



FLM Developer's Tutorial

Version 274

Version History

Version	Date	Reason for update
1	10/10/2007	Initial release of the document
1.1	01/11/2007	Tweaking
2.0	01/08/2008	Adding FPE / Expanded Example

Table of Contents

1	Introduction.....	3
2	Creating the Data Definition of a Form in SAPGUI	3
3	Designing the layout in Adobe Designer	12
4	Adding Business Logic.....	23
5	Form Routing	31
6	Launching the form in the portal	36

1 Introduction

This FLM Starter Guide is aimed towards a beginner designing his first form. Although it is helpful for you to be familiar with SAP and Adobe Designer, it should be possible for anyone to follow the step-by-step instructions given here and create your first FLM form and get a feel for the processes involved.

The aims of this exercise are to:

- Create a new form data definition using the FLM form wizard
- Combine the data definition with the form template to create a working Interactive Form
- Enter the required UserExit code to prepopulate, create a dropdown menu, and validate fields on the form
- Launch the finished form in the FLM portal and test it.

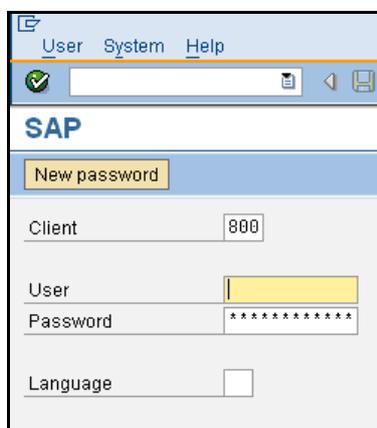
Exercise Prerequisites:

- FLM installed on the system
- Customer code initialised
- Form Status, Action and Category codes created.
- Message 996 set up
- Message 'Form submitted for approval' set up e.g. as number 100
- Users 1 and 2 configured

2 Creating the Data Definition of a Form in SAPGUI

The form data definition is done in the SAP IMG.

Login to SAP with your username and password.



The screenshot shows the SAP login interface. At the top, there is a menu bar with 'User', 'System', and 'Help'. Below the menu bar is a search bar with a green checkmark icon on the left and a magnifying glass icon on the right. The main area of the screen is titled 'SAP' and contains a 'New password' button. Below this, there are four input fields: 'Client' with the value '800', 'User' with a yellow highlight, 'Password' with asterisks, and 'Language' with a dropdown arrow.

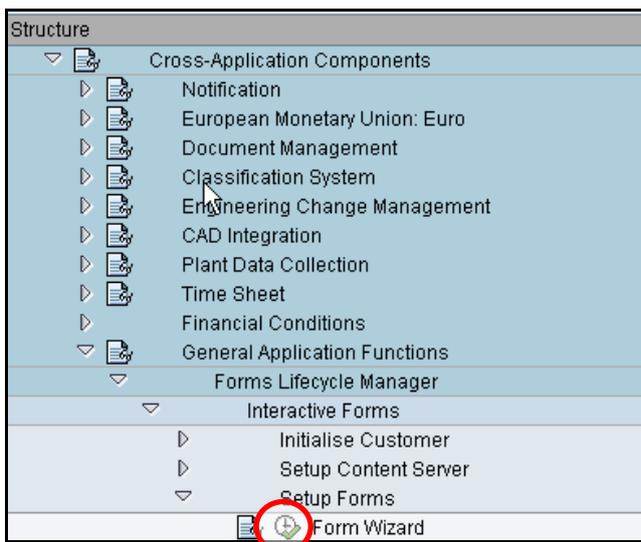
Go to transaction 'spro' by entering it in the transaction box and pressing return.



Click on 'SAP reference IMG'



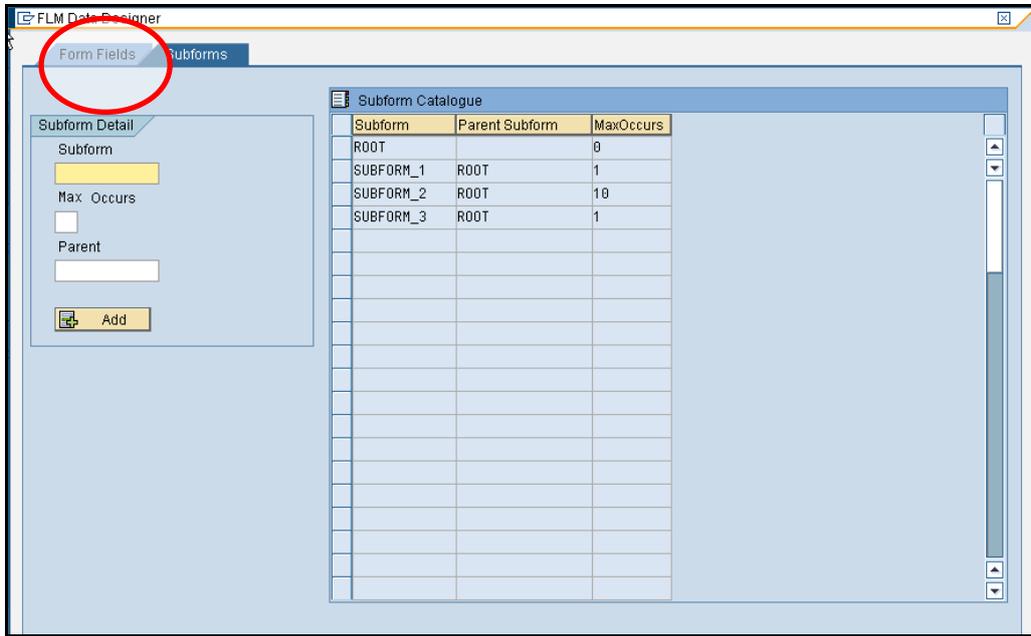
Go to Cross-Application Components> General Application Functions> Forms Lifecycle Manager> Interactive Forms> Setup Forms> Form Wizard.



The Form Wizard will open:

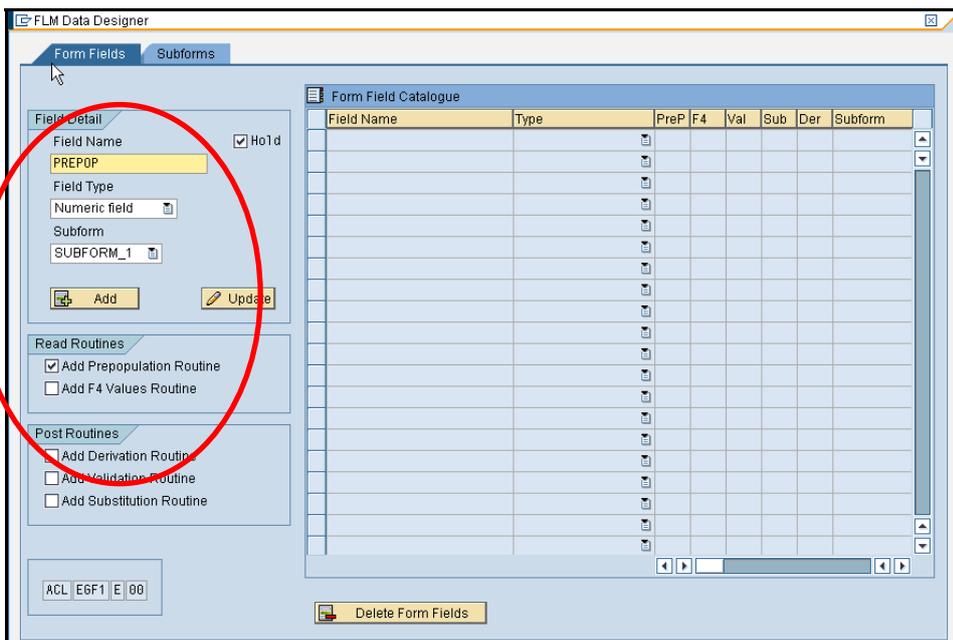


Your subform page should now look like this:

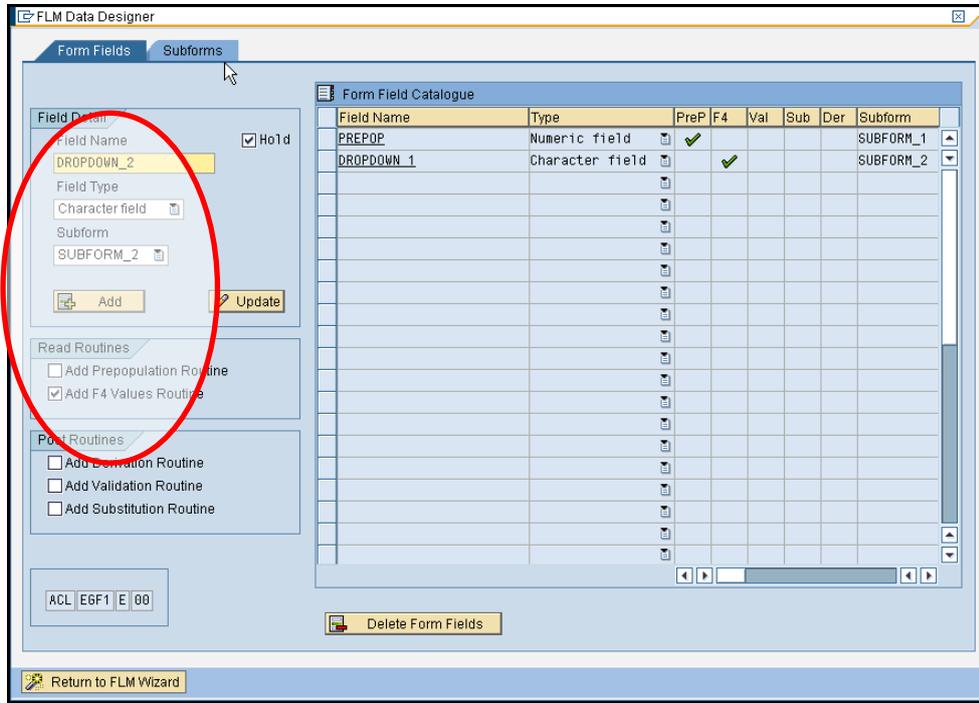


Return to the 'form fields' tab to create your fields.

The first field, for the sake of this example, will be called 'prepop', of type 'numc' and parent 'subform_1'. Check the tickbox to 'add prepopulation routine'. Finally click 'Add' and it will appear in the field table.

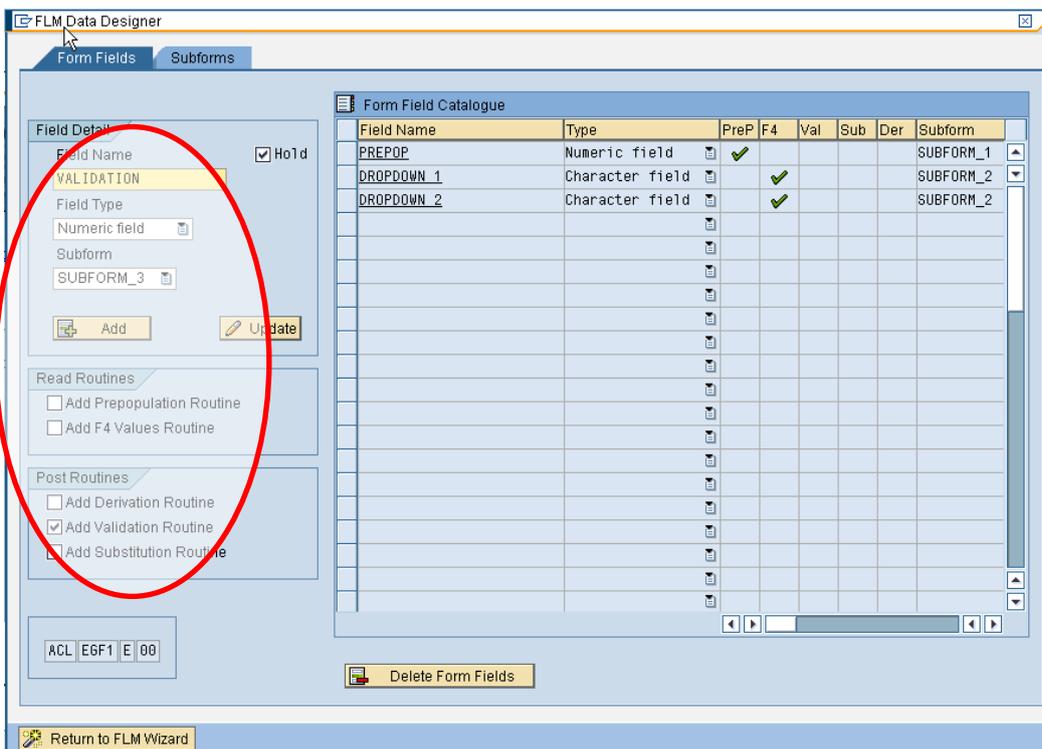


Next, create two more fields, called 'Dropdown_1' and 'Dropdown_2', type: 'CHAR' and with parent: 'Subform_2'. Check the box to add an F4 values routine to both.



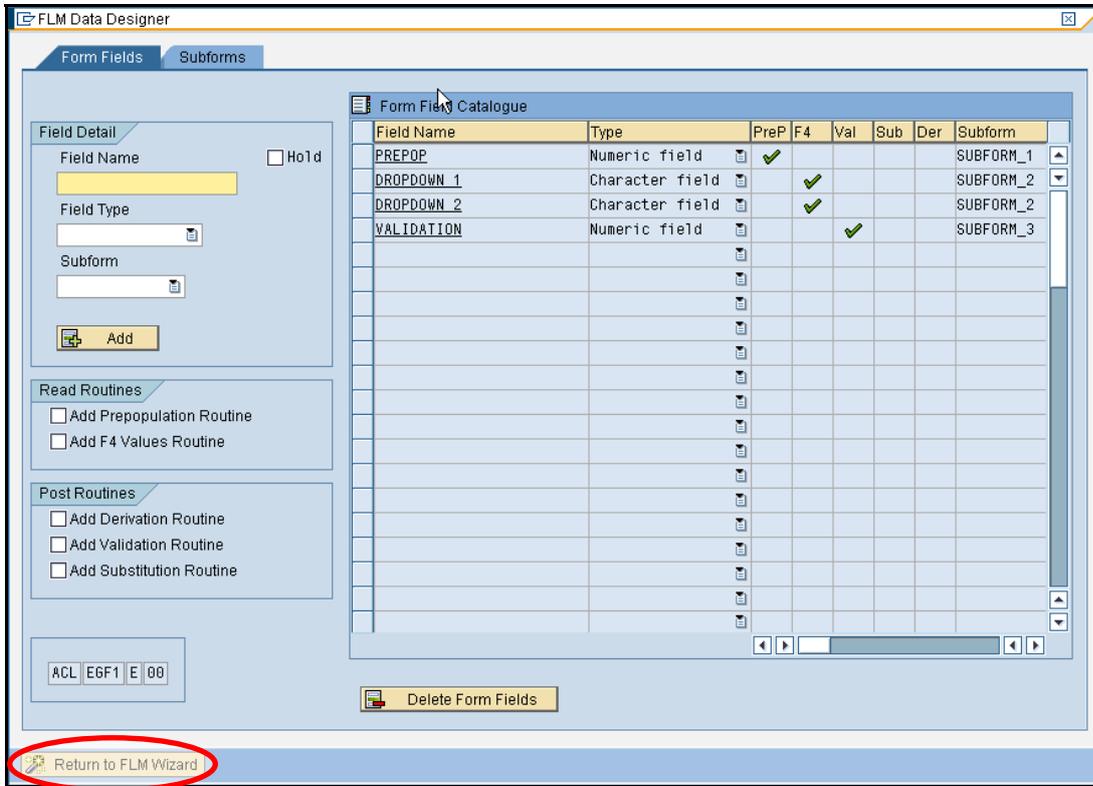
Field Name	Type	PreP	F4	Val	Sub	Der	Subform
PREPOP	Numeric field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				SUBFORM_1
DROPDOWN_1	Character field	<input type="checkbox"/>	<input checked="" type="checkbox"/>				SUBFORM_2

Finally, create a fourth field, called 'validation', type = NUMC and parent = subform_3.

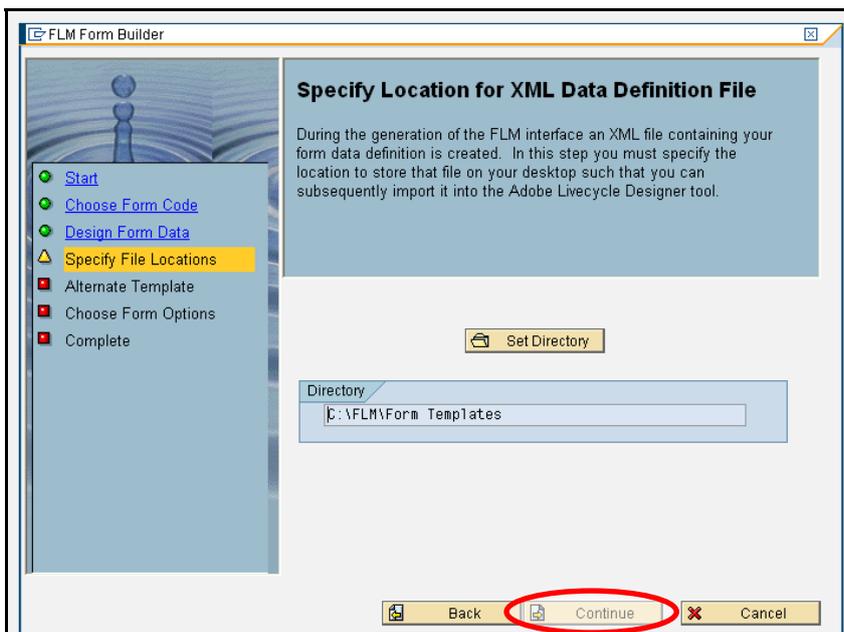


Field Name	Type	PreP	F4	Val	Sub	Der	Subform
PREPOP	Numeric field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				SUBFORM_1
DROPDOWN_1	Character field	<input type="checkbox"/>	<input checked="" type="checkbox"/>				SUBFORM_2
DROPDOWN_2	Character field	<input type="checkbox"/>	<input checked="" type="checkbox"/>				SUBFORM_2
VALIDATION	Numeric field	<input type="checkbox"/>	<input type="checkbox"/>				SUBFORM_3

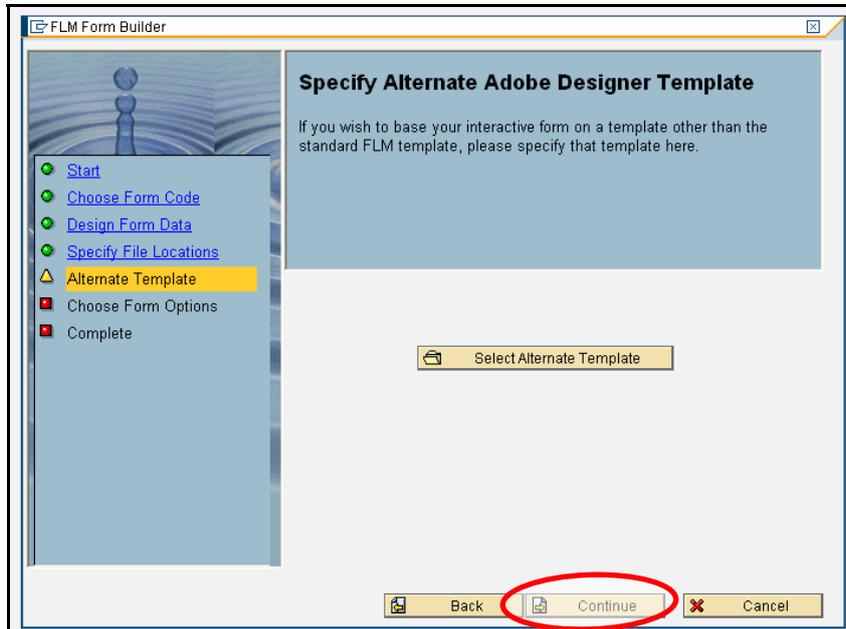
Click on 'Return to FLM Wizard' in the bottom-left hand corner to exit the data designer. Click 'Continue'.



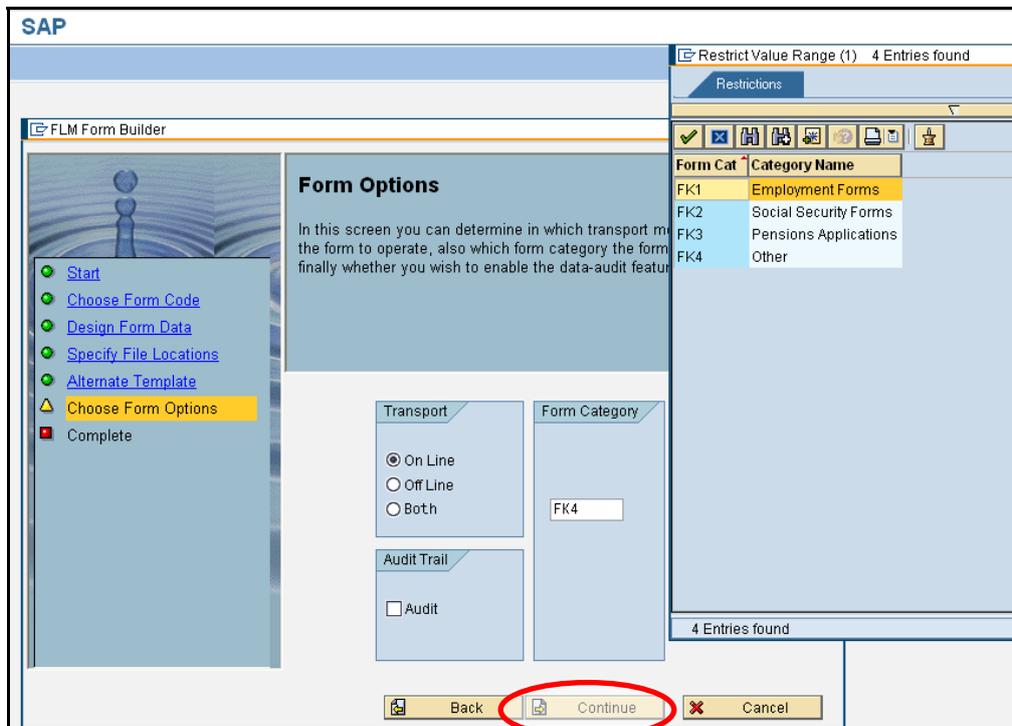
FLM automatically creates a directory on your computer in which to store the finished form file. Click 'continue'.



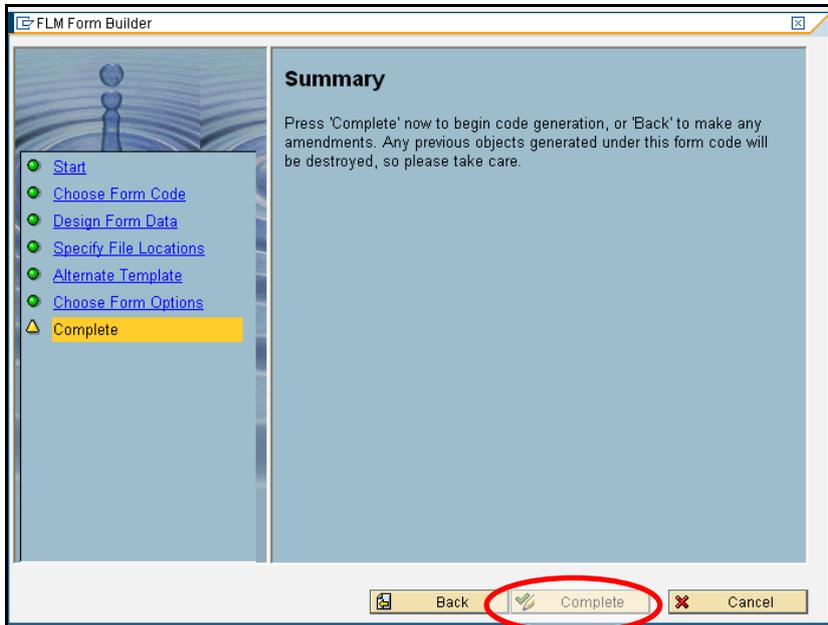
We will be using the standard FLM template for this exercise, so click 'Continue'



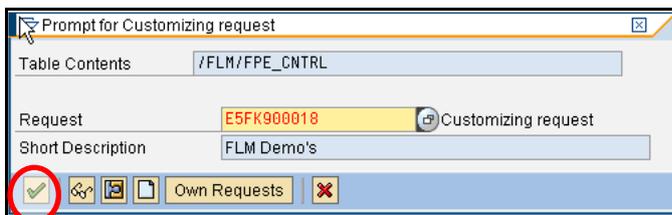
Select the following form options: Online transport, category FK4 (other). Click Continue.



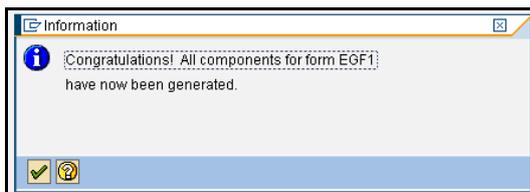
Click 'Continue' to begin form code generation



Click the  to complete the process

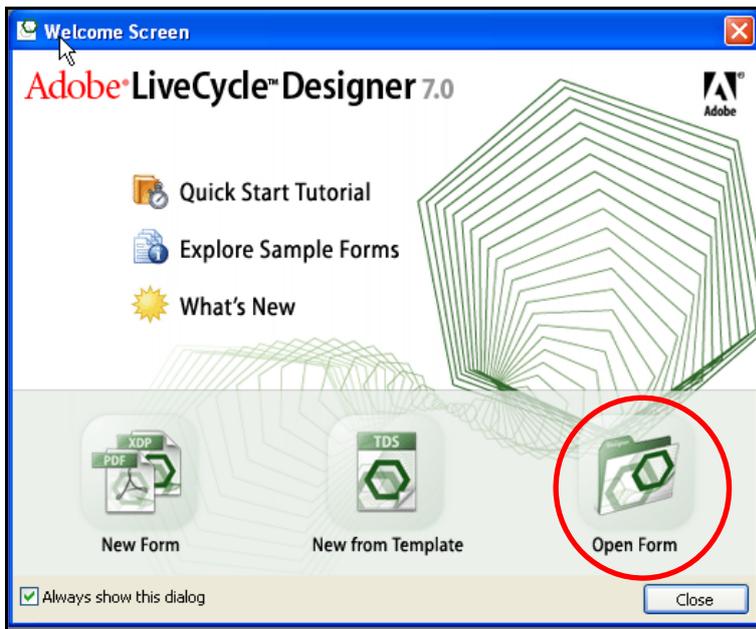


This message will be displayed. Click the  to exit the wizard and return to the IMG menu.

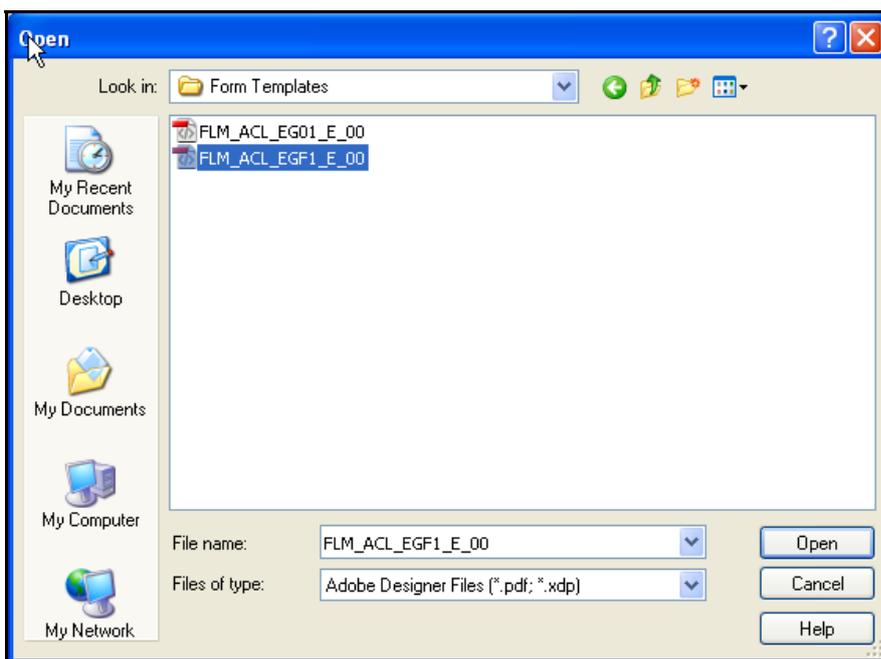


3 Designing the layout in Adobe Designer

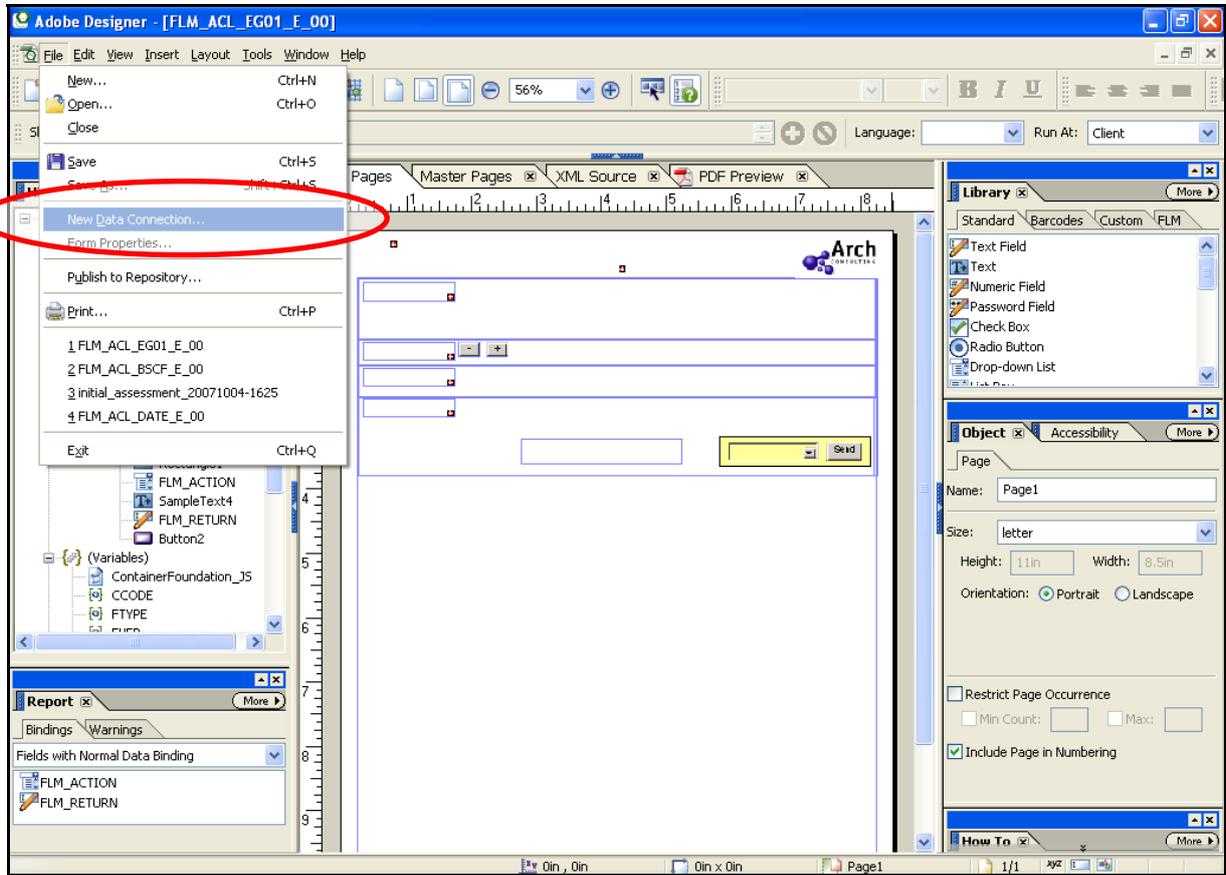
Once the form's data definition has been created, open your form template in Adobe Designer. It will be in the C:/FLM/Form Templates folder.



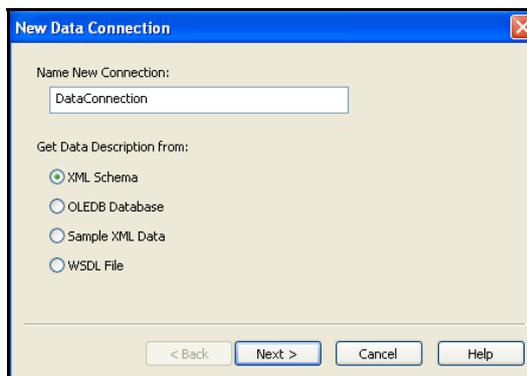
The file will have the format: FLM_[3-digit customer code]_[4-digit form code]_E_[version number]



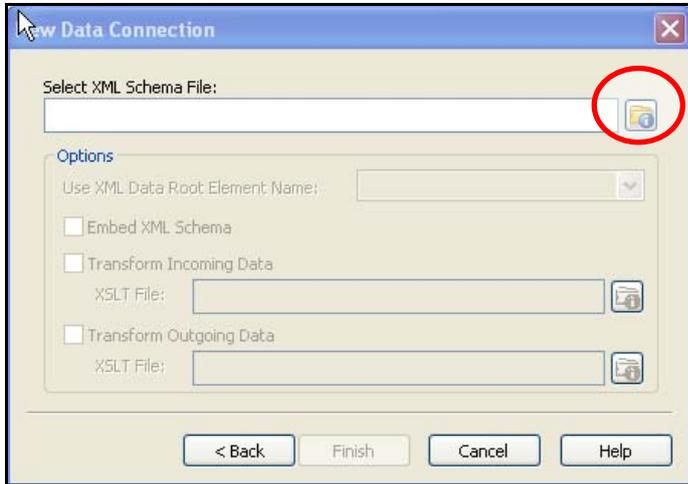
Go to File> New Data Connection



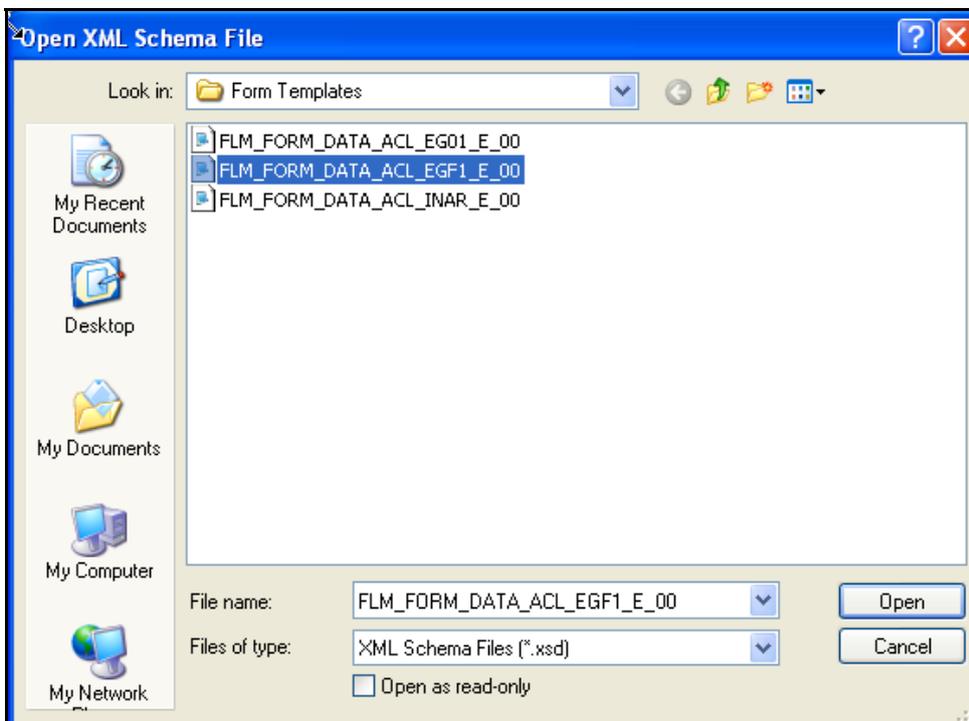
Select 'get data connection from XML schema'. Click Next.



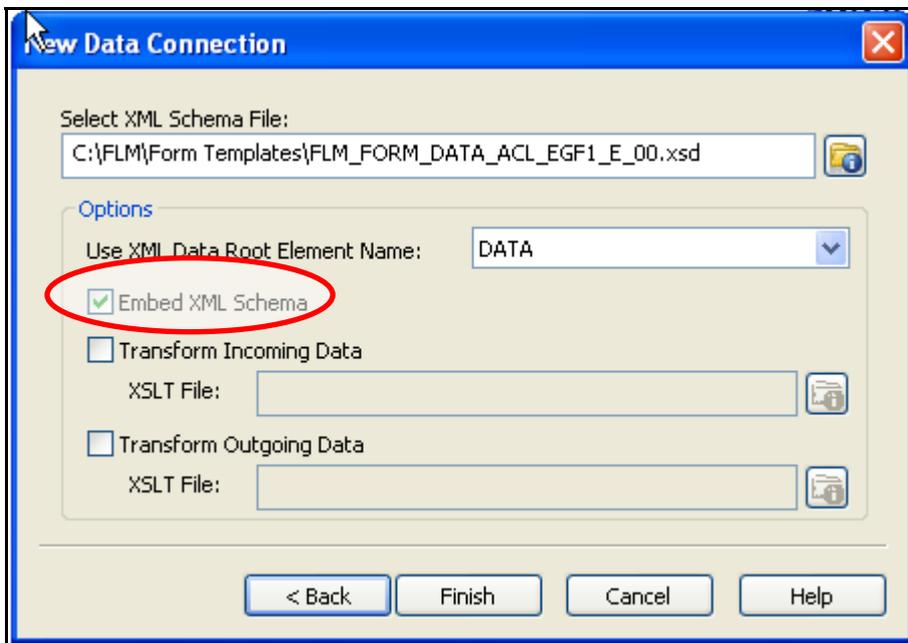
Open the directory and select the FLM form. It will have a file name of FLM_FORM_DATA_[3-digit customer code]_[4-digit form code]_E_[version number]



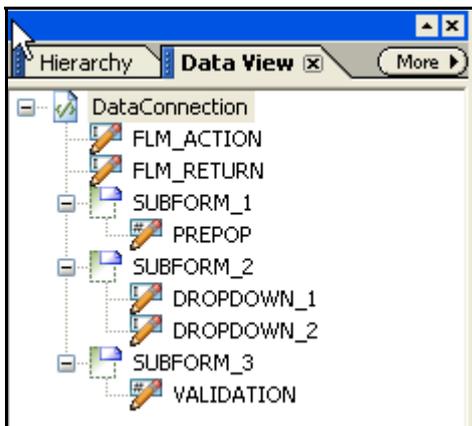
Click 'Open'



Check 'embed XML schema' and click 'Finish'



Now the following appears in the 'Data View' tab next to the form hierarchy on the left hand side:



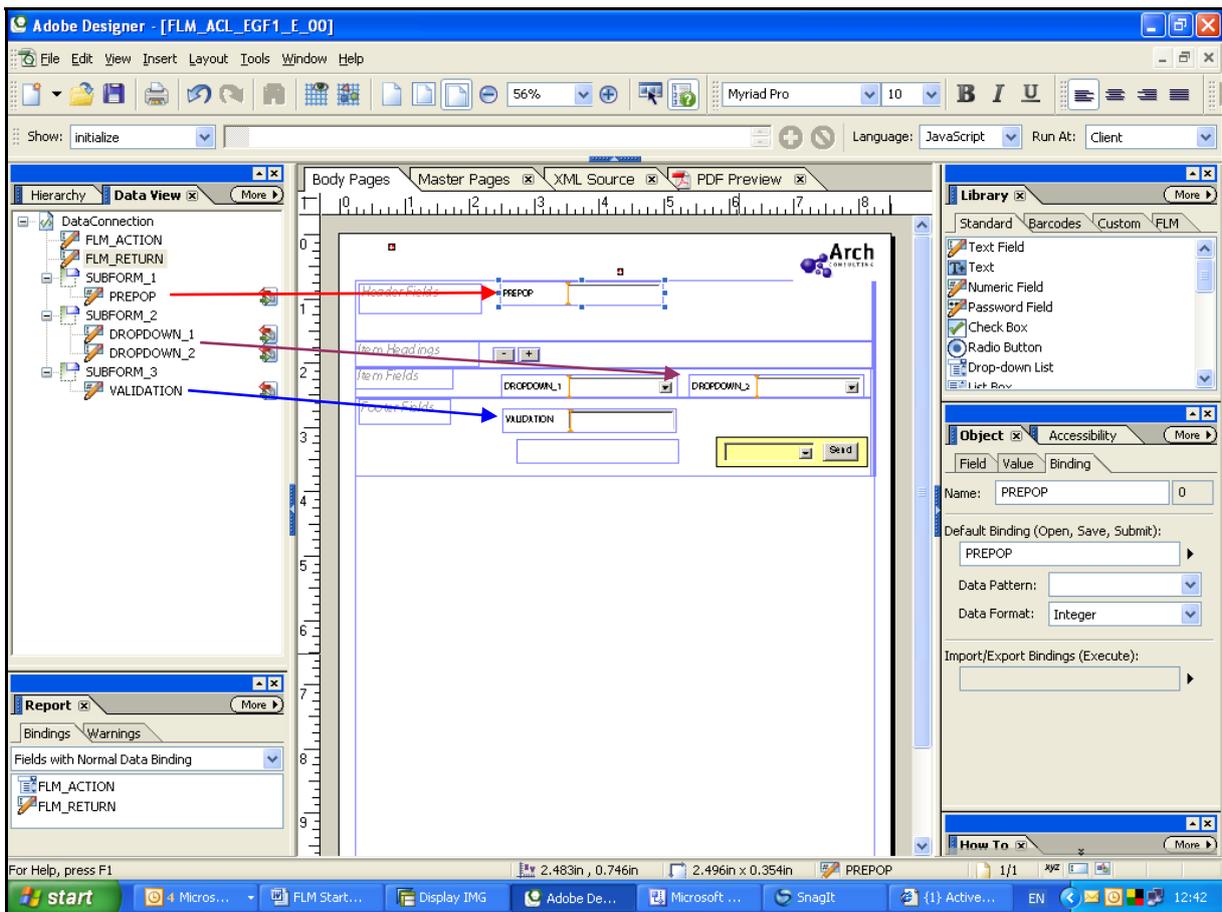
H The Data View tab now contains the schema you defined in the FLM wizard. Subform_1 will correspond to the 'Header' field on the template, Subform_2 corresponds to 'Items' and Subform_3 corresponds to 'Footer'. 'FLM_Action' and 'FLM_Return' are required by the system so are generated automatically.

The next step is to drag-and-drop the fields in the Data View onto the corresponding form fields. Do not drag-and-drop the subforms.

Drag 'Prepop' onto the subform marked 'Header Fields'

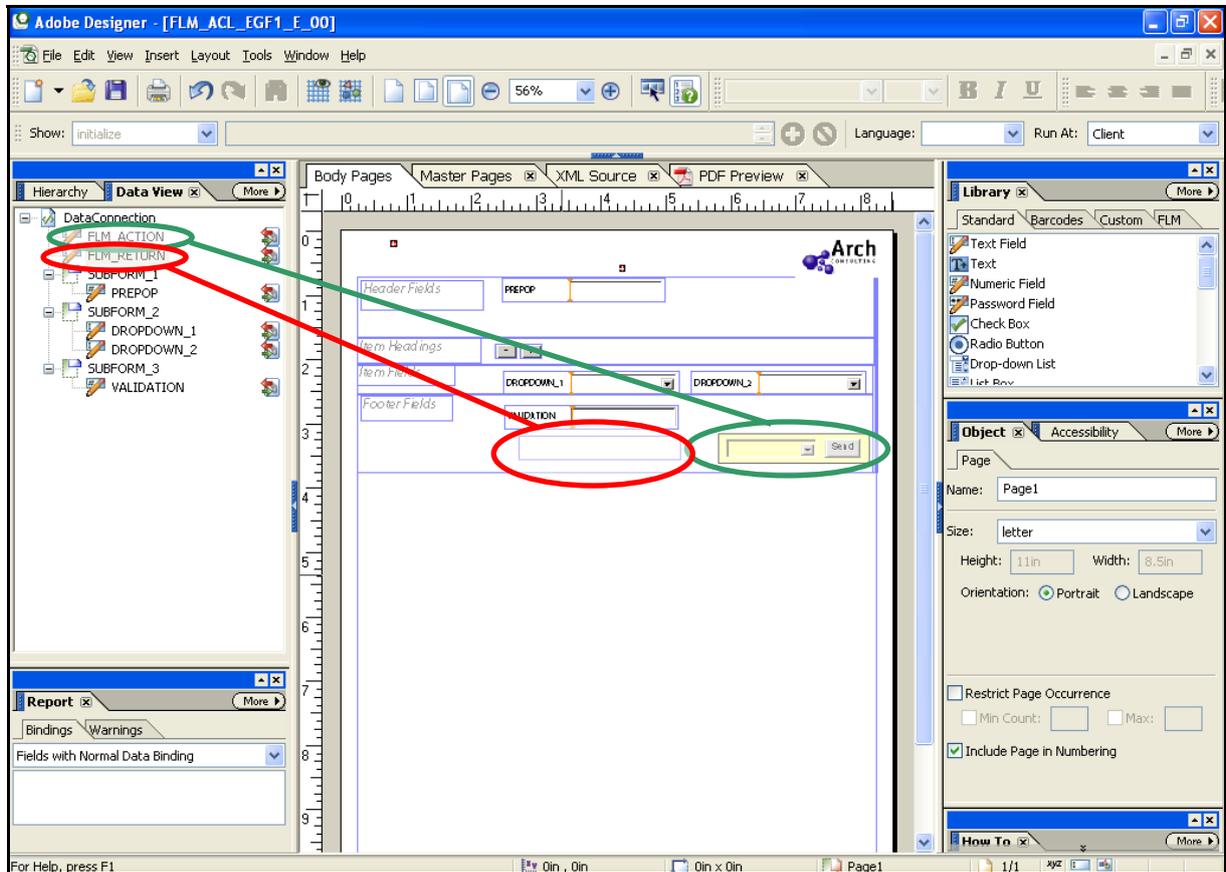
Drag 'Dropdown_1' and 'Dropdown_2' onto the 'Item Fields' subform

Drag 'Validation' onto the 'Footer Fields' subform



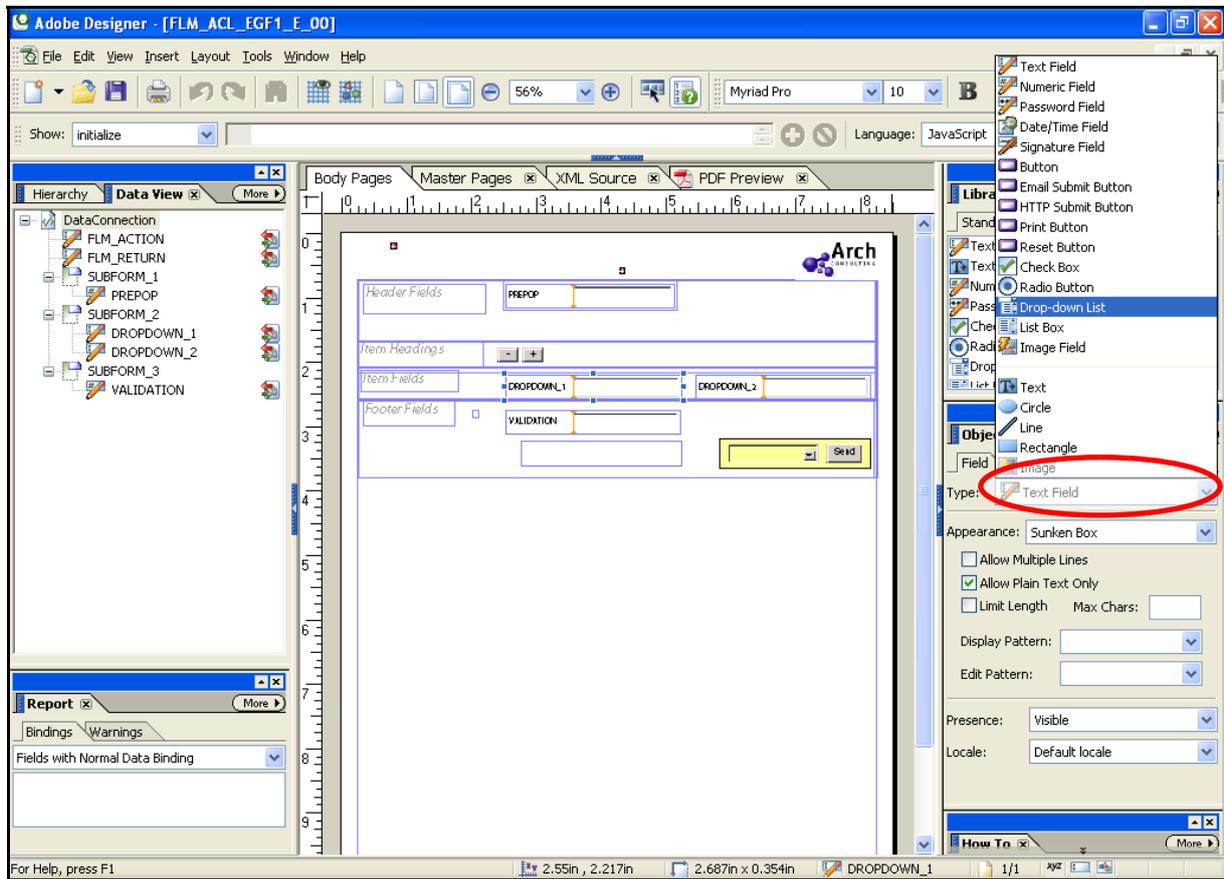
When the fields are successfully bound, the  icon will appear next to that item in the Data View.

FLM_ACTION should be dragged and dropped onto the dropdown field next to the 'Send' button. FLM_RETURN corresponds to the blank box on the left of the ACTION field as shown.

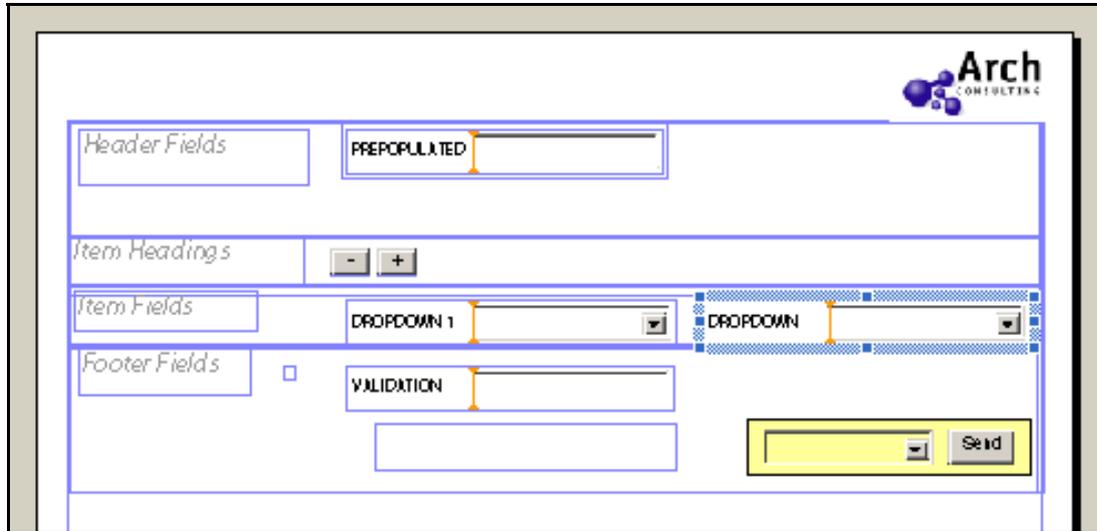


You will need to create a drop-down chevron for both the dropdown fields on the form.

To do this, select the required fields and click on the field type on the right-hand side. Select 'drop down list' from the options:



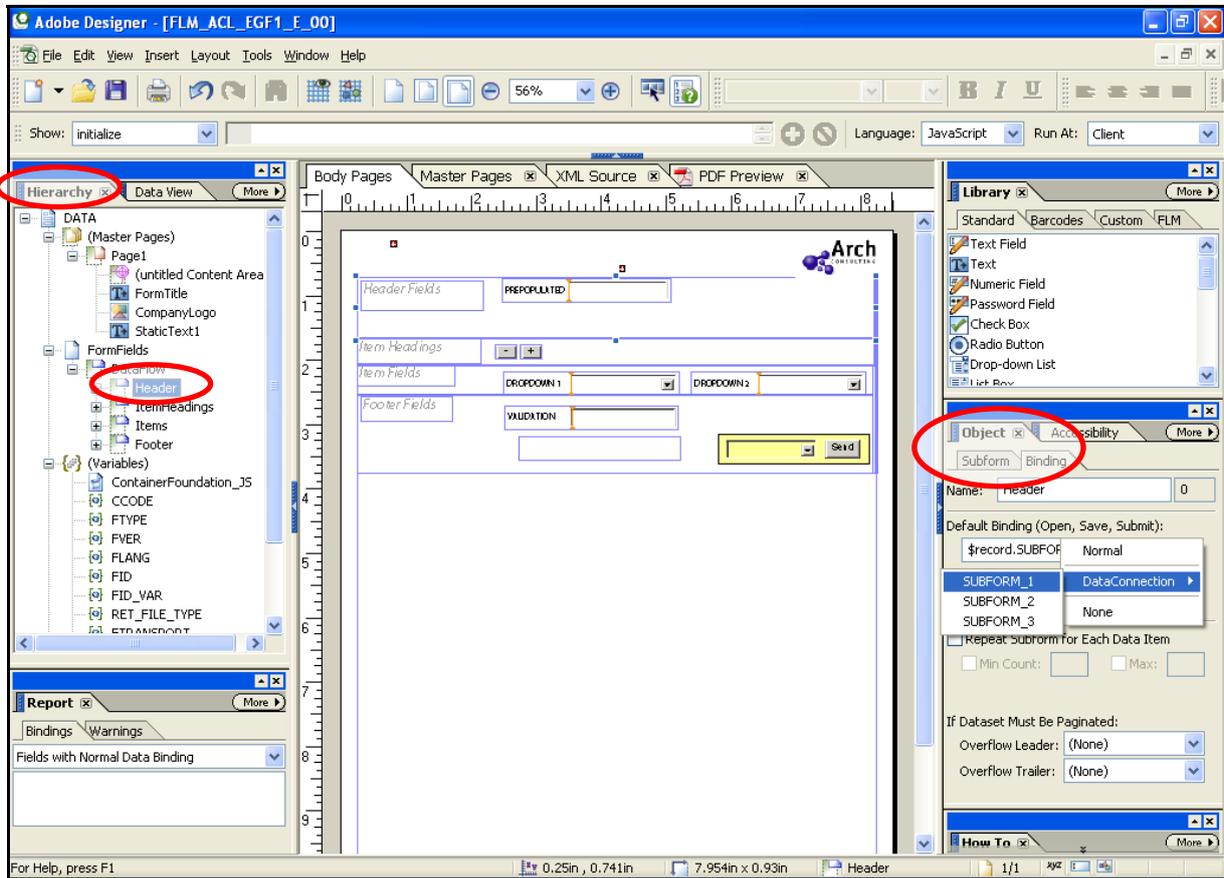
Click in the text boxes denoting the field names. Rename 'Prepop' to 'Prepopulated' and replace the underscores in the dropdown field names with spaces:



i The names of the fields in the data view and in the FLM system do not change when you change the field descriptions on the form, so your field descriptions are not limited by the character and length restrictions in the data designer. It is advisable to keep the data designer names and field descriptions similar or have a system for field nomenclature when working with long forms.

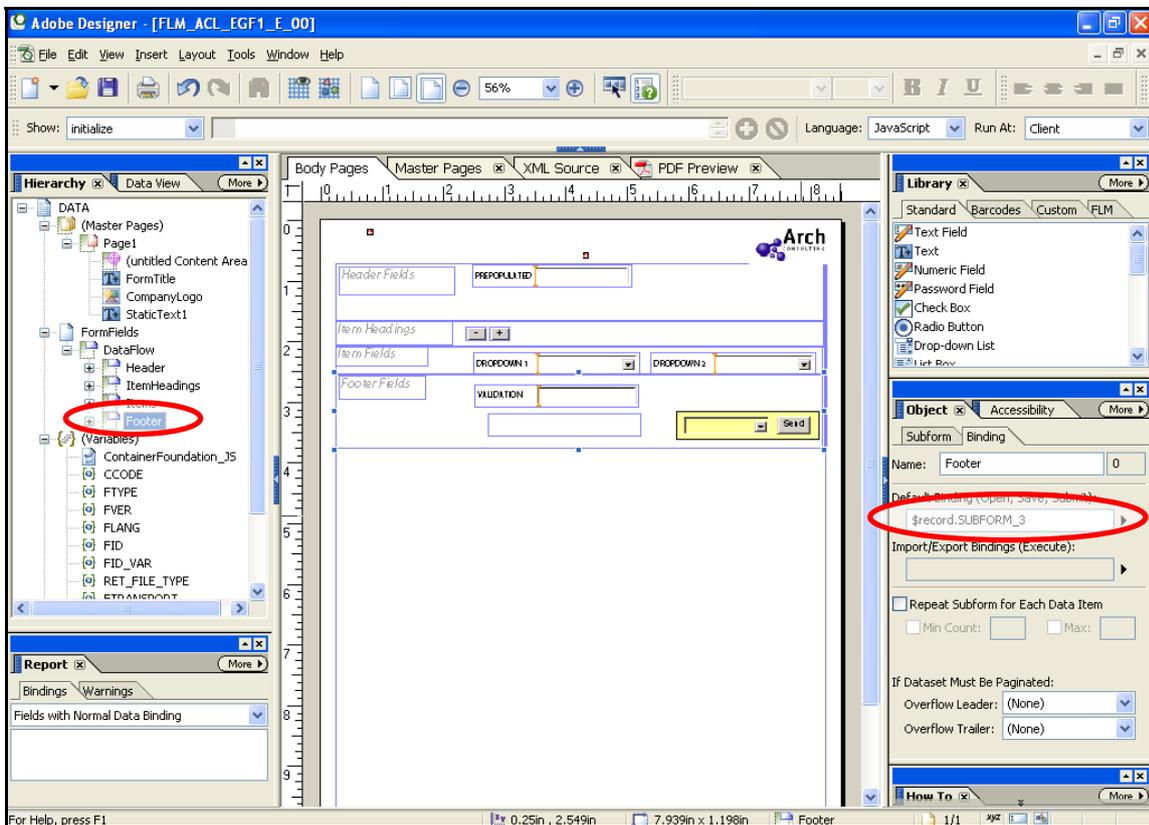
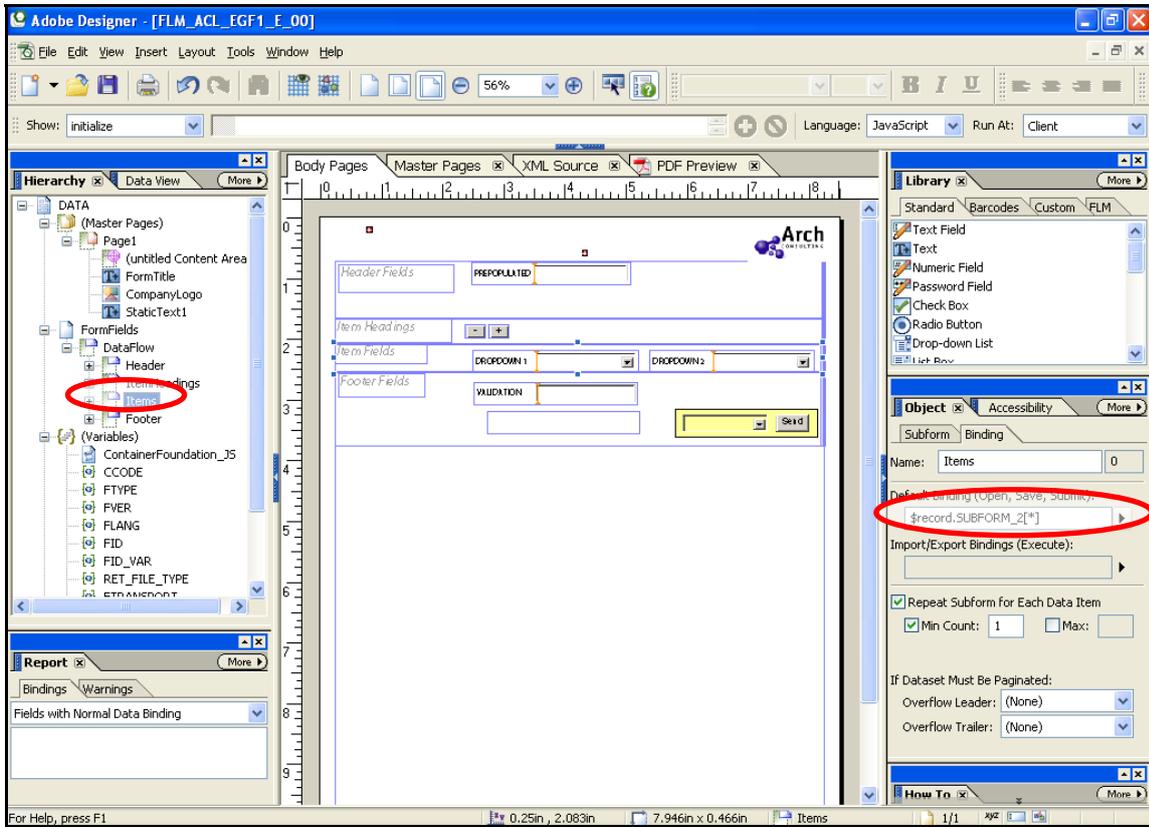
In order to ensure that the form functions correctly, you will need to bind the subforms on the template to the subforms you created in the Form Wizard.

To do this, return to the Hierarchy tab and under 'DataFlow', select the Header field.

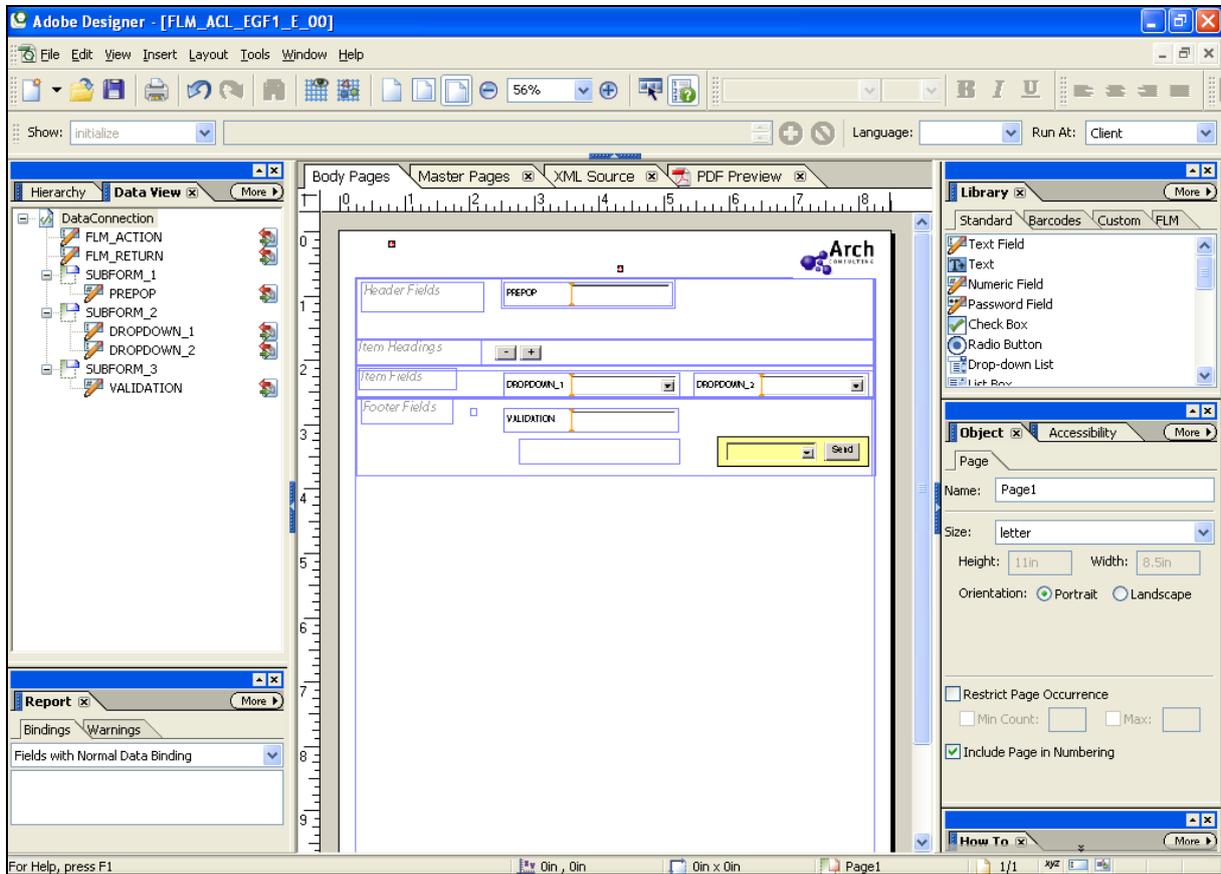


In the Object> Binding menu on the right, select the default binding to SUBFORM_1 by clicking on the  under the default binding and going to DataConnection> SUBFORM_1 as shown.

Repeat the process for the 'Items' and 'Footer' subforms:



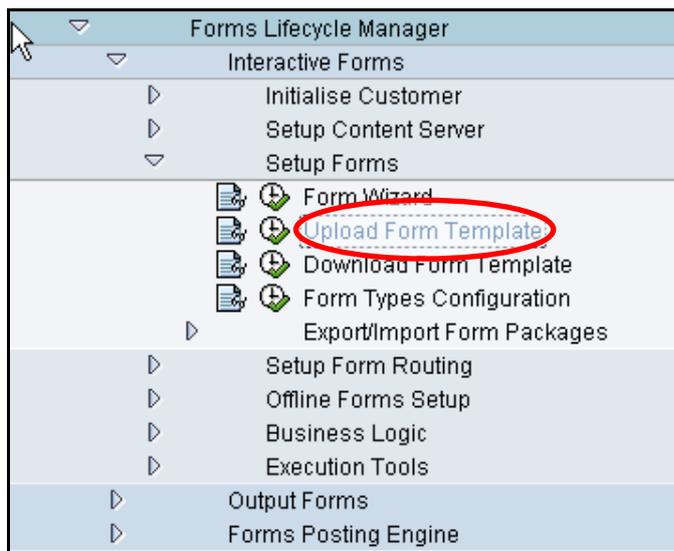
You should now have a form that looks like this:



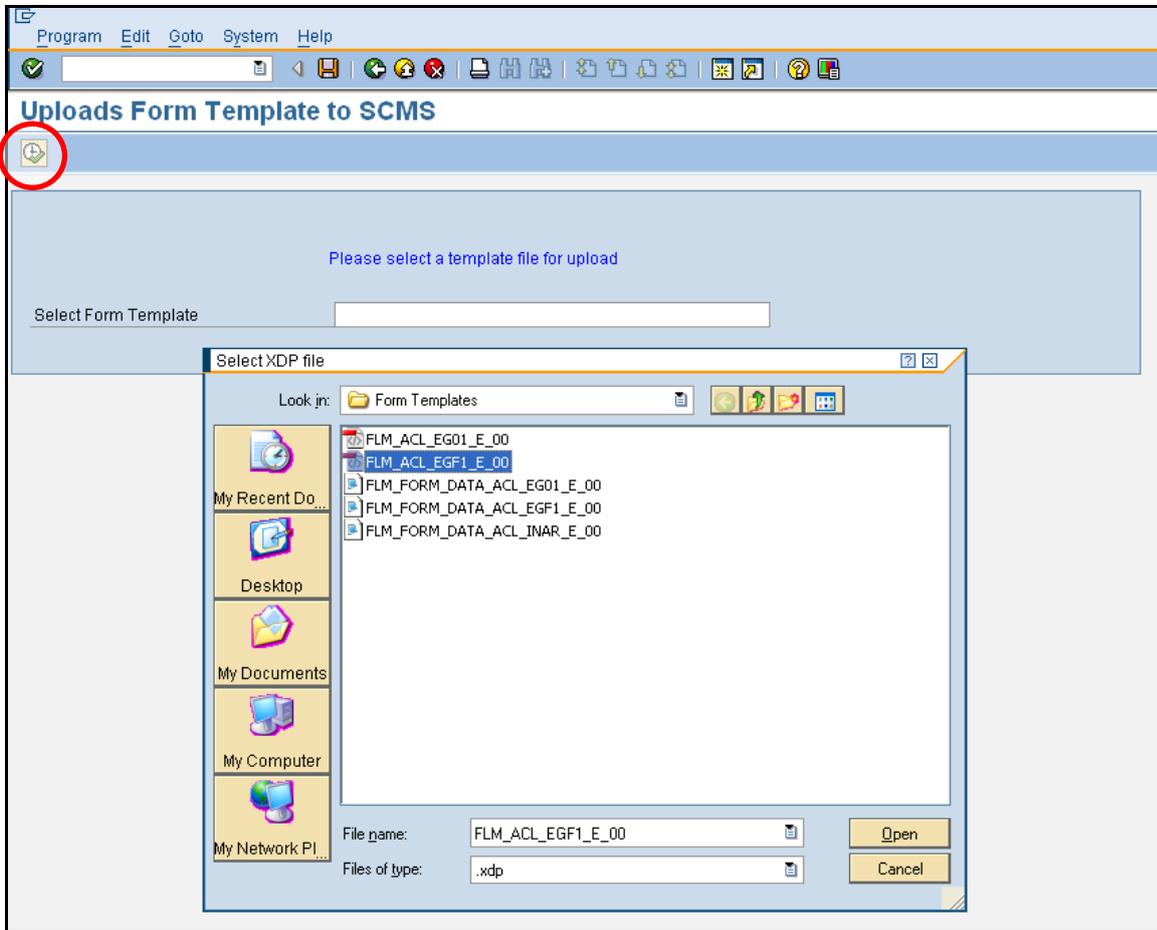
Save the form  and exit Adobe Designer.

4 Adding Business Logic

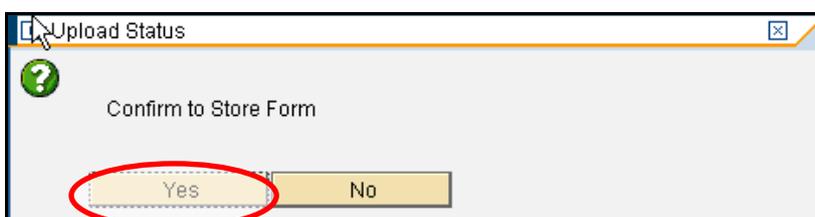
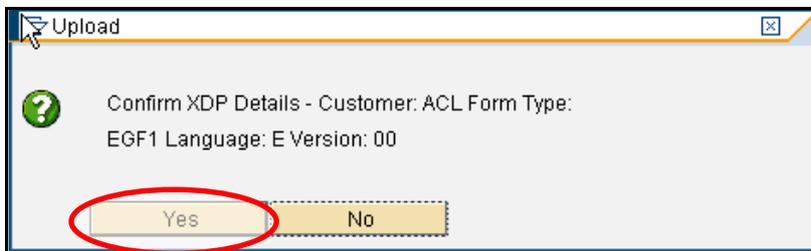
Return to SAP transaction SPRO IMG>Cross Application Components> General Application Functions> Forms Lifecycle Manager and go to 'Upload Form Template'



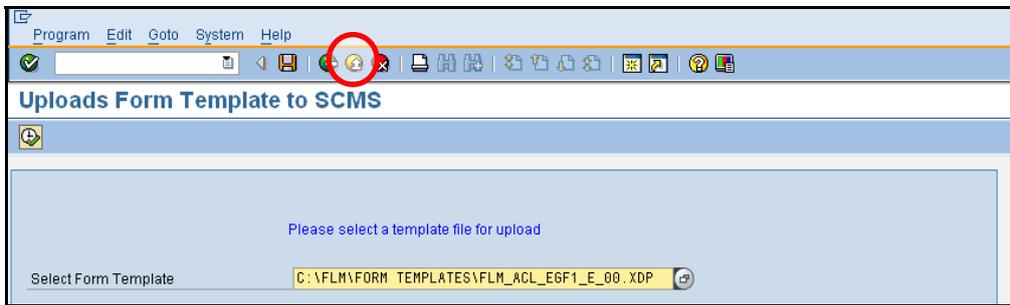
Select the .XDP file you have just been working with. Click the 'Execute' icon on the top-left of the page.



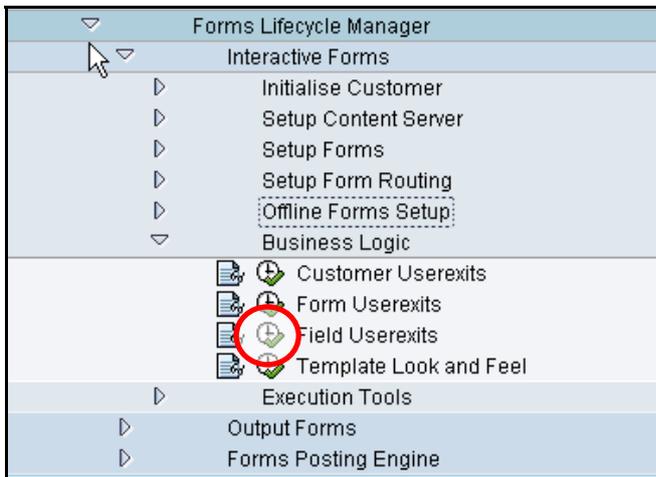
Confirm at the prompts:



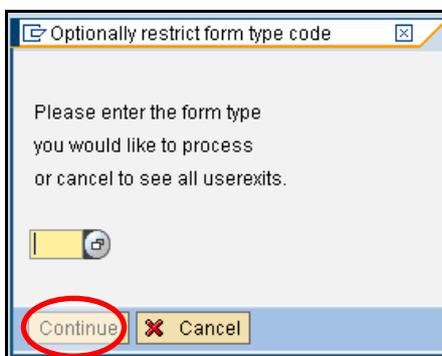
Exit the menu using the  icon at the top of the page.



Go into Field UserExits under business logic from the IMG menu:



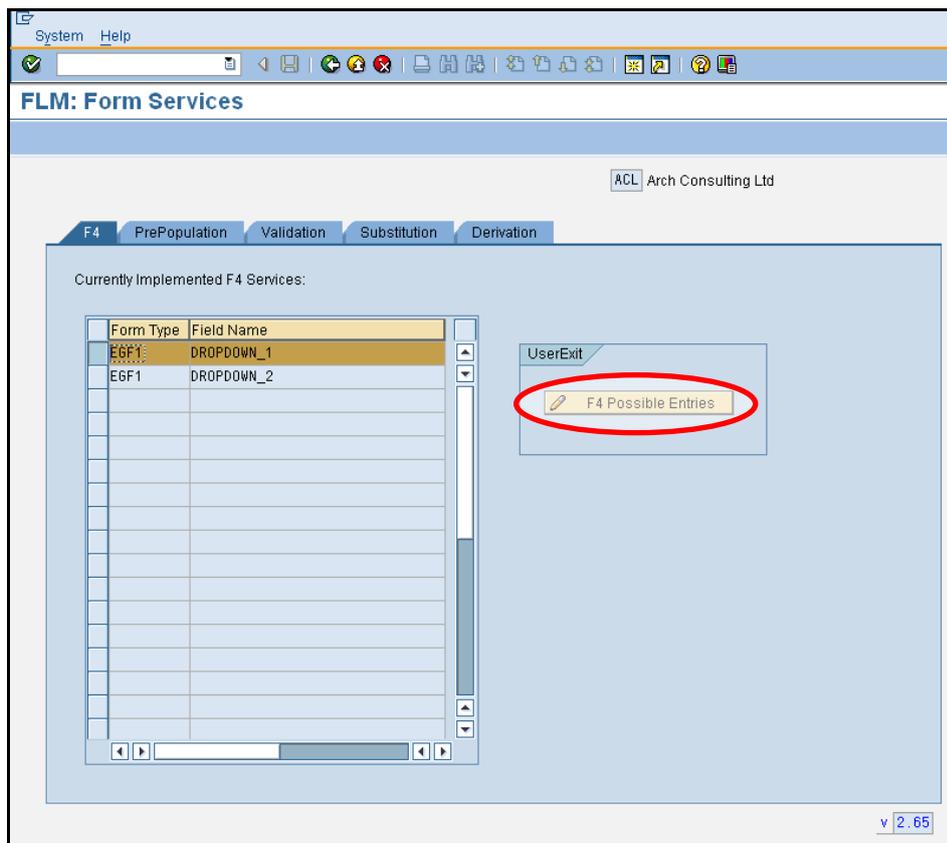
You will receive a prompt to enter the form type code you are working with. Enter 'EGF1' and click 'Continue'



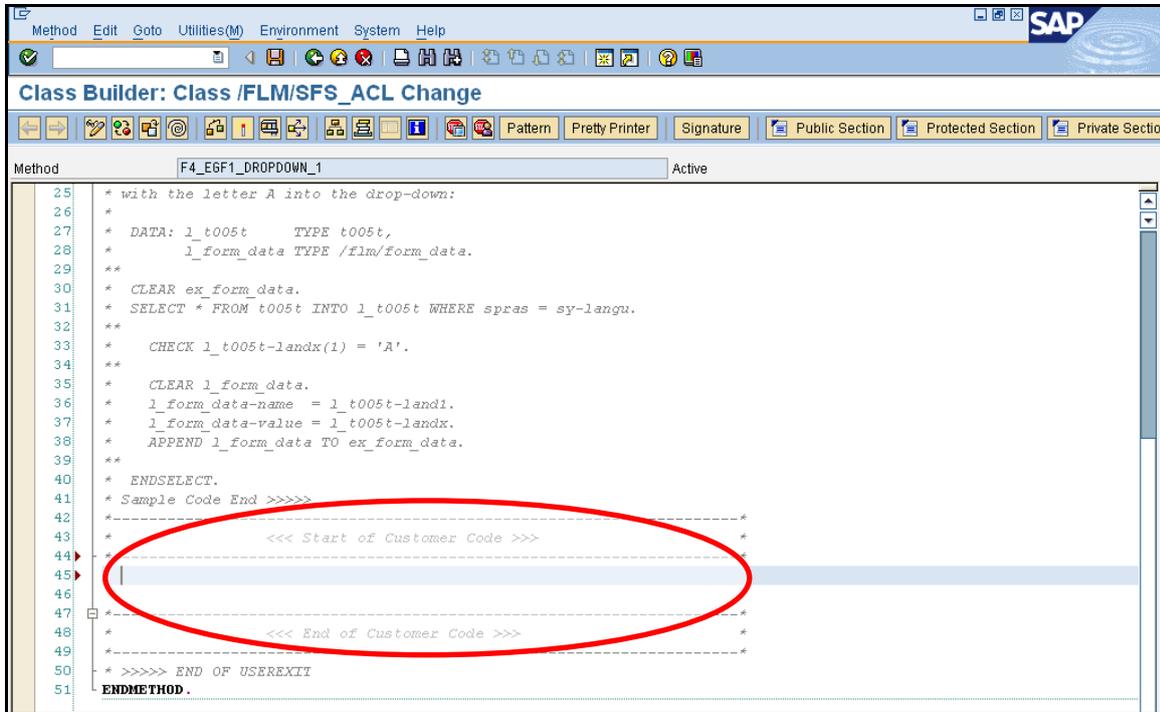
The screen shows a list of the fields that were assigned UserExits in the data designer, by category. To summarise:

- 'Dropdown_1' and 'Dropdown_2' were assigned an F4 values routine
- 'Prepop' was assigned a prepopulation routine
- 'Validation' was assigned a validation routine.

To edit the UserExit code that creates the dropdown options for 'Dropdown_1', select 'Dropdown 1' from the list under the F4 tab and click on 'F4 Possible Entries'



The following screen will appear, containing the UserExit code behind the field 'Dropdown_1'.



```

25 * with the letter A into the drop-down:
26 *
27 * DATA: l_t005t      TYPE t005t,
28 *        l_form_data TYPE /flm/form_data.
29 **
30 * CLEAR ex_form_data.
31 * SELECT * FROM t005t INTO l_t005t WHERE spras = sy-langu.
32 **
33 * CHECK l_t005t-landx(1) = 'A'.
34 **
35 * CLEAR l_form_data.
36 * l_form_data-name = l_t005t-land1.
37 * l_form_data-value = l_t005t-landx.
38 * APPEND l_form_data TO ex_form_data.
39 **
40 * ENDSELECT.
41 * Sample Code End >>>>
42 *-----*
43 * <<<< Start of Customer Code >>>> *
44 * |                               *
45 * |                               *
46 * |                               *
47 *-----*
48 * <<<< End of Customer Code >>>> *
49 *-----*
50 * >>>> END OF USEREXIT
51 ENDMETHOD.

```

If you scroll down to the bottom of the page, there is a space denoted by <<<< Start of Customer code >>>> and <<<< End of Customer Code >>>>

This is where you will enter the code to define the possible entries in the dropdown. Cut and paste the following code into the space:

```

DATA: l_t005t      TYPE t005t,
      l_form_data TYPE /flm/form_data.
*
  CLEAR ex_form_data.
  SELECT * FROM t005t INTO l_t005t WHERE spras = sy-langu.
*
  CLEAR l_form_data.
  l_form_data-name = l_t005t-land1.
  l_form_data-value = l_t005t-NATIO.

  CHECK l_t005t-NATIO is not initial.

  APPEND l_form_data TO ex_form_data.
*
  ENDSELECT.

```

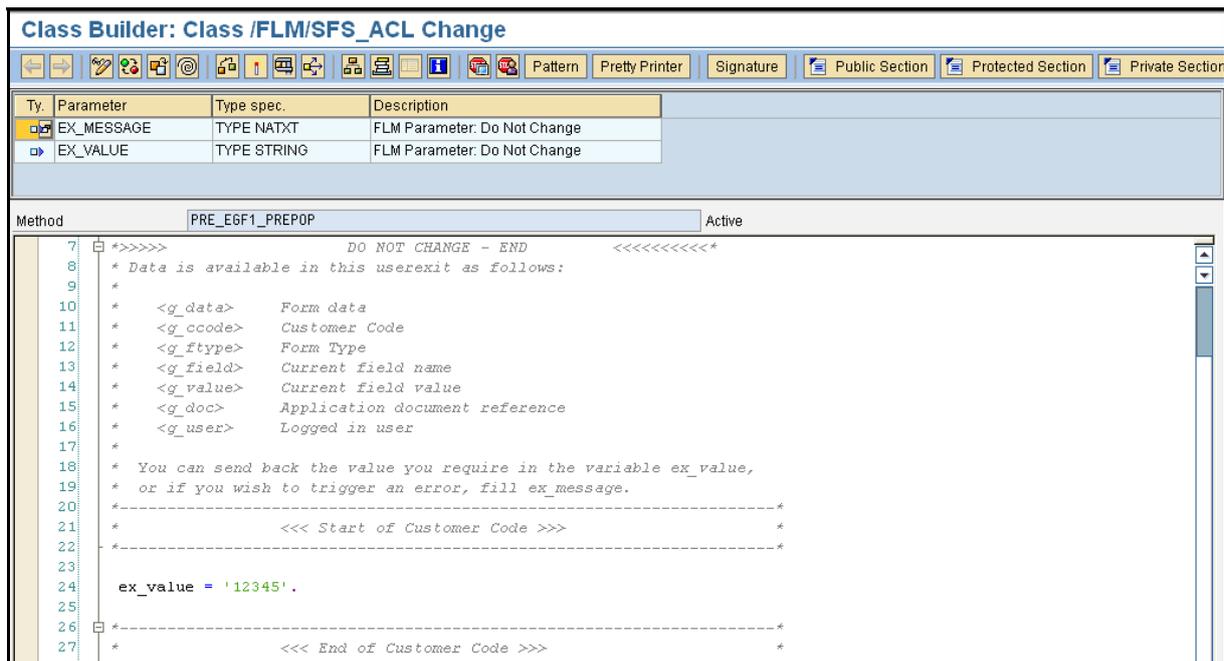
Click Activate  and then confirm.

 This ABAP code will fill the dropdown menu with values from the table in SAP called t005t, excluding blank rows. Table t005t in this case contains a list of nationalities. This is a simple example, but you can enter any ABAP code here to use SAP's resource to populate the dropdown options.

Enter the following code into the space denoted by <<<< Start of Customer code >>>> and <<<< End of Customer Code >>>> as before:

```
ex_value = '12345'.
```

 This code will prepopulate the field with the value '12,345'. As with the F4 code, any ABAP code can be entered here to prepopulate the field.



Class Builder: Class /FLM/SFS_ACL Change

Ty.	Parameter	Type spec.	Description
	EX_MESSAGE	TYPE NATXT	FLM Parameter: Do Not Change
	EX_VALUE	TYPE STRING	FLM Parameter: Do Not Change

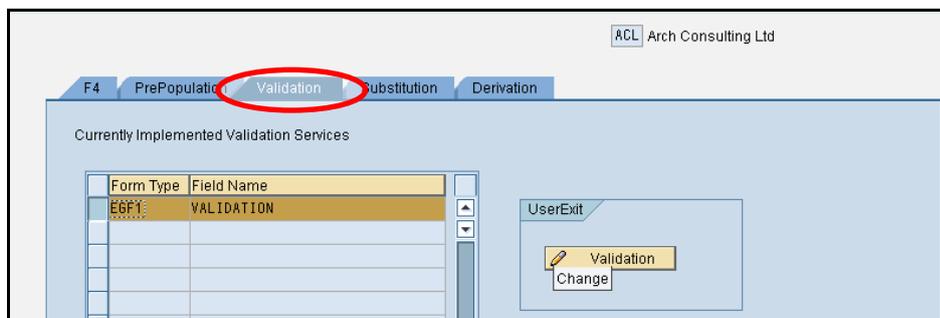
Method: PRE_EGF1_PREPOP Active

```

7 | * >>>>>> DO NOT CHANGE - END <<<<<<<<<<<<
8 | * Data is available in this userexit as follows:
9 | *
10 | * <g_data> Form data
11 | * <g_ccode> Customer Code
12 | * <g_fotype> Form Type
13 | * <g_field> Current field name
14 | * <g_value> Current field value
15 | * <g_doc> Application document reference
16 | * <g_user> Logged in user
17 | *
18 | * You can send back the value you require in the variable ex_value,
19 | * or if you wish to trigger an error, fill ex_message.
20 | *-----*
21 | * <<< Start of Customer Code >>> *
22 | *-----*
23 |
24 | ex_value = '12345'.
25 |
26 | *-----*
27 | * <<< End of Customer Code >>> *
  
```

Click Save  and then confirm. Activate the code using the  tool as before and then exit .

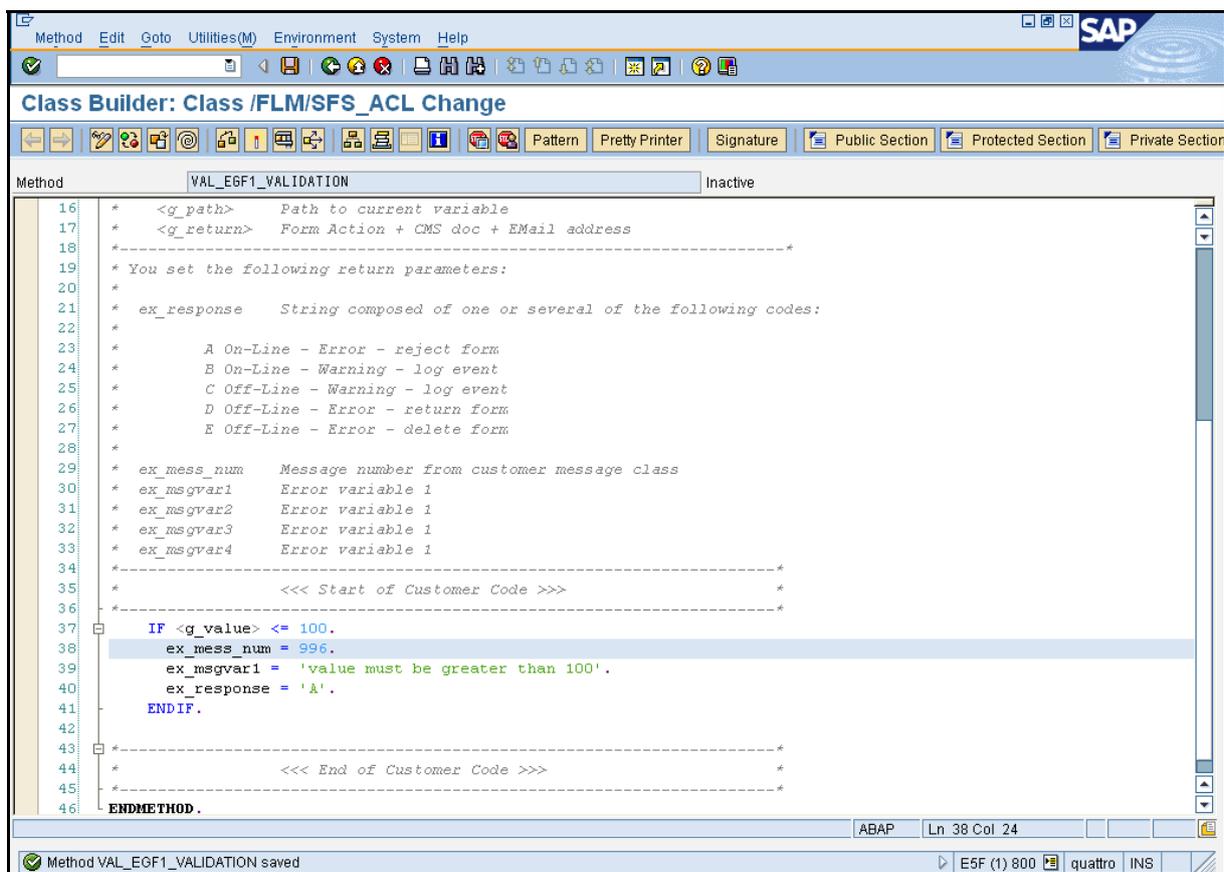
Enter the Validation tab, select the field and click on the  button.



Copy and paste the following code into the same space as before:

```
IF <g_value> <= 100.
  ex_mess_num = 996.
  ex_msgvar1 = 'value must be greater than 100'.
  ex_response = 'A'.
ENDIF.
```

 This code will automatically validate the value entered into this field to ensure that it is over 100, and return an error message: 'value must be greater than 100' if this condition is not met.



The screenshot shows the SAP Class Builder interface for the class /FLM/SFS_ACL Change. The method VAL_EGF1_VALIDATION is selected and is currently inactive. The code editor displays the following code:

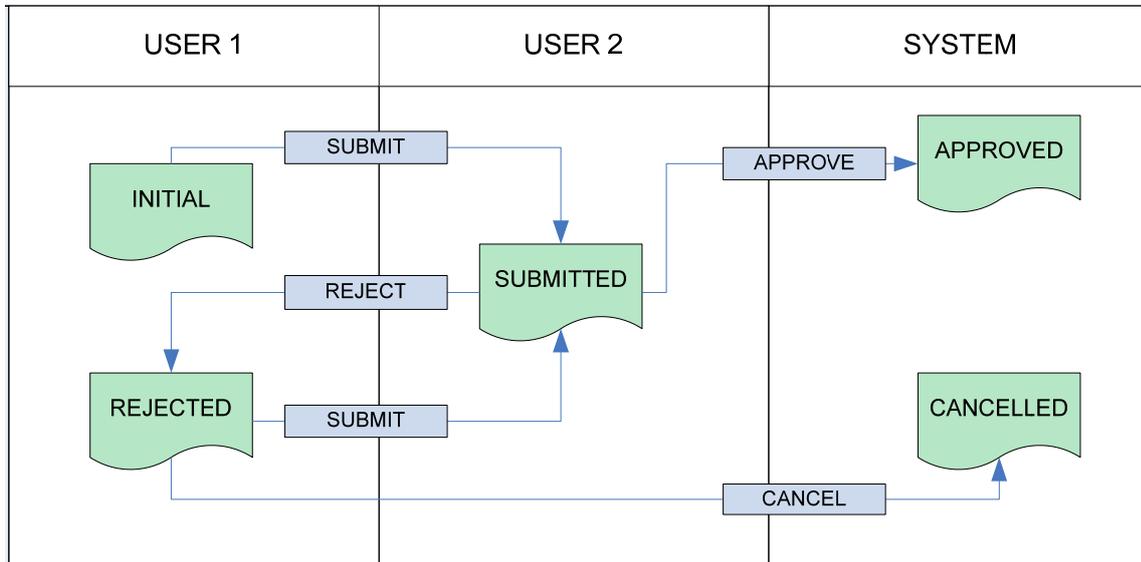
```
16 * <g_path> Path to current variable
17 * <g_return> Form Action + CMS doc + EMail address
18 -----*
19 * You set the following return parameters:
20 *
21 * ex_response String composed of one or several of the following codes:
22 *
23 * A On-Line - Error - reject form
24 * B On-Line - Warning - log event
25 * C Off-Line - Warning - log event
26 * D Off-Line - Error - return form
27 * E Off-Line - Error - delete form
28 *
29 * ex_mess_num Message number from customer message class
30 * ex_msgvar1 Error variable 1
31 * ex_msgvar2 Error variable 1
32 * ex_msgvar3 Error variable 1
33 * ex_msgvar4 Error variable 1
34 -----*
35 * <<< Start of Customer Code >>> *
36 -----*
37 IF <g_value> <= 100.
38   ex_mess_num = 996.
39   ex_msgvar1 = 'value must be greater than 100'.
40   ex_response = 'A'.
41 ENDIF.
42 -----*
43 * <<< End of Customer Code >>> *
44 -----*
45 *
46 ENDMETHOD.
```

The code between lines 37 and 41 is highlighted in blue, indicating it is the active code being edited. The status bar at the bottom shows 'Method VAL_EGF1_VALIDATION saved' and 'ABAP Ln 38 Col 24'.

Click Save  and then confirm. Activate the code using the  tool as before and then exit .

5 Form Routing

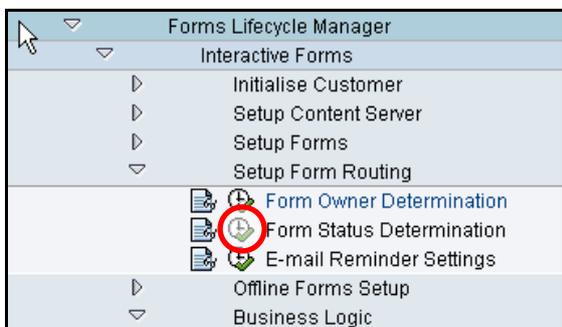
Here we will setup a simple routing for the form:



This routing can be represented by a table of actions:

User	Form Status	Action	New User	New Status
Initial user (User 1)	Initial	Submit	Approver (User 2)	Submitted
Approver (User2)	Submitted	Approve	System	Approved
Approver (User 2)	Submitted	Reject	Initial user (User 1)	Rejected
Initial user (User 1)	Rejected	Submit	Approver (User 2)	Submitted
Initial user (User 1)	Rejected	Cancel	System	Cancelled

To configure this workflow into FLM, first go into Form Status Determination from the IMG menu in Transaction SPRO:

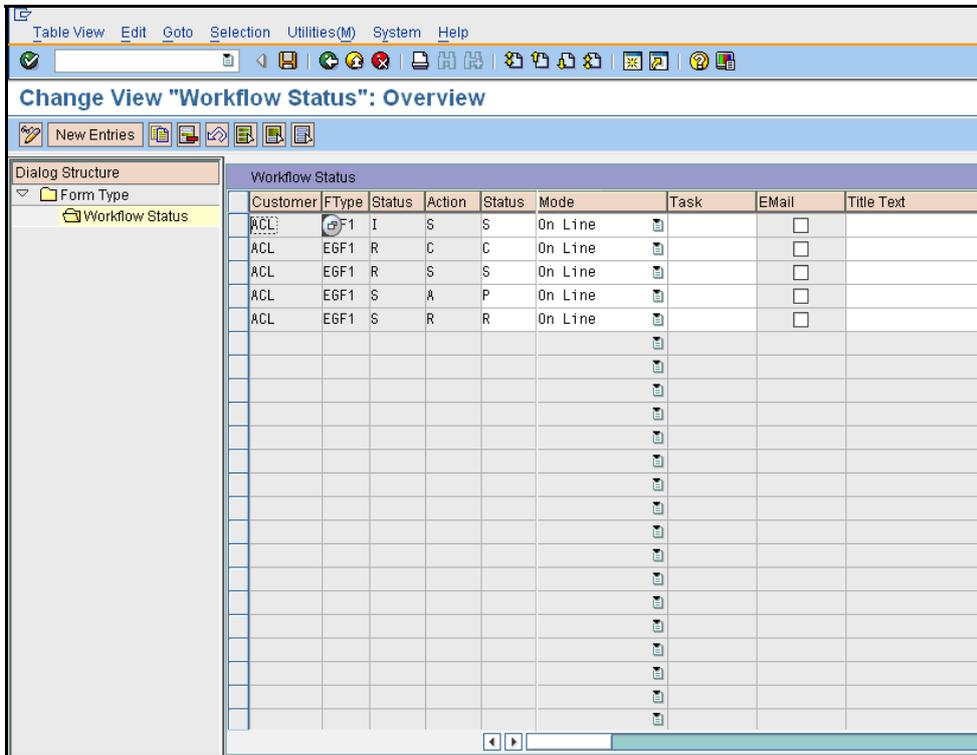


From the second, third and fifth columns of the routing table above we can derive the following other actions:

- Submitted → Approve = End of life
- Submitted → Reject = Rejected
- Rejected → Submit = Submitted
- Rejected → Cancel = Cancelled

Go to 'New Entries' and enter the above status processes into the table as shown below. When you have finished click the 'Save' icon to store the data.

I This table can be used for more advanced routing configurations, e.g. email reminders and version variations, so it has a number of options that we won't use for the sake of this example.



Customer	FType	Status	Action	Status	Mode	Task	Email	Title Text
ACL	EGF1	I	S	S	On Line		<input type="checkbox"/>	
ACL	EGF1	R	C	C	On Line		<input type="checkbox"/>	
ACL	EGF1	R	S	S	On Line		<input type="checkbox"/>	
ACL	EGF1	S	A	P	On Line		<input type="checkbox"/>	
ACL	EGF1	S	R	R	On Line		<input type="checkbox"/>	

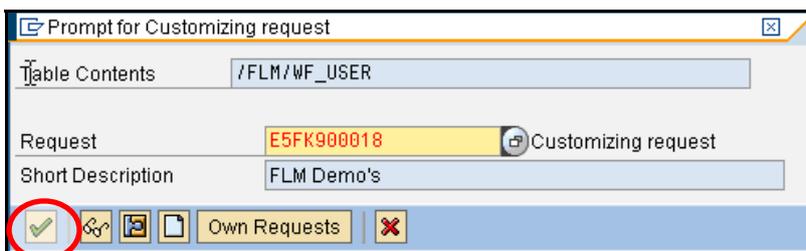


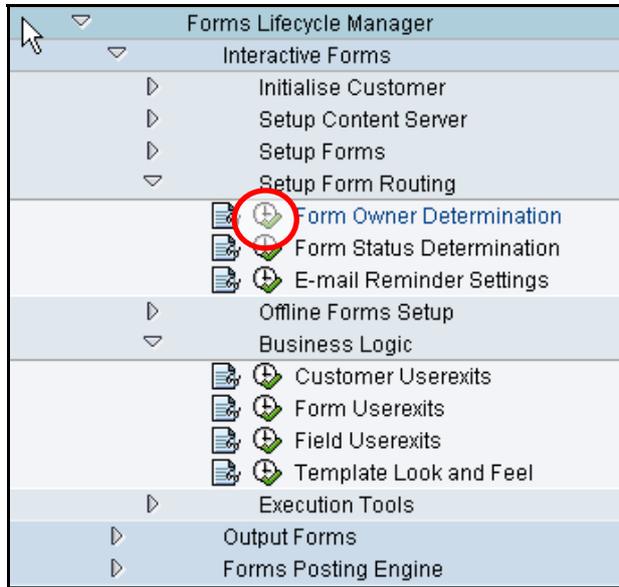
Table Contents: /FLM/WF_USER

Request: E5FK900018 Customizing request

Short Description: FLM Demo's

Buttons: Own Requests

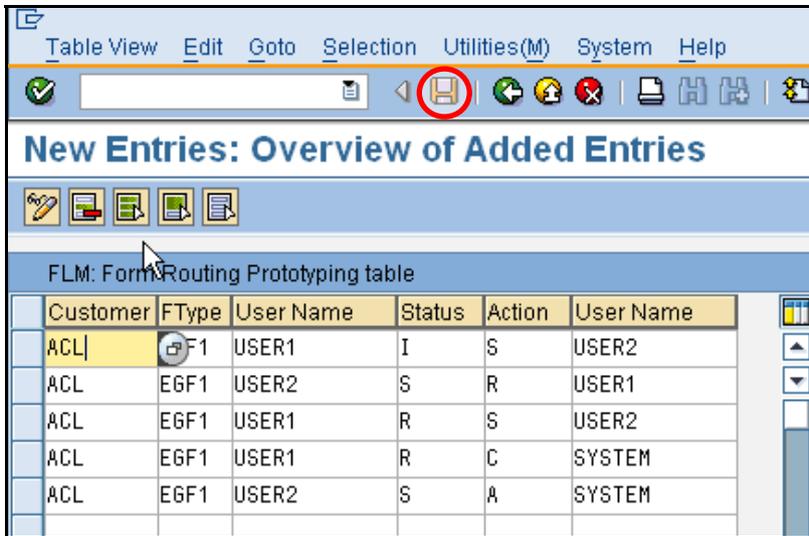
Next, go into 'Form Owner Determination' from the IMG menu:



We will also need configure changes of user, as defined by the routing table:

User	Form Status	Action	New User	New Status
Initial user (User 1)	Initial	Submit	Approver (User 2)	Submitted
Approver (User2)	Submitted	Approve	System	Approved
Approver (User 2)	Submitted	Reject	Initial user (User 1)	Rejected
Initial user (User 1)	Rejected	Submit	Approver (User 2)	Submitted
Initial user (User 1)	Rejected	Cancel	System	Cancelled

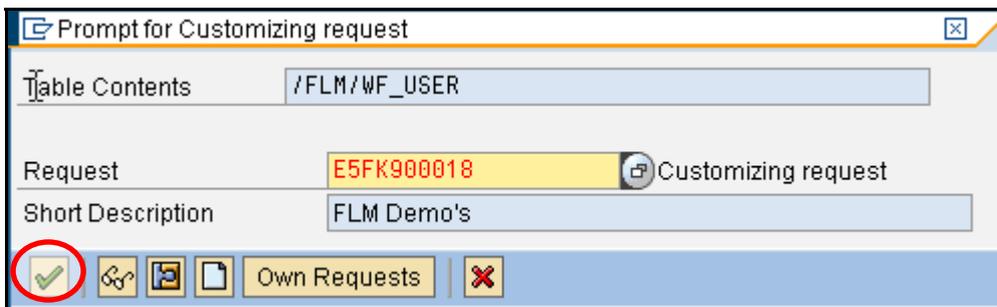
Go into **New Entries** to configure the form user routing by entering the information as follows. Click the Save icon to store.



Customer	FType	User Name	Status	Action	User Name
ACL	E6F1	USER1	I	S	USER2
ACL	E6F1	USER2	S	R	USER1
ACL	E6F1	USER1	R	S	USER2
ACL	E6F1	USER1	R	C	SYSTEM
ACL	E6F1	USER2	S	A	SYSTEM

I 'SYSTEM' is not a configured user, however it is used here to transfer ownership of the form from the user who submitted it and hence remove it from their inbox. The form will be stored in the system without an 'owner', ready for any subsequent actions, such as data posting, to be applied to it.

Click on the green tick to confirm.



Exit the menu using the  icon at the top of the page.

6 Launching the form in the portal

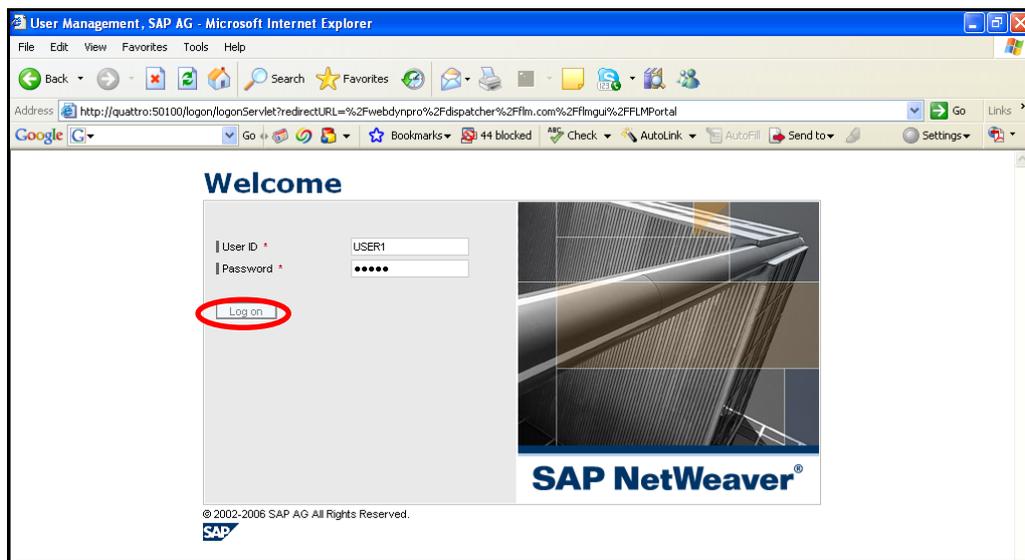
Launch the FLM portal in a browser using the URL:

<http://quattro:50100/webdynpro/dispatcher/flm.com/flmgui/flmportal>

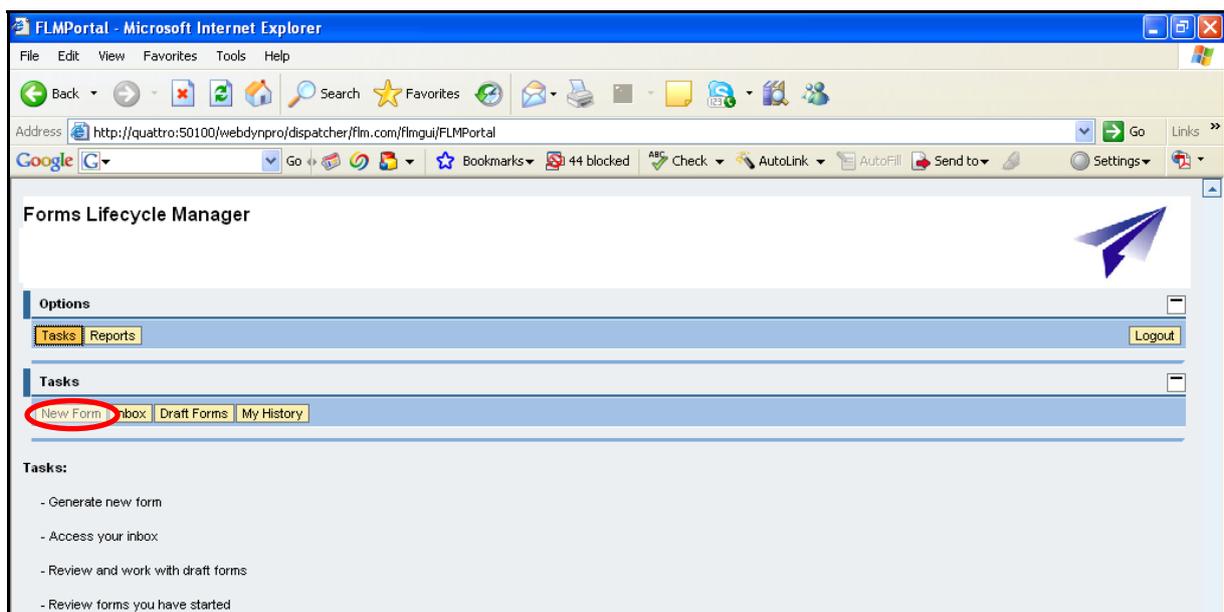
system host name

http host

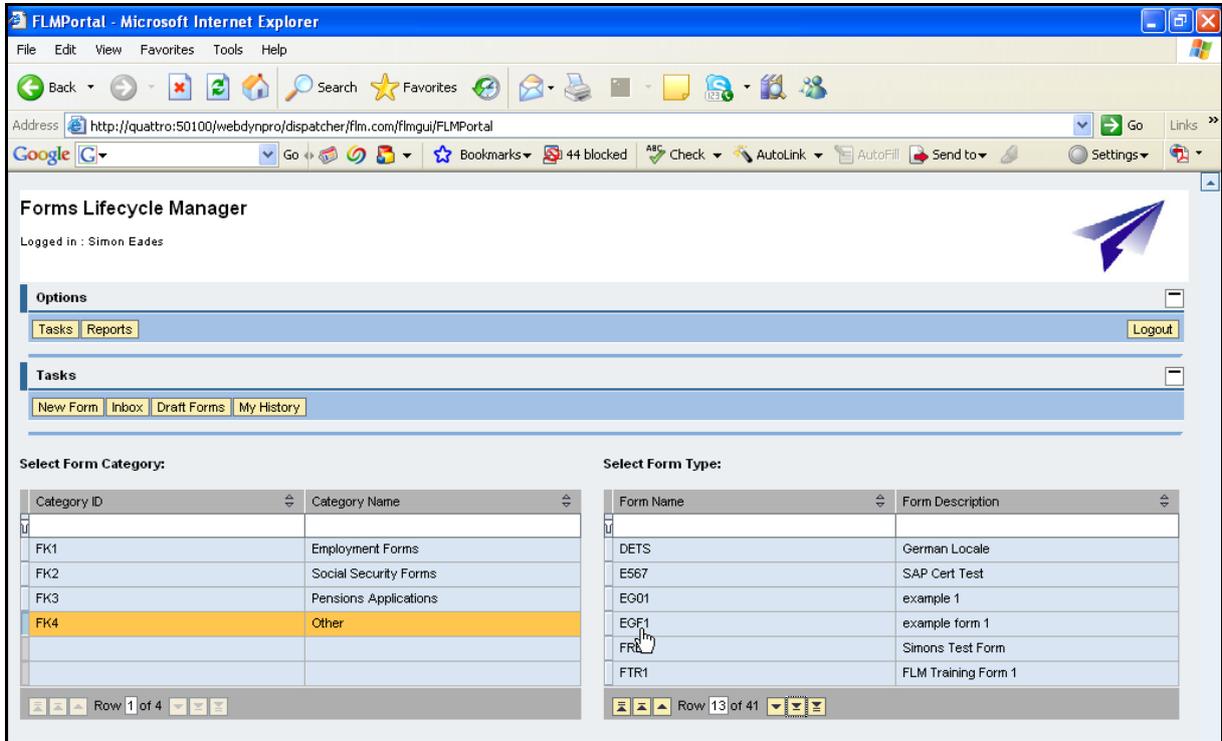
Log in as the first user in the routing (USER1):



Go to 'Tasks' and then 'New Form'

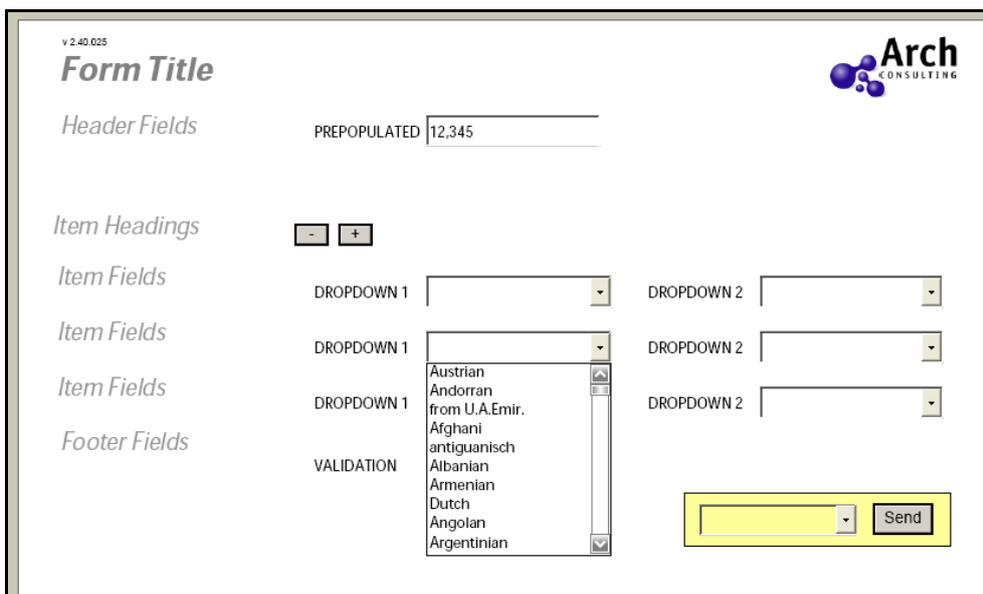


Click on the form category 'FK4' to which the form was assigned, scroll down through the list using the  button to form EGF1 and click on it. It will launch in the browser.

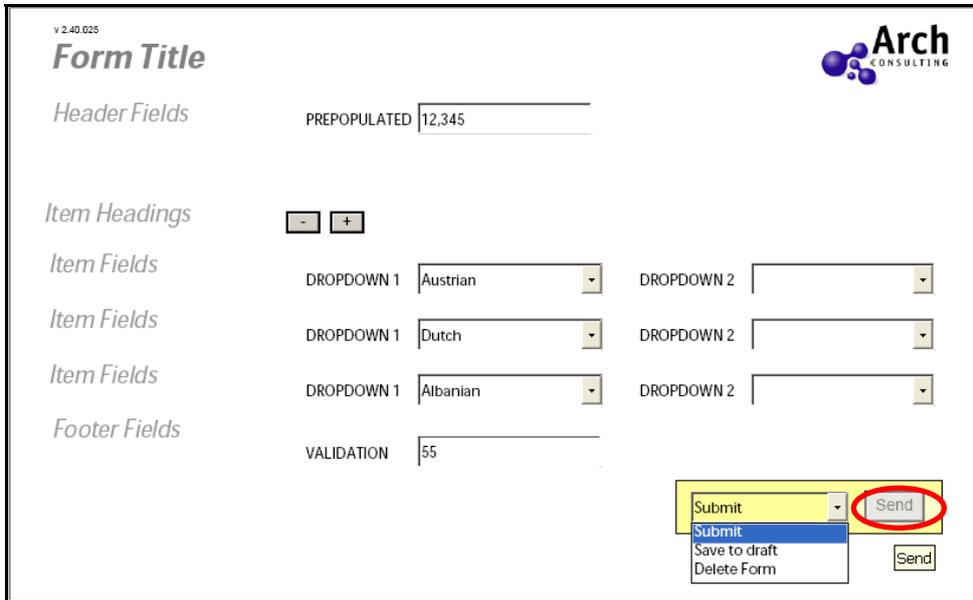


Category ID	Category Name	Form Name	Form Description
FK1	Employment Forms	DETS	German Locale
FK2	Social Security Forms	E567	SAP Cert Test
FK3	Pensions Applications	EG01	example 1
FK4	Other	EGF1	example form 1
		FTR1	FLM Training Form 1

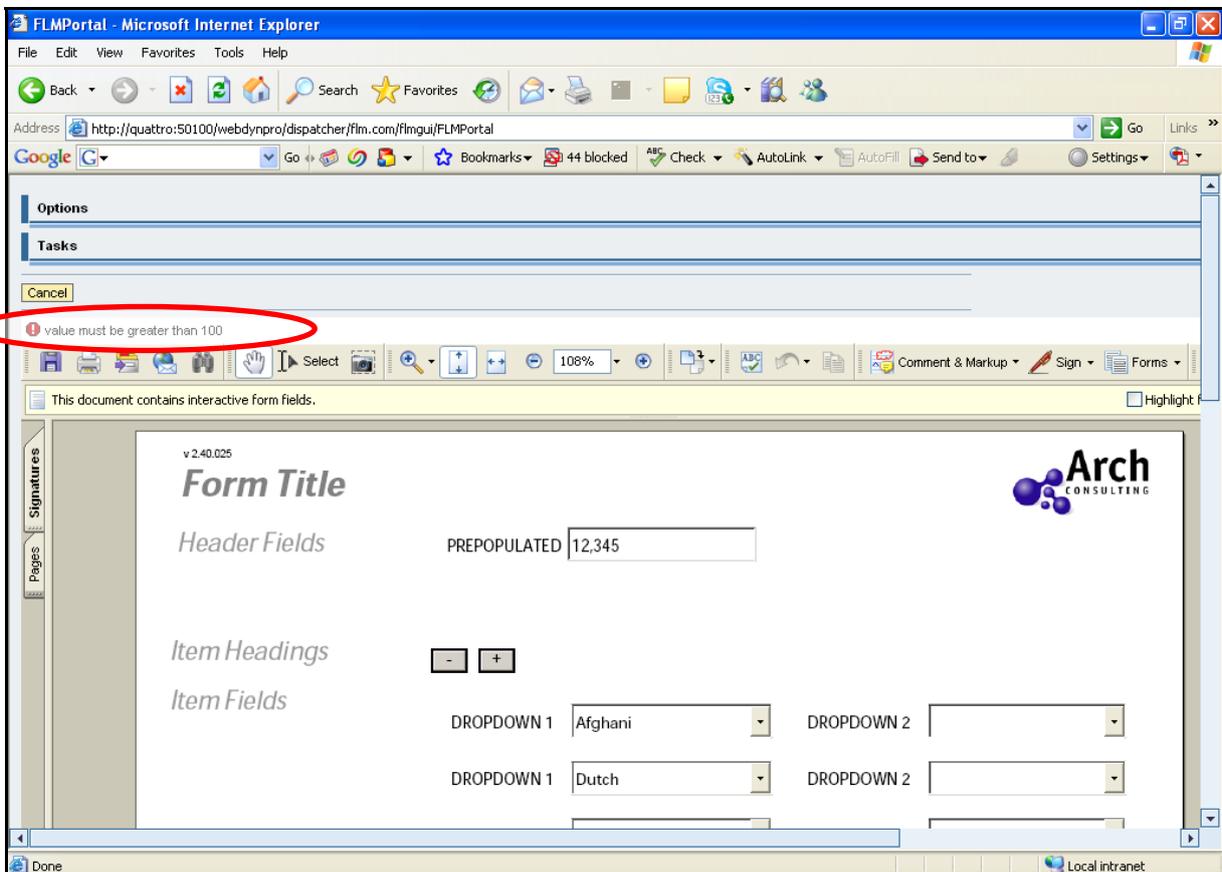
When the form launches, the 'Prepopulated' field should contain the value '12,345', as determined by the UserExit code you entered. Clicking on the chevron next to 'Dropdown 1' brings up the dropdown list you created, and you can increase the number of item fields on the form using the  button:



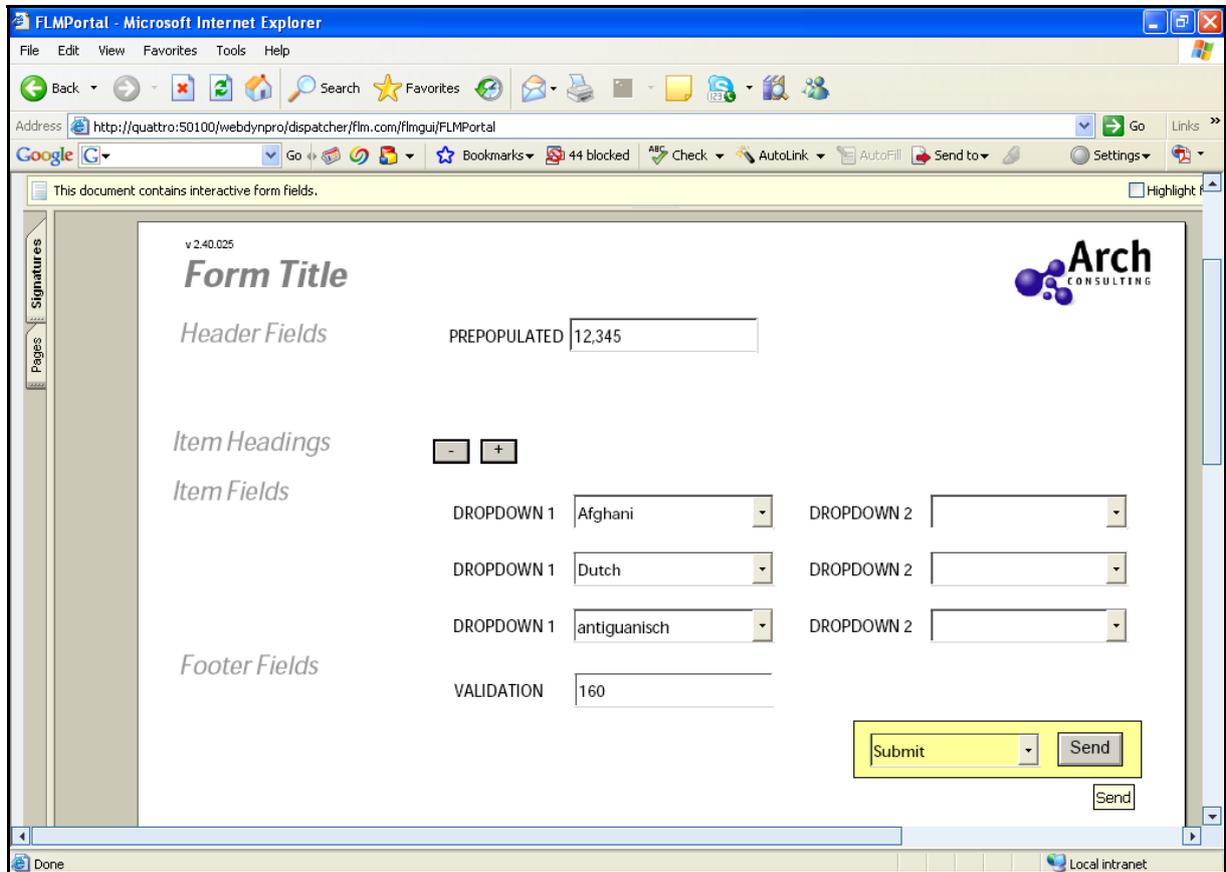
Test the validation code by entering a number less than 100 into the 'Validation' Field, selecting 'Submit' and clicking 'send'



The error message you typed should appear:



Enter a valid number into the Validation field, select 'Submit' and click 'Send' again to send the form to the next user in the routing:

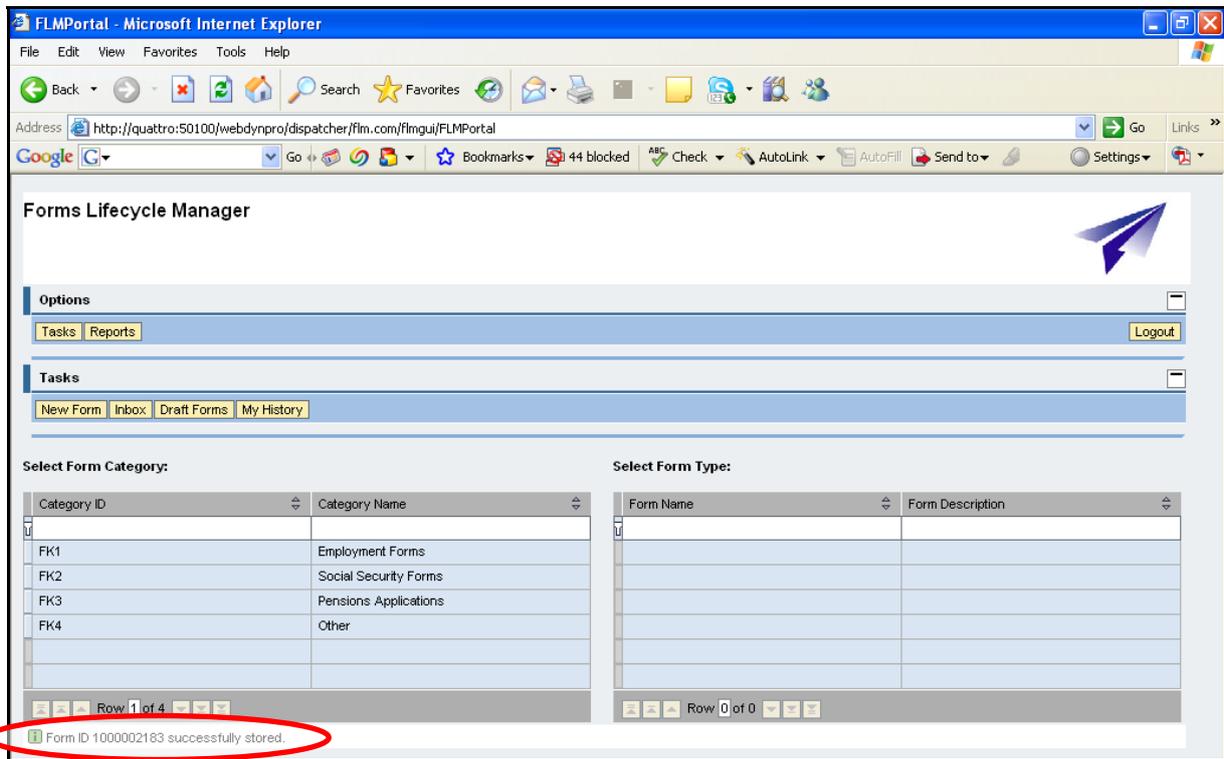


The screenshot shows a Microsoft Internet Explorer browser window displaying a web form. The browser's address bar shows the URL: `http://quattro:50100/webdynpro/dispatcher/flm.com/flmgui/FLMPortal`. The form itself is titled "Form Title" and includes the following sections and fields:

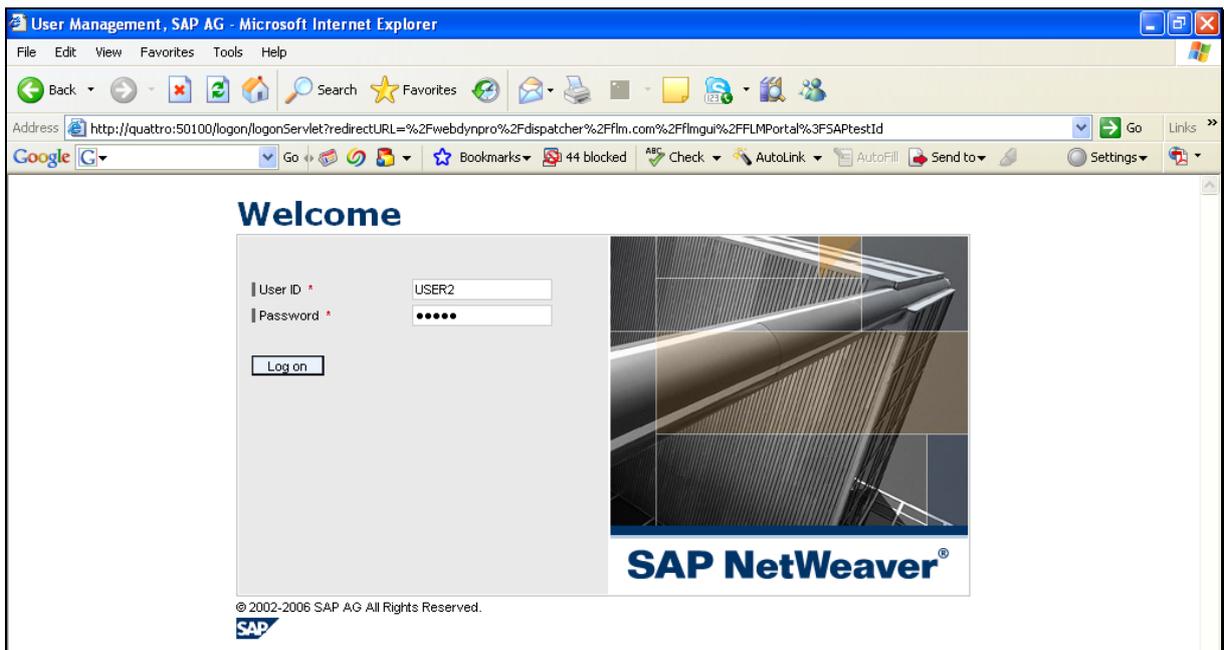
- Header Fields:** A text input field labeled "PREPOPULATED" containing the value "12,345".
- Item Headings:** Two small square buttons, one with a minus sign and one with a plus sign.
- Item Fields:** Three rows of dropdown menus. Each row has a "DROPDOWN 1" and a "DROPDOWN 2". The first row has "Afghani" selected in the first dropdown. The second row has "Dutch" selected. The third row has "antiguanisch" selected.
- Footer Fields:** A text input field labeled "VALIDATION" containing the value "160".
- Buttons:** A yellow "Submit" button and a grey "Send" button are located at the bottom right of the form area. A smaller "Send" button is also visible below the main "Send" button.

The browser's status bar at the bottom shows "Done" and "Local intranet".

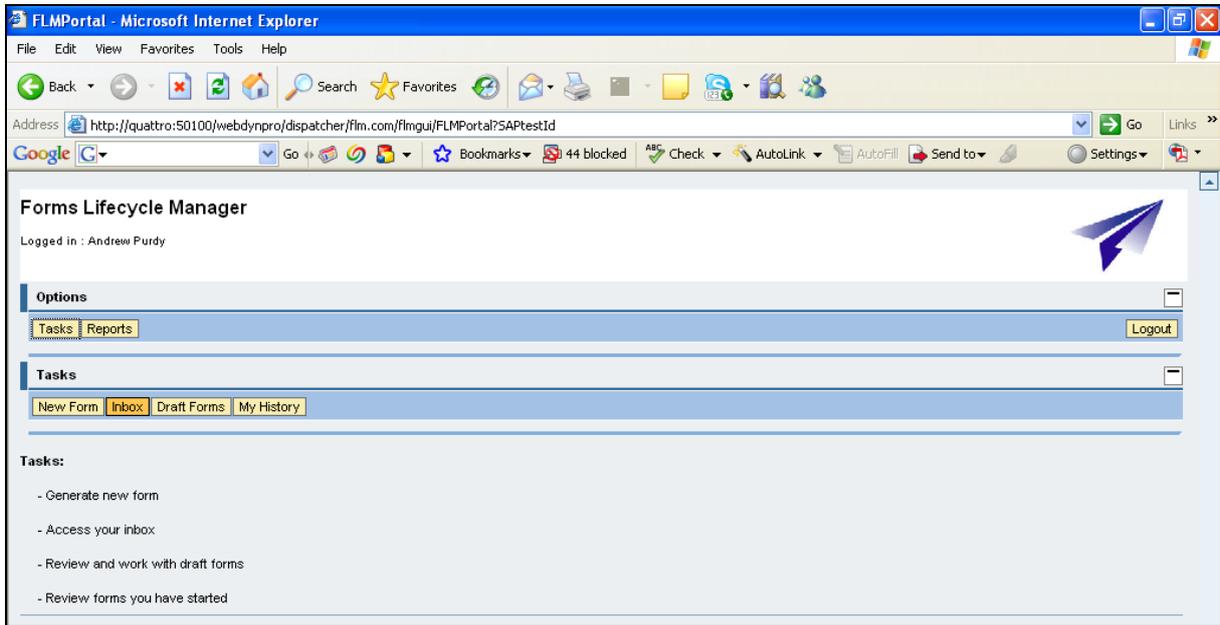
The form will be submitted, and a confirmation message will appear on the screen:



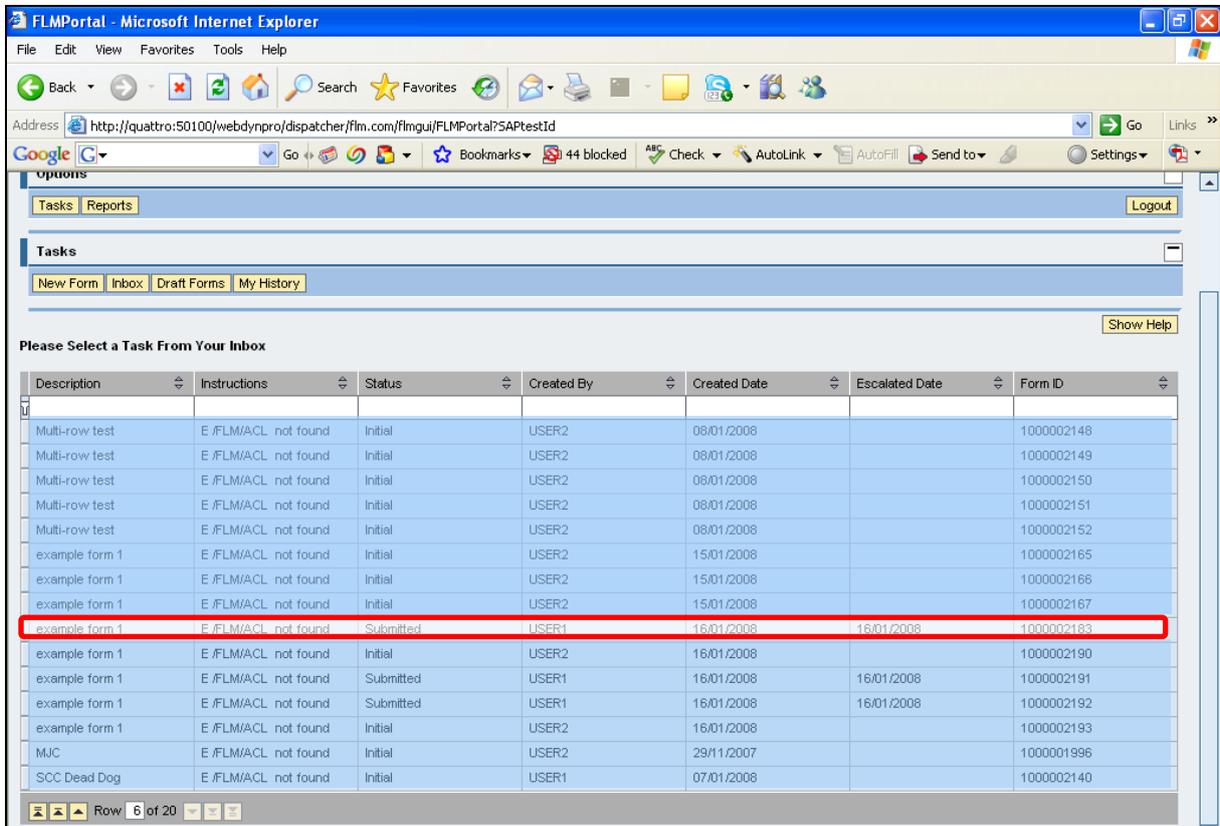
If you have the login details of the next user in the routing, you can check that the form was routed successfully to them, as specified in the routing table. To do this, first **Logout**, then enter the login details of the next user:



Go to Tasks> Inbox...



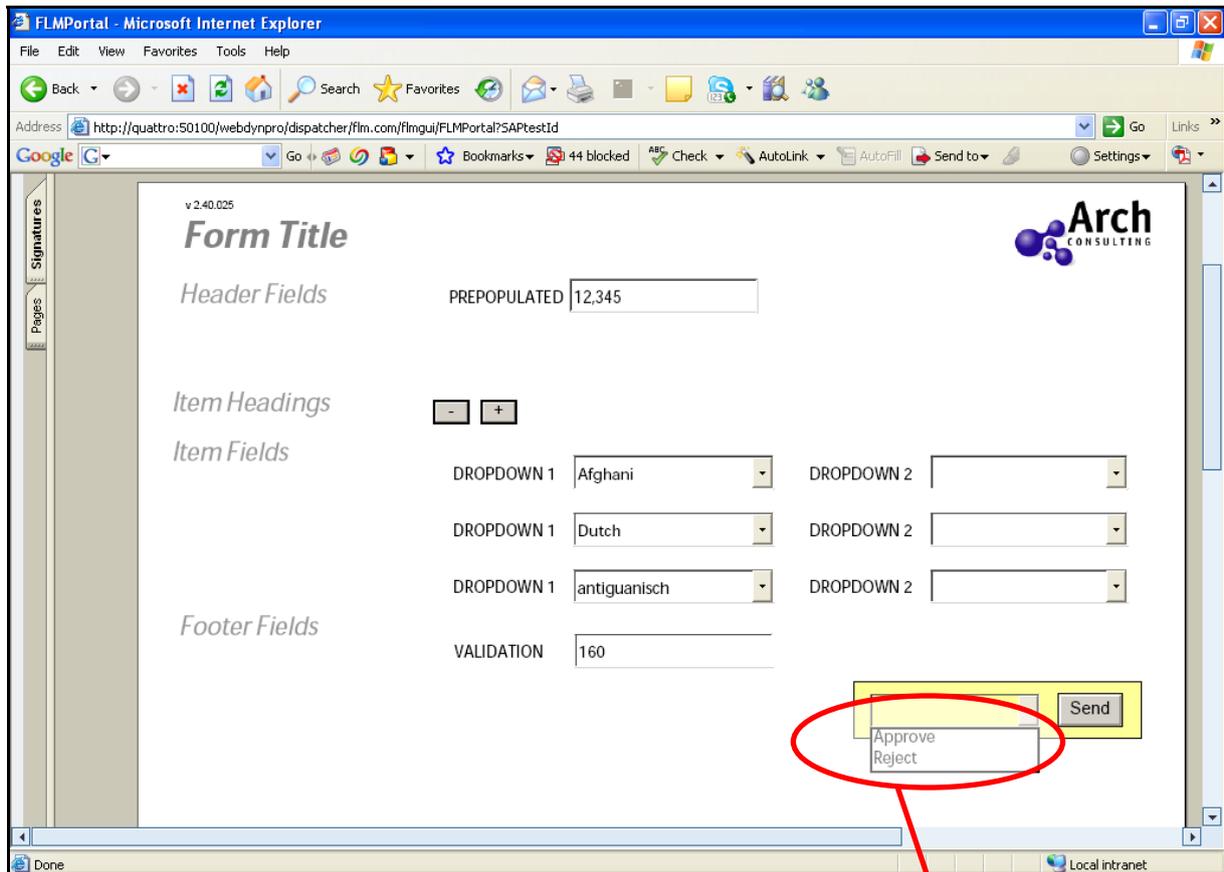
... and the form you have just submitted (EGF1) should appear in the listing, with status 'Submitted', created by USER1 with today's date on it. Click on the form to open it.



Description	Instructions	Status	Created By	Created Date	Escalated Date	Form ID
Multi-row test	E /FLM/ACL not found	Initial	USER2	08/01/2008		1000002148
Multi-row test	E /FLM/ACL not found	Initial	USER2	08/01/2008		1000002149
Multi-row test	E /FLM/ACL not found	Initial	USER2	08/01/2008		1000002150
Multi-row test	E /FLM/ACL not found	Initial	USER2	08/01/2008		1000002151
Multi-row test	E /FLM/ACL not found	Initial	USER2	08/01/2008		1000002152
example form 1	E /FLM/ACL not found	Initial	USER2	15/01/2008		1000002165
example form 1	E /FLM/ACL not found	Initial	USER2	15/01/2008		1000002166
example form 1	E /FLM/ACL not found	Initial	USER2	15/01/2008		1000002167
example form 1	E /FLM/ACL not found	Submitted	USER1	16/01/2008	16/01/2008	1000002183
example form 1	E /FLM/ACL not found	Initial	USER2	16/01/2008		1000002190
example form 1	E /FLM/ACL not found	Submitted	USER1	16/01/2008	16/01/2008	1000002191
example form 1	E /FLM/ACL not found	Submitted	USER1	16/01/2008	16/01/2008	1000002192
example form 1	E /FLM/ACL not found	Initial	USER2	16/01/2008		1000002193
MJC	E /FLM/ACL not found	Initial	USER2	29/11/2007		1000001996
SCC Dead Dog	E /FLM/ACL not found	Initial	USER1	07/01/2008		1000002140

The form will appear in the inbox of User 2 as it was when submitted by User 1.

I It is possible to render the form's fields to be read-only for an approver so that the contents of the fields are fixed at this stage of the routing.



I User 2 doesn't have the same transport options as User 1: these are defined by the Form Status Configuration you did in Section 5.

You can decide whether to approve or reject the form. Rejecting it will return it to User 1; approving it will change its status to 'Approved', which can then be input as a valid status for posting to SAP by the Forms Posting Engine.

Congratulations! You have just successfully created and tested your first FLM form. Please see the Configuration guide, the Developer Guide, the Form Design Guide and the System Administration Guide for more advanced instructions to configure a form and its processing to your requirements.