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What's New in Exensio ProcessControl 6.0-20250327

Exensio Process Control Product Group

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Exensio ProcessControl Licensing Feature

FDC Data Collection

- ❑ SBSS, PCE, PT
- ❑ PCB, PCA ,IDE
- ❑ Non product wafer data collection

Process Control (service/frontend)

- ❑ Online FDC execution. Trace data loading, FilterPlan, SPC, OCAP
- ❑ Offline FDC execution. FilterPlan, SPC
- ❑ Analytics Foundation
- ❑ Search frame and trace/indicator viewing chart
- ❑ Manager base - Equipment Type, Filter Plan, SPC Plan, OCAP, Artifact
- ❑ User Privileges Base
- ❑ Artifact Versioning
- ❑ Export / Import FDC model
- ❑ Custom Indicators
- ❑ SPC Offsets, WECO Rules, Auto-Limits Ad-hoc
- ❑ OCAP report in WebPlayer

Advanced Control (frontend)

for FDC Data Collections Module

- ❑ EDA (Interface-A)
- ❑ External Sensor Capability
- ❑ Versioning, Strategy Management

for Process Control module

- ❑ Auto Merge – ET Manager
- ❑ Auto Indicator
- ❑ Virtual Sensors
- ❑ Custom Script Indicators
- ❑ Auto Retarget
- ❑ Scheduled Auto-Limits Offline Service
- ❑ Aggregation Manager Base
- ❑ Aggregation: Multivariate Analysis
- ❑ Aggregation: Wafer to wafer FDC
- ❑ Fab Migration Script (E-PC to E-PC model migration)
- ❑ FSR Migration Script (Maestria to E-PC model migration)
- ❑ YAFDC: Export FDC indicators to Manufacturing Analytics
- ❑ SOAP API for SPC model management

Process Control Big Data (backend)

- ❑ Storage of trace data in Cassandra
- ❑ Storage of Indicator data in Cassandra (Future)

Gateway Export (service)

- ❑ FDC Writer service
- ❑ Trace Writer service
- ❑ Trace Writer utility

Automation and Reporting

(Exensio Platform Module)

- ❑ DP Monitor
- ❑ Automation Services
- ❑ WebPlayer

Process Control Guided Analytics (frontend)

- ❑ Wafer Qualification Report
- ❑ Dashboard
- ❑ Trendviewer
- ❑ Tool Matching Report

Solution

- ❑ Yield Aware FDC

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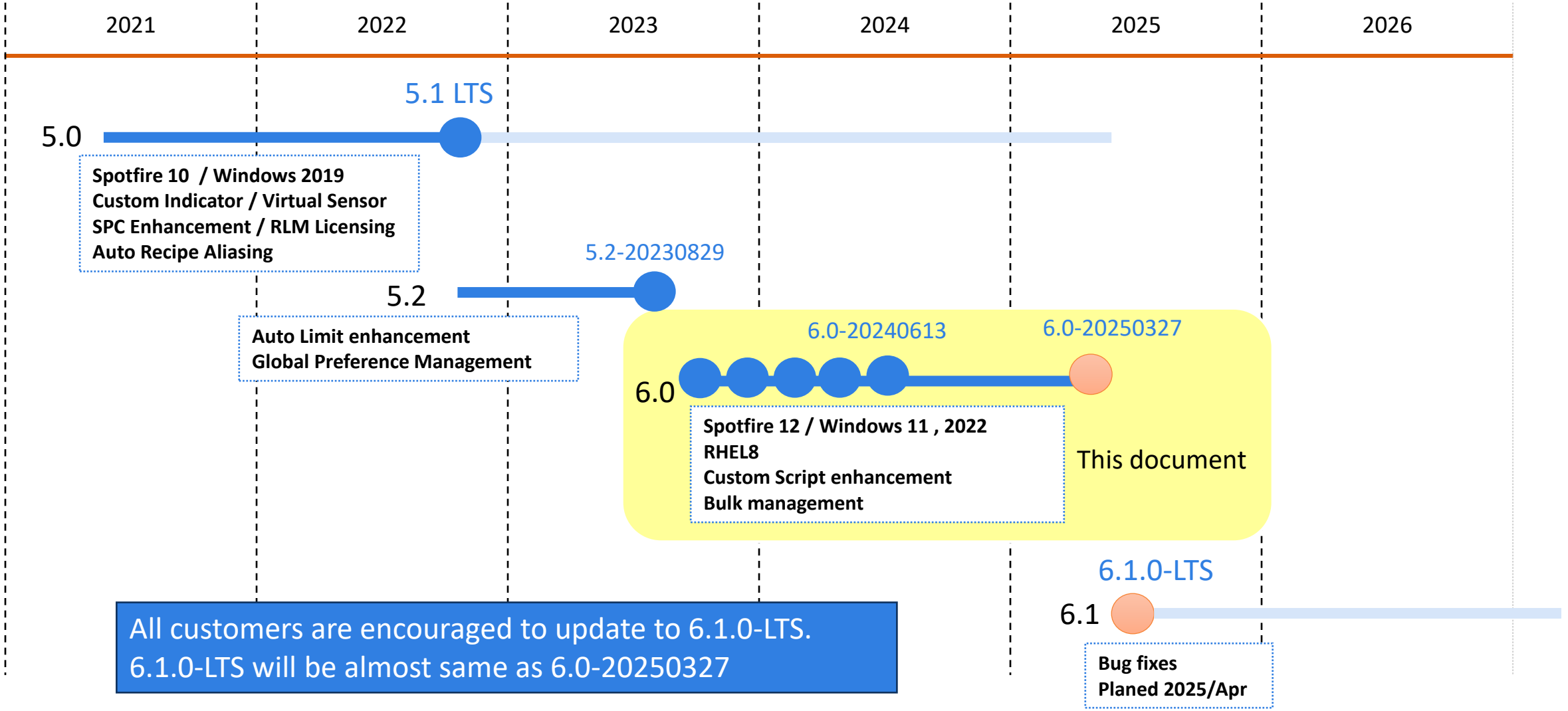
Exensio ProcessControl Release History



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Summary of Bug Fix and Feature List

Modeling Improvement – Focusing on Useability

Function Area	Feature	JIRA	Version
ET	Virtual Sensor Editor UI Improvements	EX-33149	6.0 ~ 6.0-20240613
Filter Plan	Temporal Trimming Timing Resolution	EX-33754	6.0 ~ 6.0-20240613
	Custom Script Improvement-1	EX-28663 EX-33250	6.0 ~ 6.0-20240613
	Custom Script Improvement-2	EX-29645 EX-37785 EX-33880 EX-37333	**6.0-20250327**
	Sensor Filtering for Auto Indicator	EX-37541	**6.0-20250327**
	Copy Indicator to the other Filter Plans	EX-33547	**6.0-20250327**
FilterPlan/SPC	Indicator Chart X axis options	EX-33349	**6.0-20250327**
OCAP	Include/Exclude Indictor Limitation Relaxed	EX-32711	**6.0-20250327**
	Disabling Actions	EX-32604	6.0 ~ 6.0-20240613
All	Artifact Selection Panel Enhancements	EX-31764	6.0 ~ 6.0-20240613

Function cleanup/Specification change

Function Area	Feature	JIRA	Version
Cleanup unused functions	ET: Data Collection Type is always “RTS”	EX-30533	6.0 ~ 6.0-20240613
	ET: Enable/Disable Recipe, Recipe Alias	EX-29895	**6.0-20250327**
	FP/SPC: remove notification page	EX-32659	**6.0-20250327**
Specification change	.fdc file format change	EX-36753	**6.0-20250327**
	Rollback unit of **Time statistics from second to milliseconds	EX-37334	**6.0-20250327**
Reliability	Online: reject too large trace data to prevent out of memory exception	EX-38984	**6.0-20250327**

Database/Delete-Rename management

Function Area	Feature	JIRA	Version
Database management	RemoveOldSpc Job	EX-33115	6.0 ~ 6.0-20240613
	mdbtools: Delete Filter Plan	EX-32372	6.0 ~ 6.0-20240613
	mdbtools: Delete SPC Plan	EX-36136	**6.0-20250327**
	Mdbtools: Delete Aggregation Plan	EX-36137	**6.0-20250327**
	Default Trace storage configuration	EX-32091	**6.0-20250327**
Delete/Rename management	ALL: “Deleted” Artifact State Renamed to “Deactivated”	EX-33854	6.0 ~ 6.0-20240613
	ET: Remove a recipe from the recipe alias	EX-29895	**6.0-20250327**
	ET: Remove a module from the module type	EX-20852	**6.0-20250327**
	Reject approved artifacts	EX-26288	**6.0-20250327**

Bulk update/API/Global Config

Function Area	Feature	JIRA	Version
Bulk update	Request For Production for Multiple Artifacts	EX-33896	6.0 ~ 6.0-20240613
	Bulk Import/Export artifacts. FP, OCAP in addition to SPC	EX-37925	**6.0-20250327**
	Import FilterPlan with misaligned sensors/indicators	EX-32101	**6.0-20250327**
Global Setting	Maximum Contexts to Load for Trace DoD	EX-30800, EX-14404	6.0 ~ 6.0-20240613
API	SPC API specification documented	EX-29398	**6.0-20250327**

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Summary of Bug Fix and Feature List

Area	Bug	Feature	T:
PC-Backend	11	5	16
PC-Frontend	8	4	12
PC-Services	5	0	5
Total Unique Issues:	**24**	**9**	**33**

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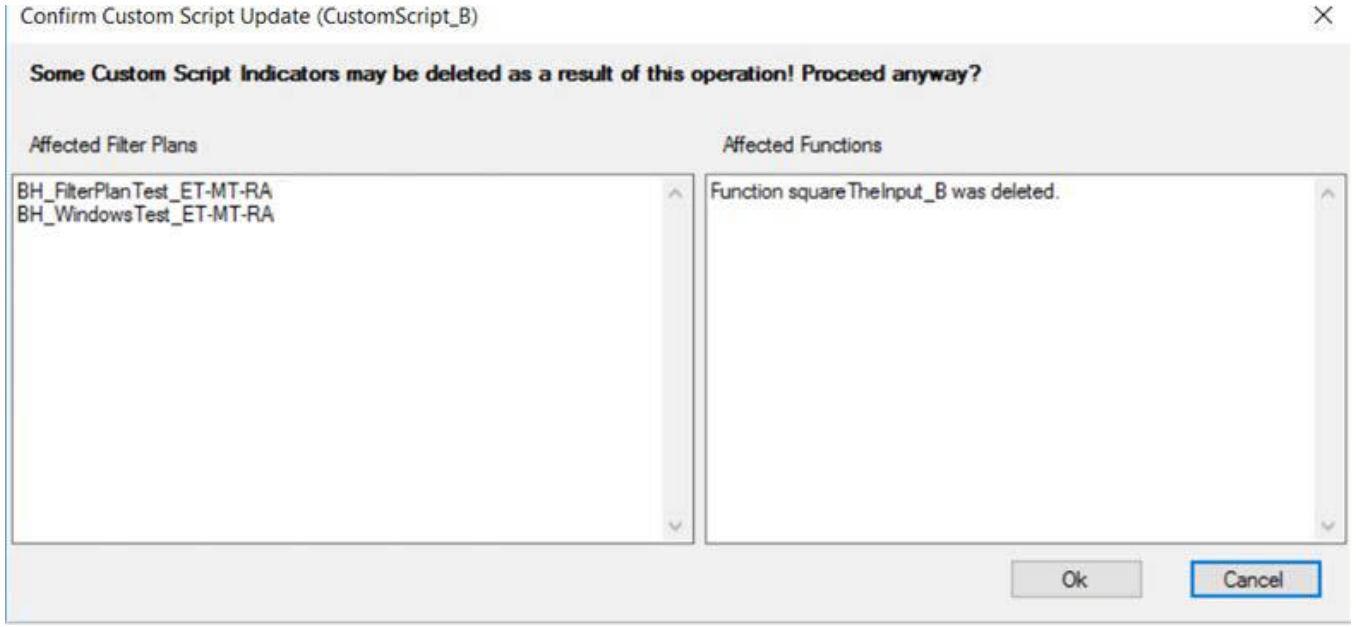
#1. Filter Plan – Custom Script update warnings

- When a custom script update operation is performed and the result is that a custom script indicator *may* be deleted or a function may otherwise be impacted, a warning message is now displayed, listing the affected filter plan name(s) and affected function(s), and asking for confirmation.



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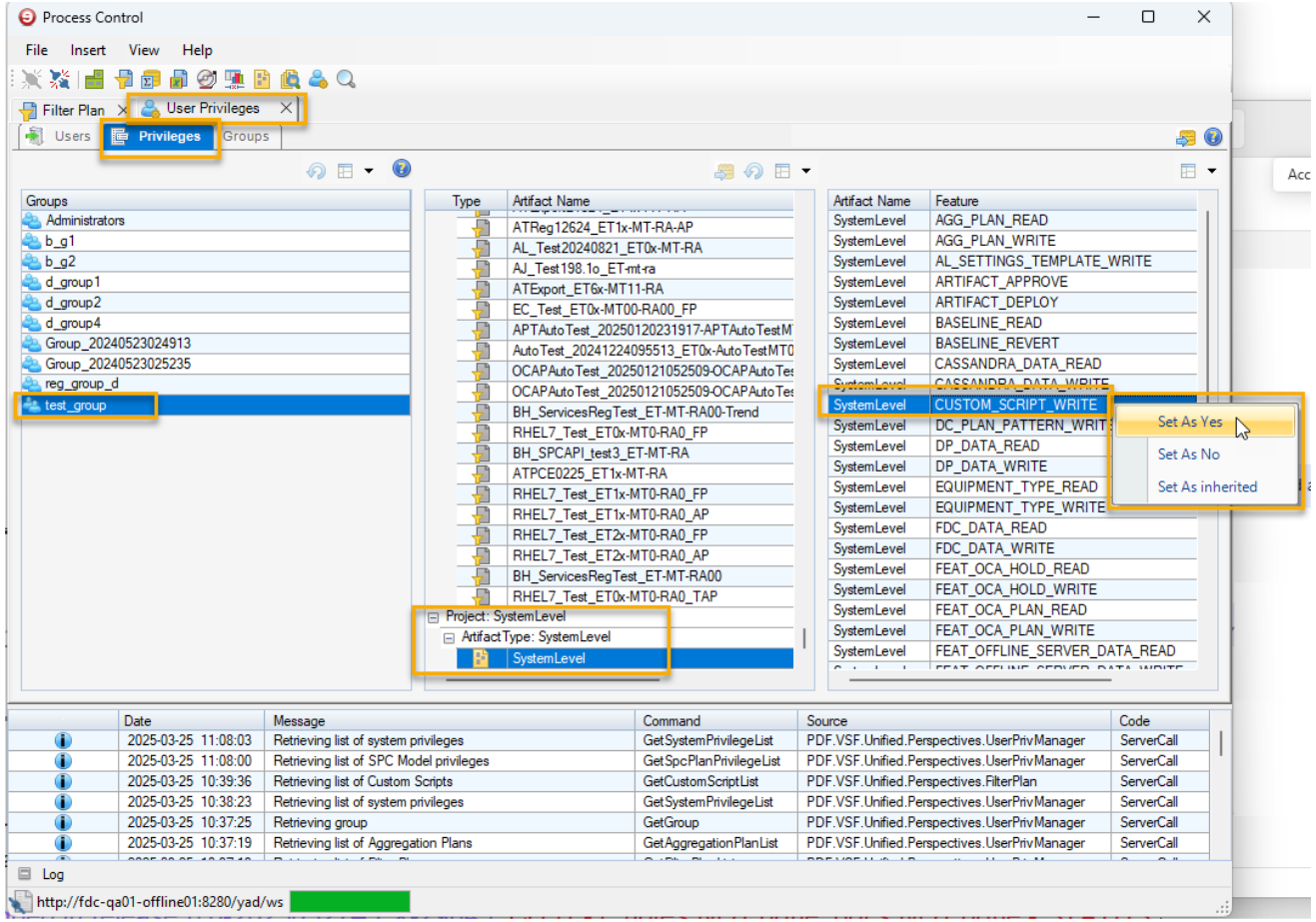
#2. Filter Plan – Custom Script Editing Privileges

new Custom Script level of user privileges has been added. This setting allows administrators to define, for a given group, whether members of the group can or cannot edit and create custom groovy scripts. This is configurable in the User Privileges Manager, from the **Privileges** panel



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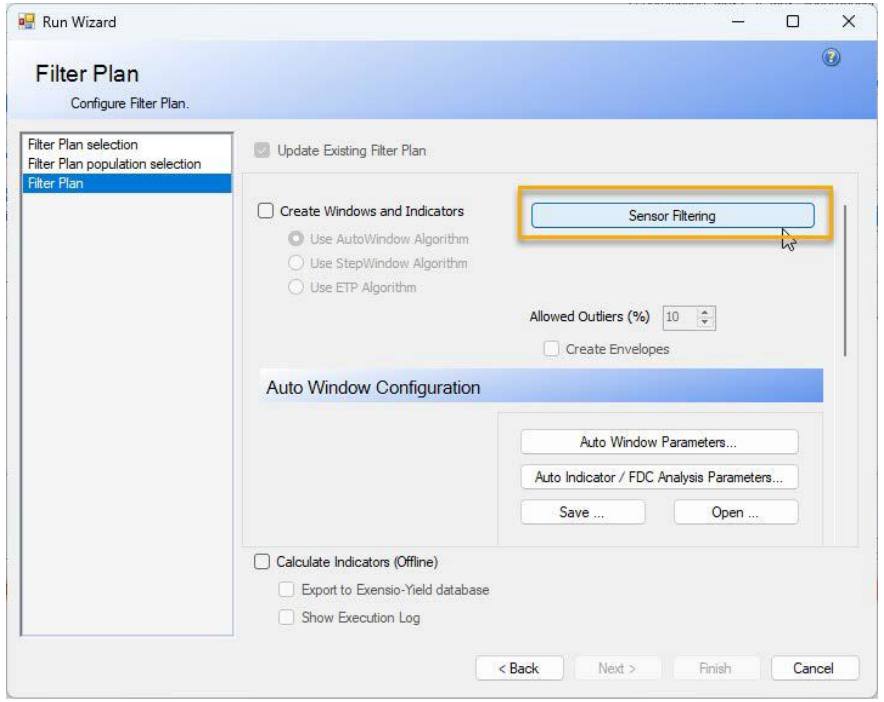
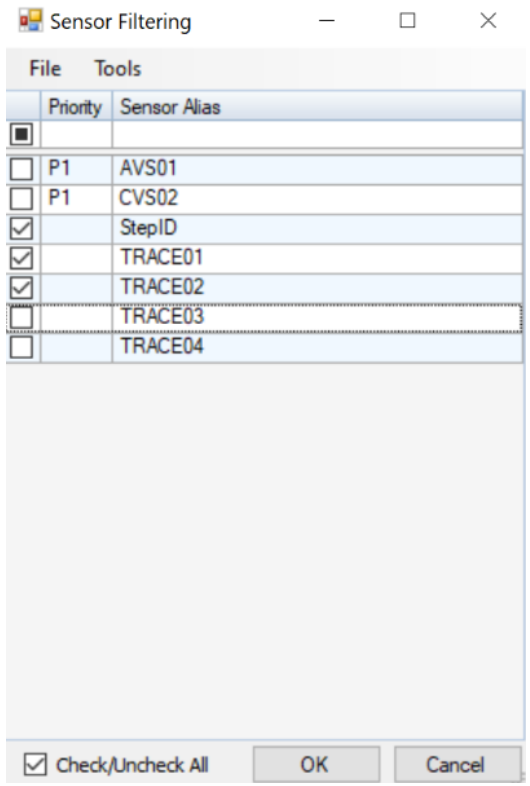
#3. Filter Plan – Sensor Filtering For Auto-Indicators

- Now user can filter sensor for auto indicator generation
- “Set Priorities” button is deleted, and Sensor Filtering feature take over the capability in demo/full mode offline analysis





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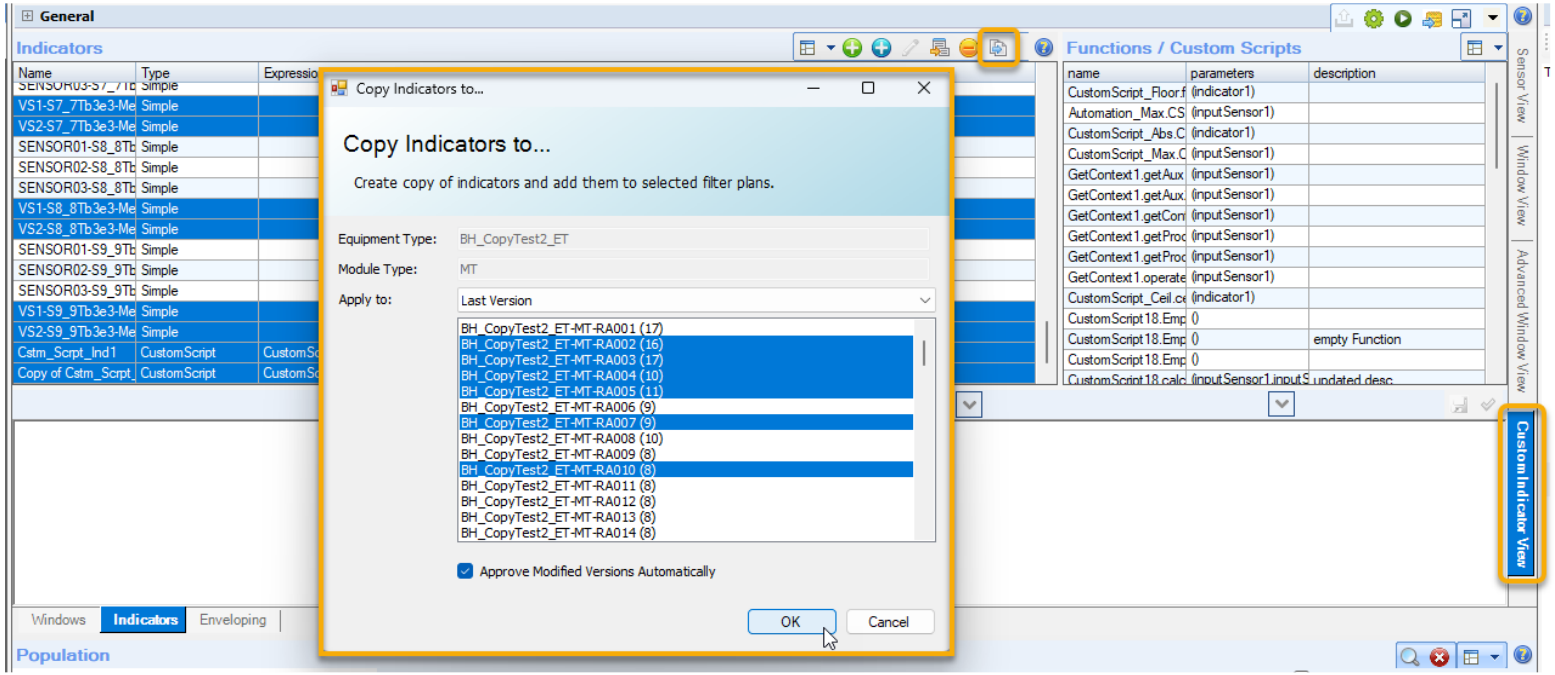
#4. Filter Plan – Copying indicators to other Filter Plans

- User can copy multiple indicators from to multiple filter plans



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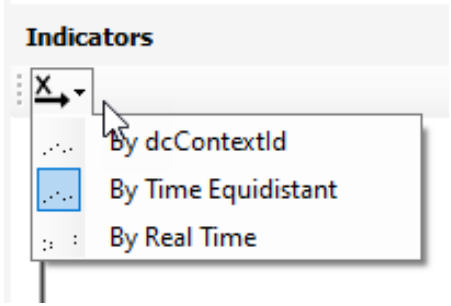
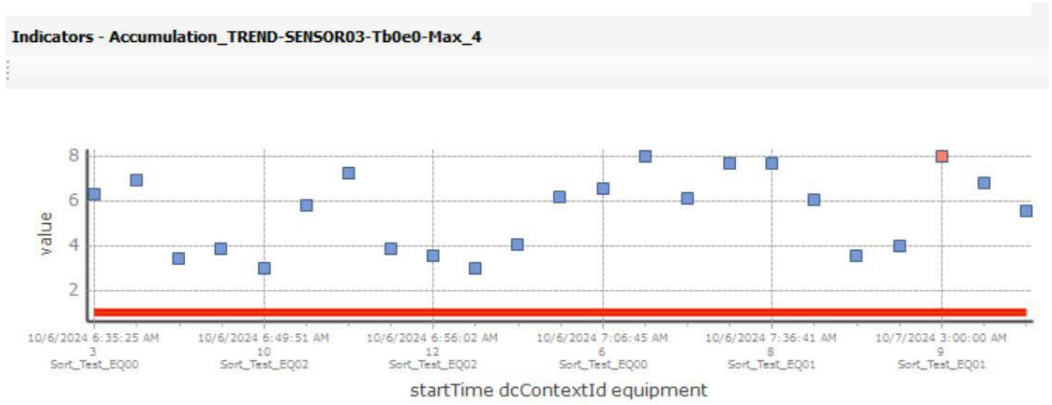
#5. Filter Plan/SPC – X-axis option for indicator chart

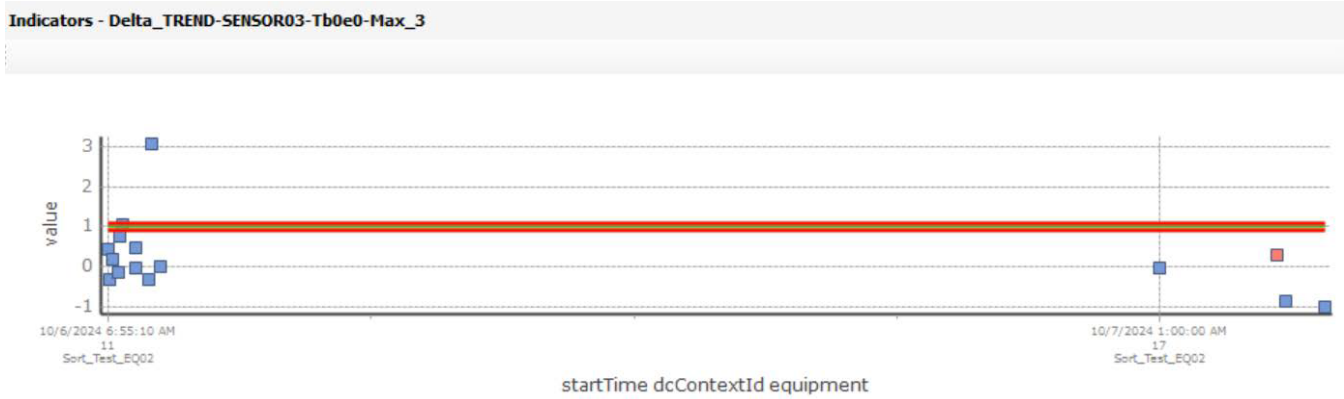
- **3 x-axis mode available**
  - By dcContextId
  - By Time Equidistant (new)
  - By Real Time(new)



X-axis by Time Equidistant



X-axis by Real Time



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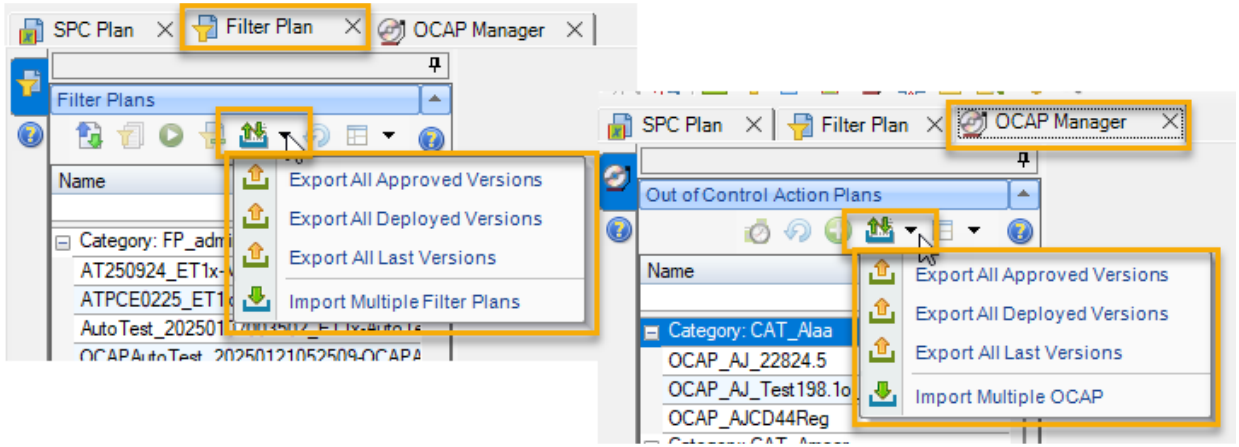
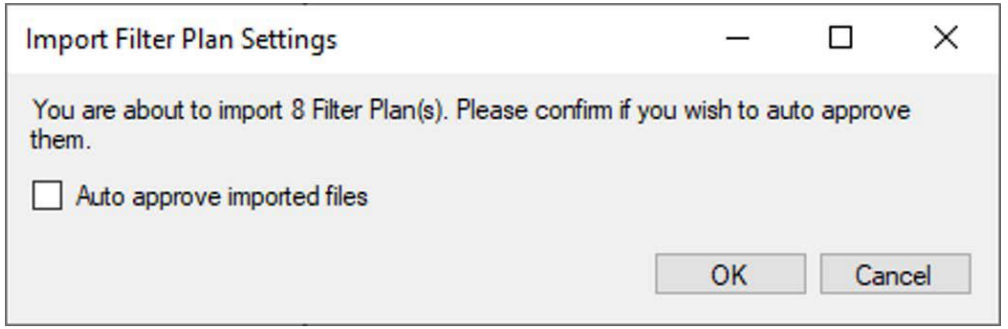
EX-32711
EX-32604

#6. Bulk Update – Model import/export

Bulk Import/Export for FilterPlan and OCAP

- Bulk import/export feature is now available for Filter Plan and OCAP in addition to SPC Plan
- Optionally, the imported artifacts can be approved





Importing Filter Plan with misaligned Sensor/Indicators

In previous releases, users were unable to import a new filter plan from a different system when it referenced sensors/indicators that did not exist in the current system.

Now, importing handling missing sensor/indicators smartly to make import succeedful

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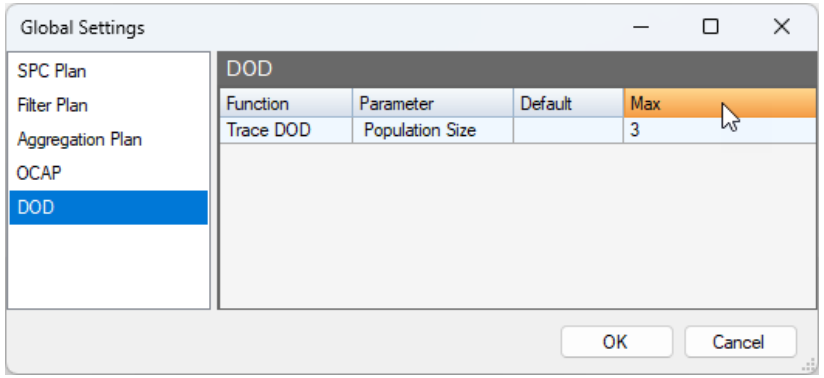
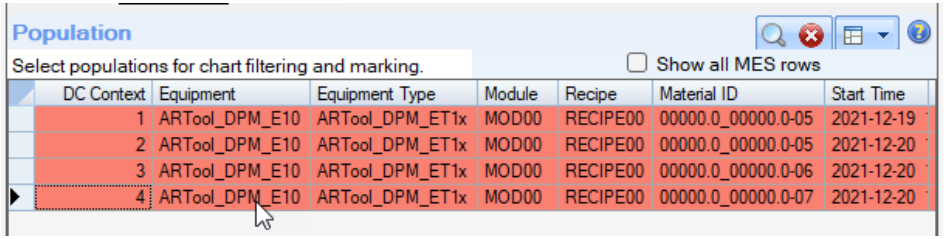
#7. Global Setting – Maximum Contexts to Load for Trace DoD

- **A new Process Control Global Settings category has been added as following**



- **The Max limit applies to context selection in the Population grids when generating trace charts and FDC drill-down tables. The Max limit applies to**
  - Search Frame
  - Filter Plan
  - SPC plan
  - FDC trace dod table



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#8. Spec change – .fdc file format change

- The following file format changes have been made to the M2DP (E2DP) export file:
  - **ModuleType** — new text field. Represents the module type associated with the exported data.
  - **DCQV —** new column: Data Collection Quality Value.

```
<header-section>
ProgClass 24
ProgGroup YA-FDC
ProgName IND_N.A._ChA_DemoRecipe_N.A.
Equipment Demo01
Equipment Type PM_Retarget_Demo
Material Name NA
Recipe DemoRecipe
Physical Recipe NA
Logical Recipe NA
StartTime 2024/01/04 12:12:13.000
EndTime 2024/01/04 12:12:13
FPVersion 5
Strategy PM_Retarget_Demo-ChA-DemoRecipe
StrategyUUID 31A9E4A2-BCC9-3A30-A141-BA0760F196EA
Model NA
FdcContextId 118569
DcContextId 288
ModuleType ChA
Chamber ChA
FilterPlanKey 42
AggregationPlanKey NA
ControlJobId NA
ProcessJobId NA
ProcessJobName NA
</header-section>
<wafer-section>
LOT_NAME WAFER_NAME AUX1 AUX2 TECHNOLOGY PRODUCT PROCESS STAGE STEP
SlotNumber Route ProductFamily Carrier LotType SubRoute InputLoadPort
ReticleName
DemoLot14 DemoWafer14 UNDEFINED UNDEFINED N.A. N.A. NA N.A. N.A.
NA N.A. UNDEFINED N.A. N.A. UNDEFINED NA
UNDEFINED
</wafer-section>
<indicator-section>
INDICATOR_NAME VALUE LSL HSL LPL HPL LOL HOL DCQV
PM_Index-Tb0e0-Max 14.6 NA NA NA NA NA NA 1.0
SensorB-Tb0e0-Max 25.45 NA NA NA NA NA NA 1.0
SensorA-Tb0e0-Max 35.963 NA NA NA NA NA NA 1.0
</indicator-section>
</data-file>
```


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#9. Reliability – Online reject too large trace data

- **When online receive a large size of trace data, larger than JVM max memory size**
- **Before**
  - Out Of Memory exception raised, and the online enters unstable status leading massive data loading missing.
- **After**
  - Check memory usage while reading trace chunk, if the usage > 60% of JVM max memory size, the online reject the context, and safely continue to process next contexts.

2025-Mar-24 03:29:26,216 - ERROR TID=Thread-5 (HornetQ-client-global-threads-1102677603) [com.pdf.online.service.impl.OnlineServiceImpl] Unable to process message : group = Data_Load_Test_ET0x ; equipment = Data_Load_Test_EQ00 ; module = null ; time = Mon Mar 24 03:29:18 PDT 2025 ; equipmentId = null ; moduleId = null ; pft_key = null ; fp_key = null ; spc_key = null ; dcContextId = null ; fdcContextId = null cause = com.pdf.datastore.exception.DSTO_Exception: High memory usage detected. Aborting the process.

2025-Mar-24 03:29:26,216 - DEBUG TID=Thread-5 (HornetQ-client-global-threads-1102677603) [com.pdf.common.service.impl.ServiceErrorHandlerImpl] Error is com.pdf.datastore.exception.DSTO_Exception: High memory usage detected. Aborting the process.

2025-Mar-24 03:29:26,216 - DEBUG TID=Thread-5 (HornetQ-client-global-threads-1102677603) [com.pdf.common.service.impl.ServiceErrorHandlerImpl] Source message is HornetQMessage[null]:PERSISTENT

2025-Mar-24 03:29:26,217 - WARN TID=Thread-5 (HornetQ-client-global-threads-1102677603) [com.pdf.common.service.impl.ServiceErrorHandlerImpl] Recoverable error:com.pdf.datastore.exception.DSTO_**Exception: High memory usage detected. Aborting the process.**

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EX-32372
EX-36136
EX-36137

#10. Mdbtools – Delete models

- **#1 Delete Filter Plan by name**
  - including associated SPC Plans ← New
- **#15 Delete SPC Plans by name ← New**
- **#16 Delete Aggregation Plans by name ← New**
  - including associated SPC Plans

NOTICE: delete model will delete associated data from large history tables (FDCCONTEXT, TREATEDDATA, …), and the processing time depends on the number of rows to delete.

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#11. Database – RemoveOldSpc job

- **New maintenance job is added in FDC scheme**
  - RemoveOldSpc
  - Scheduled: every day 9:30 AM
  - target tables
    - SPC_OFFSET_PATTERN
    - SPC_OFFSET
    - SPC_DATA
    - SPC_LIMIT_RULE
    - SPC_DATA_RULE
    - SPC_ELEMENT
    - SPC_LIMIT_SET

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3rd party module support matrix

now

Modules	Exensio 5.2	Exensio 6.0	Exensio 6.0-20250327	Exensio 6.1.x
Spotfire	10.10	12.0	12.0	12.0
Cassandra	3.11.15	4.1.4	4.1.4	4.1.4
Windows OS	7, 8.1, 10 Server 2012/2016/2019	10, 11 Server 2016/2019/2022	10, 11 Server 2016/2019/2022	10, 11 Server 2016/2019/2022
Linux OS	RHEL7.9	RHEL7.9	RHEL7.9 RHEL8.5-10	RHEL8.5-10 RHEL9.x (6.2.x)
Oracle client	12c for Windows 12c for RHEL7	12c for Windows 12c for RHEL7	19c for Windows 12c for RHEL7 19c for RHEL8	Oracle 19c
Oracle Database	12.2c, 19c	19c	19c	19c

Exensio 6.1.0-LTS will be the last version to support RHEL7 and Oracle client12

3rd party EOL
- Oracle 12 2022/07/31
- RHEL7 2024/06/30

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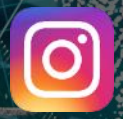
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