COSMO CONSULT
Business-Software für Menschen

DevOps
Docker

Prerequisite

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

Visual Studio Code

https://code.visualstudio.com

Git

https://git-scm.com

Competence Team DevTech

Microsoft AL

VS Code
Useful Extensions

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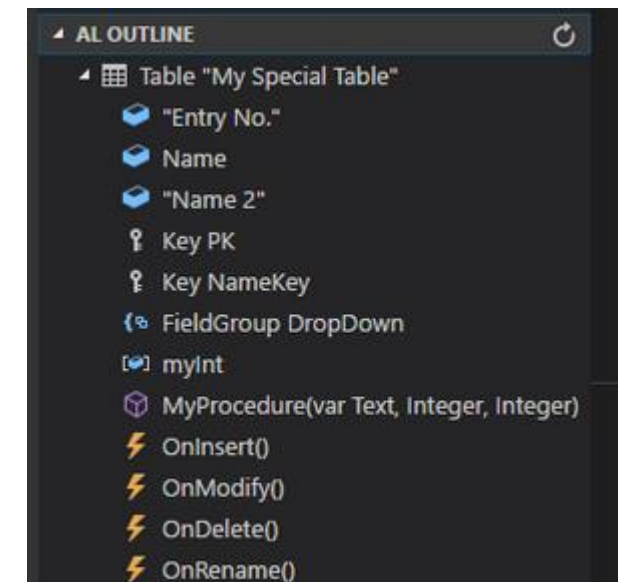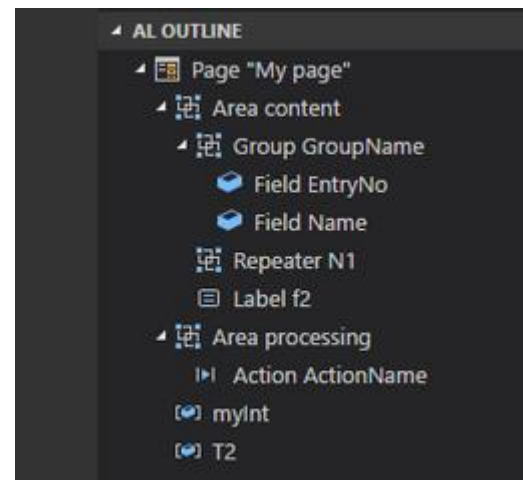> > Readability Guidelines - Spacing and newlines (experimental)

> **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;
}
```

```
▲ AL OUTLINE
  ▲ 📄 Page "My page"
    ▲ 📇 Area content
      ▲ 📇 Group GroupName
          ◈ Field EntryNo
          ◈ Field Name
      📇 Repeater N1
      ▭ Label f2
    ▲ 📇 Area processing
      ▷ Action ActionName
    ⟦•⟧ myInt
    ⟦•⟧ T2
```

```
▲ AL OUTLINE                          ↻
  ▲ 🎛 Table "My Special Table"
      ◈ "Entry No."
      ◈ Name
      ◈ "Name 2"
      🔑 Key PK
      🔑 Key NameKey
      {◈ FieldGroup DropDown
      ⟦•⟧ myInt
      📦 MyProcedure(var Text, Integer, Integer)
      ⚡ OnInsert()
      ⚡ OnModify()
      ⚡ OnDelete()
      ⚡ OnRename()
```

AGENDA

1 Docker, NAV on Docker, Docker Commands

2 Hand On

3 NAV Container Helper (Powershell)

4 Hands On

5 Q & A

COSMO CONSULT

Infrastructure
Docker

Infrastructure | Docker
Overview

> Isolate application's view of the operating environment

> Easy & Simple Application Deployment

Source: https://de.wikipedia.org/wiki/Datei:Docker_(container_engine)_logo.png

> Requirements
>> Windows 10 / Windows Server 2016
>> Recommended 16GB Ram & 40 GB HDD on C:
>> Hyper-V enabled
>> Install Docker for Windows

> After Docker Installation
>> Switch Container Mode to "Windows"
>> (Docker @ Taskbar Icon → [Right Click] Menu → Switch to Windows Container Mode)
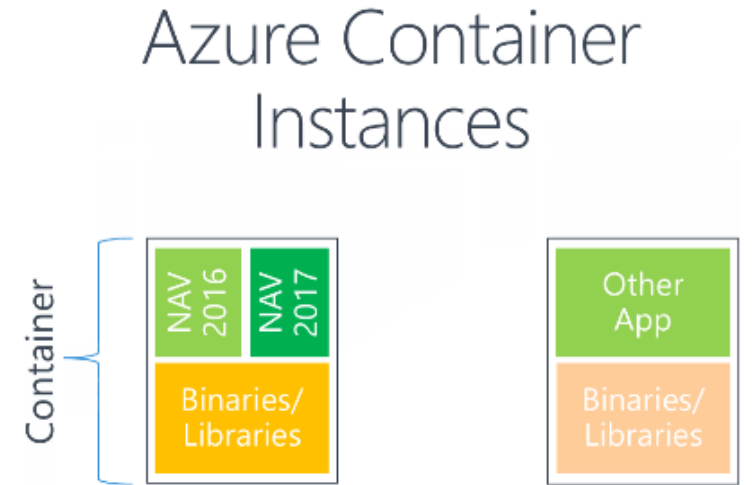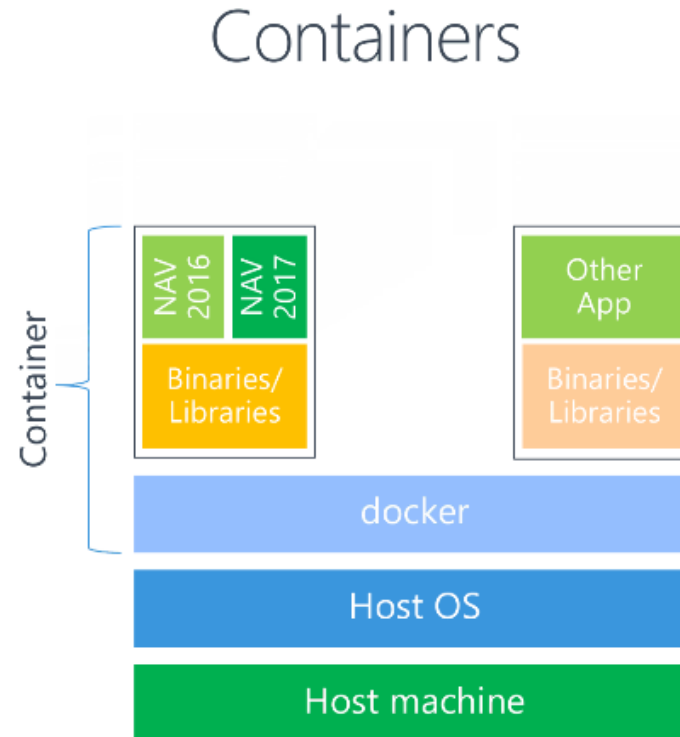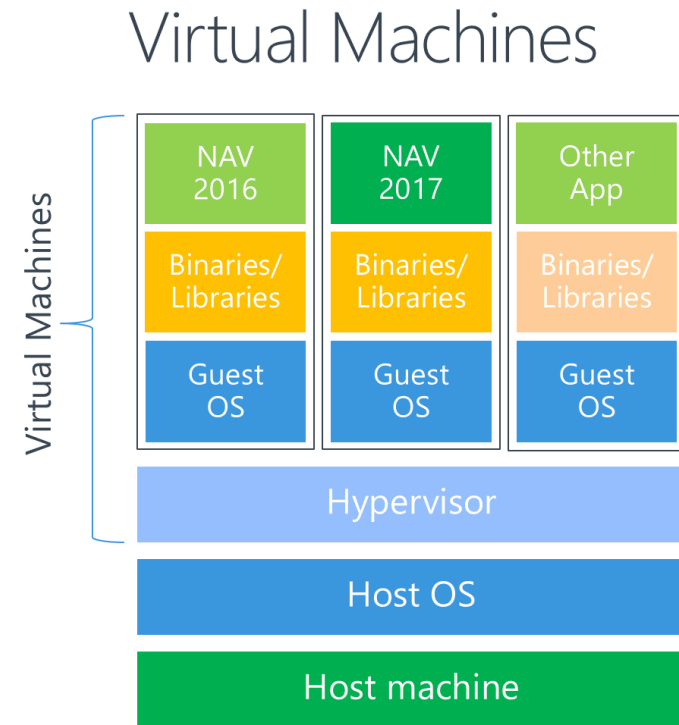>> *this may require a restart*

> Documentation

Infrastructure | Docker
NAV in Containers

Source: https://blogs.msdn.microsoft.com/freddyk/2017/10/31/what-is-docker-what-are-containers/

Infrastructure | Docker
NAV Containers

❯ Pull (Download the Image)   Repository\<Image-Name>[:<Tag>]

❯ NAV Container
   ❯ Windows Server Nano
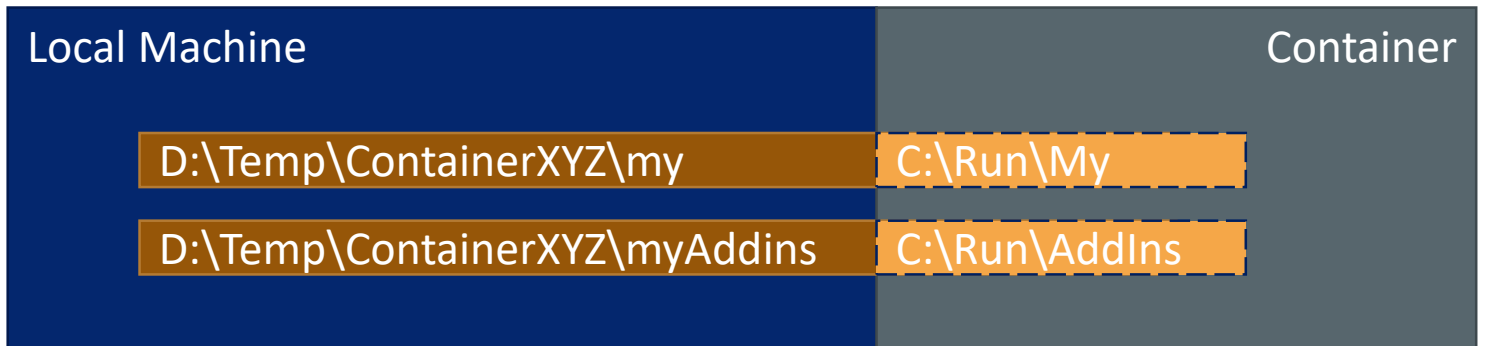   ❯ SQL Server Express   CORNUS DB
   ❯ Web-Server
   ❯ Navision in the right version: NST, WebClient, RTC, C/Side (FinSQL.exe)

❯ Folders
   ❯ Volume Mapping

```
-v "<OutSide>:<InSide>"
```

Local Machine	Container
D:\Temp\ContainerXYZ\my	C:\Run\My
D:\Temp\ContainerXYZ\myAddins	C:\Run\AddIns

Docker
Common Commands

Cheat-Sheet

List all containers

```
$ docker ps -a
```

List all images

```
$ docker images -a
```

Fetch the logs of a container

```
$ docker logs <container ID or Name>
```

Kill a container

```
$ docker kill <container ID or Name>
```

Remove a containers

```
$ docker rm <container ID or Name>
```

Remove a container image

```
$ docker rmi <image ID>
```

Pull a container from registry

```
$ docker pull <registry>/<image>[:<tag>]
```

Docker
Hands On

> **Prerequisites**

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

> **Hand On - Tasks**

> > Learn how to interact with docker

> > Pull some containers

> > Get some information from the container

Docker
Hands On

> Open your PowerShell (Admin Mode)

  > Which docker images are present at the machine?

  > Which Container are running?

  > Query the Log-Information of a running container!

```
$ docker ps -a
```

```
$ docker images -a
```

```
$ docker logs <container ID or Name>
```

> Pull / Update an image

  > Docker Registry: microsoft

  > Docker Image: dynamics-nav

  > Docker Tag: 2018-cu5-de

```
$ docker pull <registry>/<image>[:<tag>]
```

Infrastructure
NAV-Container-Helper

NAV Container Helper
Introduction

> Freddy DK *Microsoft*
>> Install on Windows:
>> https://blogs.msdn.microsoft.com/freddyk/2018/03/20/navcontainerhelper-1/
>
>> Setup CSIDE development environment with source code management
>> https://blogs.msdn.microsoft.com/freddyk/2018/03/22/navcontainerhelper-setup-cside-development-environment-with-source-code-management/
>
>> GitHub
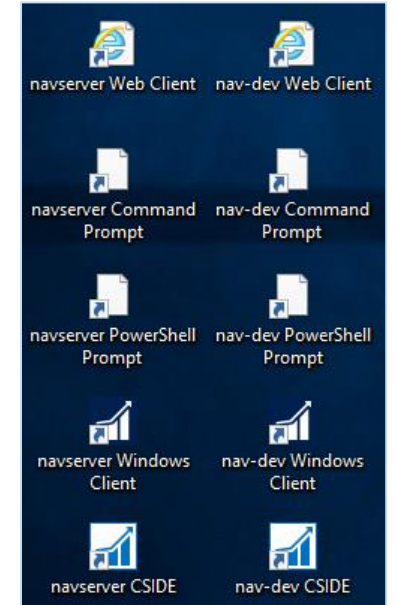>> https://github.com/Microsoft/navcontainerhelper

> Windows 10 or 2016 Server & Docker **required**

> Installation *PowerShell*

```
$ install-module navcontainerhelper -force
```

> Local Container Path

```
$ C:\ProgramData\NavContainerHelper\Extensions\
```

NAV Container Helper
Introduction

> Pull & Setup Containers for NAV
> > The Right NAV-Image
> > Import license file
> > Mount Volumes (PS-Scripts, Add-ins, DB-Backup Dir)
> > Authentication
> > Symbols Loading

> Import/Export Objects, Database, Apps   (PowerShell)

```
New-NavContainer -accept_eula:$accept_eula `
                 -accept_outdated:$accept_outdated `
                 -containerName $containerName `
                 -imageName $imageName `
                 -licenseFile $licenseFile `
                 -credential $credential `
                 -memoryLimit $memoryLimit `
                 -includeCSide `
                 -doNotExportObjectsToText:$doNotExportObjectsToText `
                 -alwaysPull:$alwaysPull `
                 -enableSymbolLoading:$enableSymbolLoading `
                 -updateHosts:$updateHosts `
                 -useSSL:$useSSL `
                 -auth $auth `
                 -additionalParameters $additionalParameters `
                 -myScripts $myScripts
```

NAV Container Helper
Common Commands   *Cheat-Sheet*

List common Commands

```
$ Write-NavContainerHelperWelcomeText
```

Create new C/SIDE development container

```
$ New-CSideDevContainer -accept_eula -containerName <name> -imageName "Microsoft/dynamics-nav:2018-cu4-de" …
```

Create new Nav container

```
$ New-NavContainer -accept_eula -containerName <name> -imageName "Microsoft/dynamics-nav:2018-cu4-de" …
```

```
$
```

```
$
```

```
$
```

```
$
```

COSMO CONSULT
Business-Software für Menschen

Hands On

Docker
NAV Container Helper

> **Material**
>> **Project Skeleton** „04-DevOps-Docker**Starter**\COSMO-CONSULT-**1**\"

> **Prerequisites**
>> **Connect to your Workshop VM** → use Instructions on your Workshop Boarding Pass

> **Hand On - Tasks**
>> Learn how to setup a development environment
>>
>> Create and access a dev container with C/Side, RTC & WebClient short cuts
>>
>> Develop against to the Container

Docker
NAV Container Helper

> Open your PowerShell ISE (Admin Mode)

> Create a new Container with NavContainerHelper

> > Docker Registry: microsoft

> > Docker Image: dynamics-nav

> > Docker Tag: 2018-cu5-de

> > Container Name: **nav-dev**

> Run the Script

```
$ docker pull <registry>/<image>[:<tag>]
```

```powershell
$authUser     = 'student'
$authPass     = 'WS-VSCode2018'
$secpasswd    = ConvertTo-SecureString $authPass -AsPlainText -Force
$credential   = New-Object System.Management.Automation.PSCredential ($authUser, $secpasswd)

New-NavContainer -accept_eula `
                 -accept_outdated `
                 -containerName "nav-dev" `
                 -imageName "microsoft/dynamics-nav:2018-cu5-de" `
                 -licenseFile "<OutSide-Folder>\License.flf" `
                 -credential $credential `
                 -includeCSide `
                 -enableSymbolLoading `
                 -auth NavUserPassword
```

Docker
NAV Container Helper

> Open your Project „...**Starter**\COSMO-CONSULT-**1**\" in VS Code

>> Fix the „lauch.json"

>> Deploy and run the solution

> TBD ☺

Q & A

Competence Team DevTech

Channel   Microsoft AL