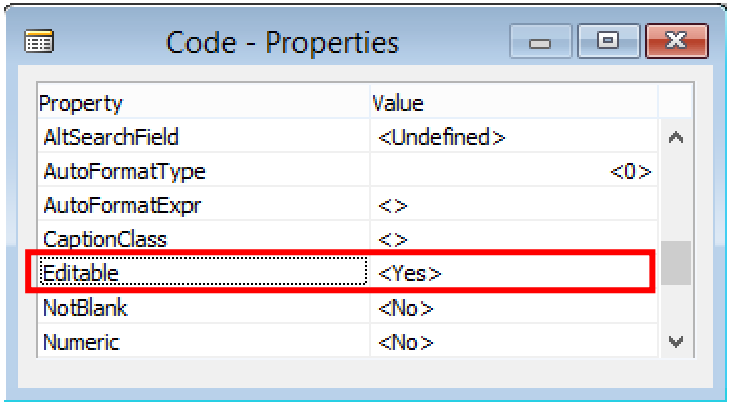
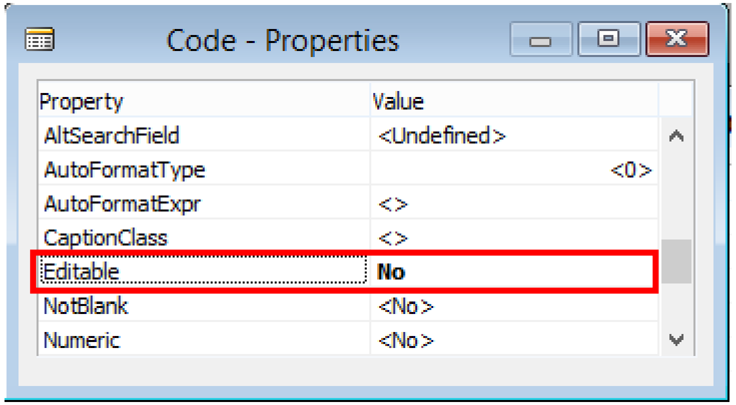
Development Environment Introduction in Microsoft Dynamics NAV 2015

Module 1 - Microsoft Dynamics NAV Development Environment

1. Non-default property values

Microsoft Dynamics NAV objects properties that have non default value of the property appear as bold in the Properties window.





Module 2 – Tables

1. Database Schema Synchronization

Source: Synchronizing Table Schemas - Microsoft Development network - https://msdn.microsoft.com/en-us/library/dn762357(v=nav.80).aspx and Sync-NAVTenant - Microsoft Development network - https://msdn.microsoft.com/en-us/library/dn466418(v=nav.90).aspx

When you design a table in Microsoft Dynamics NAV, you define the metadata for the table, such as the name and object ID, and the fields and their data types. This table definition describes the table that must be created in the SQL Server database to store business data. You create and modify the table definition by using the Microsoft Dynamics NAV Development Environment. When you make changes to the table definition in the development environment, or when you upgrade a Microsoft Dynamics NAV database to a newer version, you must synchronize the business database table schema with the new or changed table definition so that the two are the same. Table schema synchronization is performed by the Microsoft Dynamics NAV Server instance that connects to the business database.

Depending on the changes to a table definition, you might have to consider how to handle the existing data in the business data table when synchronizing the schema. For example, you must decide whether to keep or delete the data. Some table definition changes, such as adding and renaming a field, adding a new table, or modifying C/AL code to a table, do not affect data in the database table and are considered to be non-destructive changes. With non-destructive changes, you can synchronize the schema without any special data handling considerations. However, if you make destructive changes to the table definition, such as removing a field, then you will be warned by the development environment when you try to save the changes, and you must specify how to handle the data when synchronizing the schema.

Synchronizing Table Schemas with SQL Server

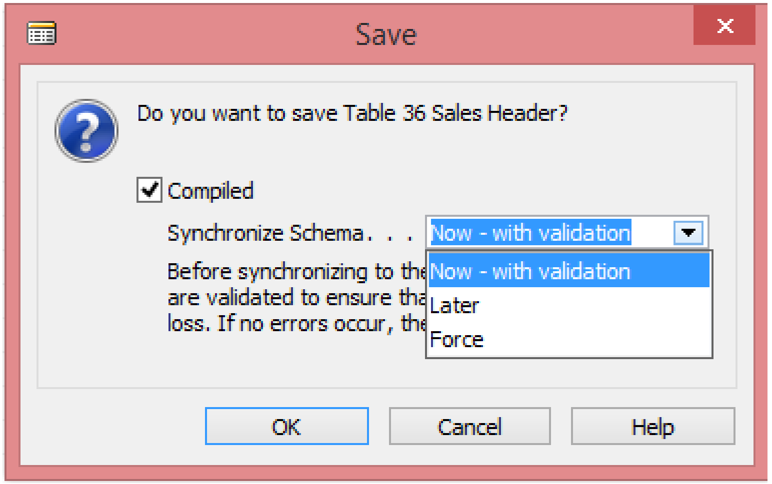
You can synchronize table schemas from the Microsoft Dynamics NAV Development Environment or by using the Sync-NAVTenant cmdlet in the Microsoft Dynamics NAV 2015 Administration Shell.

Synchronizing the Table Schema for Specific Tables From the Development Environment

In the development environment, you can synchronize the table schema for a specific table or for all tables. You have the option to synchronize a table schema when you perform one of the following operations on a table from the development environment:

- Save
- Save As
- Compile (This also pertains when you select multiple tables for compiling from Object Designer).

- Delete (This also pertains when you select multiple tables for deleting from Object Designer).



Schema Synchronization Options

When you perform one of the operations on a table, you can choose from the following schema synchronization options:

Option	Description
Now - with validation	Before applying changes to the business data table, Microsoft Dynamics NAV Server validates the changes to the table definitions to check whether they are destructive changes. This includes changes that will delete data in the fields of the business data table which are affected by the changes. • If there are no destructive changes to the table, then the schema changes are applied to the business data table immediately. • If there are destructive changes, Microsoft Dynamics NAV Server checks that there are table synchronization instructions in an upgrade codeunit. If there are instructions, then the schema changes are applied to the business database table according to the instructions. If there are no instructions, then an error message appears. The table definition changes are not saved and the schema changes are not applied.

Later	Table definition changes are saved and compiled in the application but the changes are not validated or applied to the business data table. You synchronize the table schema later by doing one of the following: • Save or compile the table from Object Designer in development environment and choose either the **Now - with validation** or **Force** synchronization option. • Use the **Sync. Schema for All Tables** option on the **Tools** menu. • Run the Sync-NAVTenant cmdlet from the Microsoft Dynamics NAV 2015 Administration Shell.
Force	Table definition changes are applied to the business data table schema without validation. For destructive changes, data in columns of the business data table that are affected by changes will be deleted. This option ignores any table synchronization instructions for the table in upgrade codeunits.

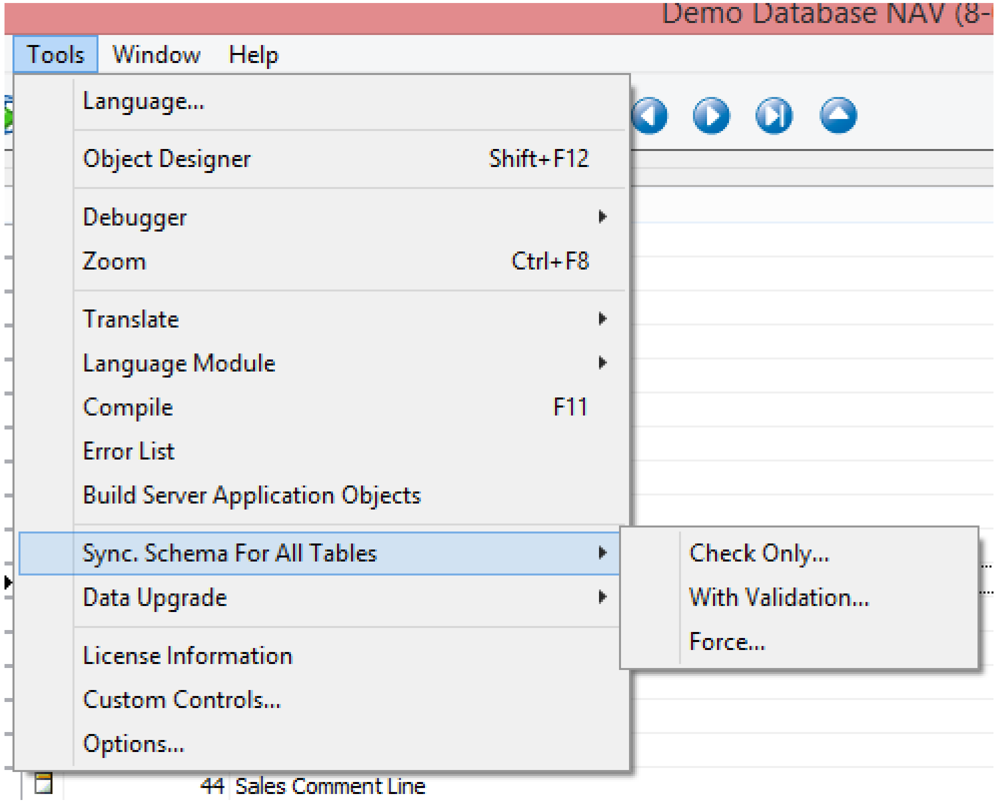
Synchronizing All Table Schemas From the Development Environment

From the development environment, you can synchronize table schema changes for all tables in the database. This is useful when you upgrade from an earlier version of Microsoft Dynamics NAV or when you made changes to a table or multiple tables previously and chose to synchronize later.

To synchronize schema changes for all tables, on the **Tools** menu, under **Sync. Schema For All Tables**, you can choose one of the following options:

Option	Description
Check Only	Microsoft Dynamics NAV Server validates the table definition changes but does not apply the schema changes to the business database. • If there are no destructive changes to any of the tables, no errors occur. • If there are destructive changes, Microsoft Dynamics NAV Server checks that there are table synchronization instructions in an upgrade codeunit. If

	there are instructions, then no errors occur. If there are no instructions, an error occurs. For more information about how Microsoft Dynamics NAV Server validates changes, see the How Microsoft Dynamics NAV Server Validates Table Schema Changes section.
With Validation	Before applying changes to the business data table, Microsoft Dynamics NAV Server validates the table definition changes to check for destructive changes to the table. • If there are no destructive changes to the table, then the schema changes are applied to the business data table immediately. • If there are destructive changes, Microsoft Dynamics NAV Server checks that there are table synchronization instructions in an upgrade codeunit. If there are instructions, then the schema changes are applied to the business database table according to the instructions. If there are no instructions, then an error message appears. Table definition changes are not saved and the schema changes are not applied. For more information, see How Microsoft Dynamics NAV Server Validates Table Schema Changes.
Force	Table definition changes are applied to the business data table schema without validation. For destructive changes, data in columns of the business data table that are affected by changes will be deleted. This option ignores any table synchronization instructions for the table in upgrade codeunits. You should use this option only when you are sure that there is no risk of unwanted data loss.


Demo Database NAV (8-
Tools
Window
Help
Language...
Object Designer Shift+F12
Debugger
Zoom Ctrl+F8
Translate
Language Module
Compile F11
Error List
Build Server Application Objects
Sync. Schema For All Tables
Data Upgrade
License Information
Custom Controls...
Options...
Check Only...
With Validation...
Force...
44 Sales Comment Line

Sync-NAVTenant cmdlet

Use the Sync-NAVTenant cmdlet to synchronize the database schema in a tenant database with the schema in the application database.

Parameters
-Force
Forces the command to run without asking for user confirmation.

-Mode<Int>
Specifies how the database schema for the tenant database is synchronized with the database schema that the mounted application database defines. The default value is Sync, ForceSync = 0, Sync = 2 and CheckOnly = 3.

-ServerInstance<String>
Specifies the Microsoft Dynamics NAV Server instance that the application database and the tenant database are mounted against, such as DynamicsNAV90.

-Tenant<TenantId>
Specifies the ID of the tenant that you want to synchronize with the application, such as Tenant1.

Example:
```
PS C:\> Sync-NAVTenant –ServerInstance DynamicsNAV90 -Tenant 'Tenant1'
```

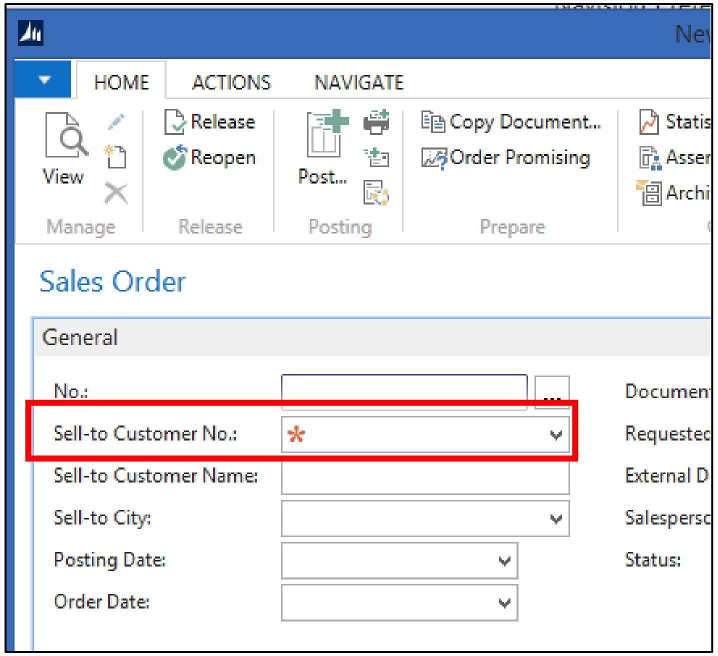
Module 3 – Pages

1. Mandatory Fields

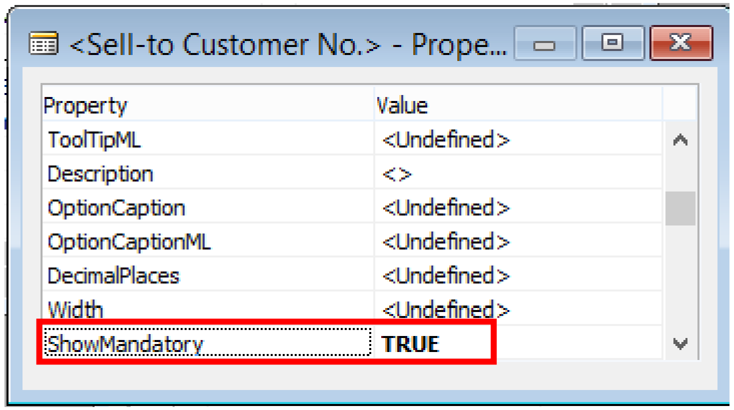
Source: Simplified UX - White Paper - Brian Nielsen (Principal Program Manager), Nikola Kukrika (Software Engineer), Jacob Winther (Senior UX Designer), July 2014, Microsoft

Less experienced users often do not know which fields to fill in as a minimum, for example on the customer card, for the customer to be used in processes, such as invoice posting. All the help they get is an error message when they try to complete the process.

To help users with this issue, the ShowMandatory property has been introduced. In this context, "mandatory" means that a field is marked with red asterisk to indicate to users that they are expected to fill the field. The user can still leave page without getting error messages if the field is not otherwise validated by business logic.



To set the field as mandatory developer can change value of property ShowMandatory.



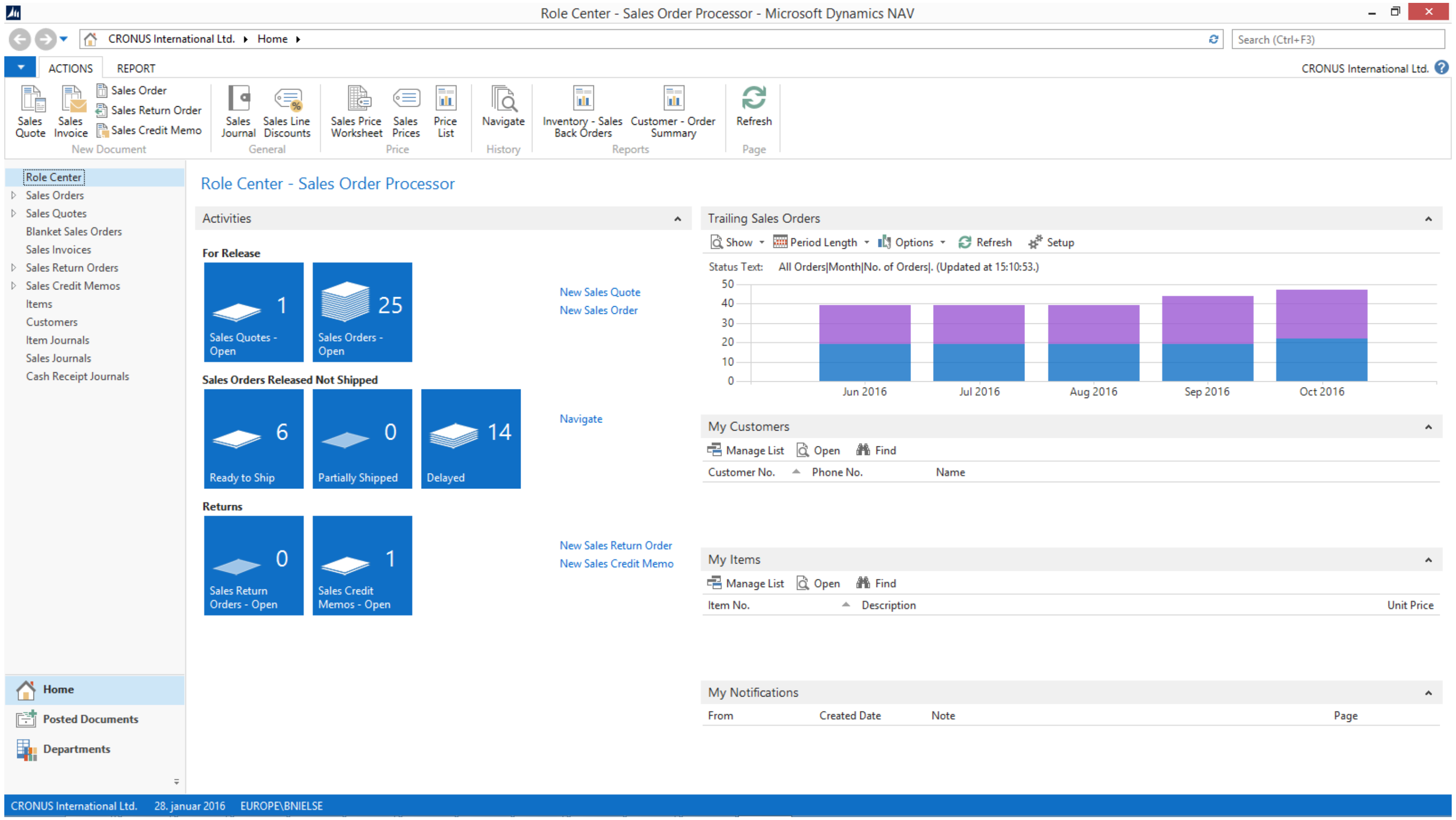
2. UI Elements Removal

Source: Microsoft Dynamics NAV 2015 - Simplified UX - Brian Nielsen (Principal Program Manager), March 2014, Microsoft

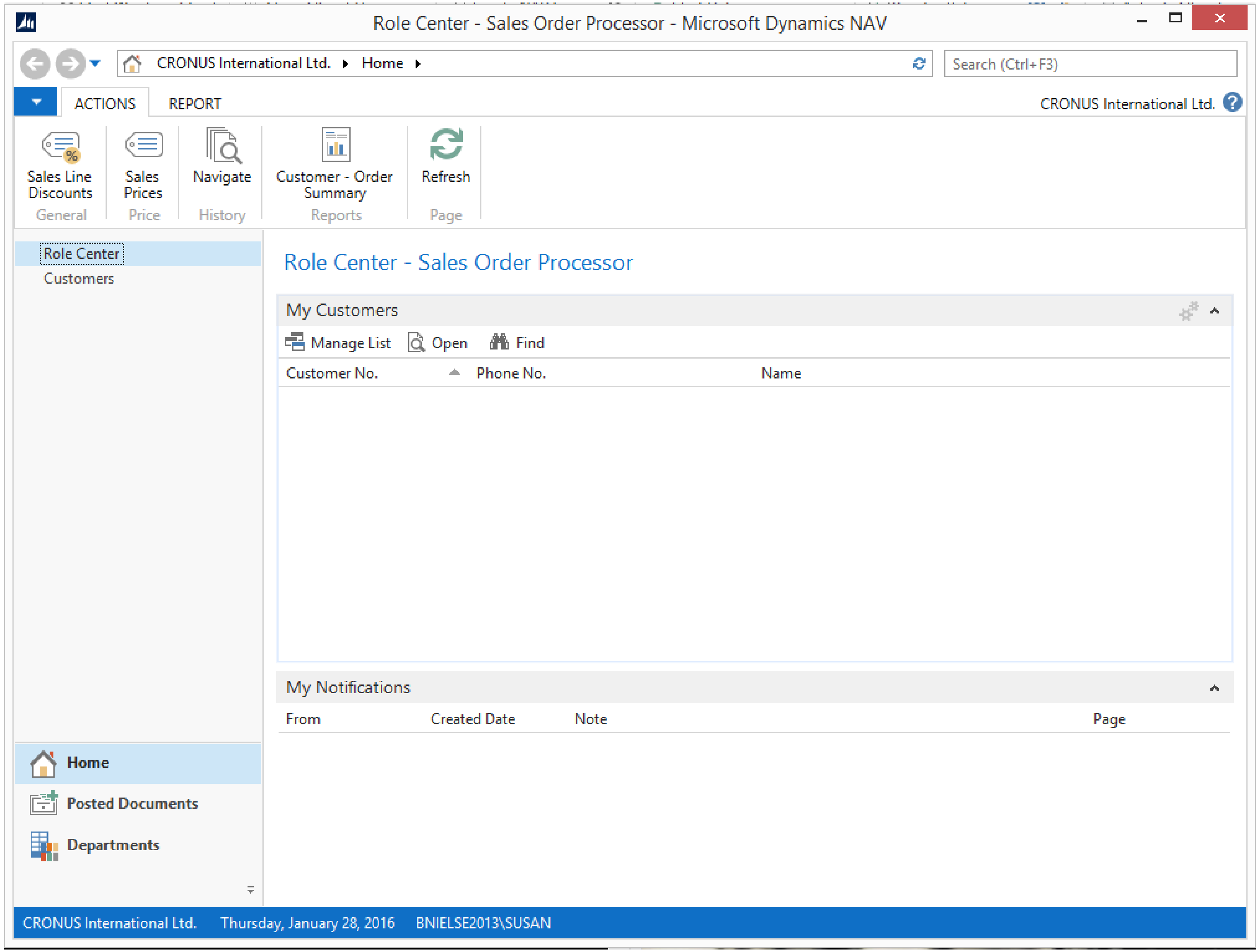
NAV 2015 remove UI Elements not in the user's license or permissions set the UI can be made very simple, only showing the things the user have access to.

Example with a sales order processor with a very restricted permission set before and after the system removes UI elements not in the user's permissions.

Before UI Elements were removed.



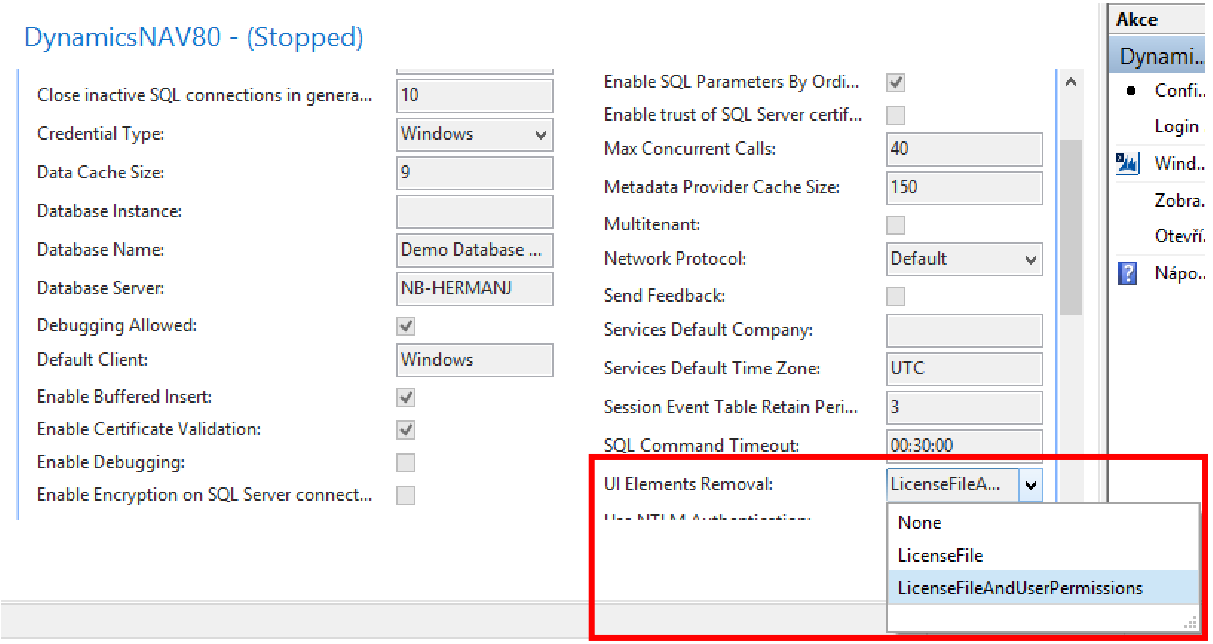
After UI Elements were removed.



3. UI Elements Removal Setup

Source: How to: Specify When UI Elements Are Removed, Microsoft Dynamics NAV 2015, Microsoft Developer Network - https://msdn.microsoft.com/en-us/library/dn271718(v=nav.80).aspx and How to: Remove UI Elements Using the AccessByPermission Property, Microsoft Dynamics NAV 2015, Microsoft Developer Network - https://msdn.microsoft.com/en-us/library/dn789564(v=nav.80).aspx

How to Specify When UI Elements Are Removed



Depending on the setting in the UI Elements Removal field in the Microsoft Dynamics NAV Server Administration tool, only user interface (UI) elements on objects in the license or on objects that the user has permissions to will appear in the user interface.

All types of UI elements will be removed if they relate to objects that are not included in the license or the user does not have the required permission to the objects:

- Fields
- Actions
- Page parts

UI elements that are directly related to an object through the TableRelation or the CalcFormula property can be removed automatically according to the license file and/or user permissions.

To specify when UI elements are removed user can change settings using Microsoft Dynamics NAV Server Administration tool. In the UI Elements Removal field user can choose one of following options:

- None - All UI elements are displayed, even if the license file does not include the related object and the user does not have permissions to the related object.
- LicenseFile - A UI element is removed if the related object is

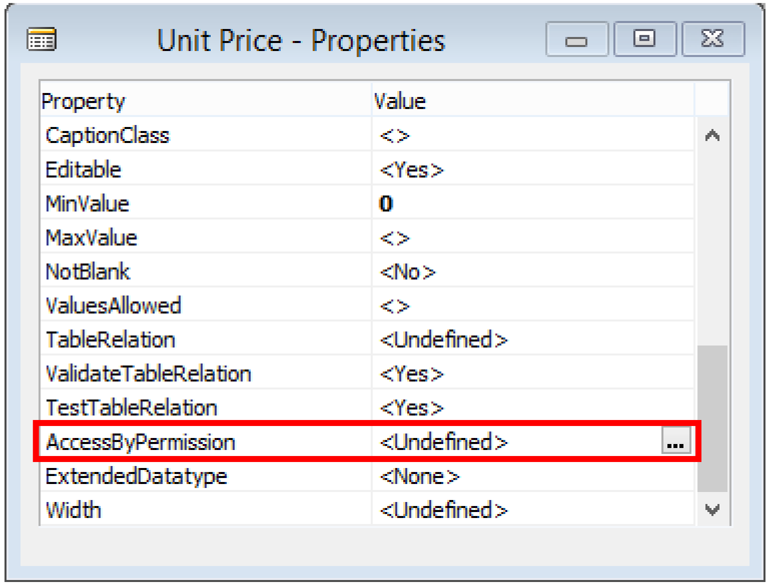
not included in the license file.

- LicenseFileAndUserPermissions -
- A UI element is removed if the related object is not included in the license file and the user does not have permissions to the object as defined in the AccessByPermission property for the related UI element. By default, this option is selected.

How to: Remove UI Elements Using the AccessByPermission Property

For UI elements that are not directly related to an object, you can use the AccessByPermission property to remove the element according to the user's permission to a related object.

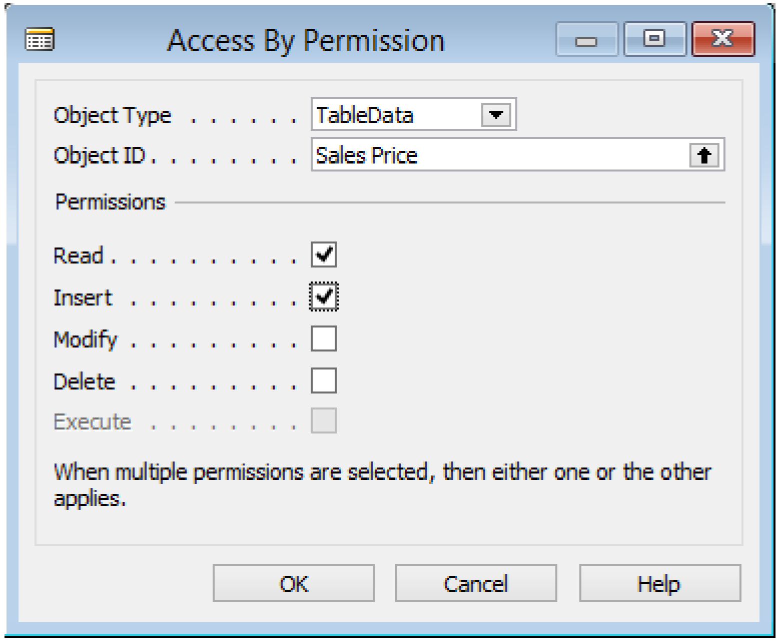
The **AccessByPermission** property sets a value for a table field or UI element that determines the permission mask for an object that a user must have to see and access the related page fields or UI element in the client. The UI element will be removed at runtime if the user does not have permissions to a certain object as specified in the **Access By Permission** window.



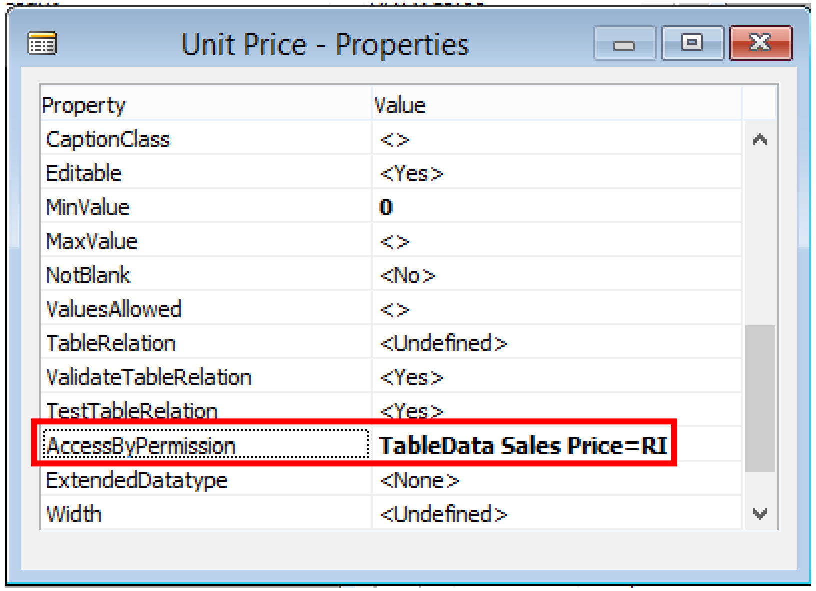
To remove UI elements by using the AccessByPermission property developer can do following:

- In the Microsoft Dynamics NAV Development Environment, view the properties of a table field for which you want to remove its page control(s) or view the properties of a field, action, or part on a page object.
- For the AccessByPermission property, choose the AssistEdit button.
- In the Access By Permission window, fill the fields as described next:
    - Object Type - Specify the type of object to which

permission is required for the UI element to be visible. Object ID - Specify the object to which permission is required for the UI element to be visible.
  - Read - Specify if Read permission is required for the UI element to be visible.
  - Insert - Specify if Insert permission is required for the UI element to be visible.
  - Modify - Specify if Modify permission is required for the UI element to be visible.
  - Delete - Specify if Delete permission is required for the UI element to be visible.
  - Execute - Specify if Execute permission is required for the UI element to be visible.
  - When multiple permissions are selected, then one or another applies. For example, if you choose Insert and Modify, then the user must have either the Insert or the Modify permission to the object for the UI element to be visible.



- Save and compile the changes. The UI element in question is now invisible to users who do not have the specified permissions to the object.


Unit Price - Properties
Property
Value
CaptionClass
<>
Editable
<Yes>
MinValue
0
MaxValue
<>
NotBlank
<No>
ValuesAllowed
<>
TableRelation
<Undefined>
ValidateTableRelation
<Yes>
TestTableRelation
<Yes>
AccessByPermission
TableData Sales Price=RI
ExtendedDatatype
<None>
Width
<Undefined>

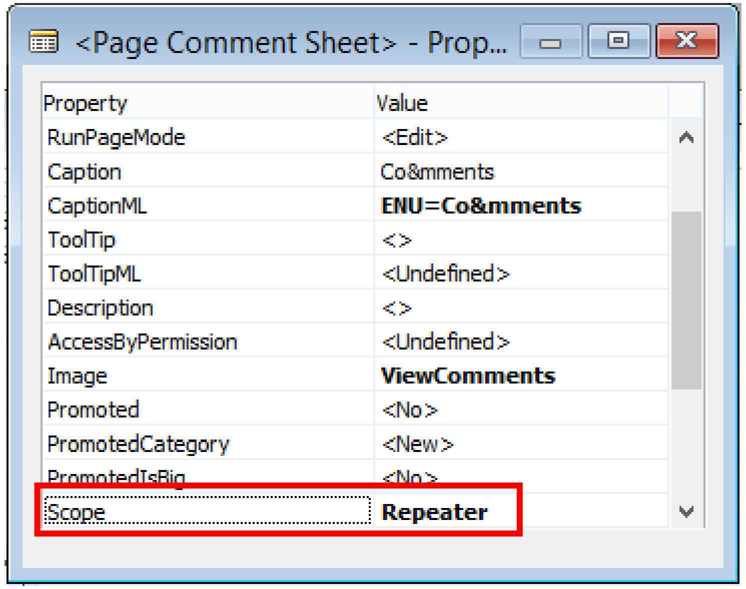
4. Defining Action Scope for NAV Page

Source: Defining Action Scope for Microsoft Dynamics NAV Pages, Microsoft Dynamics NAV 2015, Microsoft Developer Network - https://msdn.microsoft.com/en-us/library/dn789514(v=nav.80).aspx

Defining Action Scope for Microsoft Dynamics NAV Pages

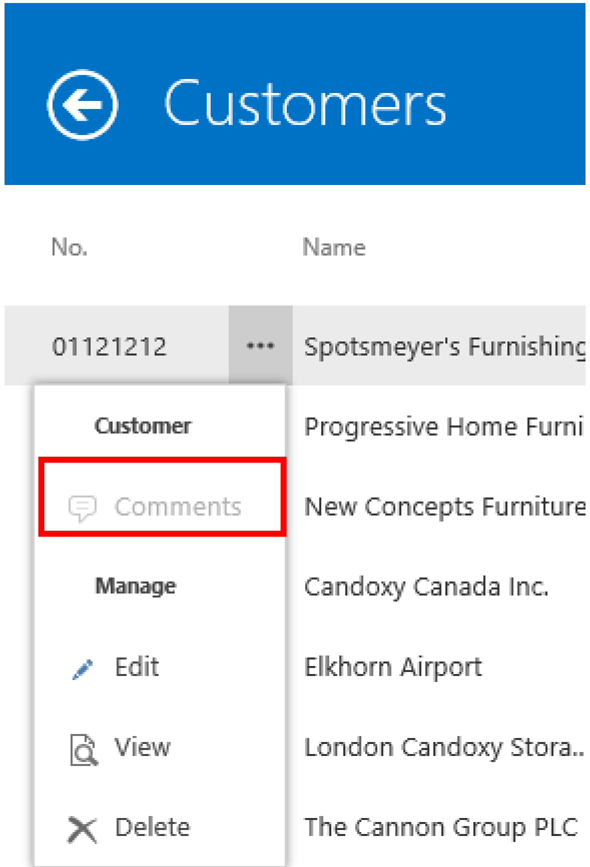
When developing pages for Microsoft Dynamics NAV Tablet and Web client that include a repeater control, it is useful to be able to define whether the actions available on a page apply to the whole page or are related to the repeater control on the page. The purpose of the **Scope** property is to enable application developers to add row-specific actions to the shortcut menu which is available to the user on each line. This gives users a more direct way to invoke actions that relate to the selected row/line.

This is the case when you have, for example, Line Comments which are related to a line, but appear in the ribbon. You can specify the scope of action by setting the property on the page action to be either **Page** or **Repeater**.



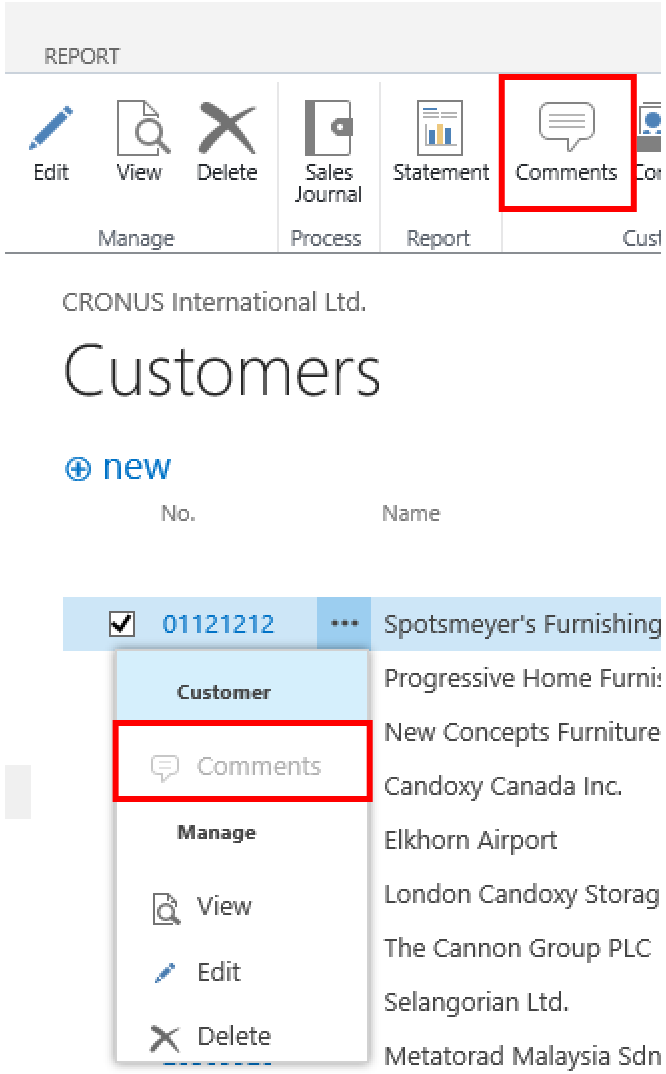
Tablet Client

Scope property = Repeater – action is displayed only in repeater scope.



Web Client

Scope property = Repeater – action is displayed in action ribbon and in repeater scope as well.

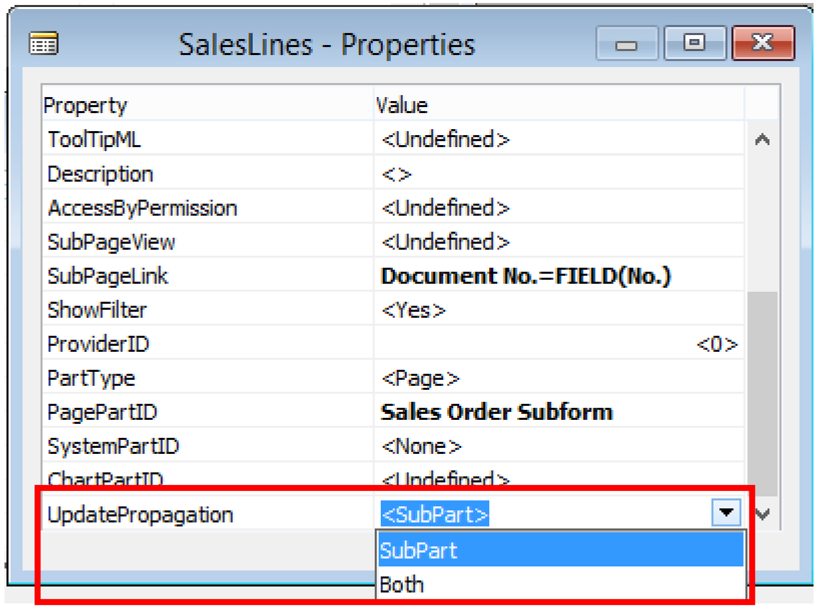


5. Update Parent Page from a Subpage

Source: UpdatePropagation Property, Microsoft Dynamics NAV 2015, Microsoft Developer Network - https://msdn.microsoft.com/en-us/library/dn789582(v=nav.80).aspx

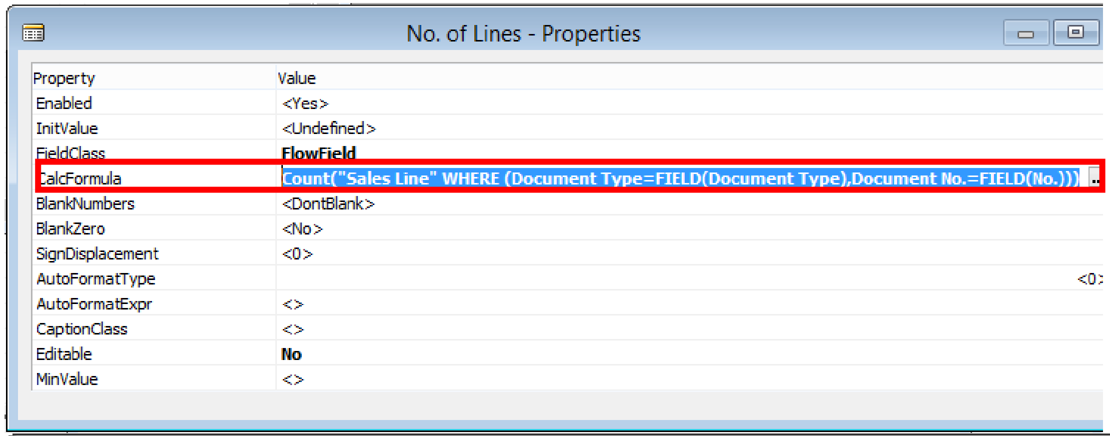
Update Parent Page from a Subpage

Sets a value that specifies what happens when a main page with a subpage is updated. The **UpdatePropagation** property is available on **Part** controls and has two options; **Subpage** and **Both**. If **UpdatePropagation** is set to **Subpage**, an update action will update the subpage only. If **UpdatePropagation** is set to **Both**, an update action will update both the main page and the subpage. This is useful if a value on the subpage changes, and you want a main page total to be refreshed automatically.

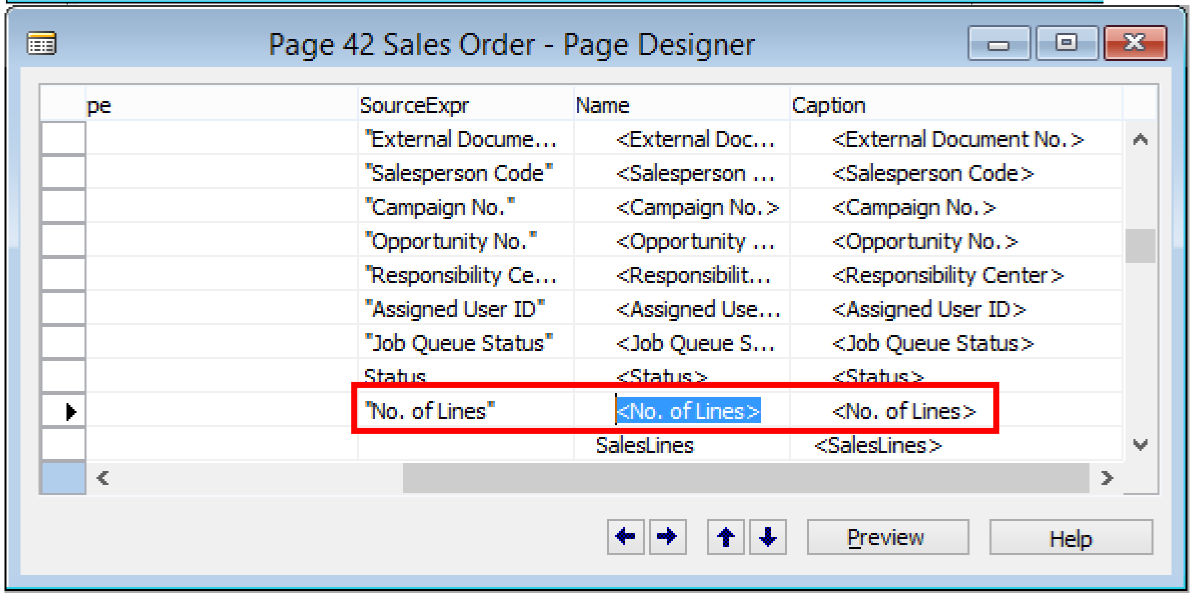


Example:
Create new field on Sales Order page – No. of Lines which will automatically calculate number of lines created for the Sales Order.

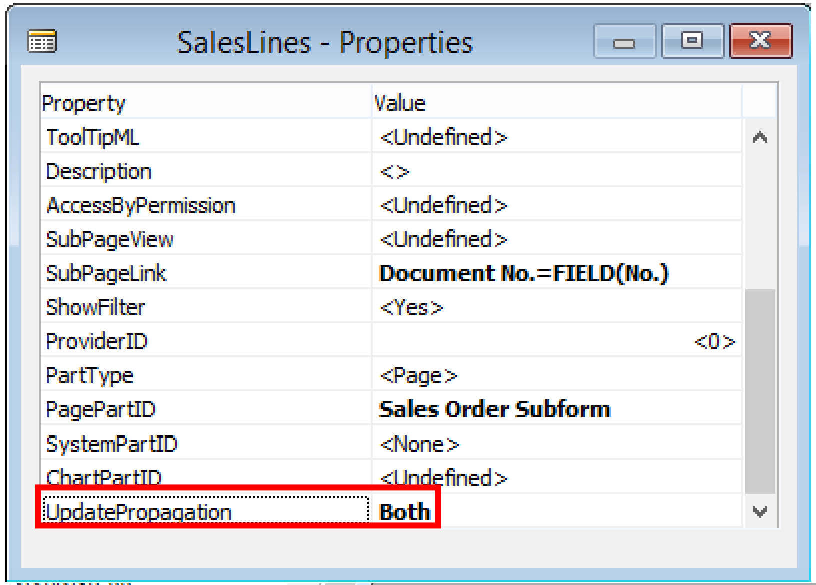
1. Create new non-editable field No. of Lines – int – Flowfield in table Sales Header. Flowfield calculates number of existing records in table Sales Line for Document Type and Document No. same as for Sales Header.



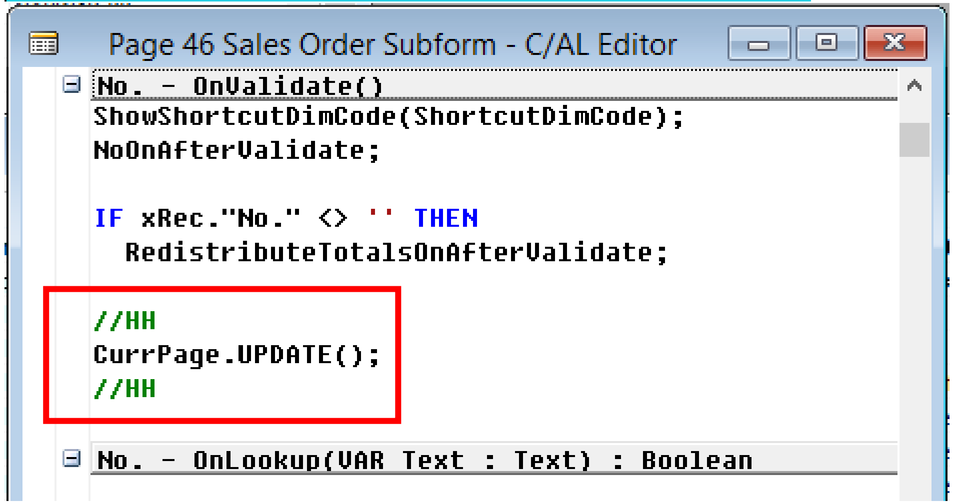
2. Add new field to Sales Order page.

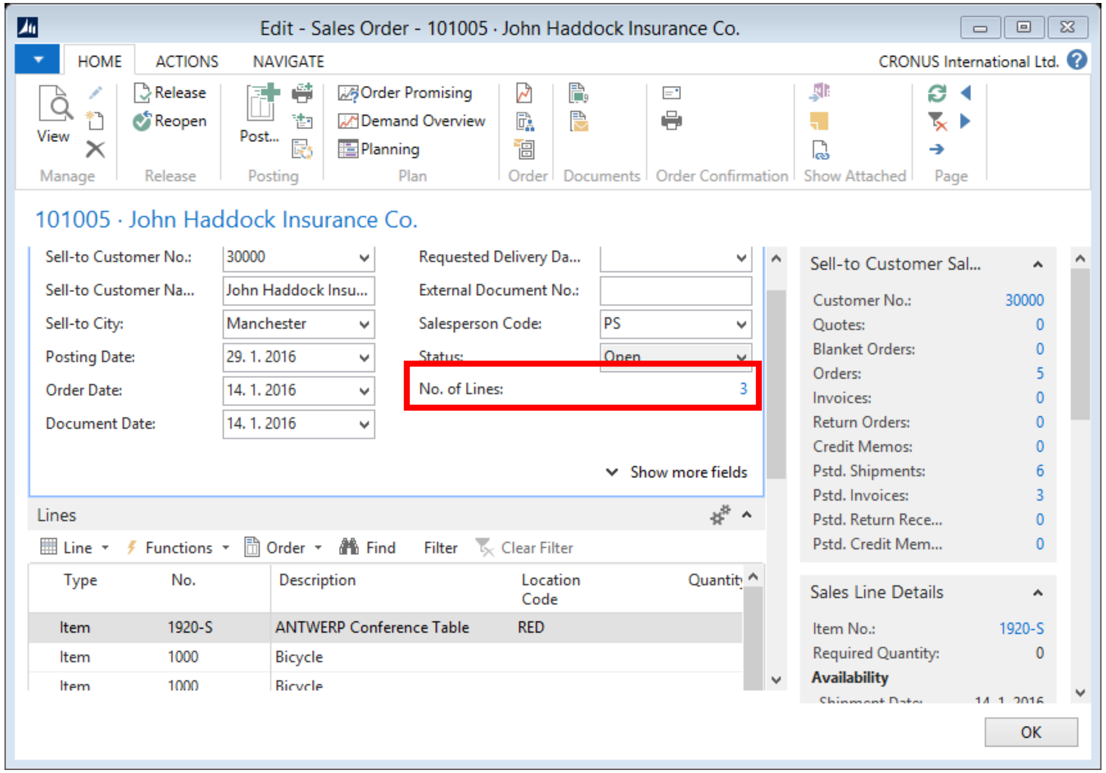


3. Change Update Propagation Property to Both for subpage with lines.



4. Add CurrPage.UPDATE(); call on appropriate subpage trigger, for example OnNewRecord.

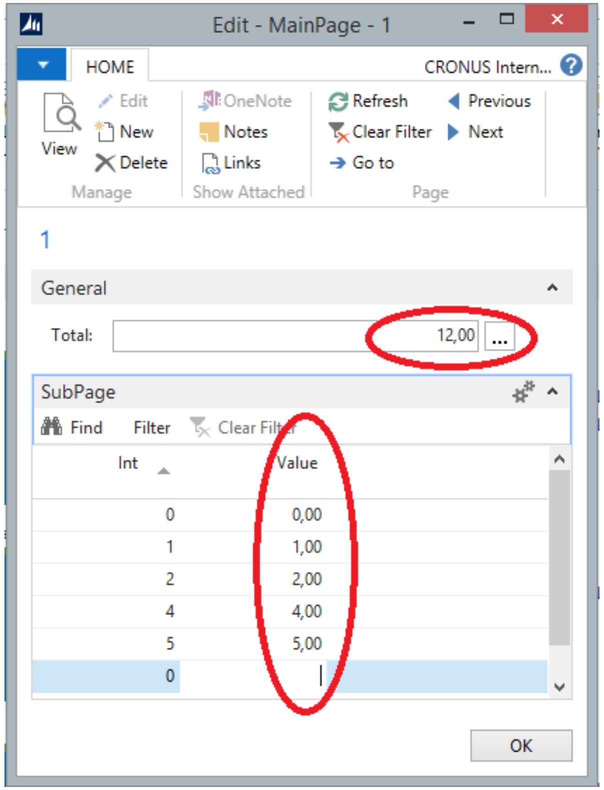


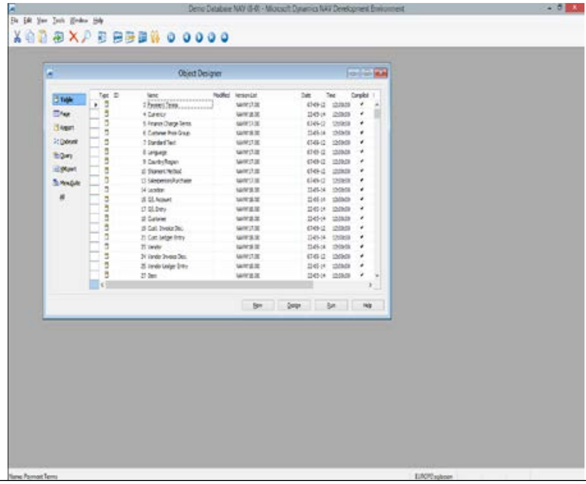
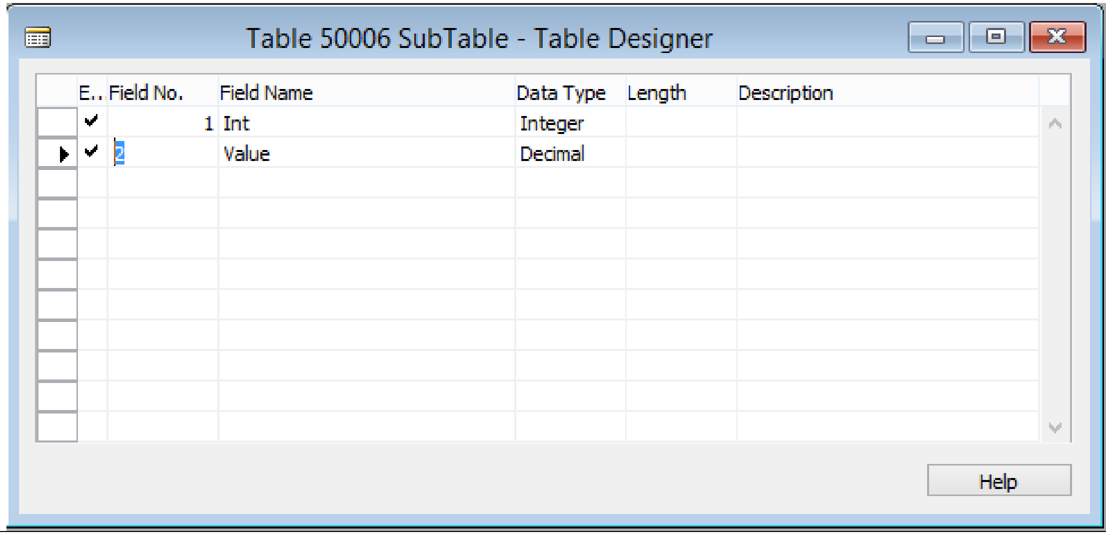

Edit - Sales Order - 101005 · John Haddock Insurance Co.
HOME
ACTIONS
NAVIGATE
CRONUS International Ltd.
View
Manage
Release
Reopen
Release
Post...
Posting
Order Promising
Demand Overview
Planning
Plan
Order
Documents
Order Confirmation
Show Attached
Page
101005 · John Haddock Insurance Co.
Sell-to Customer No.: 30000
Sell-to Customer Na... John Haddock Insu...
Sell-to City: Manchester
Posting Date: 29. 1. 2016
Order Date: 14. 1. 2016
Document Date: 14. 1. 2016
Requested Delivery Da...
External Document No.:
Salesperson Code: PS
Status: Open
No. of Lines: 3
Show more fields
Lines
Line
Functions
Order
Find
Filter
Clear Filter
Type
No.
Description
Location Code
Quantity
Item 1920-S ANTWERP Conference Table RED
Item 1000 Bicycle
Item 1000 Bicycle
Sell-to Customer Sal...
Customer No.: 30000
Quotes: 0
Blanket Orders: 0
Orders: 5
Invoices: 0
Return Orders: 0
Credit Memos: 0
Pstd. Shipments: 6
Pstd. Invoices: 3
Pstd. Return Rece... 0
Pstd. Credit Mem... 0
Sales Line Details
Item No.: 1920-S
Required Quantity: 0
Availability
OK

6. Lab - Update Parent Page from a Subpage

Source: Demo Script - Refreshing Parent Page with UpdatePropagation, Stuart Glasson (Program Manager), August 2014, Microsoft

The scenario in this lab is to build a header/subpage pattern page and display a current total in the header. At the end, you will create a page that looks and behaves like the page in the following illustration where the sum of the values is totalled in the **General** FastTab without a user needing to refresh the page.

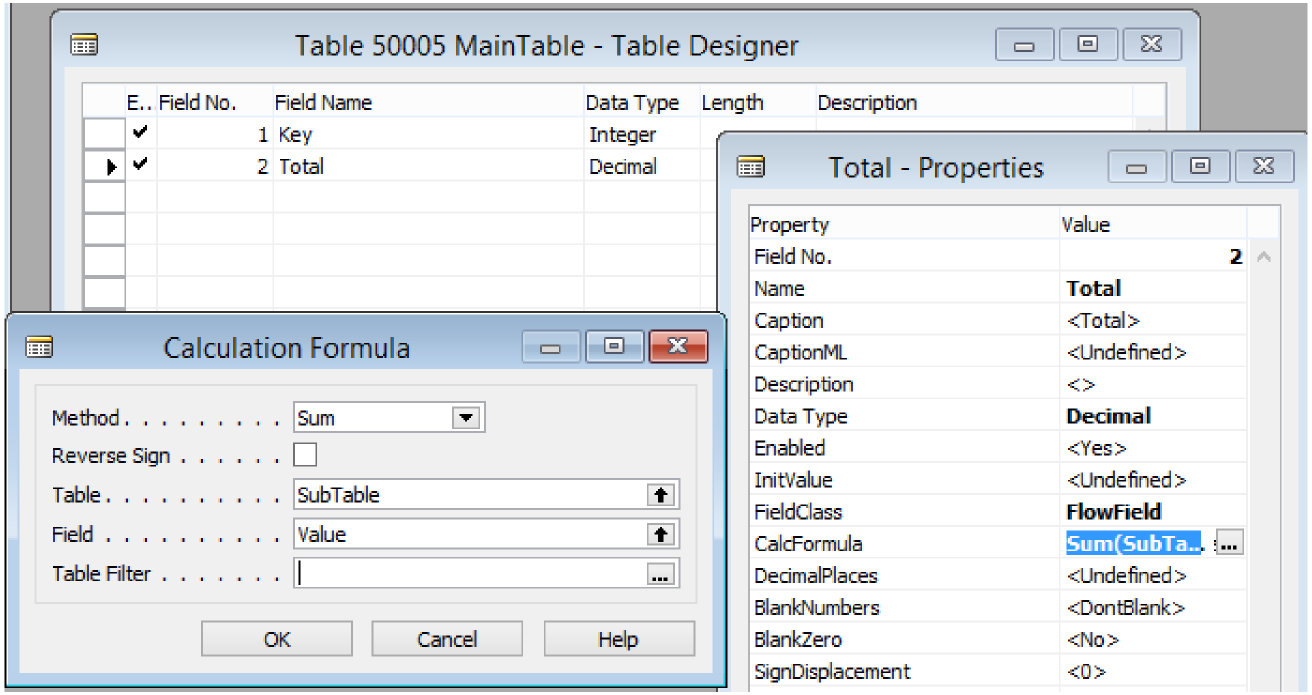


What to do	What to say	Screenshots
1. Open the Microsoft Dynamics NAV 2015 Development Environment. 2. On the **Tools** menu, choose **Object Designer**.	So, let's get started by opening the Development Environment and Object Designer.	
3. Choose Table and then choose New. a. Specify two fields: • **Int** as Integer • **Value** as Decimal b. Save the table as follows: ID: **50006** Name: **SubTable** c. Close Table Designer.	Build the table that will be the data source for the subpage.	

4. Choose Table and then choose New.
   a. Specify two fields:
      - **Key** as Integer
      - **Total** as Decimal
   b. Select the **Total** field and open the **Properties** window (Shift+F4).
   c. Set the **FieldClass** property to **FlowField.**
   d. In the **CalcFormula** property, choose the **AssistEdit** button to open the CalcFormula wizard.
   e. Set the following formula:
      Method: **Sum**
      Table: **SubTable**
      Field: **Value**.
   f. Choose the **OK** button and close the Calculation Formula wizard and then close the **Properties** window.
   g. Save the table as follows:
      ID: **50005**
      Name: **MainTable**
   h. Close Table Designer.

Next, build the table that will be the data source for the main page.

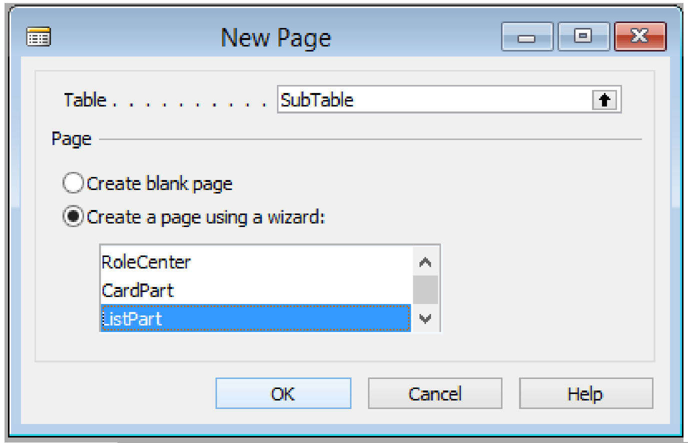
Note that the total for the **Total** field is a FlowField calculated as the sum of values from table 50006.

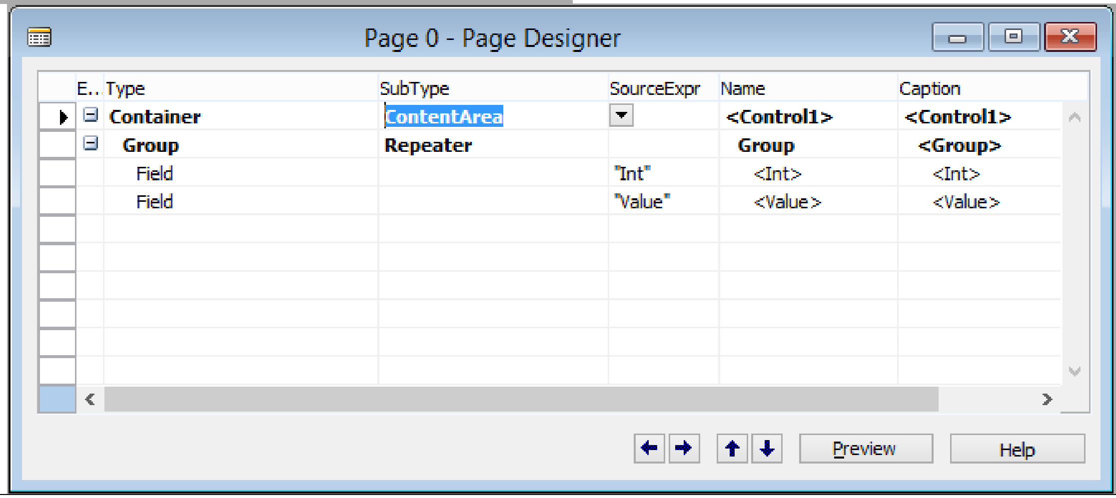


5. Choose Page and then choose New.
   a. Specify the following:
      Table: **SubTable**
      Create a Page: **ListPart**
   b. Add both fields.
   c. Close, save, and compile the page:
      ID: **50006**
      Name: **SubPage**

Now that you have your data sources, it's time to build the pages.

First, build the subpage that will show the line information. For this, use the Page Designer wizard and pick a ListPart page type.





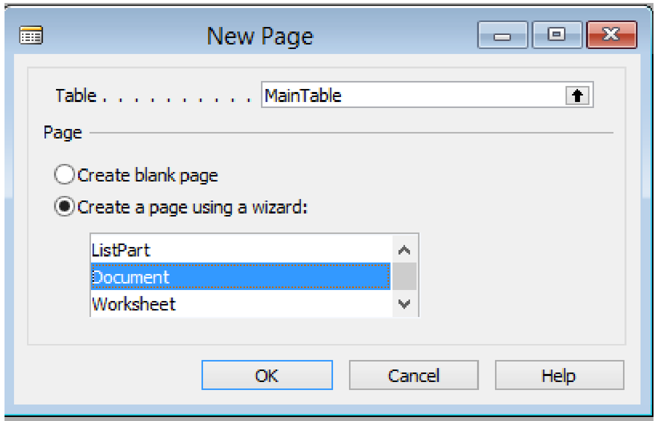
6. Choose Page and then choose New.
    a. Specify the following:
       Table: **MainTable**
       Create a Page: **Document**
    b. Choose the **OK** button.
    c. Choose **Next** to create a General FastTab.
    d. Add the **Total** field to the Field Order list box.
    e. Choose **Finish**.
    f. Select the first empty line and add a new entry:
       Type: **Part**
       Subtype: **Page**.
    g. Choose the left arrow button to indent the subpage entry one step back.
    h. Open the **Properties** window for the Part:Page entry and set the **PagePartID** property to **SubPage**.
7. Choose **Preview**.
8. Close, save, and compile the page:
   ID: **50005**
   Name: **MainPage**.

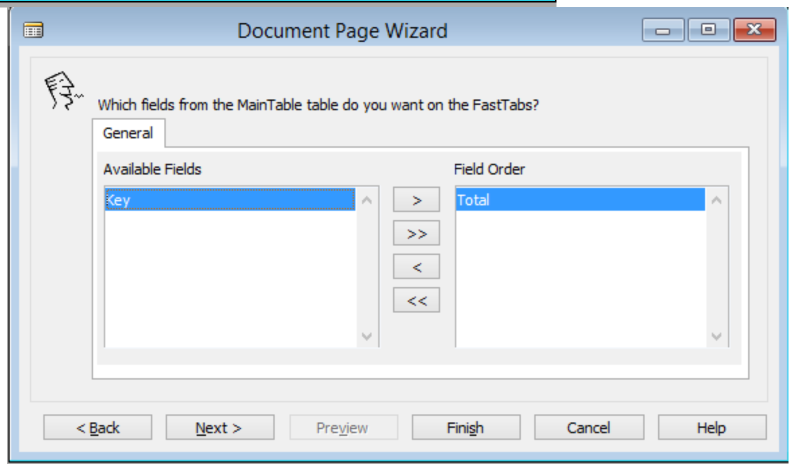
Next, build the main page, which will show the header information. Again, use the Page Designer wizard and this time pick the Document page type.

As you make the page, you only want to display the total value in the header.

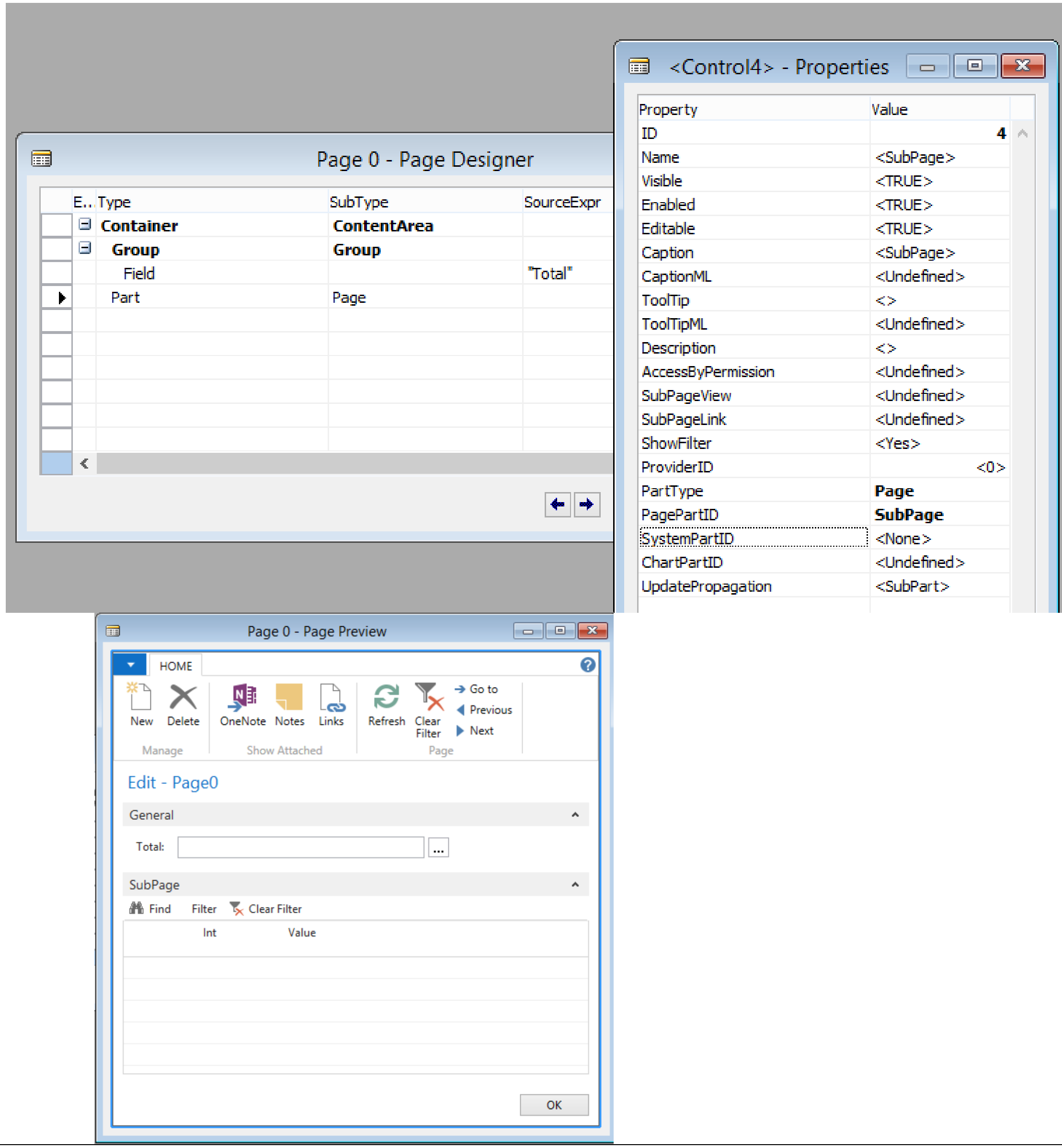
After adding the **Total** field, close the Page Designer wizard and add the subpage to the main page.

In Page Designer, add the subpage to the page. Make sure to choose the left arrow to indent the subpage entry one step back. If you do not do this, the subpage part will display next to the **Total** field and you want it to be underneath.



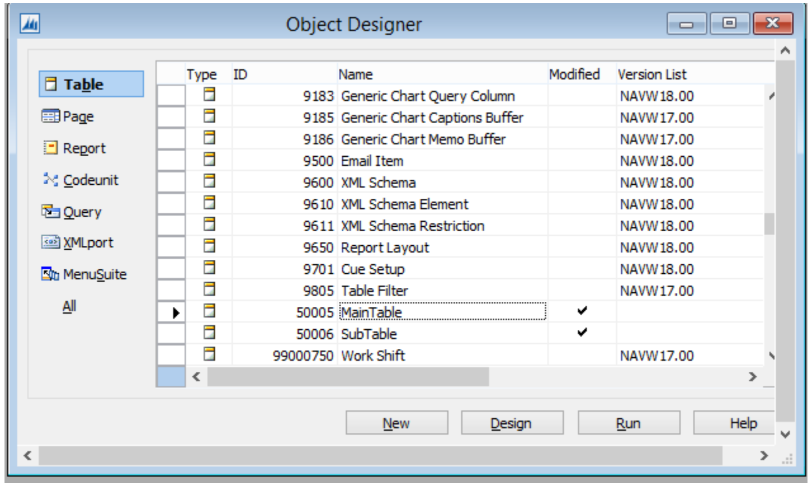


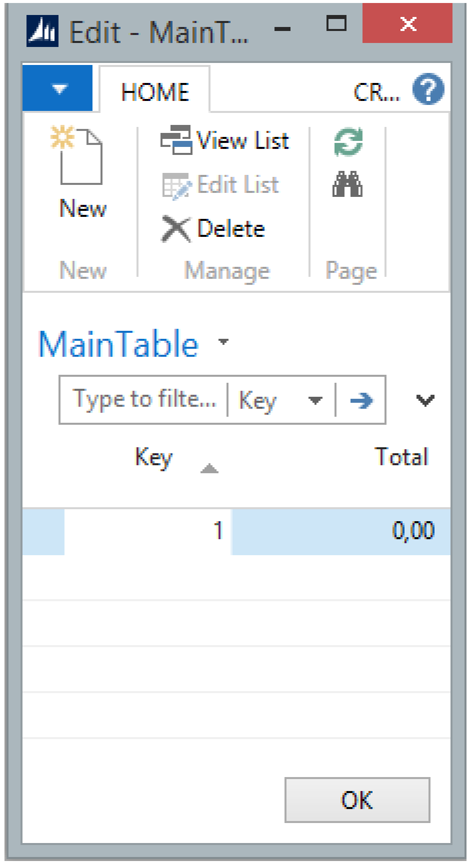
Choose the **Preview** button to see if you are on track.

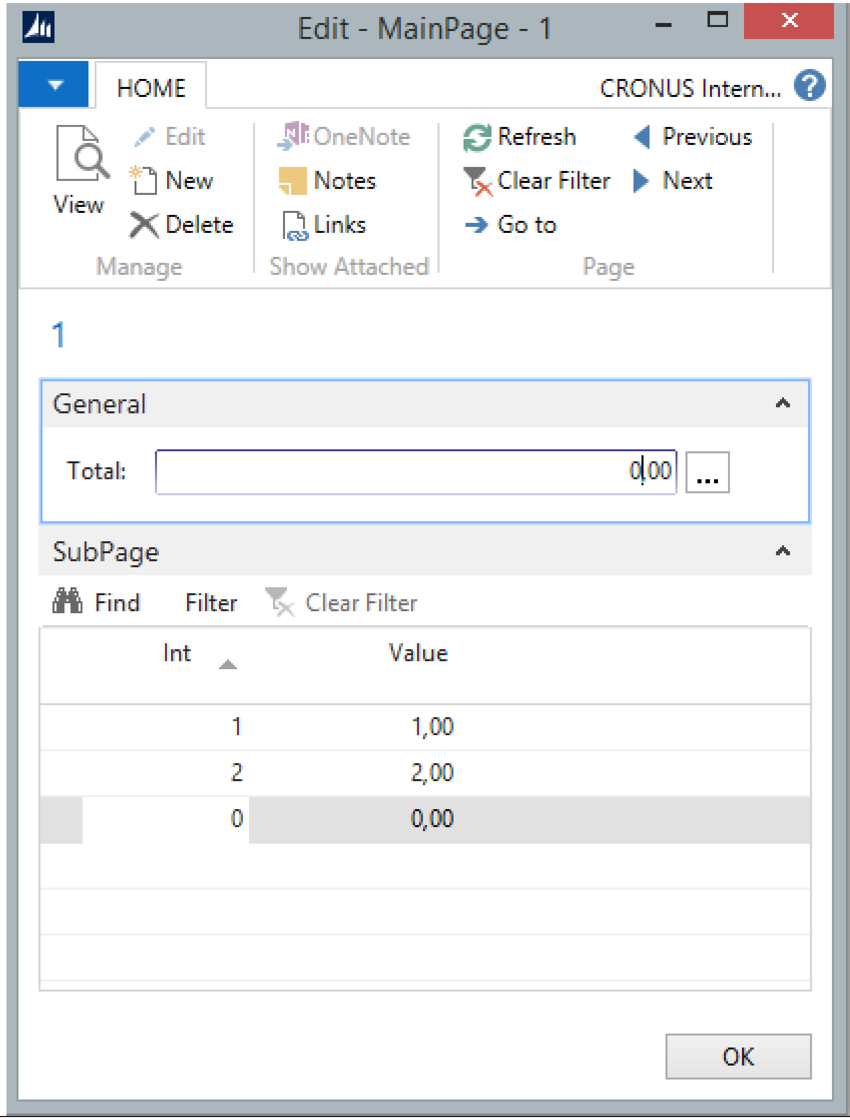


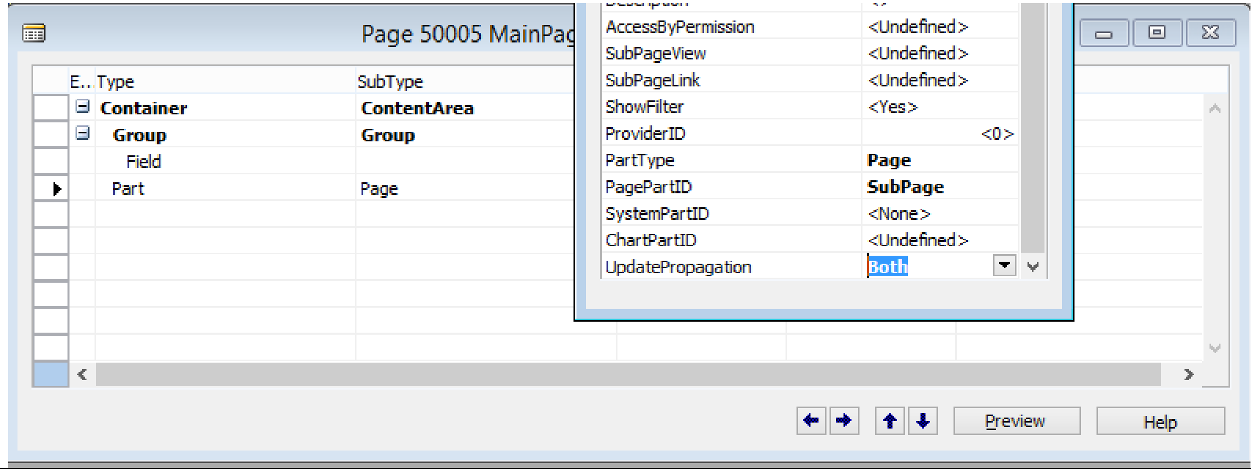
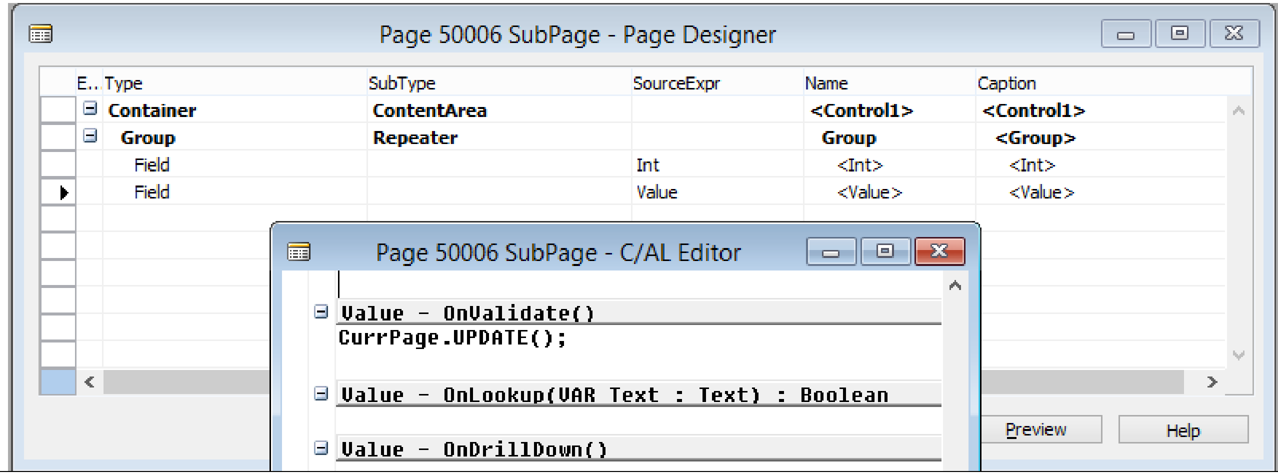
9. From Object Designer, run Table MainTable.
10. The MainTable table opens. Enter 1 in the table.
11. Choose the **OK** button to close the page.
12. Switch back to the development environment.

To test this, add a demo data record to the main table. From Object Designer, run Table Main Table and add the number 1 to the table.





13. From Object Designer, run Page MainPage. The Microsoft Dynamics NAV Windows Client opens and displays the page. 14. On the **Manage** tab, choose Edit. Add some test values.	Now, test if the header/subpage solution works. Run the Main Page. Add some values and notice that as you add them, the **Total** field does not update. If you refresh the page, then it does, but it does not do it automatically. Let's fix that with the new UpdatePropagation functionality.	

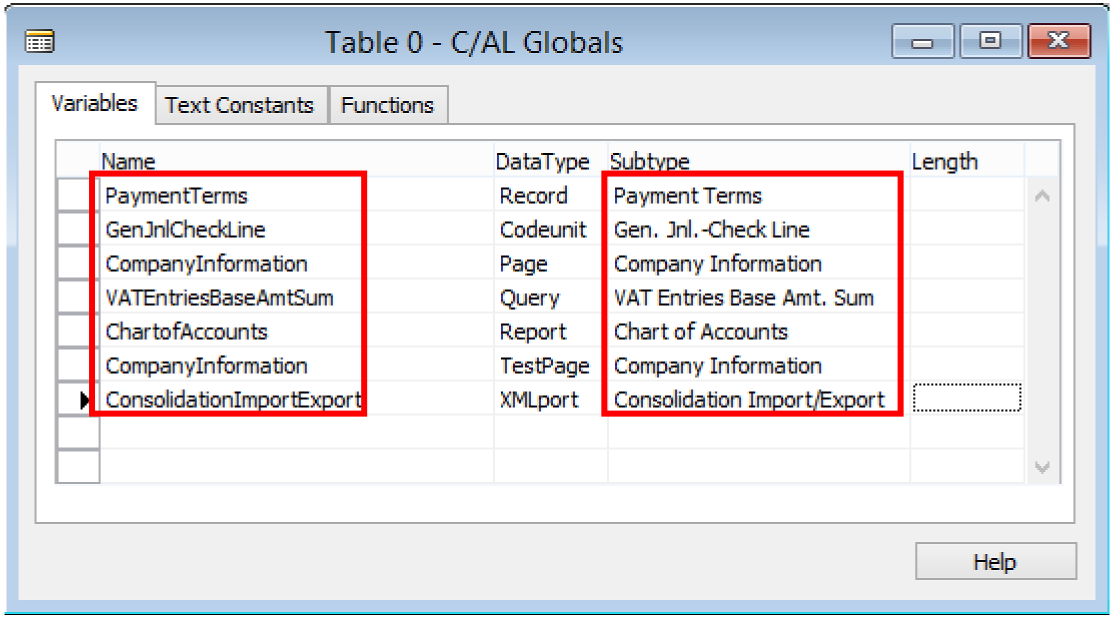
15. Return to the development environment. 16. Open the MainPage in the Page designer. Select the Part:Page line and open the **Properties** window (Shift + F4). 17. Set the **UpdatePropagation** property to **Both**. 18. Close and save the MainPage page.	Change the setting of the **UpdatePropagation** property on the Page Part from **SubPart** to **Both**. This means any refresh or page update from the subpage will refresh the parent page too.	
19. Open the SubPage page in Page Designer. 20. Select the Value line and open the C/AL code editor (F9). 21. Find the **Value OnValidate** trigger and add the following line of code `CurrPage.Update();` 22. Close the code editor and save the page.	Next, you want to make the subpage refresh itself on changes. Add AL code for a page refresh to the OnValidate trigger of the field.	
23. Run the MainPage page again. 24. Choose Edit, and add more values to the lines. .	Now, run the MainPage page again. As you add values in the subpage, notice the automatic refresh of the total in the	

	header.	

Module 4 - Introduction to C/AL Programming

1. Variable Scope - Auto-generating of C/AL variable and parameter names for complex data types

When defining global or local variable (C/AL Globals or C/AL Locals) or function parameter of complex data type Record, Codeunit, Page, Query, Report, TestPage, and XMLPort, NAV 2015 Development Environment creates Name of that variable/parameter automatically using name of the associated NAV object.

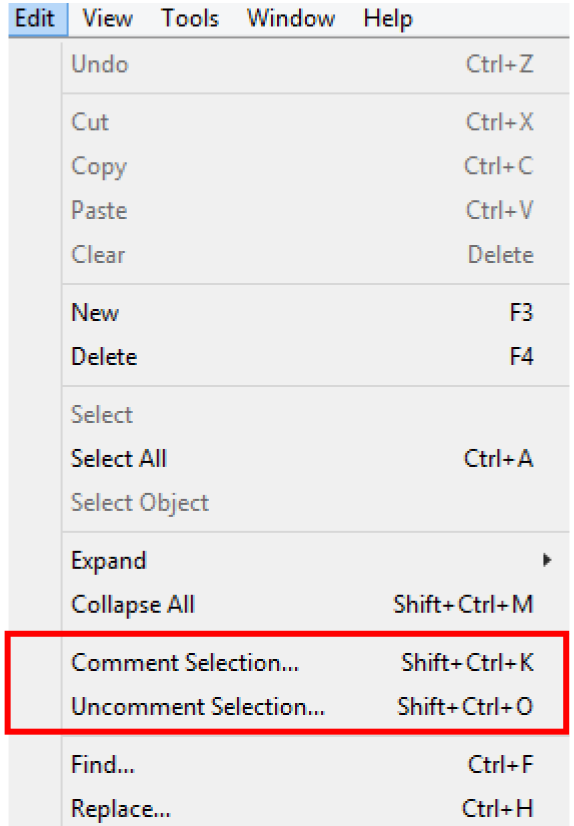


Module 6 - C/AL Statements

1. The Syntax of Comments - Multiple lines comments

In order to comment multiple lines of code, select lines and then go to **Edit** menu and use **Comment Selection** or **Shift+Ctrl+K**.

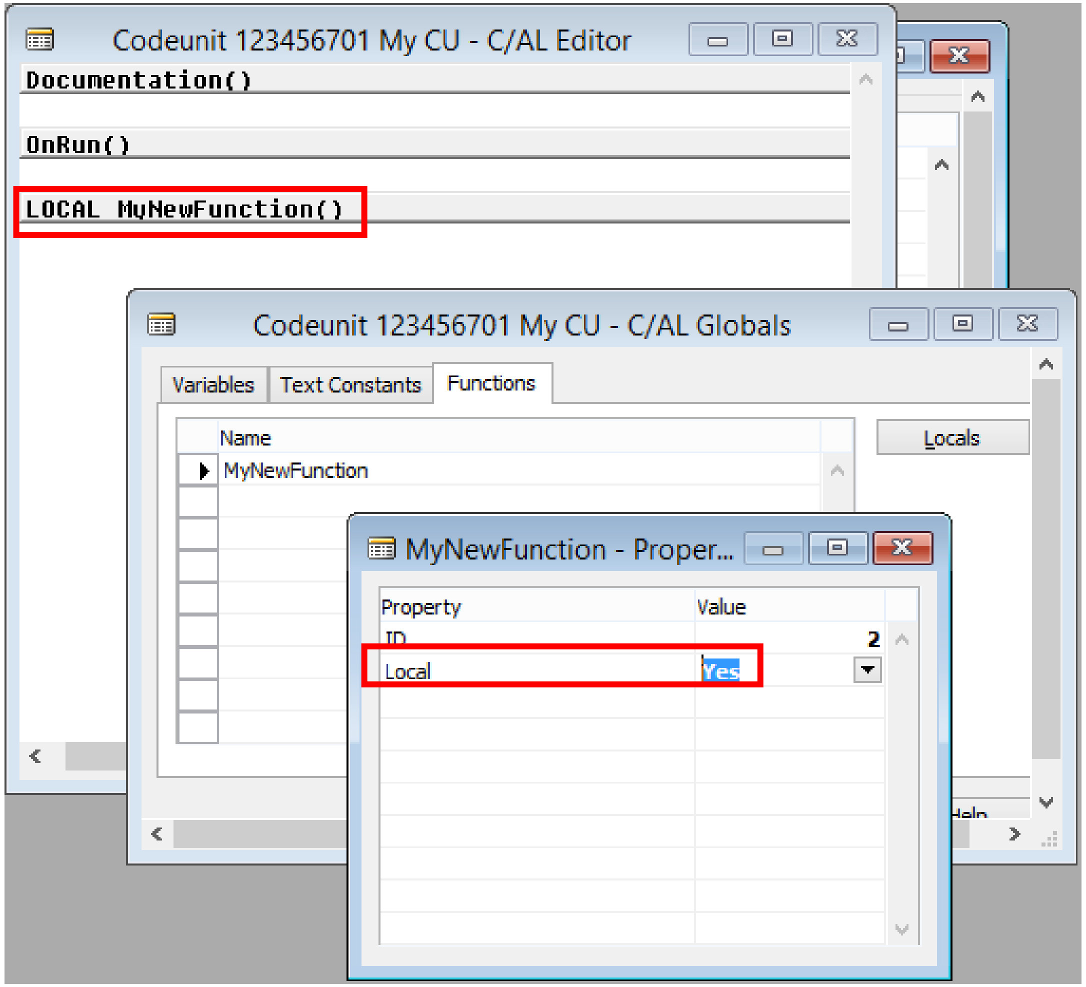
In order to uncomment multiple lines of code, select lines and then go to **Edit** menu and use **Uncomment Selection** or **Shift+Ctrl+O**.



Module 7 - C/AL Functions

1. Functions and Parameters - C/AL functions are local by default

New functions are local by default, property Local is set to Yes. Local function is not accessible outside the object in which is it defined.



Module 8 – Reports

1. Word Document Reports

Source: Demo Script – Word Document Reports and Custom Layout, Microsoft

Benefits:

- Users are familiar with Word
- Flexible layout
- WYSIWYG

Limitations

- Not suitable for complex layout or very large documents
- Conditional formatting is not supported
- Number formatting limited to built-in NAV numbers

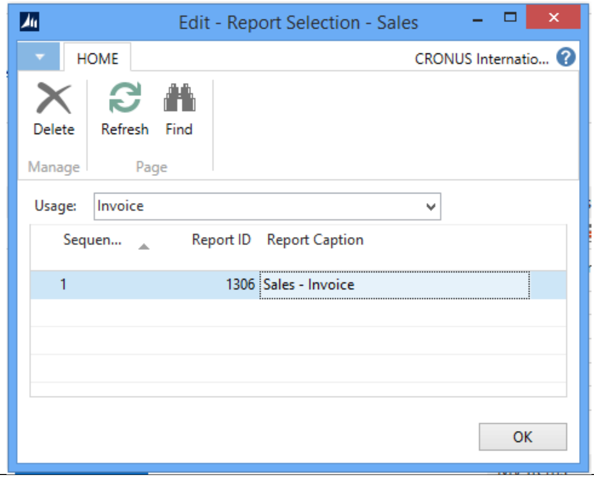
Lab 1 — Using Report Selector to run Report 1306 Instead of Report 206

Lab story: Microsoft Dynamics NAV 2015 ships with the following a set of new and simplified sales document reports:

- 1304 Mini Sales – Quote
- 1305 Mini Sales – Confirmation
- 1306 Mini Sales – Invoice
- 1307 Mini Sales – Credit Memo

Out of the box, the customary reports 204, 205, 206, and 207 are still enabled by default. To use the new reports, you set them up by using the report selection feature. In this lab, the required steps to use the new sales document reports are shown.

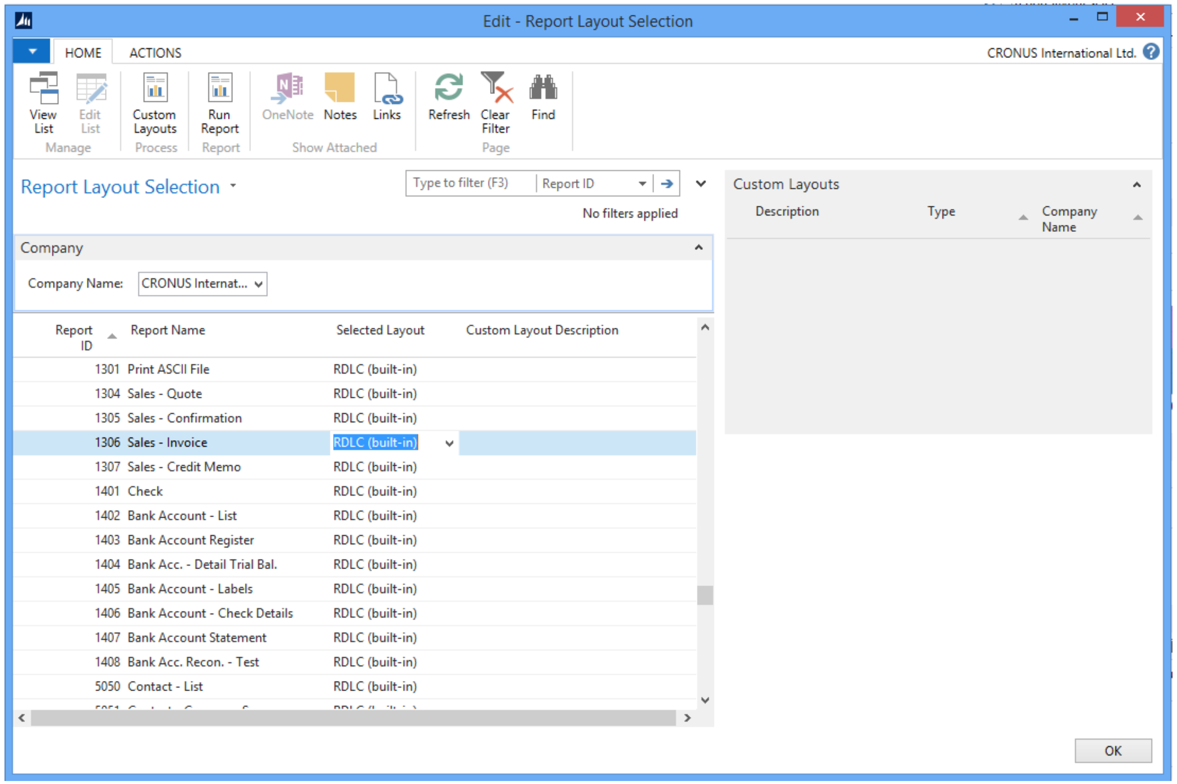
<table>
<tr><th>What to do</th><th>What to say</th><th>Screenshots</th></tr>
<tr><td>1. Open the Report Selection – Sales page by doing one of the following:
• In the Search box, enter Report Selection – Sales, and then choose the related link.
• In the navigation pane, choose Departments, Administration, IT Administration, and then Reports.</td><td>For the remaining labs, instead of running the default report “206 Sales – Invoice”, we want to run the newly designed Sales Invoice report, that is, report “1306 Mini Sales – Invoice.”

To do this, we will use the Report Selection feature.</td><td></td></tr>
<tr><td>2. In the Report Selection – Sales window, do the following:
a. Set the Usage field to Invoice.
b. In the Report ID field, replace 206 with 1306.
c. Choose the OK button.</td><td>Set up the report selection to run report 1306 instead of report 206 when printing invoices.</td><td>
</td></tr>
</table>

Lab 2 — Managing Report Layouts

Lab story: Microsoft Dynamics NAV 2015 enables reports to have a single built-in RDLC and Word layout, shared among tenants, as well as any number of customized layouts per tenant. To browse and manage which layout is currently used for a given report, a new Report Layout Selection list page has been introduced.

In this lab, we will use the Report Layout Selection page to switch between and run the RDLC and Word layouts that are shipped as part of the new Sales Invoice report 1306.

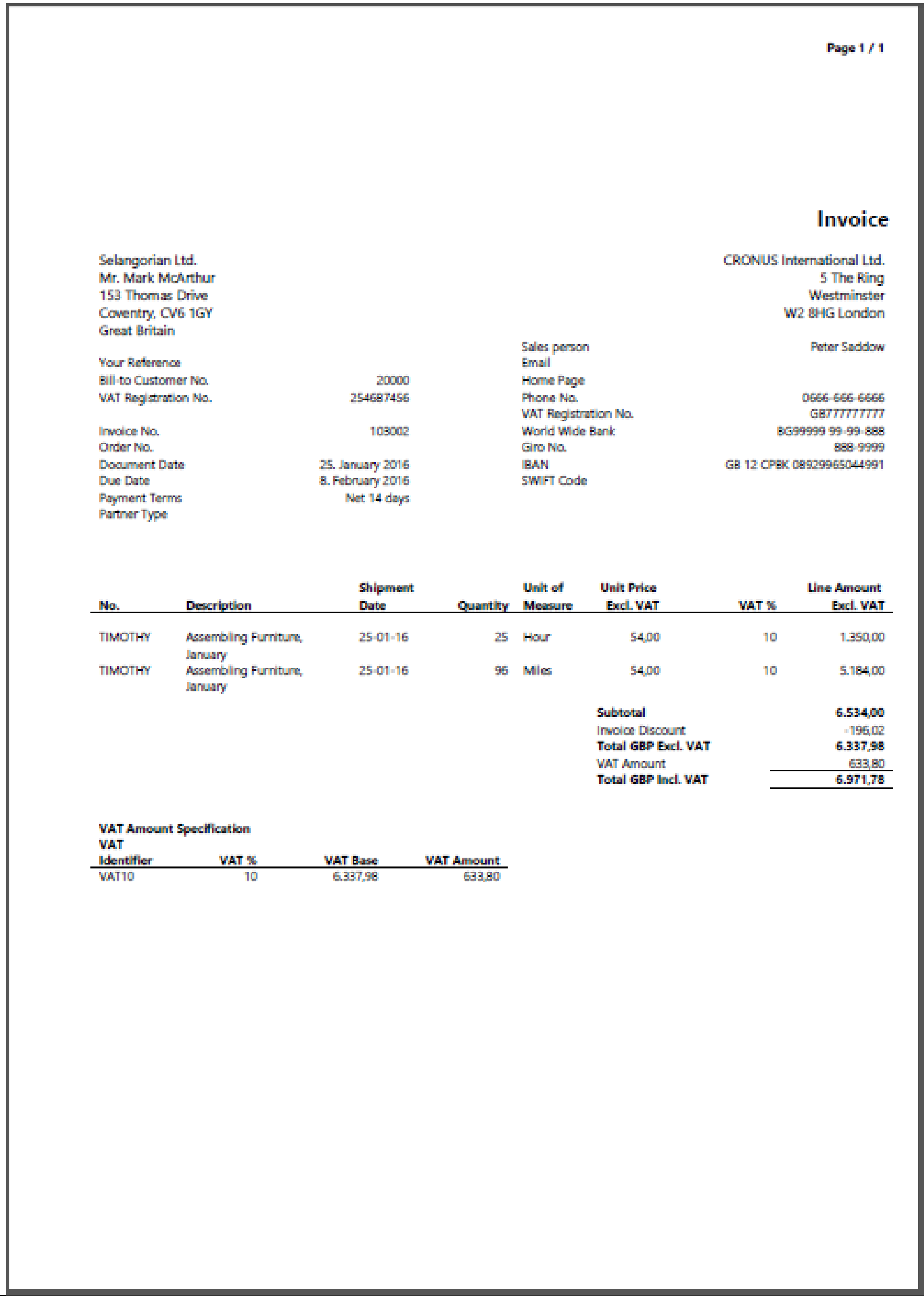
What to do	What to say	Screenshots
1. Open **Report Layout Selection** page by doing one of the following: • In the Search box, enter Report Layout Selection, and then choose the related link. • In the navigation pane, choose Departments, Administration, IT Administration, Reports, and then Report Layout Selection. • In the Small Business Role Center, on the Actions tab, choose Setup, Company Information, and then choose Report Layouts. 2. Ensure that the **Company Name** field is set to the correct company because reports layouts are company-specific.	The **Report Layout Selection** page lists all of the reports that are available for the company that is specified in the **Company** field at the top of the window. The **Selected Layout** field specifies the layout that is currently used for a given report. A report can be set up with more than one report layout, which you can then switch among as needed. Depending on the layouts that are available for a report, you can choose to	

	use a built-in RDLC layout, a built-in Word layout, or a custom layout. From the **Report Layout Selection** page, it is also possible to manage custom layouts for reports.	
3. In the list, locate the document report 1306 Sales – Invoice by doing one of the following: • Scroll down through the list. • Filter on the Report ID equal to 1306. 4. Select the row for report **1306**. 5. Choose the down arrow in the **Selected Layout** field to show the options (RDLC, Word, and Custom).	First we will have a look at the new report 1306 Sales - Invoice, which has a built-in RDLC and Word layout. Out of the box, it does not have any custom layouts – we will add these in later labs. As you can see, the **RDLC (built-in)** is typically the layout that selected by default. This can, however, be controlled by using the Default	

	Layout property on the specific report object in Microsoft Dynamics NAV Development Environment. Notice that the page also contains a Custom Layouts FactBox. This lists any available custom layouts for a selected report in the list. If there are no custom layouts for the report, then you will have to create one first.	

6. In the row for report 1306, set the **Selected Layout** field to **RDLC (built-in).**
7. On the **Home** tab, in the **Report** group, choose **Run Report.**
8. In the resulting report request page, use default values, and then select the **Print** button and choose **PDF.**
9. Open and inspect the resulting PDF file for report, which is based on the RDLC layout.

We will now select and run the built-in RDLC layout for report 1306 Sales – Invoice from the Report Layout Selection list page.


Page 1 / 1

Invoice

Selangorian Ltd.
Mr. Mark McArthur
153 Thomas Drive
Coventry, CV6 1GY
Great Britain

CRONUS International Ltd.
5 The Ring
Westminster
W2 8HG London

Your Reference	
Bill-to Customer No.	20000
VAT Registration No.	254687456
Invoice No.	103002
Order No.	
Document Date	25. January 2016
Due Date	8. February 2016
Payment Terms	Net 14 days
Partner Type	

Sales person	Peter Saddow
Email	
Home Page	
Phone No.	0666-666-6666
VAT Registration No.	GB777777777
World Wide Bank	BG99999 99-99-888
Giro No.	888-9999
IBAN	GB 12 CPBK 08929965044991
SWIFT Code	

No.	Description	Shipment Date	Quantity	Unit of Measure	Unit Price Excl. VAT	VAT %	Line Amount Excl. VAT
TIMOTHY	Assembling Furniture, January	25-01-16	25	Hour	54,00	10	1.350,00
TIMOTHY	Assembling Furniture, January	25-01-16	96	Miles	54,00	10	5.184,00

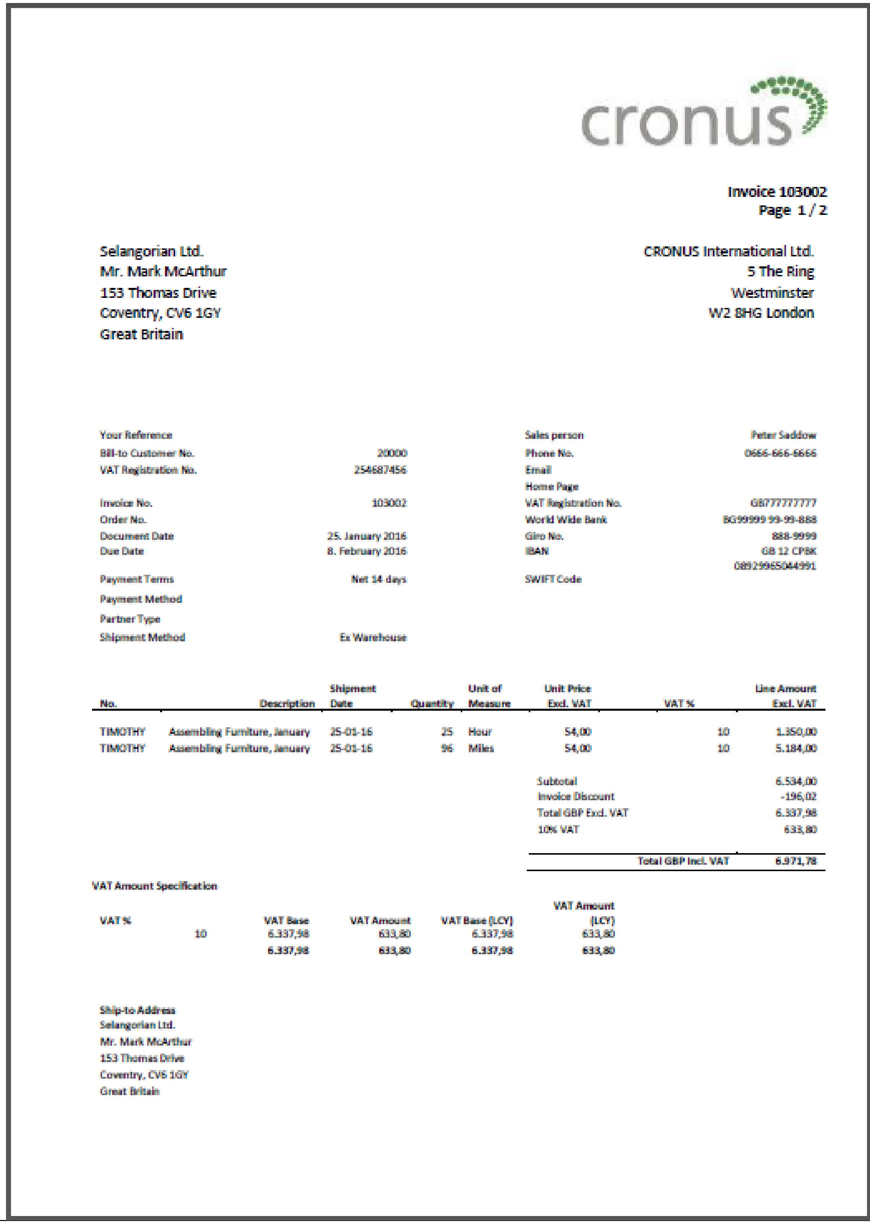
Subtotal	**6.534,00**
Invoice Discount	-196,02
Total GBP Excl. VAT	**6.337,98**
VAT Amount	633,80
Total GBP Incl. VAT	**6.971,78**

VAT Amount Specification

VAT Identifier	VAT %	VAT Base	VAT Amount
VAT10	10	6.337,98	633,80

10. In the **Report Layout Selection** page, select the line for report 1306, and then set the **Selected Layout** field to **Word (built-in)**.
11. On the **Home** tab, in the **Report** group, choose **Run Report**.
12. In the resulting report request page, use default values, and the select the **Print** button and choose **PDF.** [Note: This might not work for all client setups because it relies on server-side PDF conversion. As an alternative, use the **Preview** option on the request page, which will result in a Word document.)
13. Open and inspect the resulting PDF file for the report, which is based on the Word layout.

Finally, we will change the layout to the built-in Word layout and then run the report.


cronus

Invoice 103002
Page 1 / 2

Selangorian Ltd.
Mr. Mark McArthur
153 Thomas Drive
Coventry, CV6 1GY
Great Britain

CRONUS International Ltd.
5 The Ring
Westminster
W2 8HG London

Your Reference		Sales person	Peter Saddow
Bill-to Customer No.	20000	Phone No.	0666-666-6666
VAT Registration No.	254687456	Email	
		Home Page	
Invoice No.	103002	VAT Registration No.	GB777777777
Order No.		World Wide Bank	BG99999 99-99-888
Document Date	25. January 2016	Giro No.	888-9999
Due Date	8. February 2016	IBAN	GB 12 CPBK 08929965044991
Payment Terms	Net 14 days	SWIFT Code	
Payment Method			
Partner Type			
Shipment Method	Ex Warehouse		

No.	Description	Shipment Date	Quantity	Unit of Measure	Unit Price Excl. VAT	VAT %	Line Amount Excl. VAT
TIMOTHY	Assembling Furniture, January	25-01-16	25	Hour	54,00	10	1.350,00
TIMOTHY	Assembling Furniture, January	25-01-16	96	Miles	54,00	10	5.184,00

Subtotal	6.534,00
Invoice Discount	-196,02
Total GBP Excl. VAT	6.337,98
10% VAT	633,80
Total GBP Incl. VAT	6.971,78

VAT Amount Specification

VAT %	VAT Base	VAT Amount	VAT Base (LCY)	VAT Amount (LCY)
10	6.337,98	633,80	6.337,98	633,80
	6.337,98	633,80	6.337,98	633,80

Ship-to Address
Selangorian Ltd.
Mr. Mark McArthur
153 Thomas Drive
Coventry, CV6 1GY
Great Britain

Lab 3 — Customize Report 1306 Sales Invoice Word Layout: Simple Formatting

Lab story: Microsoft Dynamics NAV 2015 enables end users to customize RDLC and Word based report layouts. By default, a report will have a built-in report layout, which can be either an RDLC report layout or Word report layout, or both. You cannot modify built-in layouts. However, you can create your own custom layouts that enable you to change the appearance of a report when it is viewed, printed or saved. You can create multiple custom report layouts for the same report, and then switch the layout that is used by a report as needed.

To create a custom layout, you can either make a copy of an existing custom layout or add a new custom layout, which in most cases is based on a built-in layout. When you add a new custom layout, you can choose to add an RDLC report layout type, Word report layout type, or both. The new custom layout will automatically be based on the built-in layout for the report if one is available. If there is no built-in layout for the type, then a new blank layout is a created, which you will have to modify and design from scratch.

This lab showcases how non-technical end users, such as Annie or Stan, can customize the sales invoice document report by adding a new custom Word layout based on the built-in Word layout, changing the formatting to the desired visual identity, and setting the new custom layout to the active layout for the sales invoice report.

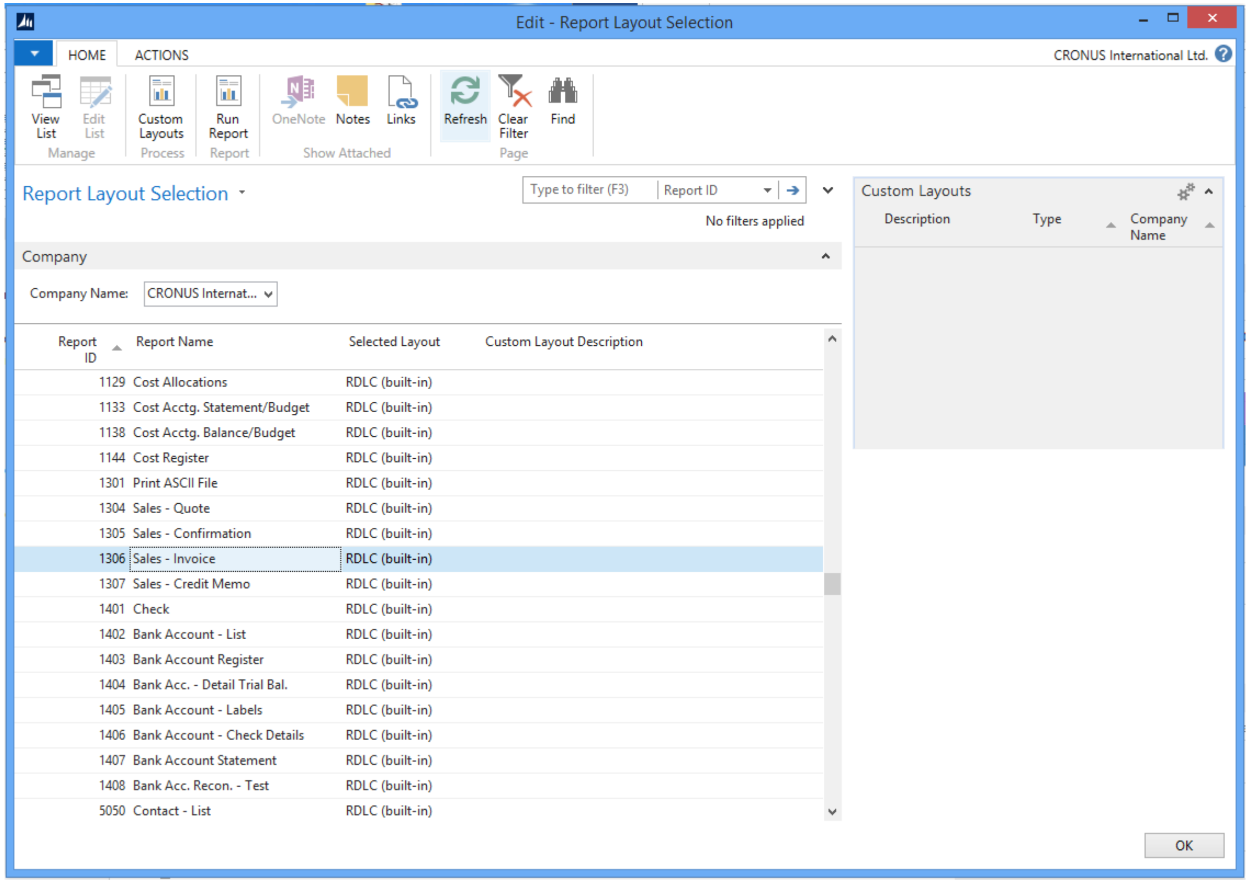
<table>
<tr><th>What to do</th><th>What to say</th><th>Screenshots</th></tr>
<tr>
<td>

Open Report Layout Selection page by doing one of the following:

In the Search box, enter Report Layout Selection, and then choose the related link.
In the navigation pane, choose Departments, Administration, IT Administration, Reports, and then Report Layout Selection.
In the Small Business Role Center, on the Actions tab, choose Setup, Company Information, and then choose Report Layouts.

Ensure that the Company Name field is set to the correct company because reports layouts are company specific.
In the list, locate the document report 1306 Sales – Invoice by doing one of the following:

Scroll down through the list.
Filter on the Report ID equal to 1306.

</td>
<td>
The normal starting point for customizing a report is from the list of reports in the application, i.e., from the Report Layout Selection page.
A contextual option, e.g., from the request page, is not yet supported.
As we want to customize the 1306 Sales Invoice, the first step is to browse to this in the report list
</td>
<td>


</td>
</tr>
</table>

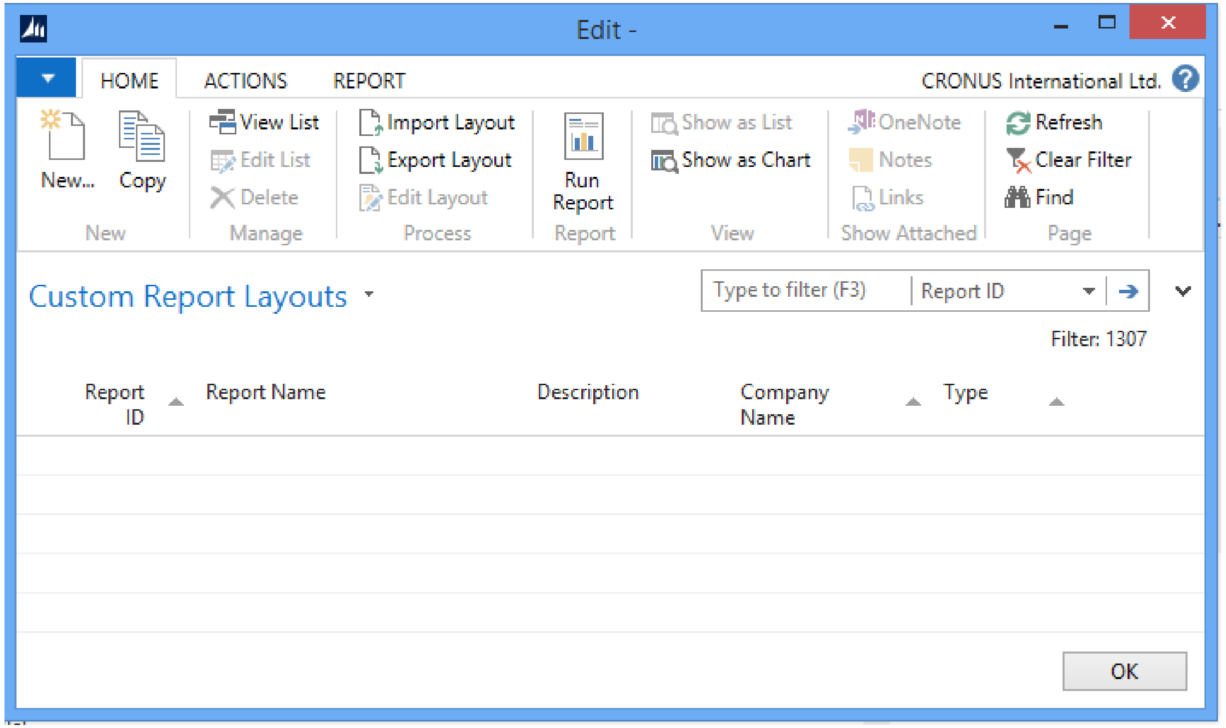
4. Select the row for report 1306, and then on the **Home** tab, in the **Process** group, choose **Custom Layouts**.

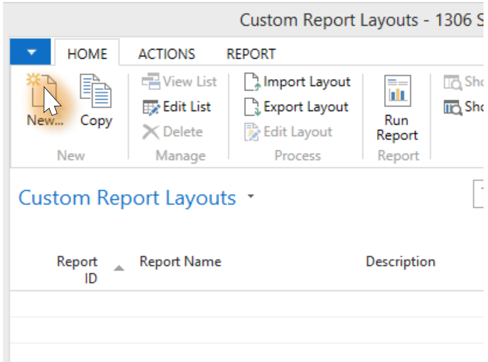
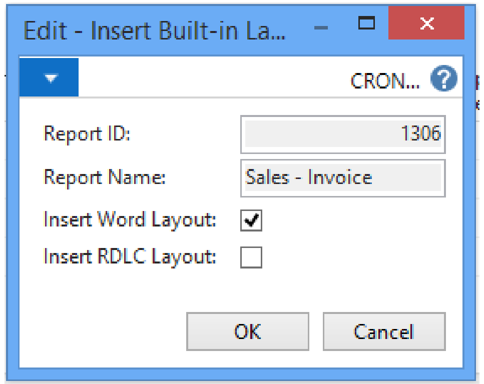
The Custom Layouts page is used to create and manage custom layouts for a selected report.

Out of the box, the list is empty, because there are no custom layouts.

Notice that the Custom Report Layouts page can be opened by itself by searching for the page or using the Departments, or, as here, from the context of a given report. In the case of the latter, the page is filtered to the selected report ID when opened. If opened on its own, the page lists all custom layouts across all reports, which is useful when managing layouts for multiple reports.

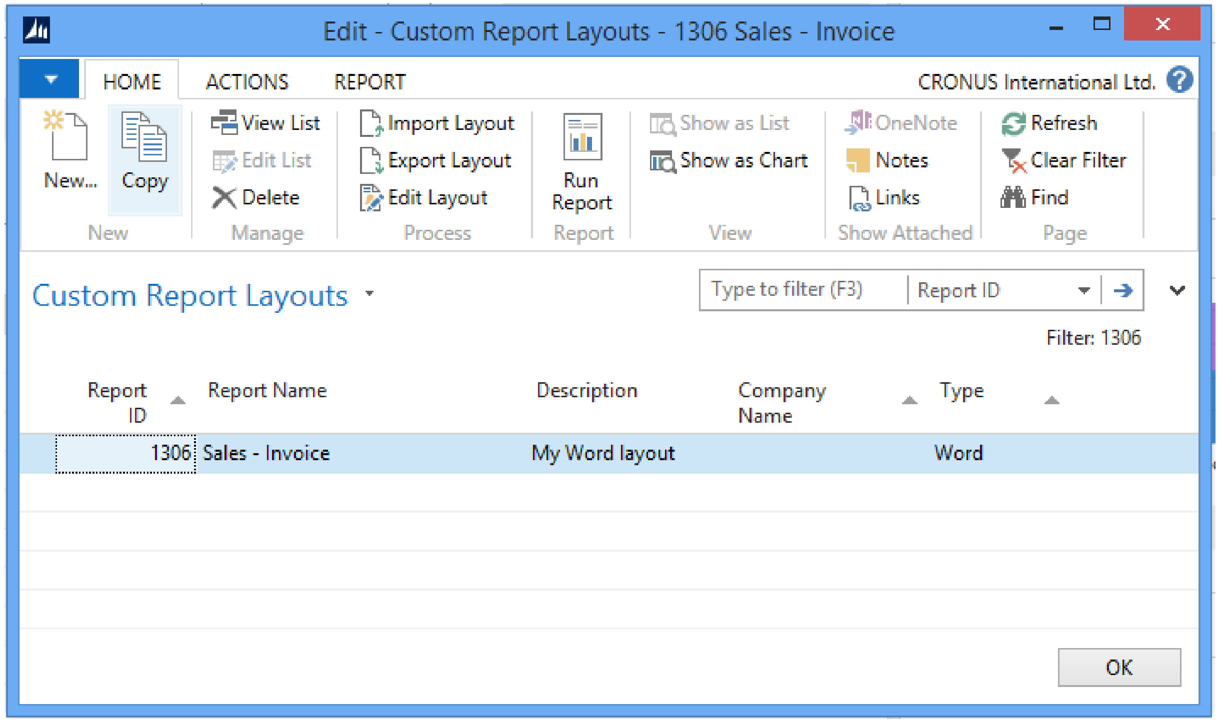
The **Custom Layouts** page is also accessed from the **Selected Layout** field on **Report Layout Selection** page. In this case, the **Custom Layouts** page works as a lookup.

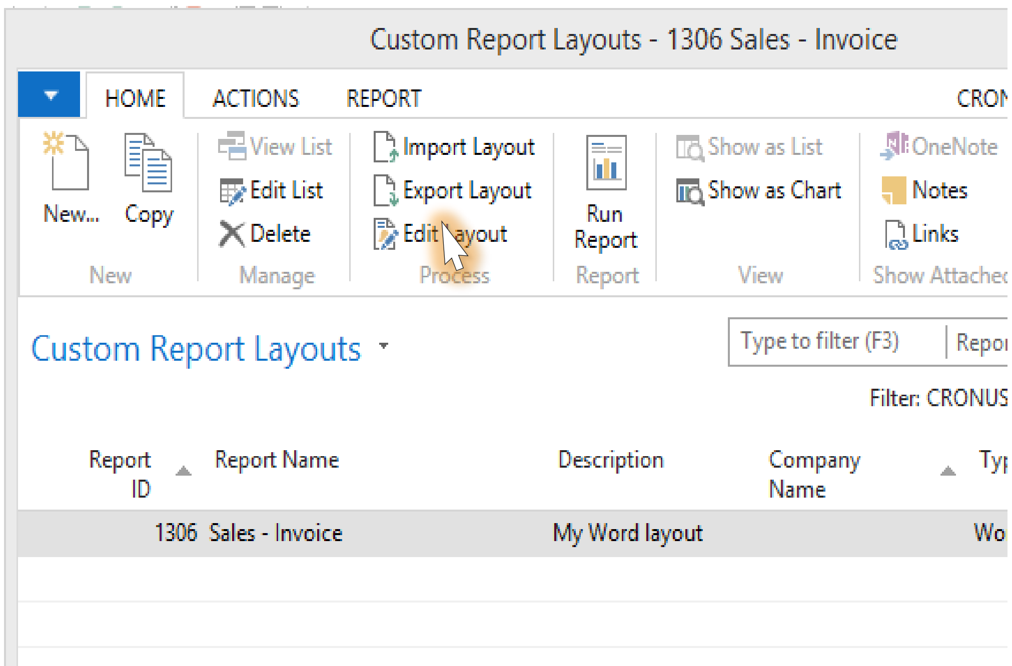


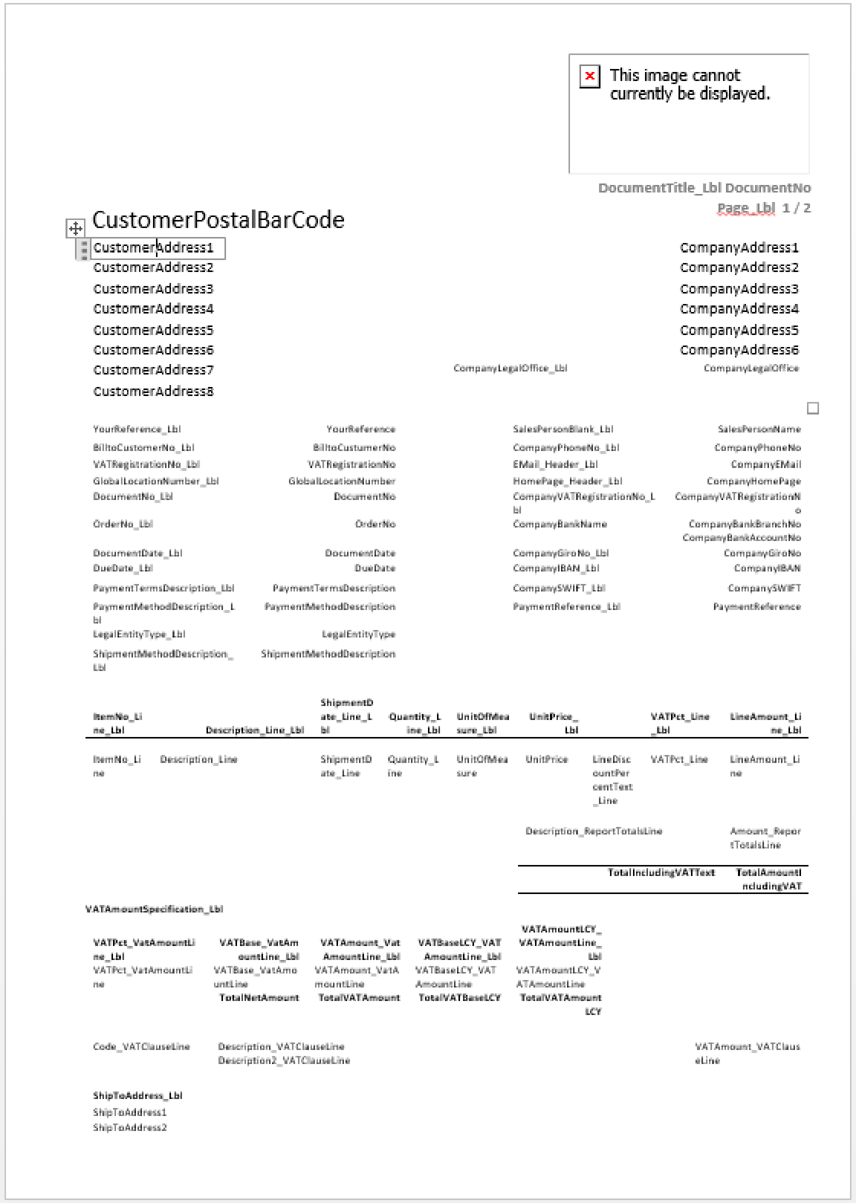
	In this mode, it is still possible to create and modify layouts. However, when you select a layout in **Custom Layouts** page, and then choose the **OK** button to close the page, the selected layout becomes the active layout for the report.	
5. On the **Home** tab, in the **New** group, choose **New** to insert a new custom layout. The **Insert Built-in Layout for a Report** window appears. The **ID** and **Name** fields are automatically filled in 6. To add a custom Word report layout type, select the **Insert Word Layout** check box, and then choose the **OK** button, 7. In the **Custom Report Layouts** page, in the **Description** field, rename the newly created custom layout to "My Word layout".	The built-in layouts themselves cannot be edited, therefore we are going to create a new Word report layout based on (or in other words, a copy of) the built-in Word layout, and then customize that layout further. The new custom layout appears in the **Custom Report Layouts** page. If a new layout is based on a built-in layout, then it has the words **Copy of Built-in Layout** in the **Description** field. If there was no built-in layout for the report, then the new	 

layout has the words **New Layout** in the **Description** field, which indicates that custom layout is blank.

The **Custom Report Layouts** list includes a **Type** column that indicates whether the custom layout is RDLC or Word based. It also includes the **Company Name** column that allows you to specify whether the layout should be company specific. In this case, we have made the custom layout apply to all companies by leaving the field blank.

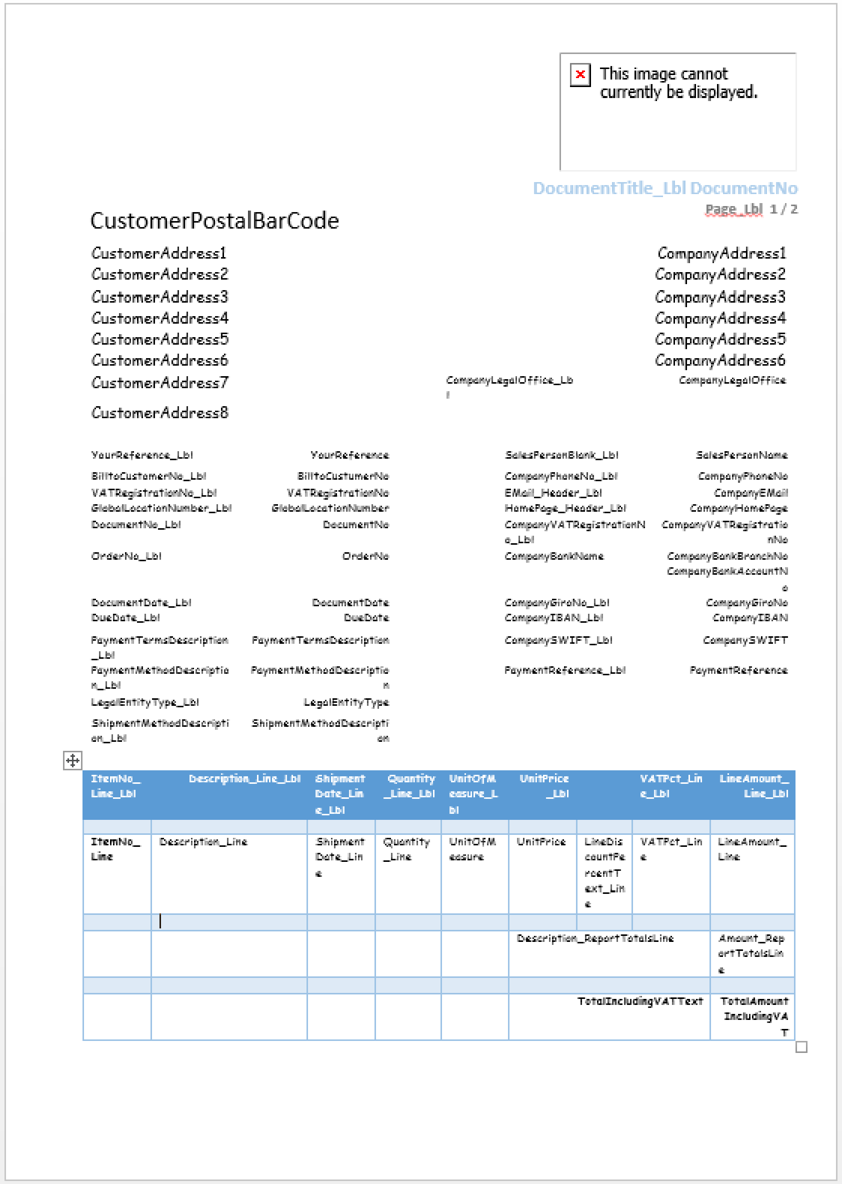


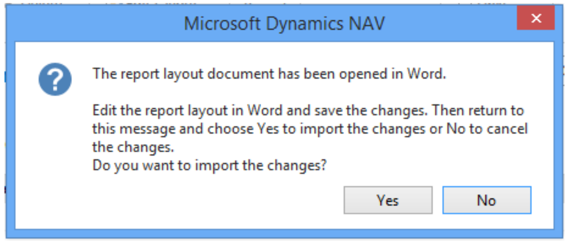
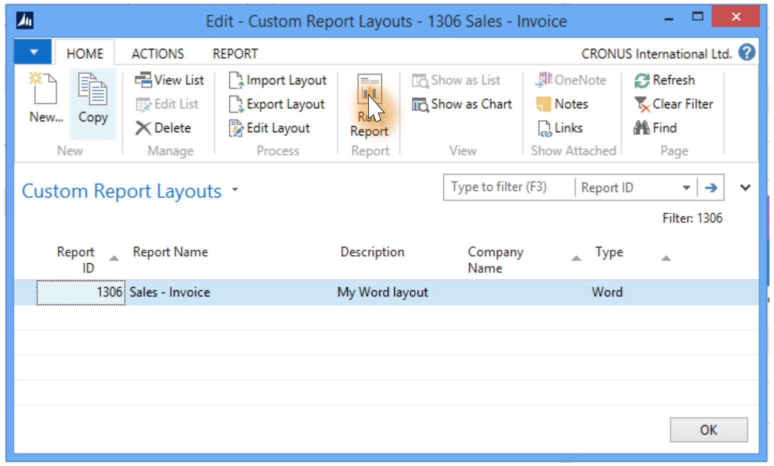
8. On the **Home** tab, in the **Process** group, choose **Edit Layout**.	With the custom layout created, we will now edit it in Word. Note that the **Edit** function relies on client-side automation, and therefore requires that the Microsoft Dynamics NAV 2015 Windows client and Word 2013 are installed. If you are using the Microsoft Dynamics NAV 2015 Web client or a device, the custom layout can be edited by manually exporting the layout to a Word (.docx) file, editing it in Word, and then importing the layout file back into the appropriate report.	

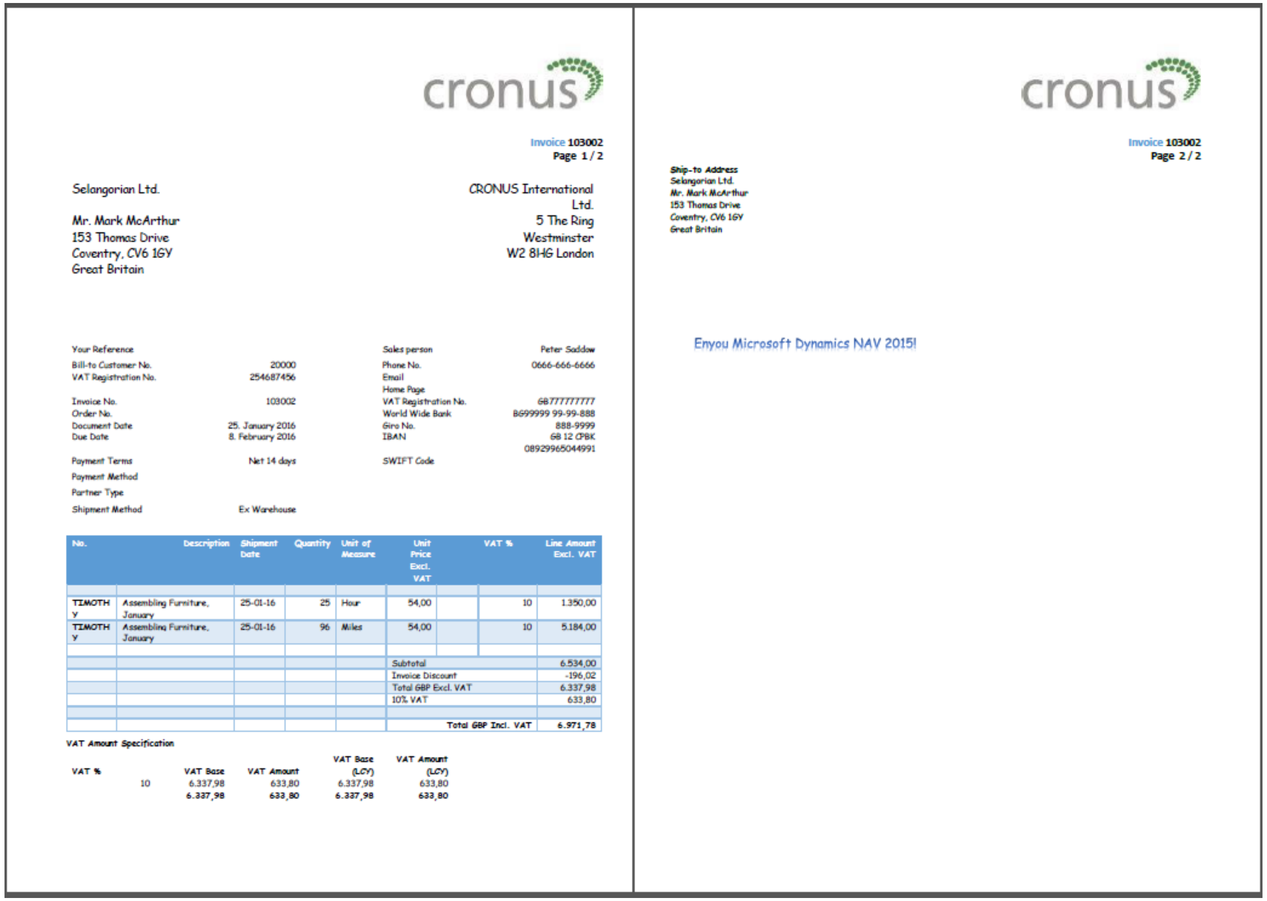
9. Look at the Word report layout content.	A Word report layout is a Word document with content controls laid out in either free form or in table structures, which can even be repeating. The content controls themselves map to fields in the report dataset. In this lab, we will continue changing some of the formatting, and then in a later lab look at how to add content controls (fields).	

10. Change the fonts as follows:
    a. Select all text (Ctrl+A).
    b. On the **Home** tab, in the **Font** group, change the font to Comic Sans.
11. Change the font size and colour of document title and document no. as follows:
    a. In the header, select the **DocumentTitle_Lbl** control, and then increase font size a couple of steps and change the colour to Blue, Accent 1 (top row in normal colours).
    b. Repeat for the **DocumentNo** control.
12. Add a style to the item lines item table as follows:
    a. Select the item lines table.
    b. On the **Design** tab under **Table Tools**, expand the **Table Styles** control.
    c. Select **Grid Table 4, accent 1** (blue, with solid header and alternating rows).
13. Insert a glowing “Enjoy Microsoft Dynamics NAV2015!” greeting as follows:
    a. Add text to the end of the document.
    b. Select the text, and then on **Home** tab, in the **Font**

In Word, we are going to make some format customizations and insert a greeting.



group, select the **A** in the **Text Effects and Typography** field. c. Choose second entry in second row (**Gradient Fill – Blue, Accent 1, Reflection**). d. Change the font size to 12.		
14. Save the changes and close the Word document. 15. On the confirmation dialog that appeared when the layout was opened for editing, choose **Yes** to import the revised layout in the Microsoft Dynamics NAV client.	With the changes in place, the Word layout is saved and imported back into Microsoft Dynamics NAV 2015.	
16. In the **Custom Report Layouts** page, select the new custom layout, and then on the **Home** tab, in the **Report** group select **Run Report**. 17. In the request page, use default values, choose the **Print** button, and then choose **PDF**. 18. Open and inspect the result file. Validate the font, colour and size changes, the table style, and the greeting.	Before setting the new custom layout as the active layout for the sales invoice report, we are going to test it out by running it from within the **Custom Report Layouts** page.	



cronus

Invoice 103002
Page 1 / 2

Selangorian Ltd.

Mr. Mark McArthur
153 Thomas Drive
Coventry, CV6 1GY
Great Britain

CRONUS International Ltd.
5 The Ring
Westminster
W2 8HG London

Your Reference		Sales person	Peter Saddow
Bill-to Customer No.	20000	Phone No.	0666-666-6666
VAT Registration No.	254687456	Email	
		Home Page	
Invoice No.	103002	VAT Registration No.	GB777777777
Order No.		World Wide Bank	B699999 99-99-888
Document Date	25. January 2016	Giro No.	888-9999
Due Date	8. February 2016	IBAN	GB 12 CPBK 08929965044991
Payment Terms	Net 14 days	SWIFT Code	
Payment Method			
Partner Type			
Shipment Method	Ex Warehouse		

No.	Description	Shipment Date	Quantity	Unit of Measure	Unit Price Excl. VAT		VAT %	Line Amount Excl. VAT
TIMOTHY	Assembling Furniture, January	25-01-16	25	Hour	54,00		10	1.350,00
TIMOTHY	Assembling Furniture, January	25-01-16	96	Miles	54,00		10	5.184,00
					Subtotal			6.534,00
					Invoice Discount			-196,02
					Total GBP Excl. VAT			6.337,98
					10% VAT			633,80
							Total GBP Incl. VAT	6.971,78

VAT Amount Specification

VAT %	VAT Base	VAT Amount	VAT Base (LCY)	VAT Amount (LCY)
10	6.337,98	633,80	6.337,98	633,80
	6.337,98	633,80	6.337,98	633,80

cronus

Invoice 103002
Page 2 / 2

Ship-to Address
Selangorian Ltd.
Mr. Mark McArthur
153 Thomas Drive
Coventry, CV6 1GY
Great Britain

Enyou Microsoft Dynamics NAV 2015!

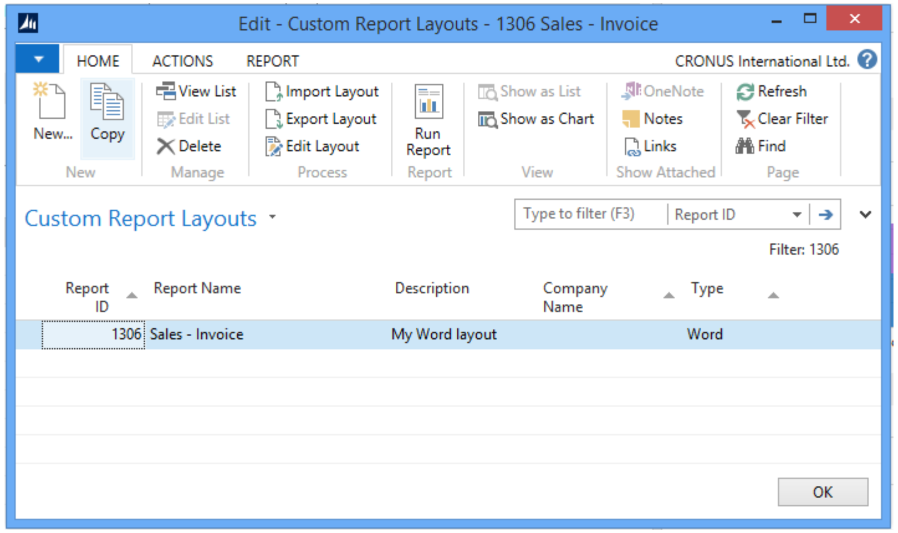
19. Open **Report Layout Selection** page again. 20. Locate and select the report 1306 Sales Invoice, 21. Change **Selected Layout** field to **Custom**	Being satisfied with the new layout, we are now going to make this the default layout for the sales invoice report.	

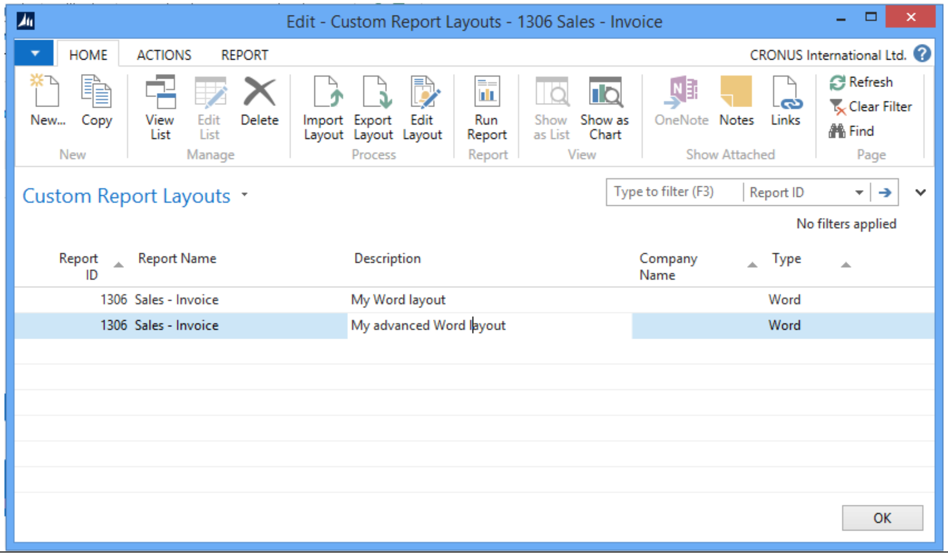
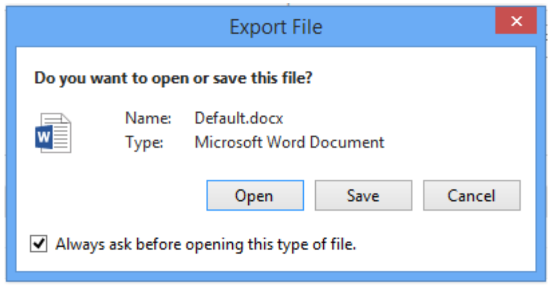
22. In **Custom Report Layouts** page that appears, select layout “My Word layout” that you just created, and then choose the **OK** button to close the lookup. 23. Verify that the **Selected Layout** field is now set to **Custom** and the **Custom Layout Description** field is set to “My Word layout” for the report 1306.	To do this, we will set the **Selected Layout** field in the **Report Layout Selection** page to the newly created custom layout. Note that if the **Selected Layout** field is already set to **Custom**, then the actual custom layout is changed by using the lookup in the **Custom Layout Description** field instead.	
24. Open **Posted Sales Invoices** by doing one of the following: • In the Search box, enter Posted Sales Invoices, and then choose the related link. • In the navigation pane, choose Posted Documents, and then Posted Sales Invoices. 25. Select a sales invoice from the list, and then on the **Home** tab, in the **Invoice** group, choose **Print**. 26. In the print dialog, use default values, select the **Print** button, and then choose **PDF**. 27. Verify that the resulting PDF file is using the custom layout “My Word layout” that you created previously.	Finally, we will run the sales invoice from a real application context, e.g., Posted Sales Invoices, to verify that the new custom layout is used.	

Lab 4 — Customize 1306 Sales Invoice Word Layout: Adding Fields and Changing Structure

Lab story: Microsoft Dynamics NAV 2015 enables end users to customize RDLC and Word based report layouts, both from a formatting point of view, as well as changing the structure and adding new fields from the report's dataset.

This lab showcases how power users, such as Sean, or technically experienced personas, such as Annie or Stan, can customize the Word based document reports, like the Sales Invoice report, to include desired fields and layout structure. The lab assumes that lab 3 has been completed, and that there is already a custom layout available for the document report 1306 Sales Invoice. If this is not the case, the lab can still be run but with the small variation that a new custom layout based on the built-in Word layout should be used, instead of copying an existing custom layout.

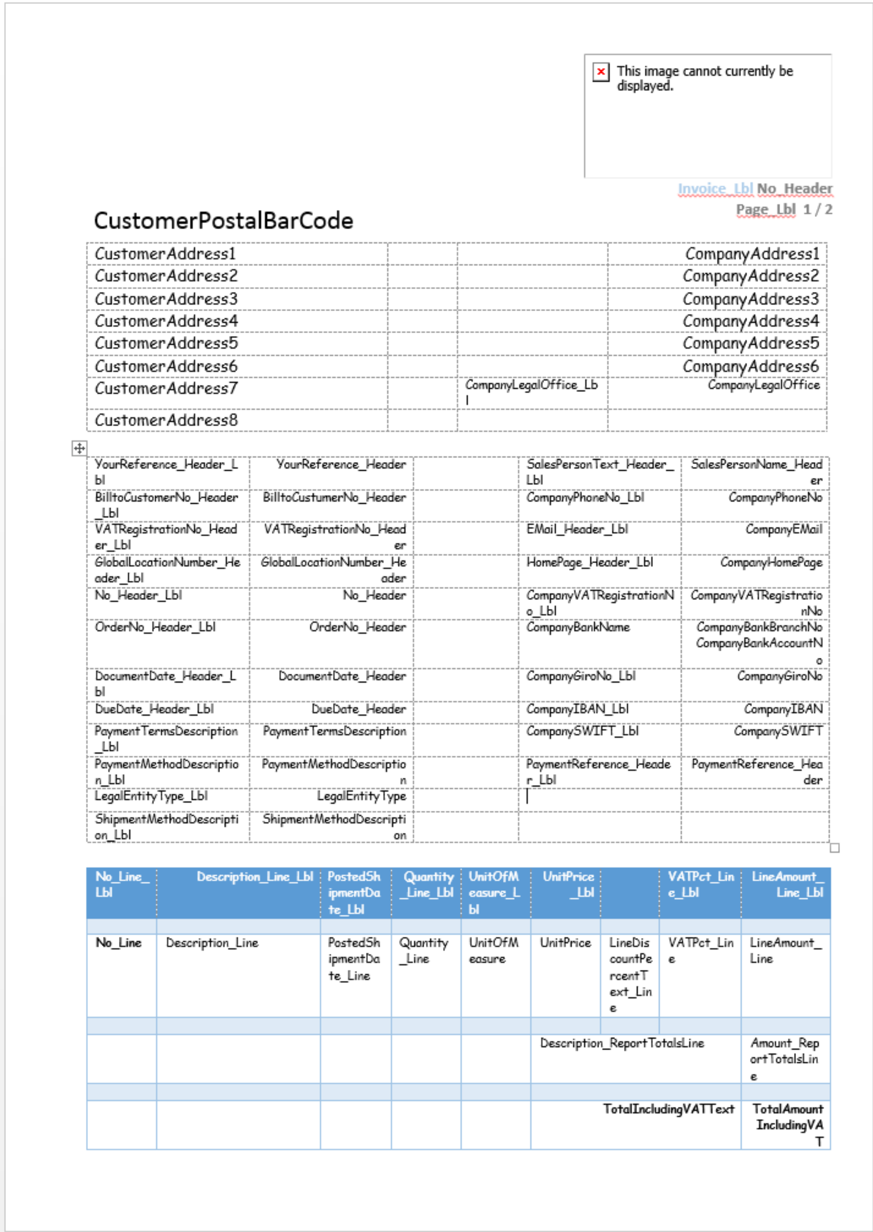
What to do	What to say	Screenshots
1. Open **Custom Report Layouts** page by doing one of the following: • In the Search box, enter Custom Report Layouts, and then choose the related link. • In the navigation pane, choose Departments, Administration, IT Administration, and then Reports.	First, we want to make a copy of the previously created custom report and work on that. Once the layout is completed and tested, we will switch over to using the layout created in this lab. Rather than opening **Custom Report Layouts** from the context of a specific report in the **Report Layout Selection** list, we are now going to open it directly. Note that doing this will display all custom layouts unfiltered across all reports in the tenant. In this case though, we still only have a single entry from the previous lab. An alternative to opening the **Custom Report Layout** page on its own, is to open it for a specific	

<table>
<tr>
<td></td>
<td>report from the Report Layout Selection page, and then remove the report ID filter which has been set.</td>
<td></td>
</tr>
<tr>
<td>2. Select the “My Word layout” row, and on the Home tab, in the New group, choose Copy.
3. In the Description field, rename the newly created layout to “My advanced Word layout”.</td>
<td>We are going to add fields to the custom layout made in the previous lab. However, instead of modifying that layout directly, we are going to create a copy. This lets you work with and test the layout without risking impact to an actively used layout.</td>
<td>
</td>
</tr>
<tr>
<td>4. Select the “My advanced Word layout” row, and then on the Home tab, in the Process group, choose Export Layout.
5. In the Export File dialog, select Save, and save the file to a preferred device location, such as the Desktop.
6. Open the document from the saved location in Word 2013.</td>
<td>With the custom layout created, we will now edit it in Word. In this lab, we will use Import Layout and Export Layout instead of Edit Layout, as you would do when using the Microsoft Dynamics NAV Web client.</td>
<td>
</td>
</tr>
</table>

7. Select a table structure in the layout, such as the sales lines.
8. In Word, on the **Layout** tab, in the **Table** group, choose **View Gridlines**.

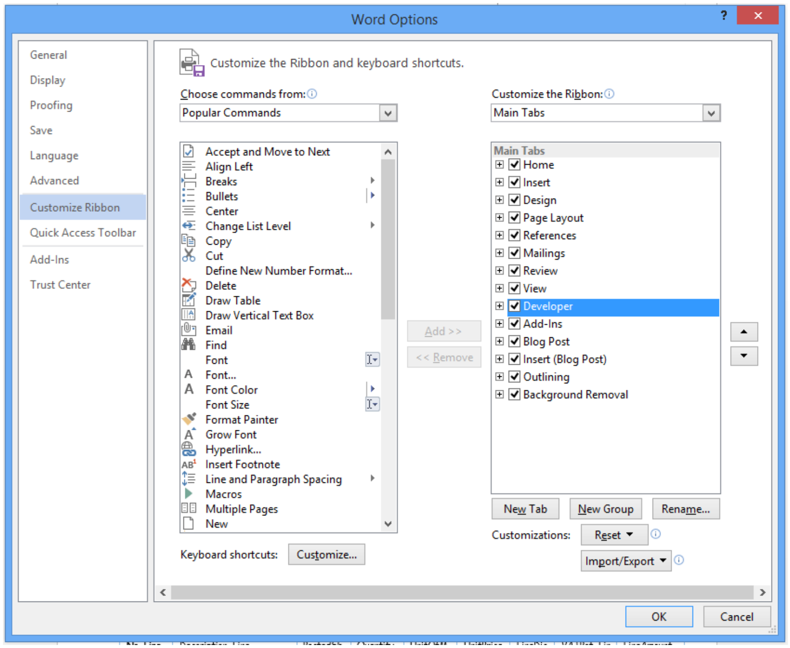
As Word report layouts often use hidden table structures to align content controls (such as field mappings), enabling gridlines in Word is quite useful to understand the structure.

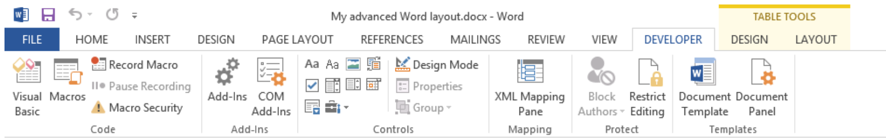
As can be seen, the sales invoice header fields are all arranged in tables for easier alignment in Word.



9. In Word, do one of the following:
   - Right click the ribbon, and then select Customize the Ribbon.
   - On the File menu, choose Options, and then select Customize Ribbon tab in the Word Options dialog box.
10. In the right pane, select the **Developer** check box, and then choose **OK**.
11. Select the **Developer** tab that is now visible in Word.

To insert new fields from the report dataset in the Word layout, we need to take advantage of the custom XML mapping feature in Word. This feature is available in the **Developer** tab in Word, which is hidden by default, so the first task is to enable it.

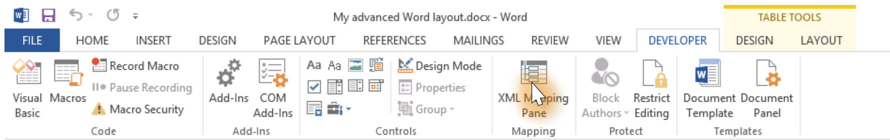




12. On the **Developer** tab, choose **XML Mapping Pane**.
13. In the **XML Mapping** pane, in the **Custom XML Part** dropdown list, choose the custom XML part for the 1306 Sales Invoice. Typically, this is last in the list. The name of the custom XML part has the following format:

Word layouts in Microsoft Dynamics NAV 2015 rely on mapping content controls to dataset fields. To facilitate this, Word's custom XML feature is used.

A Word document can contain one or more embedded XML parts with



urn:microsoft-dynamics-nav/reports/Mini_Sales_Invoice/1306

14. The **XML Mapping** pane now displays the labels and field controls that are available for the report. Browse the structure by expanding the tree and notice heading and different line structures.

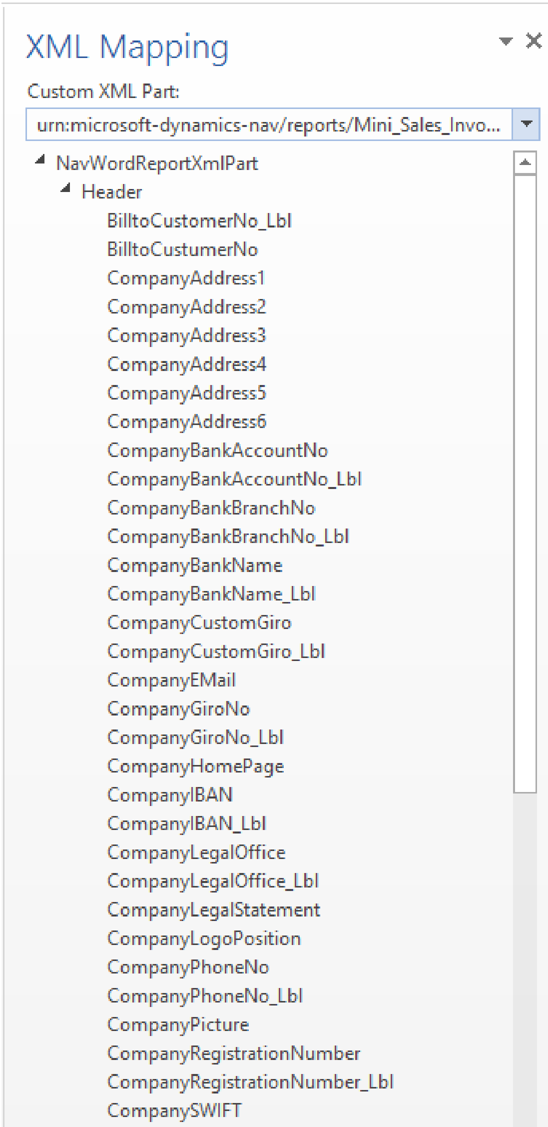
data. When Word layouts are exported or invoked for editing from Microsoft Dynamics NAV 2015, the layout will have a specific Microsoft Dynamics NAV XML ml part added, which represents the dataset structure of the report. This structure is then used when mapping the dataset to content controls.

Therefore, first we need to show the **XML Mapping** pane in Word, and then select the proper embedded XML part that represents the report dataset.

The name of the custom XML part has the following format:

urn:microsoft-dynamics-nav/reports/report_name/ID

Where *report_name* is the normalized name that is assigned to the report as specified by the report's Name Property in the Microsoft Dynamics NAV Development Environment, and *ID* is the identification number of the report.



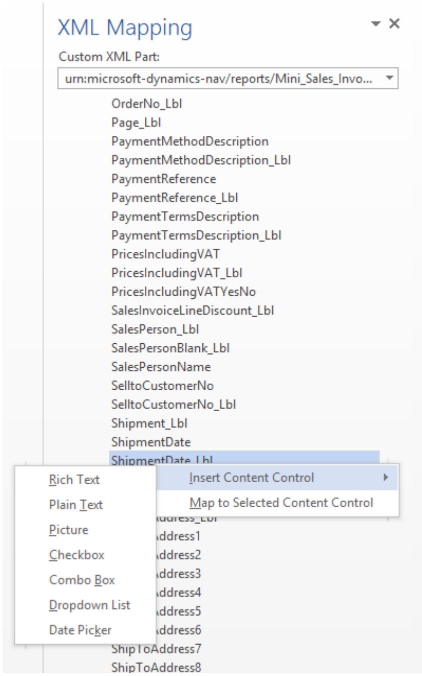
15. In the document header table, locate the empty cell in the last row and second last column.
16. Insert the text marker by clicking in the cell.
17. In the **XML Mapping** pane, expand the header structure and locate ShipmentDate_Lbl.
18. Right click on ShipmentDate_Lbl, select **Insert Content Control**, and then choose **Plain Text**.
19. Insert the text marker in the last cell in the row.
20. In the **XML Mapping** pane, locate ShipmentDate.
21. Right-click on ShipmentDate, select **Insert Content Control**, and then choose **Plain Text**.

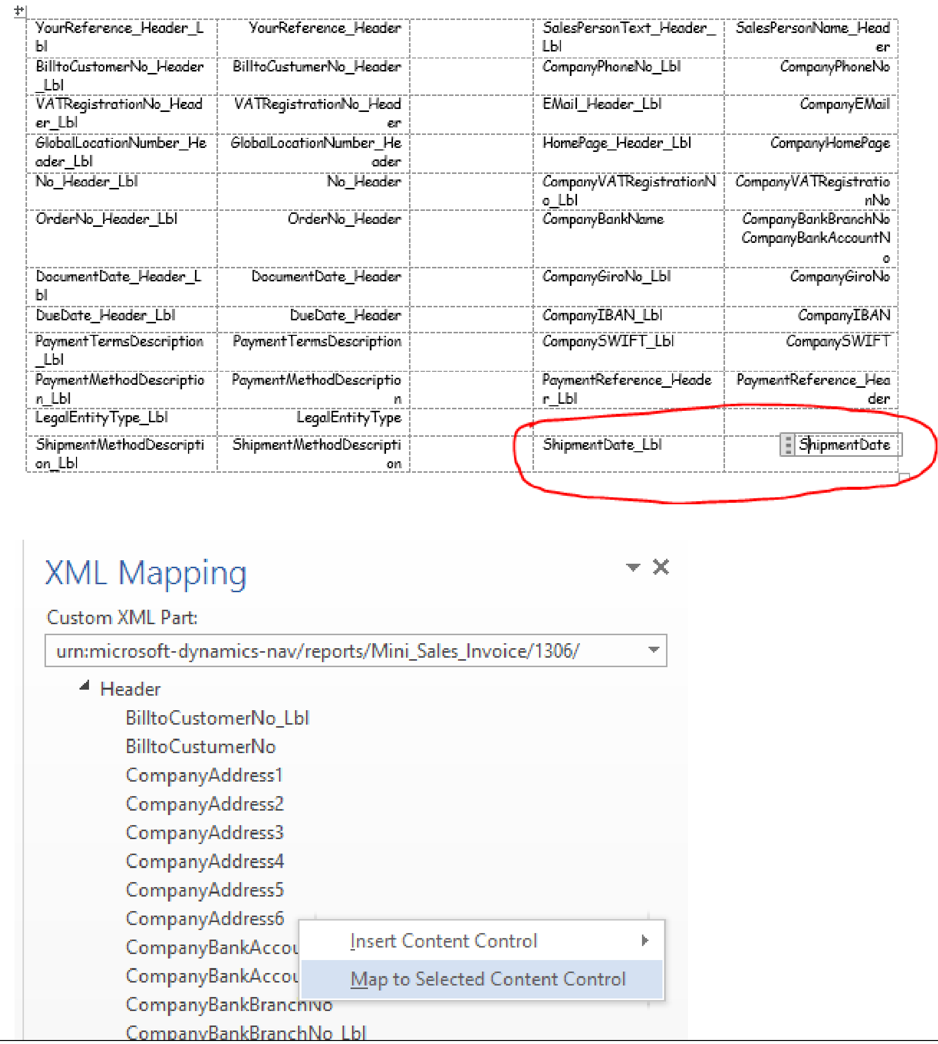
We are going to add a Shipment date field and a corresponding Shipment data label (for the localized field) name to the document header.

We will add these to the empty cells at the bottom of the header, and to the right of the ShipmentMethodDescription field.

When inserting the fields from the **XML Mapping** pane, Word inserts a content control at the text marker in the document, and links that content control to the xpath of the field in the custom XML part that represents the dataset. The content control also gets a visible name/caption which corresponds to the field name – however, this does not determine the mapping. The name can be changed, but the mapping remains the same.

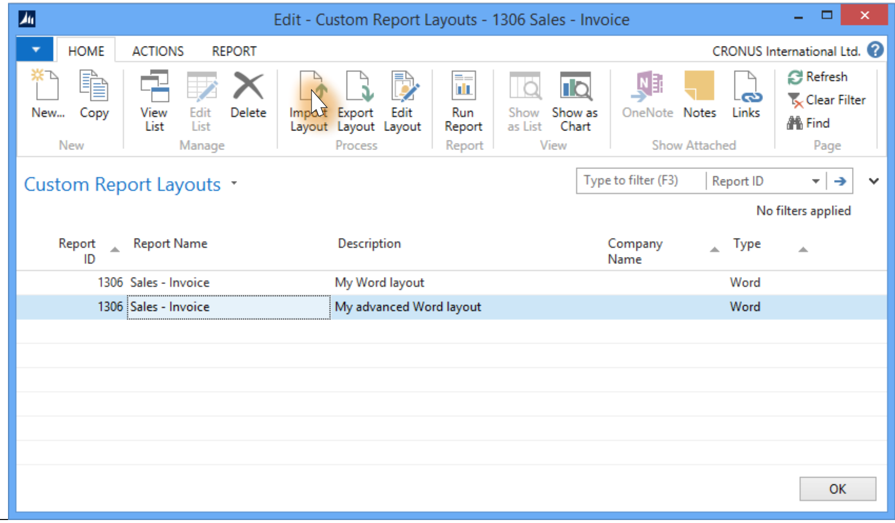
To remap a content control, either delete the content control and add a new one, or highlight the content control, find the correct field in the **XML Mapping** pane, right click it and then select **Map to Selected Content Control**,

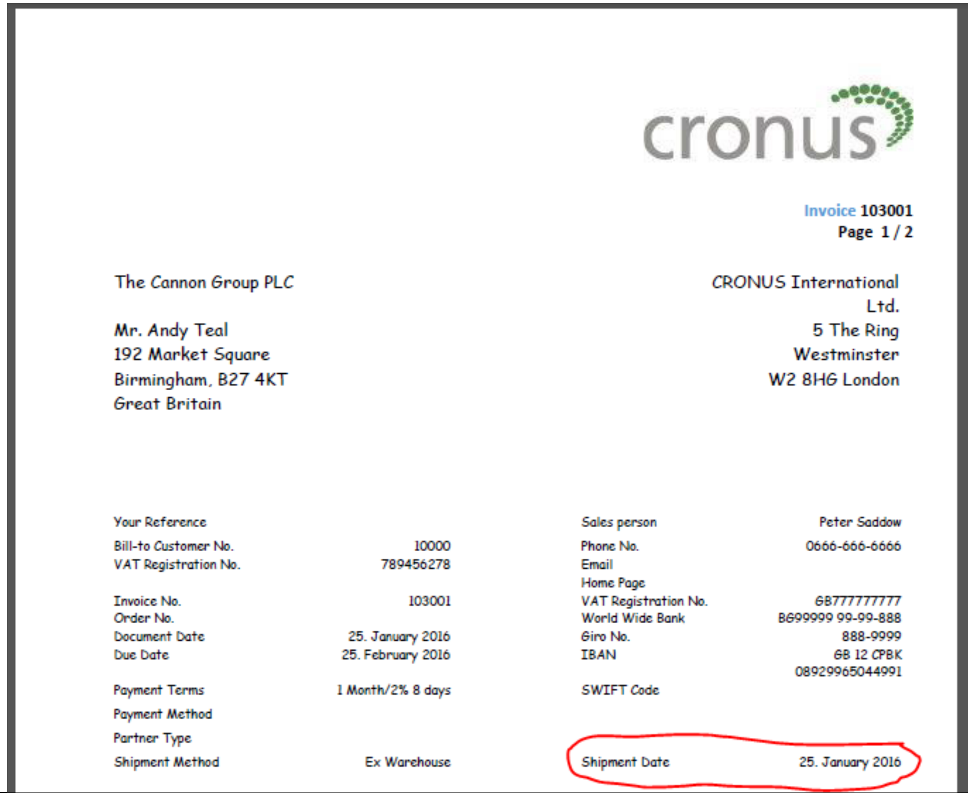



YourReference_Header_Lbl
YourReference_Header
SalesPersonText_Header_Lbl
SalesPersonName_Header
BilltoCustomerNo_Header_Lbl
BilltoCustumerNo_Header
CompanyPhoneNo_Lbl
CompanyPhoneNo
VATRegistrationNo_Header_Lbl
VATRegistrationNo_Header
EMail_Header_Lbl
CompanyEMail
GlobalLocationNumber_Header_Lbl
GlobalLocationNumber_Header
HomePage_Header_Lbl
CompanyHomePage
No_Header_Lbl
No_Header
CompanyVATRegistrationNo_Lbl
CompanyVATRegistrationNo
OrderNo_Header_Lbl
OrderNo_Header
CompanyBankName
CompanyBankBranchNo
CompanyBankAccountNo
DocumentDate_Header_Lbl
DocumentDate_Header
CompanyGiroNo_Lbl
CompanyGiroNo
DueDate_Header_Lbl
DueDate_Header
CompanyIBAN_Lbl
CompanyIBAN
PaymentTermsDescription_Lbl
PaymentTermsDescription
CompanySWIFT_Lbl
CompanySWIFT
PaymentMethodDescription_Lbl
PaymentMethodDescription
PaymentReference_Header_Lbl
PaymentReference_Header
LegalEntityType_Lbl
LegalEntityType
ShipmentMethodDescription_Lbl
ShipmentMethodDescription
ShipmentDate_Lbl
ShipmentDate
XML Mapping
Custom XML Part:
urn:microsoft-dynamics-nav/reports/Mini_Sales_Invoice/1306/
Header
BilltoCustomerNo_Lbl
BilltoCustumerNo
CompanyAddress1
CompanyAddress2
CompanyAddress3
CompanyAddress4
CompanyAddress5
CompanyAddress6
Insert Content Control
Map to Selected Content Control
CompanyBankBranchNo_Lbl

22. Save the document in Word.
23. Go back to the **Custom Report Layouts** page in Microsoft Dynamics NAV 2015 and make sure the new custom layout “My advanced Word layout” is selected.
24. On the **Home** tab, in the **Process** group, choose **Import layout**
25. In the **Import Word Document** dialog box, browse to the location where you exported the layout in the beginning of the lab, select the edited Word file, and choose **OK** to import the layout.

Sean could have continued to add, delete, or move fields around, but for this lab, Sean is content, so he saves his work and imports the layout document back into the new custom Word layout in Microsoft Dynamics NAV.



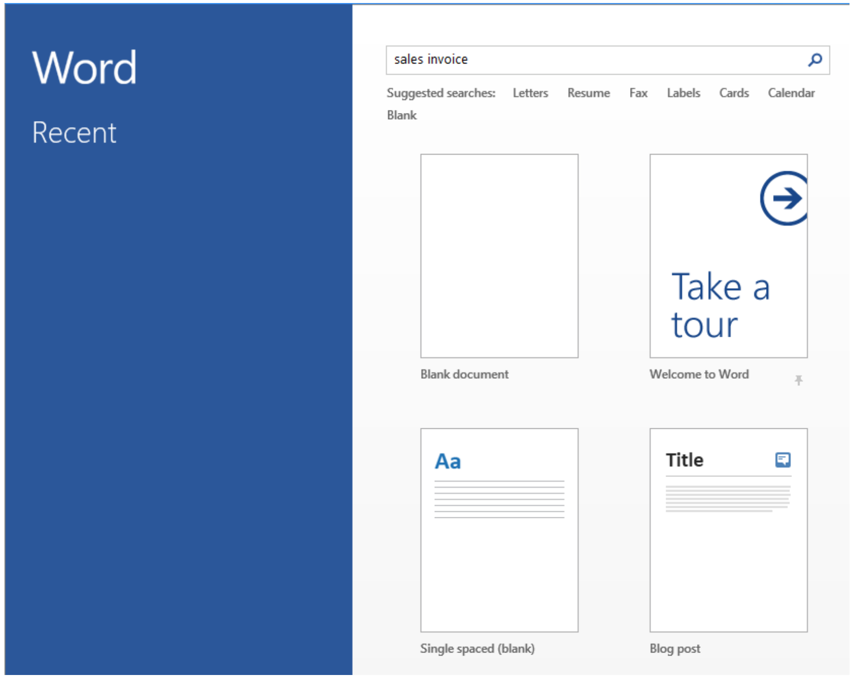
26. In the **Custom Report Layouts** page, select the "My advanced Word layout" row, and then on the **Home** tab, in the **Report** group, select **Run Report**. 27. In the resulting request page, use default values, select the **Print** button, and then choose **PDF**. 28. Inspect the resulting report and validate that Shipment Date is included.	Before setting the new custom layout as the active one, Sean runs it to validate it works as intended.	
29. Open **Report Layout Selection** page 30. Browse to and select the report 1306 Sales Invoice. 31. Assuming that **Selected Layout** field is already set to **Custom**, change **Custom Layout Description** field to the new "My advanced Word layout" layout. 32. Open **Posted Sales Invoices** by doing one of the following: • In the Search box, enter Posted Sales	Finally, Sean switches over to use the newly created custom layout, which the ShipmentDate, as the active sales invoice Word layout.	

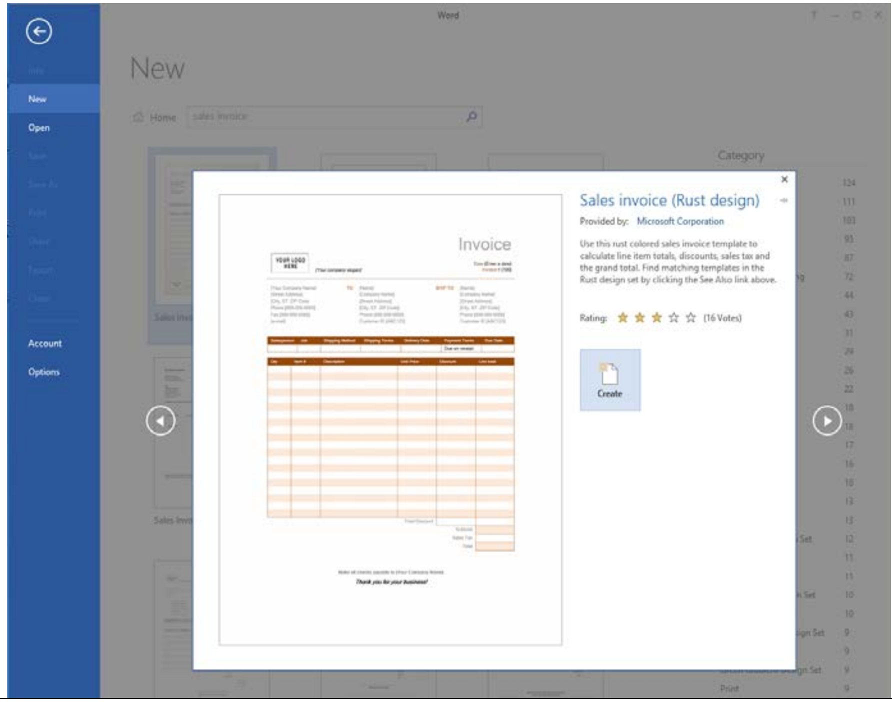
Invoices, and then choose the related link. • In the navigation pane, choose Posted Documents, and then Posted Sales Invoices. 33. Select a sales invoice from the list, and then on the **Home** tab, in the **Invoice** group, choose **Print**. 34. In the print dialog, use default values, select **Print**, and then **PDF**. 35. Validate that the resulting PDF is using the custom layout "My advanced Word layout" that you created previously.		

Lab 5 — Creating a new Word Document Report Layout Based on an Existing Word Template

Lab story: Microsoft Word supports the creation of great looking documents. Unless a visual identity has already been defined by a designer though, it is often much easier to start with an existing Word template, for example, from the community, than from scratch (although possible), and then tweak the templates visual design instead.

In this lab, we will look at how a power user such as Sean can take an online Word template and add content controls that map to the Microsoft Dynamics NAV report dataset to create a custom sales invoice to fit the desired visual identity of his company relatively easy.

What to do	What to say	Screenshots
1. Browse for invoice templates in Word online, by doing one of the following: • Open Word 2013 and search for sales invoice. • In an existing Word 2013 session, on the File menu, select New, and then search for sales invoice. 2. In the search result, look through the different suggested templates by selecting one and viewing the preview pane. Use left and right arrow buttons to shift through templates that have been found. 3. Locate the **Rust** template, and select **Create** in the preview pane to create a document from the template. 4. Save the document to a desired file location.	First, Sean is selecting the template he would like to work on. As Microsoft Dynamics NAV Word layouts cannot be based on Word .dotx template files directly, Sean will have to create a document using the template. Sean opens Microsoft Word 2013 and browses through available sales invoice templates using the preview capability. He ends up liking the Rust template the most, and selects **Create** to make a document based on this template.	

		
5. Open **Report Layout Selection** page by doing one of the following: • In the Search box, enter Report Layout Selection, and then choose the related link. • In the navigation pane, choose Departments, Administration, IT Administration, and then Reports, • In the Small Business Role Center, on the Actions tab, choose Setup, Company Information, and then choose Report Layouts. 6. Ensure that the correct company is specified in the **Company Name** field,	With the Word template in a document, Sean creates a new Sales Invoice custom layout in Microsoft Dynamics NAV 2013.	

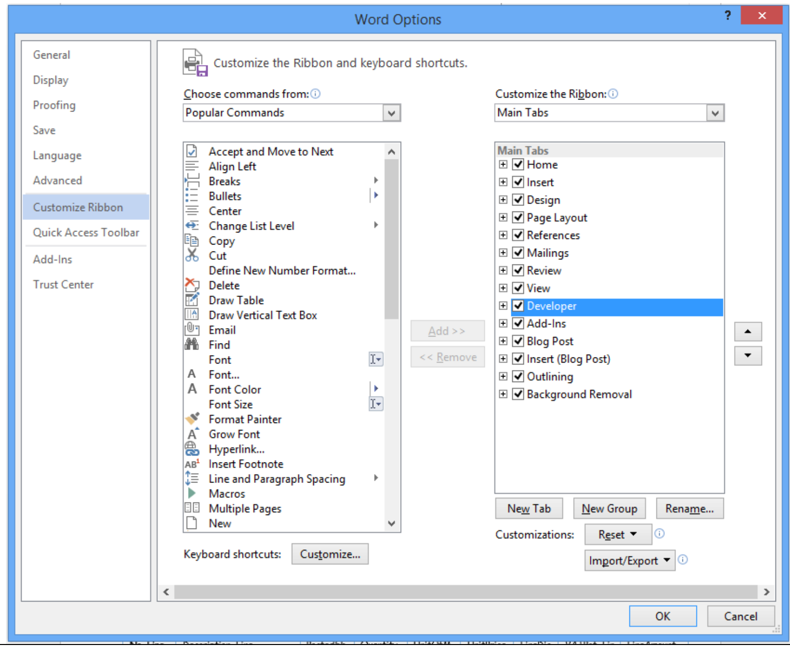
because reports layouts are company specific. 7. Locate the document report 1306 Sales – Invoice in the list by doing one of the following: • Scroll down through the list. • Filter on the Report ID equal to 1306. 8. Select the row for report 1306, and on the **Home** tab, in the **Process** group, choose **Custom Layouts**. 9. On the **Home** tab, in the **New** group, choose **New** to insert a new custom layout. The **Insert Built-in Layout for a Report** window appears. The **ID** and **Name** fields are automatically filled in. 10. To add a custom Word report layout type, select the **Insert Word Layout** check box, and then choose **OK**. 11. In the list, change the **Custom Layout Description** field of the newly created custom layout to “My Rust Word layout”.		
12. On the **Home** tab, in the **Process** group, select **Import layout**. 13. In the **Import Word Document** dialog, browse to the location where you saved the Word document Word document that is based on the **Rust** template (in the beginning of the lab), select the document, and then choose **OK** to import the layout.	As the newly created Word custom layout just contains a copy of the built-in Word layout, Sean imports his template document created in the beginning of the lab to overwrite the content.	
14. On the **Home** tab, in the **Process** group, choose **Edit Layout**.	With the new custom layout containing the Rust template, Sean	

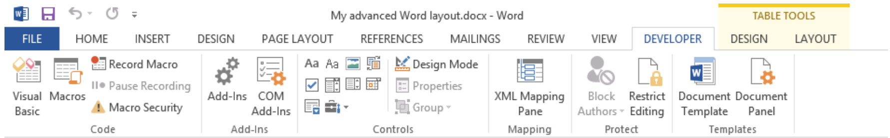
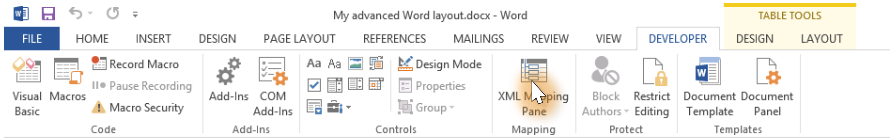
opens the custom layout for editing to start inserting content controls that represent data from Microsoft Dynamics NAV.

Note that the Edit function relies on client-side automation, and therefore requires that the Microsoft Dynamics NAV 2015 Windows client and Word 2013 are installed.

If you are us the Microsoft Dynamics NAV 2015 Web client or a device, the custom layout can be edited by exporting the layout to a Word file, editing it in Word, and then importing the layout file back into the appropriate report.

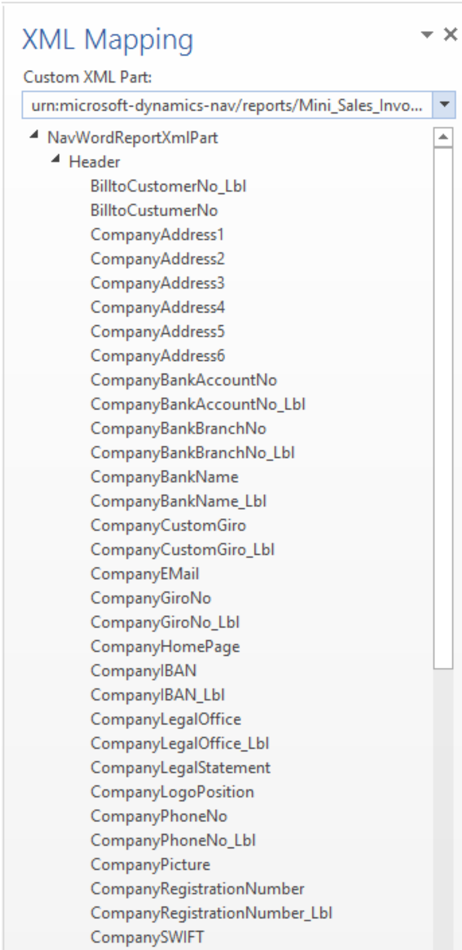
Also note that when you edit or export the custom layout, the required custom XML part is automatically inserted. Instead of importing the Rust template first before editing or exporting it, Sean could also have exported only the custom XML part from the **Export Word XML Part** in the **General** group on the **Actions** tab. Then, he could have manually inserted XML part into the template in Word, done all the content controls, and

	imported the custom layout into Microsoft Dynamics NAV. However, the lab steps described here are easier to understand.	
15. Select a table structure in the layout, for example, the sales lines. 16. In Word, on the **Layout** tab, in the **Table** group, choose **View Gridlines**.	As Word report layouts often use hidden table structures to align content controls (such as field mappings), enabling gridlines in Word is quite useful to understand the structure. As can be seen, the sales invoice header fields are all arranged in tables for easier alignment in Word.	
17. In Word, do one of the following: • Right click the ribbon, and then select Customize the Ribbon. • On the File menu, choose Options, and then select Customize Ribbon tab in the Word Options dialog box. 18. In the right pane, select the **Developer** check box, and then choose **OK**. 19. Select the **Developer** tab that is now visible in Word.	To insert new fields from the report dataset in the Word layout, we need to take advantage of the custom XML mapping feature in Word. This feature is available in the **Developer** tab in Word, which is hidden by default, so the first task is to enable it.	

		
20. On the **Developer** tab, choose **XML Mapping Pane**. 21. In the **XML Mapping** pane, in the **Custom XML Part** dropdown list, choose the custom XML part for the 1306 Sales Invoice. Typically this is the last in the list. The name of the custom XML part has the following format: urn:microsoft-dynamics-nav/reports/Mini_Sales_Invoice/1306 22. The **XML Mapping** pane now displays the labels and field controls that are available for the report. Browse the structure by expanding the tree and notice heading and different line structures.	Word layouts in Microsoft Dynamics NAV 2015 rely on mapping content controls to dataset fields. To facilitate this, the Words custom XML feature is used. A Word document can contain one or more embedded XML parts with data. When Word layouts are exported or invoked for editing from Microsoft Dynamics NAV 2015, the layout will have a specific Microsoft Dynamics NAV XML part added that represents the dataset structure of the report. This structure is then used when mapping the dataset to content controls. Therefore, first we need to show the **XML Mapping** pane in Word, and select the proper embedded XML part for the report dataset. The name of the custom XML part has the following format:	

urn:microsoft-dynamics-nav/reports/report_name/ID

Where report_name is the normalized name that is assigned to the report as specified by the report's Name Property in the Microsoft Dynamics NAV Development Environment, and ID is the identification number of the report.



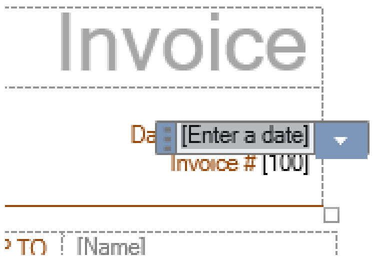
23. Locate and select the existing Date content control.
24. Delete it and make sure the text cursor is still located to the right of the Date text.
25. In the **XML Mapping** pane, expand the header structure and locate DocumentData.
26. Right click on DocumentDate, select **Insert Content Control**, and then choose **Plain Text**.

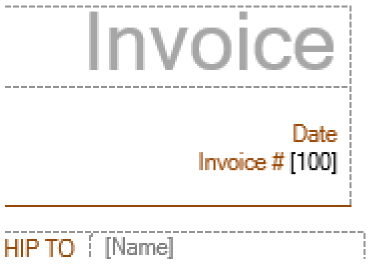
With the XML Mapping pane enabled, Sean can finally start adding content controls for the various placeholders in the Rust based custom layout.

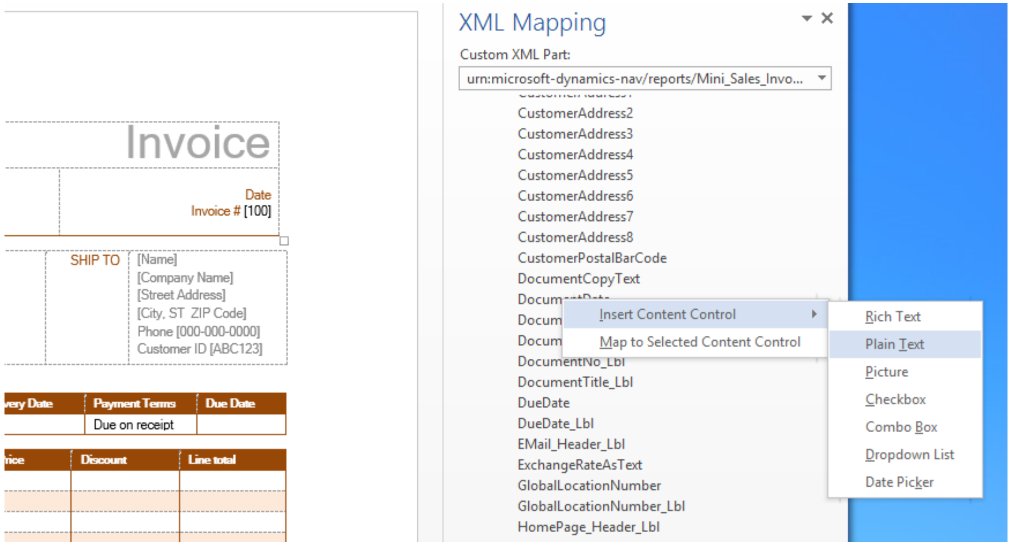
As Sean is not going to use the layout in any foreign locale, he is just going to use hardcoded text strings for captions, thus avoiding spending time on inserting content controls for labels.

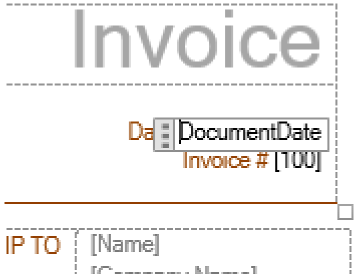
The Rust template already has some content controls. As we are not interested in these controls other than the placeholder, we are going to replace these with Microsoft Dynamics NAV content controls instead.

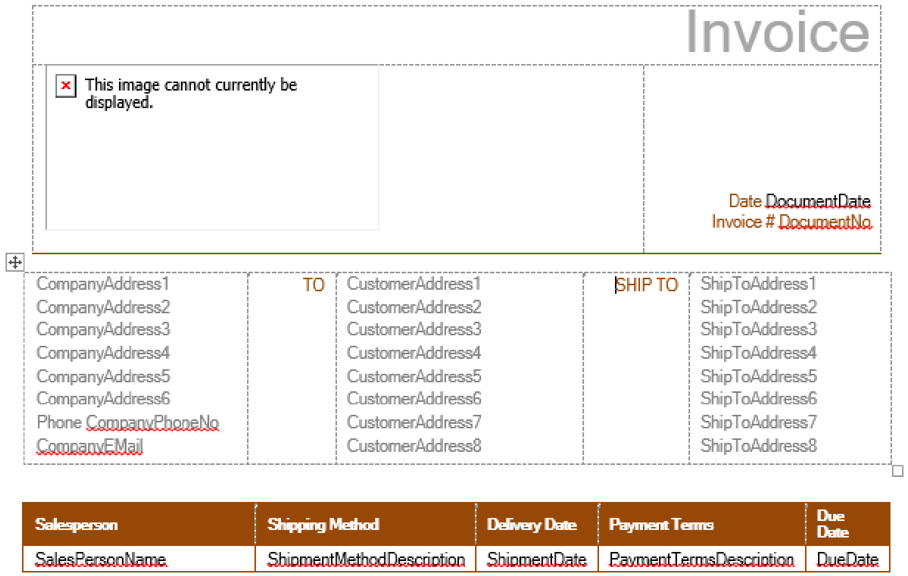
First, Sean is adding the document date in the header.

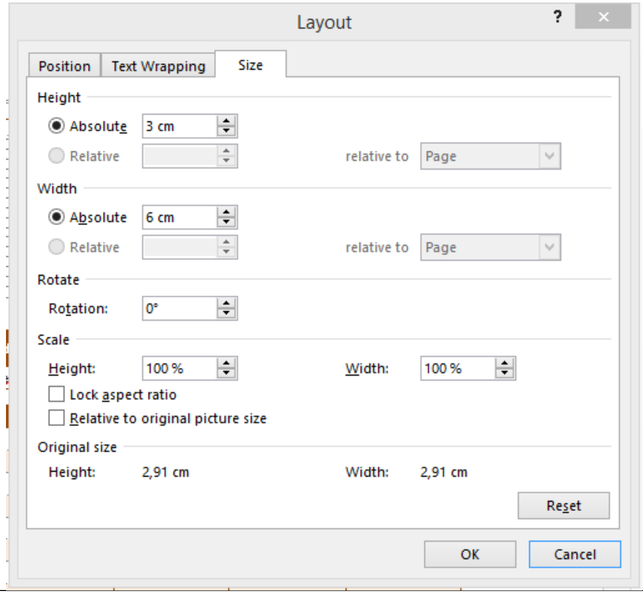





Invoice
Date
Invoice # [100]
SHIP TO
[Name]
[Company Name]
[Street Address]
[City, ST ZIP Code]
Phone [000-000-0000]
Customer ID [ABC123]
Payment Terms
Due Date
Due on receipt
Discount
Line total
XML Mapping
Custom XML Part:
urn:microsoft-dynamics-nav/reports/Mini_Sales_Invo...
CustomerAddress2
CustomerAddress3
CustomerAddress4
CustomerAddress5
CustomerAddress6
CustomerAddress7
CustomerAddress8
CustomerPostalBarCode
DocumentCopyText
Insert Content Control
Map to Selected Content Control
DocumentTitle_Lbl
DueDate
DueDate_Lbl
EMail_Header_Lbl
ExchangeRateAsText
GlobalLocationNumber
GlobalLocationNumber_Lbl
HomePage_Header_Lbl
Rich Text
Plain Text
Picture
Checkbox
Combo Box
Dropdown List
Date Picker


Invoice
DocumentDate
Invoice # [100]
[Name]

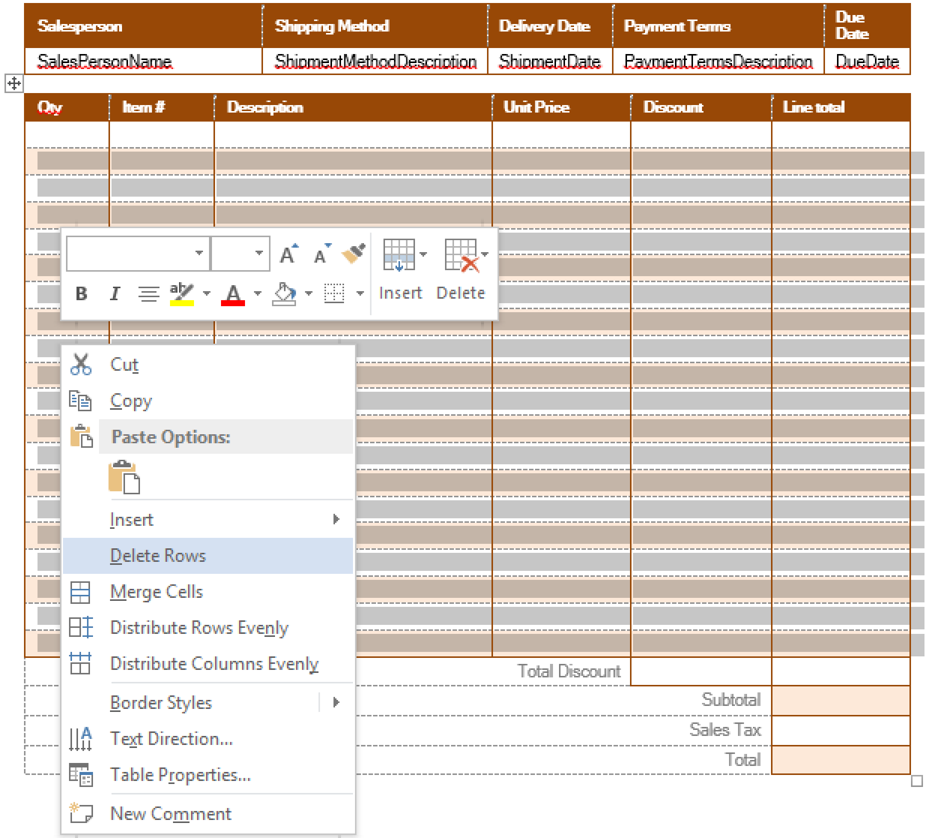
27. Create additional header content controls by repeatedly placing the text cursor in the Word layout and inserting a content control for the required field. To insert a control, find it in the **XML Mapping** pane, right-click it, select **Insert Content Control**, and then choose **Plain Text**.	Sean repeats adding header information to the layout, such as invoice date and number, company address, customer address, ship to address, sales person, shipping method, and so on. As part of this, Sean tweaks the structure a bit, for example, by adding more address lines because Microsoft Dynamics NAV supports more than those included in the generic Rust template.	

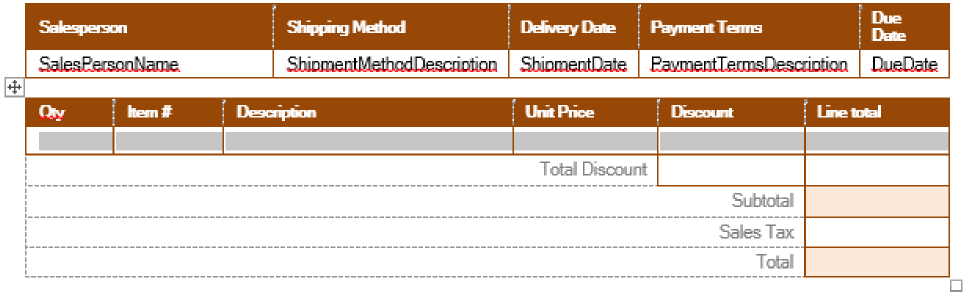
28. To complete the header, delete the logo place holder from the Rust template, and then merge the cell where it was contained with the one to the right. Then, place the cursor in the cell, and in the **XML Mapping** pane, right-click CompanyPicture, select **Insert Content Control**, and the choose **Picture**. 29. Right-click the inserted picture content control, and then choose **Size and Position**. 30. In the **Layout** dialog box, on the **Size** tab, specify the picture dimensions that correspond to the logo that is used. The Cronus demo data logo has a height of 3 cm and width of 6 cm.	Sean then inserts a logo placeholder.	

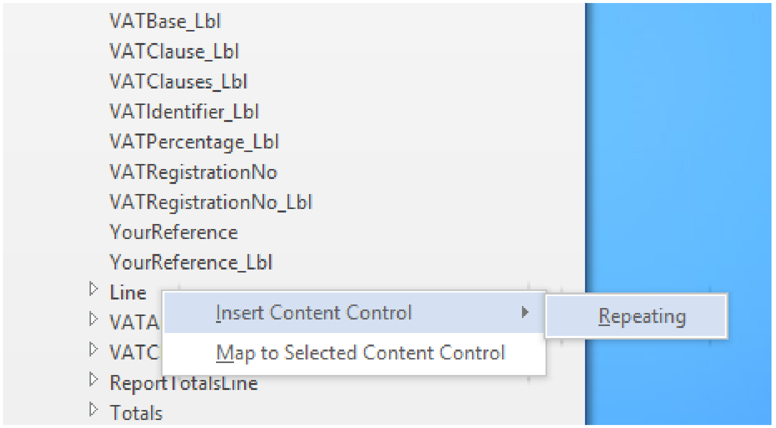
31. Delete all lines except the first line between the lines header and the totals part. To do this, select the rows, right click, and then choose **Delete Rows**.
32. Select the remaining row in the lines list.
33. In the **XML Mapping** pane, go to the nested Line section at the bottom.
34. Right click the Line entry, select **Insert Content Control**, and then choose **Repeating**.

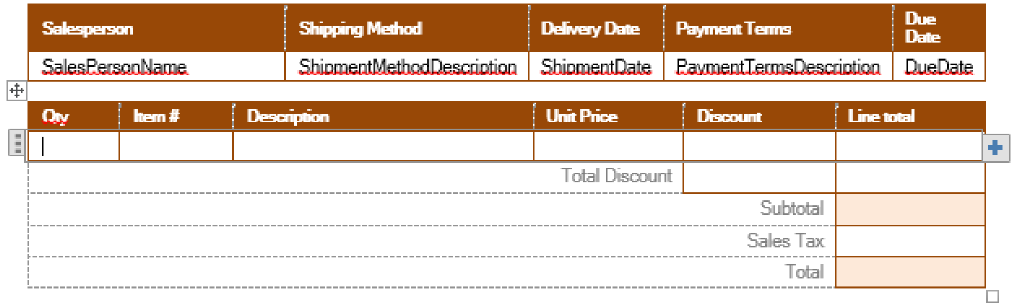
Lines and totals are just handled as a number of fixed, empty lines in the Rust template.

As the number of lines are dynamic in normal sales invoices, Sean will remove all of the redundant lines and insert a repeater content control for the line structure requiring repeat capabilities.




Salesperson
Shipping Method
Delivery Date
Payment Terms
Due Date
SalesPersonName
ShipmentMethodDescription
ShipmentDate
PaymentTermsDescription
DueDate
Qty
Item #
Description
Unit Price
Discount
Line total
Total Discount
Subtotal
Sales Tax
Total

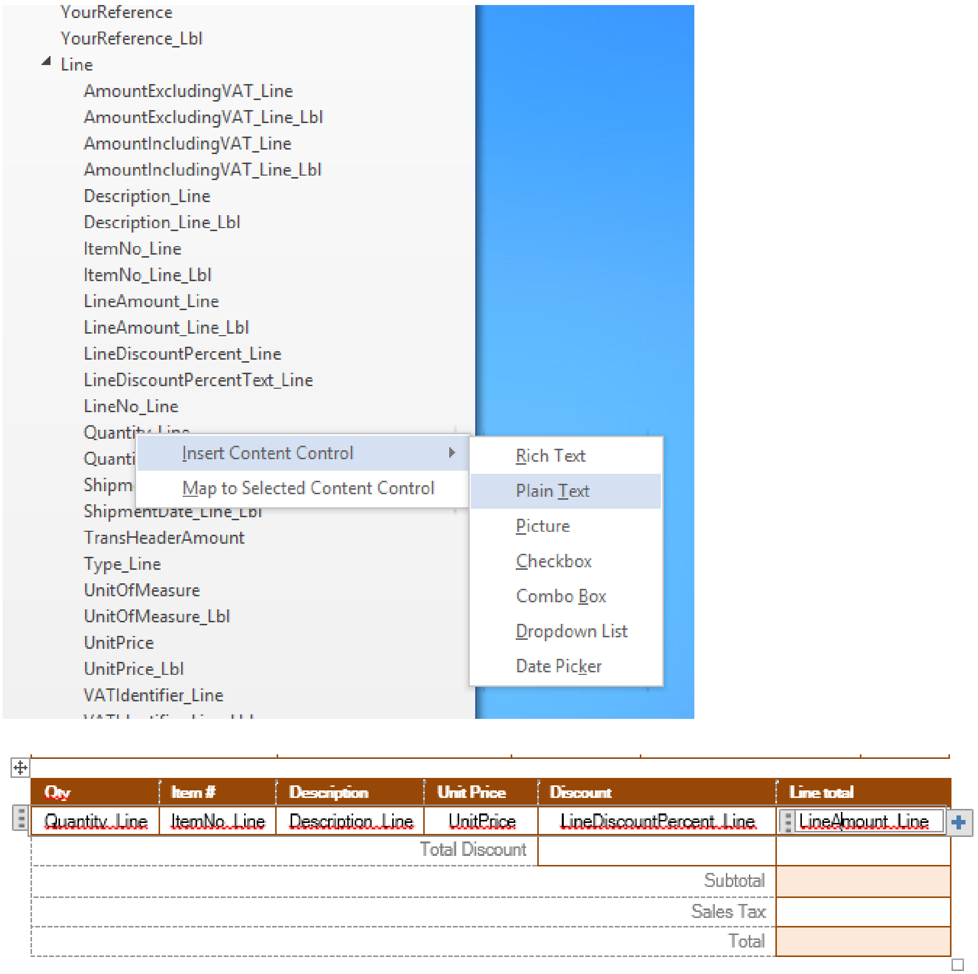

VATBase_Lbl
VATClause_Lbl
VATClauses_Lbl
VATIdentifier_Lbl
VATPercentage_Lbl
VATRegistrationNo
VATRegistrationNo_Lbl
YourReference
YourReference_Lbl
Line
ReportTotalsLine
Totals
Insert Content Control
Map to Selected Content Control
Repeating


Salesperson
Shipping Method
Delivery Date
Payment Terms
Due Date
SalesPersonName
ShipmentMethodDescription
ShipmentDate
PaymentTermsDescription
DueDate
Qty
Item #
Description
Unit Price
Discount
Line total
Total Discount
Subtotal
Sales Tax
Total

35. In the cells of the repeating row, insert content controls for quantity, item no, and so on (These controls are nested content controls in the repeater content control). Find the required fields in the nested Line structure in the **XML Mapping** pane.

With the repeater control in place, individual content controls for the column values in a line can be inserted.

Again, Sean tweaks the Rust template a bit as needed.



36. In the total cells, insert content controls for total discount, tax, and so on. Find the required fields in the nested Totals structure in the **XML Mapping** pane.

With the line structure in place, Sean inserts totals.

There are two ways totals can be inserted:

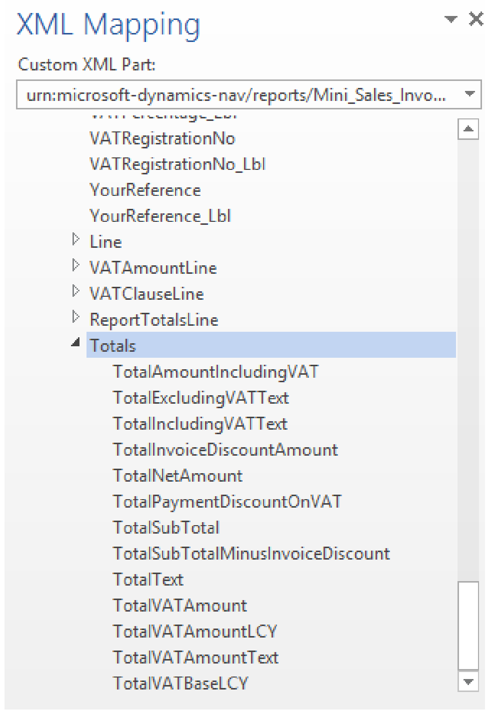
Using individual content controls for each total field found in the Totals structure of the **XML Mapping** pane.

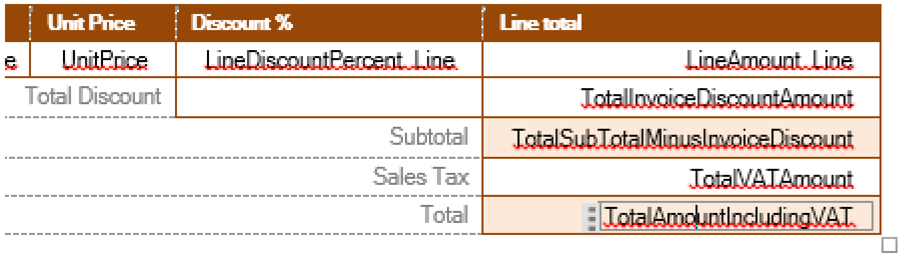
Using a dynamically formatted total repeater by using the ReportTotalsLine structure of the **XML Mapping** pane.

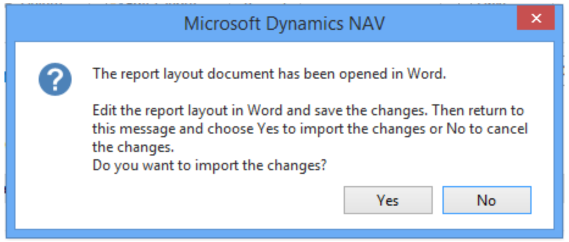
The former has the advantage that individual total numbers can be formatted and placed as desired.

The latter has the advantage that only lines with content (value), such as discount total, are shown.

In this lab, Sean will insert explicit totals. For an example of using the total repeater, see the standard report 1306 Sales Invoice Word layout.

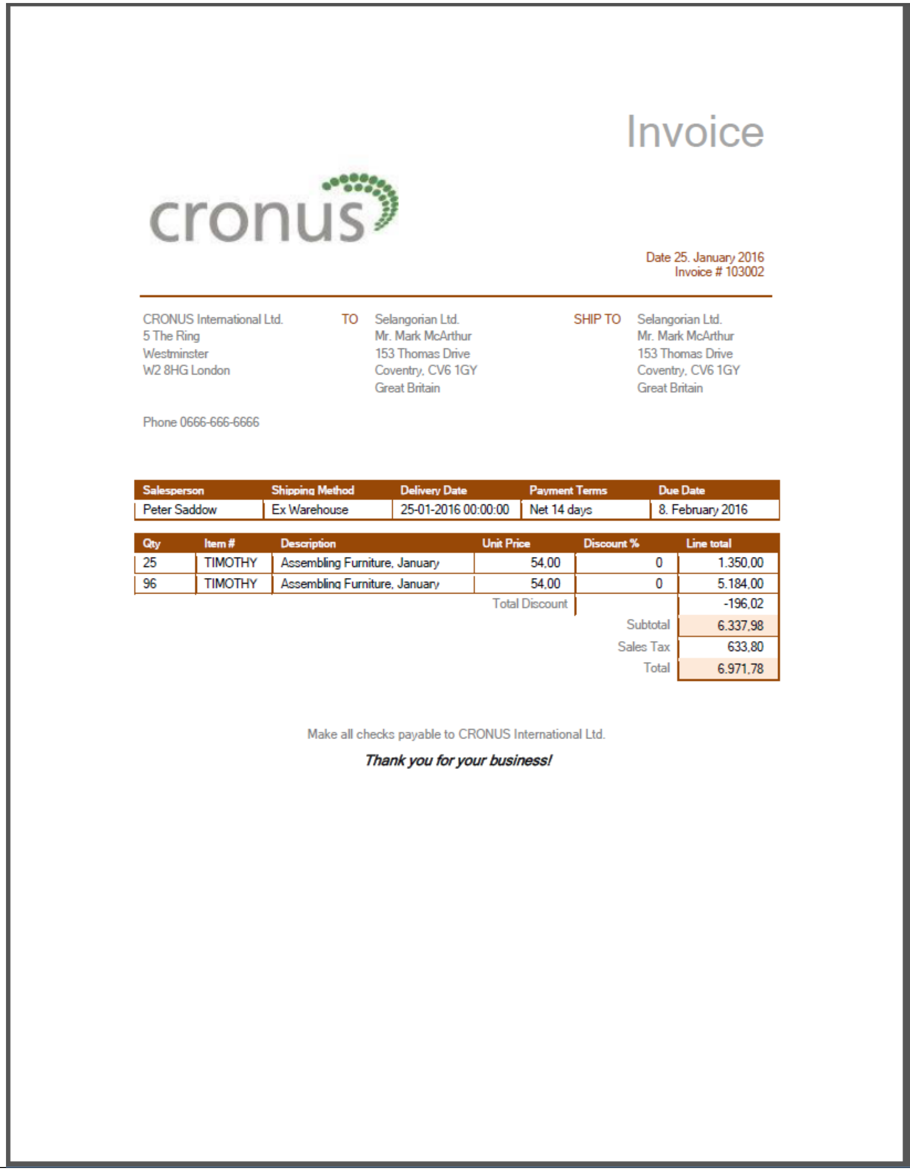




37. Replace the greeting content control with a content control that refers to CompanyAddress1 to get the company name in the greeting.	Finally, Sean updates the greeting and saves the layout	
38. Save the changes and close the Word document. 39. On the confirmation dialog box which appeared when the layout was opened for editing, choose **Yes** to accept the changes and import the layout into Microsoft Dynamics NAV.	With the layout done, Sean saves the Word document and accepts importing the changes into Microsoft Dynamics NAV.	

40. In the **Custom Report Layouts** page, select the new custom layout, and then on the **Home** tab, in the **Report** group choose **Run Report**.
41. In the resulting request page, use default values, select the **Print** button, then choose **PDF**.
42. Inspect the resultant PDF and validate that the Rust-based Word layout looks good and has correct field values.

Before enabling the new custom layout as the active layout for the sales invoice report, we are going to test it out by running it from within the **Custom Report Layout** page.



Invoice

cronus

Date 25. January 2016
Invoice # 103002

CRONUS International Ltd.
5 The Ring
Westminster
W2 8HG London

TO
Selangorian Ltd.
Mr. Mark McArthur
153 Thomas Drive
Coventry, CV6 1GY
Great Britain

SHIP TO
Selangorian Ltd.
Mr. Mark McArthur
153 Thomas Drive
Coventry, CV6 1GY
Great Britain

Phone 0666-666-6666

Salesperson	Shipping Method	Delivery Date	Payment Terms	Due Date
Peter Saddow	Ex Warehouse	25-01-2016 00:00:00	Net 14 days	8. February 2016

Qty	Item #	Description	Unit Price	Discount %	Line total
25	TIMOTHY	Assembling Furniture, January	54,00	0	1.350,00
96	TIMOTHY	Assembling Furniture, January	54,00	0	5.184,00
			Total Discount		-196,02
				Subtotal	6.337,98
				Sales Tax	633,80
				Total	6.971,78

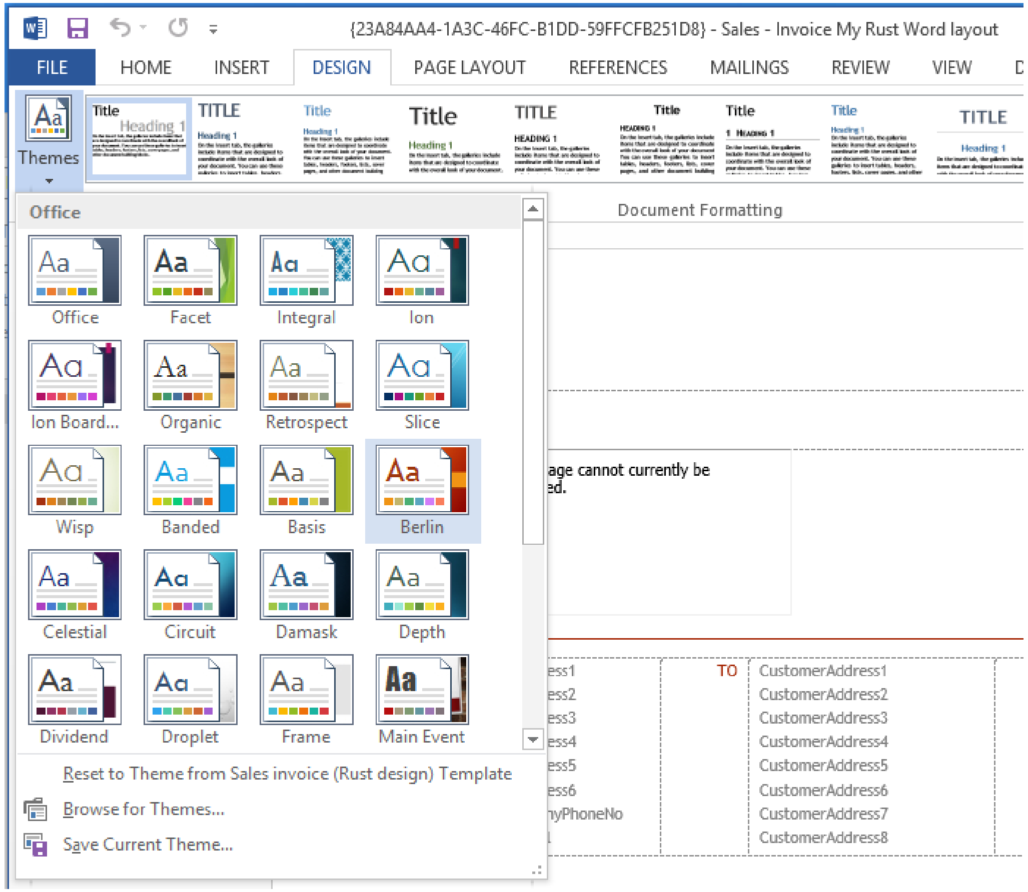
Make all checks payable to CRONUS International Ltd.

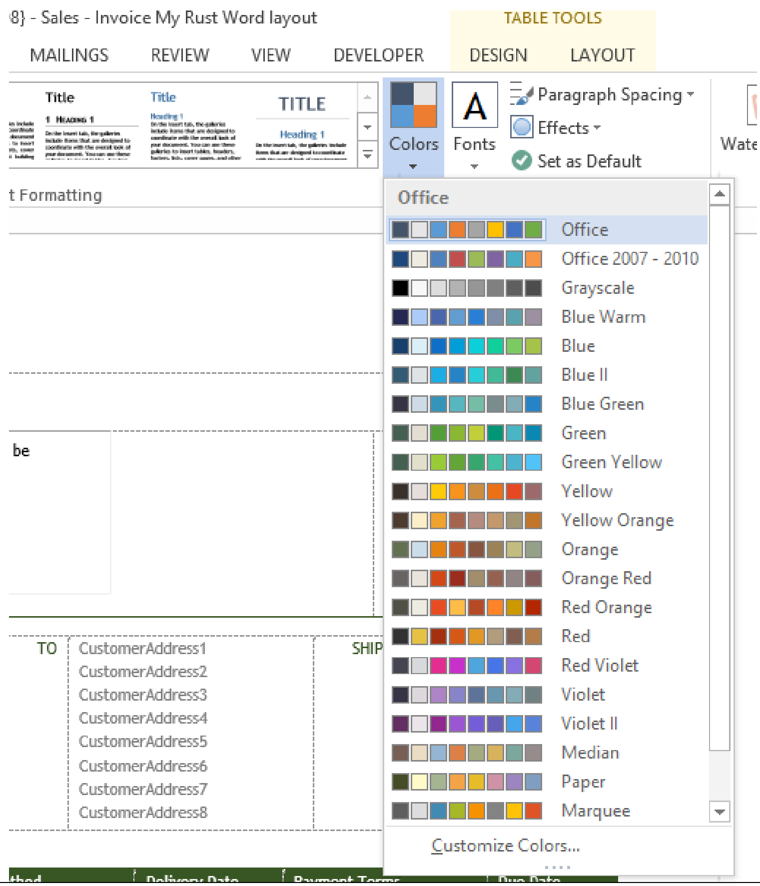
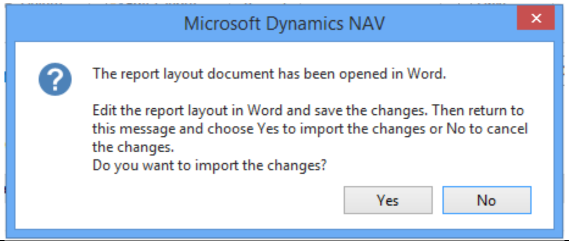
Thank you for your business!

43. Go back to the **Custom Report Layouts** page for report 1306 Sales Invoice.
44. Select the new Rust-based custom layout “My Rust Word layout”.
45. On the **Home** tab, in the **Process** group, choose **Edit Layout.**
46. In Word, on the **Design** tab, use the left most **Themes** drop down list and apply a couple of different theme options to see the impact in the document.
47. Apply the **Berlin** theme.
48. On the **Design** tab, use the **Colour** drop down list to select a couple of different colour schemes to see the impact in the document.
49. Apply the **Office** colour scheme.

Sean likes the result, but he knows that many templates use styles and support Word themes and colour schemes, so he is going to explore these options to see if there are any colour and formatting combination he likes better.

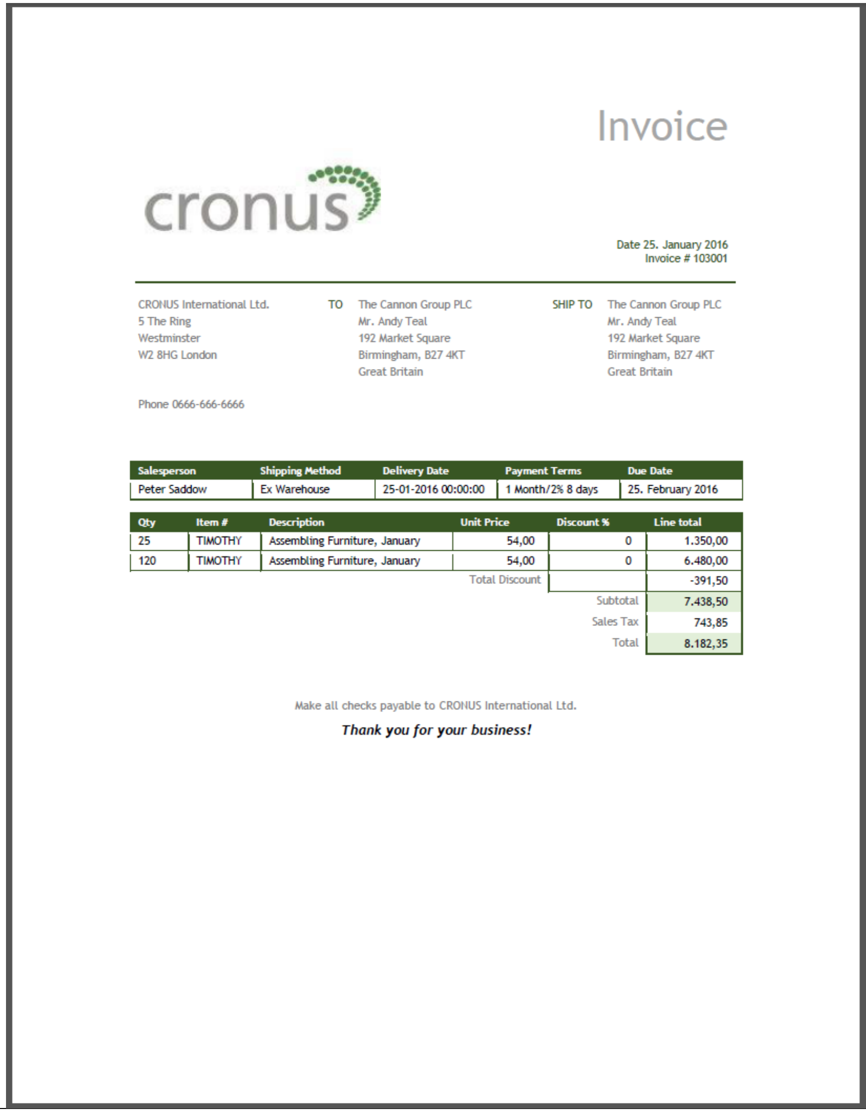
Applying different themes and colours, Sean likes the fonts and setup of the Berlin theme the most. However, to get a colour scheme that better matches his company “green” profile, he changes the colour scheme to Office.



		
50. Save and close the Word document. 51. On the confirmation dialog box which appeared when the layout was opened for editing, choose **Yes** to accept the changes and import the layout into Microsoft Dynamics NAV.	With the layout theme and colour scheme changes, Sean saves the Word document and accepts importing the changes into Microsoft Dynamics NAV.	

52. In the **Custom Report Layouts** page select the new custom layout, and then on the **Home** tab, in the **Report** group select **Run Report**.
53. In the resulting request page, use default values, select the **Print** button, and then choose **PDF**.
54. Inspect the resulting PDF and validate that the Rust-based Word layout now has a new theme and colour scheme.

As a final test, Sean reruns the layout, now with the new theme.



Invoice

cronus

Date 25. January 2016
Invoice # 103001

CRONUS International Ltd.
5 The Ring
Westminster
W2 8HG London

TO
The Cannon Group PLC
Mr. Andy Teal
192 Market Square
Birmingham, B27 4KT
Great Britain

SHIP TO
The Cannon Group PLC
Mr. Andy Teal
192 Market Square
Birmingham, B27 4KT
Great Britain

Phone 0666-666-6666

Salesperson	Shipping Method	Delivery Date	Payment Terms	Due Date
Peter Saddow	Ex Warehouse	25-01-2016 00:00:00	1 Month/2% 8 days	25. February 2016

Qty	Item #	Description	Unit Price	Discount %	Line total
25	TIMOTHY	Assembling Furniture, January	54,00	0	1.350,00
120	TIMOTHY	Assembling Furniture, January	54,00	0	6.480,00
			Total Discount		-391,50
				Subtotal	7.438,50
				Sales Tax	743,85
				Total	8.182,35

Make all checks payable to CRONUS International Ltd.

Thank you for your business!

55. Open **Report Layout Selection** page again.
56. Browse to and select the report 1306

Being satisfied with the new layout, we are going to make this the

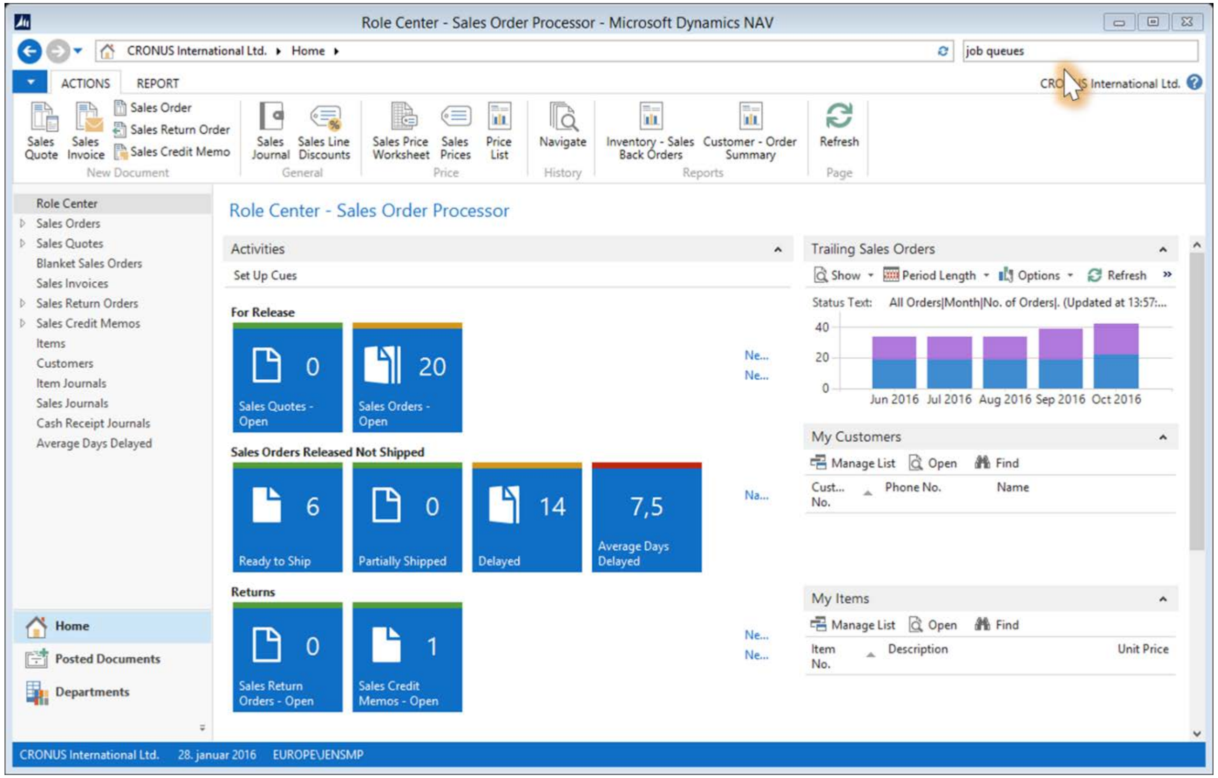
Sales Invoice. 57. Change **Selected Layout** field to **Custom**. 58. In the **Custom Report Layouts** page that appears, select the layout "My Rust Word layout" that you previously created, and choose the **OK** button to close the page. 59. Validate that the **Selected Layout** field now is set to **Custom** and that **Custom Layout Description** field in the list contains "My Rust Word layout" for the report 1306.	default layout for the sales invoice. To do this, we will set the **Selected Layout** field in the **Report Layout Selection** page to the newly defined custom layout. Note that if the **Selected Layout** field is already set to **Custom**, the actual custom layout is changed by using the lookup in the **Custom Layout Description** field instead.	
60. Open **Posted Sales Invoices** by doing one of the following: • In the Search box, enter Posted Sales Invoices, and then choose the related link. • In the navigation pane, choose Posted Documents, and then Posted Sales Invoices. 61. Select a sales invoice from the list, and then on the **Home** tab, in the **Invoice** group, choose **Print.** 62. In the print dialog, use default values, select the **Print** button, and then choose **PDF**. 63. Validate that the resulting PDF is using the custom layout "My Rust Word layout" that you previously created.	Finally, Sean runs the sales invoice from a real application context, for example, Posted Sales Invoices, to verify that the new custom layout is used.	

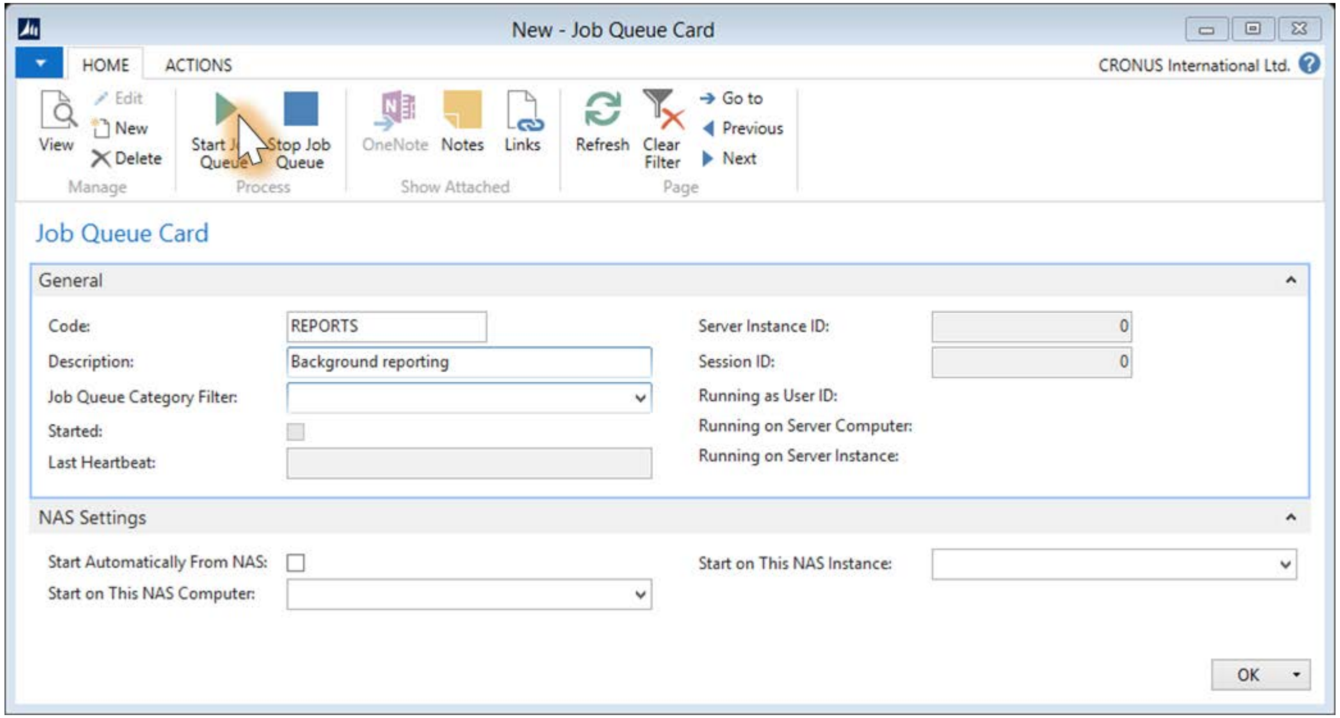
2. Scheduling Reports

Source: Demo Script – Scheduling Reports, Microsoft

Lab 1 — Setting up the job queue to run a report

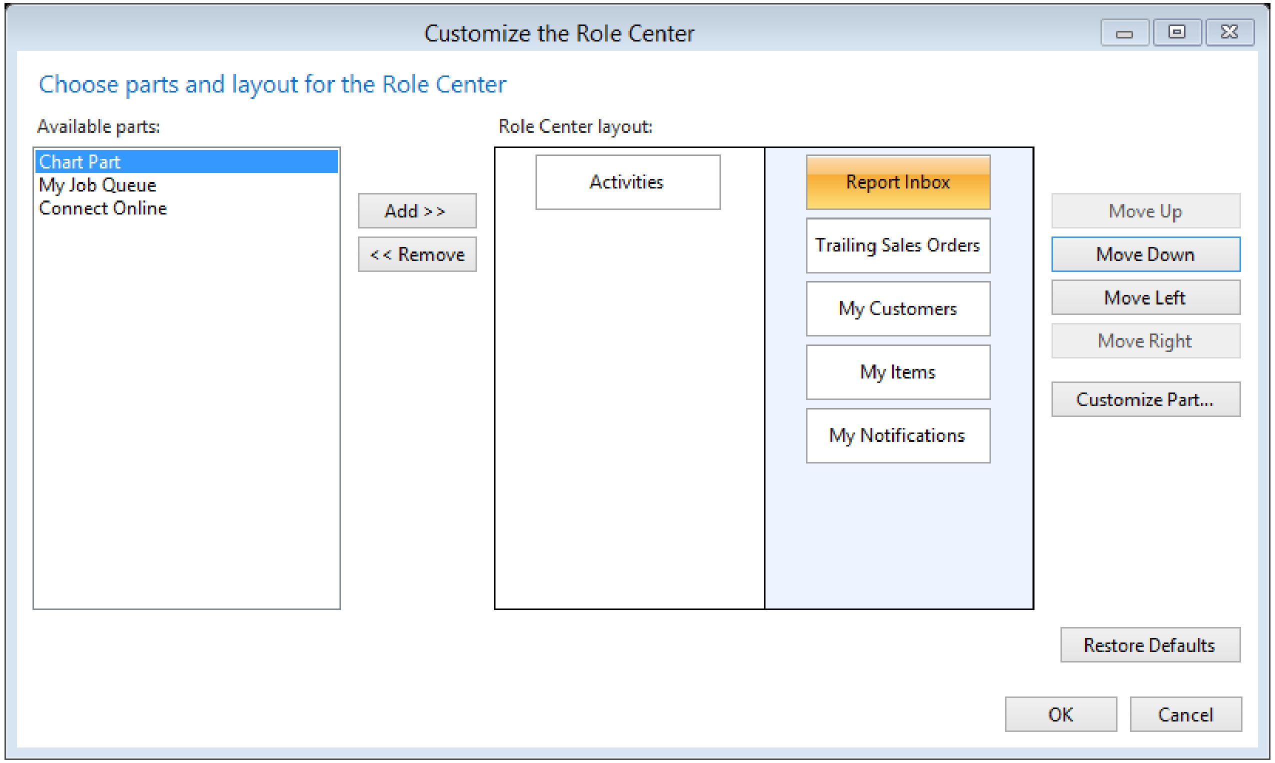
Lab story: Stan needs to run a number of long running reports and does not want to wait for them to complete. The scenario is simplified because a typical customer setup would involve setting up a NAS instance to process the reports.

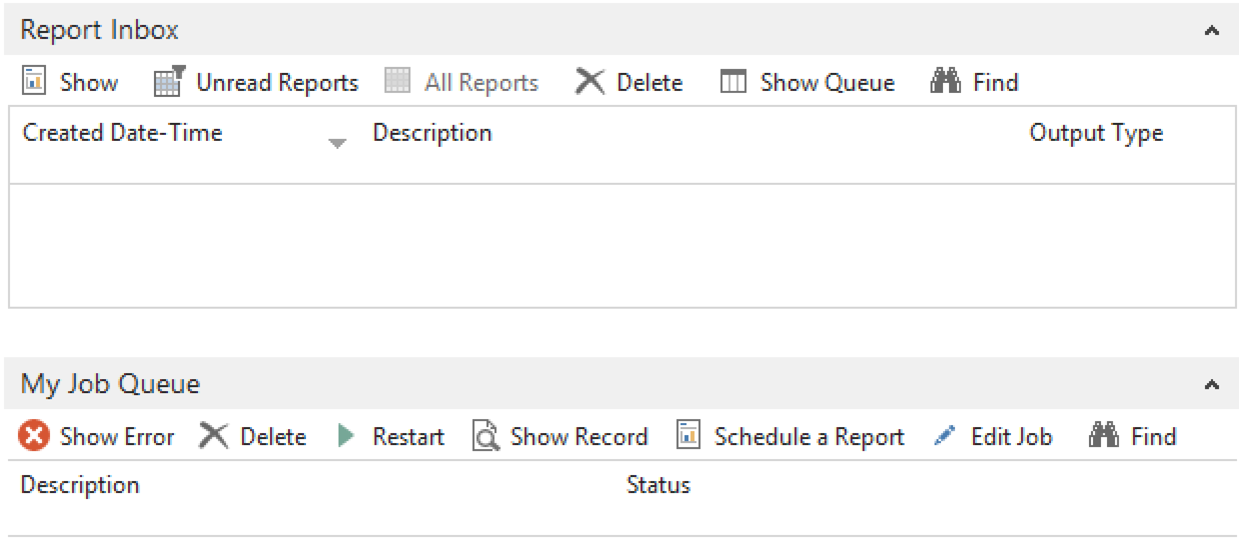
What to do	What to say	Screenshots
25. Open the **Job Queues** page. 26. On the **Home** tab, in the **New** group, choose **New** to set up a new job queue.	Usually, a job queue would have been set up and started automatically on startup. For simplicity, in this example, we will start a job queue explicitly. Job queues enable you to specify, request, and control when certain processes are run, such as running a report or executing a codeunit. The partner can modify the business logic to direct reports to a specific job queue.	

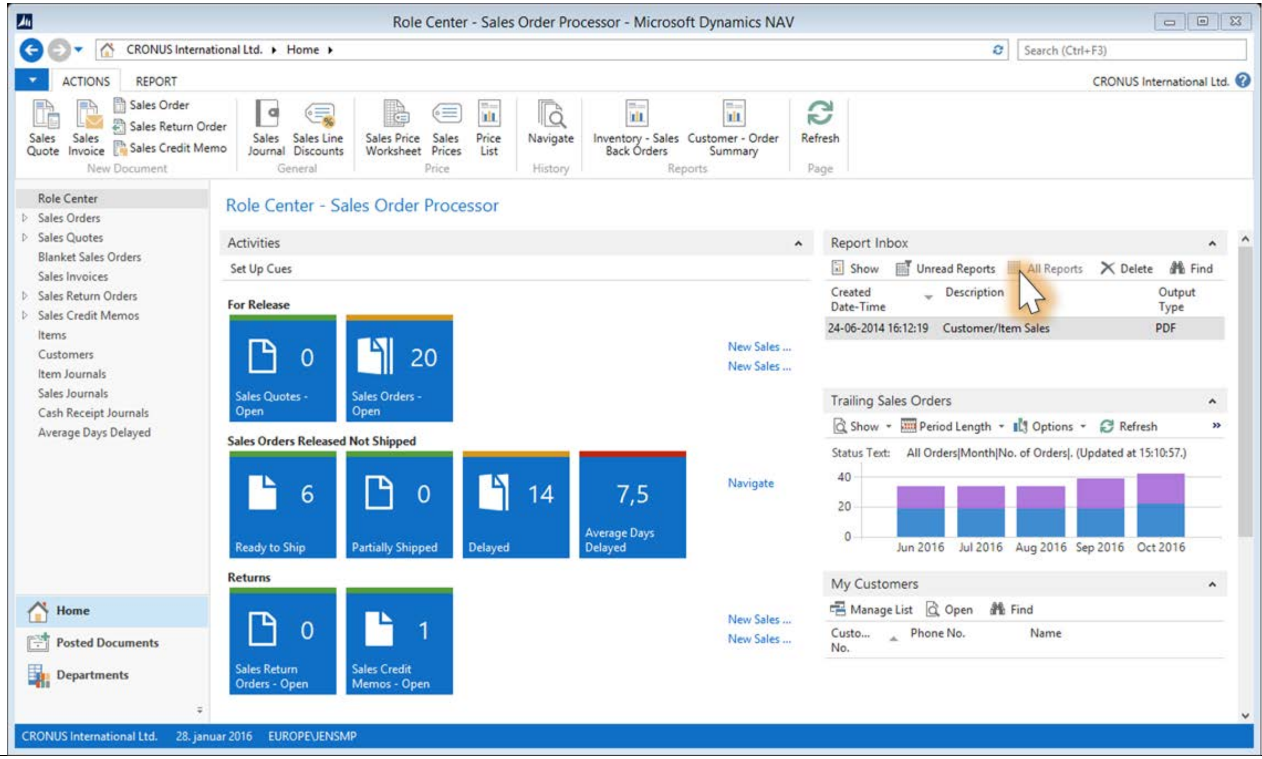
27. In the **Code** field, type REPORTS. 28. Fill in the **Description** field. 29. Leave the **Job Queue Category Filter** field blank. 30. On the **Home** tab, in the **Process** group, choose **Start Job Queue**. 31. Close the Job Queue Card	A job queue with no filter runs the reports. In many customer installations, the reports will be picked up by the DEFAULT job queue	

Lab 2 — Adding the Report Inbox to the Role Center

Lab story: The user wants easy access to the reports that he has scheduled, so he adds the Report Inbox part to the Role Center page.

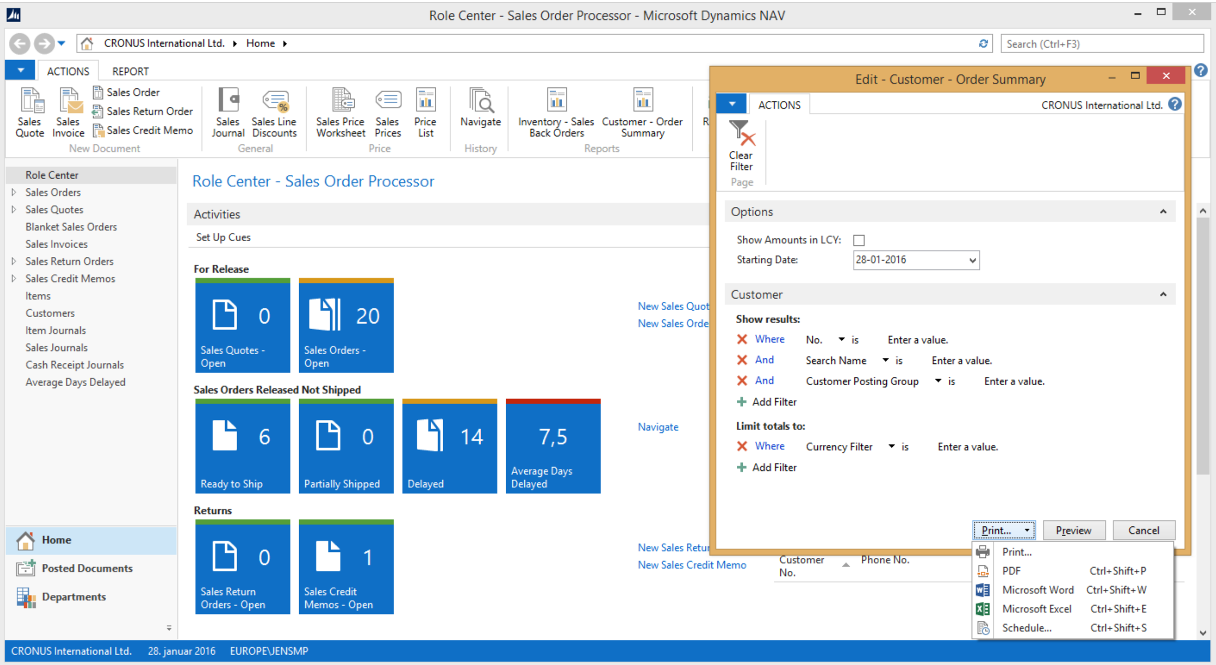
What to do	What to say	Screenshots
1. To open the Role Center page that you want to customize, in the navigation pane, choose the **Home** button, then choose the **Role Center** menu item. 2. On the **Application** menu , choose **Customize**, and then **Customize This Page.** 3. In the **Available Parts** pane, select **Report Inbox**, and then choose the **Add** button. 4. To move the **Report Inbox** part to top of the second column in the **Role Center layout** pane, select it and then use the **Move** buttons.	By default, the **Report Inbox** is added to most Role Centers Role that are shipped on the DVD. If the **Report Inbox** is not present, it can be added by customizing the Role Center.	

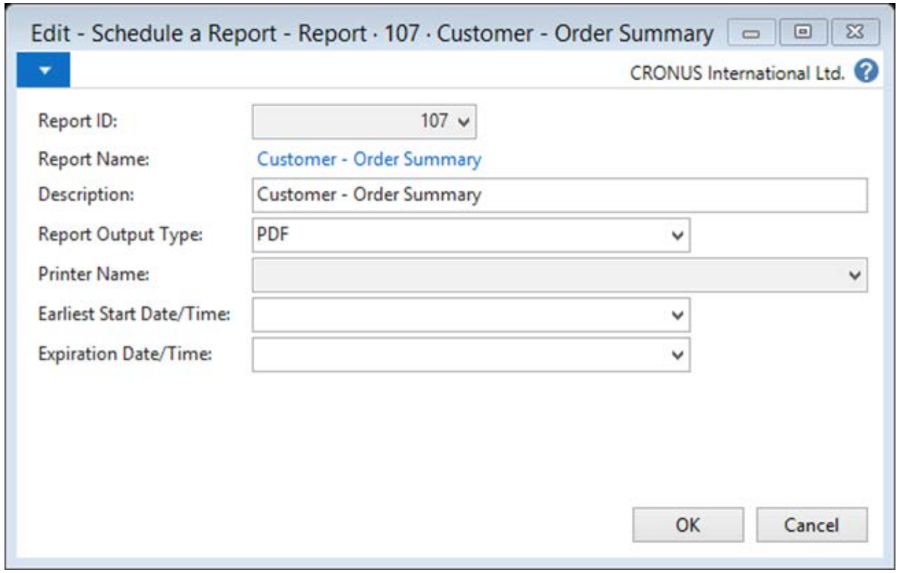
5. (Optional) To add the **My Job Queue** to the Role Center, in the **Available Parts** pane, select **My Job Queue**, and then choose the **Add** button. 6. (Optional) To move the **My Job Queue** part below the **Report Inbox** in the **Role Center layout** pane, select it and then use the **Move** buttons.	Optional: When the job queue is in use, it can be useful to have easy access to the state of the jobs that are currently running. The reason for having the two parts is that the job queue can be used for tasks other than running reports. Also note, that the job queue can be accessed directly from the **Report Inbox** by choosing the **Show Queue** action. So, if there is a need to preserve space on the **Role Center**, then you do not have to include the **My Job Queue** part.	

7. Verify that the **Report Inbox** appears in the Role Center.		

Lab 3 — Scheduling a report and viewing the result

Lab story: The user wants to run a number of reports and view the contents later. He does not want to wait for the reports to finish running – he just wants to continue his work. The first report he needs is the **Customer Order Summary** report. In other scenarios cases, he may need to run reports that require a lot of memory. In this case, the reports can be run more efficiently on Microsoft Dynamics NAV Server.

What to do	What to say	Screenshots
1. On the Role Center, on the **Report** tab, choose **Customer Order – Summary.** 2. On the report request window, choose the **Print** button, and then choose **Schedule**.	For simplicity, a simple report on the Role Center paged is selected. A good use of this feature is to schedule "long running reports" like the **Detail Trial Balance** report.	

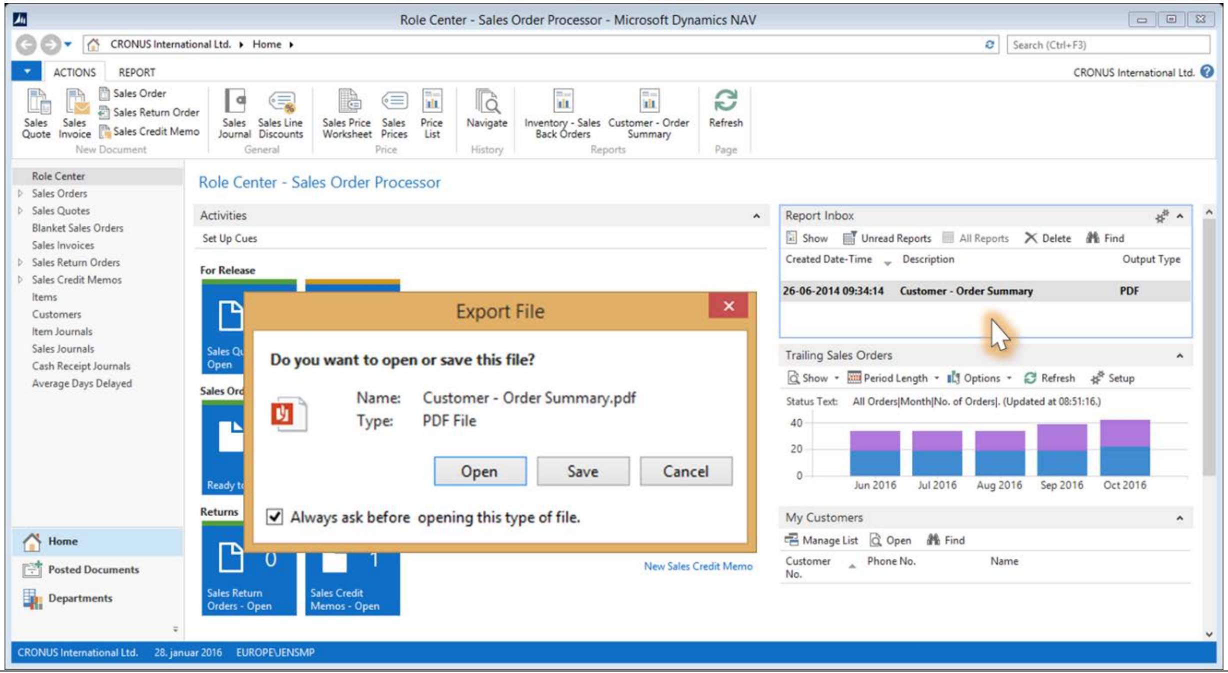
3. In the **Schedule a Report** window that appears, in the **Description** field type a different text. 4. In the **Report Output Type** field, select the down arrow, and choose **PDF**. 5. Choose the **OK** button.	The user can enter a descriptive name that makes it easier for him to remember his scheduled job. PDF is the default output format, but you can select other formats. The user has the option to run the report at a later time. This is particularly useful for long running reports that can be run after normal working hours.	

6. Go to the **Report Inbox** on the Role Center and show that the report appears when it is finished running.
7. To view the report, select it in the **Report Inbox**, and then choose **Show**.

The **Report Inbox** part will update regularly. You can also force an update by pressing **F5** in the Role Center.

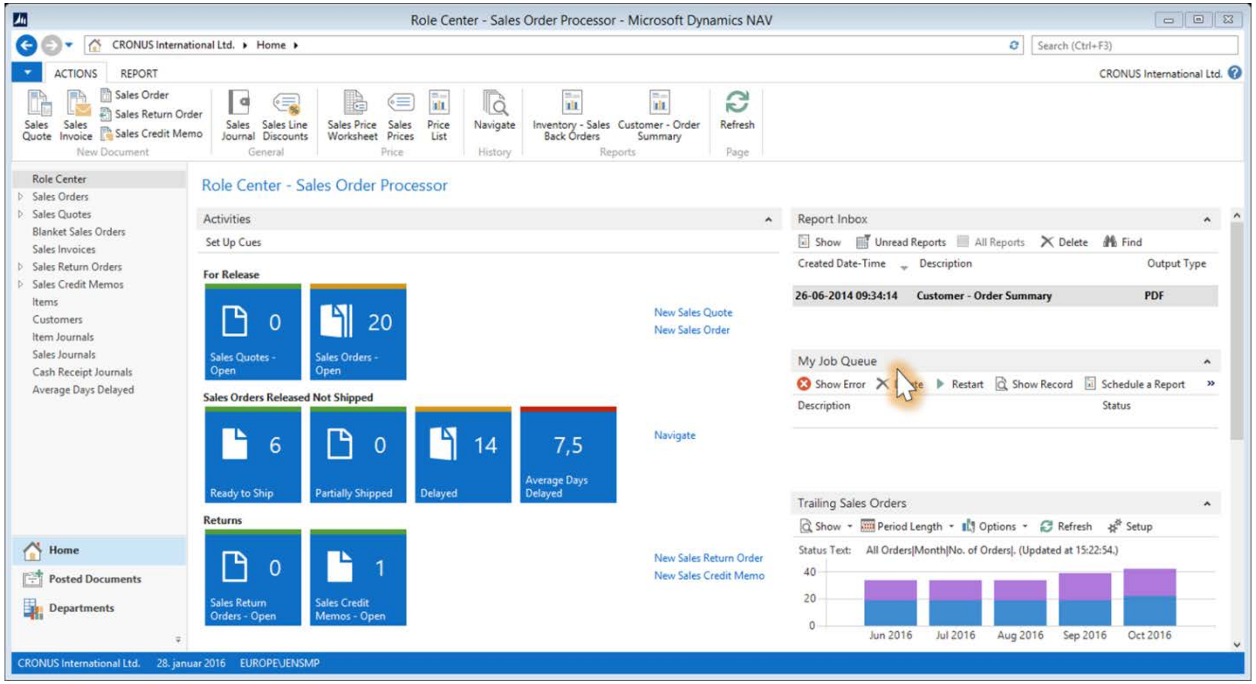
Unread reports are shown in bold

You can show the generated report by double-clicking the item or selecting **Show**.



Lab 4 — When a scheduled report fails

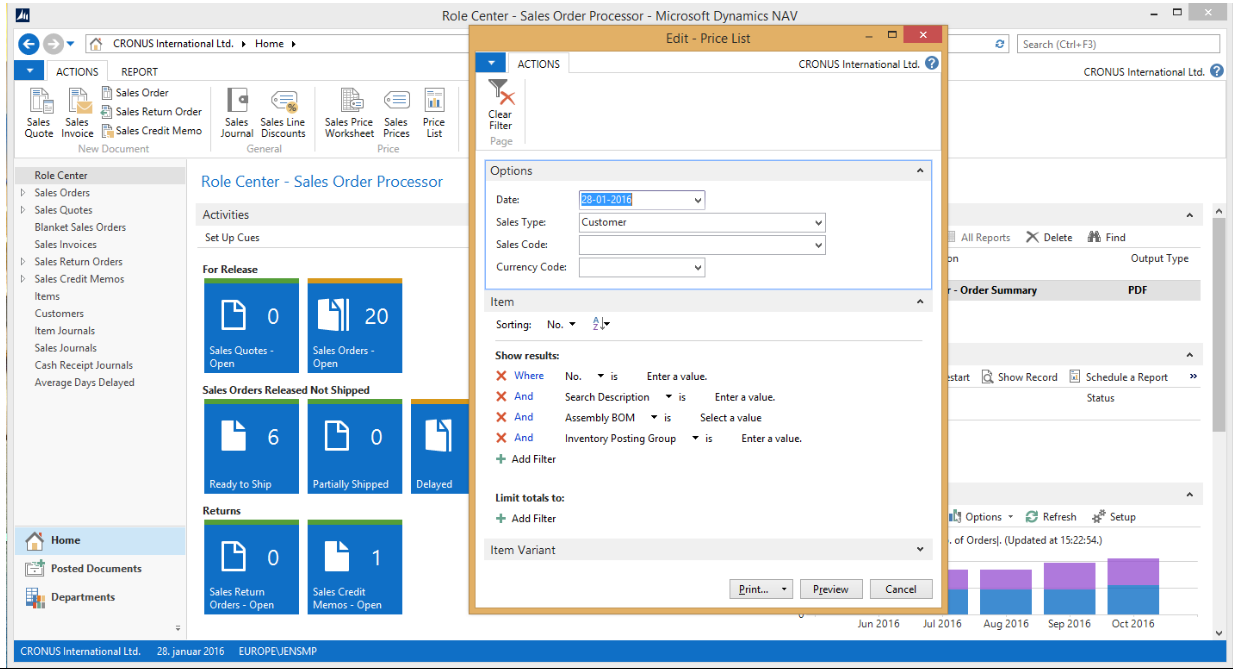
Lab story: Stan schedules a report to be run later, but an error occurred during execution. Stan investigates why the report did not generate an output and realizes that the parameters that were used to run the report are invalid. He changes the parameters, and then reruns the report.

What to do	What to say	Screenshots
1. Open the Role Center. 2. On the **Application** menu , choose **Customize**, and then **Customize This Page.** 3. In the **Available Parts** pane, select **My Job Queue**, and then choose the **Add** button. 4. To move the **My Job Queue** part below the **Report Inbox** in the **Role Center layout** pane, select it and then use the **Move** buttons 5. In the Role Center, go to the **My Job Queue** part.	When the job queue is in use, it is useful to have easy access to the state of the jobs running. The reason for having the **Report Inbox** and **My Job Queue** parts is that the job queue can be used for tasks other than running reports. Note, that the job queue can be accessed directly from the **Report Inbox** by choosing the **Show Queue** action. So, if there is a need to save space on the Role Center real estate, you do not have to include the **My Job Queue** part.	

6. On the Role Center, on the **Reports** tab, choose **Price List**.
7. In the **Sales Type** field select **Customer**.
8. To schedule the report to run later, choose the **Print** button, then select **Schedule**.
9. In the **Schedule a Report** window, leave the default values in fields and choose the **OK** button.

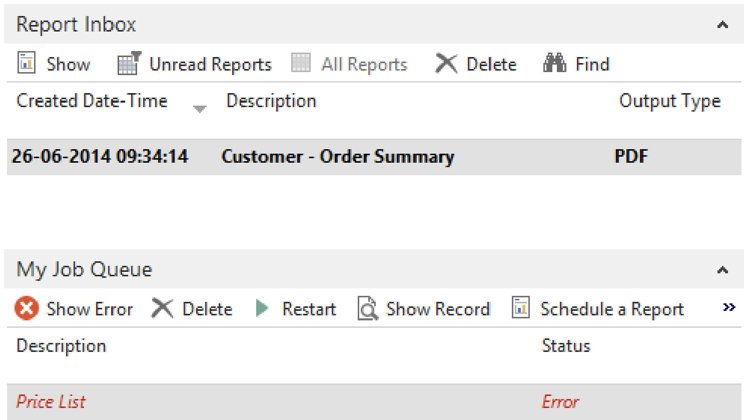
Some reports will generate an error when they are run.

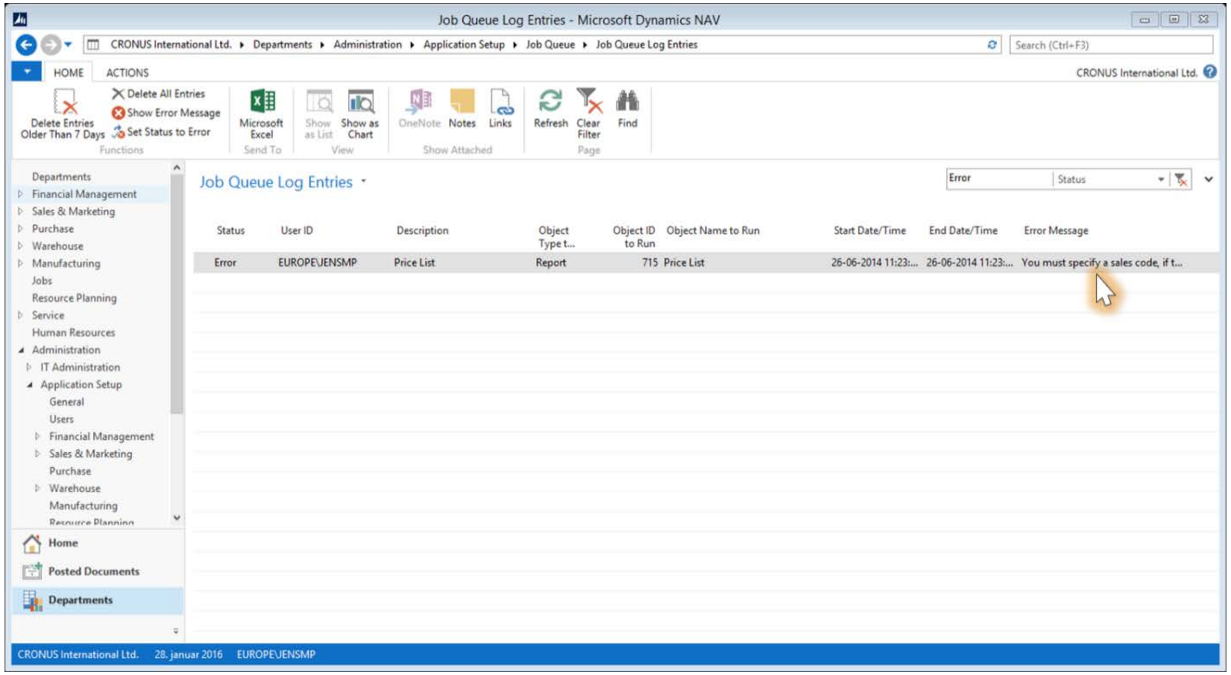
In this example, you must either specify a customer number or select **All Customers** in the **Sales Type** field.



10. When the error shows up in the **My Job Queue** part, select the error, and then choose **Show Error**.
11. Read the error message, and then choose the **OK** button to close it.

The **My Job Queue** part will update regularly. You can also force an update by pressing **F5** in the Role Center.



12. Open the **Job Queue Log Entries** page. 13. Filter the list to display entries whose **Status** is **Error**. 14. To view the error message, point to the **Error message** field for the entry, or, select the entry, and then on the **Home** tab, choose **Show Error Message**.	Optional: Going to this page is only needed if you want to know more about when the job was started or if you need to look at failed jobs for other users.	
15. Return to the Role Center, and then run the **Price List** report again. 16. On the report request window, set the **Sales Type** field to **All Customers**, choose **Print**, and then choose **Schedule**. 17. In the **Schedule a Report** window, leave the default values in fields and choose	Use the error message information to rerun the report with different parameters.	

the **OK** button. 18. In the **Report Inbox** on the Role Center, view the completed report.		

Module 12 – Queries

1. Queries - SELECT DISTINCT

Source: SELECT DISTINCT with Queries, Bogdana Botez - Microsoft Development Center Copenhagen, Microsoft Dynamics NAV Community, Design Patterns - https://community.dynamics.com/nav/w/designpatterns/152.select-distinct-with-queries

SELECT DISTINCT with Queries

When working with tables, sometimes a developer needs to perform a SELECT DISTINCT (also known as SELECT UNIQUE) from a table. As NAV does not provide this out of the box, we present below a way to select unique records by using queries.

Problem statement
Let's consider the VAT Entry table.

The goal is to select one line for each separate document that produced VAT Entries. In other words, we want records grouped by **Type**, **Document Type** and **Document No.**. However, if there are multiple lines with the same value of the triad **Type**, **Document Type** and **Document No.** in the **VAT Entry** table, we only want to see one of them.

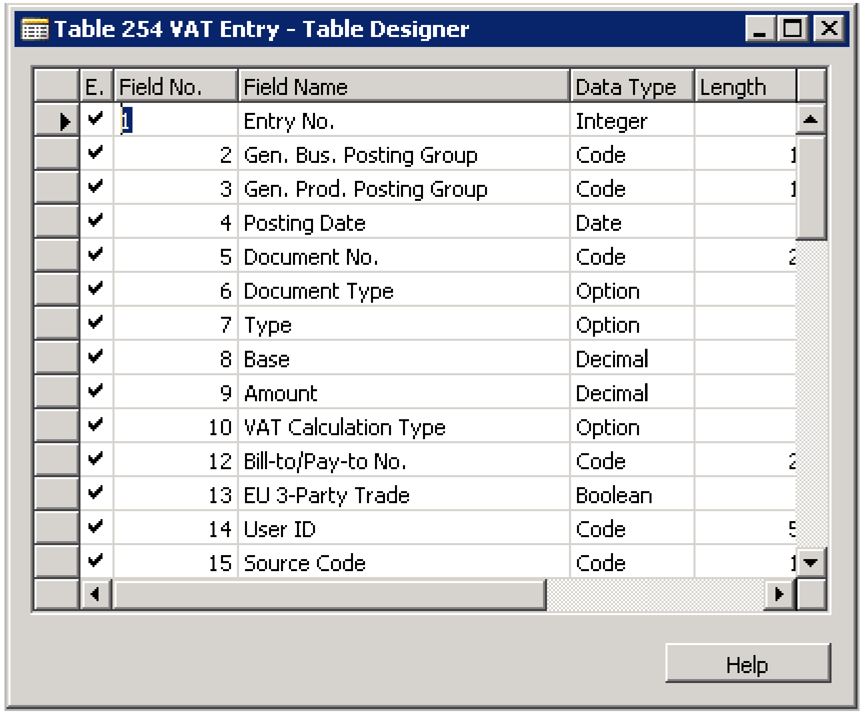


Table 254 VAT Entry - Table Designer

E.	Field No.	Field Name	Data Type	Length
✔	1	Entry No.	Integer	
✔	2	Gen. Bus. Posting Group	Code	1
✔	3	Gen. Prod. Posting Group	Code	1
✔	4	Posting Date	Date	
✔	5	Document No.	Code	2
✔	6	Document Type	Option	
✔	7	Type	Option	
✔	8	Base	Decimal	
✔	9	Amount	Decimal	
✔	10	VAT Calculation Type	Option	
✔	12	Bill-to/Pay-to No.	Code	2
✔	13	EU 3-Party Trade	Boolean	
✔	14	User ID	Code	5
✔	15	Source Code	Code	1

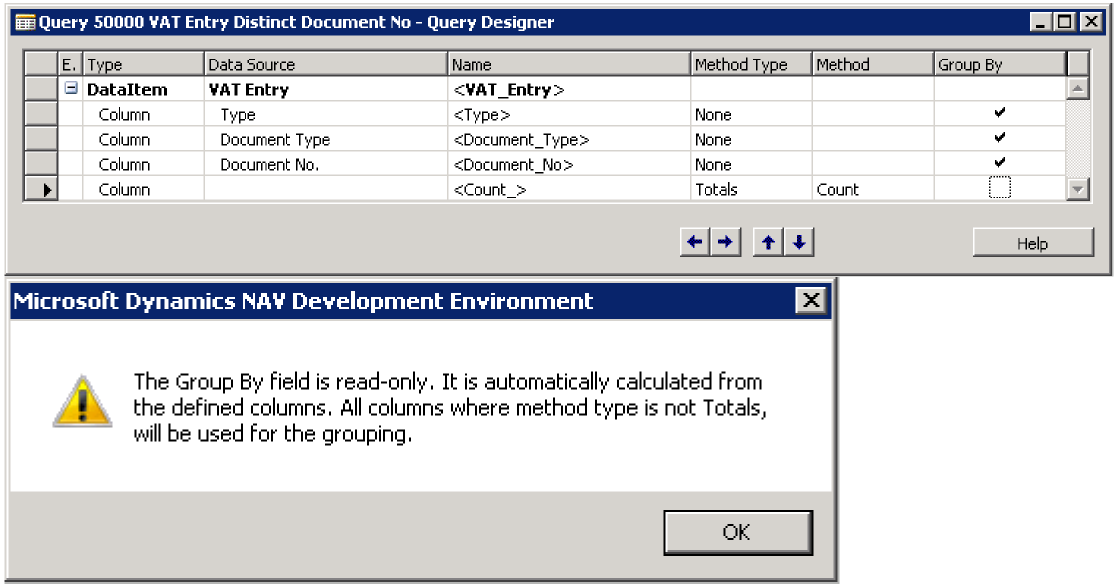
Help

Solution

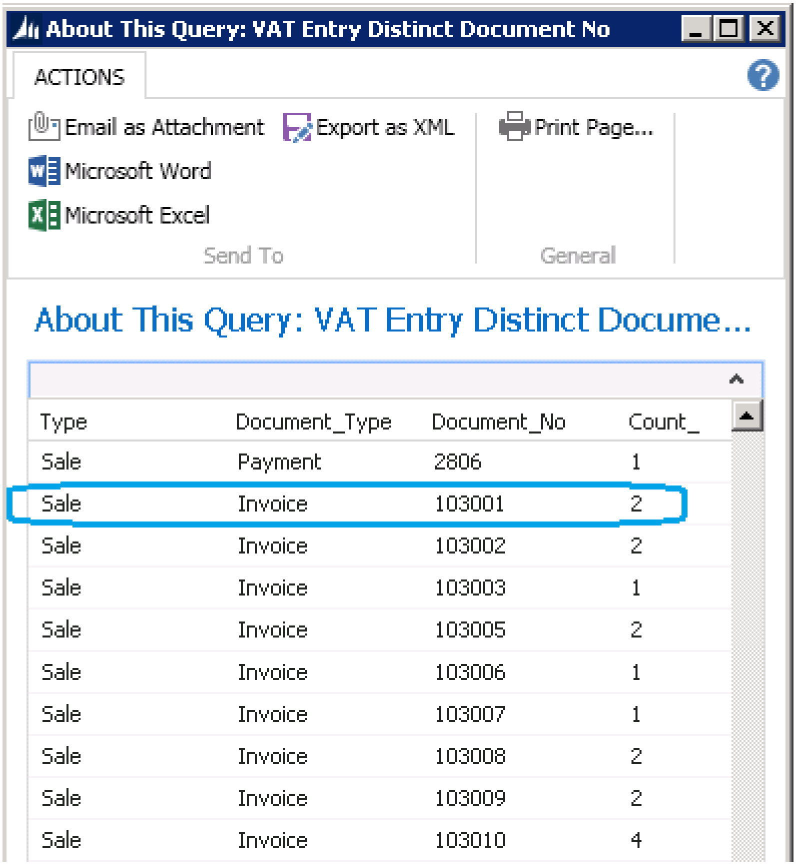
Create a new query object **VAT Entry Distinct Document No.**, with a single DataItem sourced from **VAT Entry** table. Add the three desired group-by fields **Type**, **Document Type** and **Document No.** as columns.

To enable grouping, add one more column, with **Method Type = Totals**. This will automatically set the **Group By** checkbox to TRUE on the three precedent fields.

Note that the **Group By** field is read-only and trying to set it by hand will clarify that:



Running the query yields a single record per document. You can notice in the second line below for example, how the sales invoice number 103001 had 2 VAT Entries, but it shows up only once in the query:



2. Usage of Queries with temporary table – Page

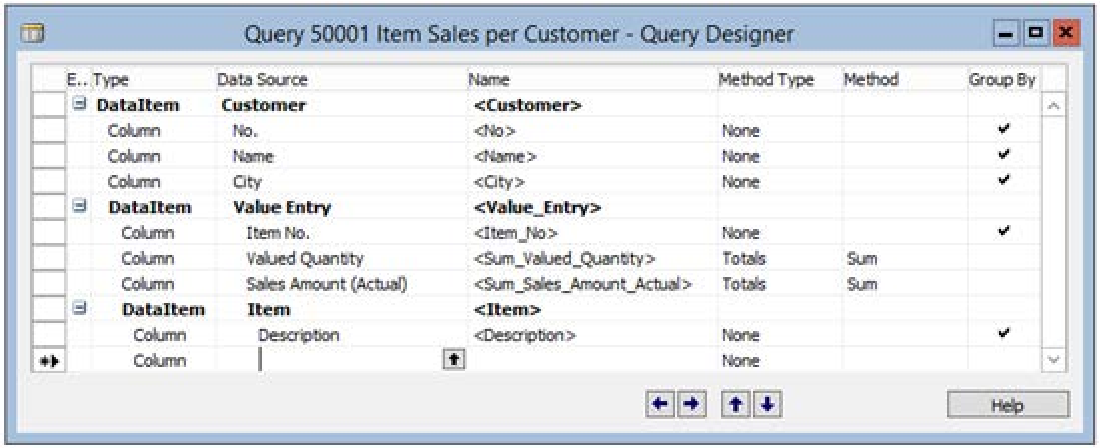
Source: Using Queries in Pages & Reports - Mark Brummel, NAV Skills | Brummel Dynamics Services B.V., http://nav-skills.com/2013/09/10/tip-35-using-queries-in-pages-reports/

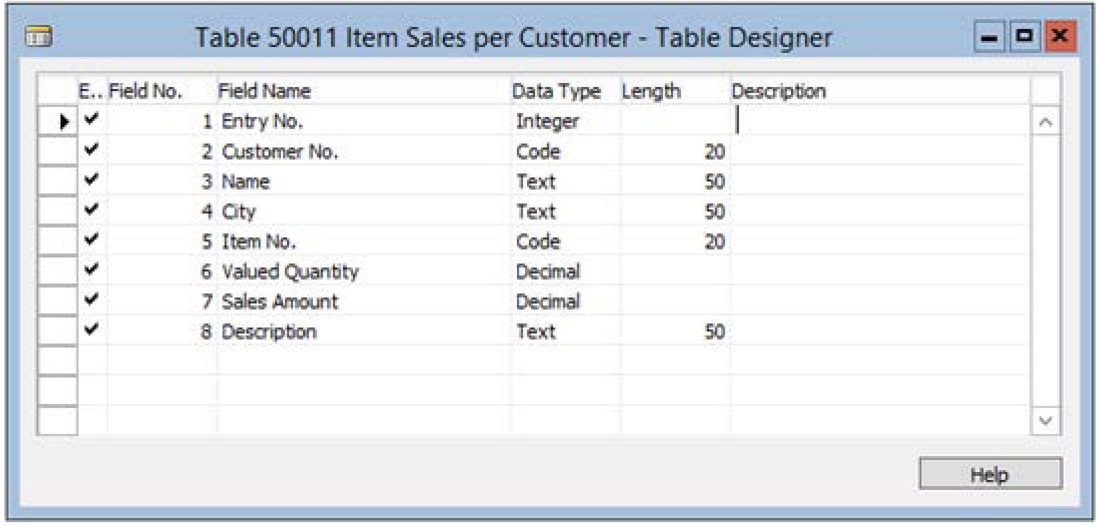
In order to be able to use Query as a source for Page object developer has to do following:

- Create Query object, for example as displayed.
- Create Table object with same fields as Query object.
- Create Page object using the Table as source (SourceTable property).
- Change Page property SourceTableTemporary to Yes.
- Modify OnOpenPage trigger to execute the query and fill result of the query to temporary table.

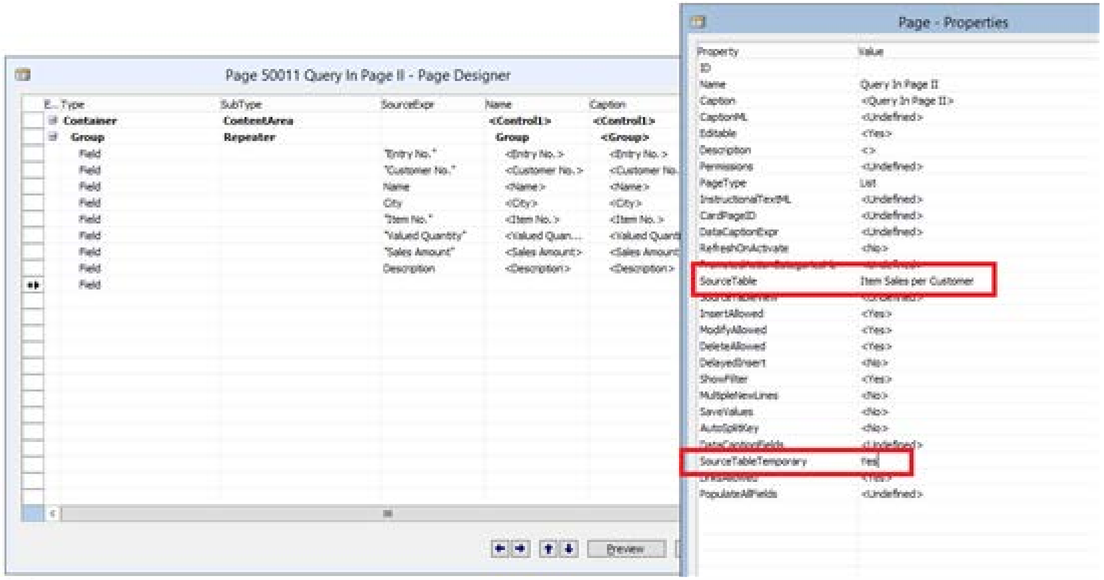
Create Table object with same fields as Query object and add field for primary key, for example Entry No.

Temporary tables do not need to be in customer licence, therefore there is no need to buy an extra table into customer licence.





Create Page object using the Table as SourceTable and change Page property SourceTableTemporary to Yes.

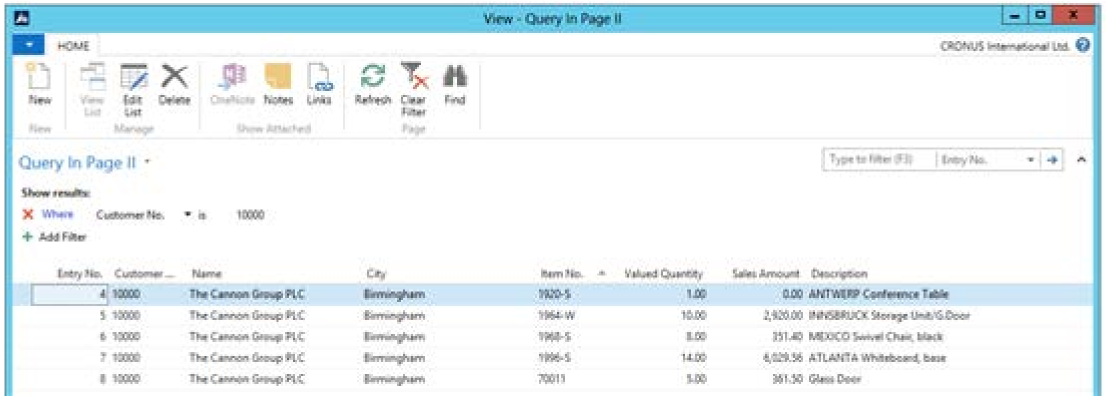


Create function to execute query and fill result of the query to temporary table. Modify OnOpePage trigger to execute new function.

```
SetPageData()
ItemSalesPerCust.OPEN;
WHILE ItemSalesPerCust.READ DO BEGIN
  NextRowNo := NextRowNo + 1;
  "Entry No." := NextRowNo;
  "Customer No." := ItemSalesPerCust.No;
  Name := ItemSalesPerCust.Name;
  City := ItemSalesPerCust.City;
  "Item No." := ItemSalesPerCust.Item_No;
  "Valued Quantity" := ItemSalesPerCust.Sum_Valued_Quantity;
  "Sales Amount" := ItemSalesPerCust.Sum_Sales_Amount_Actual;
  Description := ItemSalesPerCust.Description;
  INSERT;
END;

FINDFIRST;
```

Page with dataset from Query object.

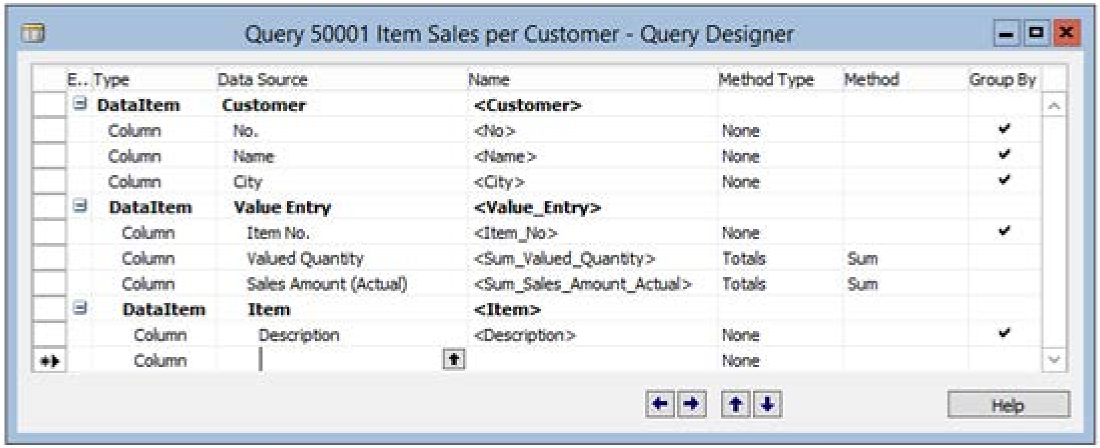


3. Usage of Queries with temporary table – Report

Source: Report Temporary Property - Mark Brummel, NAV Skills | Brummel Dynamics Services B.V., http://nav-skills.com/2015/03/24/tip-45-nav2015-report-temporary-property/

In order to be able to use Query as a source for Report object developer has to do following:

- Create Query object, for example as displayed.
- Create Table object with same fields as Query object.
- Create Report object using the Table as source (DataItemTable property).
- Change DataItem property Temporary to Yes.
- Modify OnPreDataItem trigger to execute the query and fill result of the query to temporary table.



Query 50001 Item Sales per Customer - Query Designer

E..	Type	Data Source	Name	Method Type	Method	Group By
⊟	DataItem	Customer	<Customer>			
	Column	No.	<No>	None		✔
	Column	Name	<Name>	None		✔
	Column	City	<City>	None		✔
⊟	DataItem	Value Entry	<Value_Entry>			
	Column	Item No.	<Item_No>	None		✔
	Column	Valued Quantity	<Sum_Valued_Quantity>	Totals	Sum	
	Column	Sales Amount (Actual)	<Sum_Sales_Amount_Actual>	Totals	Sum	
⊟	DataItem	Item	<Item>			
	Column	Description	<Description>	None		✔
	Column			None		

Help

Create Table object with same fields as Query object and add field for primary key, for example Entry No.

Temporary tables do not need to be in customer licence, therefore there is no need to buy an extra table into customer licence.

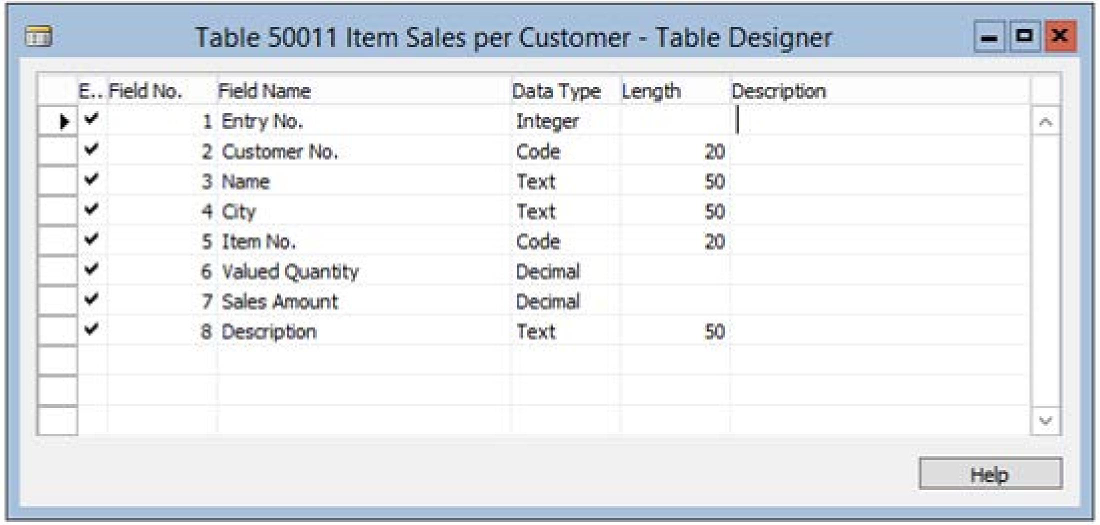
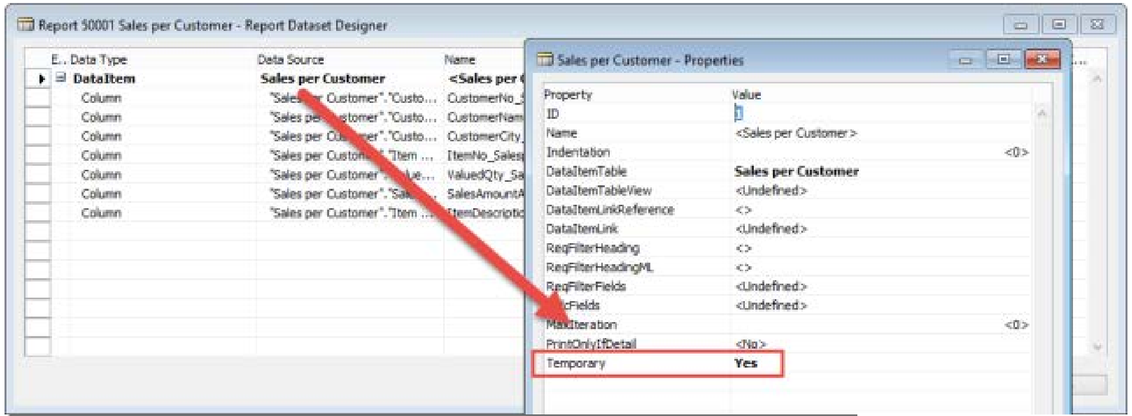


Table 50011 Item Sales per Customer - Table Designer

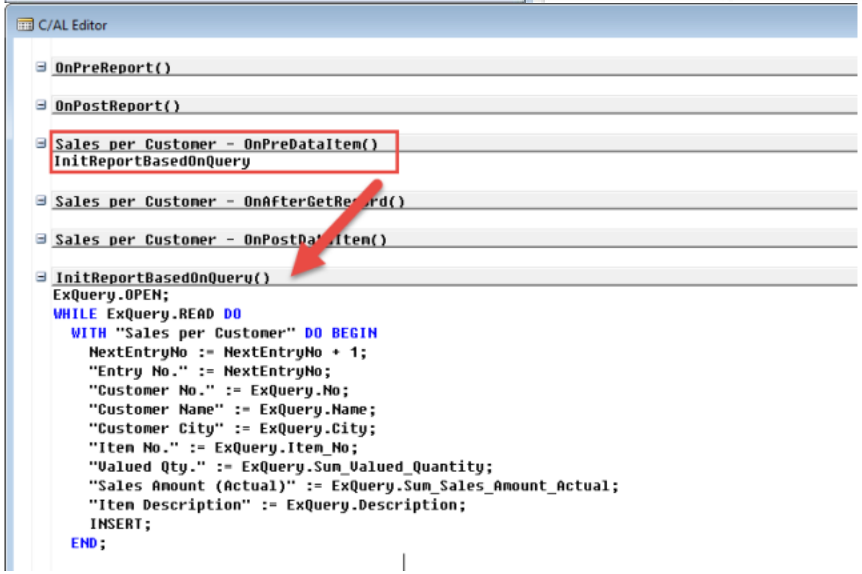
E..	Field No.	Field Name	Data Type	Length	Description
✔	1	Entry No.	Integer		
✔	2	Customer No.	Code	20	
✔	3	Name	Text	50	
✔	4	City	Text	50	
✔	5	Item No.	Code	20	
✔	6	Valued Quantity	Decimal		
✔	7	Sales Amount	Decimal		
✔	8	Description	Text	50	

Help

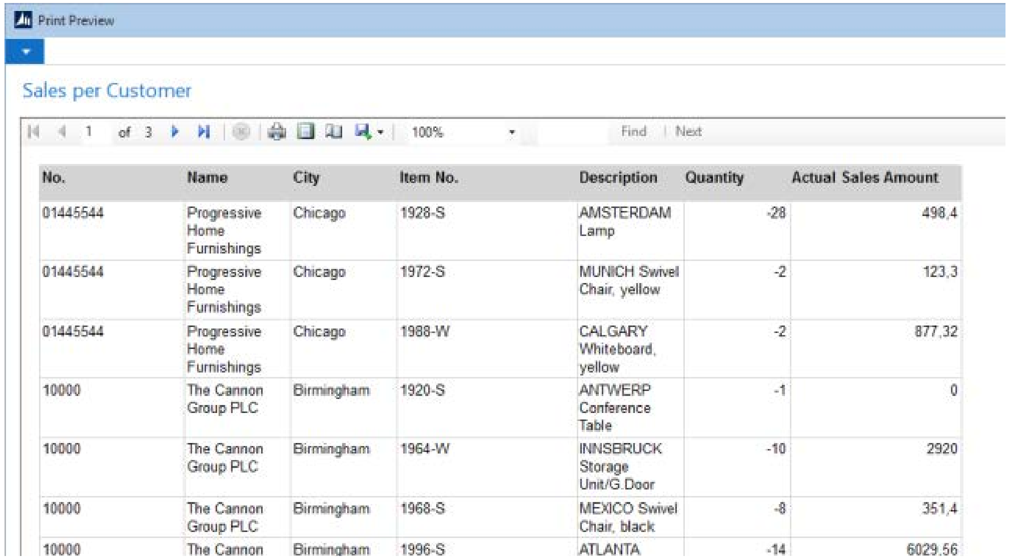
Create Report object using the Table as DataItem (DataItemTable property) and change DataItem property Temporary to Yes.



Create function to execute query and fill result of the query to temporary table. Modify OnPreDataItem trigger to execute new function.



Report with dataset from Query object.



Print Preview

Sales per Customer

1 of 3 100% Find | Next

No.	Name	City	Item No.	Description	Quantity	Actual Sales Amount
01445544	Progressive Home Furnishings	Chicago	1928-S	AMSTERDAM Lamp	-28	498,4
01445544	Progressive Home Furnishings	Chicago	1972-S	MUNICH Swivel Chair, yellow	-2	123,3
01445544	Progressive Home Furnishings	Chicago	1988-W	CALGARY Whiteboard, yellow	-2	877,32
10000	The Cannon Group PLC	Birmingham	1920-S	ANTWERP Conference Table	-1	0
10000	The Cannon Group PLC	Birmingham	1964-W	INNSBRUCK Storage Unit/G.Door	-10	2920
10000	The Cannon Group PLC	Birmingham	1968-S	MEXICO Swivel Chair, black	-8	351,4
10000	The Cannon	Birmingham	1996-S	ATLANTA	-14	6029,56

Development Environment Solution Development in Microsoft Dynamics NAV 2015

Module 6 – Reporting

1. Built-in Report Layouts

Report object can use two types of layout:

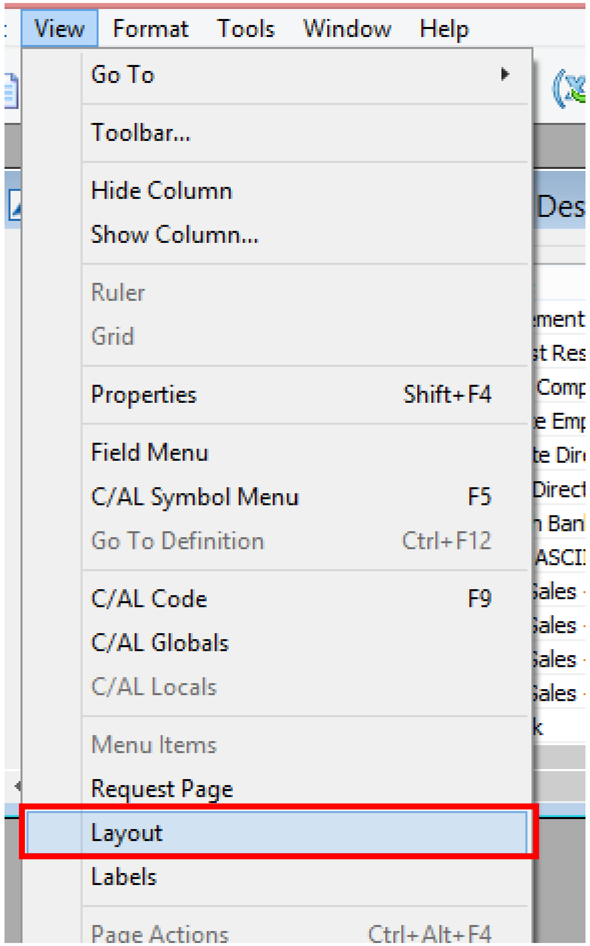
- RDLC
- Word

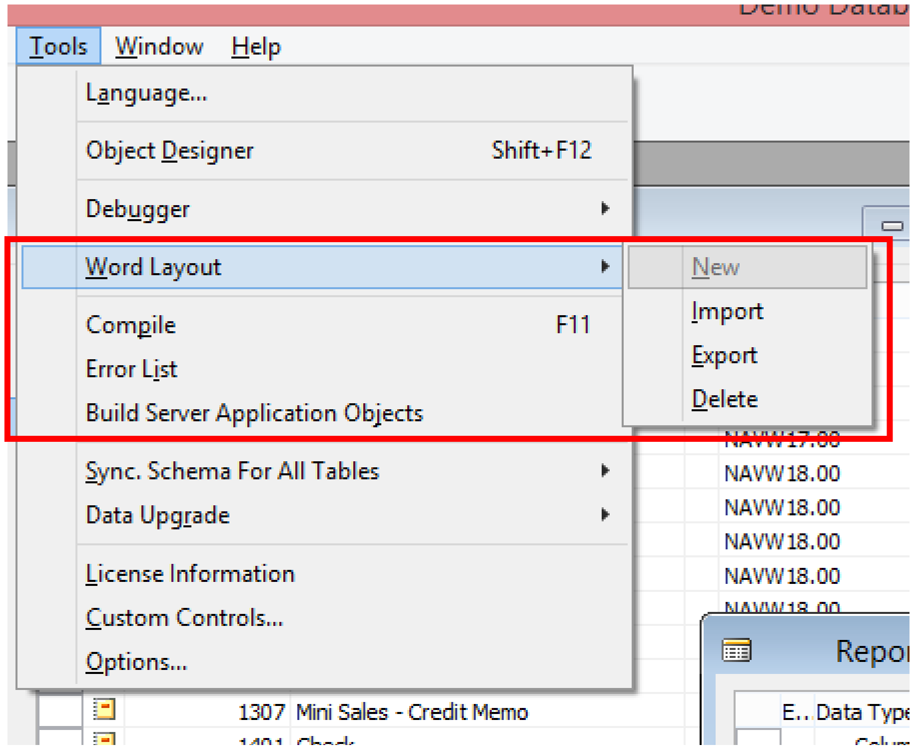
These built-in layouts are part of definition of the report object. If developer export the definition of report object to fob or txt file RDLC and Word layout are included.
Report object can have:

- 1 built-on RDLC layout
- 1 built-on Word layout

By default, the built-in RDLC layout will be used.

Users can specify whether to use RDLC or Word built-in layout. Users can also create custom layout based on built-in layouts.




Tools
Window
Help
Language...
Object Designer
Shift+F12
Debugger
Word Layout
New
Import
Export
Delete
Compile
F11
Error List
Build Server Application Objects
Sync. Schema For All Tables
Data Upgrade
License Information
Custom Controls...
Options...
NAVW18.00
NAVW18.00
NAVW18.00
NAVW18.00
1307 Mini Sales - Credit Memo

2. Change Default Layout

Source: How to: Change Which Layout is Currently Used on a Report Microsoft Developer Network - https://msdn.microsoft.com/en-us/library/dn789629(v=nav.80).aspx

Depending on the layouts that are available for a report, you can choose to use a built-in RDLC report layout, a built-in Word report layout, or a custom layout. User can change the layout using page **Report Layout Selection**.

To change the layout that is used on a report:

1. In the **Search** box, enter **Report Layout Selection**, and then choose the related link.
   The **Report Layout Selection** window lists all the reports that are available for the company that is specified in the Company field at the top of the window.
   The Selected Layout field specifies the layout that is currently used on the report.
2. Set the **Company** field at the top of the window to the company that includes the report.
3. To change the layout that is used by a report, in the row for the report in the list, set the **Selected Layout** field to one of the following options:

Option	Description
RDLC (built-in)	Uses the built-in RDLC report layout on the report.
Word (built-in)	Uses the built-in Word report layout on the report.
Custom	Uses a custom layout on the report. You can see which custom layouts are available for the report in the **Report Layouts Part** FactBox. If there are no custom layouts for the report, then you will have to create one first. If you choose this option, go to the next procedure to specify the custom layout that you want to use.

3. Create a Custom Report Layout

How to: Create a Custom Report Layout, Microsoft Developer Network - https://msdn.microsoft.com/en-us/library/dn757308(v=nav.80).aspx

By default, a report will have a built-in report layout, which can be either an RDLC report layout or Word report layout, or both. You cannot modify built-in layouts. However, you can create your own custom layouts that enable you to change the appearance of report when it is viewed, printed or saved. You can create multiple custom report layouts for the same report, and then switch the layout that is used by a report as needed.

To create a custom layout, you can either make a copy of an existing custom layout or add a new custom layout, which in most cases is based on a built-in layout. When you add a new custom layout, you can choose to add an RDLC report layout type, Word report layout type, or both. The new custom layout will automatically be based on the built-in layout for the report if one is available. If there is no built-in layout for the type, then a new blank layout is a created, which you will have to modify and design from scratch.

To create a custom layout:

1. In the **Search** box of the Microsoft Dynamics NAV Windows client or Microsoft Dynamics NAV Web client, enter **Report Layout Selection**, and then choose the related link.
   The **Report Layout Selection** window lists all the reports that are available in the company that is specified in the **Company** field at the top of the window.
2. Set the **Company** field to the company in which you want to create the report layout.
3. Select the row for the report that you want to create the layout for, and then on the **Home** tab, in the **Process** group, choose **Custom Layouts**.
   The **Custom Report Layouts** window appears and lists all the custom layouts that are available for the selected report.
4. If you want to create a copy of an existing custom layout, select the existing custom layout in the list, and then on the **Home** tab, in the **New** group, choose **Copy**.
   The copy of the custom layout appears in the **Custom Report Layouts** window and has the words **Copy** of in the **Description** field.
5. If you want to add a new custom layout that is based on a built-in layout, do the following:
   a. On the **Home** tab, in the **New** group, choose **New**.
      The **Insert Built-in Layout for a Report** window appears. The **ID** and **Name** fields are automatically filled in.
   b. To add a custom Word report layout type, then select the **Insert Word Layout** check box.
   c. To add a custom RDLC report layout type, then select the **Insert RDLC Layout** check box.
   d. Choose the **OK** button.
      The new custom layouts appear in the **Custom Report Layouts** window. If a new layout is based on a built-in layout, then it has the words **Copy of a Built-in Layout** in the **Description** field. If there was no built-in layout for the report, then the new layout has the words **New Layout** in the **Description** field, which indicates that custom layout is blank.
6. By default, the **Company Name** field is blank, which means that the custom layout will be available for the report in all companies. To make the custom layout

available in a specific company only, on the **Home** tab, in the **Manage** group, choose **Edit**, and then set the **Company Name** field to the company that you want.

Module 9 - Role Tailoring

1. Enhanced Cues

Source: Microsoft Dynamics NAV 2015 - Enhanced Cues - Jonathan Davis (Program Manager), August 2014, Microsoft

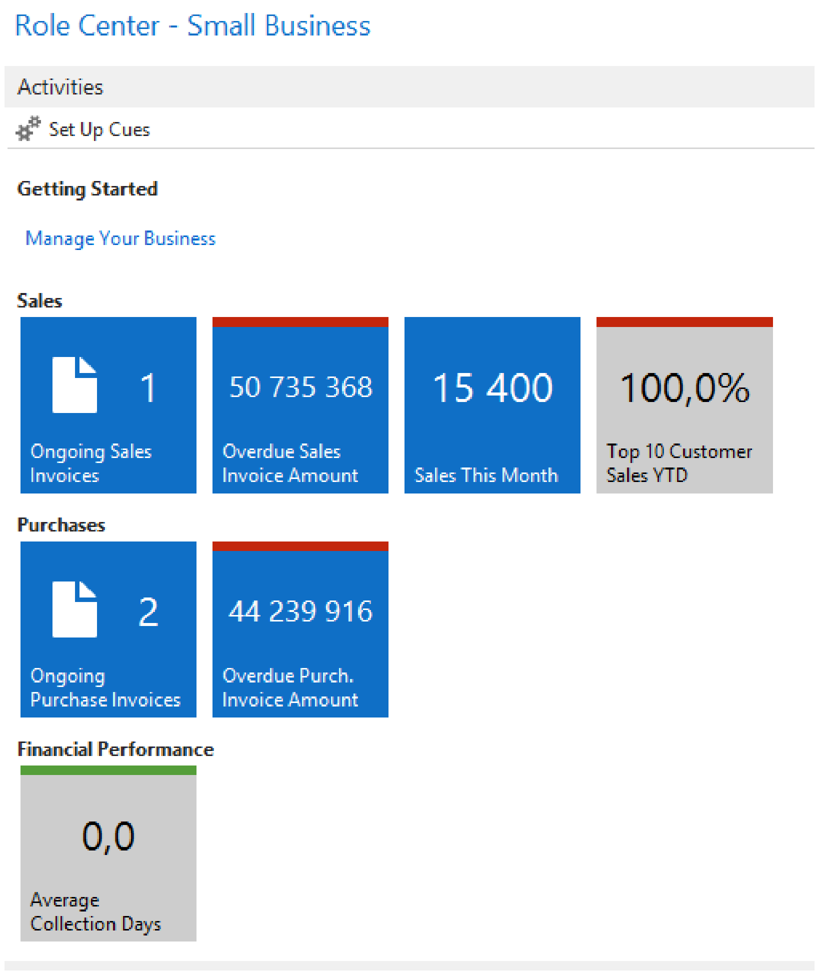
Enhanced Cues are special cue tiles that apply custom formatting to any computed numerical value such as the number of open sales invoices and a custom tile icon (or no icon).

Enhanced Cues can also show an indicator that changes colour based on the data values that the tile reflects. This provides a visual signal of the status of the data based on conditions for favourable and unfavourable thresholds. For example, the tile can show a red bar if the number of open sales invoices is less than 5.

The initial thresholds for the visual clues are set by an administrator or super user, but the end user can modify them to better fit their workflow or situation.

Features of enhanced cues:

- Show any computed value that can be calculated in Microsoft Dynamics NAV (not just counts).
- Support for integers and decimals.
- Automatic font scaling to support large numbers.
- Custom suffixes and prefixes (e.g. $12M or -67%).
- Choose from a set of 20 new tile icons (or show no icon).
- Automatically apply visual clues with colour indicators linked to tile values.
- Tiles are configurable on a global, per-company or per-user basis.
- End-users can configure their own sentiments in the

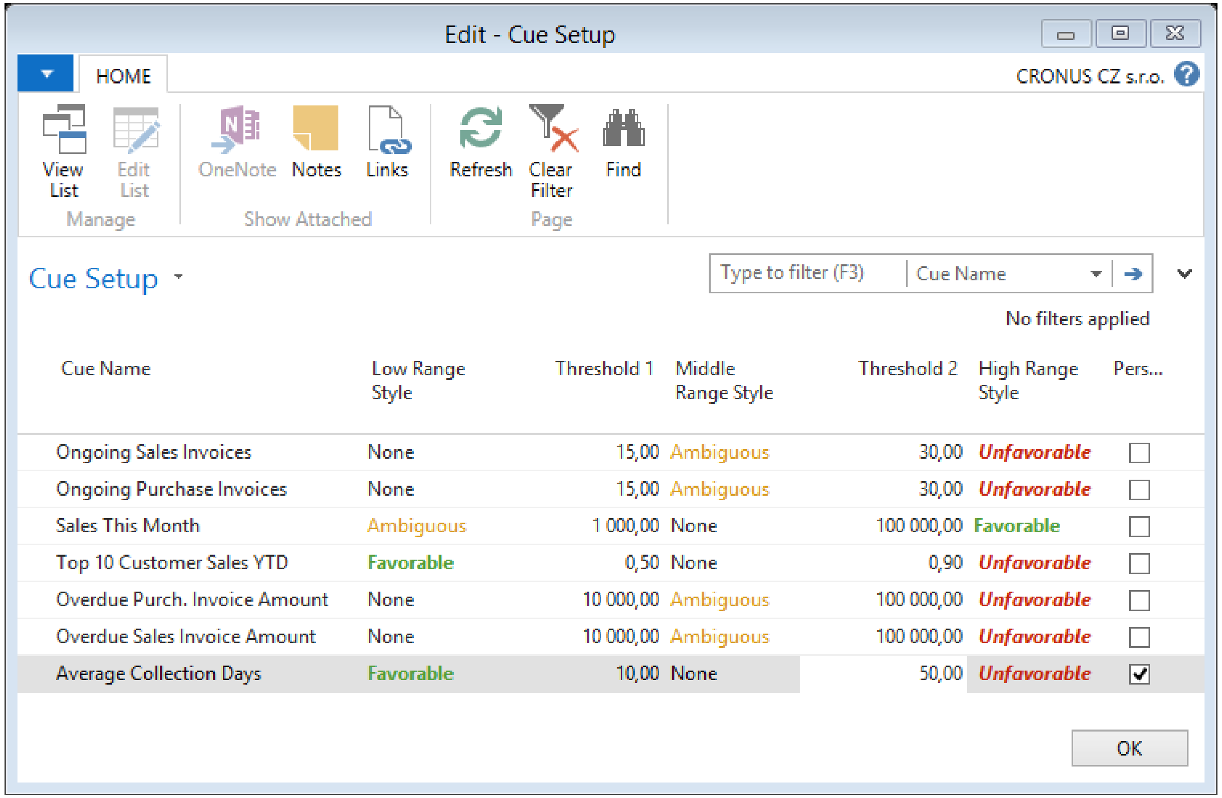


Microsoft Dynamics NAV Windows client or the Microsoft Dynamics NAV Web client.

To setup the cue stack for you as an individual user, do the following:

- Open the Role Centre, Activities part.
- Select the Set Up Cues item, above the Cue Stacks.
- Edit Cue Setup, modify values for Threshold 1 and Threshold 2 and decide what style to use, fields Low Range Style, Middle Range Style and High Range Style.

To setup the cue stack for your company as an Administrator, go to **Departments/Administration/Application Setup/General/Cue Setup** or search for Cue Setup.



2. Formatting Cues

Source: How to: Set Up Coloured Indicators on Cues by Using the Style and StyleExpr Property, Microsoft Developer Network - https://msdn.microsoft.com/en-us/library/dn789598(v=nav.80).aspx

Set Up Coloured Indicators on Cues by Using the Style and StyleExpr Property

You can configure a cue with a coloured indicator that appears along its top border to provide a visual indication to users about the value of data in the cue. You can configure the indicator to behave in the following ways.

- The indicator has a static colour - in this case, the indicator appears with a specified colour at all times.
- The indicator changes colour conditionally, based on the data in the cue - this is the most typical behaviour. When the data in the cue hits a specified value, the indicator changes colour. There are 4 colours to choose from, which enables you to configure different colours for different data intervals.

You set up the indicator by using the **StyleExpr Property** and **Style Property** for the field that defines the cue and, in most cases, by adding C/AL code to the page object.

The following table describes the values of the **Style** property and the corresponding indicator colour. You will need to know these values for whichever behaviour that you implement.

Value	Colour
Standard	None (uses the background colour of cue)
Favourable	Green
Unfavourable	Red
Ambiguous	Yellow
Subordinate	Grey

Configuring Static Colour Indication on a Cue

Use the following procedure to configure a coloured indicator on the cue that appears at all times.
To configure a static colour on a cue:

1. Open the page in Page Designer.
2. Select the field that you want to format, and on the **View** menu, choose **Properties**.
3. Set the **Style** property value to one of the formats that are described in the preceding table.
4. Set the **StyleExpr** property value to **True**.

Configuring Conditional Colour Indication on a Cue

To configure the indicator to change colour conditionally based on the data in the cue field, you use a combination of C/AL code and the **StyleExpr** property and/or **Style** property. In the C/AL code of the page which contains the cue, you add code that evaluates the cue field's data and sets a variable based on the evaluation. A typical place to add the code is on **OnAfterGetRecord** trigger. The variable can have a data type of **Boolean**, **Codeunit**, or **Text**. You will use the variable on the **StyleExpr** property of the cue field to determine which colour to apply to the indicator. The data type that you use for the variable will depend on what you want to achieve, and it will also influence the configuration. The following table describes the differences when using a Boolean data type compared to a Text or Codeunit data type.

Variable Data Type	Description
Boolean	If you use a Boolean variable, you can only configure one colour condition for the cue. When the **StyleExpr** property set to a variable that has a Boolean data type, and the variable is **true**, then indicator uses the colour that is specified by **Style** property value.
Text or Codeunit	If you use a Text or Codeunit variable, you can configure up to four different colour conditions for the indicator. When the **StyleExpr** property is set to a variable of the Text or Codeunit data type, the **Style** property is not used. Instead, the variable must be explicitly set in C/AL code to one of the following values that specify the colour: **Favourable**, **Unfavourable**, **Ambiguous**, and **Subordinate**. These values correspond to the values of the Style property.

To configure colour indication by using a Boolean variable

1. Add C/AL code that evaluates the cue field data and sets a Boolean variable to **True** when the data meets the conditions for which you want to apply the indicator.
   For example, **page 9060 SO Processor Activities** in the CRONUS International Ltd. demonstration database contains the cue field **"Sales Quotes - Open"**. You want the indicator to turn red when the number of open sales quotes exceeds 10. To do this, you can add a variable called **ColorVar** that has the data type Boolean, and then add the following code to the **OnAfterGetRecord** trigger.

   ```
   IF ("Sales Quotes - Open" > 10) THEN
   ColorVar := TRUE;
   ```

2. Set the cue field's **StyleExpr** property to the variable.
   For the example in the step 1, you set the property to **ColorVar**.

3. Set the **Style** property on the cue field to the value that corresponds to the colour indication that you want.
   For the example, you set the value **Unfavourable** to configure the colour to red.

To configure colour indication by using a Text or Codeunit variable

1. Add C/AL code that evaluates the cue field data and sets a Text or Codeunit variable to one of the following values for each condition that you want colour indication: **Favourable**, **Unfavourable**, **Ambiguous**, and **Subordinate**. For the corresponding colours for these values, see the table in the introduction of this topic

   For example, page **9060 SO Processor Activities** in the CRONUS International Ltd. demonstration database contains the cue field **"Sales Quotes - Open"**. You want the indicator to have the following colour conditions:

   - Green when the number of open sales quotes is 10 or less
   - Yellow when open sales quotes is greater than 10
   - Red when open sales quotes is greater than 20

To do this, you can add a variable called **ColorVar** that has the data type Text or Codeunit, and then add the following code to the **OnAfterGetRecord** trigger.

```
IF ("Sales Quotes - Open" <= 10) THEN
ColorVar := 'Favourable'
ELSE IF("Sales Quotes - Open" > 20) THEN
ColorVar := 'Unfavourable'
ELSE ("Sales Quotes - Open")
ColorVar := 'Ambiguous';
```

2. Set the cue field's **StyleExpr** property to the variable.
   For the example in the step 1, you set the property to **ColorVar**.

3. Set Up an Image on a Cue

Source: How to: Set Up an Image on a Cue – Microsoft Developer Network, https://msdn.microsoft.com/en-us/library/dn789627(v=nav.80).aspx

When a field that defines the data in a cue has an **integer** data type, you can set up the cue to include an image.

To set up an image on the cue, you set the Image Property (Fields) of the field that defines the cue as described in the following procedure.

To set up an image on a cue in the development environment, open the page that contains the cue as follows:

- In Page Designer, select the field that defines the cue, and then on the View menu, choose Properties.
- In the Properties window, set the Image property as follows:
  - Choose the AssistEdit button in the Value field.
  - In the Image List window, select the image that you want to use for the cue.
  - If you do not want to include an image on the cue, then select None.
  - To view all the available action images, see Microsoft Dynamics NAV Icon Collection - https://msdn.microsoft.com/en-us/library/dd568728(v=nav.80).aspx
- Close the Properties window, and then save the page.

4. Lab - Using Query Object to Calculate the Cue Data

Source: Walkthrough: Creating a Cue Based on a Normal Field and a Query – Microsoft Developer Network, https://msdn.microsoft.com/en-us/library/dn789551(v=nav.80).aspx

This lab illustrates the following tasks:

- Creating a query object for calculating Cue data.
- Adding a field for a new Cue in an existing table, and adding C/AL code to the field to get the data from the query object.
- Adding a new Cue to an existing page for displaying the Cue in the Microsoft Dynamics NAV client.
- Formatting the data in the Cue.

Prerequisites:

- To complete this lab, you need Cue table 123456740 Seminar Cue and page 123456741 Seminar Manager Activities from lab 9.1. Create the Seminar Manager Role Center.

Story:

Viktor is a software developer who is working for CRONUS International Ltd. He has been asked to add a Cue to the Role Centers that shows the total sales for the month. To accomplish this, Viktor will create a Cue that is based on a query object that extracts the total sales for the month from table **21 Cust. Ledger Entry**. The company already has a table (**123456740 Seminar Cue**) and page (**123456741 Seminar Manager Activities**) on the Role Center. Viktor will add the new Cue to these objects.

To create a query for calculating the Cue data do the following:

1. In the Microsoft Dynamics NAV 2015 Development Environment, on the Tools menu, choose Object Designer, choose Query, and then choose New.
2. In Query Designer, on the first line, set Type column to **DataItem**, and then set the **Data Source** column to **Cust. Ledger Entry** (table ID 21).
3. Under the **DataItem**, add a **Filter** control for the **Document Type** field and a **Filter** control for **Posting Date** field of the **Cust. Ledger Entry** table. Then, add a Column control for **Sales (LCY)** field that uses a **Totals** method type to return a **Sum** from the table. The Query Designer will look similar to the following table.

Type	Data Source	Name	Method Type	Method
DataItem	**Cust. Ledger Entry**	**<Cust. Ledger Entry>**		
Filter	Document Type	<Document Type>		
Filter	Posting Date	<Posting Date >		
Column	Sales (LYC)	<Sum_Sales_LCY>	Totals	Sum

4. Save the query as follows:
    a. In the Save As window, in the ID field, enter an ID for the query object, such as 123456750. The ID must be in a valid range for your solution.
    b. In the **Name** field, enter **Cust. Ledg. Entry Sales Query**.
    c. Select the Compiled check box, and then choose the OK button.

Adding the Table Field for the Cue Data

Viktor will add a normal field to the table **123456740 Seminar Cue** for holding the Cue data. He will add a global function that returns the total amount of sales invoices for the current month from the query object that he created in the previous procedure.

To add a field for the Cue data

1. In the Microsoft Dynamics NAV 2015 Development Environment, open **table 123456740 Seminar Cue** from Object Designer.
2. Add a new field for the Cue. In the **Field Name**, enter **Sales This Month** and set the **Data type** to **Decimal**. This defines the Cue data field.

To add C/AL code to the table calculate the Cue data

1. On the View menu, choose C/AL code to open the C/AL code for the table.
2. Add a **global function** that is called **CalcSalesThisMonthAmount** as follows:
   a. On the **View** menu, choose **C/AL Globals**.
   b. On the **Functions** tab, in the **Name** column, enter **CalcSalesThisMonthAmount**. By default, all functions are set to local functions as specified by the Local Property, so you must change the function to be global as described in the following steps.
   c. Select the new function, and then in the **Tools** menu, select **Properties**.
   d. Set the **Local** property to **No**.
3. In the C/AL Globals window, select the new function, and then choose Locals. The C/AL Locals window appears. From her you will add a return value and variables.
4. On the **Return Value** tab, set **Name** field to **Amount** and the **Return Type** field to **Decimal**.
5. On the **Variables** tab, add two variables as shown in the following table:

Name	DataType	Subtype
CustLedgerEntry	Record	Cust. Ledger Entry
CustLedgEntrySales	Query	Cust. Ledg. Entry Sales

6. In C/AL code, add the following code on the **CalcSalesThisMonthAmount** function:

```
CustLedgEntrySales.SETRANGE(Document_Type,CustLedgerEntry."Document Type"::Invoice);
CustLedgEntrySales.SETRANGE(Posting_Date,CALCDATE('<-CM>',WORKDATE),WORKDATE);
CustLedgEntrySales.OPEN;
IF CustLedgEntrySales.READ THEN
  Amount := CustLedgEntrySales.Sum_Sales_LCY;
```

7. To save and compile the table.

Adding the Cue to the Role Center Page

To display the Sales This Month Cue on the Role Center, Viktor adds a new field for the Cue to the existing **page 123456741 Seminar Manager Activities**.

To add the Sales This Month Cue to a page:

1. In Object Designer, open the **page 123456741 Seminar Manager Activities**. To add a Cue, you add **Field** control under a **CueGroup** control. For this lab, you will add the new Cue under the existing **CueGroup** control.
2. In a blank row under the existing **CueGroup** control, set the **Type** to **Field**, and then set the **SourceExpr** column to the **"Sales This Month"** field as follows.
    a. Select the row, and then on the **View** menu, choose **Field Menu**. The **Field Menu** window opens and displays the list of available fields from the **Seminar Cue** table.
    b. Select the **Sales This Month** field, and then choose the OK button. In the **Caption** field, enter **Sales This Month**. The Caption value defines the text that appears below the Cue.
3. Open the C/AL code for the page, and then add the following code to the **OnAfterGetRecord** trigger to assign the **Sales This Month** field to the **CalcSalesThisMonthAmount** function of **table 123456740 Seminar Cue**

    ```
    "Sales This Month" := CalcSalesThisMonthAmount;
    ```

4. To set up a link (drill down) from the Cue to **page 25 Customer Ledger Entries**, do the following:
    a. Select the **Sales This Month** field row, and then on the **View** menu, choose **Properties**.
    b. In the **Properties** window, set the **DrillDownPageID** property to **Customer Ledger Entries** (ID 25) and choose the OK button.
    c. Close the Properties window.
5. Save and compile the page.

The Cue is now available on the page. To view the page, in **Object Designer**, select the page **123456741 Seminar Manager Activities**, and the choose **Run**.

Formatting the Cue Data

Viktor wants to display the amount in the Cue so that it is preceded with "GBP", which indicates British Pound is the currency. Additionally, he does not want to display any decimal places. To achieve this, he sets the AutoFormatType Property and AutoFormatExpr Property of the Cue field on the page.

To change the data format:

- In Page Designer, to open the properties for the Cue field, select the field, and then on the **View** menu, choose **Properties**.
- In the **Properties** window, set the **AutoFormatType** property to **10**. This enables you to create a custom data format.
- Set the **AutoFormatExpr** property to the following text: 'GBP <precision,0:0><standard format,0>'
    - <precision,0:0> specifies not to display any decimals places.
    - <standard format,0> specifies to format the data according to standard format 0.
- Close the **Properties** windows, and then save and compile the page.

Module 10 – Interfaces

1. File Handling - 3tier Architecture

Source: Microsoft Development Network

In Microsoft Dynamics NAV, the business logic runs on the computer that is running Microsoft Dynamics NAV Server and not on the client. Files are created on Microsoft Dynamics NAV Server and not locally on the client computer.

Use **UPLOAD** Function (File) and **UPLOADINTOSTREAM** Function (File) to send a file from the client to Microsoft Dynamics NAV Server.
Use **DOWNLOAD** Function (File) and **DOWNLOADFROMSTREAM** Function (File) to send a file from Microsoft Dynamics NAV Server to the client.

Module 14 - Developing for the Microsoft Dynamics NAV Tablet Client

1. Tablet Client

Source: Microsoft Dynamics NAV 2015 for tablets – Business Value – Mike Borg Cardona (Program Manager), September 2014, Microsoft

Dynamics NAV for tablets (also referred as tablet client) allows users in small and midsized businesses to get access to the data they need from the device they prefer.

While the Microsoft Dynamics NAV Windows Client and Dynamics NAV Web Client are designed for mouse and keyboard interaction, Dynamics NAV for tablets has a modern, fast and fluid interface built exclusively for touch.

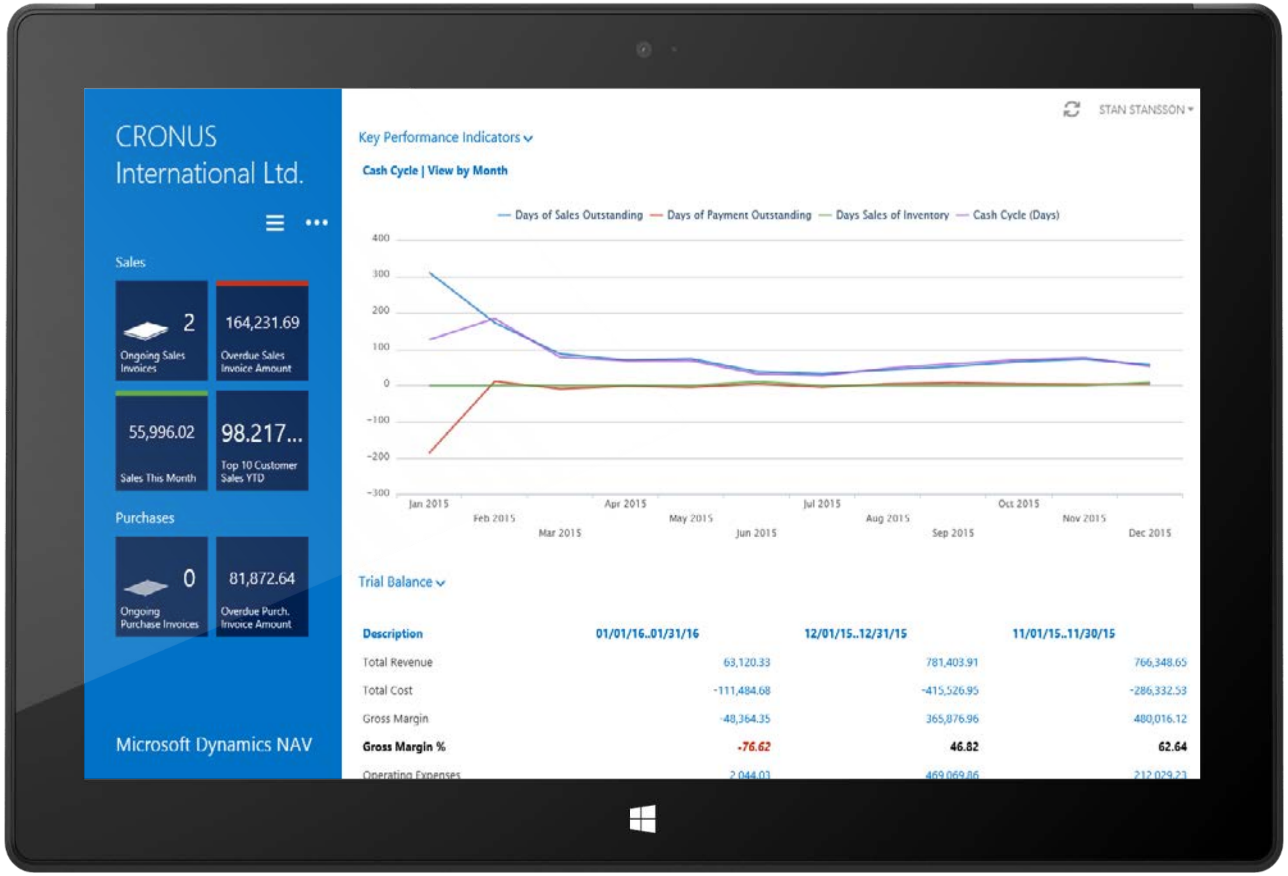
NAV Tablet client is available on 3 platforms – Microsoft Windows tablets, Apple iOS (iPads) and Android.

User can also run tablet client from web browser (Internet Explorer and Chrome for Windows).

Tablet client can be used only on tablets with 7'' screen size or larger. Screen resolution has to be at least 960 x 510.

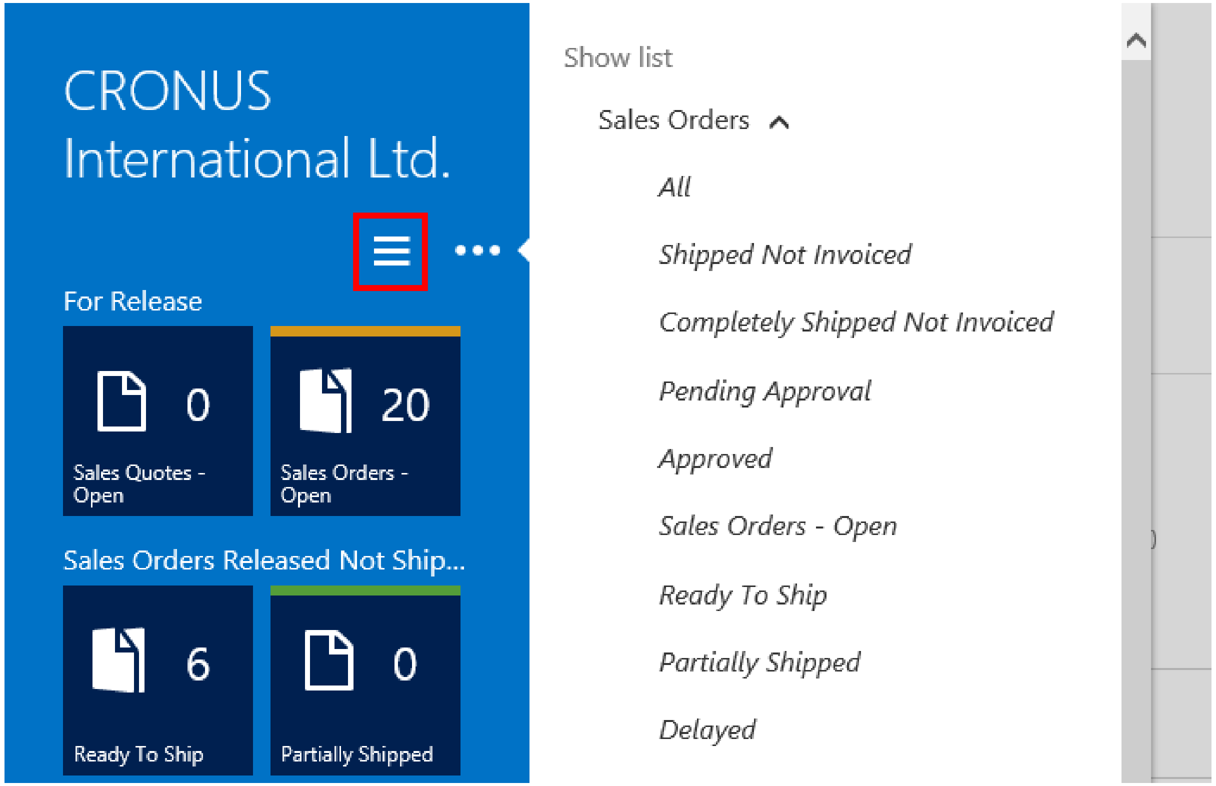
Microsoft Dynamics NAV for tablets does not provide the following capabilities:

- Offline reading and writing of data
- The ability to directly control device hardware such as GPS



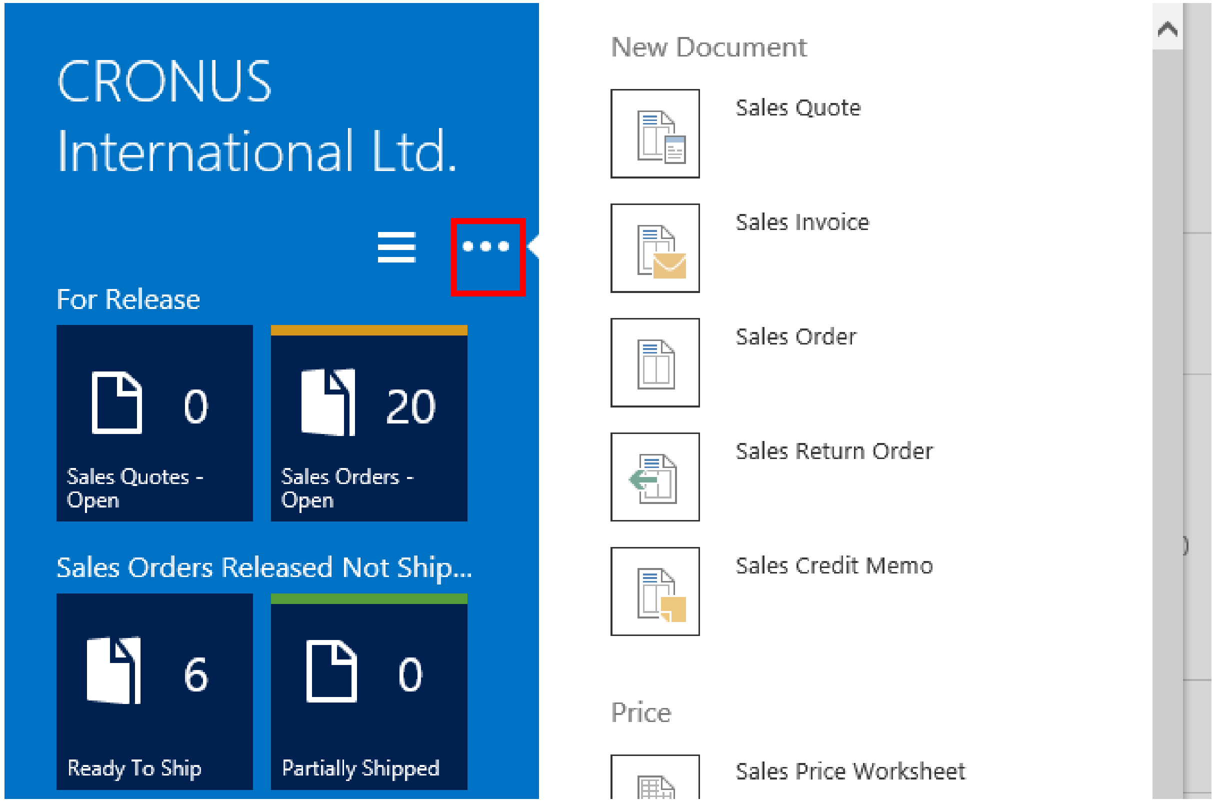
Navigation pane

In order to access Navigation Pane user has to click three lines icon above cues.



Role Centre Action Ribbon

In order to access Role Centre Action Ribbon user has to click three dots icon above cues.

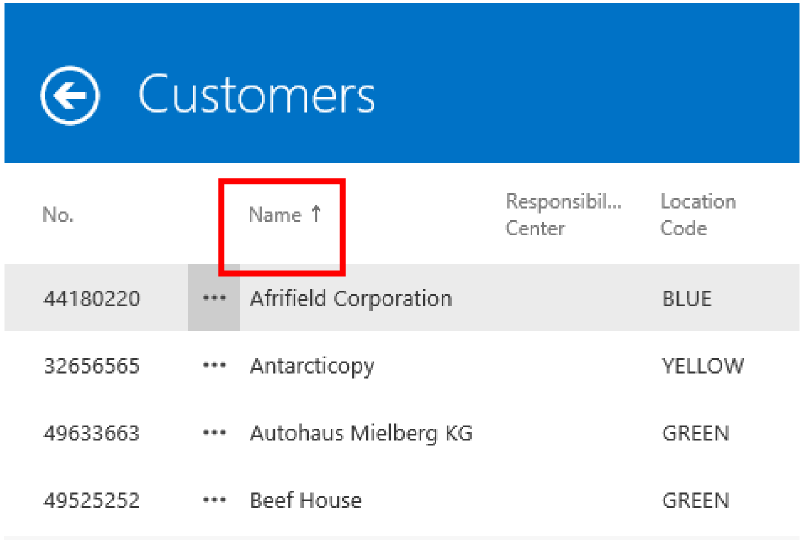


Online Help

User can access Online Help by going into Role Centre Action Ribbon and choosing Microsoft Dynamics NAV Help.

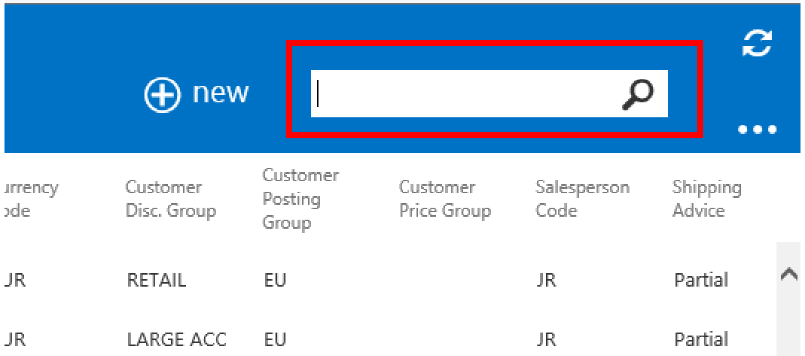
Sorting of List Page

In order to sort records in list page use can simply click on column header name for column which should be used to sort.

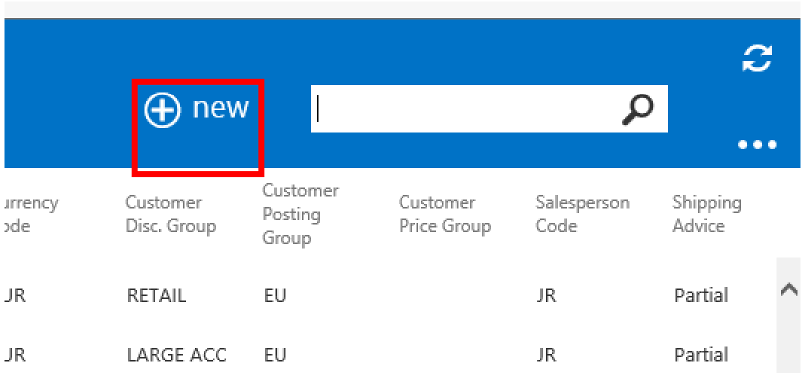


Filtering of List Page

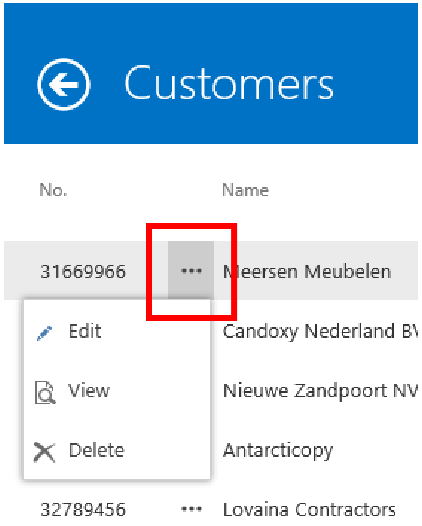
User can filter records by using filter field.



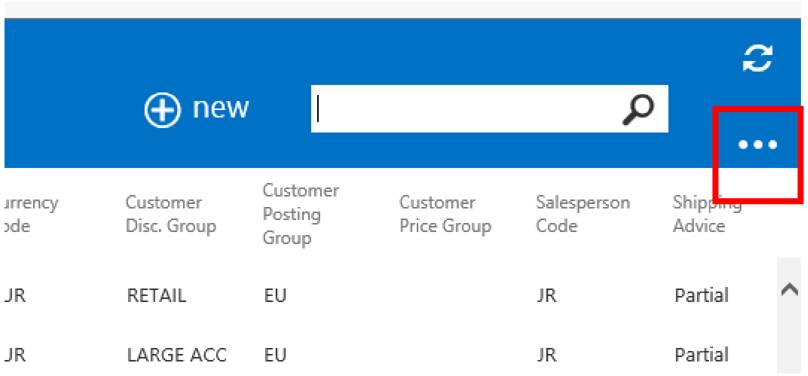
New Record



Edit/View/Delete Record



Page Action Ribbon



2. Dynamics NAV for tablets Labs

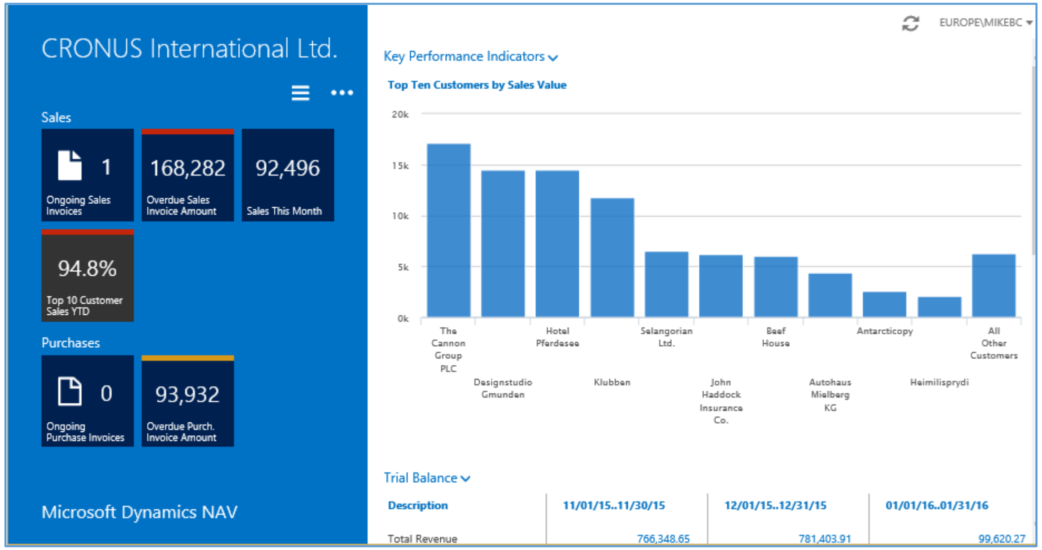
Source: Microsoft Dynamics NAV 2015 for tablets – Business Value – Mike Borg Cardona (Program Manager), September 2014, Microsoft

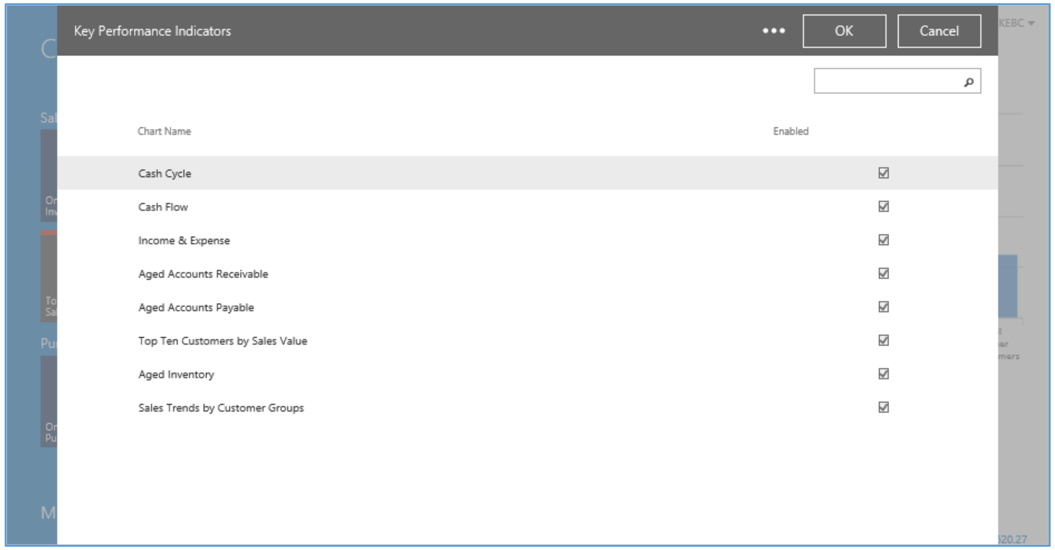
Lab data preparation

1. In the Microsoft Dynamics NAV Windows client, locate the Profiles list page.
2. Select and open the card page for the profile “SMALL BUSINESS - TABLET”.
3. Select the Default Role Centre checkbox.
4. Choose the OK button.
5. Sign into the Microsoft Dynamics NAV Tablet client and, on the Role Centre, tap Key Performance Indicators.
6. In the menu, select the Select Chart item. This will show a list of available charts.
7. Select the Top Ten Customers by Sales Value chart.

Lab 1 — A salesperson prepares to engage with a customer

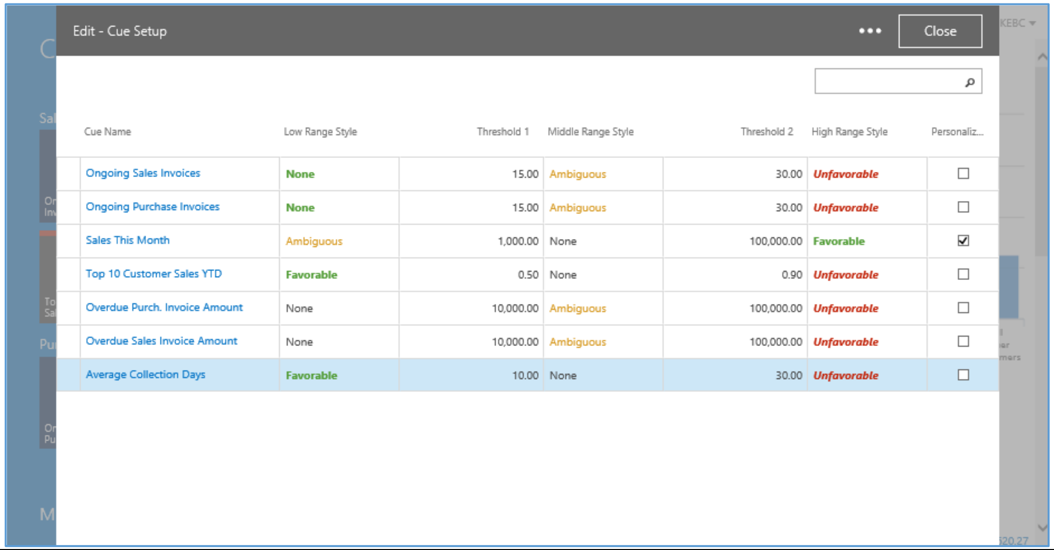
Lab story: In this short demo, we focus on how a salesperson can prepare for engaging with a customer, by quickly looking up information, and by setting sales goals directly in the Role Centre. This demo also serves as an initial explanation of the Role Centre.

What to do	What to say	Screenshots
1. **On the Start screen, tap the Dynamics NAV tile to launch Microsoft Dynamics NAV.**	Here on my Start screen I have all my favourite apps, including Dynamics NAV. If I tap that tile, the app takes me to my Role Centre.	
2. **Pause for a moment to observe the Role Centre.**	This is where I can get an overview of my work at a glance. On the left we have the cues which show me where I need to take action. For example, I can see the Overdue Sales Invoice amount is particularly high today.	

3. In the content pane, tap Key Performance Indicators. **4. In the menu, tap on Previous Chart, pause, then tap on Next Chart to return to Top 10 Customers By Sales Value.**	On the right, I have my chart. I can easily switch between various charts to get an overview of my data.	
5. Gently scroll down the content area until Favorited Customers is in view.	I can have various forms of BI displayed directly on my Role Centre, such as my personal list of Favorited Customers.	
6. Tap on the tile named Sales This Month. **7. Pause on the list of sales, and tap the back arrow.** **8. Tap to show the Action Pane and select Set Up Cues.** **9. In the row with Cue Name set to Sales This Month, tap the cell in column Middle Range Style and set it to Unfavourable.**	If I take a look at Sales This Month, I can see that I am close to the 100,000 mark. I can tap to drill down and see specifically which sales are included. As a salesperson, I want to make it my personal goal to reach that target. Maybe the customer I am meeting today is interested in	

10. Tap the Close button.

purchasing some of our more expensive products which will help me reach that goal.
I can personalize my cues to use colours to indicate if I have reached my goal or not. Here the upper threshold is already set to 100,000 so I just need to set which colour will be shown below that value.



11. Bring up the Navigation Pane and tap on Items

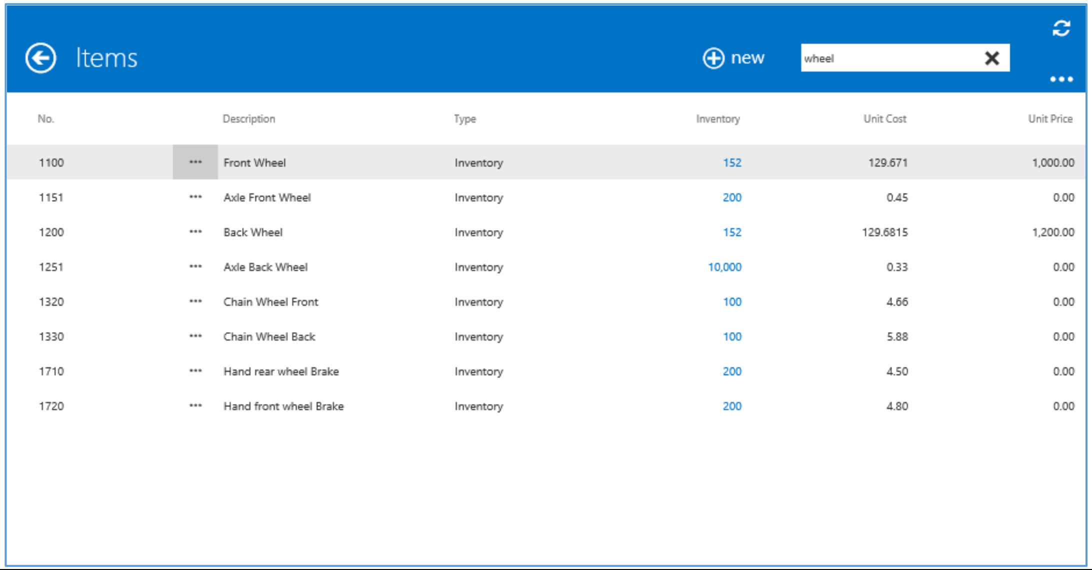
12. Gently scroll through the long list of items

13. In the Items list, tap in the Search field, enter the text "wheel" and tap the spy glass to begin searching.

Let's find the price for our more expensive items.

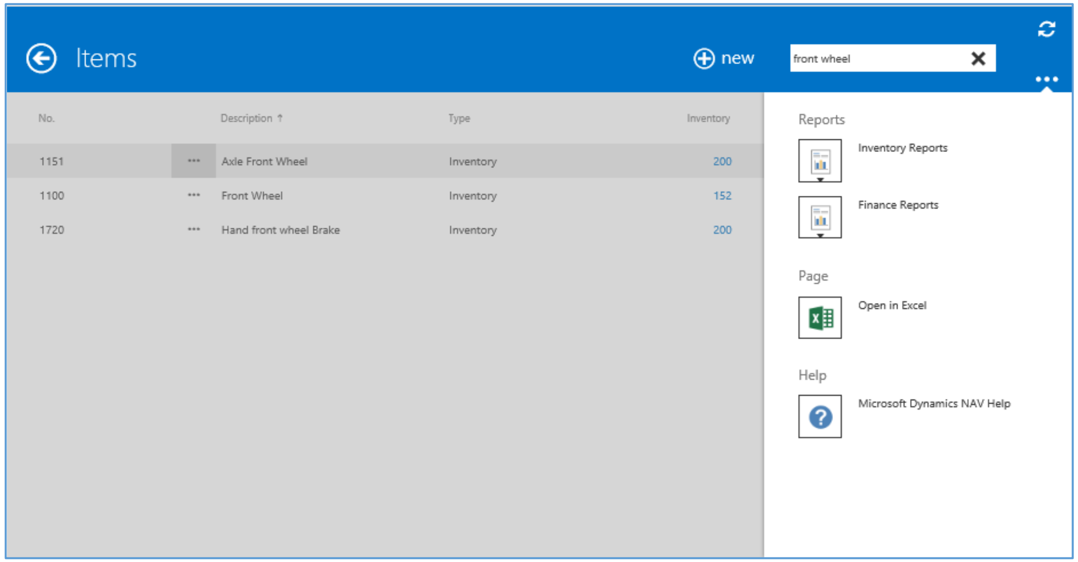
As you can see, this is quite a long list but I'm looking for something specific.

This customer has always purchased a stock of wheels so let us first search for that. Note, how I did not need to specify which columns to search on, and items were found regardless of where the term "wheel" was used.



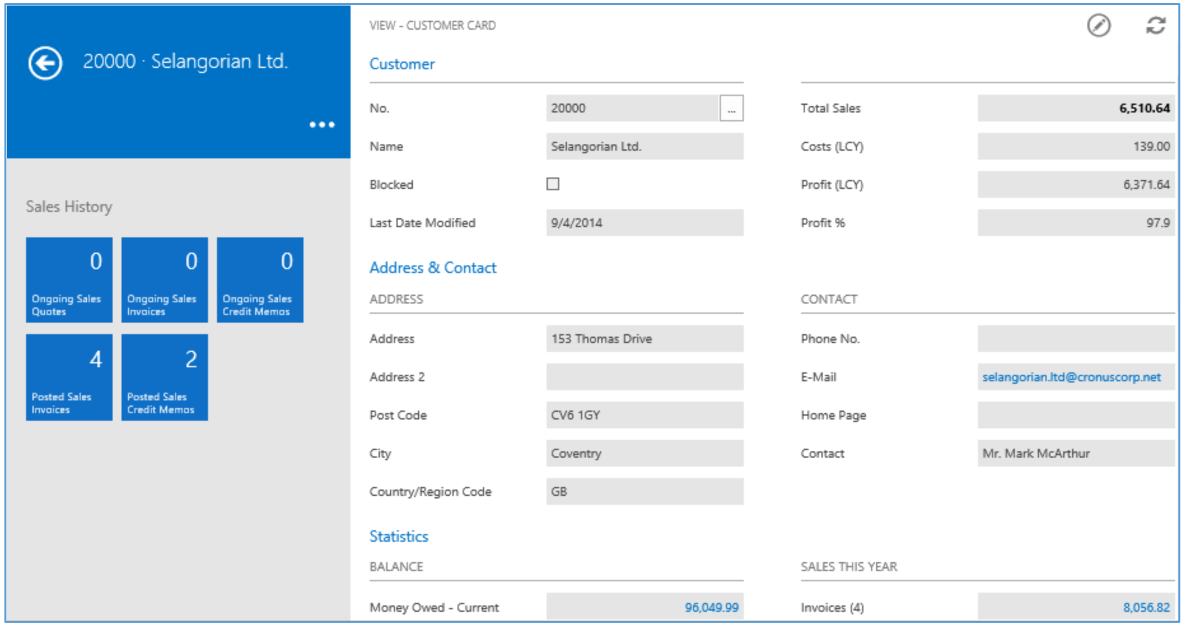
14. Tap in the Search field again,

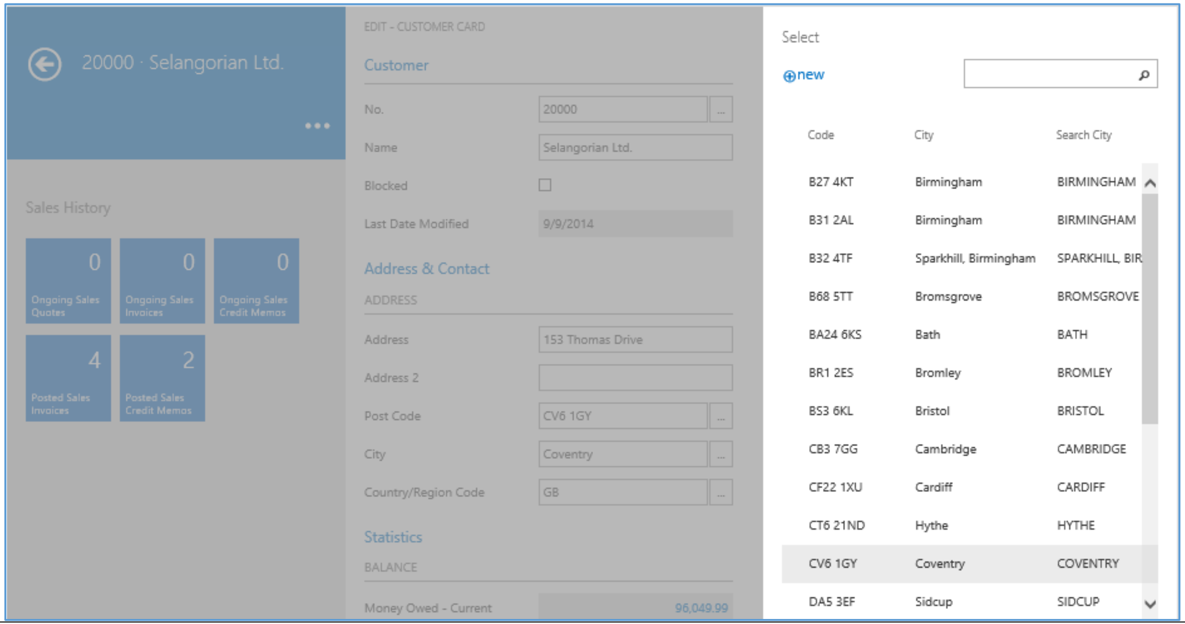
I can refine my search further, and

and change the text to "front wheel" and tap Enter on the on-screen keyboard. 15. Tap on the column header Description to sort alphabetically.	also sort my list. Now I can see that Front Wheels can be sold at 1,000 for a good profit.	
16. Bring up the Action Pane and tap on the Open in Excel action.	I can also send this list to Microsoft Excel if I want to perform some quick calculations on pricing directly on my tablet.	
17. Switch back to Dynamics NAV and tap the back button to return to the Role Centre.	As always, the Role Centre is only a tap away.	

Lab 2 — A salesperson updates customer information

Lab story: In this short demo, we focus on how a salesperson could easily update the details for a specific customer, such as the phone number. Dynamics NAV is not just for reading data, but also for writing just like in any other Dynamics NAV client.

What to do	What to say	Screenshots
32. **In Dynamics NAV, from the Role Centre, bring up the Navigation Pane and tap on Customers.** 33. **Tap on the row with Name set to Selangorian Ltd.** 34. **Tap the Edit button in the top right to enter Edit mode.** 35. **In the Phone Number field, enter a valid phone number.**	After talking with my favourite customer, Selangorian Ltd., I learn that they often use phone calls or Skype for communication. Let's add their phone number to the customer card.	
36. **Tap on the AssistEdit button for the City field.** 37. **Gently scroll through the list of cities in the lookup.** 38. **Tap on Luton.**	The customer address is also incorrect. Let's quickly update the city.	

39. Tap the back button to return to the list of customers.		

Lab 3 — A salesperson creates a Sales Quote for a customer

Lab story: In this short demo, we focus on creating a Sales Quote and instantly mailing this to the customer. Creating sales or purchase documents is a common task while
continuation from Demo 2 where we will now send the quote to customer Selangorian Ltd.

<table>
<tr><th>What to do</th><th>What to say</th><th>Screenshots</th></tr>
<tr>
<td>

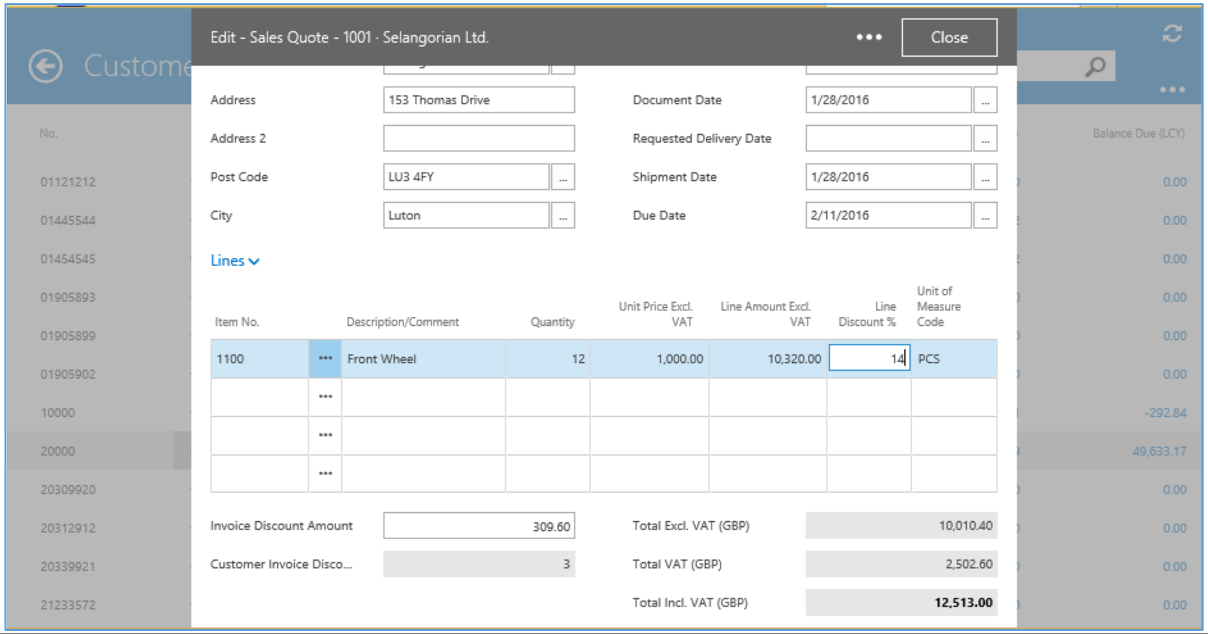
1. In the Customers list page, bring up the menu for customer Selangorian Ltd.
2. Tap on Sales Quote.
3. Under the Lines section, in the first empty row, tap the AssistEdit button for Item. No.
4. In the lookup pane, tap in the Search field, enter “front wheel” and then tap Enter on the keyboard.
5. Tap on the Quantity field and enter value 12.
6. Tap in the Line Discount % field and set the value to 14.

</td>
<td>

Let’s quickly create a sales quote for this customer. Note, how the customer information has been prefilled in the quote.

With a few taps, I can prepare the quote. Since this is one of my favourite customers, I will raise the discount to 14%. See how the total changes accordingly.

</td>
<td>

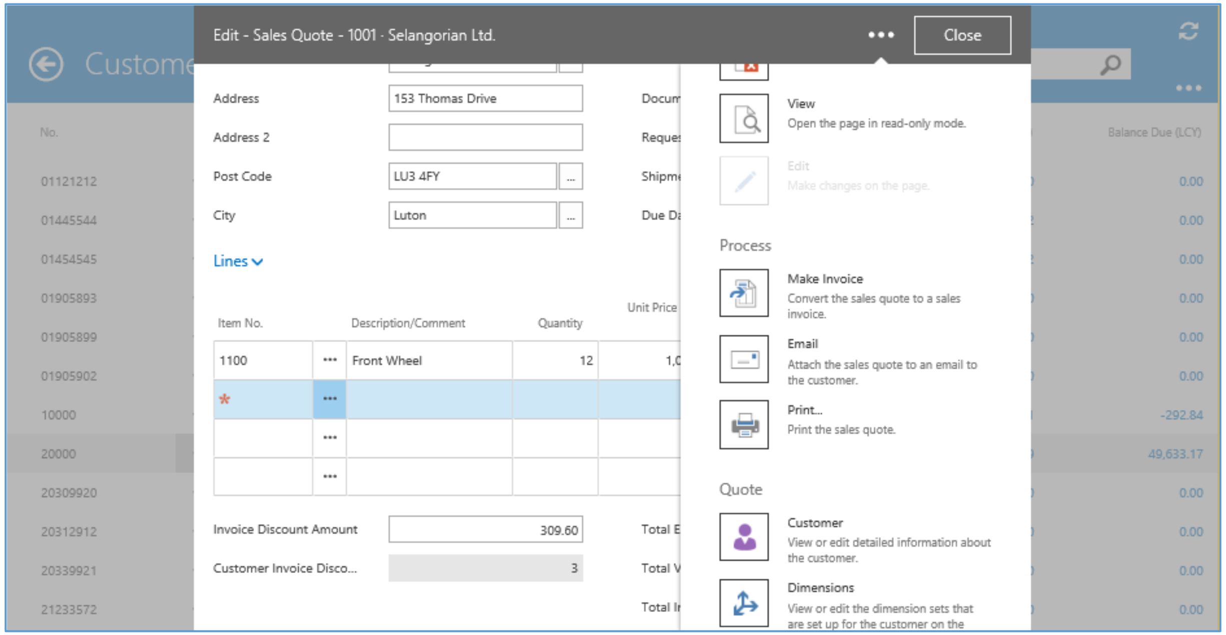


</td>
</tr>
</table>

7. Bring up the Action pane and, in the Process action group, tap the Email action.
8. In the task dialog, enter the following message: “Thank you for today’s meeting – here is the quote we talked about. I am looking forward to hearing from you.”
9. Tap the OK button to proceed with sending the mail.

Now let’s send the quote to the customer with a few more taps.

The email is sent with the sales quote attached as a PDF document.



3. Differences and Limitations When Developing Pages for the Microsoft Dynamics NAV Tablet Client

Source: Differences and Limitations When Developing Pages for the Microsoft Dynamics NAV Tablet Client, Microsoft Development Network - https://msdn.microsoft.com/en-us/library/dn757104(v=nav.80).aspx and https://msdn.microsoft.com/en-us/library/dn789506(v=nav.80).aspx

Developing for Microsoft Dynamics NAV Tablet client is not much different from developing for Microsoft Dynamics NAV Windows client, or Microsoft Dynamics NAV Web client. There are, however, some natural limitations on a tablet, such as not having a physical keyboard and mouse, as well as a smaller screen. In addition to this, there are some differences and limitations in developing pages for Microsoft Dynamics NAV Tablet client.

Page Differences and Limitations

In the following section, you will find a description of what to expect when displaying pages on Microsoft Dynamics NAV Tablet client.

Concept	Difference/Limitation	Example	Recommendation
Activity Buttons	Only the content of the Home activity button is shown. You cannot activate other activity buttons.	Home, Departments, and Posted Documents on the Sales Order Processor Role Center.	Design pages to expose the workflows needed by the user. For example, configure the profile to show the important list pages under the Home activity button. Alternatively, consider designing a new Role Center if the activities for the activity button greatly vary from activities in other activity buttons.
Selecting multiple records in Lists	Not available.	Ctrl+A or Ctrl+Click on rows in a list using Microsoft Dynamics NAV Windows client.	Avoid scenarios requiring selecting multiple rows on a list. Also, try to minimize actions on lists.
Ribbon Actions	Only Promoted actions are shown.	On the Small Business Role Center.	Use the development environment to promote actions. Alternatively, configure the profile and add actions to the Home ribbon tab.
FactBoxes	Not shown on List pages or Worksheet pages.	Customer list on the Small Business Role Center.	Make sure the same information is visible on the corresponding card page of the given record.
Advanced Filters	No column-specific filtering is	On the Customer list page.	Send data to Excel and do the complex filtering there.

	available.		
Page Search	Not available.	On Microsoft Dynamics NAV Windows client or Microsoft Dynamics NAV Web client.	Design pages to expose the workflows needed by the user. For example via list places, tiles or actions.
Horizontal Scrolling on Lists	The number of tiles that are shown is based on the size of the screen, no possibility to scroll.	On Items list for the Sales Order Processor profile.	
Cue and Action Tiles	The number of tiles that are shown is based on the size of the screen, no possibility to scroll.	On most Role Center pages.	Design List pages to avoid having important columns on the far right of the column list. Assume you have no control over how many columns are displayed and consider that only the first few columns will be made visible.
Field Groups	Field groups on list pages are not shown. Only the repeater control is shown in the content area of the page.	On Opportunity list page (5123).	Design Role Center pages to avoid having important tiles at the area end. Assume you have no control over how many tiles are displayed and consider that only the first few tiles will be made visible.
Links and Notes	Not available.	On Sales Orders.	Similar to Factboxes, make sure the same information in the field group is visible on the corresponding card page of the given record.
Select from full list	Not available on lookups. Users are not able to run actions on a lookup page, and they cannot access the full set of records.	On the **Item Card** when selecting the **Base Units of Measure**.	Make sure the appropriate columns are visible on the lookup. The user is still able to filter, scroll, and search through the lookup.
Date picker in grids	Not available.	On Sales Invoices.	Enter dates in grids manually.
Search across List columns	Partly supported. Search will not include FlowFields.	Customer list.	
GETURL	It is not possible to generate URLs to the Microsoft Dynamics NAV	See example in codeunit 440.	

	Tablet client using the GETURL AL function.		
Report Viewer and CurrReport.PREVIEW	There is no Preview functionality available on the Microsoft Dynamics NAV Tablet client. CurrReport.PREVIEW cannot be reliably used to identify whether a report was run as a draft or as a final printed document.	See example in report 280.	
Matrix Controls	Not supported.	See example in G/L Budget.	
File download	Cannot download multiple files at the same time.	Trial Balance report in the **Print to Excel** check box.	
Number of columns displayed in a repeater control.	Because of the form factor on tablets, you might experience that not all important columns are displayed.		Use the **Width** field property to control the size of the column and thereby make room for more columns displayed.

Role Center Behaviours

<table>
<tr><th>Concept</th><th>Description</th></tr>
<tr><td>Tiles</td><td>The app bar will automatically show tiles in two or three columns depending on the total number of tiles. A Role Center with many tiles only displays the tiles that fit vertically on the screen; other tiles are not shown and will not be available.</td></tr>
<tr><td>Actions</td><td>Actions that are added under an ActionContainer of the subtype HomeItems are always shown in the navigation pane.</td></tr>
<tr><td>Actions</td><td>Actions that are added under an ActionContainer of the subtype ActivityButtons are never shown, and cannot be accessed.

There is no ability to navigate to other Activity Buttons as you can do in Microsoft Dynamics NAV Windows client and Microsoft Dynamics NAV Web client. Because Activity Buttons link to related functionality, the recommended workaround is to providing links to this functionality through their own Role Center as a separate entry point.</td></tr>
<tr><td>Actions</td><td>In the action pane, if the current profile has no configuration for the specific page, for example, if this was deleted, only promoted actions will be shown. If there are no promoted actions, any actions under NewDocumentItems will be shown. If there are no NewDocumentItems actions, an empty pane will be shown.
If a page configuration exists, the NewDocumentItems will be shown, together with any new groups that were created. Actions, even if they were renamed, which remain in their original group will not show until you move them to a custom group. This behaviour differs from Microsoft Dynamics NAV Windows client which will always show them.
When you add actions to the Home tab, it corresponds to setting the actions to Promoted. However, you can only do this with the configuration tooling if there is at least one Promoted action. Otherwise, the Home tab will never be available for customization.</td></tr>
</table>

4. Designing for Different Screen Sizes on a Tablet

Source: Designing for Different Screen Sizes on a Tablet, Microsoft Developer Network - https://msdn.microsoft.com/en-us/library/dn789596(v=nav.80).aspx

Form Factor Considerations

Users can scroll the content area of Microsoft Dynamics NAV for tablets to access all data for a given page. However, some elements of the screen, for example, the app bar cannot be scrolled. The app bar is the blue area of Microsoft Dynamics NAV for tablets and it is designed to provide easy access to important information and tasks that the user should not lose sight of when scrolling. The static elements will display only as much data as they can reasonably fit on the screen. Developers should design to make sure that the important static elements are displayed first, so that that these will be shown even on the smallest, available devices.

Guidance for Page Element Types on Smallest Devices

The following table provides a list of non-scrollable elements in the page content or the app bar.

Page Type	Displays on smallest device
RoleCenter	4 tiles in 1 group, or 2 groups together with 2 tiles
List Pages	5 columns of type Text50 or 8 columns of type Text20
Card Pages	• CardPage Factbox with up to 15 fields • 2 CardPage Factboxes with up to 6 fields each • Activities Factboxes with 4 tiles in 1 group, or 2 groups together with 2 tiles
Document Pages	• CardPage Factbox with up to 15 fields • 2 CardPage Factboxes with up to 6 fields each • Activities Factboxes with 4 tiles in 1 group, or 2 groups together with 2 tiles