Mangan Inc.

SI UDFs and UDTs
LTUF February 2024
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Smart Instrumentation UDFs and UDTs

- Up to SPI version 2013 (V10), user defined fields (UDFs and user defined tables UDTs) were at the plant level.

- For a SPI/INtools domain with more than 1 plant, the UDFs and UDTs definitions can be consistent or different.
  - Created challenges with batch updating data.
  - Created challenges with specification forms.
  - Created challenges with ESL loop layouts.

- Starting with SI V2016 (V11), user defined fields (UDFs and user defined tables UDTs) must be consistent.
  - Can be considered at the domain level.
  - The must consistency is the header definition.
  - Can be: Because UDTs selections are still tracked in the tables with a plant_id field and can have different selections.
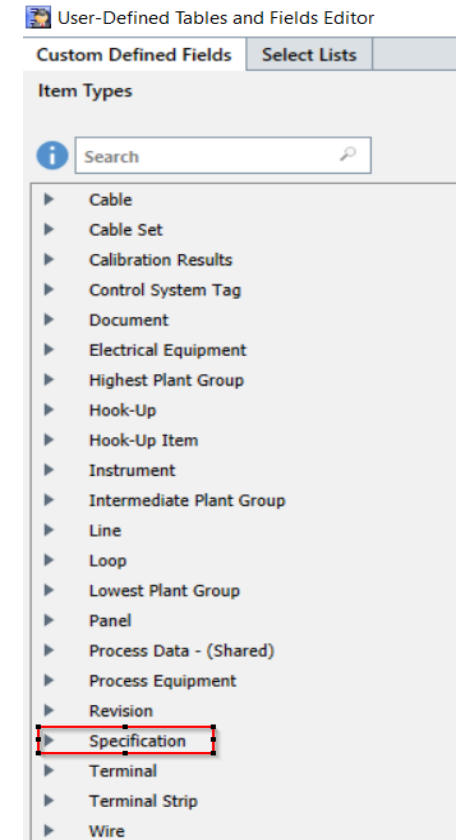
	UDT_SUPPORT_ID	PLANT_ID	AREA_ID	UNIT_ID	NAME	DESCRIPTION
1	0	0	0	0	NULL	NULL
2	178894	153013	178239	178240	P	Process / Air Tubing and Pipe
3	178895	153013	178239	178240	E	Electrical Wiring
4	178896	153013	178239	178240	C	Combination of P & E
5	178897	153013	178239	178240	D	Direct, Inline (no tube or wire req)
6	178898	153013	178239	178240	S	Software Point
7	337942	153013	178239	178240	TEST	NULL
8	337956	179044	179125	179128	P	Process / Air Tubing and Pipe
9	337957	179044	179125	179128	E	Electrical Wiring
10	337958	179044	179125	179128	C	Combination of P & E
11	337959	179044	179125	179128	D	Direct, Inline (no tube or wire req)
12	337960	179044	179125	179128	S	Software Point

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- The following is applicable to domains with more than 1 plant and upgrading from SPI version 2013 (V10)
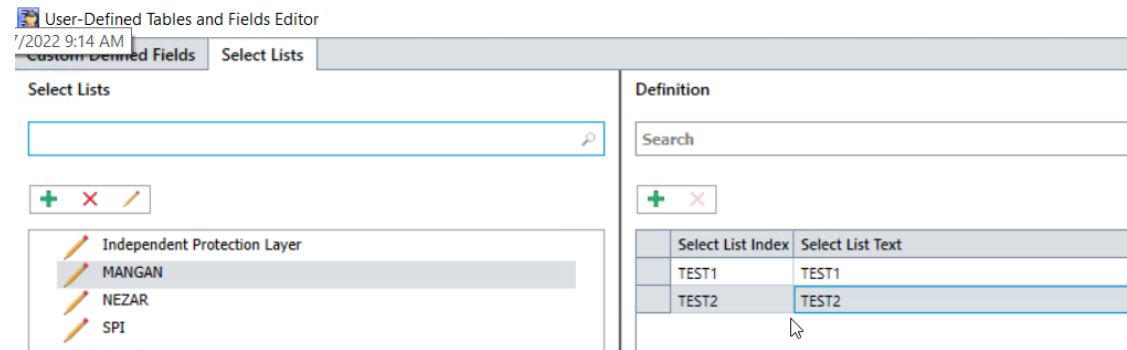
  to SI V2016 and beyond:
  - o If UDFs and UDTs are not evaluated (before the upgrade), the upgraded UDFs and UDTs editor

    (admin module – domain admin) will have notifications regarding the inconsistency of header definition.
  - o The inconsistency will need to be resolved before starting SI work as this will impact EDEs.
  - o The resolution includes definitions, data moving, updating (where applicable) specification forms, ESL layouts, Etc.
  - o Therefore,
    - ➤ Either evaluate and update before upgrade.
    - ➤ Or evaluate and update after upgrade.
- o Note: The evaluation, updating data, and the upgrade inconsistency does not

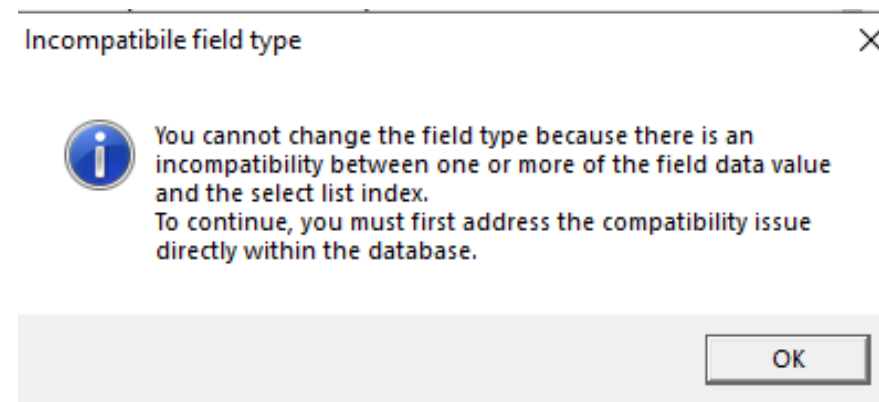 include the newly added SI item (Specification) to the UDFs & UDTs Editor.

User-Defined Tables and Fields Editor

Custom Defined Fields | **Select Lists**

Item Types

Search

- ▶ Cable
- ▶ Cable Set
- ▶ Calibration Results
- ▶ Control System Tag
- ▶ Document
- ▶ Electrical Equipment
- ▶ Highest Plant Group
- ▶ Hook-Up
- ▶ Hook-Up Item
- ▶ Instrument
- ▶ Intermediate Plant Group
- ▶ Line
- ▶ Loop
- ▶ Lowest Plant Group
- ▶ Panel
- ▶ Process Data - (Shared)
- ▶ Process Equipment
- ▶ Revision
- ▶ Specification
- ▶ Terminal
- ▶ Terminal Strip
- ▶ Wire

- UDFs now can be defined as select lists.
  - This can be applied to upgraded domains and existing UDFs.

  - However, when UDFs has data (regardless if header is defined or not), SI will not allow you to define as a select list if there is a mismatch data.

Smart Instrumentation UDFs and UDTs

- Select List header name and its selections are stored in the ENUMERATIONS and the CODELISTS tables.

- Both tables are system tables. Therefore, you cannot use the import module.

- The select list definitions (Index & Text) can be the same or different.
  - Index field is 50 character and Text field is 80 character.

Select List Index	Select List Text
TEST1	TEST1
TEST2	TEST2

Select List Index	Select List Text
INTOOLS3	INTOOLS
SI1	SI
SPI2	SPI

  - The index field (text) is what gets stored in the database UDF field.
  - The text field (text) is what gets displayed in the EDE.

Document Number (Name)	Nezar	MANGAN	Document Type Name
20-PID-2010	INTOOLS	TEST1	P&ID
20-PID-2011			P&ID

	DWG_NAME	DWG_UDF_C99	DWG_UDF_C98
1	20-PID-2010	INTOOLS3	TEST1

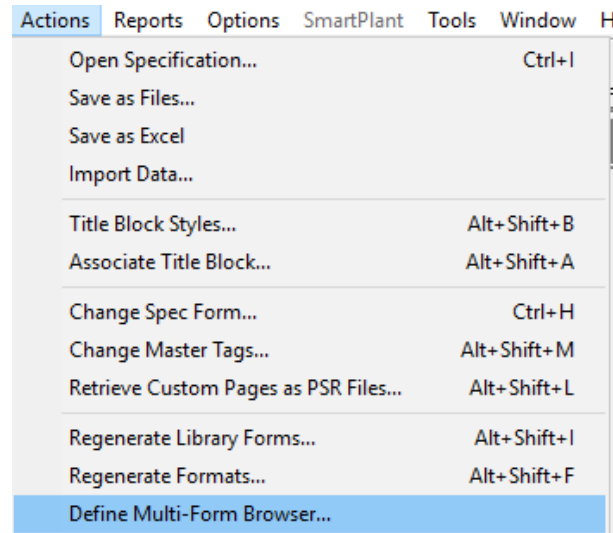- The UDFs select list only works with EDE views.

- Challenges, Issues, and Recommendations:
  - Not having the Index field = text field in the select issue creates a challenge with data extractions via SQL.
    - Therefore, the recommendation is to always have the Index field matches the text field.

    - In addition (as always with select lists and to avoid the unexpected), keep the index and text fields short and easy to read (20-character max).

  - Having the select list only available in an EDE creates a challenge with:
    - Tag property window – custom fields. The select list will not appear in the custom fields; therefore, data can be entered differently than the select list and saved.

    - Any remaining browser views (Ex: Fieldbus Tag Number Browser and Document Binder Browser). The select list will not appear in the browser; therefore, data can be entered differently than the select list and saved.

    - Any specification form that is using UDFs. The select list will not appear in the tag spec; therefore, data can be entered differently than the select list and saved.

    - Therefore, the recommendation is an enhancement to SI to allow the select lists appear in the tag property window – custom fields, and browser views. Or at least provide a warning regarding the inconsistent/different data.

  - Bug No. 4195621: UDF_N07 to UDF_N10 cannot be updated on tag property window. They can only be updated through an EDE.

Smart Instrumentation UDFs and UDTs

- Challenges, Issues, and Recommendations:
  - Several tables do have UDF fields; however, they are not available through the administration module to define.
    - Apparatus (Wiring Equipment).
    - Apparatus Category (Wiring Equipment Category).
    - Component_function_type (Instrument Type).
    - Component_category (Tag Category).
    - And Other.
    - Note: Most of these UDF fields are available in an EDE view and can be selected and edited (Ex: Apparatus); however, some cannot be edited (Ex: Tag Category).

    - Therefore, recommendation to have these different UDFs available in the administration module for consistency purposes and allow all to be editable in an EDE.

  - With the limited No. of UDFs that are available and the visibility that EDE views, the recommendation is to evaluate and update/move data to their specific SI fields (Ex: Alarm and Trip settings, IPF No., Notes, etc.).

- Specification UDFs:
  - For legacy specification forms where their spec_udf fields are not normalized (Ex: spec_udf_c01 is used for different purposes per specification form), please remember that you can use the Define Multi-Form Browser function when needing to evaluate and update such spec_udf.
    - ➢ Specification Module – Actions – Define Multi-Form Browser.
    - ➢ You must have SpecDD defined per form.
    - ➢ Strongly recommend to have the SpecDD header defined the same on all forms.
    - ➢ When generated, a browser view becomes available to use under specification browser.

  - In addition, separate EDE views or separate spec browser views can be created for such updates; however, each view will need to be defined per specification form.

Your questions please.