

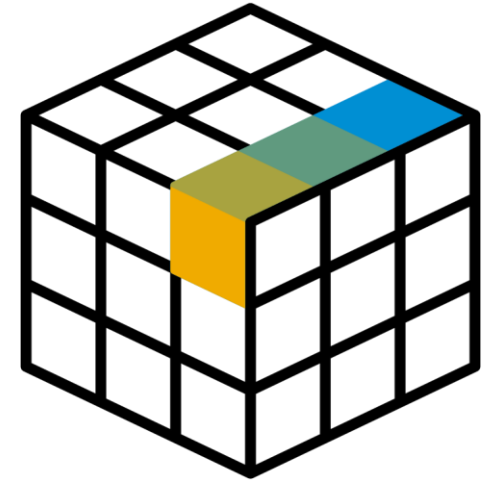


Week 3: Add Enterprise Qualities

Unit 2: Support for SAP Fiori Elements

SAP Cloud Application Programming Model and SAP Fiori UIs

- Service built using the programming model can be consumed by any UI technology
- Programming model provides dedicated support for SAP Fiori using SAP Fiori elements
- SAP Fiori elements provide a framework for most common application patterns
- SAP Fiori elements use the semantic annotations from OData



Support for SAP Fiori Elements

Annotations

- Provide semantic information to OData
- Describe capabilities of an OData service

```
annotate CatalogService.Products with @(
  UI: {
    HeaderInfo: {
      TypeName: 'Product',
      TypeNamePlural: 'Products',
      Title: { $Type: 'UI.DataField', Value: title }
    },
    SelectionFields: [ identifier, title, availability, price],
    LineItem: [
      {$Type: 'UI.DataField', Value: identifier},
      {$Type: 'UI.DataField', Value: title},
      {$Type: 'UI.DataField', Value: availability},
      {$Type: 'UI.DataField', Value: price}
    ],
  }
);
```

< SAP Products ▾

Products

Search

ID:

Name:

Products (6)

ID	Name			
MC-CM-1003	Tea- / Coffee-Mug	153	2.65	>
MC-CH-1000	Coat Hangers	10	2.60	>
MC-CH-1001	Coat Hangers	34	21.73	>
MC-CH-1002	Wooden Coat Hangers - Pack of 5	5	6.40	>
MC-CH-1003	Designer Coat Hooks - Pack of 3	6	6.49	>
MC-CH-1004	Vacuum Wall Hook - Pack of 6	17	5.76	>

Support for SAP Fiori Elements

Annotations – Adding static labels

```
25  annotate CatalogService.Products with {  
26    ID @( Common: { Label: 'Product ID'} ); // For multiple annotations  
27    availability @( Common.Label : 'In Stock' );  
28    price @( Common.Label : 'Price' );  
29  }
```

< SAP Products ▾

Search

ID:

Name:

In Stock:

Price:

Products (6)

ID	Name	In Stock	Price
MC-CM-1003	Tea- / Coffee-Mug	153	2.65 >
MC-CH-1000	Coat Hangers	10	2.60 >
MC-CH-1001	Coat Hangers	34	21.73 >
MC-CH-1002	Wooden Coat Hangers - Pack of 5	5	6.40 >
MC-CH-1003	Designer Coat Hooks - Pack of 3	6	6.49 >
MC-CH-1004	Vacuum Wall Hook - Pack of 6	17	5.76 >

Support for SAP Fiori Elements

Annotations – Adding image and currency

■ Currency using measures

```
8  annotate CatalogService.Products with @(
9      UI: {
10         HeaderInfo: {
11             TypeName: 'Product',
12             TypeNamePlural: 'Products',
13             Title: { $Type: 'UI.DataField', Value: title }
14         },
15         SelectionFields: [ identifier, title, availability, price],
16         LineItem: [
17             {$Type: 'UI.DataField', Value: image_url},
18             {$Type: 'UI.DataField', Value: identifier},
19             {$Type: 'UI.DataField', Value: title},
20             {$Type: 'UI.DataField', Value: availability},
21             {$Type: 'UI.DataField', Value: price}
22         ],
23     },
24 );
25
26 annotate CatalogService.Products with {
27     ID @( Common: { Label: 'Product ID'} ); // For multiple annotations
28     availability @( Common.Label : 'In Stock' );
29     price @( Common.Label : 'Price', Measures.ISOCurrency: currency_code );
30     image_url @( Common.Label: 'Image', UI.IsImageUrl: true);
31 }
```

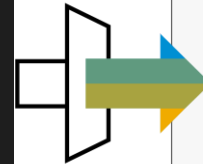
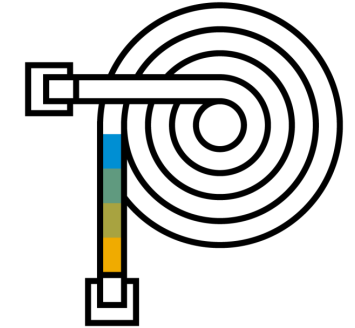


Image	ID	Name	In Stock	Price
	MC-CM-1003	Tea- / Coffee-Mug	153	USD 2.65
	MC-CH-1000	Coat Hangers	10	USD 2.60
	MC-CH-1001	Coat Hangers	34	USD 21.73
	MC-CH-1002	Wooden Coat Hangers - Pack of 5	5	USD 6.40
	MC-CH-1003	Designer Coat Hooks - Pack of 3	6	USD 6.49
	MC-CH-1004	Vacuum Wall Hook - Pack of 6	17	USD 5.76

Support for SAP Fiori Elements

Annotations – Filtering







```
annotate CatalogService.Products with @(
  UI: {
    HeaderInfo: {
      TypeName: 'Product',
      TypeNamePlural: 'Products',
      Title: { $Type: 'UI.DataField', Value: title }
    },
    SelectionFields: [ identifier, title, availability, price ],
    LineItem: [
      { $Type: 'UI.DataField', Value: image_url },
      { $Type: 'UI.DataField', Value: identifier },
      { $Type: 'UI.DataField', Value: title },
      { $Type: 'UI.DataField', Value: availability },
      { $Type: 'UI.DataField', Value: price }
    ]
  }
);
```

```
annotate CatalogService.Products with {
  ID @( Common: { Label: 'Product ID' } );
  availability @( Common.Label: 'In Stock' );
  price @( Common.Label: 'Price', Measures: price );
  image_url @( Common.Label: 'Image', UI.Is: image_url );
}
```

SAP Products

Search ID: Name: In Stock: Price:

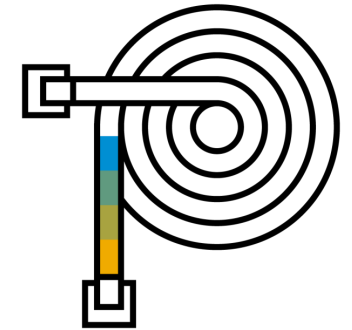
Products (4)

Image	ID	Name	In Stock	Price
	MC-CH-1000	Coat Hangers	10	USD 2.60 >
	MC-CH-1001	Coat Hangers	34	USD 21.73 >
	MC-CH-1002	Wooden Coat Hangers - Pack of 5	5	USD 6.40 >
	MC-CH-1003	Designer Coat Hooks - Pack of 3	6	USD 6.49 >

Support for SAP Fiori Elements

Annotations – Detail view

- **HeaderFacets**, **Facets** and **DataPoint** of the SAP UI vocabulary

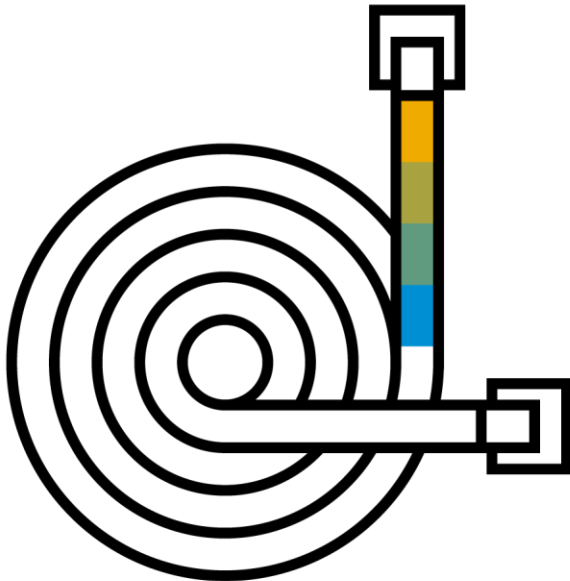


```
HeaderFacets: [
  { $Type: 'UI.ReferenceFacet', Target: '@UI.FieldGroup#ProductDetail', Label: '{i18n>Cat.HeaderFacetDetails}' },
  { $Type: 'UI.ReferenceFacet', Target: '@UI.FieldGroup#SupplierDetail', Label: '{i18n>Cat.HeaderFacetSupplier}' },
  { $Type: 'UI.ReferenceFacet', Target: '@UI.DataPoint#Price' }
],
Facets: [
  {
    $Type: 'UI.CollectionFacet',
    Label: '{i18n>Cat.FacetProductInformation}',
    Facets: [
      { $Type: 'UI.ReferenceFacet', Target: '@UI.FieldGroup#Description', Label: '{i18n>Cat.FacetSectionDescription}' }
    ]
  }
],
DataPoint#Price: { Value: price, Title: '{i18n>Cat.HeaderPrice}' },
FieldGroup#Description: {
  Data: [
    { $Type: 'UI.DataField', Value: description }
  ]
},
FieldGroup#ProductDetail: {
  Data: [
    { $Type: 'UI.DataField', Value: identifier },
    { $Type: 'UI.DataField', Value: availability }
  ]
},
FieldGroup#SupplierDetail: {
  Data: [
    { $Type: 'UI.DataField', Value: supplier.identifier },
    { $Type: 'UI.DataField', Value: supplier.postCode },
    { $Type: 'UI.DataField', Value: supplier.phone }
  ]
}
```

Products ▾		
Tea- / Coffee-Mug		
Details	Supplier	Price
ID: MC-CM-1003	Name: Office Line Prag (OFFICELINE)	USD 2.65
In Stock: 153	City: 140 00 (Praha)	
	Phone: +420 776 9487923	
Product Information		
Description		
Robust high-quality ceramic mug for every-day use in two unobstrusive colours.		

Annotations – CRUD operations and drafts

```
service CatalogService {  
  @readonly entity Products as projection on officesupplies.Products;  
  @readonly entity Suppliers as projection on officesupplies.Suppliers;  
};
```



```
service CatalogService {  
  @odata.draft.enabled  
  entity Products as projection on officesupplies.Products;  
  entity Suppliers as projection on officesupplies.Suppliers;  
};
```


Support for SAP Fiori Elements

Annotations – CRUD operations and drafts

Products

Search

Editing Status: All

ID:

Name:

In Stock:

Price:

Products (6)

Create Delete

Image	ID	Name	In Stock	Price
	MC-CM-1003	Tea- / Coffee-Mug	153	USD 2.65
	MC-CH-1000	Coat Hangers	10	USD 2.60

SAP Products

Tea- / Coffee-Mug

Edit Delete

Details

Supplier

Price

ID: MC-CM-1003

Name: Office Line Prag (OFFICELINE)

USD 2.65

In Stock: 153

City: 140 00 (Praha)

Phone: +420 776 9487923

Product Information

Description

Description:

Robust high-quality ceramic mug for every-day use in two unobtrusive colours.

SAP Products

Tea- / Coffee-Mug

Header Product Information

Name:

ID:

Tea- / Coffee-Mug

MC-CM-1003

In Stock:

Price:

153

5.00 USD

City:

Phone:

Praha

+420 776 9487923

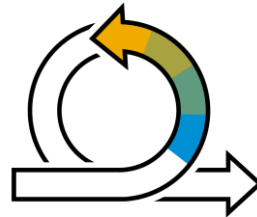
Draft saved Save Cancel

Support for SAP Fiori Elements

Entities from CDS to EDMX

Service definition

```
1 namespace sap.capire.officesupplies;
2 using { Currency } from '@sap/cds/common';
3
4 entity Products {
5   @Common.Label : 'UUID'
6   key ID         : UUID;
7   identifier      : String @Common.Label : 'ID';
8   title          : localized String @( Common.Label : 'Name' );
9   price          : Decimal(9,2);
10  supplier       : Association to Suppliers;
11  image_url      : String;
12 }
13
14 entity Suppliers {
15   key ID         : UUID;
16   identifier      : String;
17   name           : String;
18   products       : Association to many Products on products.supplier = $self;
19 }
20
21 service CatalogService {
22   @readonly entity Products as projection on officesupplies.Products;
23   @readonly entity Suppliers as projection on officesupplies.Suppliers;
24 };
25
26 annotate CatalogService.Products with @(
27   UI: {
28     HeaderInfo: {
29       TypeName: '{i18n>Cat.TypeName}',
30       TypeNamePlural: '{i18n>Cat.TypeNamePlural}',
31       Title: { $Type: 'UI.DataField', Value: title }
32     },
33     SelectionFields: [ identifier, title, availability, price],
34     LineItem: [
35       { $Type: 'UI.DataField', Value: image_url},
36       { $Type: 'UI.DataField', Value: identifier},
37       { $Type: 'UI.DataField', Value: title},
38       { $Type: 'UI.DataField', Value: availability},
39       { $Type: 'UI.DataField', Value: price}
40     ]
41   }
42 )
```



EDMX metadata file

```
-open.org/odata/ns/edm">
<EntityContainer Name="EntityContainer">
  <EntitySet Name="Products" EntityType="sap.capire.officesupplies.CatalogService
    .Products">
    <NavigationPropertyBinding Path="supplier" Target="Suppliers"/>
    <NavigationPropertyBinding Path="texts" Target="Products_texts"/>
    <NavigationPropertyBinding Path="localized" Target="Products_texts"/>
  </EntitySet>
  <EntitySet Name="Products_texts" EntityType="sap.capire.officesupplies
    .CatalogService.Products_texts"/>
  <EntitySet Name="Suppliers" EntityType="sap.capire.officesupplies.CatalogService
    .Suppliers">
    <NavigationPropertyBinding Path="products" Target="Products"/>
  </EntitySet>
</EntityContainer>

<EntityType Name="Products">
  <Key>
    <PropertyRef Name="ID"/>
  </Key>
  <Property Name="ID" Type="Edm.Guid" Nullable="false"/>
  <Property Name="identifier" Type="Edm.String"/>
  <Property Name="title" Type="Edm.String"/>
  <Property Name="price" Type="Edm.Decimal" Scale="2" Precision="9"/>
  <NavigationProperty Name="supplier" Type="sap.capire.officesupplies
    .CatalogService.Suppliers" Partner="products">
    <ReferentialConstraint Property="supplier_ID" ReferencedProperty="ID"/>
  </NavigationProperty>
  <Property Name="image_url" Type="Edm.String"/>
  <NavigationProperty Name="texts" Type="Collection(sap.capire.officesupplies
    .CatalogService.Products_texts)">
    <OnDelete Action="Cascade"/>
  </NavigationProperty>
  <NavigationProperty Name="localized" Type="sap.capire.officesupplies
    .CatalogService.Products_texts">
    <ReferentialConstraint Property="ID" ReferencedProperty="ID"/>
  </NavigationProperty>
  <Property Name="supplier_ID" Type="Edm.Guid"/>
</EntityType>

<EntityType Name="Products_texts">
  <Key>
    <PropertyRef Name="locale"/>
  </Key>
  <Property Name="text" Type="Edm.String"/>
  <Property Name="language" Type="Edm.String"/>
</EntityType>

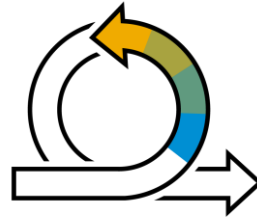
</Schema>
```

Support for SAP Fiori Elements

Annotations from CDS to EDMX

Service definition

```
1 namespace sap.capire.officesupplies;
2 using { Currency } from '@sap/cds/common';
3
4 entity Products {
5   @Common.Label : 'UUID'
6   key ID        : UUID;
7   identifier    : String @Common.Label : 'ID';
8   title        : localized String @( Common.Label : 'Name' );
9   price        : Decimal(9,2);
10  supplier      : Association to Suppliers;
11  image_url     : String;
12 }
13
14 entity Suppliers {
15   key ID        : UUID;
16   identifier    : String;
17   name         : String;
18   products     : Association to many Products on products.supplier = $self;
19 }
20
21 service CatalogService {
22   @readonly entity Products as projection on officesupplies.Products;
23   @readonly entity Suppliers as projection on officesupplies.Suppliers;
24 };
25
26 annotate CatalogService.Products with @(
27   UI: {
28     HeaderInfo: {
29       TypeName: '{i18n>Cat.TypeName}',
30       TypeNamePlural: '{i18n>Cat.TypeNamePlural}',
31       Title: { $Type: 'UI.DataField', Value: title }
32     },
33     SelectionFields: [ identifier, title, availability, price],
34     LineItem: [
35       { $Type: 'UI.DataField', Value: image_url},
36       { $Type: 'UI.DataField', Value: identifier},
37       { $Type: 'UI.DataField', Value: title},
38       { $Type: 'UI.DataField', Value: availability},
39       { $Type: 'UI.DataField', Value: price}
40     ]
41   }
42 }
```

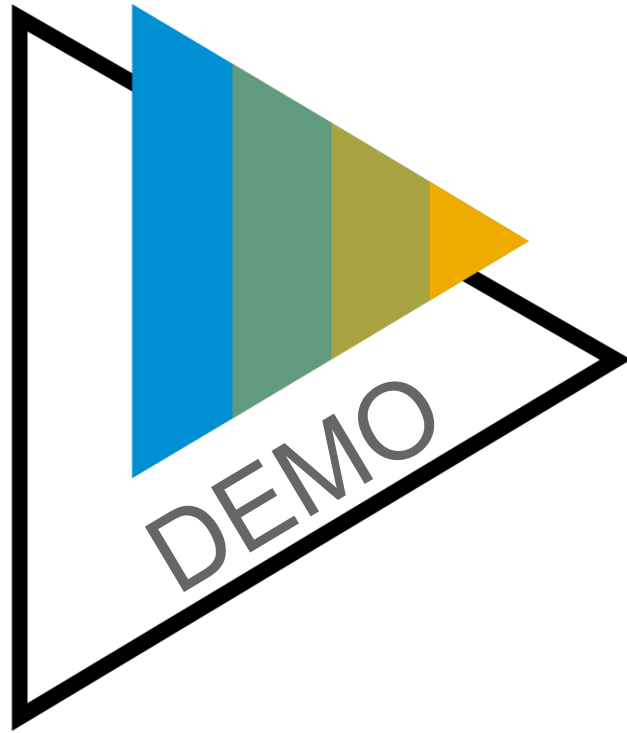


EDMX metadata file

```
<Annotations Target="sap.capire.officesupplies.CatalogService.Products">
  <Annotation Term="UI.HeaderInfo">
    <Record Type="UI.HeaderInfoType">
      <PropertyValue Property="Title">
        <Record Type="UI.DataField">
          <PropertyValue Property="Value" Path="title"/>
        </Record>
      </PropertyValue>
      <PropertyValue Property="TypeName" String="{i18n>Cat.TypeName}"/>
      <PropertyValue Property="TypeNamePlural" String="{i18n>Cat.TypeNamePlural}"/>
    </Record>
  </Annotation>
  <Annotation Term="UI.LineItem">
    <Collection>
      <Record Type="UI.DataField">
        <PropertyValue Property="Value" Path="image_url"/>
      </Record>
      <Record Type="UI.DataField">
        <PropertyValue Property="Value" Path="identifier"/>
      </Record>
      <Record Type="UI.DataField">
        <PropertyValue Property="Value" Path="title"/>
      </Record>
      <Record Type="UI.DataField">
        <PropertyValue Property="Value" Path="availability"/>
      </Record>
      <Record Type="UI.DataField">
        <PropertyValue Property="Value" Path="price"/>
      </Record>
    </Collection>
  </Annotation>
</Annotations>
```

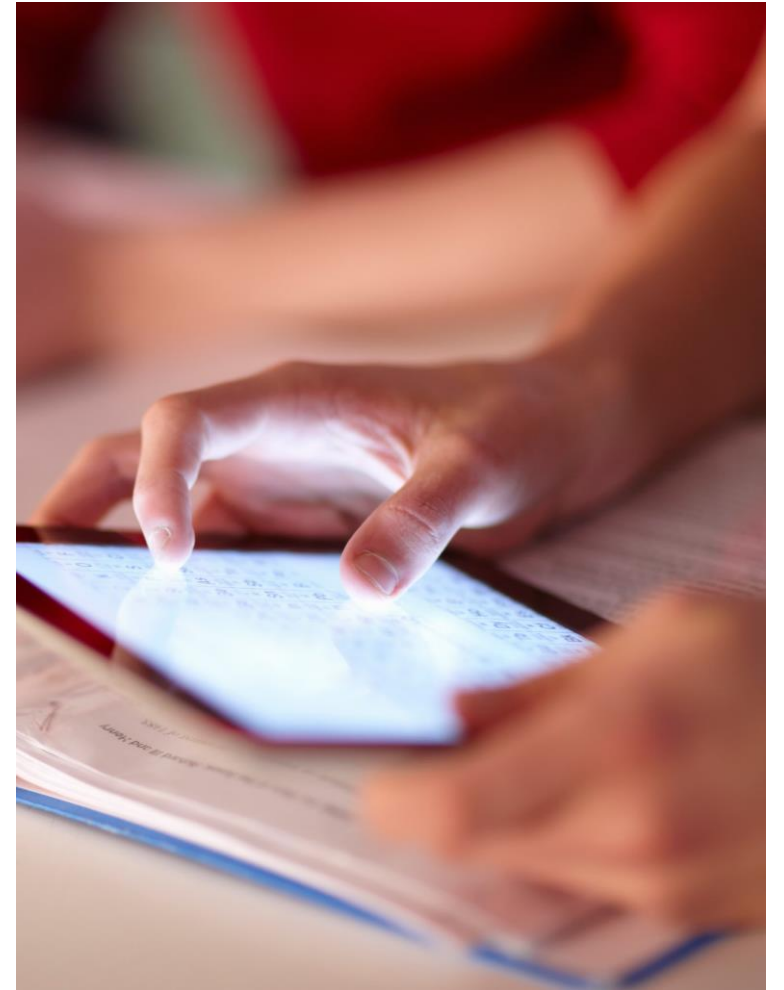
Support for SAP Fiori Elements

Demo



What you've learned in this unit

- Build SAP Fiori UIs for your business app
- Link between annotations and application
- How to write annotations
 - List and detail reports
 - Filtering in tables
 - Drafts to edit rows



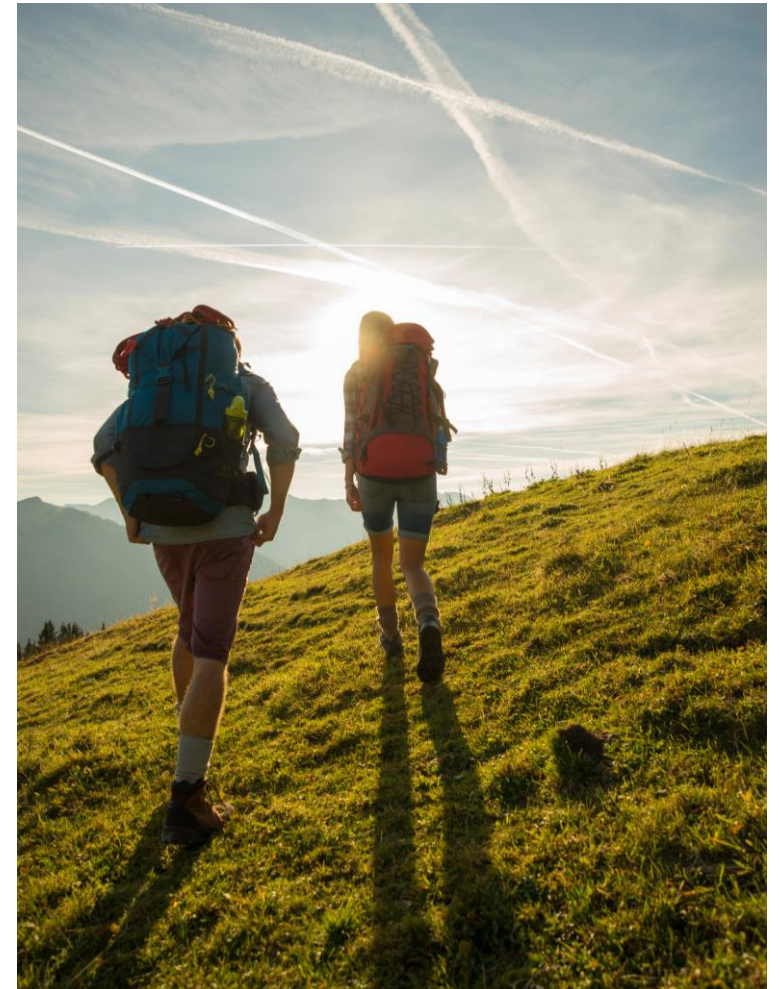
Support for SAP Fiori Elements

Further reading



Additional Material

- [Official documentation](#)
- [Blogs: SAP Cloud Application Programming Model](#)
- [TechEd Replay](#)
- [SAP Fiori Elements: Understanding OData & Annotations](#)
- [SAP Fiori Elements: Turning OData into Applications](#)
- [TechEd SAP Fiori elements lecture](#)
- [SAP Fiori Elements Community](#)



Thank you.

Contact information:

open@sap.com

Follow all of SAP



www.sap.com/contactsap

© 2020 SAP SE or an SAP affiliate company. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP SE or an SAP affiliate company.

The information contained herein may be changed without prior notice. Some software products marketed by SAP SE and its distributors contain proprietary software components of other software vendors. National product specifications may vary.

These materials are provided by SAP SE or an SAP affiliate company for informational purposes only, without representation or warranty of any kind, and SAP or its affiliated companies shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP or SAP affiliate company products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

In particular, SAP SE or its affiliated companies have no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation, and SAP SE's or its affiliated companies' strategy and possible future developments, products, and/or platforms, directions, and functionality are all subject to change and may be changed by SAP SE or its affiliated companies at any time for any reason without notice. The information in this document is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, and they should not be relied upon in making purchasing decisions.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP SE (or an SAP affiliate company) in Germany and other countries. All other product and service names mentioned are the trademarks of their respective companies.

See www.sap.com/copyright for additional trademark information and notices.