

# DAXIF# - Delegate Automated Xrm Installation Framework

Delegate A/S

d e l e g a t e

Shared Success

- Delegate A/S
- DAXIF#
  - Only one programming language
  - Type strong script (and self-documenting) files
  - Unit tests are executed before assembly (.dll) being built
  - Live demo:
    - One-click-installation
    - One-click-deployment
    - TFS commit → DEV → DEV-BUILD → TEST → PROD
    - Web resource synchronization
    - Data Management (Import/Export with Parallelism)
    - Data migration: 1:1 between source and target Created by/on Modified by/on (only for On-premise)
- Summary

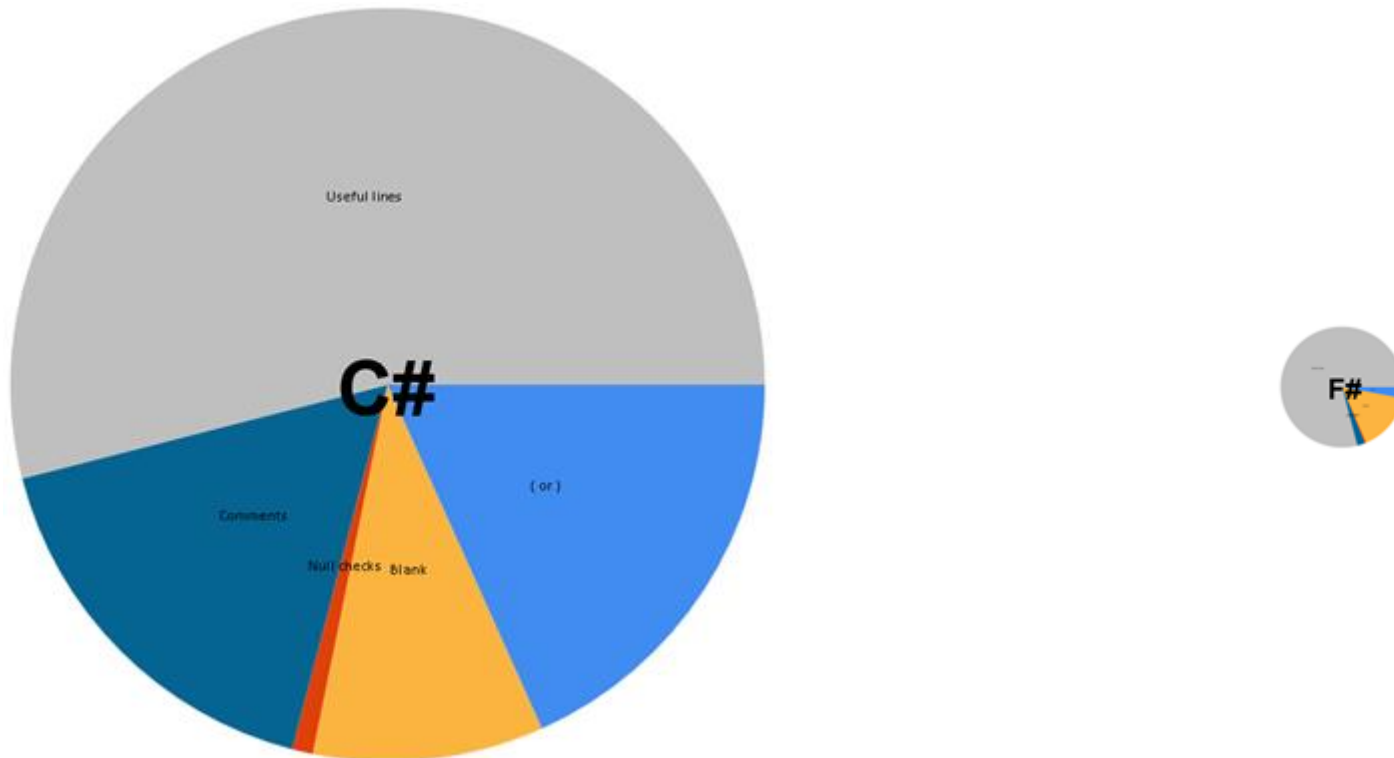


Shared Success

- Consulting firm known for their mission-critical SharePoint solutions since 2006
- CEO Peter Østergaard, former **Associate Partner** at Netcompany and **Microsoft CRM Sales Lead**
- CRM department was established the 1 February 2013, the day I started at Delegate A/S
- At the head is Kaspar Bøgh Christensen, former **Dynamics CRM Director** at Avanade
- And this summer Michael Weis arrived, a former **Microsoft Solution Sales Lead, Dynamics CRM**
- The company's motto: "**We must be the best, not the biggest.**"



- *A set of tools that in combination with other MS tools make it easier to work with CRM/xRM on a daily basis?  
(Also for developers who are not familiar with the platform)*



- DAXIF# started out as DAXIF (C#, .BAT files, almost no time for unit testing, ..., you know the drill). Now all modules are less than 100 lines of code making it easy to read it again and again and again ...
- Why F#? Less code base, error-free projects, only one language, large data (big data), parallelism, concurrency (concurrency), asynchronous processor ...

# DAXIF# - Type strong script (and self-documenting) files



Delegate.DAXIFsharp.Sar

DAXIF# v.1.0.0.2 - Delegate Automated Xrm Installation Framework (2013-12-01T10:04:17.5752282+01:00)

### Delegate.DAXIFsharp.Sample1.fsx

In order to execute this F# script F# 3.0 tools (VWD\_FSharp.exe) must be installed. The tools can be downloaded from:

- [F# Tools for Visual Studio Express 2012 for Web](#)

After installation run the following from a `cmd.exe` (run as Administrator):

```
reg add "HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment" ^
/v Path /t REG_SZ /d "%PATH%;C:\Program Files (x86)\Microsoft SDKs\F#\3.0\Framework\v4.0"
```

and then log off/login and the Register Database will be updated (no need for restart)

### Libraries

Load DAXIF#

```
1: #r @"..\Delegate.DAXIFsharp.dll"
```

Load Microsoft xRM SDK for the AuthenticationProviderType

```
1: #r @"..\microsoft.xrm.sdk.dll"
```

Open libraries for use

```
1: open System
2: open System.IO
3: open Microsoft.Xrm.Sdk.Client
4: open DG.DAXIFsharp
5: open DG.DAXIFsharp.Modules
```

### Helper functions

```
1: /// Args function that parses command line arguments
2: let getArg argv key =
3:   let arg = Array.tryFind(fun (a:string) -> a.StartsWith(key)) argv
4:   match arg with
5:   | Some x -> x.Replace(key, String.Empty)
6:   | None -> failwith ("Missing argument: " + key)
7:
8: /// Folder function that ensures that a folder is created if it doesn't exist
9: let ensureFolder path =
10:  match Directory.Exists(path) with
11:  | false -> Directory.CreateDirectory(path) |> ignore
12:  | true -> ()
```

Delegate.DAXIFsharp.Sar

### Configuration settings

Log level

```
1: let log = LogLevel.Verbos
```

Serialize Type

```
1: let xml = SerializeType.XML
```

DEV auth information

```
1: let usrDev = @"USERNAME"
2: let pwdDev = @"PASSWORD"
3: let domainDev = @"DOMAIN"
```

TEST auth information

```
1: let usrTest = @"USERNAME"
2: let pwdTest = @"PASSWORD"
3: let domainTest = @"DOMAIN"
```

Shared environment information

```
1: let rootFolder = __SOURCE_DIRECTORY__
2: let authType = AuthenticationProviderType.ActiveDirectory
3: let protocol = @"http://"
4: let port = @"80/"
5: let wsdl = @"/XRMServices/2011/Organization.svc"
6: let solution = "XrmVSSolution"
7: let unmanaged = rootFolder + @"\unmanaged\"
8: let managed = rootFolder + @"\managed\"
9: let translations = rootFolder + @"\translations\"
10: let data = rootFolder + @"\data\"
11: let webresources = rootFolder + @"\wr\"
```

DEV environment information

```
1: let hostDev = @"dg-crmdev-1.delegate.local"
2: let urlDev = protocol + hostDev + port
3: let orgDev = "XrmFramework"
4: let wsdlDev = Uri(urlDev + orgDev + wsdl)
```

# DAXIF# - Type strong script (and self-documenting) files



```
Delegate.DAXIFsharp - Microsoft Visual Studio
file:///C:/_tfs/_delegate/DAXIF/_branches/1311-EARTHSHAKER/_docs/output/Delegate.DAXIFsharp.Sa
Apps DELEGATE MAILTALK CODE TFS LICENSES CRM SP APPS TRAINING INTEGRATIONS

DAXIF# operations

Sync webresources
1: ensureFolder webresources
2:
3: WebResourcesModule.syncSolutionWebResources
4: wsd1Dev solution webresources authType usrDev pwdDev domainDev log

Export data from account, contacts and cases
1: ensureFolder data
2:
3: DataModule.dataExport
4: wsd1Dev data [|"@account"; @"contact"; @"incident"; @"lead"; @"opportunity"; |]
   authType usrDev pwdDev domainDev log xml

Import data from account, contacts and cases
1: DataModule.dataImport
2: wsd1Test data authType usrDev pwdDev domainDev log xml

Export managed solution from DEV
1: ensureFolder managed
2:
3: SolutionModule.retrieveSolution
4: wsd1Dev solution managed true authType usrDev pwdDev domainDev log

Import managed solution to TEST
1: let zip1 = managed + solution + @"_zip"
2:
3: SolutionModule.fetchSolution
4: wsd1Test solution zip1 true authType usrDev pwdDev domainDev log

Export solution translations from DEV
1: ensureFolder translations
2:
3: TranslationsModule.retrieveTranslations
4: wsd1Dev solution translations authType usrDev pwdDev domainDev log

Import solution translations back to DEV
1: let zip2 = translations + solution + @"_Translations.zip"
2:
```

```
Delegate.DAXIFsharp - Microsoft Visual Studio
FILE EDIT VIEW PROJECT BUILD DEBUG TEAM SQL TOOLS TEST ANALYZE WINDOW
Start - Debug
Delegate.DAXI...p.Sample1.fsx
(Parsing project files)
64
65 (** DEV auth information *)
66 #load @".\AuthInfo.fsx"
67
68 let usrDev = AuthInfo.usr
69 let pwdDev = AuthInfo.pwd
70 let domainDev = AuthInfo.domain
71
72 (** TEST auth information *)
73 let usrTest = @"USERNAME"
74 let pwdTest = @"PASSWORD"
75 let domainTest = @"DOMAIN"
76
77 (** Shared environment information *)
78 let rootFolder = __SOURCE_DIRECTORY__
79 let authType = AuthenticationProviderType.ActiveDirectory
80 let protocol = @"http://"
81 let port = @":80/"
82 let wsdl = @"/XRMServices/2011/Organization.svc"
83 let solution = "XrmVSSolution"
84 let unmanaged = rootFolder + @"\unmanaged\"
85 let managed = rootFolder + @"\managed\"
86 let translations = rootFolder + @"\translations\"
87 let data = rootFolder + @"\data\"
88 let webresources = rootFolder + @"\wr\"
89
90 (** DEV environment information *)
91 let hostDev = @"dg-crmdev-1.delegate.local"
92 let urlDev = protocol + hostDev + port
93 let orgDev = "XrmFramework"
94 let wsdlDev = Uri(urlDev + orgDev + wsdl)
95
96 (** TEST environment information *)
97 let hostTest = @"dg-crmdev-1.delegate.local"
98 let urlTest = protocol + hostTest + port
99 let orgTest = "XrmTEST"
100 let wsdlTest = Uri(urlTest + orgTest + wsdl)
101
```

# DAXIF# - Unit tests are executed before assembly (.dll) being built



The screenshot shows a web browser window with the URL `file:///C:/tfs_delegate/DAXIF/_branches/1311-EARTHSHAKER/_docs/output/DataModuleUnitTests.html`. The page title is "DataModuleUnitTests.fsx" and the content is for "DAXIF# v.1.0.0.2 - Delegate Automated Xrm Installation Framework (2013-11-12T18:46:50.1652286+01:00)".

**DataModuleUnitTests.fsx**

In order to execute this F# script F# 3.0 tools (VWD\_FSharp.exe) must be installed. The tools can be downloaded from:

- [F# Tools for Visual Studio Express 2012 for Web](#)

After installation run the following from a `cmd.exe` (run as Administrator):

```
reg add "HKLM\SYSTEM\CurrentControlSet\Control\Session Manager\Environment" ^  
/v Path /t REG_SZ /d "%PATH%;C:\Program Files (x86)\Microsoft SDKs\F#\3.0\Framework\v4.0"
```

and then log off/login and the Register Database will be updated (no need for restart)

**Libraries**

Load system libraries

```
1: #r @"System.Runtime.Serialization"  
2: #r @"System.ServiceModel"
```

Load required assemblies

```
1: #r @"..\..\packages\Microsoft.Crm.Sdk.Proxy.5.0.14\lib\net40\microsoft.crm.sdk.proxy.dll"  
2: #r @"..\..\packages\Microsoft.Xrm.Sdk.5.0.14\lib\net40\microsoft.xrm.sdk.dll"  
3: #r @"..\..\..\lib\Microsoft.Crm.Services.Utility.dll"
```

Load non-compiled source files

```
1: #load @"..\HelperModules\Common\AuthenticationModule.fs"  
2: #load @"..\HelperModules\Common\ServiceManagerModule.fs"  
3: #load @"..\HelperModules\Common\ServiceProxyModule.fs"  
4: #load @"..\HelperModules\Common\CrmDataModule.fs"
```

The screenshot shows the F# Interactive console in Visual Studio. The code being executed is:

```
val domain : string = "DELEGATE"  
val ap : AuthenticationProviderType = ActiveDirectory  
val ac : AuthenticationCredentials  
val wsdl : Uri =  
    http://dg-crmdev-1.delegate.local/XrmFramework/XRMServices/2011...  
val m : IServiceManagement<IOrganizationService>  
val p : OrganizationServiceProxy  
val tc1 : unit -> bool  
val tc2 : unit -> bool  
val tc3 : unit -> bool  
val tc4 : unit -> bool  
val tc5 : unit -> bool  
val tc6 : unit -> bool  
val unitTest : bool list = [true; true; true; true; true; true]  
val result : bool = true
```

The output shows the result of the unit tests: `val result : bool = true`.

- Unit testing carried out before building the final assembly file. F# interactive used for add-hoc real-time tests

**Remark:** F# interactive can interact with C# assemblies



C:\WINDOWS\system32\cmd.exe

```
C:\_tfs_delegate\DAXIF_branches\DAXIFsharp_src\Delegate.DAXIFsharp\bin\Debug>fsianycpu Delegate.DAXIFsharp.Sample1.fsx
2013-10-31T21:37:34.8778624+01:00 - Info: Retrieve Solution: XrmVSSolution
2013-10-31T21:37:40.7700813+01:00 - Info: The Solution was retrieved succesfully
2013-10-31T21:37:40.7730816+01:00 - Info: Fetch Solution: XrmVSSolution
2013-10-31T21:37:46.8473812+01:00 - Info: The Solution was fetched succesfully

C:\_tfs_delegate\DAXIF_branches\DAXIFsharp_src\Delegate.DAXIFsharp\bin\Debug>fsianycpu Delegate.DAXIFsharp.Sample1.fsx
2013-10-31T21:39:04.5538401+01:00 - Info: Retrieve Solution: XrmVSSolution
2013-10-31T21:39:04.5558395+01:00 - Verbose: Organization: http://dg-crmdev-1.delegate.local/XrmFramework/XRMServices/2011/Organization.svc
2013-10-31T21:39:04.5568400+01:00 - Verbose: Solution: XrmVSSolution
2013-10-31T21:39:04.5568400+01:00 - Verbose: Path to folder: C:\_tfs_delegate\DAXIF_branches\DAXIFsharp_src\Delegate.DAXIFsharp\bin\Debug\managed\
2013-10-31T21:39:04.5568400+01:00 - Verbose: Managed solution: True
2013-10-31T21:39:04.5568400+01:00 - Verbose: Authentication Provider: ActiveDirectory
2013-10-31T21:39:04.5578405+01:00 - Verbose: User: crminstall
2013-10-31T21:39:04.5578405+01:00 - Verbose: Password: *****
2013-10-31T21:39:04.5578405+01:00 - Verbose: Domain: DELEGATE
2013-10-31T21:39:04.5628399+01:00 - Verbose: License is valid
2013-10-31T21:39:04.8861609+01:00 - Verbose: Service Manager instantiated
2013-10-31T21:39:04.8871937+01:00 - Verbose: Service Proxy instantiated
2013-10-31T21:39:04.8881854+01:00 - Verbose: Proxy timeout set to 1 hour
2013-10-31T21:39:04.8891852+01:00 - Verbose: Export solution
2013-10-31T21:39:10.2564126+01:00 - Verbose: Solution was exported succesfully
2013-10-31T21:39:10.2594103+01:00 - Verbose: Solution saved to local disk
2013-10-31T21:39:10.2633944+01:00 - Info: The Solution was retrieved succesfully
2013-10-31T21:39:10.2633946+01:00 - Info: Fetch Solution: XrmVSSolution
2013-10-31T21:39:10.2633946+01:00 - Verbose: Organization: http://dg-crmdev-1.delegate.local/XrmTEST/XRMServices/2011/Organization.svc
2013-10-31T21:39:10.2663928+01:00 - Verbose: Solution: XrmVSSolution
2013-10-31T21:39:10.2663928+01:00 - Verbose: Path to file: C:\_tfs_delegate\DAXIF_branches\DAXIFsharp_src\Delegate.DAXIFsharp\bin\Debug\managed\XrmVSSolution.zip
2013-10-31T21:39:10.2663928+01:00 - Verbose: Managed solution: True
2013-10-31T21:39:10.2673929+01:00 - Verbose: Authentication Provider: ActiveDirectory
2013-10-31T21:39:10.2673929+01:00 - Verbose: User: crminstall
2013-10-31T21:39:10.2673929+01:00 - Verbose: Password: *****
2013-10-31T21:39:10.2673929+01:00 - Verbose: Domain: DELEGATE
2013-10-31T21:39:10.2693935+01:00 - Verbose: License is valid
2013-10-31T21:39:10.3433980+01:00 - Verbose: Service Manager instantiated
2013-10-31T21:39:10.3433980+01:00 - Verbose: Service Proxy instantiated
2013-10-31T21:39:10.3444229+01:00 - Verbose: .ZIP loaded succesfully
2013-10-31T21:39:10.3453975+01:00 - Verbose: Proxy timeout set to 1 hour
2013-10-31T21:39:10.3463976+01:00 - Verbose: Import solution
2013-10-31T21:39:15.6090210+01:00 - Verbose: Solution was imported succesfully
2013-10-31T21:39:15.6100211+01:00 - Info: The Solution was fetched succesfully

C:\_tfs_delegate\DAXIF_branches\DAXIFsharp_src\Delegate.DAXIFsharp\bin\Debug>fsianycpu Delegate.DAXIFsharp.Sample1.fsx
2013-10-31T21:39:38.4002648+01:00 - Info: Fetch Solution: XrmVSSolution
2013-10-31T21:39:38.4012824+01:00 - Verbose: Organization: http://dg-crmdev-1.delegate.local/XrmTEST/XRMServices/2011/Organization.svc
2013-10-31T21:39:38.4012824+01:00 - Verbose: Solution: XrmVSSolution
2013-10-31T21:39:38.4022661+01:00 - Verbose: Path to file: C:\_tfs_delegate\DAXIF_branches\DAXIFsharp_src\Delegate.DAXIFsharp\bin\Debug\managed\XrmVSSolution.zip
2013-10-31T21:39:38.4022661+01:00 - Verbose: Managed solution: True
2013-10-31T21:39:38.4022661+01:00 - Verbose: Authentication Provider: ActiveDirectory
2013-10-31T21:39:38.4022661+01:00 - Verbose: User: crminstall
2013-10-31T21:39:38.4032640+01:00 - Verbose: Password: *****
2013-10-31T21:39:38.4032640+01:00 - Verbose: Domain: DELEGATE
2013-10-31T21:39:38.4072838+01:00 - Verbose: License is valid
2013-10-31T21:39:38.6853029+01:00 - Verbose: Service Manager instantiated
2013-10-31T21:39:38.6862855+01:00 - Verbose: Service Proxy instantiated
2013-10-31T21:39:38.6872829+01:00 - Error: Could not find file 'C:\_tfs_delegate\DAXIF_branches\DAXIFsharp_src\Delegate.DAXIFsharp\bin\Debug\managed\XrmVSSolution.zip'.
C:\_tfs_delegate\DAXIF_branches\DAXIFsharp_src\Delegate.DAXIFsharp\bin\Debug>
```

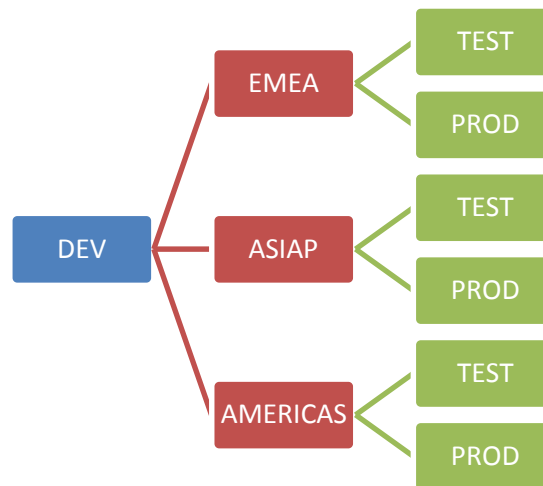
- [mbs.microsoft.com](http://mbs.microsoft.com)
  - Virtual Machines (Hyper-V)
    - CRM2011
    - CRM2011-Exchange (AD)
  - CRM Administrator
    - CONTOSO\administrator
    - pass@word1
  - Adam Barr
    - CONTOSO\adam
    - pass@word1
  - Ken Mallit
    - CONTOSO\ken
    - pass@word1

- One-click-installation

- CRM2011 vs CRM2013 vs CRM Online?
- We can not reuse a CRM solution to all of them but ...
- You can create a solution + populate with content from TFS

**Remark:** Will be expanded in a later release with the creation of CRM tenant for On-Premise

- One-click-deployment
  - How many have tried to manually deploy from DEV → TEST → PROD? *Pain-in-the-ass* ☹️ !!!
  - And have you tried to do it for a global customer? (Growing exponentially)



- TFS commit → DEV → DEV-BUILD → TEST → PROD
  - Solution Packager is not easy to use (some claim that ...)
  - And it gets no easier when it's combined with TFS ...
  - We want to create a user-friendly and easy interface to perform these tasks

- Web resource synchronization
  - MS CRM Developer Toolkit is not quite optimal to use as all files, regardless of type, are stored in a single folder ("root").
  - It will often be various files located in a folder structure. This structure should also be reflected in the CRM solution (HTML + relative paths, etc.)
  - In the end, it will also remove some errors/warnings when using it in combination with MS Solution Packager

- Data Management (Import/Export with Parallelism)
  - Import and export of data should be done as fast as possible.
  - By using some of the currently available tools, there must be made some kind of mechanism to ensure that data is not being loaded multiple times? (one of the clients we have taken have an issue with SCRIBE + MSMQ)
  - If you know little to MS CRM data model, you can easily establish a hierarchical import sequence that makes it possible to load data in parallel by exploiting all the computer processing power

- Data migration: 1:1 between source and target Created by/on Modified by/on (only for On-premise)
  - There are many times a customer will start fresh with a whole new CRM database (we hear it often when customers are upgrading from CRM2011 → CRM2013), but they still want to maintain their PROD data in the state in which they have it today (Example: Workflows that listens on a particular created/modified dates and sends a notice to the user)
  - Therefore, it is not "just right" to export the data and load data when these dates will be set to today's date
  - Sometimes you just have to think out-of-the-box 😊  
(But you MUST ALWAYS comply with the SDK guidelines)

**Remark:** When importing data, you can overwrite Created by/on



- DAXIF# is constantly being developed:
  - NUGET package
  - Github website with documentation and API Description
  - KeePass for storing environmental information
  - Better integration with Visual Studio (UI)
  - And many other things you can just think of 😊
  - But just around the corner ...

# Summary - Diff report based on CRM2011/2013 solutions



DAXIF# - Delegate Automated Xrm Installation Framework (TODO: v.1.0.0.0) : Diff Report (TODO: ISO-8601 DateTimeStamp)

**delegat**e

**Diff Legend**

Added	Changed	Removed	Moved from	Moved to	Ignored
Black text and green background	Black text and yellow background	White text and red background	Black text and gray background	Black text and gray background	White text and red background

**Diff Tree**

Tree	Unchanged	Changed	Not in source	Not in target
- Entities				
+ Account				
+ CustomerAddress				
+ Other	23	12	11	7
+ PluginAssemblies				
+ SdkMessageProcessingSteps				
+ WebResources				

**Diff Viewer**

Source: Some source file	Target: Some target file
<pre>&lt;ImportExportXml xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"&gt;   &lt;Entities&gt;     &lt;Entity&gt;       &lt;Name LocalizedName="Account"         OriginalName="Account" &gt;         Account       &lt;/Name&gt;       &lt;ObjectTypeCode&gt;         1       &lt;/ObjectTypeCode&gt;       &lt;FormXml&gt;         &lt;forms type="main"&gt;           &lt;systemform&gt;             &lt;formid&gt;               {b053a39a-041a-4356-acef-ddf00182762b}             &lt;/formid&gt;             &lt;form shownavigationbar="true"&gt;               &lt;hiddencontrols&gt;                 &lt;data id="address1_addressid"                   datafieldname="address1_addressid"                   classid="{5546E6CD-394C-4bee-94A8-4425E17EF6C6}"/&gt;                 &lt;data id="address2_addressid"                   datafieldname="address2_addressid"                   classid="{5546E6CD-394C-4bee-94A8-4425E17EF6C6}"/&gt;               &lt;/hiddencontrols&gt;               &lt;tabs&gt;                 &lt;tab name="general"                   verticallayout="true"                   id="{13b0fbf2-e596-4dc5-919b-7a0aea72598b}"                   IsUserDefined="0"&gt;                   &lt;labels&gt;                     &lt;label description="General"                       languagecode="1033"/&gt;                   &lt;/labels&gt;                 &lt;/tab&gt;               &lt;/tabs&gt;             &lt;/form&gt;           &lt;/systemform&gt;         &lt;/forms type="main"&gt;       &lt;/FormXml&gt;     &lt;/Entity&gt;   &lt;/Entities&gt; &lt;/ImportExportXml&gt;</pre>	<pre>&lt;ImportExportXml xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"&gt;   &lt;Entities&gt;     &lt;Entity&gt;       &lt;Name LocalizedName="Account"         OriginalName="Account2" &gt;         Account       &lt;/Name&gt;       &lt;ObjectTypeCode&gt;         1       &lt;/ObjectTypeCode&gt;       &lt;FormXml&gt;         &lt;forms type="main"&gt;           &lt;systemform&gt;             &lt;formid&gt;               {b053a39a-041a-4356-acef-ddf00182762b}             &lt;/formid&gt;             &lt;form shownavigationbar="true"&gt;               &lt;hiddencontrols&gt;                 &lt;data id="address1_addressid"                   datafieldname="address1_addressid"                   classid="{5546E6CD-394C-4bee-94A8-4425E17EF6C6}"/&gt;                 &lt;data id="address2_addressid"                   datafieldname="address2_addressid"                   classid="{5546E6CD-394C-4bee-94A8-4425E17EF6C6}"/&gt;               &lt;/hiddencontrols&gt;               &lt;tabs&gt;                 &lt;tab name="general"                   verticallayout="true"                   id="{13b0fbf2-e596-4dc5-919b-7a0aea72598b}"                   IsUserDefined="0"&gt;                   &lt;labels&gt;                     &lt;label description="General"                       languagecode="1033"/&gt;                   &lt;/labels&gt;                 &lt;/tab&gt;               &lt;/tabs&gt;             &lt;/form&gt;           &lt;/systemform&gt;         &lt;/forms type="main"&gt;       &lt;/FormXml&gt;     &lt;/Entity&gt;   &lt;/Entities&gt; &lt;/ImportExportXml&gt;</pre>

Questions?