a. *The internationalization technique OTR (Online Text Repository)* is used to translate static texts. **Online Text Repository (OTR)** is the central location for storing texts. The main task of the OTR is to support the creation and translation of texts. There are two methods for creating texts in OTR: by using the transaction SOTR_EDIT or directly from the view of the component Web Dynpro, by using the *Goto* menu and the *Online text Repository Browser* command. By using the transaction SOTR_EDIT, we create an alias for the text in the log-in language. This text is linked with an UI element from the view of the component Web Dynpro and, with the SE63 transaction (Fig. 2), we realize the translation from the log-in language in the desired language. The trial version "SAP NetWeaver Application Server ABAP 7.0" includes only two log-in languages: English and German.

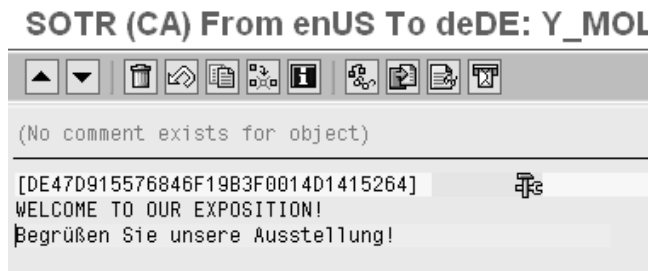


Fig.2 OTR translation through the SE63 transaction

b. The message internationalization technique

The messages are dynamic texts. In the system, there is an abstract SAP class `cl_wd_component_assistance` [3] that can help us to internationalize. So, for each *wd* component we can assign the created assistance class, which inherit the SAP class `cl_wd_component_assistance` (Fig.3).

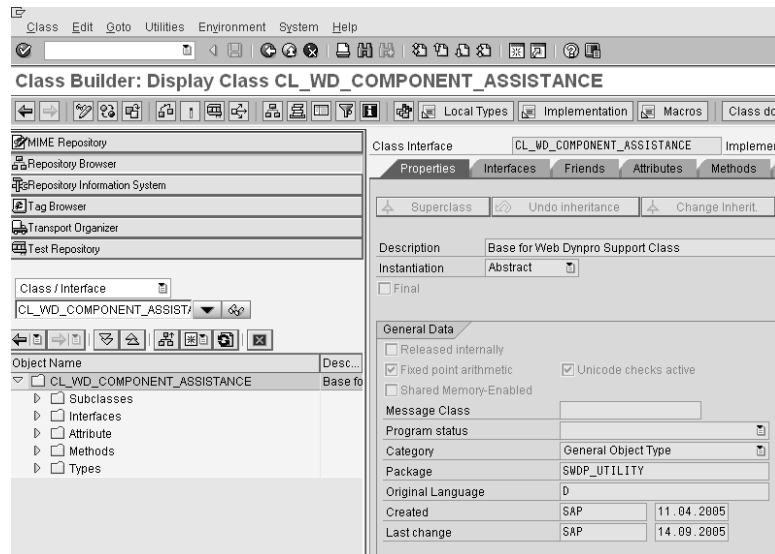


Fig.3 The global class `cl_wd_component_assistance`

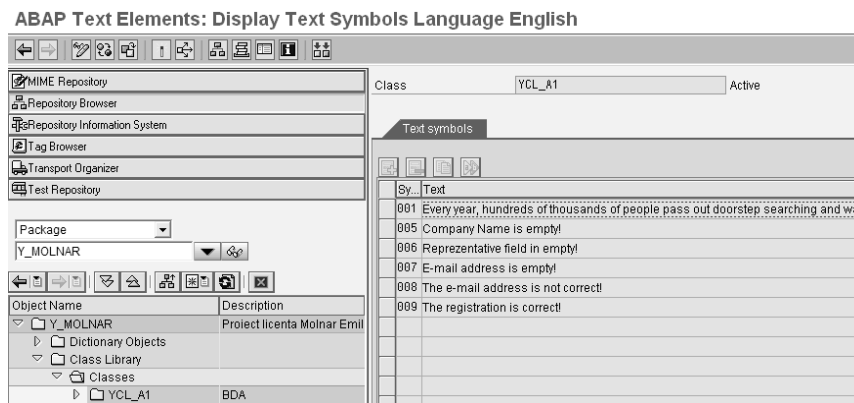


Fig.4 Text symbols defining

At the properties of the Web Dynpro component, we mention the name of the assistance class and define the respective dynamic text symbols (Fig. 4), which are translated by using the menu "Go to translation" (Fig. 5). In the respective code of the messages, we use, instead of the text to be displayed, the afferent text symbol that populates the *key* parameter of the `get_text` method of the `if_wd_component_assistance` interface [4], [5].

e.g. `text1 = wd_assist->if_wd_component_assistance~get_text(key = '001')`.

RPT8 (CA) From enUS To deDE: YCL_A1

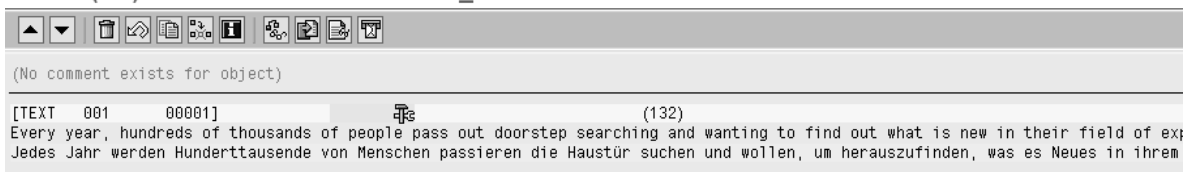


Fig.5 Translation of the dynamic text defined with the text symbol

c. Internationalization of the database

The translations are customizable operations performed only by the application administrator. To internationalize the information included in the field of a transparent table, information accessed through "search helps" (global object realized in Data Dictionary, for browsing), we used an associated text table, and for the internationalization of the information included in the update database tables, we realized a customizable table structure (Fig. 6 a, b) made of two tables: a key table and a text table, linked 1 to n with the key field property of a text table, which is linked with the database in a way that avoids the damage of its consistency (undefined link) (Fig. 7) [6], [7].

| Field | Key | Initi... | Data element | Data Ty... | Length | Deci... | Short Description |
|---------|-------------------------------------|-------------------------------------|--------------|------------|--------|---------|---------------------|
| MANDANT | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | MANDANT | CHAR | 3 | | TODO: Client |
| ID KEY | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | YID | INT1 | 3 | | Data element for ID |

a)

| Field | Key | Initi... | Data element | Data Ty... | Length | Deci... | Short Description |
|-----------|-------------------------------------|-------------------------------------|--------------|------------|--------|---------|-------------------------|
| MANDANT | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | MANDANT | CHAR | 3 | | TODO: Client |
| LIMBA | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | LANG | LANG | 1 | | Language ID |
| ID KEY | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | YID | INT1 | 3 | | Data element for ID |
| ID TEXT | <input type="checkbox"/> | <input type="checkbox"/> | YID | INT1 | 3 | | Data element for ID |
| TRADUCERE | <input type="checkbox"/> | <input type="checkbox"/> | YNUMEM | CHAR | 50 | | Data element for labels |

b)

Fig.6 Customizable tables

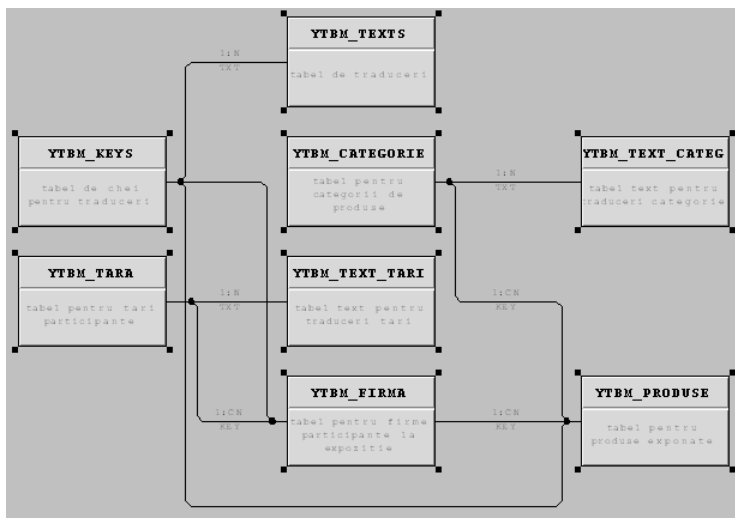


Fig. 7 Link between the translation structure and the database

Because the records included in the key table are rarely changing, it is advisable to use the buffering property (Fig. 8). At the first reading of a record included in this table, the records that correspond to the buffering type option are placed in a special memory zone, so that, at the second reading, the records are taken from this memory zone. Buffering is preferred for improving the performance, in case of frequent readings from the database [8].

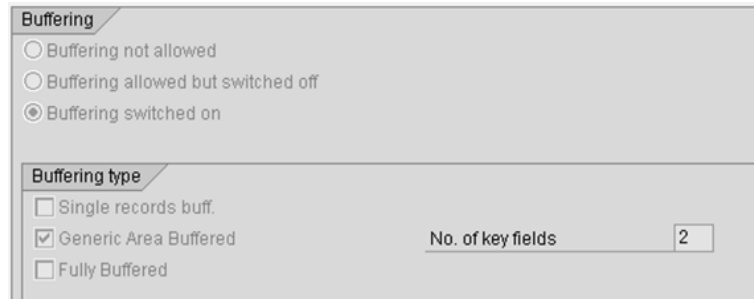


Fig.8 Technical settings of the buffering options

For the translation table structure [3], it is realized a maintenance view by using the se11 translation, through which the data included in these tables are updated. In the maintenance view [1], the data form a logic unit for the user. So, the data of this unit can be displayed, modified or added. The user can manipulate the data without being interested in the technical part of the database implementation (he doesn't care if the data come from the fields of different tables) (Figs. 9, 10).

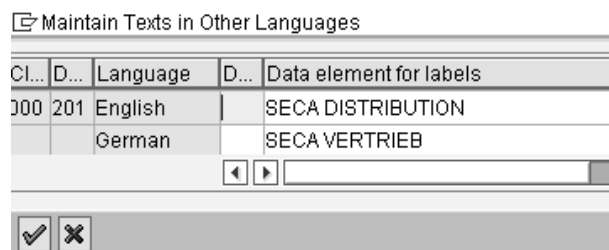


Fig. 9 Translation through maintenance view

Table: YTBM_TEXTS
 Displayed Fields: 5 of 5 Fixed Columns: List Width 0250

| | MANDANT | LIMBA | ID_KEY | ID_TEXT | TRADUCERE |
|--------------------------|---------|-------|--------|---------|-------------------|
| <input type="checkbox"/> | 000 | D | 50 | 4 | MESSEN |
| <input type="checkbox"/> | 000 | D | 202 | 5 | SECA DISTRIBUTION |
| <input type="checkbox"/> | 000 | D | 201 | 0 | SECA VERTRIEB |
| <input type="checkbox"/> | 000 | E | 50 | 1 | |
| <input type="checkbox"/> | 000 | E | 202 | 6 | CAREFOUR |
| <input type="checkbox"/> | 000 | E | 200 | 2 | |
| <input type="checkbox"/> | 000 | E | 51 | 7 | OPERATION MACHINE |
| <input type="checkbox"/> | 000 | E | 201 | 0 | SECA DISTRIBUTION |

Fig. 10 Text table updating through maintenance view

3. The result of implementing the internationalization techniques in the case study

The case study we have realized is a Web Dynpro ABAP application for an international exhibition of industrial products, implemented by applying the faceless componentizing technique in a trial system SAP NetWeaver Application Server ABAP 7.0. The application testing has been realized for the available log-in languages, English and German. The results regarding the OTR translations are presented in Figs. 11 and 12.



Fig. 11 Log-in in English



Fig. 12 Log-in in German

The messages are internationalized by using an assistance class available for the entire project. In this class, all the messages of the application are defined by keys (Figs. 13 and 14).


| | |
|---|---|
| Companie Namen: | <input type="text" value="DEUCHE SOFT"/> |
| Land: | <input type="text" value="DEUTSCHLAND"/> <input type="checkbox"/> |
| Vertreter: | <input type="text" value="TIEN VON BIEN"/> |
| E-mail: | <input type="text" value="TIEN"/> |
| <input type="button" value="Überprüfung der Daten"/> <input type="button" value="REGISTRIEREN AUSSTELLER"/> | |
| Wenn Sie schon registriert sind, für die Registrierung Ihre | |
|  Die E-Mail-Adresse ist nicht korrekt! | |

Fig.13 Message in German

Fig.14 Message in English

Hereunder, there are presented the tables that include the information regarding the products registered by the participant companies, internationalized in the two log-in languages (Figs.15 and 16).

| Products Name | Category | Manufacturing Date | Representative | Representatives E-mail | Country |
|-------------------|----------------------------|--------------------|----------------|------------------------|---------|
| OPERATION MACHINE | OPERATING TECHNICS | 03.06.2009 | PIERRE | PIERRE@YAHOO.FR | FRANCE |
| | MEASURE AND CONTROL DEVICE | 12.02.2009 | POPESCU | POPESCU@YAHOO.COM | GERMANY |

Fig.15 Presentation of the information included in the products table, in English

| Produkte Namen | Kategorie | Datum der Herstellung | Vertreter |
|----------------|-----------------------------|-----------------------|-----------|
| MESSEN | MESSEN UND ZU STEUERS GERÄT | 12.02.2009 | POPESCU |

Fig.16 Presentation of the information included in the products table, in German

Conclusions

Based on the ABAP platform, the Web Dynpro anticipates a complex development in building IT projects, performed by groups of designers, due to the componentizing and usage techniques [3]. The current SAP technologies offer the possibility to re-use the components and not only the code (other programs or programming environments can re-use only the code).

An internationalized application offers not only technical and organizational information, but especially the possibility to access this information in different world languages, this one being a major advantage for any multinational or event planning company.

References

- [1] SAP Help Portal (<http://help.sap.com>);
- [2] SAP Developer Network (<http://sdn.sap.com>);
- [3] Ulli Hoffmann, *Web Dynpro for ABAP*, Publishing House: SAP Galileo Press, Bonn, Germany, 2007;
- [4] <http://www.sdn.sap.com/irj/scn/index?rid=/library/uuid/506afd46-32df-2b10-99b0-b93b19075cb1&overridelayout=true>;
- [5] Gellert, Ulrich, Cristea, Ana Daniela, *Web Dynpro ABAP for Practitioners*, Springer Publishing House, 2010

- [6] *Web Dynpro ABAP Programming Guidelines (SAP AG 2006), available in electronic format (pdf) on the Internet network;*
- [7] *Rich Heilmann, Thomas Jung, Next Generation ABAP Development, Publishing House: SAP Galileo Press, Bonn, Germany, 2007*
- [8] *Web Dynpro for ABAP (WDA, WD4A, WDF4A) Release NW2004s SP8 (SAP AG Online Help 2006) – available in electronic format (pdf) on the Internet network.*