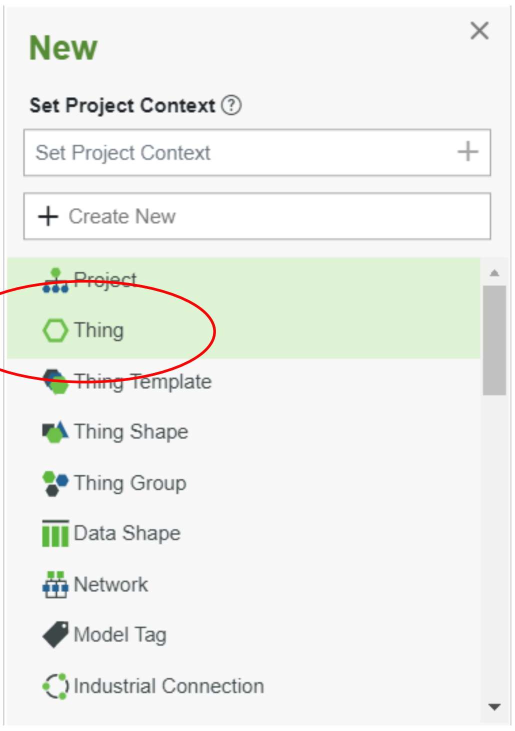
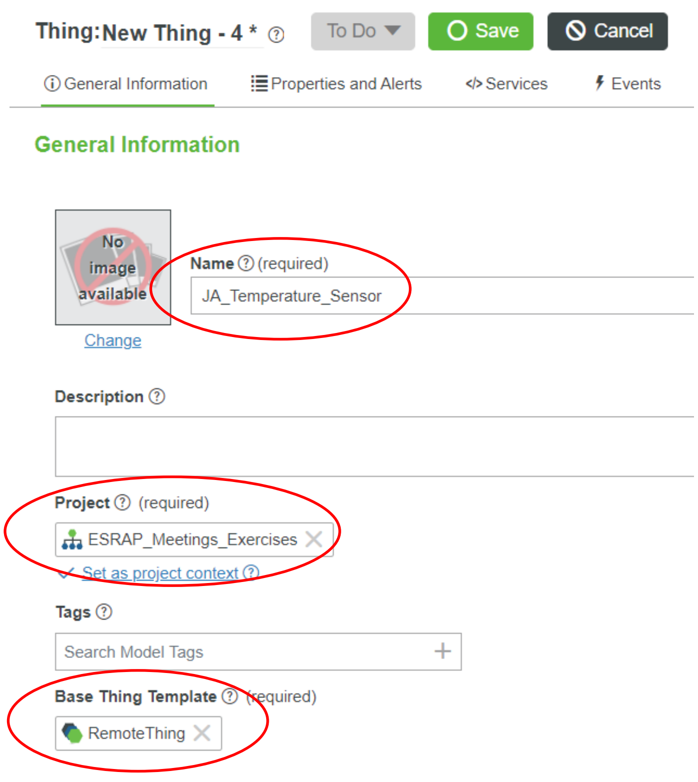
Displaying Time Series Data from Edge Device in a Mashup

1. Create new Thing



2. Fill out General Information
   a. Name = Initials_Temperature_Sensor
   b. Project = ESRAP_Meetings_Exercises
   c. Base Thing Template = RemoteThing



Name (required)
JA_Temperature_Sensor

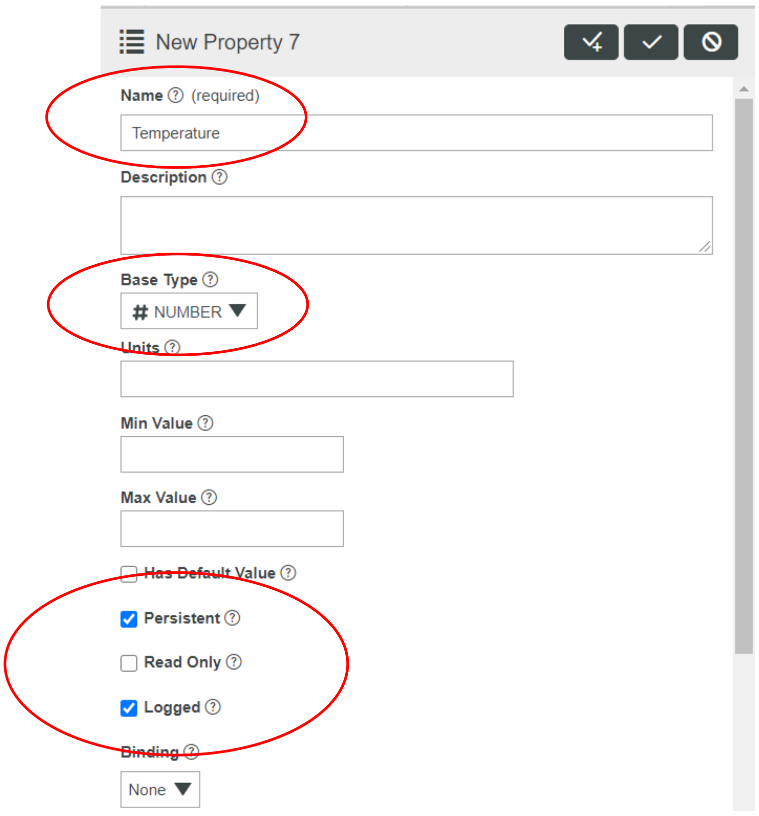
Description

Project (required)
ESRAP_Meetings_Exercises
Set as project context

Tags
Search Model Tags

Base Thing Template (required)
RemoteThing

3. Go to Properties and Alerts -> Add Property
   a. Fill in the information as in the following image:



Name (required)
Temperature

Description

Base Type
NUMBER

Units

Min Value

Max Value

Has Default Value

Persistent ✓

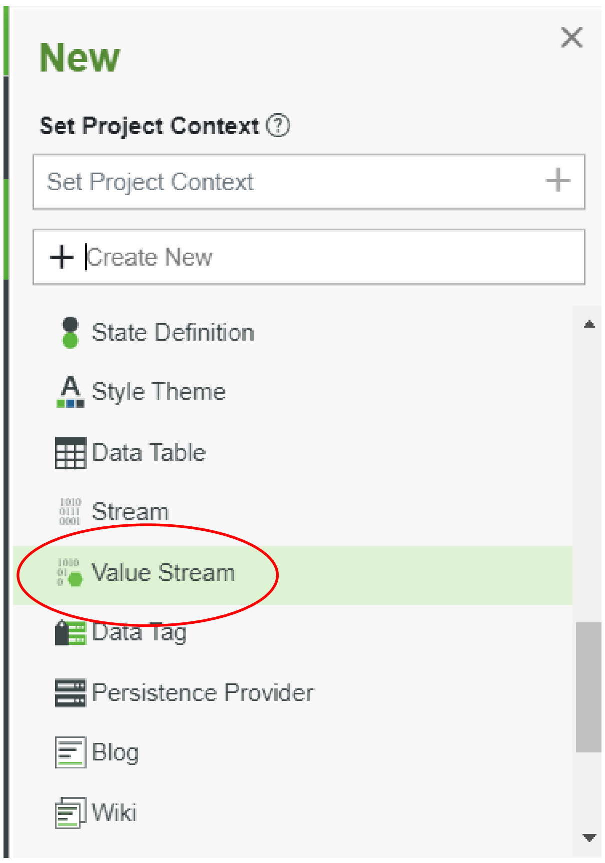
Read Only

Logged ✓

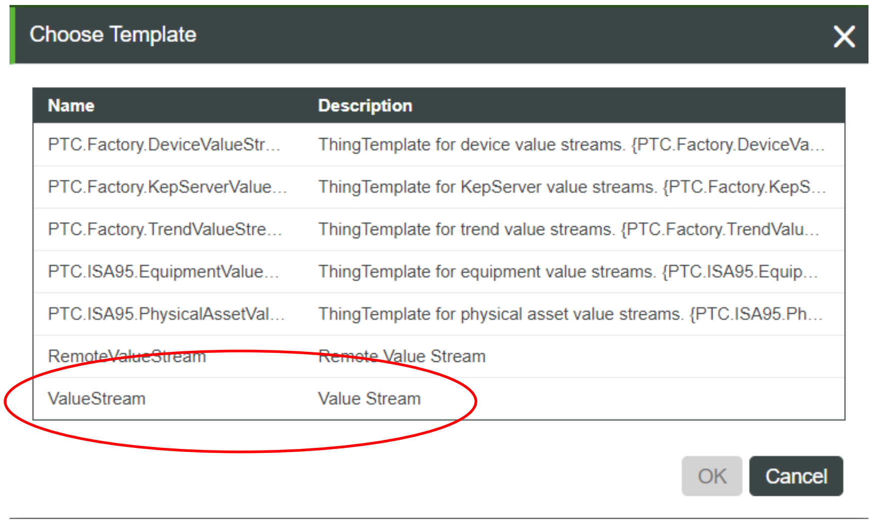
Binding
None

   b. Save

4. Create new Value Stream

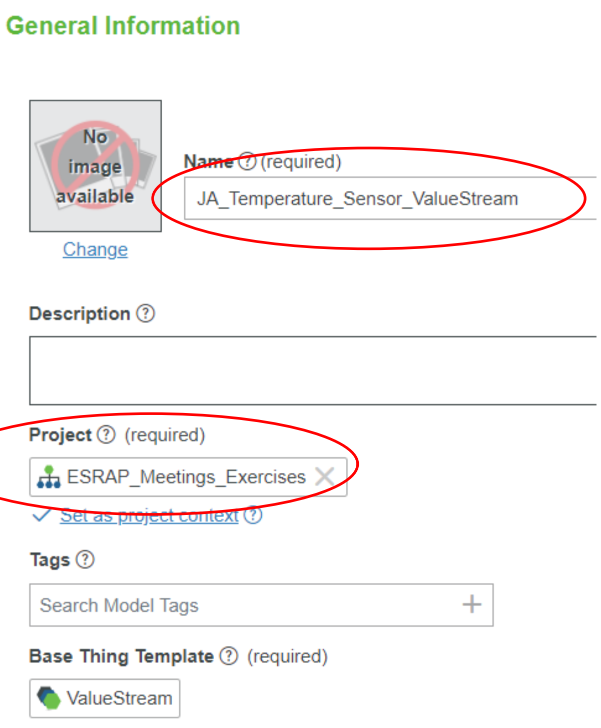


   a. Select ValueStream -> OK



Name	Description
PTC.Factory.DeviceValueStr…	ThingTemplate for device value streams. {PTC.Factory.DeviceVa…
PTC.Factory.KepServerValue…	ThingTemplate for KepServer value streams. {PTC.Factory.KepS…
PTC.Factory.TrendValueStre…	ThingTemplate for trend value streams. {PTC.Factory.TrendValu…
PTC.ISA95.EquipmentValue…	ThingTemplate for equipment value streams. {PTC.ISA95.Equip…
PTC.ISA95.PhysicalAssetVal…	ThingTemplate for physical asset value streams. {PTC.ISA95.Ph…
RemoteValueStream	Remote Value Stream
ValueStream	Value Stream

5. Fill in Information:
   a. Name = Initials_Temperature_Sensor_ValueStream
   b. Project = ESRAP_Meetings_Exercises


General Information

Name (required)

JA_Temperature_Sensor_ValueStream

Description

Project (required)

ESRAP_Meetings_Exercises

Tags

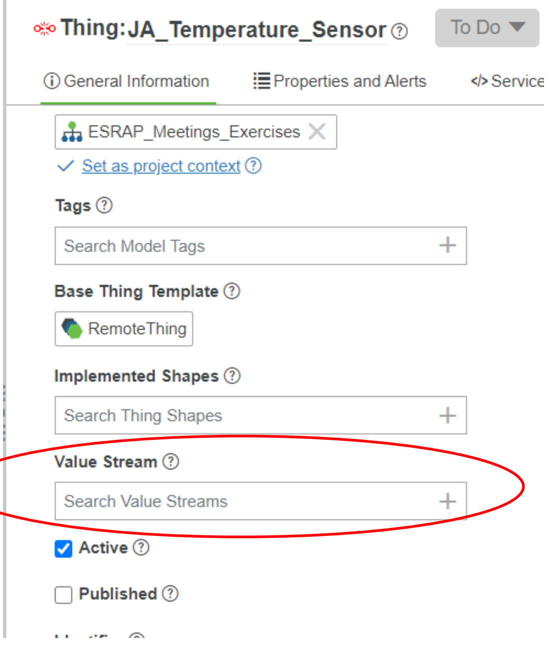
Search Model Tags

Base Thing Template (required)

ValueStream

   c. Save

6. Navigate to Initials_Temperature_Sensor Thing
   a. Add a Value Stream on General Information tab


Thing: JA_Temperature_Sensor

ESRAP_Meetings_Exercises

Tags

Search Model Tags

Base Thing Template

RemoteThing

Implemented Shapes

Search Thing Shapes

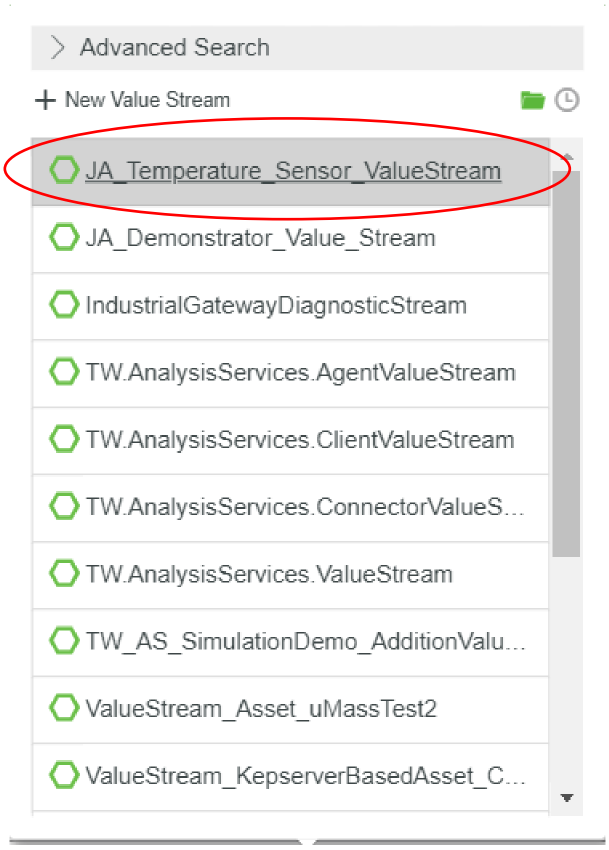
Value Stream

Search Value Streams

☑ Active

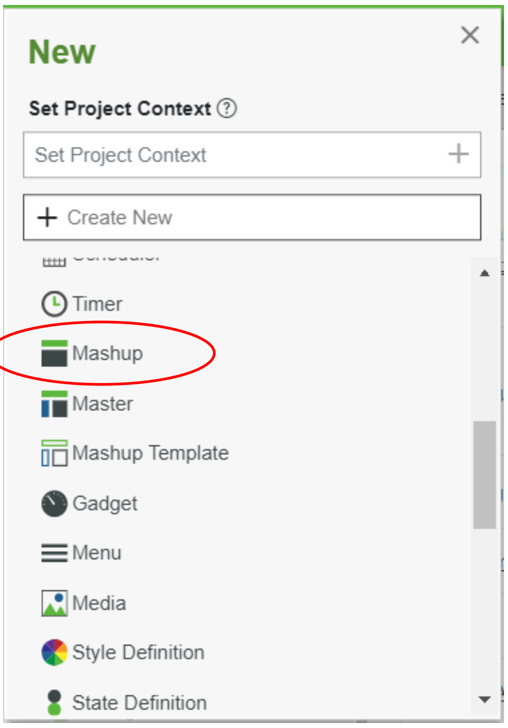
☐ Published

   b. Select the previous created Value Stream

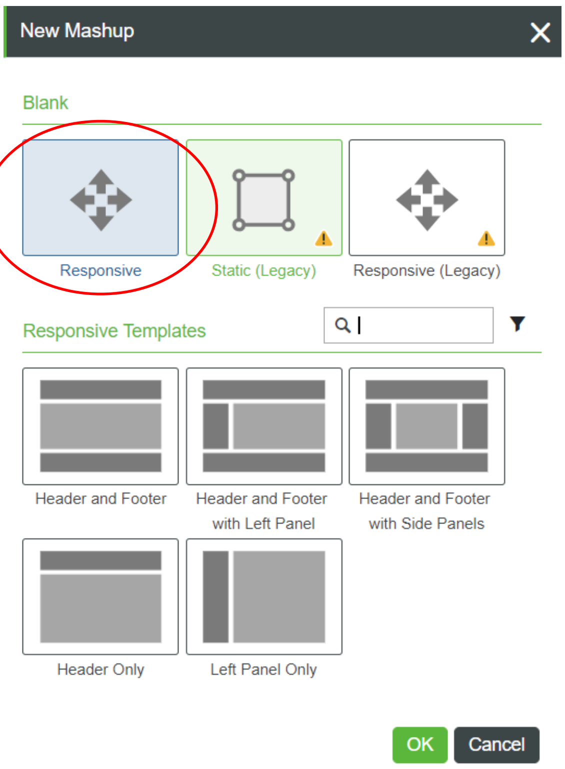

Advanced Search
New Value Stream
JA_Temperature_Sensor_ValueStream
JA_Demonstrator_Value_Stream
IndustrialGatewayDiagnosticStream
TW.AnalysisServices.AgentValueStream
TW.AnalysisServices.ClientValueStream
TW.AnalysisServices.ConnectorValueS...
TW.AnalysisServices.ValueStream
TW_AS_SimulationDemo_AdditionValu...
ValueStream_Asset_uMassTest2
ValueStream_KepserverBasedAsset_C...

c. Save

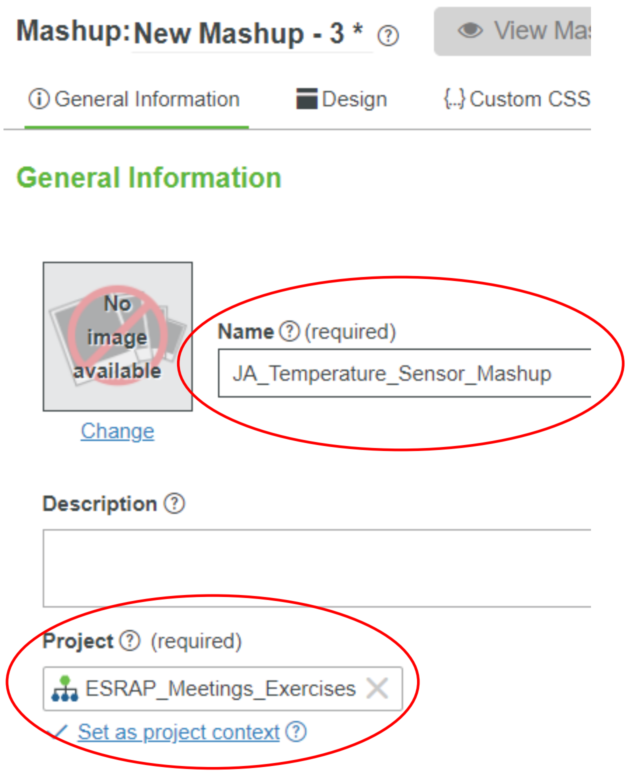
7. Create a Mashup



a. Select Responsive



8. Fill in General Information
   a. Name = Initials_Temperature_Sensor_Mashup
   b. Project = ESRAP_Meetings_Exercises


Mashup: New Mashup - 3 *

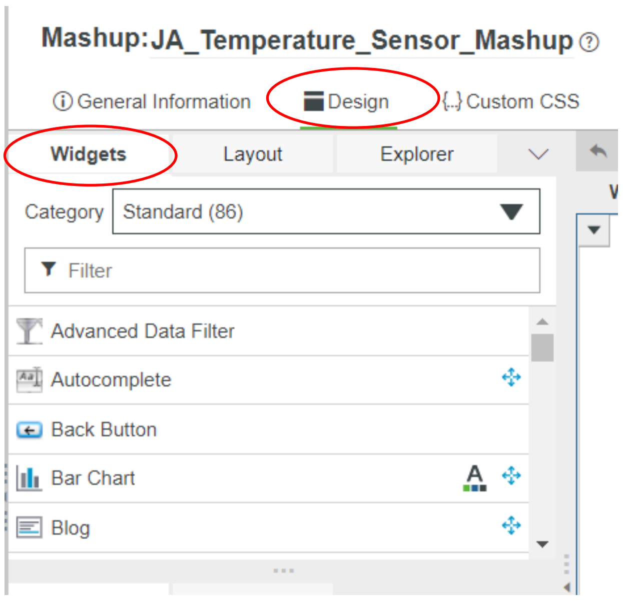
General Information

Name (required): JA_Temperature_Sensor_Mashup

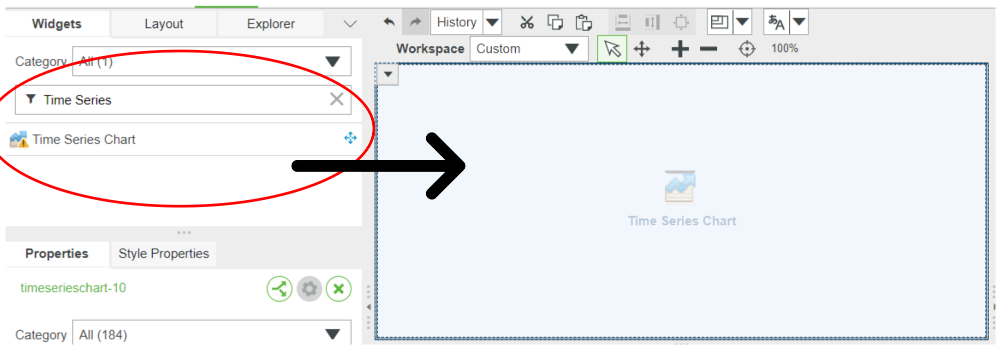
Description:

Project (required): ESRAP_Meetings_Exercises

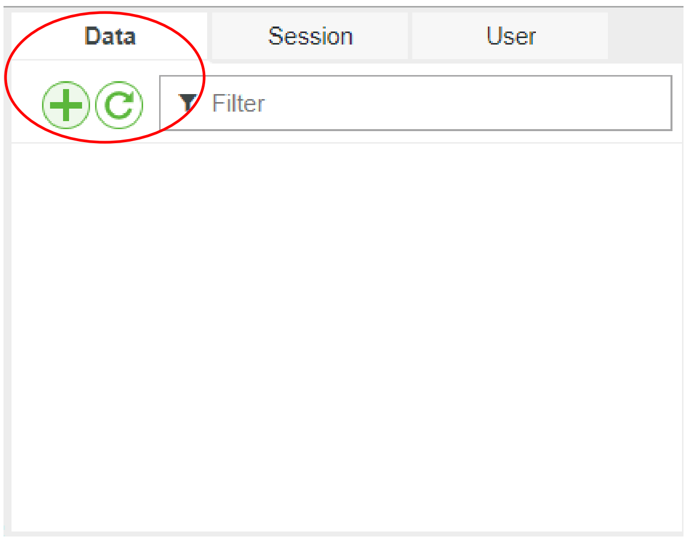
9. Switch to the Design tab
   a. Select Widgets



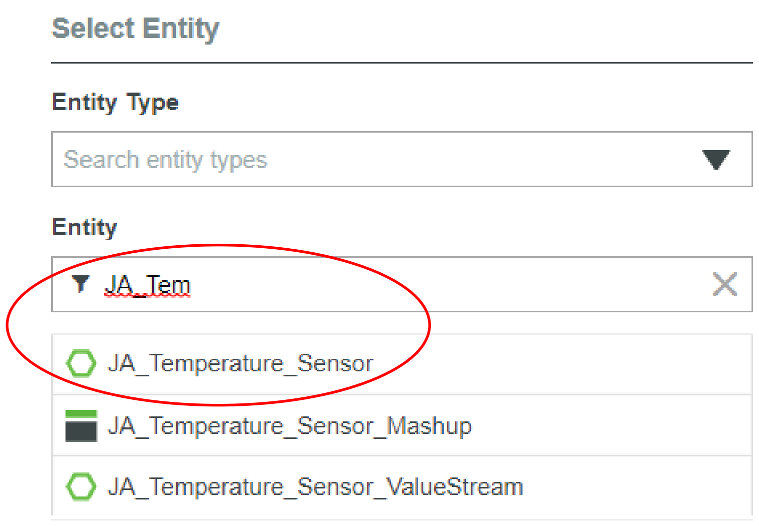
b. Use the Filter to select Time Series Chart
c. Drag and drop the Time Series Chart to the container



10. On the right side of the screen navigate to Data and click on add



11. In the Add Data window select the Temperature_Sensor Thing
    a. Use the Entity filter to find the Thing



Select Entity

Entity Type

Search entity types

Entity

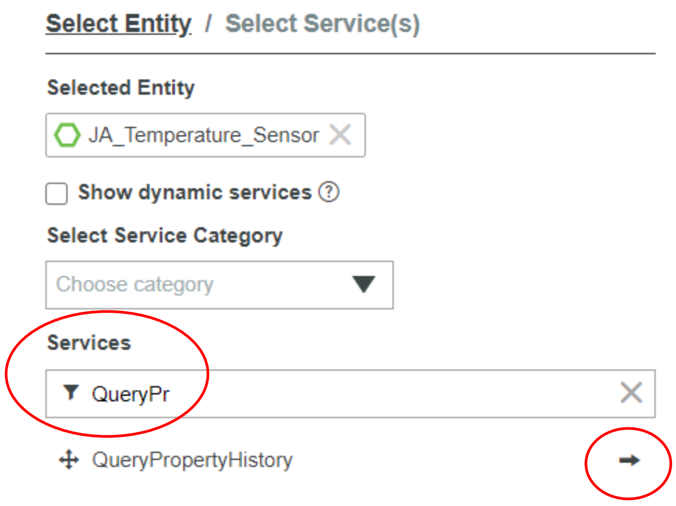
JA_Tem

JA_Temperature_Sensor

JA_Temperature_Sensor_Mashup

JA_Temperature_Sensor_ValueStream

    b. Use the Services Filter to find the QueryPropertyHistory Service and click on the arrow to select it



Select Entity / Select Service(s)

Selected Entity

JA_Temperature_Sensor

Show dynamic services

Select Service Category

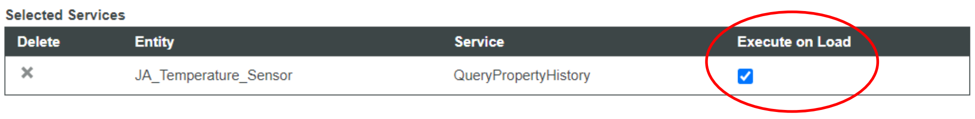
Choose category

Services

QueryPr

QueryPropertyHistory

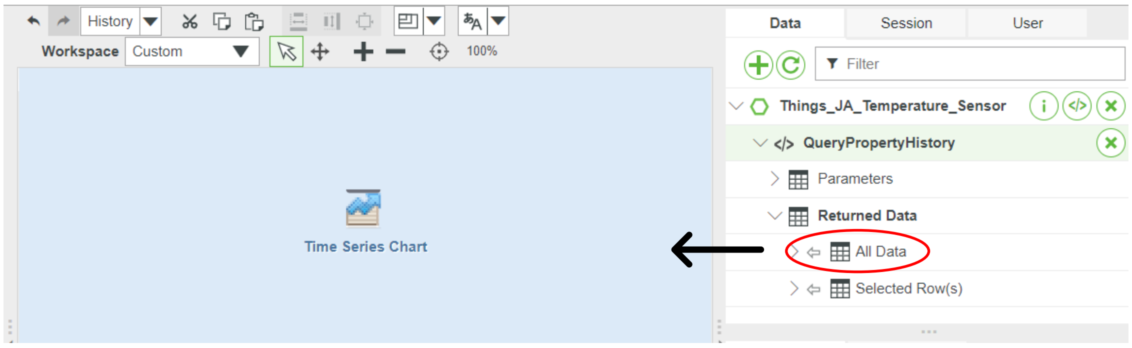
    c. Check the Execute on Load checkbox



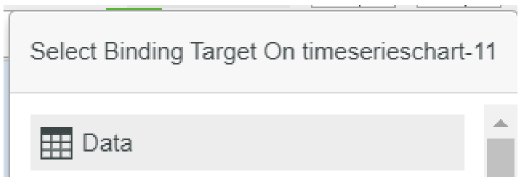
Selected Services

Delete	Entity	Service	Execute on Load
×	JA_Temperature_Sensor	QueryPropertyHistory	✓

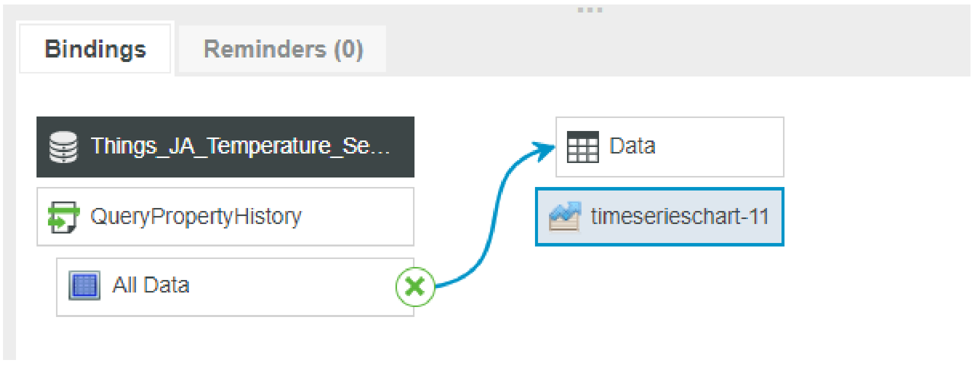
12. From the Data tab drag and drop All Data on the Time Series Chart



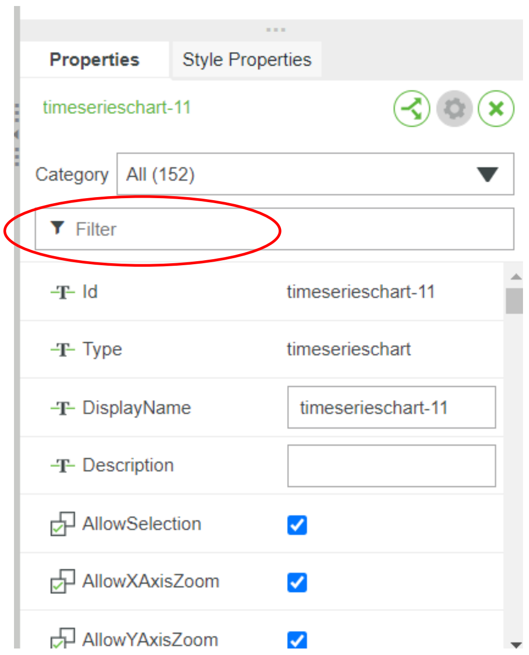
a. Select Data



13. Your Bindings in the bottom should look like this



14. Click on the Time Series Chart
    a. On the left side you can see the Properties tab
    b. Select following values (use the Filter to find it quicker):



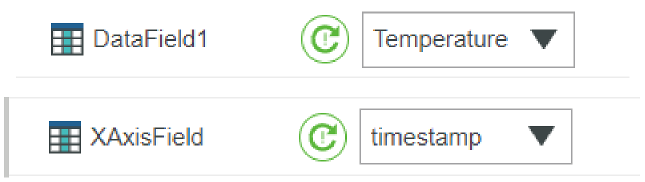
Properties | Style Properties

timeserieschart-11

Category: All (152)

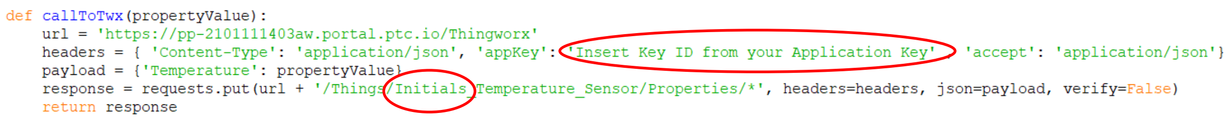
Filter

Id	timeserieschart-11
Type	timeserieschart
DisplayName	timeserieschart-11
Description	
AllowSelection	✓
AllowXAxisZoom	✓
AllowYAxisZoom	✓



DataField1	Temperature
XAxisField	timestamp

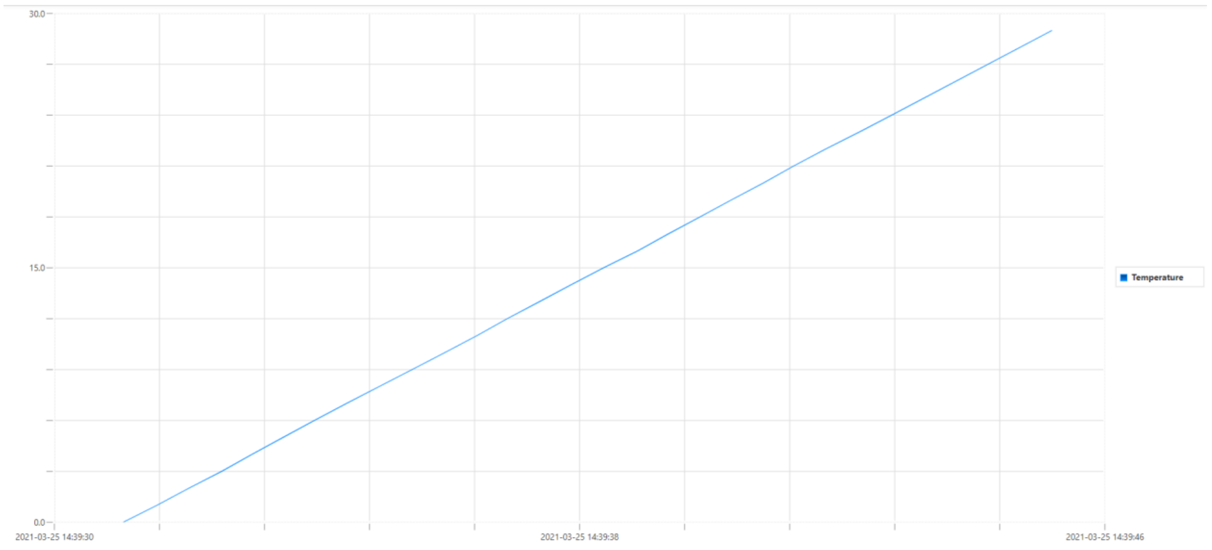
15. Now we need some data
    a. You can go to the Initials_Temperature_Sensor Thing and manually change the value of the Temperature property a few times
    b. Or you can use the provided python script that uses the Thingworx REST API to push property data
        i. Create New -> Application Key
        ii. Name = Initials_Temperature_Sensor_Appkey
        iii. Project = ESRAP_Meetings_Exercises
        iv. User Name Reference = Select your own user (TWX will tell you that no admin user should be used)
        v. Save
        vi. In the python script copy your generated Key ID and fill in your initials (example: '/Things/JA_Temperature_Sensor/Properties/*')



```
def callToTwx(propertyValue):
    url = 'https://pp-2101111403aw.portal.ptc.io/Thingworx'
    headers = { 'Content-Type': 'application/json', 'appKey':'Insert Key ID from your Application Key', 'accept': 'application/json'}
    payload = {'Temperature': propertyValue}
    response = requests.put(url + '/Things/Initials_Temperature_Sensor/Properties/*', headers=headers, json=payload, verify=False)
    return response
```

16. The script needs the “requests” package (pip install requests)
    a. Run the script from command line: python updateTwxProperties.py
    b. Tested with Python 3.7 and 3.9

17. In Thingworx Composer head back to your Mashup and click “View Mashup”, if you used the python script it will look like this:



18. If you want to delete the stored data, use the PurgeAllPropertyHistory Service of the Temperature_Sensor Thing