Toolbox Crystal Reports Class 2: Adding Additional Fields To An AR Invoice

This Session walks you through adding fields to your custom AR Invoice forms. While any field that can be logically tied to a transaction can be added to a form, this session addresses the fields more commonly associated with AR Invoices.

1. **Customer**
2. **Customer Address Fields**
3. **Invoice Date**
4. **Payment Terms**
5. **Ship Via**
6. **Sales Associate**
7. **Default Job**
8. **Default Retention Rate**
9. **Reference**
10. **Memo**
11. **Payment App**
12. **Freight On Board**
13. **Custom Job Fields**
14. **Accounting for Sales Tax**
15. **Accounting for Retention**
16. **Make the Group Footers Conditionally Suppress**

1. To add the "Customer" field to your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | address_book
    Click Close
    Click OK (you should now be in the Visual Linking Expert)
    Link gl_master.name_ID to address_book.identifier
    Highlight the link by clicking on it.
    Click Link Options (on the right)
    Select "Left Outer" for your SQL Join Type (bottom right)
    Click OK
    Click OK (to exit the Visual Link Expert)
Click Insert | Field Object | Database Fields | Address_book |name
Drag "name" to the desired location on your form.

2. To add the "Customer Address fields" field to your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | address
    Click Add
    Click Close
    Click OK (you should now be in the Visual Linking Expert)
    Link address_book.identifier to address.assc_id
    Highlight the link by clicking on it.
    Click Link Options (on the right)
    Select "Left Outer" for your SQL Join Type (bottom right)
    Click OK
    Click OK (to exit the Visual Link Expert)

Click Insert | Field Object | Database Fields | address |
Drag "addr1" to the desired Location
Click Insert | Field Object |
Right click on "Formula Fields"
Click New
Type "Addr2" in for the name of the formula
Click OK
Using the field tree, make your formula the following:
if {ADDRESS.ADDR2} = ""
then {ADDRESS.CITY} + ", " + {ADDRESS.STATE} + " " + {ADDRESS.ZIP}
else {ADDRESS.ADDR2}

Click Insert | Field Object |
Right click on "Formula Fields"
Click New
Type "Addr3" in for the name of the formula
Click OK
Using the field tree, make your formula the following:
if {ADDRESS.ADDR2} = ""
then ""
else {ADDRESS.CITY} + ", " + {ADDRESS.STATE} + " " + {ADDRESS.ZIP}
Click Report | Select Expert
Click the "New" button
Find Address.Address_type in the list of fields and double click on it
Click the dropdown box and select "is equal to"
Click the right dropdown box and select "20"
Click "Ok"

3. To add the "Invoice Date" field to your AR Invoice:

From within an AR Invoice Form:
Click Insert | Field Object | Database Fields | GL_Master
Drag "tran_date" to the desired location.

4. To add the “Payment Terms” field to your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | Tables | ap_terms
Click Close
Click OK (you should now be in the Visual Linking Expert)
Link gl_master.terms_id to ap_terms.identifier
Highlight the link by clicking on it.
Click Link Options (on the right)
Select “Left Outer” for your SQL Join Type (bottom right)
Click OK
Click OK (to exit the Visual Link Expert)
Click Insert | Field Object | Database Fields | ap_terms
Drag “name” to the desired location on your form.

5. To add the “Sales Associate” field to Your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | Tables | ut_names
We want to name this table “ut_names_sales_assoc”.

1. If this table has already been added, Crystal will prompt you add an Alias to this Report for this table.
Click Yes
Name the table:
“ut_names_sales_assoc”
Click OK

2. If this table has not previously been added, Crystal will not prompt you to name the table. We will do this later.
Click Close
Click OK (you should now be in the Visual Linking Expert)

Link gl_master.sales_assoc to ut_names_sales_assoc.identifier
Highlight the link by clicking on it.
Click Link Options (on the right)
Select "Left Outer" for your SQL Join Type (bottom right)
Click OK
Click OK (to exit the Visual Link Expert)

If Crystal did not prompt you to rename the table above, complete the following steps to rename the table "ut_names_sales_assoc".

Click Database | Set Alias
Single click "ut_names".
Click Set Alias

Name the table:
"ut_names_sales_assoc"

Click OK
Click Done

Click Insert | Field Object | Database Fields | ut_names_sales_assoc
Drag "name" to the desired location on your form.

6. To add the "Ship Via" field to your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | Tables | ut_names

We want to name this table "ut_names_ship_via".

1. If this table has already been added, Crystal will prompt you add an Alias to this Report for this table.

Click Yes

Name the table:

"ut_names_ship_via"

Click OK

2. If this table has not previously been added, Crystal will not prompt you to name the table. We will do this later.

Click Close
Click OK (you should now be in the Visual Linking Expert)
Link gl_master.ship_via to ut_names_ship_via.identifier
Highlight the link by clicking on it.
Click Link Options (on the right)

Select "Left Outer" for your SQL Join Type (bottom right)
Click OK
Click OK (to exit the Visual Link Expert)

If Crystal did not prompt you to rename the table above, following the following steps to rename the table "ut_names_ship_via".

Click Database | Set Alias
Single click "ut_names".
Click Set Alias

Name the table:
"ut_names_ship_via"
Click OK
Click Done

Click Insert | Field Object | Database Fields | ut_names_ship_via
Drag "name" to the desired location on your form.

7. To add the "Default Job" field to your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | Tables | jc_job
We want to name this table "jc_job_def_job".

1. If this table has already been added, Crystal will prompt you add an Alias to this Report for this table.
Click Yes
Name the table:
"jc_job_def_job"
Click OK

2. If this table has not previously been added, Crystal will not prompt you to name the table. We will do this later.

Click Close
Click OK (you should now be in the Visual Linking Expert)
Link gl_master.def_job to jc_job_def_job.identifier
Highlight the link by clicking on it.
Click Link Options (on the right)
Select "Left Outer" for your SQL Join Type (bottom right)
Click OK

Click OK (to exit the Visual Link Expert)
If Crystal did not prompt you to rename the table above, following the following steps to rename the table "jc_job_def_job".
Click Database | Set Alias
Single click "jc_job".
Click Set Alias
Name the table:
"jc_job_def_job".
Click OK
Click Done
Click Insert | Field Object | Database Fields | jc_job_def_job
Drag "job_name" to the desired location on your form.

8. To add the "Default Retention Rate" field to your AR Invoice:

Click Insert | Field Object | Database Fields | gl_master
Drag "retention" to the desired location on your form.

9. To add the "Reference" field to your AR Invoice:

Click Insert | Field Object | Database Fields | gl_master
Drag "ref" to the desired location on your form.

10. To add the "Memo" field to your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | gl_detail
Crystal will prompt you add an Alias to this Report for this table.
Click Yes
Name the table:
"gl_detail_memo"
Click OK

Click Close
Click OK (you should now be in the Visual Linking Expert)
Link gl_master.identifier to gl_detail_memo.tran_id
Highlight the link by clicking on it.
Click Link Options (on the right)
Select "Left Outer" for your SQL Join Type (bottom right)
Click OK
Click OK (to exit the Visual Link Expert)
Click Report | Select Expert
Click Show Formula
Click Formula Editor
Place the following below the last line:
and {gl_detail_memo.item_type} = 10
Click the "Save and Close" icon (disk with x)
Click OK (to exit the Select Expert)
Click Insert | Field Object | Database Fields | gl_detail_memo.
Drag "item_desc" to the desired location on your form.

11. To add the "Payment App" field to your AR Invoice:

Click Insert | Field Object | Database Fields | gl_master
Drag "app_num" to the desired location on your form.

12. To add the "FOB" field to your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | Tables | ut_names
We want to name this table "ut_names_fob".
1. If this table has already been added, Crystal will prompt you add an Alias to this Report for this table.
Click Yes
Name the table:
"ut_names_fob"
Click OK

2. If this table has not previously been added, Crystal will not prompt you to name the table. We will do this later.

Click Close

Click OK (you should now be in the Visual Linking Expert)

Link gl_master.fob to ut_names_fob.identifier

Highlight the link by clicking on it.

Click Link Options (on the right)

Select "Left Outer" for your SQL Join Type (bottom right)

Click OK

Click OK (to exit the Visual Link Expert)

If Crystal did not prompt you to rename the table above, following the following steps to rename the table "ut_names_fob".

Click Database | Set Alias

Single click "ut_names".

Click Set Alias

Name the table:
"ut_names_fob"

Click OK

Click Done

Click Insert | Field Object | Database Fields | ut_names_fob

Drag "name" to the desired location on your form.

13. Adding Custom Job Fields to your AR Invoice

Custom Job Fields Database Information for AR Transactions.

When a custom field is labeled in one job, this label is used for all jobs. The label is stored in the ut_names table.

ut_names.type = 413 - Job notebook custom date field descriptions

ut_names.type = 414 - Job notebook custom text field descriptions

ut_names.type = 415 - Job notebook custom number field descriptions

When a value is placed onto a job for a given custom field, a row is created in the ut_rec_assoc table.

assc.type =

66 - Values for date custom fields in Job Notebook

68 - Values for text custom fields in Job Notebook

67 - Values for number custom fields in Job Notebook

ut_rec_assc.table1 = jc_job.identifier

ut_rec_assc.table2 = equals the ut_names.identifier (413,414 or 415 see above)

ut_rec_assc.table3 = date value for dates, and 0 for other type custom records

ut_rec_assc.rate = number value for custom number field on job.

ut_rec_assc.text = text value for custom text field on job.

To add custom job fields to your AR Invoice:

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | Tables | ut_rec_assc
We want to name this table "custom1_value".

1. If this table has already been added, Crystal will prompt you add an Alias to this Report for this table.
Click Yes
Name the table:
"custom1_value"
Click OK

2. If this table has not previously been added, Crystal will not prompt you to name the table. We will do this later.
Click Close
Click OK (you should now be in the Visual Linking Expert)
Link jc_job.identifier to custom1_value.table1
Highlight the link by clicking on it.
Click Link Options (on the right)
Select "Left Outer" for your SQL Join Type (bottom right)
Click OK

Click OK (to exit the Visual Link Expert)
If Crystal did not prompt you to rename the table above, following the following steps to rename the table "custom1_value".
Click Database | Set Alias
Single click "ut_rec_assc".
Click Set Alias
Name the table:
"custom1_value"
Click OK
Click Done
Click Insert | Field Object | Database Fields | custom1_value

If the custom field is a date field, Drag ‘table3” to the desired location.
If the custom field is a text field, Drag ‘text” to the desired location.
If the custom field is a number field, Drag ‘rate” to the desired location.

From within an AR Invoice Form:
Click Database | Visual Link Expert
Expand window to full size.
Click Tables
Click Add Table
Select ODBC | Toolbox | Tables | Ut_names
We want to name this table “custom1_name”.
1. If this table has already been added, Crystal will prompt you add an Alias to this Report for this table.
Click Yes
Name the table:
“Custom1_name”
Click OK
3. If this table has not previously been added, Crystal will not prompt you to name the table. We will do this later.
Click Close
Click OK (you should now be in the Visual Linking Expert)
Link custom1_value.table2 to custom1_name.identifier
Highlight the link by clicking on it.
Click Link Options (on the right)
Select “Left Outer” for your SQL Join Type (bottom right)
Click OK
Click OK (to exit the Visual Link Expert)
If Crystal did not prompt you to rename the table above, following the following steps to rename the table “custom1_name”.
Click Database | Set Alias
Single click “ut_names”.
Click Set Alias
Name the table:
“custom1_name”
Click OK
Click Done
Click Insert | Field Object | Database Fields | custom1_name
Drag “name” to the desired location on your form.

Click Report | Select Expert
Click Show Formula
Click Formula Editor
Place the following below the last line:

(if isnull({custom1_name.name}) then true
else {custom1_name.name} = "custom field name")
(Note: the custom field name will be the name you assigned your custom field in the job notebook | entry 2 tab).
Click the "Save and Close" icon (disk with x)
Click OK (to exit the Select Expert)

14. Accounting for Sales Tax

Subject to Tax fields

An AR Invoice can have rows in its distribution subject to tax. In order to select which rows are subject to tax user must designate which distribution rows are subject to tax. This can be done by turning on a field in the distribution area(s) called "Subject to Tax." This is done under Utilities | Customize | AR Inv (Screen) for the "1. Basic" tab and/or the "2. Items" tab.

Sales Tax field

Users must also turn on the AR Invoice "Sales Tax" field. This is done under the Header Options under Utilities | Customize | AR Inv (Screen).

Tax Items and Groups

In order to designate which taxing entity(ies) to charge tax for, users must have Tax Items setup. (and Tax Groups if multiple entities have tax being charged). This is done under A/R | Items List. (Note that the items list can also be accessed through A/P | Items List, and Inventory | Items List) From the Items List, click "Add | Tax Item | Ok" to setup an item. After multiple items are set up, users can set up Tax Group(s) by clicking "Add | Tax Group | Ok."

Sales Tax Portion of an AR Invoice Database Information

For each taxing entity that has tax associated with the transaction will have a row in the GL_Detail table and one row in the GL_Det_Amt table. For example if a tax group that includes 3 tax items is placed on the invoice, regardless of the rows subject to tax, the system will generate 3 rows. The rows will be posted to the "Liability Account" designated in each of the 3 tax items.

Adding Sales Tax to the AR Invoice Forms

Generally the sales taxes are accumulated, and displayed at the bottom of the invoice. Optionally, users can designate which rows are subject to tax. The following illustrates how these two concepts can be accomplished in Crystal Reports.

Extra Group footers must first be created.
Three extra group footer sections must be created in order to accommodate the sales tax and retention formulas, which are intertwined.

1. Right click on the Group Footer 1 section, on the left hand column of the Design tab.
2. Select "Insert Section Below"
3. Notice that a new Group Footer 1 section appeared, called Group Footer 1b. Repeat steps 1 and 2 until there is a Group Footer 1d section.

Sales tax information is contained within Group Footer 1c. Four fields are generally placed in the row.

1. A text field called "Sales Tax".
    a. Insert | Text Object
    b. Place in the Group Footer 1c section, on the left side.
    c. Type "Sales Tax".
2. A field called IT_ITEMS.SALES_DESC, from the IT_ITEMS table.
    a. Database | Visual Linking expert
    b. Add the IT_ITEMS table. Link GL_MASTER.TAX_ID to IT_ITEMS.IDENTIFIER
    c. Insert | Field Object
    d. Place IT_ITEMS.SALES_DESC in the Group Footer 1c section, to the right of the text object that was just added.
3. A Formula called "Sales Tax Rate".
    a. Insert | Field Object | Formula Fields:
    b. Name the formula "Sales Tax Rate".

c. Place the following formula in the variable:
   totext ({IT_ITEMS.TAX_RATE}) + "%
d. Click the “Save and Close” icon.
e. Drag the new variable to the sales tax row to the right of the field that was just added

4. A running total field called “ Total Sales Tax”.

a. Insert | Field Object | Running Total Fields:
b. Name the variable “Total Sales Tax”.
c. On the left column under “Available Tables and Fields”
   i. Click @Amount
   ii. Click the “>“ to the left of “Field to summarize”
   iii. Make sure the “Type of summary” is set to “sum.”
   iv. In the Evaluate section, click “Use a formula.”
   v. Click the “X-2” icon to the right of “Use a formula.”
   vi. Place the following formula in the window:
   vii. {GL_DETAIL.ITEM_TYPE}=30
   viii. Click the “Save and Close” icon.
d. Click Ok
e. Drag the new running total field to the far right column of the sales tax row.

15. Accounting for Retention

Retention Database Information for AR Transactions.

Distribution Side of the Entry (revenue side):
When a distribution line item has retention, Toolbox will have a single row in the gl_detail table and one or more rows in the gl_det_amt table. For example, if a row has 1,000 as an amount and 10% retention, the system will generate one gl_detail table row, two gl_det_amt table rows (one for $1,000 for the total amount of the row, and one for $100 that represents the retention portion. The $1,000 will generally be posted to a Revenue account by the user (tied to the gl_accounts table with gl_det_amt.acct_id = gl_accounts.identifier). The $100 will not have an association to the GL_Accounts table. The gl_det_amt row with a $1,000 value will have an gl_det_amt.amt_type = 10, and the $100 row will have a gl_det_amt.amt_type = 20.

The GL_DET_AMT.AMT_TYPE values are as follows:

10 = Trade and Retention – no stored materials

20 = Retention
60 = Stored Materials Trade and Retention
61 = Stored Materials Retention

Control Side of the Entry (accounts receivable side):
A total of the trade portion of the distribution rows will be posted to the AR-Trade control account (GL#110 or 1100 in the default chart of accounts), and a total of the retention portion of the distribution rows will be posted to the AR-Retention control account (GL#112 and 1120 in the default chart of accounts). For example, if the above example only had one line of distribution, $900 would post to GL#1100, and $100 would post to gl#1120. Note that there will be a one entry into the gl_detail table and a one entry into the gl_det_amt table for the trade side control entry, and one entry in into the gl_detail table and one entry into the gl_det_amt table for the retention side control entry.

GL_Master Table Entry:
There will be a single entry into the GL_Master table for the entire transaction.

Adding Retention to the AR Invoice Forms

Generally the retention will be accumulated, and displayed after all the distribution rows are itemized. The following illustrates how this concepts can be accomplished in Crystal Reports.

Five fields are generally placed in the row.

1. A text field called “Gross Billing”.
   a. Insert | Text Object
   b. Place toward left side in Group Footer #1a.
   c. Type “Gross Billing”.
2. A text field called “Retention”.
   a. Insert | Text Object
   b. Place toward left side in Group Footer #1b.
   c. Type “Retention”.
3. A running total field called “Gross Amount”.
   a. Insert | Field Object | Running Total Fields:
   b. Name the running total “Gross Amount”.
   c. On the left column under “Available Tables and Fields”
      i. Click GL_DET_AMT.AMT_VALUE
      ii. Click the “>“ to the left of “Field to summarize”
      iii. Make sure the “Type of summary” is set to “sum.”
      iv. In the Evaluate section, click “Use a formula.”

v. Click the "X-2" icon to the right of "Use a formula."
vi. Place the following formula in the window:
{GL_DET_AMT.AMT_TYPE} = 10 and
{GL_DETAIL.ITEM_TYPE} <> 30
vii. Click the "Save and Close" icon.
viii. Drag and drop the formula into the Group Footer 1a section on the far right side.

d. Click Ok

4. A running total field called "Total Retention".
   a. Insert | Field Object | Running Total Fields:
   b. Name the variable "Total Retention".
   c. On the left column under "Available Tables and Fields"
      i. Click GL_DET_AMT.AMOUNT_VALUE
      ii. Click the ">" to the left of "Field to summarize"
      iii. Make sure the "Type of summary" is set to "sum."
      iv. In the Evaluate section, click "Use a formula."
      v. Click the "X-2" icon to the right of "Use a formula."
      vi. Place the following formula in the window:
      {GL_DET_AMT.AMT_TYPE} = 20
      vii. Click the "Save and Close" icon.
   d. Click Ok
   e. Drag the new running total field to the far right column of the Group Footer #1b section.
5. A formula called "Total Gross Billing"
   a. Click Insert | Field Object | Formula:
   b. Name the formula "Total Gross Billing"
   c. Place the following information in the formula:
      if isnull({#Total Sales Tax})
      then -{#Gross Amount}
      else
      -{#Gross Amount}-{#Total Sales Tax}
   d. Place the formula on the right side of the section Group Footer 1a.
6. A formula field called "Total before Sales Tax".
   a. Insert | Field Object | formula:
   b. Name the formula "Total before Sales Tax".
   c. Place the following information in the formula:
      if isnull({#Total Retention})
      then {@Total Gross Billing}
      else {@Total Gross Billing}+{#Total Retention}
   e. Click the "Save and Close" icon.
   f. Drag the formula to the far left column of the Group Footer #1b section and just below the #Total Retention field.

Make the Group Footers Conditionally Suppress

Group Footer 1a

Right Click on the Group Footer 1a description in the design column (far left).
Click Format Section
Click the X-2 box to the right of "Suppress (No Drill-Down)."
Insert the following formula:

```
        (isnull({#Total Retention})
or {#Total Retention}=0)   //suppress section if no retention
and
(isnull({#Total Sales Tax})
or {#Total Sales Tax}=0)  //suppress section if no sales tax
```

Thus, this section will not be necessary where this subtotal will equal the total of the invoice at the bottom.

Group Footer 1b

Right Click on the Group Footer 1b description in the design column (far left).
Click Format Section
Click the X-2 box to the right of "Suppress (No Drill-Down)."
Insert the following formula:

```
isnull({#Total Retention})
or {#Total Retention}=0   //suppress section if no retention
```

Thus, this section will not be necessary if there is no retention.

Group Footer 1c
Right Click on the Group Footer 1c description in the design column (far left).
Click Format Section
Click the X-2 box to the right of "Suppress (No Drill-Down)."
Insert the following formula:

```
isnull({#Total Sales Tax})
or {#Total Sales Tax}=0   //suppress section if no sales tax
```

Thus, this section will not be necessary if there is no sales tax.