



COSMO CONSULT
Business-Software für Menschen

Microsoft AL

GUI & In-Client Designer II

Prerequisite

Use Workshop-VM / Workshop-Computer
follow the instructions of the Boarding Pass



Visual Studio Code

<https://code.visualstudio.com>



Competence Team DevTech

[Microsoft AI](#)

VS Code

Useful Extensions

> AL Formatter

- > Indentation
- > Keyword case style
- > Sort variable definitions
- > Readability Guidelines - Spacing and newlines (experimental)

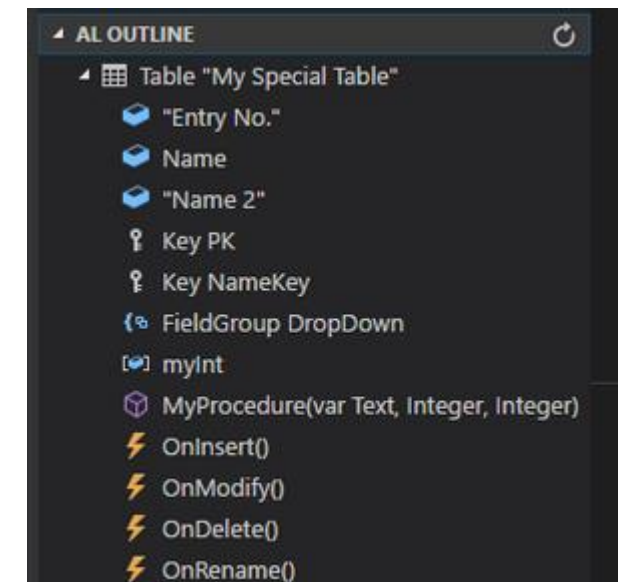
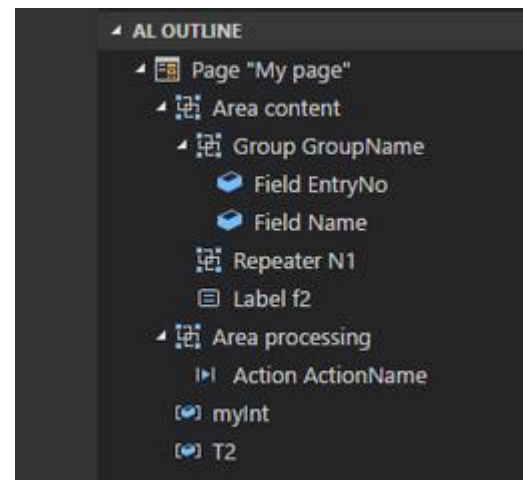
> AL Code Outline

- > Outlining – AL Object Structure
- > “Create List Page” from Table
- > “Create Card Page” from Table

> al-util

- > “Rename & Move” Objects
- > Templates e.g. “Readme.md”

```
Codeunit 70000000 MyCodeunit
{
    var
        Customer : Record Customer;
        Counter : Integer;
        InvalidCustomerErr : TextConst ENU='Invalid Customer.
    trigger OnRun();
    begin
        if Customer.FindSet then
            repeat
                if not Customer.HasAddress then
                    Error(InvalidCustomerErr);
            until Customer.Next = 0;
    end;
}
```



GUI & In-Client Designer

Agenda

- 1 Language & Types (Re-Cap)
- 2 Pages, Page Extensions (Re-Cap)
- 3 Page Properties
- 4 Page Actions
- 5 Hands On

Microsoft AL

Language & Types

- Page
- Page Extension
- Page Customization

Microsoft AL

Language & Types

- Recommendation for VS Code
 - 1 File per Object
 - Organize Object Files in Folders (Pages, PageExtension, ...)
- Use Snippets in AL
 - ttable
 - tpageext
 - tcodeunit
 - ...
- Documentation - Development in AL
 - <https://docs.microsoft.com/.../developer/devenv-dev-overview>

C/Side	Microsoft AL	
	<i>Extending</i>	<i>New</i>
Codeunit	-	<u>codeunit</u>
Table	<u>tableextension</u>	<u>table</u>
Page	<u>pageextension</u> <u>pagecustomization</u>	<u>page</u>
XMLport	-	<u>xmlport</u>
Query	-	<u>query</u>
Report	-	<u>report</u>
Menu Suite	-	-
		<u>profile</u>
		<u>controladdin</u>

Microsoft AL

Page

page <ID> „<Unique Name>“

➤ Content Structure

- Page Properties
- Layout Section
- Actions Section
- Global Variables
- Procedures & Events & Page-Triggers

➤ Sections

- Layout → Areas → Groups → *Group-Properties* & Fields → *Field-Properties* & Triggers
- Action → Areas → *Area-Properties* & Actions → *Action-Properties* & Trigger

```
page 58215 "Test Page ccAI"
{
    PageType = Card;
    UsageCategory = Administration;
    ApplicationArea = All;
    Caption = 'cc TEST';

    layout
    {
        0 references
        area(content)
        {
            0 references
            group(GroupName)
            {
            }
        }
    }

    actions
    {
        0 references
        area(processing)
        {
            0 references
            action(ActionName)
            {
                Caption = 'Test';
                Image = TestDatabase;
                ApplicationArea = All;

                trigger OnAction();
                var CU: Codeunit "Intent Handler Test ccAI";
                begin
                    CU.TestStopWorkcenter;
                end;
            }
        }
    }
}
```

Microsoft AL

Page Extension

pageextension <ID> "<Unique Name>" extends "< Target Page Name>" / or <ID>

➤ Extensions / Modifications

- Add *addfirst(<ID>), addbefore(<ID>), addafter(<ID>), addlast(<ID>)*
- Move *movefirst(<ID>), movebefore(<ID>), moveafter(<ID>), movelast(<ID>)*
- Modify *modify(<ID>)*

➤ Changes in Sections

- Layout → <Extension/Modification> → new / changed page content
- Action → <Extension/Modification> → new / changed page actions

➤ Additional Content

- Global Variables
- Procedures & Events & Page-Triggers

```
pageextension 58205 "Work Center List ccAI" extends "Work Center List"
{
    layout
    {
        addafter(Name)
        {
            0 references
            field(Status; Status)
            { StyleExpr = StatusStyle; }

            0 references
            field("Fault Information"; "Status Message")
            { StyleExpr = StatusStyle; }
        }

        addfirst(FactBoxes)
        {
            2 references
            part("Bot"; "Bot ccAI")
            { }
        }
    }

    actions
    {
        addlast(Processing)
        {
            0 references
            action("Stop Work Center")
            {
                CaptionML = DEU = 'Stop', ENU = 'Stop';
                Image = Stop;
                Promoted = true;
                PromotedIsBig = true;
                ApplicationArea = All;

                trigger OnAction();
                begin
                    Rec.Validate(Status, Status::Down);
                    Rec.Modify;
                end;
            }
        }
    }
}

5 references
var StatusStyle: Text;

trigger OnAfterGetRecord();
begin
```


Microsoft AL

Page Customization

pagecustomization "<Unique Name>" customizes "<Target Page Name>" / or <ID>

➤ Modifications

- Move *movefirst(<ID>), movebefore(<ID>), moveafter(<ID>), movelast(<ID>)*
- Modify *modify(<ID>)*

➤ Changes in Sections

- Layout → <Modification> → changed page content
- Action → <Modification> → changed page actions

➤ No Additional Content!!!

```
pagecustomization "Item List Cust" customizes "Item List"
{
    layout
    {
        // Modify fields / groups
        modify("No.")
        {
            Visible = false;
        }

        // Move Fields / Groups relative to an Anchor
        movefirst(Content; Description, "Search Description")
    }

    actions
    {
        // Add changes to page actions here
        modify(Action29)
        {
            Visible = false;
        }
    }

    // Variables, procedures and triggers are
    // not allowed on Page Customizations
}
```

Pages in Microsoft AL

Microsoft AL Page Design

- Page Properties
- Layout, Action, Triggers



Microsoft AL

Page Properties

➤ PageType

➤ *Card, List, RoleCenter, Card Part, List Part, **API**, ...*

➤ SourceTable / SourceTableView

➤ *SourceTableView = order(ascending) where (Code = const('PROD'));*

➤ ApplicationArea *Application Area for the Page WebClient SearchPage*

➤ *All, Basic, Suite, Advanced*

➤ UsageCategory *Department for the Page WebClient SearchPage*

➤ *None, Lists, Tasks, ReportsAndAnalysis, Documents, History, Administration*

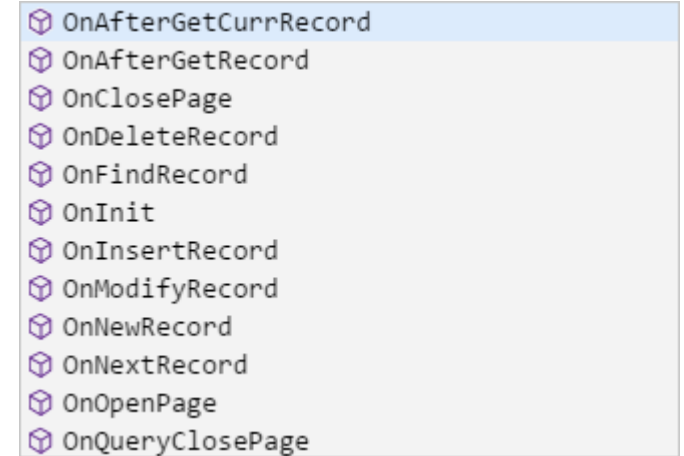
➤ CardPageId

Microsoft AL

Page / Page Extension - Triggers

➤ Page - Triggers *(Picture 1)*

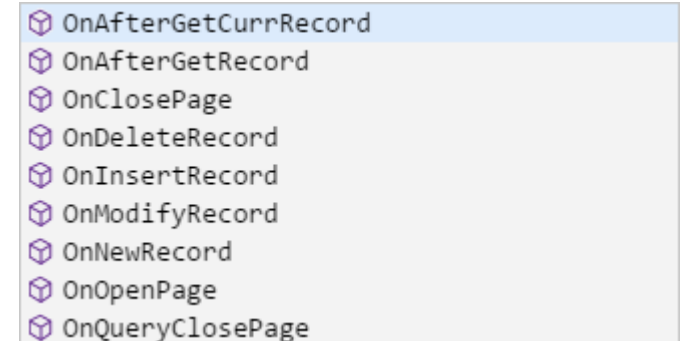
- Same Triggers as in C/Side



```
OnAfterGetCurrRecord
OnAfterGetRecord
OnClosePage
OnDeleteRecord
OnFindRecord
OnInit
OnInsertRecord
OnModifyRecord
OnNewRecord
OnNextRecord
OnOpenPage
OnQueryClosePage
```

➤ Page Extension - Triggers *(Picture 2)*

- less Triggers as Pages
- Microsoft: "...triggers are called "closer" to the original trigger than the events..."



```
OnAfterGetCurrRecord
OnAfterGetRecord
OnClosePage
OnDeleteRecord
OnInsertRecord
OnModifyRecord
OnNewRecord
OnOpenPage
OnQueryClosePage
```

Microsoft AL

Page Actions

➤ Properties *equal to C/Side*

- Image
- Promoted / PromotedOnly / PromotedIsBig / PromotedCategory
- Ellipsis
- ApplicationArea

All, Basic, Suite, Advanced

- InFooterBar *(Wizards)*
- RunObject & RunPageView

RunObject = page "Target Page"

RunPageView = order(ascending) where("Target Rec Field" = field("Source Field"));

➤ Trigger

- OnAction();

```
actions
{
    area(Navigation)
    {
        action(NewAction)
        {
            RunObject = codeunit "Document Totals";
        }
    }
}
```

```
group(MyActionGroup)
{
    Action(MyAction1)
    {
        CaptionML = ENU='Hello!';

        trigger OnAction();
        begin
            Message('My message');
        end;
    }

    Action(MyAction2)
    {
        RunObject = codeunit "Activities Mgt.";
    }
}
```


Microsoft AL

Multi Language Properties

> CaptionML, TooltipML, InstructionalTextML, ...

> Deprecated

> XLIFF

> XML Localization Interchange File Format

> Working with Translation Files

> Editor

> Multilingual App Toolkit 4.0 Editor

```
<ding="utf-8"?>
<xliff version="1.2" xmlns="urn:oasis:names:tc:xliff:document:1.2" xmlns:xsi="http://www.w3.org/2001/XMLSchema-inst
  <file datatype="xml" source-language="en-US" target-language="da-DK" original="ALProject16">
    <body>
      <group id="body">
        <trans-unit id="PageExtension 1255613137 - Property 2879900210" maxwidth="999" size-unit="char" translate="
          <source>Developer translation for %1</source>
          <target>Udvikleroversættelse for %1</target>
          <note from="Developer" annotates="general" priority="2">%1 is extension name</note>
          <note from="Xliff Generator" annotates="general" priority="3">PageExtension - PageExtension</note>
        </trans-unit>
      </group>
    </body>
  </file>
</xliff>
```

📘 Note

The support for using the ML properties, such as **CaptionML** and **TooltipML**, is being deprecated, so it is recommended to refactor your extension to use the corresponding property, such as **Caption** or **Tooltip**, which is being picked up in the .xlf file.

📘 Important

You can use the .xlf translation files approach only for objects from your extension. For translating the base application you still need to use the .txt files approach. For more information, see the **Translation and Localization apps** section below.

It's Lab Time

Hands On

- New Pages
- New Extensions



Pages in Microsoft AL

Hands On

➤ Material

- Project Skeleton „02-GUI-&-In-Client-Designer**Starter**\02 My Favorite Beer\”
- Tables: “Beer Category”
- Tables.Extensions: “Customer”, “Item”

➤ Prerequisites

- Connect to your Workshop VM → use Instructions on your Workshop Boarding Pass

➤ Hand On - Tasks

- Create a **Card Page** and a **List Page** for Table “Beer Category”
- Create a **Page Extension** (Card) for Table Extension “Customer”
- Create a **Page Extension** (Card) for Table Extension “Item”

Pages in Microsoft AL

Hands On – Card Page

➤ Create a Card Page „*Beer Category Card [CC]*“ ID: 50201

➤ Setup the Properties for the Page

- PageType *Card*
- UsageCategory *Documents*
- ApplicationArea *All*
- SourceTable *„Beer Category [CC]“*
- SourceTableView *sorting: „Code“ order: ascending*
- CaptionML *ENU + DEU*

The screenshot shows the Microsoft Dynamics 365 AL development environment. The top bar includes a 'START' button and a ribbon with icons for 'Neu', 'Bearbeiten', 'Löschen', 'Notizen', 'Links', 'Vorheriger', 'Nächster', 'Verwalten', 'Dateianhang anzeigen', and 'Seite'. The main content area is titled 'ANSICHT - BIER KATEGORIE KARTE' and displays a card for 'AMBER ALE'. Below the title, there is a 'General' section with a table containing the following data:

Code	AMBER ALE	Beschreibung	American-Style Amber/Red Ale
Name	Amber ale		

➤ Layout

- Add all fields of the table to the layout *area „content“* in a *group „General“*
- Setup field properties (e.g. ApplicationArea)

Pages in Microsoft AL

Hands On – List Page

➤ Create a List Page „*Beer Category List [CC]*“ ID: 50202


➤ Setup the Properties for the Page

- PageType *List*
- UsageCategory *Lists*
- ApplicationArea *All*
- SourceTable *„Beer Category [CC]“*
- SourceTableView *sorting: „Code“ order: ascending*
- CaptionML *ENU + DEU*
- CardPageId *"Beer Category Card [CC]"*


➤ Layout

- Add all fields of the table to the layout *area „content“* in a *repeater „General“*
- Setup field properties (e.g. ApplicationArea)


START




Neu




Bearbeiten




Ansicht




Löschen




Liste bearbeiten



Notizen



Links



In Excel öffnen

Neu

Verwalten

Dateianhang anzeigen

Seite

ANSICHT - BIER KATEGORIE LISTE + Neu

CODE

ALTBIER

NAME

Altbeer

BESCHREIBUNG

German-Style Altbeer

AMBER ALE

Amber ale

American-Style Amber/Red Ale

BARLEY WINE

Barley wine

British-Style Barley Wine Ale

BERLINER WEISSE

Berliner Weisse

Berliner-Style Weisse

BITTER

Bitter

Ordinary Bitter

BLONDE ALE

Blonde Ale

Golden or Blonde Ale

BROWN ALE

Brown Ale

English-Style Brown Ale

DOPPELBOCK

Doppelbock

German-Style Doppelbock

DUNKELWEIZEN

Dunkelweizen

South German-Style Dunkel Weizen

EISBOCK

Eisbock

German-Style Eisbock

HEFEWEIZEN

Hefeweizen

South German-Style Hefeweizen

Pages in Microsoft AL

Hands On – Page Extension

➤ Create a Page Extension „*Item Card [CC]*“ extends “*Item Card*”

ID: 50200

➤ Layout

- Add a group “Beer” behind the “Item” group
- CaptionML ENU + DEU
- Add the “Beer” fields
- Hide “Beer Category Group” & „Beer Category Group Name“, when the item is not marked as „Beer Item“

➤ Actions

- Add an action to show the “Beer Category Card”
- Use Properties:
CaptionML, ApplicationArea, Visible, RunObject, RunObjectView, Promoted, Image

70061 · Freiberger Pils

Item Mehr anzeigen

Description	Freiberger Pils	Base Unit of Meas...	PCS	...
Blocked	<input type="checkbox"/>	Item Category Code		...
Type	Inventory			

Bier Informationen

Beer Item	<input checked="" type="checkbox"/>	Bier Kategorie Na...	Blonde Ale
Bier Kategorie Code	BLONDE ALE		...



BLONDE ALE

General

Code	BLONDE ALE
Name	Blonde Ale

Pages in Microsoft AL

Hands On – Page Extension

➤ Create a Page Extension „*Customer Card [CC]*“ extends “*Customer Card*” ID: 50201

➤ Layout

- Add a group “Favorite Beer” behind the “General” group
- CaptionML ENU + DEU
- Add the “Beer” fields from record “Customer”

➤ Actions

- Add an action to show the “Beer Category Card”
- Add an action to show the possible “Beer Items”

BEARBEITEN - CUSTOMER CARD

10000 · The Cannon Group PLC


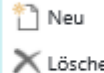



General Mehr anzeigen

Name	The Cannon Group PLC	Blocked	<input type="checkbox"/>
Balance (LCY)	168.364,41	Total Sales	17.100,96
Balance Due (LCY)	168.364,41	Costs (LCY)	11.762,70
Credit Limit (LCY)	0,00		

Lieblingsbier

Bier Kategorie Code	BLONDE ALE	Lieblings-Bier Code	70061
Bier Kategorie Na...	BLONDE ALE	Lieblings-Bier Na...	Freiberger Pils

START AKTIONEN NAVIGATE BERICHT

 Bearbeiten Verwalten	 Neu Löschen	 Bier Kategorie Process	 Biere	 Sales Quot
--	---	--	--	---

Q & A



Visual Studio Code

<https://code.visualstudio.com>



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