

KDD050 - Strategy for MES systems and SAP Digital Manufacturing

Status	Approved
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Issue

Different MES systems are used across Syensqo plants. PI by OSIsoft and Aspentech MES are the most common ones. Some other plants are running without an MES system, and some plants are using their MES only for a subset of production lines.

Recommendation

We recommend Option A: Keep current MES systems in place and interface all MES systems to SAP S4 via SAP BTP Integration Suite. For the plants and production lines currently without an MES, we will define in Detailed Design a Decision Tree, that will contain the following options:

- continue working without MES system and use S/4HANA Fiori Apps to register all required production updates, OR
- continue working without MES system and use Mobile devices and Neptune to register all production updates OR
- roll out one of the current MES systems already used by Syensqo OR
- implement SAP Digital Manufacturing - Execution on the plant

Background & Context

The current Syensqo model for Production execution consists of:

- different MES systems used by some plants, mainly based on PI-OSIsoft and Aspentech. However, different versions of these software are used, on different servers and potentially with different adaptations across the plants
- a single Production Data Lake Layer, Star Tek, based on a suite of different software: PI-Vision by OSIsoft, SeeQ, Ekhosoft, etc.
- Current Star Tek Layer heavily relies on current MES systems

Constraints

- Current Star Tek layer pick up data from SAP for several business cases (e.g. plants without MES system, data booked directly in SAP even in case of plants with MES systems, etc.)

Impacts

- Current interfaces from SAP to StarTek must be maintained and adapted to S/4HANA to guarantee the continuity of StarTek functionalities
- Current interfaces of MES data from StarTek to ECC will be substituted with SAP BTP Integration Suite, directly from MES to S/4HANA.
- Upgrades and changes to the exiting MES systems
- StarTek , if required, will have to build interfaces with the new MES systems
- Changes to the current interfaces and new interfaces between MES systems and S/4HANA

Business Rules

A Decision tree will be defined in the Detailed Design, to identify the MES solution for each plant currently without MES and for new plants.

Options considered

Option A: keep current MES systems in place and interface all MES systems to SAP S/4HANA via SAP BTP Integration Suite

In this option, we minimize the impact on the production activities: all MES systems currently used remain.

Only the plants currently without MES, and plants running MES for a small subset of production lines and/or using a small subset of MES functionalities, will undergo an assessment to define the best future path:

- continue working without MES system and use S/4HANA Fiori Apps to register production actual data OR
- continue working without MES system and use Mobile devices on Neptune to register production actual data into S/4HANAHANA OR
- roll out one of the current MES systems already used by Syensqo OR
- implement SAP Digital Manufacturing - Execution on the plant

A decision tree will be defined in Detailed Design to standardize this assessment for all cases.

Option B: define a path to substitute all MES systems with SAP DM

In this option, we consider the possibility to adopt SAP DM as the new Syensqo standard for MES system and production DataLake.

SAP DM-Execution is a modern, fully scalable and Cloud based MES system. Its introduction would allow the usage of advanced functionalities like:

- Edge points, to allow local plants to work offline in case of connection outages or system maintenance,
- Insights, to exploit the maximum value of the production data and identify all the bottle-neck and pain point in the current production activities and put in place corrective actions, then measure the effect of those actions
- Production Process Designer, to define and automate production steps
- Production Connectivity Model, to use the MES system likewise a PCS/BCS system and monitor/change the parameters of the machines in the Shop Floor (e.g. temperature of an oven, speed of flux of a certain material into a reactor, etc.)
- Resource Orchestration: to automatically assign the right people and the right machines and tools to the planned production activities and optimize their utilization
- Operator Dashboard: to provide to each operator

This option would imply:

- introduce SAP DM-Execution as MES for all plants without an MES system
- progressively substitute current MES systems (PI-OSIsoft and Aspentech MES) with SAP DM-Execution
- progressively substitute part of Star Tek functionalities with SAP DM-Insights
- progressively introduce further useful features of SAP DM like PPD and PCM

Despite the undoubted advantages of native integration, scalability and future-proof solution, this option has also significant disadvantages:

- huge impact on the day by day plant activities as the substitution of current MES would be a delicate operation
- very long lead time to achieve the final landscape, as all 65 production plants would be impacted by a MES project along the way
- waste of the investment already done to adapt and optimize the current MES systems
- waste of a relevant part of the investment already done in Star Tek, which would be in part substituted by DM Insights

Evaluation

The simple decision matrix lists all considered criteria and the estimated weights and scores for each of the 2 options. The total is the sum of each score multiplied by the weight of the criteria and gives a global evaluation of the options across the different points of view.

Criteria	Weight	Option A keep current MES systems in place and interface all MES systems to SAP S/4HANA via SAP BTP Integration Suite	Option B define a path to substitute all MES systems with SAP DM
Future Proof and Scalability	VH	High	Very High
Best Practice	M	Medium	Very High
Reduce Change Mgm and Impact on Production Activities	VH	Very High	Very Low
Reduce Training needs	M	Very High	Very Low
Protect previous investment	VH	Very High	Very Low
Total		High	Medium

Option A is the proposed solution.

See also

Change log

Version	Published	Changed By	Comment
CURRENT (v. 39)	Oct 03, 2024 10:16	WENNINGER-ext, Sascha	
v. 38	Sept 11, 2024 11:51	NICASTRI-ext, Michele	
v. 37	Sept 10, 2024 17:43	NICASTRI-ext, Michele	
v. 36	Sept 09, 2024 22:05	NICASTRI-ext, Michele	
v. 35	Sept 09, 2024 10:32	WENNINGER-ext, Sascha	
v. 34	Sept 09, 2024 09:39	NICASTRI-ext, Michele	
v. 33	Sept 09, 2024 08:30	WENNINGER-ext, Sascha	
v. 32	Sept 09, 2024 01:14	NARAHARI-ext, Bhargavi	
v. 31	Aug 29, 2024 12:41	NICASTRI-ext, Michele	
v. 30	Aug 29, 2024 12:40	NICASTRI-ext, Michele	

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Workflow history

Title	Last Updated By	Updated	Status
There are no pages at the moment.			

Workflow history

This view shows the 5 most recent entries. The complete workflow log is available from the 'Document Activity' menu item.

Oct 03, 2024	Actor	Type	Activity	Version
Approved	WENNINGER-ext, Sascha	Edit	updated the page at 10:16 am	
		State	changed state to Approved at 8:17 am	v39
Edited following Approval	WENNINGER-ext, Sascha	State	gave <i>Minor update</i> approval at 8:17 am	
		State	changed state to Edited following Approval at 8:16 am	v39
Sept 26, 2024				
Approved	 FALL-ext, Cheikh	State	changed state to Approved at 1:10 pm	v38
Pending SteerCo Review	 FALL-ext, Cheikh	State	gave <i>Final Approval</i> approval at 1:10 pm	
Sept 24, 2024				
	WENNINGER-ext, Sascha	State	changed expiry date to '08 Oct, 2024 02:59 am' at 2:59 am	
		State	changed state to Pending SteerCo Review at 2:59 am	v38