Add User-Defined Fields in Risk Management 10.0

Master data storage for most objects in Risk Management uses HR Organizational data tables. The following example describes how to enhance a control with customer-specific fields. Although this example uses the object control, the principles are similar for all Risk Management objects which are stored in HR Organizational data tables.

The following lists Risk Management objects that could be enhanced within HR Organizational data tables:

O	Organization	O0	Risk category
OM	Opportunity category	O7	Activity category
OS	Central opportunity	OF	Risk
OL	Opportunity	O1	Central risk
OE	Activity	O6	Response template

In the following example, the control documentation (type P2) is enhanced with a drop-down list box named *COSO Relevance*, with the date when this field was set. An additional comment field will also be available for users to enter further information regarding the attribute.

Supported customer-specific fields

Risk Management 10.0 provides additional flexibility in defining customer-specific fields. You can define them as:

- Single value
- Multiple value
- Regulation specific value
- Multiple regulation specific value

Each category of customer specific fields is stored differently within HR databases structures.

- Single value uses *infotype with time constraint 2*.
- Multiple value uses *infotype with time constraint 3;* in this case the infotype can contain only a single field.

For regulation-specific values we use a subtype in addition for the regulation. More details are described in the example below.

Overview of Tasks

Before you start: check SAP Note **1470670** for an updated version of the document and additional information.

1. Preparation: **Coordinate Number Ranges and Authorizations**
2. **Create Data Elements in the ABAP Dictionary**
3. **Generating the Infotypes (Data Storage)**
4. **Generating Subtypes (data storage for long text fields)**
5. **Adding the New Fields to the SAP GUI Transactions for Data Maintenance**
6. **Run report to check the customer field setup and to generate/correct the metadata**
7. **Display/Edit New Fields in the WEB UI**.
   Custom fields are displayed on the UI automatically. There is an optional BAdI implementation to change the look of the fields or to set default values, and so on.
8. **Including the Fields in Online Reporting**

To perform these tasks:

- You must have the S_DEVELOP authorization profile or the equivalent.
- You must test all changes in the development system before transporting them to the test and production systems.

Note: The changes do not cause conflicts with upgrades since they are not considered as modifications of the delivered SAP standard.

Task: Coordinate Number Ranges and Authorizations

HR Organizational data is stored in infotypes. Infotypes are numbered with 4-digit numbers, with the numbers up to 8999 reserved for standard delivery. For example, Risk Management's infotypes belong to the interval 5300-5339. Customer-defined infotypes should begin with 9, followed by 3 digits, specifying the infotype itself.

Before you begin, you must understand which infotype numbers can be used in your project, and reserve them for Risk Management-specific use. Remember that Risk Management may not be the only application using HR Organizational data tables, and it is likely that other projects within your organization are using some infotype numbers as well. For this example, the infotype number 9101 is used.

An ABAP developer needs to:

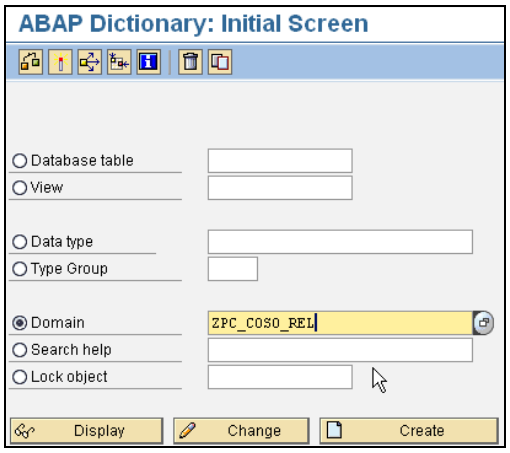
- Have basic skills with respect to ABAP and DDIC (ABAP dictionary)
- Prepare the package where the development will be located according to the project standards of the organization
- Prepare the transport request where the development will be stored
- Authorize a user to do the development work (grant S_DEVELOP authorization profile or equivalent)

Task: Create Data Elements in the ABAP Dictionary

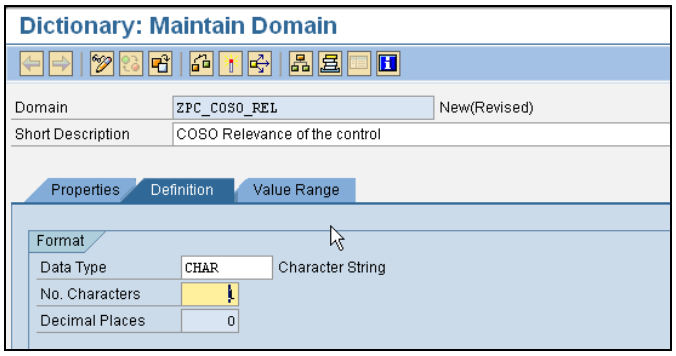
In the ABAP dictionary, the developer describes where and how the data is going to be stored. Domains and data elements must be created. Then a structure must be created that uses these elements.

For the comment and the date in our example, standard domains can be used. For the dropdown list box, a special domain will be created where the domain values can be specified.

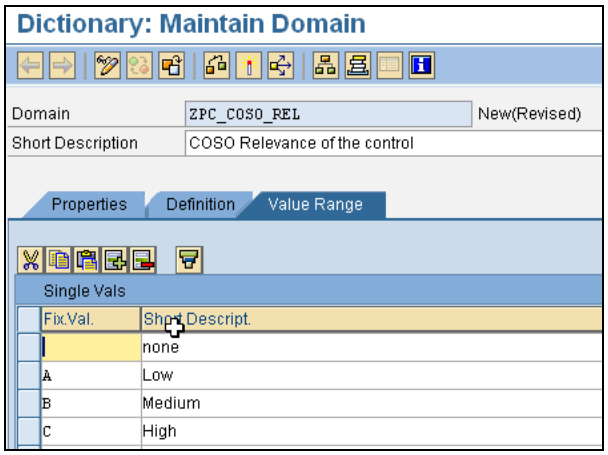
1. Enter transaction *SE11* (ABAP Dictionary), specifying the domain name ZPC_COSO_REL. Click *Create*.



2. For the new domain, maintain the description and the data type – *CHAR*, length 1.



3. Select the *Value Range* tab and specify the domain values:



4. Maintain the value for the first empty field at the top for the default value.

Note: If your organization operates with multiple languages, enter transaction code SE63 and input the languages you want to appear on the screen.

5. Save, check and activate. You must put the object into your customer-specific package.

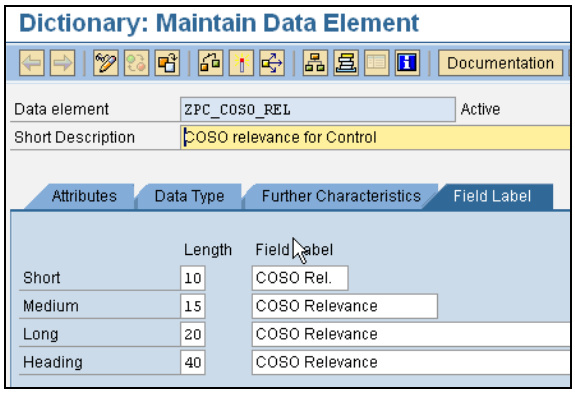
6. Create the data elements. It is important to create specific data elements for each field, because the labels of the user interface elements associated with these fields come directly from the data element definition.

7. Enter the transaction *SE11* (ABAP Dictionary).

8. Specify the data type ZPC_COSO_REL and click *Create*. Select *Data element* in the dialog box.

9. Each data element must have a description and a domain (use ZPC_COSO_REL for this example).

10. Select the tab *Field labels* and specify the text to be used in the UI.



11. Save, check, and activate the data element.

Repeat the steps for the other two data elements:

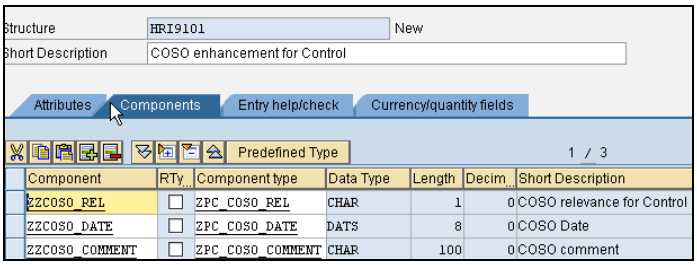
- ZPC_COSO_DATE, domain DATS
- ZPC_COSO_COMMENT, domain TEXT100.

12. Arrange the data elements into a structure. On the initial screen of the transaction *SE11*, select a data type and enter the name in the form as *HRI9nnn* (HRI9101 for this example).

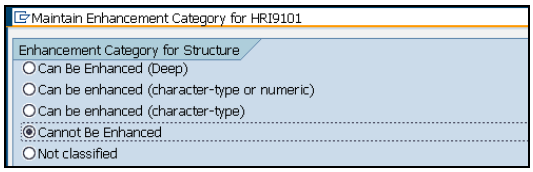
13. In the dialog box, click *Structure*.

14. Create three fields with their respective data elements on the *Components* tab. Be sure that the fields are included in the customer namespace. The field name can only be up to 16 characters in length.

    - ZZCOSO_REL
    - ZZCOSO_DATE
    - ZZCOSO_COMMENT



15. Include the short text description (mandatory) and the enhancement category: From the menu -> *Extras -> Enhancement category,* select *Cannot be Enhanced* and click *Copy*.

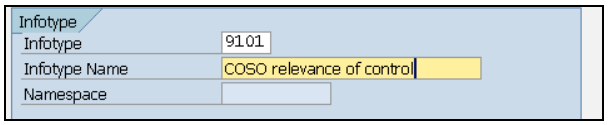


16. Save, check and activate the structure.

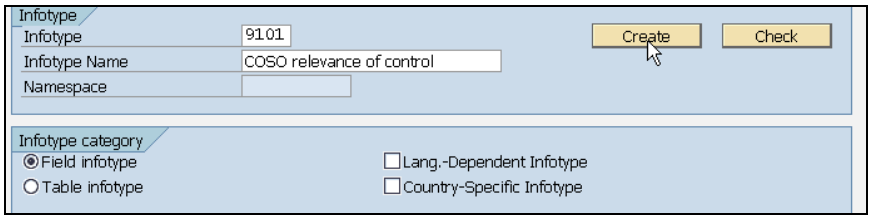
Task: Generating the Infotypes (Data Storage)

After creating the dictionary structure for the new infotype, you need to generate the complete infotype. For this example, use the all-in-one transaction *PPCI* (Create Infotype).

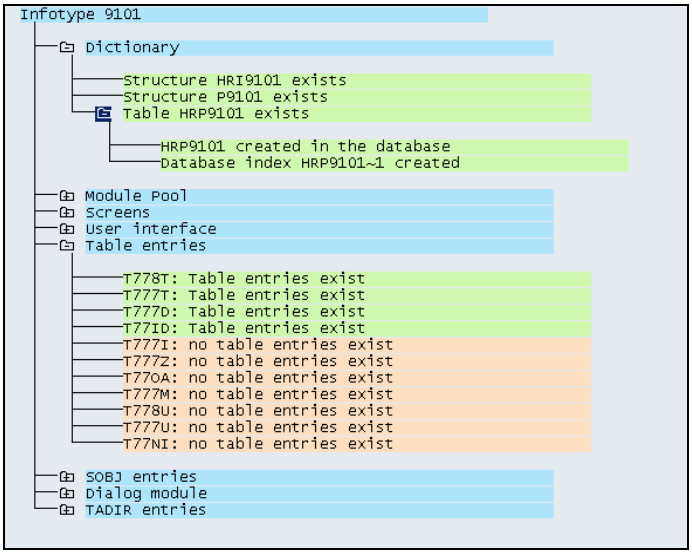
1. Enter the transaction *PPCI*. Enter the infotype *9101* for this example, and the name.
2. Click *Create* .



3. Select the infotype category *Field infotype*. Do not change the Language- and Country-dependency settings. Select *Create* again to create all the dependent entries.



4. After the confirmation that the infotype has been created, bring the infotype into the context of Risk Management objects (in this case, the control). To do this, return to the initial screen of PPCI and click *Change*. A tree structure appears with all the aspects of the infotype that can be edited:

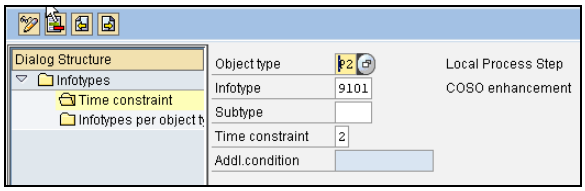


The green entries are satisfactory. These were generated automatically by the transaction *PPCI* within the creation of the infotype. The following steps will correct the orange entries.

5. Position the cursor at the entry T777I and select *Edit*. This displays the transaction SM30 (Maintain Table Views), where the view T777I is prefilled.

6. Maintain the following settings:

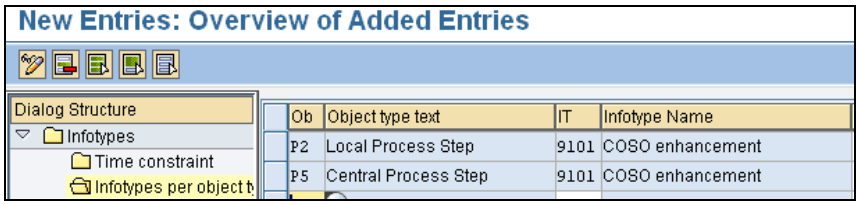
   - Click *Maintain*.
   - Locate the infotype 9101. Select the infotype and select *Time constraint*.
   - Select *New entries*.
   - Fill in the values *P2*, *9101*, *<nothing>*, *2 or 3 (see below)*.
   - Confirm the warning that the P2 is not your namespace, and save the entry.



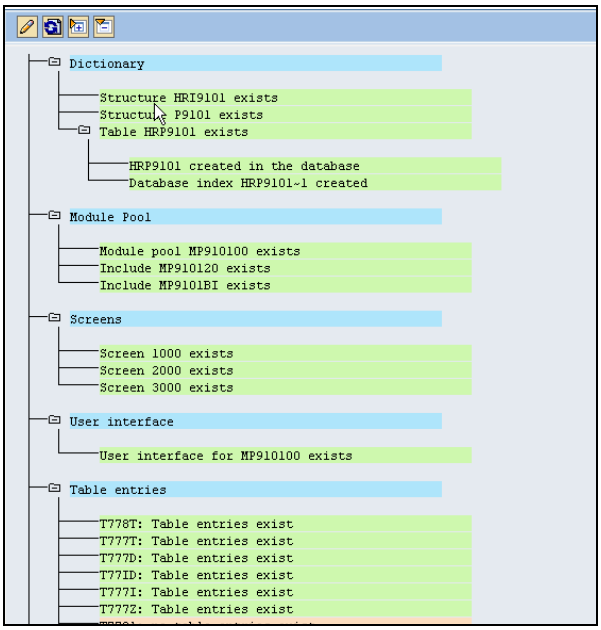
Notes for these settings:

- P2 is *Local Control* other object types exist – *Reference Control* (P3), which does not contain any data, and *Central control* (P5). Create an additional entry for the central process steps, using the P5 9101 and next object types. That is, this infotype and related fields relate both to the central and local control objects.
- Infotype 9101 is the one used in the example
- Subtypes are not used in the example. Keep this field empty.
- There are several possible time-constraints, but only 2 and 3 are relevant for Risk Management:
  - 1 means *time-dependent, without gaps*, which is the most probable variant. In such a case, for a given date, the relationship of the object and the infotype record is 1:1 - do not use this setting
  - 2 means *time-dependent, with gaps*, which is similar to 1. In such a case, for a given date, the relationship of the object and the infotype record is 1:0 in each point of time (There is either one infotype record or no infotype record at each point in time) – this value is used in case the field is single value field
  - 3 means *multiple values at any time*, which is better for tabular data, where the relationship between the object and infotype record is 1:N. For a given date, one object can be related with zero, one, or multiple records – this value is used in case you want to have a multiple value field

7. Maintain the second grouping of settings: *Infotypes per object type*. You must include entries for two object types, P2 and P5. The infotype is always 9101, and leave the remaining fields empty:



8. *Save*, exit the transaction, and restart transaction PPCI in *Change* mode. Confirm that entries T777I and T777Z are now green.

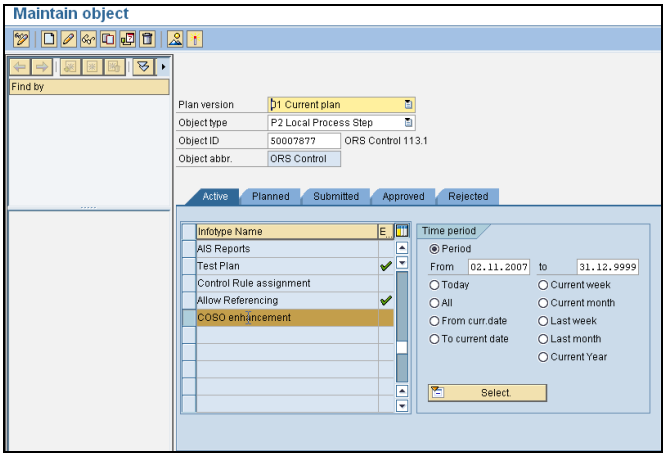


9. To show these new fields in the SAP GUI transaction GRFN_STR_CHANGE, return to the start page of PPCI. Click *Create* for your infotype. Then select *Infotype->Create Subscreen.*

The storage for the data has now been generated, and the data objects are attached to Risk Management objects. They are time-dependent by nature, as is most Risk Management data. You can now check the new data storage and add data to the objects. Proceed as follows:

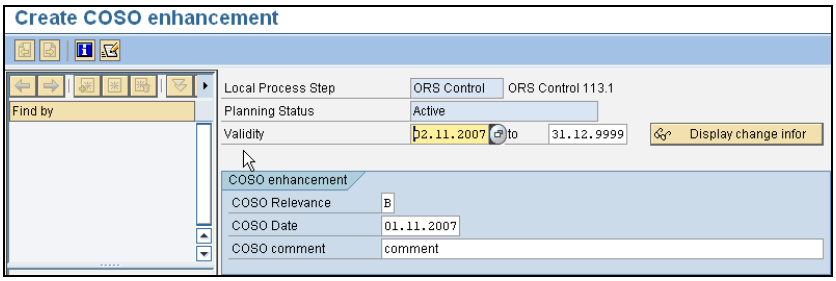
10. Start the transaction *PP01*. On the initial screen, specify the plan version (it is usually 01), the object you want to see (select *Local Control*, for example P2) and the object ID (this is different in every system, but you can use search or F4 value help to find an object ID of an arbitrary control). Press *Enter*.

In the table below your selection you can see all infotypes that are available for the control. The new infotype that was just created and attached to the P2 object is visible.



Note: Use the buttons for creation, display, maintenance and deletion of the entries in the infotype. This can be done on the simple generated screens, which are sufficient for basic maintenance by a power user.

For example, the screenshot below shows the data entry of new values for the control selected in the timeframe shown. This screen was accessed by selecting *Create Infotype*.



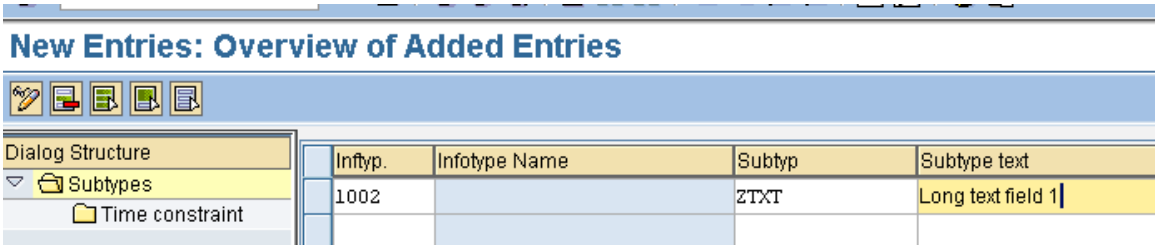
If your intention is only to enhance data storage and maintain these fields automatically, use special purpose transactions or even PP01 itself, then the task is complete.

However, in this example, the intention is to have end users maintain these fields. To add this functionality, continue to the next section.

Task: Generating Subtypes (data storage for long text fields)

Use this procedure to allow for the creation of custom fields with unlimited length.

1. Enter transaction *OOSU*
2. Click *New Entries* and provide
   - *Infotype* 1002
   - new *Subtype* ID in the customer namespace, i.e. starting with Y or Z followed by 3 more characters or digits
   - *Subtype text*, which might be later translated and is also used as the field label in the UI



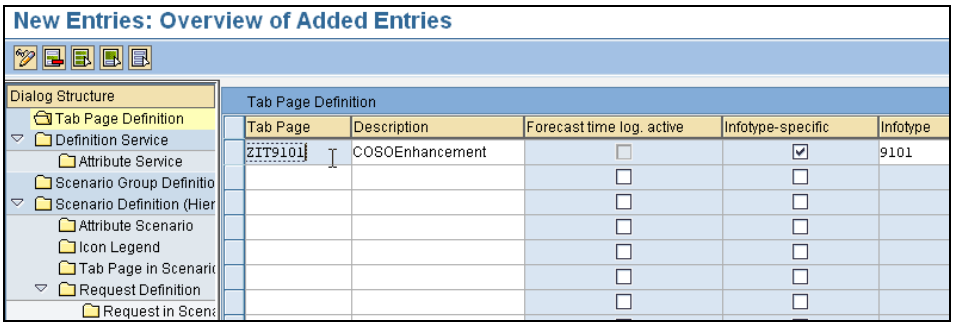
3. Click *Enter* and select newly created line
4. Click "Time constraint" on the left side, click "New Entries" and provide:
   - object type, where you want the long text to be attached
   - infotype 1002 and newly defined subtype
   - correct time-constraint, most likely "1"
5. Press ENTER (you get the warning about usage of the SAP-reserved object types - this can be ignored) and save the entered data

Please note that the long text cannot be stored as multiple or regulation specific value.

Task: Adding the New Fields to the SAP GUI Transactions for Data Maintenance

Risk Management offers SAP GUI-based administrative transactions to work with the data that is stored in HR Organizational data tables. The transactions GRFN_STR_CHANGE and GRFN_STR_DISPLAY are easier (and safer) to use than PP01. In this topic, the steps will detail how to make the new infotype available in these transactions.

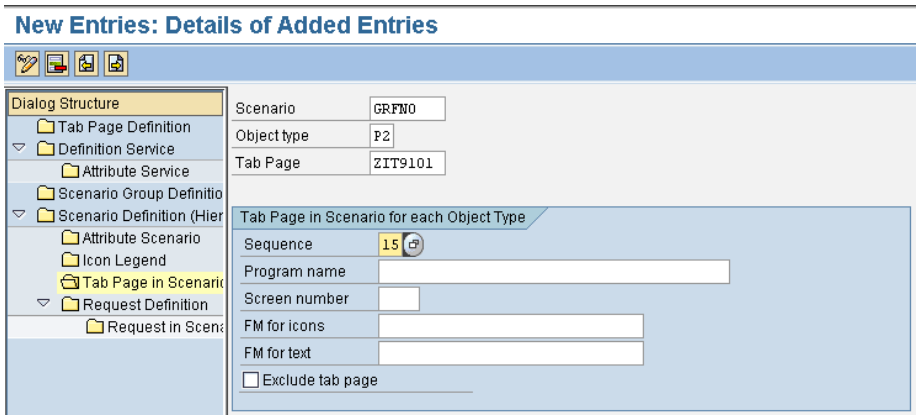
1. Enter transaction OOFRAMEWORKCUST (Hierarchy Framework Customizing). Note that this transaction is cross-client. Check what is client dependent and what is not to see how the custom fields work in a multi-client system.
2. Select *Tab Page Definition* and complete the following fields:
   - Name: ZIT9101 (Z is customer namespace, IT is a standard naming convention, and 9101 is the number of the example infotype)
   - Description: Provide the description you want to see in the UI (for example COSO Relevance)
   - Infotype specific: Select the checkbox
   - Infotype: Provide the number (in this example, use 9101)



3. Select *Tab Page in Scenario for Each Object Type*. This step will connect this new tab page within the scenario with the desired object types. Complete the following fields:

   - Select *New entries*
   - Scenario: GRFN0
   - Object Type: P2
   - Tab Page: ZIT9101.
   - Sequence (the order of the tab within the existing tab strip for the object within the *Structure Setup Expert Mode* of Risk Management)

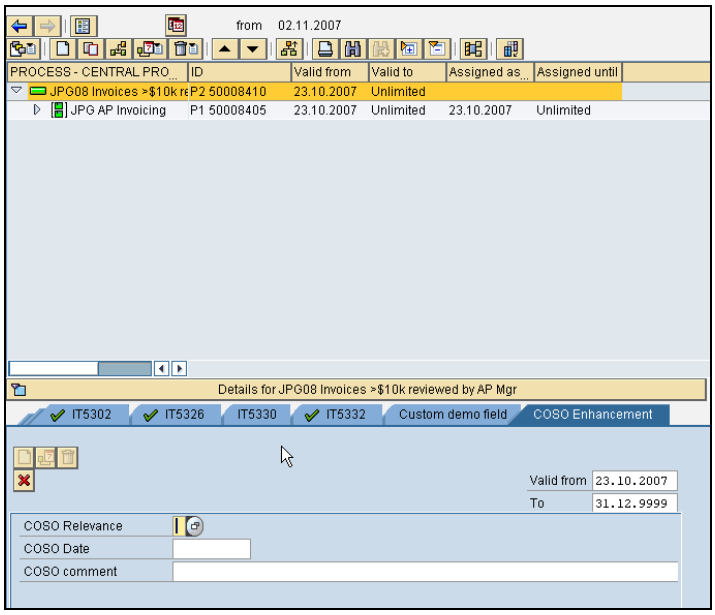
   Note: The other fields do not need to be completed.



4. Repeat the settings for the object type P5.

5. Save, and exit the transaction.

6. Start transaction GRFN_STR_DISPLAY. Navigate to any control (central or local in this example) and verify that you can see the new tab among the other tabs for the control.

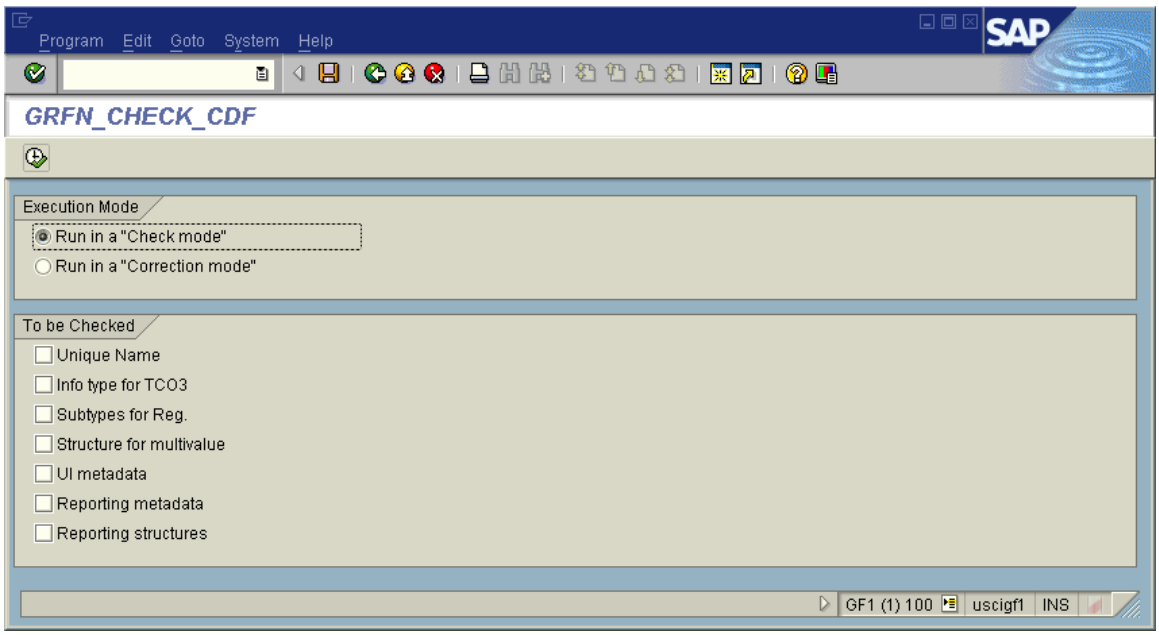


7. *Long Text fields* implemented using the subtypes are visible automatically in the GRFN_STR_CHANGE transaction after the correct *Time constraint* is maintained as described above.

Task: Run report to check the customer field setup and to generate/correct the metadata

The report GRFN_CHECK_CDF can be used to check the customer field setup and to generate/correct the metadata. You can run it in the “Check” or “Correction” mode. In check mode you can check for following inconsistencies:

- Unique field name
- Infotype structure for time constraint 3
- Subtypes for regulations
- Structure for multi value – this option is not relevant for HR fields
- UI metadata
- Reporting metadata
- Reporting structures



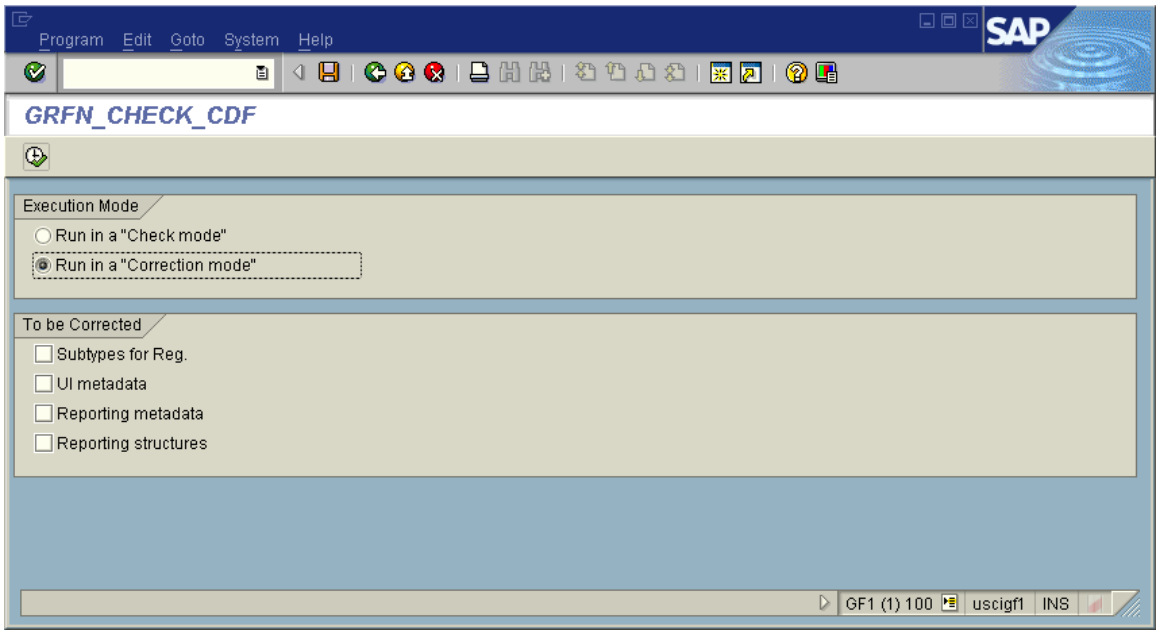
When you select required checks and run the report you will get a result in for of table. The report lists all the fields which are defined for specific entity. Each line is marked by traffic light:

- Green is not problem for the field
- Yellow is the problem that can be automatically solved by the report executed in “Correction” mode
- Red is a field design error, which cannot be solved automatically and required manual adjustments of customer field design

Last column in the report provides description of the problem for yellow and red lines.

In correction mode you can select which problem should be adjusted. The possibilities for selection are slightly smaller than in check mode:

- Subtypes for regulations
- UI metadata
- Reporting metadata
- Reporting structures



When you select the required action and execute the report you need to provide a Workbench and/or Customizing request to store the adjustments.

It is recommended to run the report after any change in customer defined fields to check if any inconsistency exists. Also run the check report in any case when you face any problem concerning the customer defined fields, which will provide useful information about possible c

Task: Display/Edit New Fields in the WEB UI

New fields are available on the UI automatically after you finish the steps described in the section “Adding the New Fields to the SAP GUI Transactions for Data Maintenance”.

The look of the field on the UI is predefined by Risk Management. The following UI types are supported:

- Text Field
- Text Field Case Sensitive
- Text Field Numeric
- Date Field
- Time Field
- Icon
- Checkbox
- Dropdown List Box
- Radio Button Group
- Text Area (long text)

For the multi value fields there are *Add* and *Delete* links to add and delete new values beside each multi value field. For regulation-specific value fields, there is no difference in the UI, however the values are stored as regulation-specific.

To modify the visibility of the fields on the UI:

1. Navigate to the IMG Settings *Configurable UI.* The following UI attributes can be maintained per each “Regulation” for each Custom Field

Please ensure first that the UI metadata are properly generated – see the chapter "Report to check customer fields"

2. Enhance GRFN_API_CUSTOMFIELD, which is called during the Retrieve and Update process.

The CT_CUSTOMFIELD_MDATA and CT_CUSTOMFIELD_DATA attributes are available in the method AFTER_RETRIEVE that can be modified.

You can adjust the following fields in the CT_CUSTOMFIELD_MDATA table:

- UITYPE can be used to change the UI Type mentioned above
- HIDDEN can be used to hide the field on UI
- READONLY can be used to set the field "Display only"
- REQUIRED can be used to make the field required
- VALUESET can be used to define text for dropdown
- FIELDLABEL can be used to adjust label of the field

You can adjust the following fields in the CT_CUSTOMFIELD_MDATA table:

- VALUE can be used for value defaulting

Use the method BEFORE_UPDATE to modify the value entered by the user. You can also implement the "input check" and raise an exception in case the user entry does not pass the check.

You may not adjust any other fields than those mentioned above; such adjustments might lead to UI malfunction.

Task: Including the Fields in Online Reporting

To add customer fields to the standard report you have to go to IMG node "Customer enhancements to standard reports". In this IMG activity you can add the field to the report and you can use it also as a filter criteria. For details please refer to the IMG activity documentation.

When fields are maintained in reporting metadata they automatically appear in the ALV based report output. However, if you want to display them in a customized Crystal Report layout you have to add the fields in Crystal Report Designer to the corresponding Crystal Report template. Please refer to Crystal report related documentation for details.