

B15 - Generering af iModels med PowerShell



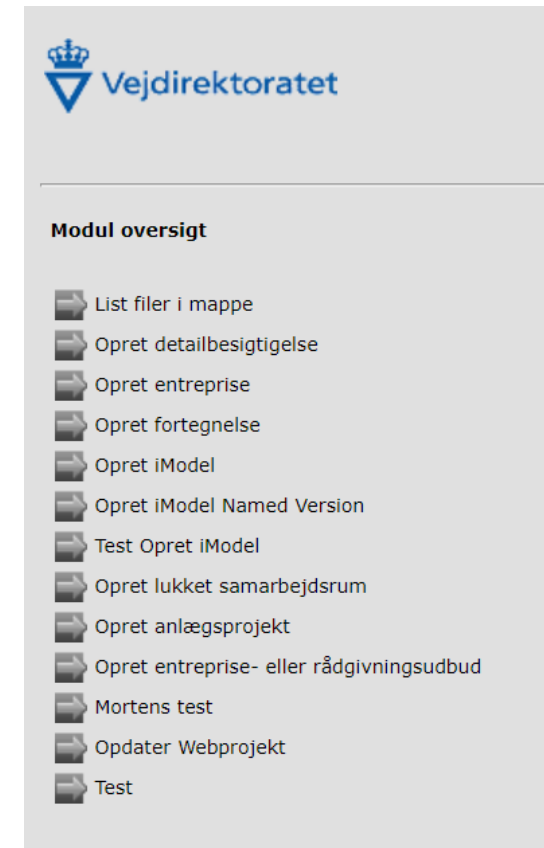
PowerShell i VD

Hvorfor benytte VD PowerShell?

Ønsker med PowerShell i VD

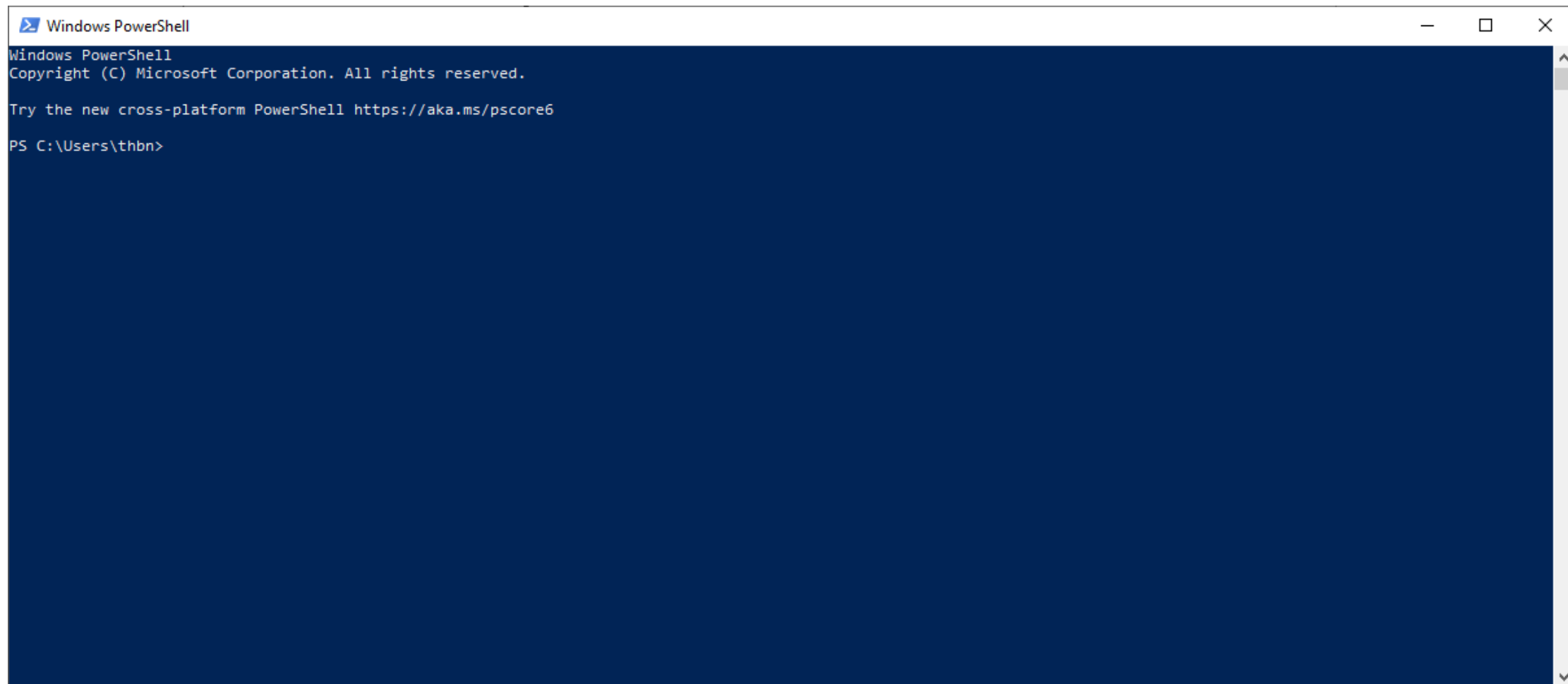
- Sikre ens arbejdsgange
- Automatisere arbejdsgange
- Ad-hoc opgaver
- Gentagende opgaver
- Afvikle funktioner med admin rettigheder

VD - Powershell Frontend



PowerShell i VD

Hvordan ?

A screenshot of a Windows PowerShell terminal window. The window title is "Windows PowerShell". The background is dark blue. The text displayed is: "Windows PowerShell", "Copyright (C) Microsoft Corporation. All rights reserved.", "Try the new cross-platform PowerShell https://aka.ms/pscore6", and "PS C:\Users\thbn>".

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

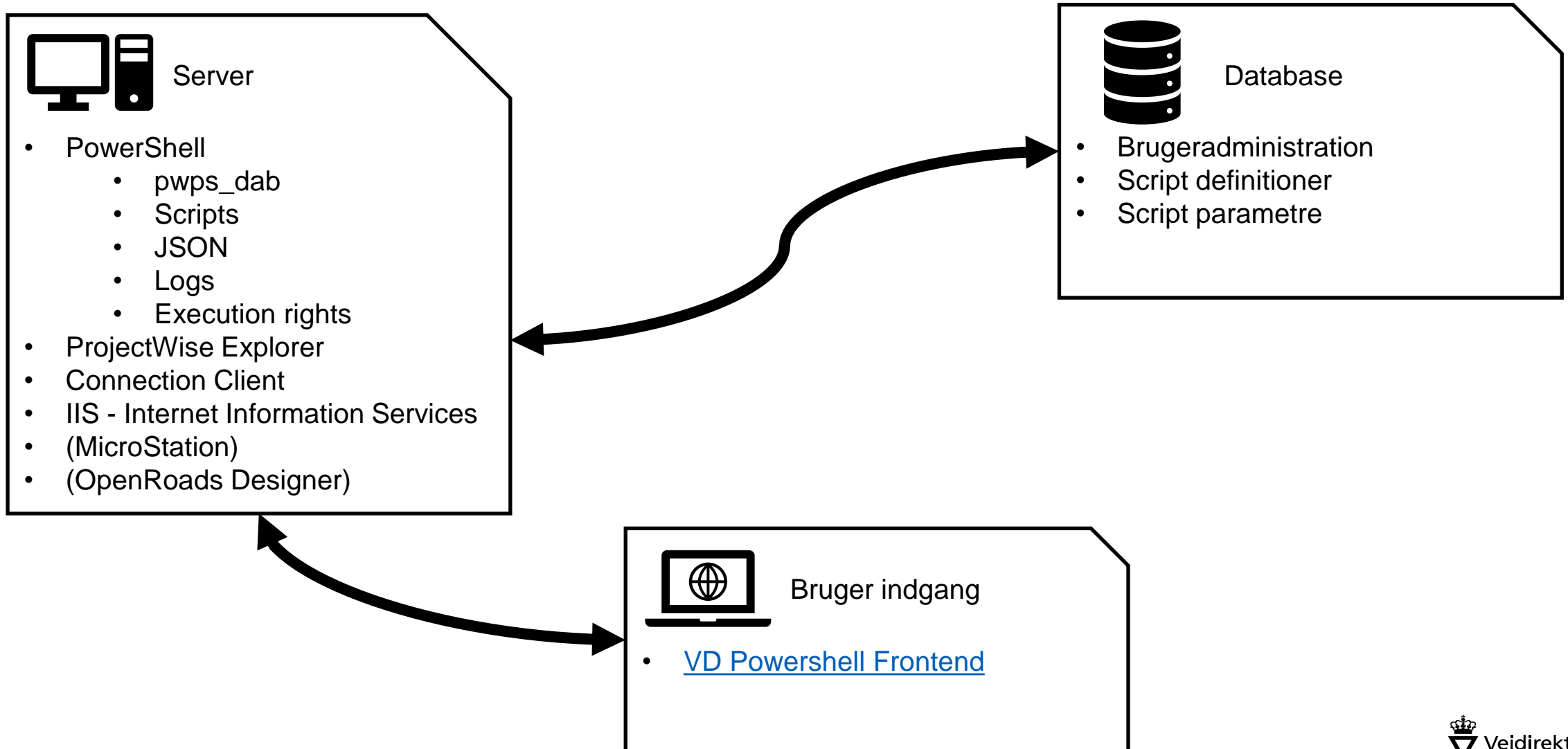
PS C:\Users\thbn>
```

PowerShell i VD

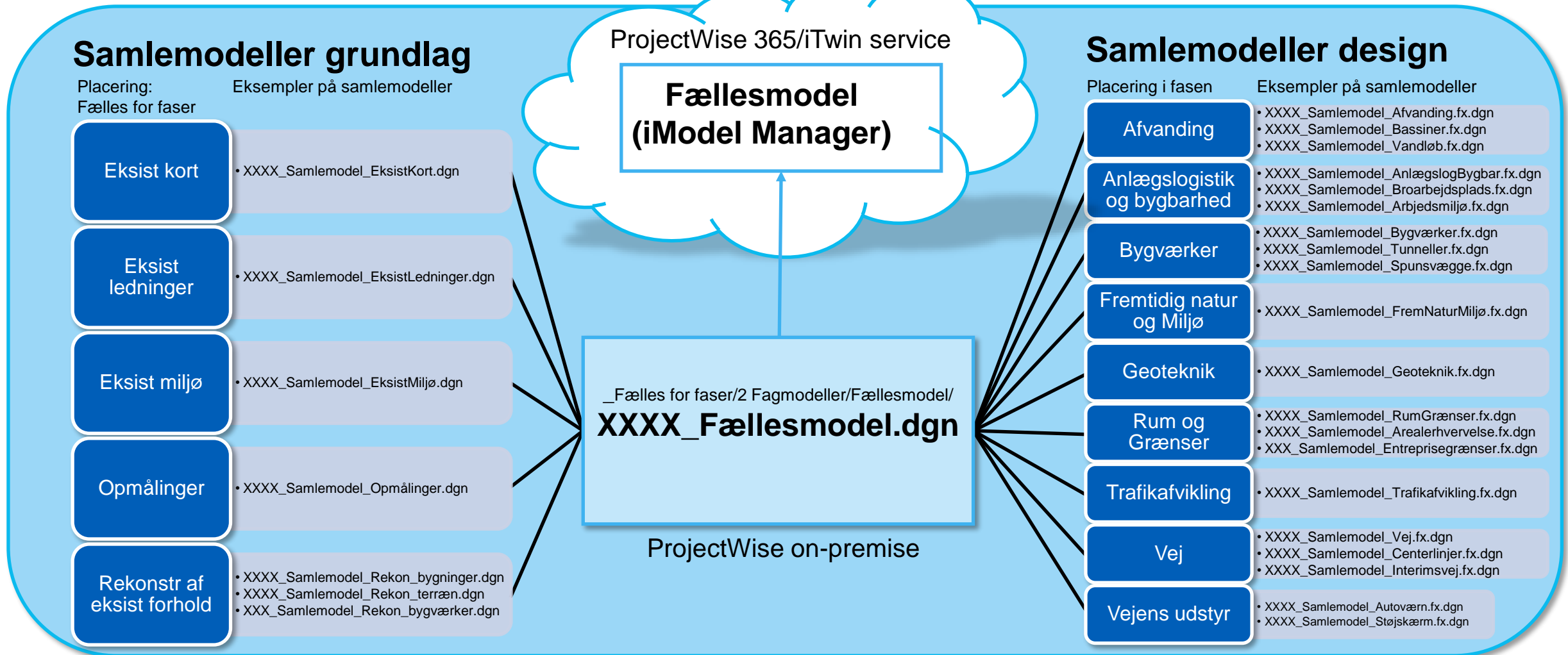
VIS POWERSHELL ?

- PWPS
- PWPS_DAB – ofte nye moduler
- Execution policy ?

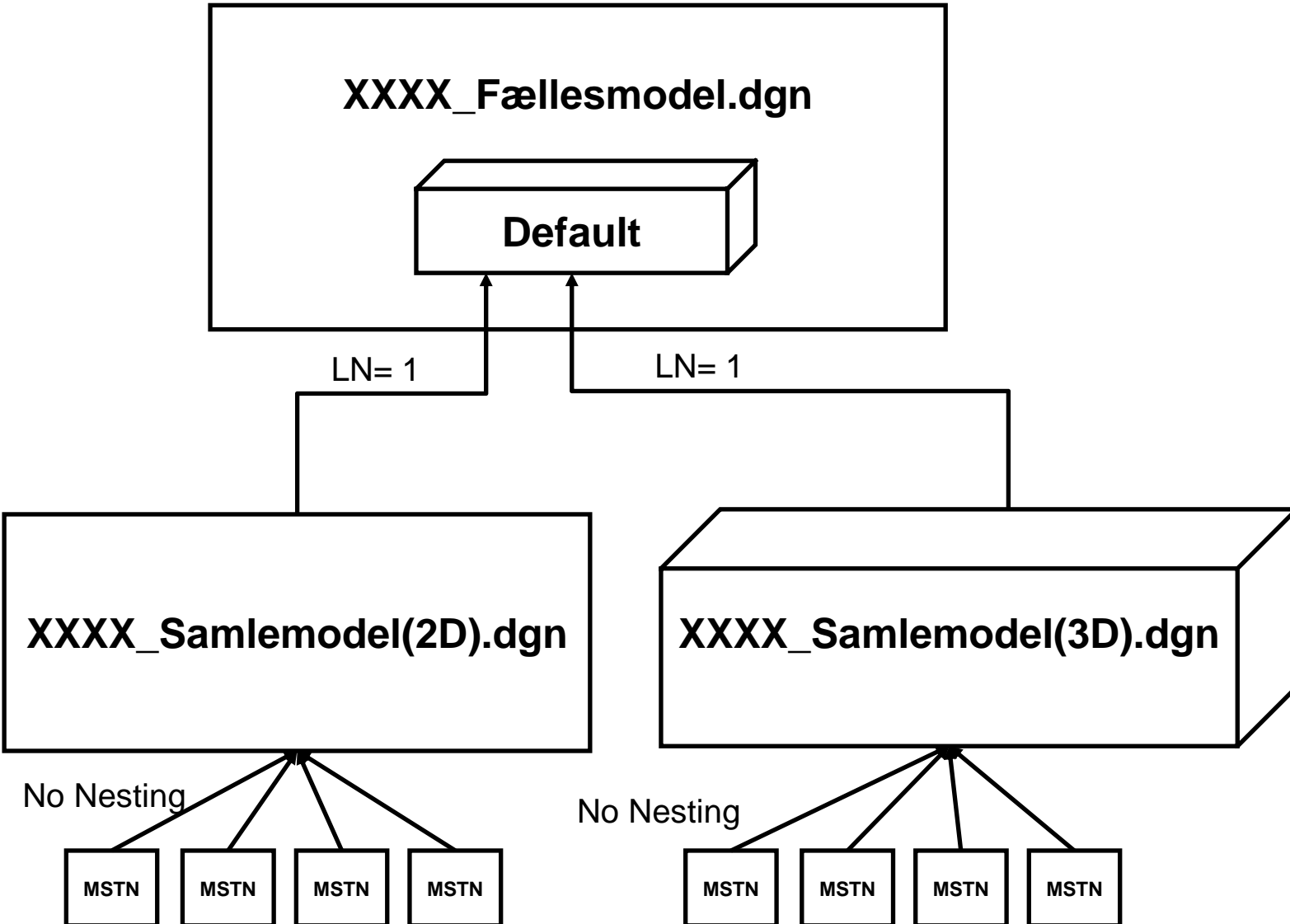
Arkitektur



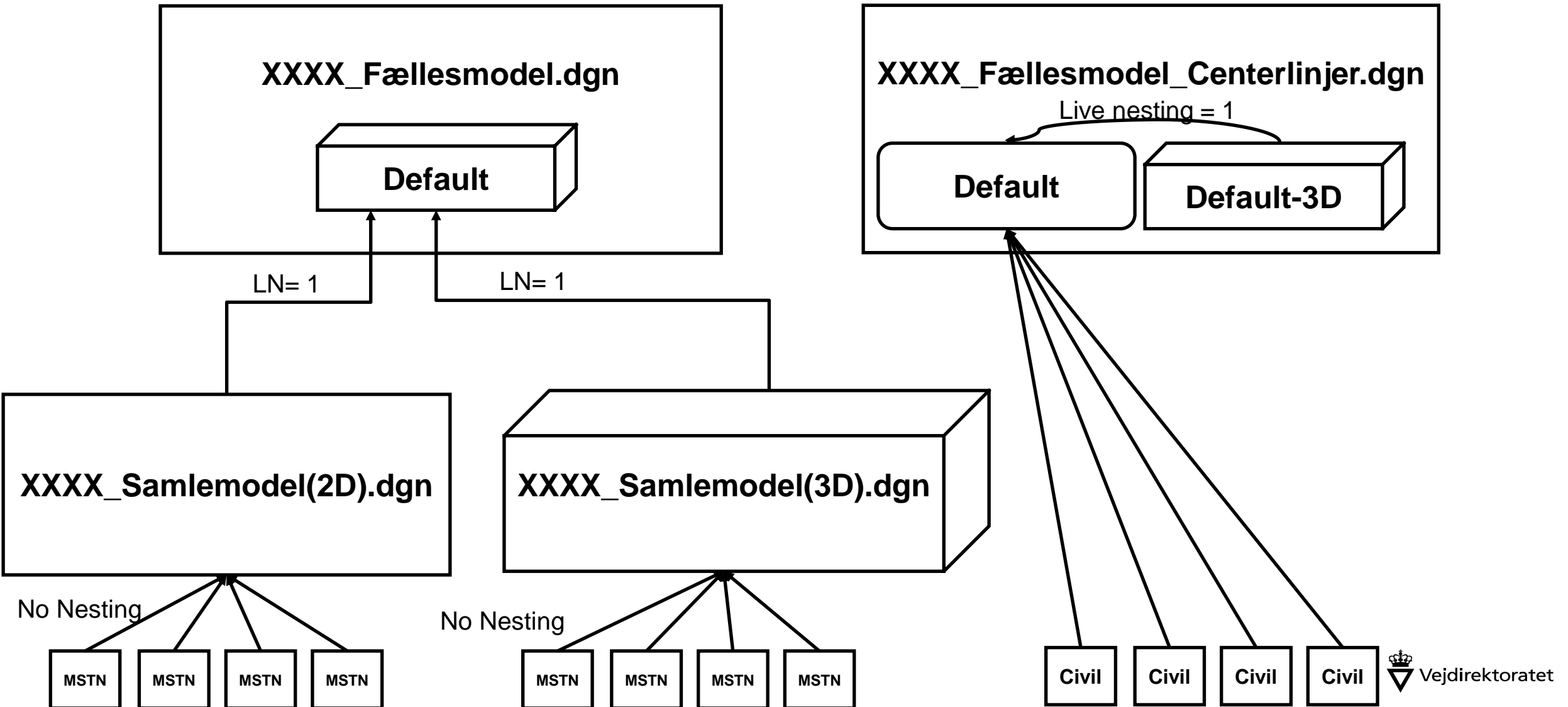
iModel – reference struktur



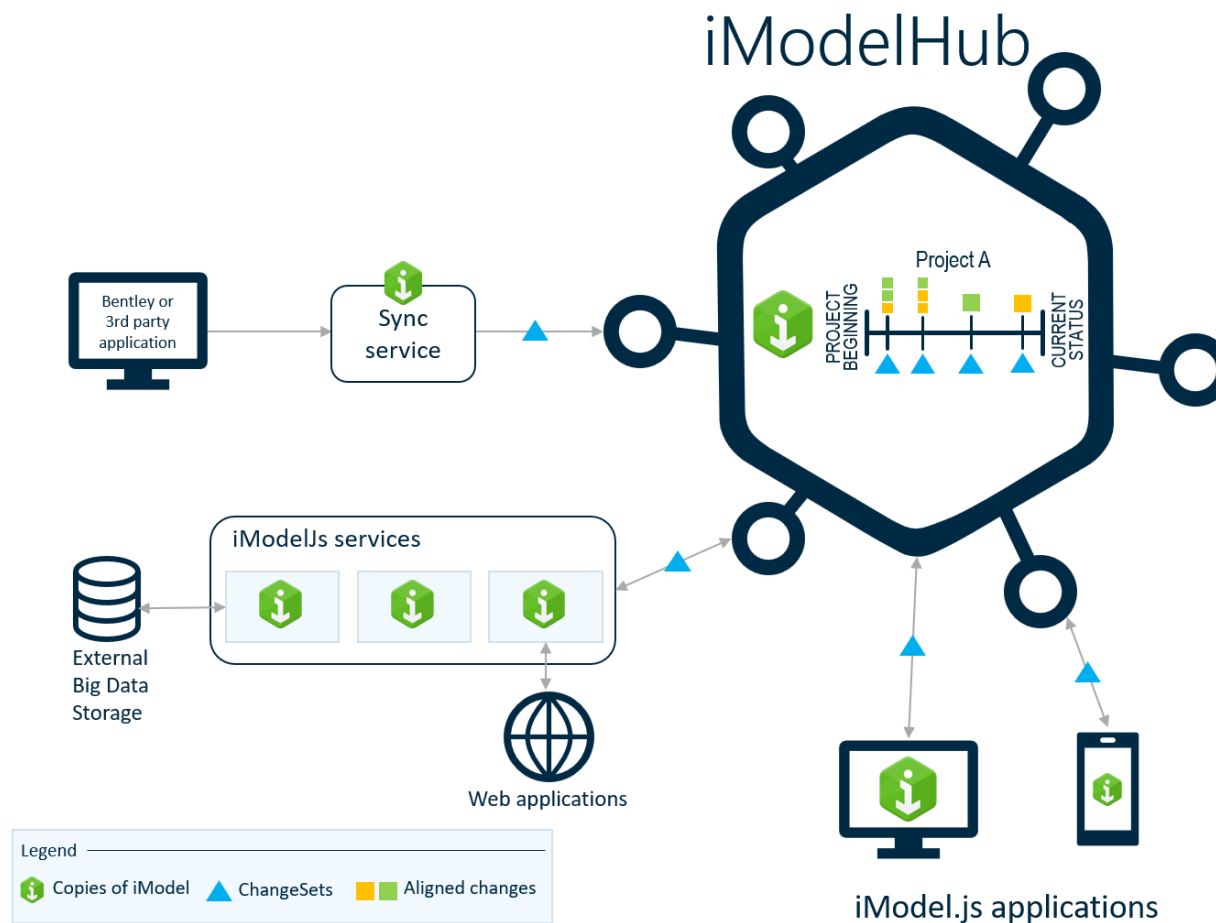
iModel – reference struktur



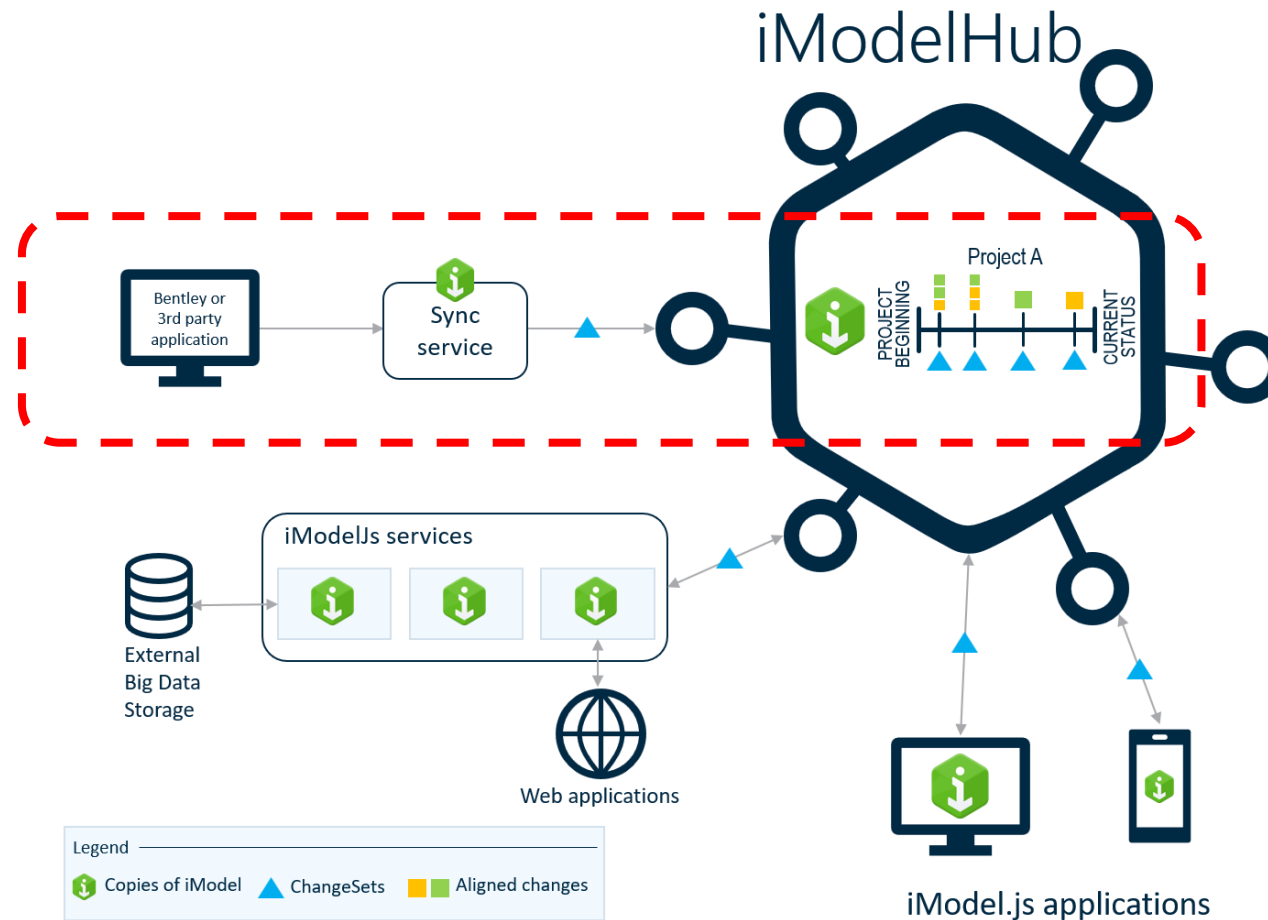
iModel – reference struktur (med Civil)



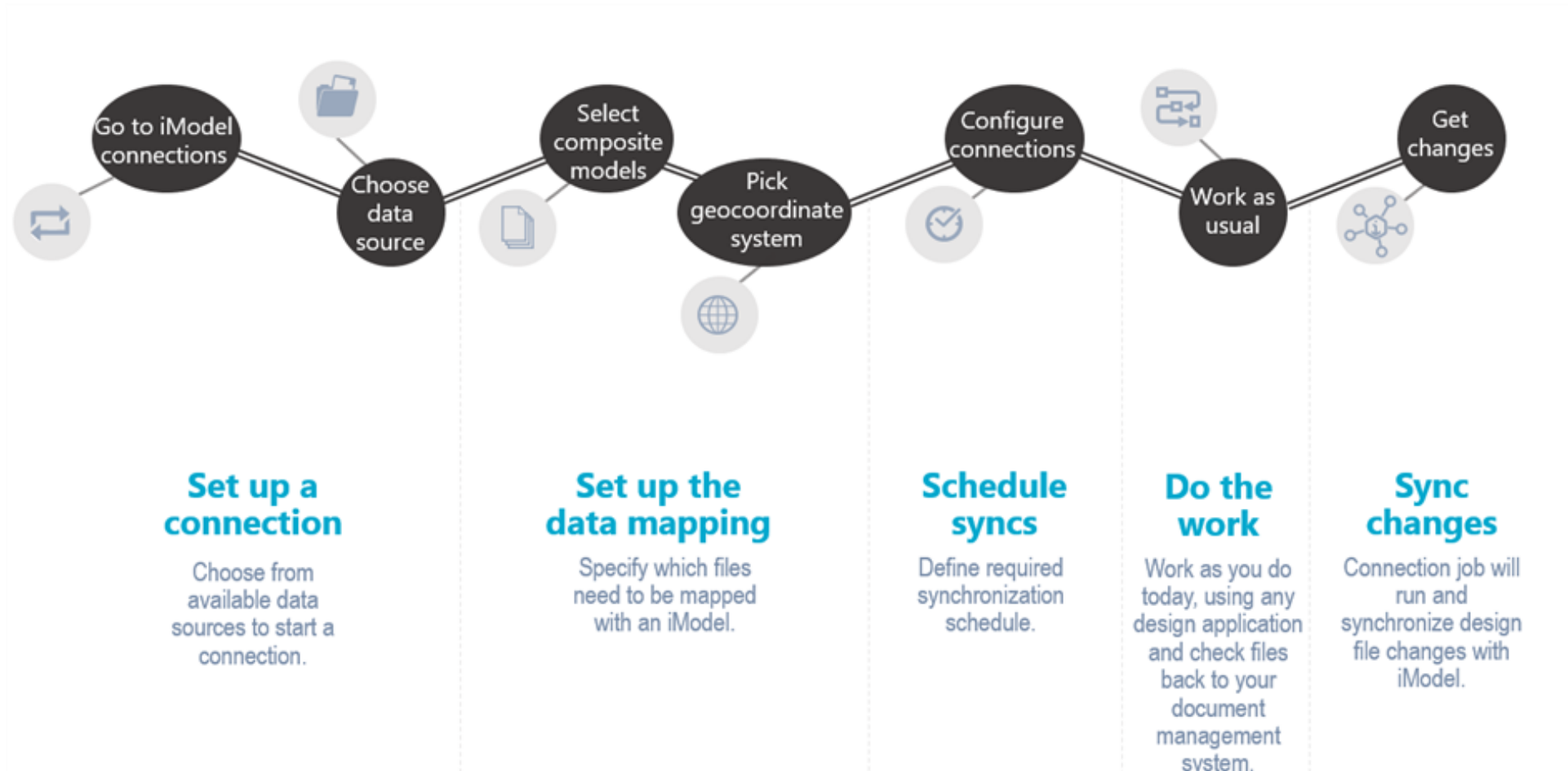
iModel



iModel



Opret iModel - Manuelt



PowerShell i VD

Opret iModel - Script

- Param / Valider input
- Begin
 - VD Moduler
 - PW PowerShell Brugere
 - Log-in i ProjectWise Explorer
 - Oprette JSON objekt til at gemme oplysninger om iModel
 - Find input dokumenter til connection
- Process
 - Opret iModel + Connections
 - Styring af versionering
 - Gem JSON objekt som fil på server
- End
 - Synkroniserer og opret NamedVersion

Param / Valider input

```

1 Param
2 (
3     # Param1 Projectwise Projekt nummer
4     [Parameter(Mandatory=$true,
5                 ValueFromPipelineByPropertyName=$true,
6                 Position=0)]
7     [ValidatePattern('^[E|e|H|h]\d{4,5}$')]
8     [string]
9     $ProjektNr,
10
11    # Param2 angiv dag i formatet MM-DD-YYYY-HH for første automatiske generering
12    [Parameter(Mandatory=$true,
13               ValueFromPipeline=$true,
14               Position=1)]
15    [ValidateScript({
16        $today = Get-Date
17        if ($_.CompareTo($today) -eq 1){ return $_ }; throw 'Den angivende dato skal ligge efter dagsdato !'})]
18    [DateTime]
19    $OpdateringsDag,
20
21    # Param3 dage i mellem generering af ny Named Version
22    [Parameter(Mandatory=$true,
23               ValueFromPipeline=$true,
24               Position=2)]
25    [ValidateSet("1", "2", "3", "4", "5", "6", "7", "14", "21", "28")]
26    [string]
27    $OpdateringsInterval,
28
29    # Param4 email på bruger der opretter iModel
30    [Parameter(Mandatory=$true,
31               ValueFromPipeline=$true,
32               Position=3)]
33    [string]
34    $OprettetAf,
35
36    # Param5 Centerlinje fællesmodel
37    [Parameter(Mandatory=$true,
38               ValueFromPipeline=$true,
39               Position=4)]
40    [ValidateSet("Ja", "Nej")]
41    $FællesmodelCenterlinjer
42
43 )

```

Parametre til modul	
ProjektNR	0320 E47 JÆGERSBORG - AVEDØRE
OpdateringsDag	
OpdateringsInterval	
OprettetAf	THBN@vd.dk
FællesmodelCenterlinjer	Opret Connection til Fællesmodel_Centerlinjer

PowerShell i VD

Param / Valider input

```

#region kontroller input + projekt
#Kontroller om projektet er større eller mindre anlæg - Default bør ikke være mulig (validatePattern), men beholdes - skal skrive evt. fejl til log fil.
$ProjektType = switch ($ProjektNr.Substring(0,1))
{
    "E" {"Storre_Anlg"; Break}
    "e" {"Storre_Anlg"; Break}
    "H" {"Mindre_Anlg"; Break }
    "h" {"Mindre_Anlg"; Break }
    Default {"No matches"}
}

#Kontroller, at projekt eksisterer og er oprettet efter gældende Projekt Template Hver OBS på Større vs. Mindre Anlæg
try
{
    $Projekt = Get-PWRichProjects -ProjectTypeName $ProjektType -ProjectProperties @{PROJECT_ProjektNr = $ProjektNr} -PopulateProjectProperties -JustOne -WarningAction Stop
}
catch {
    Write-VDPWlog -Message "Projektet kunne ikke findes" -Level "Error"
    Undo-PWLogin
    exit 12
}

#Kontroller, at projekt er oprettet efter gældende Projekt Template Hver OBS på Større vs. Mindre Anlæg - OBS benyt evt. ny Project Properties ?
if (-Not($Projekt.ProjectProperties.PROJECT_Journalplan -eq "ProjectWise journalplan"))
{
    Write-VDPWlog -Message "Projektet eksisterer ikke, eller er ikke oprettet efter gældende Projekt Template !" -Level "Error"
    Undo-PWLogin
    exit 13
}

#endregion

```

PowerShell i VD

VD Moduler

- VD's egne moduler
- Bruges på tværs af scripts
 - New-VDPWLogin.psm1
 - New-VDToken.psm1
 - Write-VDPWlog.psm1
- Importeres i scriptet med: `Import-Module`
- Kan herefter benyttes som:

```
$token = New-VDToken
```

Returnerer objekt med token for både IMS og IMSoicd (afhængig af hvilket api man skal tilgås)

```
$token.IMS
```

```
$token.IMSoicd
```

PowerShell i VD

PW Powershell Brugger

- PW Powershell Brugger – service account


Token expiration

All scheduled synchronizations are running on behalf of the connection owner. Such a user access token is valid for 30 days. In the last remaining 10 days, the token is automatically refreshed when the owner visits iTwin Synchronization Portal.

Suppose you will not visit the iTwin Synchronization Portal. In that case, all your owned scheduled connections will start failing due to user authentication issues.

Email notifications:

- The owner will receive an email notification when the token expired.

 Improvement coming up: email notification before the token expires.

iModel Objekt

```

1  $iModel = [PSCustomObject]@{
2      Name = ($ProjektNr.Substring(1) + "_Fællesmodel")
3      ProjectNumber = $ProjektNr
4      ID = ""
5      Type = "A"
6      ConnectedProjectID = ""
7      NamedVersionID = ""
8      Version = ""
9      ScheduleInterval = $OpdateringsInterval
10     CreatedBy = $OprettetAf
11
12     Date = @{
13         Creation = get-date
14         FirstRun = ""
15         LastRun = ""
16         NextRun = get-date($OpdateringsDag.AddMinutes(- $OpdateringsDag.Minute % 60).AddSeconds(- $OpdateringsDag.Second % 60))
17     }
18
19     URL = @{
20         iTwin = ""
21         iModel = ""
22     }
23
24     Connector = @{
25         MSTN = @{}
26         CIVIL = @{}
27     }
28
29 }

```

Information til iModel objektet tilføjes løbende

```
$iModel.ConnectedProjectID = Get-PWConnectedProjectId $Projekt
```

PowerShell i VD

Input dokumenter

- Finder input dokumenter til iModel Connection

```
#Find input docs til connections - findes før oprettelse af iModel, så der kan afbrydes inden iModel oprettes.
try {
    $InputDocMSTN = Get-PWDocumentsBySearch -FolderPath $SerarchFolder -FileName $SearchNameMSTN -Slow -WarningAction Stop

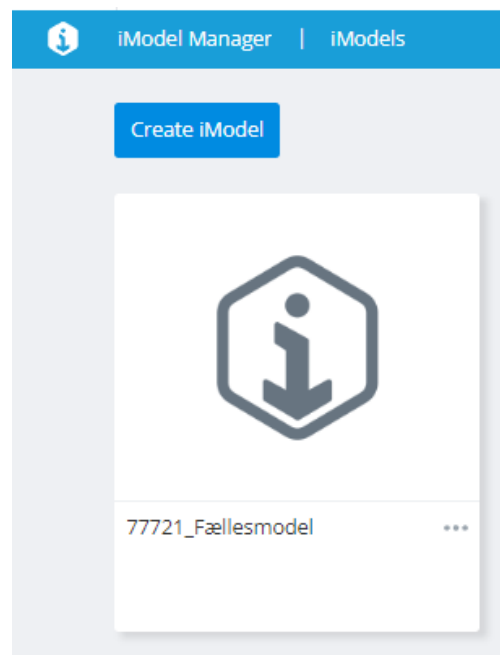
    if ($FællesmodelCenterlinjer -eq "Ja")
    {
        $InputDocCIVIL = Get-PWDocumentsBySearch -FolderPath $SerarchFolder -FileName $SearchNameCIVIL -Slow -WarningAction Stop
    }
}
catch {
    Write-VDPWlog -Message "Fejl i forbindelse med søgning efter Input modeller - kontroller navngivning af Fællesmodeller." -Level "Error"
    Undo-PWLogin
    exit 16
}
```

PowerShell i VD

Opret iModel

```
$iModel.ID = Add-ImodelToProject -ImodelName $iModel.Name -ConnectedProjectId $iModel.ConnectedProjectID -OIDCToken $token.IMS
```

[Bentley Cloud Services](#)



PowerShell i VD

Opret Connections

```

#Tilføjer MSTN Connection
try {
    $TempConnectorMSTN = Add-ImodelConnection -ImodelId $iModel.ID -InputDocuments $InputDocMSTN -WSGURL $wsgURL -BridgeType "MSTN" -ConnectionName $SearchNameMSTNNoExtension -SpatialRoot -OIDCToken $token.IMSoicd -warningAction Stop
}
catch {
    write-VDPWlog -Message "Fejl i forbindelse med oprettelse af iModel Connection (MSTN) - kontakt pw@vd.dk." -Level "Error"
    Undo-PWLogin
    exit 18
}

#Tilføjer CIVIL Connection
if ($FællesmodelCenterlinjer -eq "Ja")
{
    try {
        $TempConnectorCIVIL = Add-ImodelConnection -ImodelId $iModel.ID -InputDocuments $InputDocCIVIL -WSGURL $wsgURL -BridgeType "CIVIL" -ConnectionName $SearchNameCIVILNoExtension -OIDCToken $token.IMSoicd -warningAction Stop
    }
    catch {
        write-VDPWlog -Message "Fejl i forbindelse med oprettelse af iModel Connection (CIVIL) - kontakt pw@vd.dk." -Level "Error"
        Undo-PWLogin
        exit 19
    }
}

## Opdater iModel object (JSON)
$IModelConnections = Get-ImodelConnections -ImodelId $iModel.ID -OIDCToken $token.IMSoicd

foreach ($connection in $IModelConnections)
{
    $ConnectionType = switch -wildcard ($connection.Connection.Name)
    {
        "*Centerlinjer*" {"CIVIL"; Break}
        Default {"MSTN"}
    }
    # Add iModel Connection to iModel Object
    $iModel.Connector.$ConnectionType["iModelConnection"] = $connection.Connection

    # Add iModel InputFile to iModel Object
    $InputFile = Get-ImodelConnectionInputFiles -ConnectionId $iModel.Connector.$ConnectionType.iModelConnection.id -ImodelId $iModel.Connector.$ConnectionType.iModelConnection.iModelId -OIDCToken $token.IMSoicd
    $iModel.Connector.$ConnectionType["InputFile"] = $InputFile.InputFile

    # Add iModel RunID + Status (klargøring)
    $iModel.Connector.$ConnectionType["sync"] = @{
        ID = ""
        Status = ""
        Result = ""
    }
}

```

Gem JSON og start ny session

```
#Konverter til JSON
$iModelJSON = convertTo-Json -InputObject $iModel -Depth 5

#Gemmes som JSON fil på serveren
New-Item -ItemType File -Path $JSONpath -value $iModelJSON -Force -ErrorAction Stop

#Starter ny session
$Session = New-PSSession -Credential $credential
$Parameters = @{
    Session = $Session
    FilePath = $ScriptPath
    ArgumentList = $JSONpath, $iModelRunType
    AsJob = $true
}
Out-File -FilePath $iModelLog -InputObject $Parameters -Append

Invoke-Command @Parameters
```

Start synkronisering

```
$iModel = Get-Content -Path $iModelPath -Encoding UTF8 | ConvertFrom-Json -warningAction stop

$iModel.Connector.psobject.Properties | foreach-object {

    #Tjek om iModelConnection eksisterer (ikke alle har alle connections)
    if ($iModel.Connector.($_.Name).iModelConnection)
    {

        try {
            #Starter synkronisering
            $iModelConnectionProcessing = @{
                ConnectionId = $iModel.Connector.($_.Name).iModelConnection.id
                iModelId = $iModel.ID
                OIDCToken = $token.IMSoicd
            }

            $iModel.Connector.($_.Name).Sync.ID = Start-ImodelConnectionProcessing @iModelConnectionProcessing -verbose -warningAction stop
        }
        catch {
            Out-File -FilePath $iModelLog -InputObject ("$(get-date) : Fejl i forbindelse med start af iModel synkronisering $iModel.Connector.($_.Name) - kontakt pw@vd.dk") -Append
            exit
        }
    }
}
```

Check synkronisering

```

#loop indtil sync complete or fails
Out-File -FilePath $iModelLog -InputObject ("$(get-date) : Start på while loop - check for synkroniserings resultat") -Append
$RunStatus = $false
while ($RunStatus -eq $false) {

    $RunningCount = 0
    Out-File -FilePath $iModelLog -InputObject "$(get-date) : while loop - kører 300 sekunder." -Append
    Start-Sleep -Seconds 300
    IF ($token.IMSoicd.TTL() -lt 420) { $token.IMSoicd.Refresh() }

    $iModel.Connector.pobject.Properties | foreach-object {
        $iModelConnectionRunStatus = @{
            RunId = $iModel.Connector.($_.Name).Sync.ID
            ConnectionId = $iModel.Connector.($_.Name).iModelConnection.id
            iModelId = $iModel.ID
            OIDCToken = $token.IMSoicd
        }

        $IsRunFinished = Get-ImodelConnectionRunStatus @iModelConnectionRunStatus

        #Tjekker om alle connections er færdig synkroniseret
        if ($IsRunFinished -eq $false)
        {
            $RunningCount += 1
        } else {
            #Skaffer run-status + result fra VERBOSE Tee-object
            Get-ImodelConnectionRunStatus @iModelConnectionRunStatus -verbose 4>&1 | Tee-Object -variable StateResult
            foreach ($item in $StateResult)
            {
                if ($item.GetType().Name.toString() -eq "VerboseRecord" -and $item.message.toString().contains("state"))
                {
                    $temp = $item.message.toString() -split ', ' -replace ('"',"'") -replace ("state = ','") -replace ("Result = ','")
                    $iModel.Connector.($_.Name).Sync.Status = $temp[0]
                    $iModel.Connector.($_.Name).Sync.Result = $temp[1]
                }
            }
        }
    }
}
if ($RunningCount -eq 0) {$RunStatus = $true}
}

```

PowerShell i VD

Opret ny NamedVersion

```
#Ingen exit ved fejl, da JSON fil fra nu af skal opdateres.
$imodelUpdate = $true
Out-File -FilePath $imodelLog -InputObject ("$(get-date) : Ny Named version oprettes") -Append
#Tilføj Named Version
try {
    #sleep for 60 second to ensure "iModelHub - Finalization changes"
    Start-Sleep -Seconds 60
    $imodel.NamedVersionID = Add-ImodelNamedVersion $imodel.ID -NamedVersion ("Version " + $imodel.Version) -OIDToken $token.IMS -warningAction Stop -Verbose
}
catch {
    Out-File -FilePath $imodelLog -InputObject ("$(get-date) : Error i NamedVersionID - kan skyldes at inputfilerne ikke er ændret siden sidste synkronisering") -Append

    if ($imodel.Version -gt 1)
    {
        $imodel.Version--
    }
}

#Tilføj URL + LastRun + NextRun + Status
try {
    $imodel.URL.itwin = "https://itwin.bentley.com/review/" + $imodel.ConnectedProjectID.Guid + "/" + $imodel.ID + "/" + $imodel.NamedVersionID
    $imodel.URL.imodel = "https://connect-imodelweb.bentley.com/imodeljs/?projectId=" + $imodel.ConnectedProjectID.Guid + "&iModelId=" + $imodel.ID + "&ChangeSetId=" + $imodel.NamedVersionID
    $imodel.Date.LastRun = get-date
}
catch {
    Out-File -FilePath $imodelLog -InputObject ("$(get-date) : Error i enten: itwinURL / imodelURL / LastRun") -Append
}
```

[\(+\)](#) [Bug in Add-ImodelNamedVersion - ProjectWise PowerShell Extensions Forum - ProjectWise - Bentley Communities](#)

PowerShell i VD

Oversigt

- Opret ny iModel (Connections, Opdaterings frekvens)
- Opret ny NamedVersion (ad-hoc)
- Opret ny NamedVersion iht. Opdaterings frekvens (scheduled task)
- Opdater iModel indstillinger (Opdaterings frekvens, connections etc.)

PowerShell i VD

Oversigt over iModels i VD

Show entries Search:

	iModel	ProjectNumber	LastRun	NextRunScheduled	Interval	Version	URL	Oprettet af
+	5050_Fællesmodel	E5050	28. oktober 2022 15:32:33	30. oktober 2022 23:00:00	7	1	iTwin / iModel	THBN@vd.dk
+	6070_Fællesmodel	E6070	4. oktober 2022 01:43:24	18. oktober 2022 01:00:00	7	8	iTwin / iModel	RCN@vd.dk
+	6090_Fællesmodel	E6090	17. oktober 2022 14:58:29	21. oktober 2022 23:00:00	7	1	iTwin / iModel	THBN@vd.dk
+	77720_Fællesmodel	E77720	16. oktober 2022 14:38:05	17. oktober 2022 08:00:00	1	1	iTwin / iModel	THBN@vd.dk
-	77721_Fællesmodel	E77721	16. oktober 2022 13:32:51	17. oktober 2022 06:00:00	1	3	iTwin / iModel	THBN@vd.dk

Connection Name	Status	Result	BridgeType	SpatialRoot
77721_Fællesmodel_01	Completed	Success	MSTN	true
77721_Fællesmodel_Centerlinjer_01	Completed	Success	CIVIL	false

+	92900_Fællesmodel	E92900		26. oktober 2022 22:00:00	7		iTwin / iModel	LATK@vd.dk
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	iModel	ProjectNumber	LastRun	NextRunScheduled	Interval	Version	URL	Oprettet af
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Showing 1 to 6 of 6 entries Previous Next

[iModel Oversigt](#)