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abap-platform-fiori-feature-showcase / **04_object_page_general.md** ⎘

Jes Sie Cheah **Update 2402**   5500d99 · 10 months ago   ⟲ History

Preview   Code   Blame   665 lines (501 loc) · 22.2 KB   Raw ⎘ ⬇ ☰

Object Page - General Features

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Annotations for Data Fields

Communication Properties

Search term: `#CommunicationFields`

To display emails and phone numbers as a link, they are annotated with `@Semantics.email.address: true` or `@Semantics.telephone.type`

> ⓘ **Note**
>
> Source: CDS View **/DMO/FSA_I_Root**

```
// Search Term #CommunicationFields
@Semantics.eMail.address: true
email                    as Email,

// Search Term #CommunicationFields
```

```
@Semantics.telephone.type: [#CELL]
telephone               as Telephone,
```

```
// Search Term #Communication
@UI.facet: [
  {
    purpose: #HEADER, // or #STANDARD
    label     : 'Communication Subsection(#Communication)',
    type      : #FIELDGROUP_REFERENCE,
    targetQualifier: 'communication'
  }
]

@UI.fieldGroup: [{ qualifier: 'communication' }] // Search Term #Communication
Email;

@UI.fieldGroup: [{ qualifier: 'communication' }] // Search Term #Communication
Telephone;
```

More Information: [ABAP RESTful Application Programming Model - Contact Data](#)

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Time and Date

Search term: `#TimeAndDate`

SAP Fiori Elements provides out of the box support for displaying and editing dates and times, as well as time stamps. No additional annotations are needed, the properties just need to have the corresponding data types.

The following annotations are used in the app, in order to group the time and date fields and show them in a facet.

```
// Search Term #TimeAndDate
@UI.facet: [
  {
    purpose: #HEADER, // or #STANDARD
    label     : 'Time and Date (#TimeAndDate)',
    type      : #FIELDGROUP_REFERENCE,
    targetQualifier: 'timeAndDate'
  }
]

@UI.fieldGroup: [{ qualifier: 'timeAndDate' }] // Search Term #TimeAndDate
ValidTo;
```

```
@UI.fieldGroup: [{ qualifier: 'timeAndDate' }] // Search Term #TimeAndDate
Time;

@UI.fieldGroup: [{ qualifier: 'timeAndDate' }] // Search Term #TimeAndDate
Timestamp;
```

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Multi line Text

Search term: `#MultiLineText`

With the annotation `@UI.multiLineText` longer strings are displayed in multiple lines.

> ⓘ **Note**
>
> Source: Metadata Extension **/DMO/FSA_C_RootTP**

```
@UI.multiLineText: true // Search Term #MultiLineText
Description;

@UI.multiLineText: true // Search Term #MultiLineText
DescriptionCustomGrowing;
```

More Information: ABAP RESTful Application Programming Model - Multi-Line Text

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Collective Value Help

Search term: `#CollectiveValueHelp`

For SAP GUI-based applications it is possible to define a collective search help that combines several elementary search helps. You can choose one of several alternative search paths and retrieve input values from multiple sources/tables in a single dialog. In Fiori UI this is also possible via a collective value help using an **abstract entity** comprising a list of assigned elementary search helps and potential mappings of the bound field names.

The collective value help shall be annotated with `@ObjectModel.collectiveValueHelp.for.element` pointing to the field, for which the collective value help is defined. The field referenced by `@ObjectModel.collectiveValueHelp.for.element` shall be assigned at least a single elementary value help using annotation `@Consumption.valueHelpDefinition` .

Only the following keywords can be used for a collective value help: `entity.name` , `entity.element` , `additionalBinding.localElement` , `additionalBinding.element` and `qualifier` .

> ⓘ **Note**
>
> Source: CDS Abstract Entity **/DMO/FSA_D_CountryCVH**

```
@EndUserText.label: 'Country Collective Value Help'
@ObjectModel.supportedCapabilities:[#COLLECTIVE_VALUE_HELP]
@ObjectModel.modelingPattern:#COLLECTIVE_VALUE_HELP
@ObjectModel.collectiveValueHelp.for.element: 'Country'

// Search Term #CollectiveValueHelp
define abstract entity /DMO/FSA_D_CountryCVH
{
  @Consumption.valueHelpDefinition:[
    // 'Default' VH
    {
      entity: { name:'I_Country' },
      label: 'Search by Country'
    },
    // additional VH, set qualifier
    {
      entity: { name:'/DMO/FSA_I_ContactVH',
```

```
                         element:'Country' },
       label: 'Search by Contact',
       qualifier: 'ContactSearch'
     },
     // additional VH, set qualifier
     {
       entity: { name:'I_RegionVH',
                 element:'Country' },
       additionalBinding: [{ localElement:'Region',
                             element:'Region'  }],
       label: 'Search by Region',
       qualifier:  'RegionSearch'
     }
   ]
   Country : land1;
   Region  : regio;
}
```

The consumer view of the collective value help has to define the same fields, that are used in the collective value help definition (respectively bind all corresponding local fields via @Consumption.valueHelpDefinition.additionalBinding... to the collective value help fields).

> ⓘ **Note**
>
> Source: CDS View **/DMO/FSA_R_RootTP**

```
// Search Term #CollectiveValueHelp
@Consumption.valueHelpDefinition: [{ entity: { name: '/DMO/FSA_D_CountryCVH',  element: 'Country' },
                                     additionalBinding: [{ element: 'Region',
                                                           localElement: 'Region' }]  }]
Country,
...
Region,
```

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Side Effects

Search term: `#SideEffects, #SideEffectsSection`

> ⚠ **Warning**
>
> Only available with the latest SAP BTP or SAP S/4HANA Cloud, public edition release and for SAP S/4HANA, on-premise edition or SAP S/4HANA Cloud, private edition, from release 2023 onwards.

Side Effects annotations specify to the UI, which targets to be refreshed in order to show updated values that arises from field changes, actions, or determine actions. Side effects are defined in the behaviour definition. There are a variety of ways to annotate side effects by combining the triggers and the affected components, and a few examples are shown in the app:

> ⚠ **Warning**
>
> If you use projection, remember to add the following to your projection behaviour definition.

```
projection...

use side effects;
define behavior for ProjectionView {
}
```

Field affects field

Fields from same level entity

Root entity 510. Draft ⌄

Root entity 510.

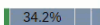**Radial Micro Chart (#RadialMicroChart)**
This is a micro chart

26%

Harvey Micro Chart (#HarveyMicroChart)   **StackedBar**
This is a micro chart   This is a micro

167.2 K   34.2%

5000

VUV

Nested Tabs (#NestedTabs) ⌄   Visible when in Edit(#HidingC⋯

Collection Facet (#OPSection)

FieldGroup (#OPForm)

Connected Fields (#ConnectedFields):

| 13 | / | 50 |

When the user changes the value of `IntegerValue`, the determination `setIntegerValue` is called and modifies the values of `ProgressIntegerValue` and `RadialIntegerValue`. In order for these 2 fields to show the updated values without a refresh, side effects is required to request UI to reload these 2 fields.

> ⓘ **Note**
>
> Source: Behaviour Definition **/DMO/FSA_R_RootTP**

```
define behavior for /DMO/FSA_R_RootTP alias Root
...
{
  determination setIntegerValue on modify { field IntegerValue; }

  side effects {
    field IntegerValue affects field ProgressIntegerValue, field RadialIntegerValue;
  }
}
```

Fields from associated entity

Child Entity (1..n)(#OPTable)

Child Entities (27) Standard ⌄   Search 🔍   Create Child from Root (#ActionOverloa⋯

☐	String Property	⬍	Percentage (0.00 to trigger Validation)	Toggle Delete (#SideEffects)	Child Pieces (#SideEffectsTable)	Attach
☐	⚠ Root entity 510. Child 27		10.00	☐	0	–
☐	Root entity 510. Child 26		20.00	☐	0	–
☐	Root entity 510. Child 26		10.00	☐	0	–
☐	Root entity 510. Child 25		10.00	☐	50	–
☐	⊗ Child entity 969.		10.00	☐	6	–

More

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Side Effects (#SideEffectsSection)

Total (Change Pieces at Child Entities):	(Change to the past -trigger validation):
83	Aug 3, 2023 📅

Children Created from Action Overload (Click Reset to set to 0):   (Change to see Navigation (1..1) change):

It is also possible to define as target, a field from an associated entity. When the field `ChildPieces` in Child entity is modified, this will trigger the determination `calculateTotalPieces` to total up the pieces of all child instances. Side effects will trigger the refresh of field `TotalPieces` from the Root entity to show the calculated total every time user enters a value at the child instance.

> ⓘ **Note**

```
define behavior for /DMO/FSA_R_ChildTP alias Child
persistent table /dmo/fsa_child_a
draft table /dmo/fsa_child_d
lock dependent by _Root
authorization dependent by _Root
{
  determination calculateTotalPieces on modify { field ChildPieces; }

  side effects {
    field ChildPieces affects field _Root.TotalPieces;
  }
}
```

Field affects entity

Side Effects (#SideEffectsSection)

Total (Change Pieces at Child Entities):

96

Children Created from Action Overload (Click Reset to set to 0):

0

(Change to the past -trigger validation):

Aug 3, 2023

(Change to see Navigation (1..1) change):

Labore diam At clita voluptua invidunt.

Navigation (1..1) (#NavigationSection)

String Property:

Labore diam At clita voluptua invidunt.

Integer Property:

887

Decimal Property:

58.650

Country/Region Key:

New Zealand (NZ)

When `NavigationID` is changed, the associated entity `_Navigation` will reload and all fields of the association will change.

> ⓘ **Note**
>
> Source: Behaviour Definition **/DMO/FSA_R_RootTP**

```
define behavior for /DMO/FSA_R_RootTP alias Root
...
{
  side effects {
    field NavigationID affects entity _Navigation;
  }
}
```

Action affects field

Reset (#SideEffectsAction)

Side Effects (#SideEffectsSection)

Total (Change Pieces at Child Entities):

96

Children Created from Action Overload (Click Reset to set to 0):

2

(Change to the past -trigger validation):

Aug 3, 2023

(Change to see Navigation (1..1) change):

Eirmod erat tempor sea aliquyam erat.

When `resetTimesChildCreated` is executed, the field `TimesChildCreated` will be set to 0.

> ⓘ **Note**
>
> Source: Behaviour Definition **/DMO/FSA_R_RootTP**

```
define behavior for /DMO/FSA_R_RootTP alias Root
...
{
  action ( features : instance ) resetTimesChildCreated;

  side effects {
    action resetTimesChildCreated affects field TimesChildCreated;
```

```
    }
}
```

Action affects permission

Side Effects (#SideEffectsSection)   Reset (#SideEffectsAction)

Total (Change Pieces at Child Entities):   (Change to the past -trigger validation):
                                          96   Aug 3, 2023   📅

Children Created from Action Overload (Click Reset to set to   (Change to see Navigation (1..1) change):
0):
                                           2   Eirmod erat tempor sea aliquyam erat.   ⌄

When `resetTimesChildCreated` is executed, instance feature control will disable the action button `resetTimesChildCreated` .

> ⓘ **Note**
>
> Source: Behaviour Definition **/DMO/FSA_R_RootTP**

```
define behavior for /DMO/FSA_R_RootTP alias Root
...
{
  action ( features : instance ) resetTimesChildCreated;

  side effects {
    action resetTimesChildCreated affects permissions ( action resetTimesChildCreated );
  }
}
```

> ⓘ **Note**
>
> Source: Behaviour Implementation **/DMO/FSA_BP_R_RootTP**

```
CLASS lhc_Root DEFINITION INHERITING FROM cl_abap_behavior_handler.
  METHOD resetTimesChildCreated.
    MODIFY ENTITIES OF /DMO/FSA_R_RootTP IN LOCAL MODE
      ENTITY Root
      UPDATE
        FIELDS ( TimesChildCreated )
        WITH VALUE #( FOR key IN keys
                          ( %tky                     = key-%tky
                            TimesChildCreated         = 0
                            %control-TimesChildCreated  = if_abap_behv=>mk-on ) )
      FAILED failed
      REPORTED reported.

    LOOP AT keys ASSIGNING FIELD-SYMBOL(<key>).

      APPEND VALUE #( %tky       = <key>-%tky
                      %msg       = new_message( id     = '/DMO/CM_FSA'
                                                number  = 003
                                                severity = if_abap_behv_message=>severity-success )
                      %action-resetTimesChildCreated = if_abap_behv=>mk-on ) TO reported-root.
    ENDLOOP.
  ENDMETHOD.

  METHOD get_instance_features.
    READ ENTITIES OF /DMO/FSA_R_RootTP IN LOCAL MODE
      ENTITY Root
        FIELDS ( UpdateHidden TimesChildCreated ) WITH CORRESPONDING #( keys )
      RESULT DATA(roots)
      FAILED failed.

    result = VALUE #( FOR root IN roots
                        ( %tky = root-%tky
                          %action-resetTimesChildCreated  = COND #( WHEN root-UpdateHidden  = abap_true OR root
                                                                    THEN if_abap_behv=>fc-o-disabled
                                                                    ELSE if_abap_behv=>fc-o-enabled  )

                        ) ).
  ENDMETHOD.
ENDCLASS.
```

Action affects entity

Child Entity (1..n)(#OPTable)

	String Property	Percentage (0.00 to trigger Validation)	Toggle Delete (#SideEffects)	Child Pieces (#SideEffectsTable)	
☐	⚠ Root entity 510. Child 27	10.00	☐	0	›
☐	Root entity 510. Child 26	20.00	☐	0	›
☐	Root entity 510. Child 26	10.00	☐	0	›
☐	Root entity 510. Child 25	10.00	☐	50	›
☐	✕ Child entity 969.	10.00	☐	6	›

Child Entities (27)   Standard ⌄   Search 🔍   Create Child from Root (#ActionOverload)   Create   Delete   ⋯

More

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When `createChildFromRoot` is executed, a new Child instance is created. Since the associated entity `_Child` is a list table, the list will reload to also show the newly created instance.

> ⓘ **Note**
>
> Source: Behaviour Definition **/DMO/FSA_C_RootTP**

```
define behavior for /DMO/FSA_C_RootTP alias Root
{
  action ( features : instance ) createChildFromRoot result [0..1] entity /DMO/FSA_C_ChildTP;

  side effects {
    action createChildFromRoot affects entity _Child;
  }
}
```

> ⓘ **Note**
>
> Source: Metadata Extension **/DMO/FSA_C_RootTP**

```
annotate entity /DMO/FSA_C_RootTP with
{
  @UI.facet: [
    {
      purpose: #STANDARD,
      type: #PRESENTATIONVARIANT_REFERENCE,
      targetElement: '_Child',
      targetQualifier: 'pVariant',
      label: 'Child Entity (1..n)(#OPTable)',
      id: 'childEntitiesSection'
    }
  ]
  ...
}
```

Determine action executed on field affects messages

Child Entities (29)   Standard ⌄   Search 🔍   Create Child from Root (#ActionOverload)   ⋯

	String Property	Percentage (0.00 to trigger Validation)	Boolean Property	
☐	Root entity 510. Child 26	20.00	☐	›
☐	Root entity 510. Child 26	10.00	☐	›

More

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Reset (#SideEffectsAction)

Side Effects (#SideEffectsSection)

Total (Change Pieces at Child Entities):	(Change to the past -trigger validation):
83	Aug 3, 2023 📅
Children Created from Action Overload (Click Reset to set to 0):	(Change to see Navigation (1..1) change):
2	Labore diam At clita voluptua invidunt. ⌄

Save   Discard Draft

When field `ValidTo` is modified, this will trigger the determine action, which is a validation in this case. Any error messages arising from the validation will pop up immediately via sticky messages.

> ⓘ **Note**

```
define behavior for /DMO/FSA_R_RootTP alias Root
...
{
  validation validateValidTo on save   { create; update; field ValidTo; }
  determine action validateDate { validation validateValidTo; }

  side effects {
    determine action validateDate executed on field ValidTo affects messages;
  }
}
```

Determine action executed on entity affects messages

Child Entity (1..n)(#OPTable)   Side Effects (#SideEffectsSection)   Navigation (1..1) (#NavigationSection)   Data Types(#Recom

Child Entity (1..n)(#OPTable)

Child Entities (27) Standard ⌄   Search 🔍   Create Child from Root (#ActionOverload)   •••

☐	String Property	⬇	Percentage (0.00 to trigger Validation)	Boolean Property	
☐	⚠ Root entity 510. Child 27		10.00	☐	›
☐	Root entity 510. Child 26		20.00	☐	›
☐	Root entity 510. Child 26		10.00	☐	›
☐	Root entity 510. Child 25		10.00	☐	›
☐	❌ Child entity 969.		10.00	☐	›

More

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Reset (#SideEffectsAction)

Save   Discard Draft

When any fields from entity `_Child` is modified, this will trigger the determine action, which is a validation defined at Child. Any error messages arising from the validation will pop up immediately via sticky messages.

> ⓘ **Note**
>
> Source: Behaviour Definition **/DMO/FSA_R_RootTP**

```
define behavior for /DMO/FSA_R_RootTP alias Root
...
{
  determine action validateChild { validation Child ~ validatePercentage; }

  side effects {
    determine action validateChild executed on entity _Child affects messages;
  }
}

define behavior for /DMO/FSA_R_ChildTP alias Child
...
{
  validation validatePercentage on save { create; update;  }
}
```

$self affects permission of association

String Property	Toggle Delete ...	Child Pieces (#Side...	Stream readonly? (#StreamDynFeatureCtrl)	
⊗ Child entity 900.	☐	20	No	›
⊘ Child entity 738.	☑	40	No	›
ⓘ Child entity 715.	☐	40	No	›
Child entity 582.	☑	0	No	›

More

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Side Effects (#SideEffectsSection)

Reset (#SideEffectsAction)

Total (Change Pieces at Child Entities):
110

(Check - Disable update of child):
☐

Children Created from Action Overload (Click Reset to set to 0):

(Change to see Navigation (1..1) change):

Draft updated   Save   Change Criticality (#OPDetermineAction)   Discard Draft

When any fields from $self is modified, the permission/feature control of the association will be refreshed. In our example, when the boolean property `DisableChildOperation` is checked, the list of child instances will be refreshed and update is disabled.

> ⓘ **Note**
>
> Source: Behaviour Definition **/DMO/FSA_R_RootTP**

```
define behavior for /DMO/FSA_R_RootTP alias Root
...
{
  side effects {
    $self affects permissions ( update _Child );
  }
}

define behavior for /DMO/FSA_R_ChildTP alias Child
...
{
  update (features : instance);
}
```

> ⓘ **Note**
>
> Source: Behaviour Implementation **/DMO/FSA_BP_R_RootTP**

```
CLASS lhc_child DEFINITION INHERITING FROM cl_abap_behavior_handler.
  METHOD get_instance_features.
    READ ENTITIES OF /DMO/FSA_R_RootTP IN LOCAL MODE
      ENTITY Child BY \_Root
        FIELDS ( DisableChildOperation )
        WITH CORRESPONDING #( keys )
      RESULT DATA(roots)
      ENTITY Child
        FIELDS ( BooleanProperty )
        WITH CORRESPONDING #(  keys  )
      RESULT DATA(children).

    DATA(lv_boolean) = roots[ 1 ]-DisableChildOperation.

    result = VALUE #( FOR child IN children
                       ( %tky           = child-%tky
                         %update         = COND #( WHEN lv_boolean  = abap_true
                                                   THEN if_abap_behv=>fc-o-disabled
                                                   ELSE if_abap_behv=>fc-o-enabled  )
                       ) ).
  ENDMETHOD.
ENDCLASS.
```

Entity affects field (workaround)

When an instance of an associated entity is deleted, a field should be updated. While there is no dedicated syntax to cater for this use case, this can be achieved with a workaround by defining a determination that is always called by a determine action, with side effect defined for the determine action.

In our example, updating `ChildPieces` at the associated entity `_Child` will update the field `TotalPieces` of the `Root` entity.

> ℹ **Note**
>
> Source: Behaviour Definition **/DMO/FSA_R_RootTP**

```
define behavior for /DMO/FSA_R_RootTP alias Root
...
determination updateTimesChildCreated on save { create; }

determine action updateTimes { determination ( always ) updateTimesChildCreated; }

{
  side effects {
    determine action updateTimes executed on entity _Child affects field TotalPieces;
  }
}
```

> ℹ **Note**
>
> Source: Behaviour Implementation **/DMO/FSA_BP_R_RootTP**

```
METHOD updateTimesChildCreated.
  READ ENTITIES OF /DMO/FSA_R_RootTP IN LOCAL MODE
    ENTITY Root BY \_Child
      FIELDS ( ChildPieces ) WITH CORRESPONDING #( keys )
    RESULT DATA(children).

  MODIFY ENTITIES OF /DMO/FSA_R_RootTP IN LOCAL MODE
    ENTITY Root
      UPDATE
        FIELDS ( TotalPieces )
        WITH VALUE #( FOR key IN keys
                       ( %tky              = key-%tky
                         TotalPieces       = REDUCE i( INIT val TYPE i
                                                       FOR child IN children
                                                       NEXT val += child-ChildPieces )
                         %control-TotalPieces = if_abap_behv=>mk-on ) )
    FAILED DATA(upd_failed)
    REPORTED DATA(upd_reported).

  reported = CORRESPONDING #( DEEP upd_reported ).
ENDMETHOD.
```

More Information:

- [ABAP RESTful Application Programming Model - Side Effects](#)
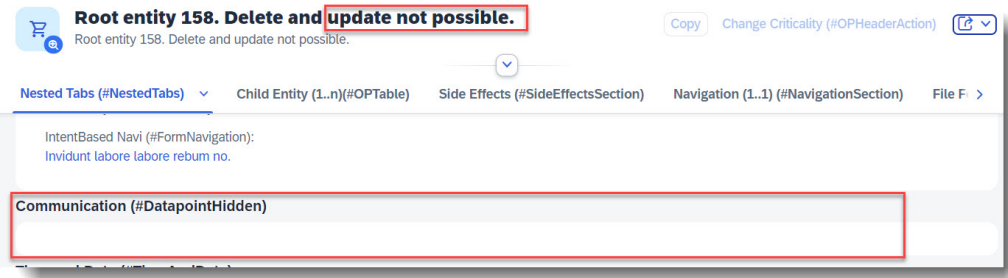- [ABAP Cloud: RAP Side Effects](#)

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Hiding Data Points

Search term: `#DatapointHidden`

If you are showing data points in the sections of your object page, it is possible to hide them using annotation `@UI.datapoint.hidden`, either with a constant `true` or with a reference to a boolean property.

In this example, `Email` and `Telephone` will be hidden when the root instance is not updateable.

> ⛔ **Caution**
>
> There is a limitation with using this annotation at the header section. Refer to [Constraints](#).

> ℹ️ **Note**
>
> Source: Metadata Extension **/DMO/FSA_C_RootTP**

```
annotate entity /DMO/FSA_C_RootTP with
{
  @UI.facet: [
    // Search Term #DatapointHidden
    {
      purpose: #STANDARD,
      type: #COLLECTION,
      label: 'Communication (#DatapointHidden)',
      id: 'datapointHidden',
      parentId: 'Nested'
    },
    {
      parentId: 'datapointHidden',
      type: #DATAPOINT_REFERENCE,
      targetQualifier: 'Email'
    },
    {
      parentId: 'datapointHidden',
      type: #DATAPOINT_REFERENCE,
      targetQualifier: 'Telephone'
    }
  ]

  ...
  UpdateHidden;

  //  Search Term #DatapointHidden
  @UI.dataPoint: {
    title: 'Email (#DatapointHidden)',
    qualifier: 'Email',
    hidden: #(UpdateHidden)
  }
  @EndUserText.label: 'Email (#DatapointHidden)'
  Email;

  //  Search Term #DatapointHidden
  @UI.dataPoint: {
    title: 'Telephone (#DatapointHidden)',
    qualifier: 'Telephone',
    hidden: #(UpdateHidden)
  }
  @EndUserText.label: 'Telephone (#DatapointHidden)'
  Telephone;
}
```

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