IMPLEMENTATION

Microsoft Dynamics NAV

Recommendations When Implementing Microsoft Dynamics™ NAV 5.0

Technical White Paper

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Microsoft Dynamics™

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Introduction

This document is intended for Microsoft partner and customer developers who are about to implement or upgrade to Microsoft Dynamics NAV 5.0. Reading this document will help readers save time and resources when upgrading from the Microsoft Dynamics NAV 5.0 Classic Client to the Microsoft Dynamics RoleTailored Client in Microsoft Dynamics NAV 5.1. By highlighting areas that are changing between the existing client and the new client platform, developers will be able to target their upgrades, changes and new coding to support the upcoming client.

The release of Microsoft Dynamics NAV 5.1 will include two clients: the Microsoft Dynamics NAV Classic Client and the Microsoft Dynamics RoleTailored Client. The Microsoft Dynamics NAV Classic Client works as the client in Microsoft Dynamics NAV 4.0 and Microsoft Dynamics NAV 5.0, while the new Microsoft Dynamics RoleTailored Client included in Microsoft Dynamics NAV 5.1, is based on new architecture. This new architecture has many benefits for partners and customers including:

- The enablement of a new user experience and role-tailored-navigation design optimized for many key employee functions
- Web services enablement which helps partners to build their connected solutions faster and more efficiently

The new architecture in Microsoft Dynamics NAV also means that some of the basic development principles and functionality that are familiar in the Microsoft Dynamics NAV Classic Client will be different, changed or removed in the Microsoft Dynamics RoleTailored Client. It is therefore important for anyone who is implementing Microsoft Dynamics NAV 5.0 to consider these factors when upgrading from the Microsoft Dynamics NAV Classic Client to the Microsoft Dynamics RoleTailored Client.

This document provides an overview of what practices should be limited or avoided in Microsoft Dynamics NAV 5.0 to ensure an easier upgrade to the Microsoft Dynamics RoleTailored Client at a later time.

Feature	Microsoft Dynamics RoleTailored Client Architecture	Microsoft Dynamics NAV Classic Client Architecture
Forms, Pages, Code on Forms, Codeunits, "Classic Objects"	Forms are transformed to Pages, all code runs as .NET managed assemblies, very Property driven	Pages are not displayed and Forms are shown as today
Reports/Batch Jobs	Microsoft SQL Server Reporting Services requires request forms to be transformed	As today
Web Services	Multi-threaded NST able to handle Web Services. Create, Customize and easily deploy Web Services	Not Available
XMLPort/Dataport	Enhanced XMLPort functionality to cover Dataports	XMLPorts & Dataports supported as today.
Deployment	NST automatically updates when new versions are detected	As today
Sharepoint Display Target	Supported out of the box	Continue with Microsoft Dynamics NAV Employee Portal
Microsoft Dynamics NAV Application Server	Will continue to work as currently but recommend moving integrations to Web services- based platform	As today

Table 1: This chart compares how objects, features and other elements are supported in the Microsoft Dynamics RoleTailored Client architecture and Microsoft Dynamics NAV Classic Client architecture. The comment "as today" refers to the fact that both clients will be available in the Microsoft Dynamics NAV 5.1 release and that the Microsoft Dynamics NAV Classic Client will function in the same way as for earlier releases (e.g., Microsoft Dynamics NAV 4.0 SP3 or Microsoft Dynamics NAV 5.0).

Please note the following when reading this document:

- In this document, code means C/AL code in a Microsoft Dynamics NAV Object from the Object Designer on the Microsoft Dynamics NAV Classic Client.
- Transformation is the process of converting a form or report in the Microsoft Dynamics NAV Classic Client to a page or a report that works in the Microsoft Dynamics RoleTailored Client.
- Development of the Microsoft Dynamics NAV application is performed using the Microsoft Dynamics NAV Classic Client and the Object Designer. Even new features like Pages and Web Service are developed using the Object Designer.

This document will be updated as more information becomes available. This document is being made available to partners at an early stage to share what is known today about working with the Microsoft Dynamics RoleTailored Client and therefore the contents of this document are subject to change.

Be sure to monitor PartnerSource as more information we will be posted and this document will be updated as our experience with the Microsoft Dynamics RoleTailored Client increases and more information becomes available.

Forms and Pages

The Microsoft Dynamics NAV Classic Client supports developing forms using the object designer in the same way as you know from Microsoft Dynamics NAV 4.0 and previous versions.

In the Microsoft Dynamics RoleTailored Client, a new object type is introduced that represents a Form for the Microsoft Dynamics RoleTailored Client. These new Form objects are called *Pages*.

Pages are designed using the object designer and are somewhat similar to the way Forms are developed today. To design a Page, a developer specifies a Page type (for example Card or List) and then sets property values like source table. Pages are inherently designed to support a new user experience (called UX2006) which provides easier access to core application functionality. The new user experience also empowers employees and supports their productivity by providing new custom controls.

To assist in migrating existing applications from the Microsoft Dynamics NAV Classic Client to Microsoft Dynamics RoleTailored Client, a Transformation Tool is provided, which generates a page object from a form object. Running the Transformation Tool is an extra development step and can be accessed from the Microsoft Dynamics NAV Classic Client.

Pages work in a way that the *display target* (Microsoft SharePoint or Microsoft Dynamics RoleTailored Client) decides how to show a Page (in the same way that Internet Explorer or other browsers decide how to display an HTML page). Defining a page has more emphasis on *what is to be shown* and much less emphasis on *how to show it*.

Due to the new behavior in display and the new platform support, Pages have some restrictions. This means that while it is possible to transform any Form to a Page, the success of the outcome will depend on a few factors:

- Whether the Page conforms to UX2006 guidelines
- Whether the original Form conforms to Microsoft Dynamics NAV design suggestions
- If the Form design is close to the Microsoft Dynamics NAV standard application

Making changes to Forms and Pages

Forms transform better to Pages when they fit a particular pattern. These patterns repeat themselves in the application and the more closely the form in question follows this pattern, the higher chance of success you will achieve with the transformation. Forms that are extensively customized or contain code that changes the way the UI is shown will not transform properly. Forms that do not fit one of the patterns (known as Page Types) require more manual work to transform.

Some forms, even those in the standard application, require changes to be able to transform into pages. The list below contains a description of changes made to the Form objects in Microsoft Dynamics NAV to ensure that they can be transformed successfully.

Forms with Multiple Columns

The Microsoft Dynamics NAV Classic Client layout for Card forms is transformed automatically in to a default two-column layout in the Microsoft Dynamics RoleTailored Client. But for some forms, it is important to keep the Multiple Column layout, as in the statistics forms where a comparison between columns is important.

This can be done by doing some manual adjustment by applying a property called "FixedLayout". The transformation will preserve rows on the Page and you will get the expected grid-like structure. If it is required to have blank cells, then apply a blank value or empty control for that particular cell.

The work required to ensure compatibility is relatively straightforward but each form needs to be redesigned.

Lists with Info Frames

Lists with Info Frames (e.g., Item Charge Assignment) require similar design as Forms with Multiple Columns, like Statistics Forms. To transform to a page, a frame control must also be around the Info Frame section.

The work required to ensure compatibility is relatively straightforward but each form needs to be redesigned.

Matrix Forms

The Microsoft Dynamics RoleTailored Client does not have a Matrix control. The functionality provided in the current matrix forms are provided by mapping a matrix control from a Form into a grid control in a Page. The new matrix solution in the Microsoft Dynamics RoleTailored Client consists of two forms: a Request Page that contains all the relevant options, filters, and a List Task Page that displays the data when the Show Matrix button on the Request Page is activated.

This solution adds some limitations:

1. The grid is read-only. It is not possible to make grids/matrix forms for the Microsoft Dynamics RoleTailored Client that are used for data entry, e.g. you cannot enter budget amounts directly into the grid, you need to drill down to Budget Ledger entries and create a new entry.

2. The grid will contain a finite number of columns. The default value may be changed if you need a larger grid but will always be static for that Page. You use the Request Page to specify which dataset to display in the grid.
3. It is necessary to make a new Request Page that is used for defining the filters and selections to be applied and a button to show the result in the grid.

The work required to migrate the matrix forms will require you to review your design and a reimplementation is needed so it may be time-consuming depending on the actual matrix form.

Note: Microsoft is committed to enhancing the new client to offer the same functionality as is currently in the Matrix control. You may expect to see the functionality in a release after Microsoft Dynamics NAV 5.1.

Multiple Subforms on a Form

Forms with multiple lists (for example lists shown in subform) must be redesigned to have only a single list on the Page.

Subforms on Multiple Tabs

It is not possible to change what is shown in a table box depending on which tab is selected. An example of this is the Application Worksheet in Microsoft Dynamics NAV 5.0. These forms must be redesigned.

Labels

Labels must always be attached to another control or they will be lost in the transformation. Forms with labels that are not attached to controls should bind the labels to the appropriate control.

Frames

In some cases, the use of Frames gives a problem in transformation. Frames are transformed to new areas in the page called FastTabs and while they are functional, it's possible the transformation may create a poorly usable solution.

Options

Form & Control Properties

Some Form properties are no longer supported in the Page object due to the new behavior of pages over Forms.

ActivateControlonOpen

This is replaced with the focus being on the first control on the Page.

UpdateOnActivate

This is no longer required due to the way Pages refresh more automatically than Forms. It means you need to write code to refresh the page less often and when refocusing on a page again, it will refresh automatically.

Tooltips

These are not yet supported in the Microsoft Dynamics RoleTailored client. It is not possible to use any of the font affecting properties – Format, Font, Italics, Color, Underline and etc. These are ignored by the Microsoft Dynamics RoleTailored Client as the behavior of the UI is driven by the client and the properties are needed to a lesser degree.

Visible, Editable and Enable

These properties are changed from the Microsoft Dynamics NAV Classic Client to the Microsoft Dynamics RoleTailored Client. In the Microsoft Dynamics NAV Classic Client, it is possible to set the Boolean value of the property from code. In Pages, the value is defined in a property for the control but is possible to set to an expression. For example, a value can be set to be true if a certain value is present in a variable or another control has a particular value.

Reports

Reports made for the Microsoft Dynamics NAV Classic Client will need to be reworked to run on the Microsoft Dynamics RoleTailored Client. All reports require some work.

When writing a new report for the Microsoft Dynamics NAV Classic Client, a developer will specify data and layout in the Report designer. When migrating an existing report or creating a report to run on the Microsoft Dynamics RoleTailored Client, a developer will define the data of the report using the Report Designer and then use the transformation tool and visual studio to define the layout.

Reports that use a request form must transform the request form to a request Page in a similar manner to Form/Page Transformation. This is straightforward and, in all cases so far, successful where the request forms do not deviate greatly from those used in the standard application. The transformation does strip information like page and print settings, margins, and other layout information.

Since the layout process for reports to run on the Microsoft Dynamics Role Tailored Client is done in Visual Studio, Microsoft Dynamics NAV will ignore all code related to layout, specifically on section triggers. Consider moving special code you have written for a report from section triggers that perform business logic or calculations to another trigger in the report or to a codeunit. Section triggers that handle conditional printing (e.g. SHOWOUTPUT() calls) and code that alters the layout of the report in the Microsoft Dynamics NAV Classic Client should not be moved since they will continue to be used when generating that report from the Microsoft Dynamics Classic Client. Also, totals are done from the layout editor (Visual Studio) and are done differently than the way they are done in the Microsoft Dynamics NAV Classic Client.

In summary, all reports require some rework to get them to function on the Microsoft Dynamics RoleTailored Client. The greatest task is to redesign the layouts and to move code from section triggers. As in current versions of Microsoft Dynamics NAV, the document type reports remain the most complex due to including multiple data sources for the report and using more special types of formatting.

Batch Jobs/Processing Only Reports

Processing Only reports, also known as batch jobs, require the same work as described above for reports. In addition, as these reports are commonly saved to file/print to file after execution, the following comments about files applies here too.

Files

When the application makes a file in the Microsoft Dynamics NAV Classic Client, the file is created locally on that client. In the Microsoft Dynamics RoleTailored Client, files are instead created at the Service Tier. If it is necessary to create a file for the Microsoft Dynamics RoleTailored Client then code must be written to create the file and then upload it from the NST to the client. Alternatively, a file that is normally stored on the client's file system can be accessed by the NST by writing code that gets the file from the Microsoft Dynamics RoleTailored Client computer and downloads it to the Service Tier.

There are new C/AL functions introduced in the development environment that help prepare an application that will help when working with files and these same functions can work on either the Microsoft Dynamics NAV Classic Client or the Microsoft Dynamics RoleTailored Client environment. By using these functions you will get same behavior whether you run the Microsoft Dynamics NAV Classic Client or the Microsoft Dynamics RoleTailored Client.

The FILE.UPLOAD and FILE.UPLOADINTOSTREAM functions are used to send a file from the Service Tier to a Microsoft Dynamics Role Tailored Client.

The FILE.DOWNLOAD and FILE.DOWNLOADINFROMSTREAM functions are used to send a file from the Microsoft Dynamics Role Tailored Client to the Service Tier.

The file functions are applicable in all situations using files, including but not limited to

- Normal file use (Create & save a file)
- Processing only reports/Batch Jobs where the output is saved as a file
- COM components that generate or consume files

Automation Objects

In the Microsoft Dynamics NAV Classic Client, it is possible to use an automation object from C/AL code which allowed that code to run functions in the automation object to do some kind of external processing that was not possible to do from C/AL. Common examples of this are automation objects that make special files (e.g., make an excel file) or interact with another part of the system (e.g., read a MSMQ message).

Both the Microsoft Dynamics NAV Classic Client and the Microsoft Dynamics RoleTailored Client can use automation objects. However, as all code for the Microsoft Dynamics RoleTailored Client is run on

the Service Tier any files that are created or any system interaction or extra processing from the automation object will happen on the NAV Service Tier and not on the local client.

Client Side COM Interaction

In the Microsoft Dynamics NAV Classic Client, it is possible to run code on the client that is able to interact with a local COM dll.

The common scenarios are:

- the dll is an OCX and has its own visual window that does special behavior or processing for the client (for example, the Gantt Chart
- the dll is an integration to hardware or a program running on the client

The Service Tier-based architecture makes it impossible for the Microsoft Dynamics RoleTailored client to run code on the client and so it is not possible to run either of the scenarios described above.

To duplicate the behavior, the other applications that run at the client could be redesigned and made into a Web Service based solution. The client application can call a web service on the system to deliver the information required for the system to process. It would be possible to code actions to a page that read into the database after the web service was called.

For example, if a customer has a solution with an electronic scale that should connect to Microsoft Dynamics NAV, then write an application that interacts with the scales, and then calls a web service on the Microsoft Dynamics NAV system. The web service would send information like the client and the value on the scales. The user would click a button on their page that reads into the database and retrieves the value that was put there.

The New Microsoft Dynamics NAV Service Tier (NST)

Unlike the Microsoft Navision Application Server (NAS), the new Microsoft Dynamics NAV Service Tier (NST) is not an indefinitely long running process that is always on listening for COM events. This means solutions like Automatic Data Capture System (ADCS) will not work properly on the NST. Once they are running, IIS will eventually terminate them.

It will be possible to use the NAS in Microsoft Dynamics NAV 5.1; however, there are several factors to consider when examining NAS solutions to ensure a successful migration to the Web Service model.

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