KDD016 - Mobility Solution Direction for Enterprise Asset Management

Status	Approved
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Issue

This Key Decision Document (KDD) outlines critical decisions, considerations and recommendations essential for implementing and managing an EAM Mobility solution to best support business processes and incorporate new functionalities S/4HANA will bring to Syensqo. It aims to clarify the rationale behind exploring and evaluating the existing custom Neptune solution in comparison to a specialized EAM mobile application.

Key areas covered in this document include:

- Benefits and drawbacks of each solution, including factors such as efficiency, accuracy, safety and compliance
- Overview & Background
- Design Options
- Evaluation
- Recommendation
- Business & Project Impacts

This KDD is designed and structured to ensure clarity, transparency and accountability in the current (and future) EAM mobility requirements at Syensqo.

Recommendation

After a thorough evaluation, we recommend implementing a **specialized Enterprise Asset Management (EAM) mobile application** for Syensqo. This dedicated application will integrate with SAP S/4HANA offering comprehensive functionality tailored for asset and work management processes, and taking into account the process evolutions being implemented by ERP Rebuild (e.g. use of Work Clearance Management, phase-based maintenance processes, etc.).

Specialized EAM mobile applications on the market typically provide an extensive range of features including:

- A user-friendly interface built on modern Fiori UX principles
- Support for both online and offline modes
- Process-driven and seamless integration
- Inspection and compliance management with dynamic form solutions

These capabilities will significantly enhance the mobile based operations within plant maintenance scenarios at Syensqo.

The final selection of the specific mobile application will be made during the detailed design phase where a meticulous analysis will ensure a well-informed and precise choice that aligns with Syensqo's operational needs and strategic goals.

Background & Context

The Mobility solution plays a crucial role in the Work Management process facilitating the effective and efficient management of maintenance activities including the oversight of material spares. It streamlines work management by providing real-time access to critical data and functionalities, empowering field personnel to efficiently execute maintenance tasks.

Syensqo is currently implementing a custom-built application based on the Neptune development platform. To date, 46 plants worldwide have successfully adopted and are actively utilizing a Neptune-based custom mobile solution on both tablets and phones for their work management processes.

Criteria used to assess the best-fit field mobility solution for all Plants within the Syensqo enterprise include:

- Functional Requirements: Meets all essential and applicable functionalities.
- Technical alignment with S/4HANA for seamless synchronization.
- User Experience (UX): Aligns with Fiori UX and ease of use by field personnel, including the ability to function in an occasionally-offline environment.

This document compares the existing Syensqo-built Neptune PM Apps with a specialized EAM mobile application that meets all of the Project's EAM Field mobile requirements. Generally specialized apps are commercially-available off-the-shelf applications which may also be built on the Neptune framework, or utilise a different mobile development platform such as SAP BTP Mobile Services.

The below high-level requirements have been collated from current mobility functionality discussion with SyMax team representatives and future requirements based on the ERP Rebuild Conceptual design:

- Synchronization
- Online & Offline Capabilities
- Technical Objects (Functional Location & Equipment)
- Notification
- Work Order & Operation
- Task Lists
- BOM’s
- Inspection Round & Checklist
- Work Clearance Management
- Permit to Work
- Work Execution
- Time Confirmation
- Bar Code Scanning
- Spare Parts
- Asset Performance and Real Time Data
- User Experience

Assumptions

Business Requirements: The initial business requirements are based on the current state (As-Is discovery) and are expected to be refined further during the detailed design phase. It is assumed that these requirements will not drastically change and that the specialized EAM mobile applications st andard functionalities will adequately meet Syensqo's needs with minimal customization.

Fiori Application Availability: It assumes that the required Fiori application will be available on the mobile device while online

Infrastructure: Mobile Devices, Tablets and Essential Network Infrastructure for Data Exchange are in place

Mobile Application: Will be determined during detailed design based on Syensqo's operational needs and strategic goals. This will include evaluating whether a single tool can effectively cover maintenance, work permitting, logistics/material management, and production needs to minimize the number of tools and simplify user training. If multiple tools are necessary, their interconnectivity, such as enabling direct notifications for production tools, will also be considered.

Constraints

Technical Support and Maintenance: Ensuring ongoing technical support and maintenance is critical to address any issues, updates and enhancements. Syensqo will need to establish a support structure that includes external SAP support to maintain system stability and performance.

Customization Requirements: There may still be a need for customization to align the solution with Syensqo's specific business processes and operational requirements. This includes tailoring workflows, forms and reports to meet the unique needs of different plants.

Upgrade Dependencies: Implementing the specialized EAM mobile application may require upgrading certain components of the existing infrastructure to be fully compatible with S/4HANA and the latest application version. This includes ensuring that mobile devices and network infrastructure are compatible.

Operational Disruption: Potential disruption during the transition phase from existing mobility solution to the new EAM Mobility solution requiring careful planning and management.

Impacts

Licensing and Cost Implications: The specialized EAM mobile application comes with its own licensing costs, potentially higher than the current Neptune solution expenses. A thorough cost-benefit analysis is necessary to ensure the long-term benefits justify the initial and recurring costs.

Multilingual Support: Ability of the mobility solution to support multiple languages to accommodate global operations and diverse user bases.

Change Management: Implementation of robust change management strategies to facilitate smooth transition, minimize resistance and maximize adoption of the new mobility solution.

User Training: Requirements for comprehensive user training programs to ensure effective utilization of the mobility solution's functionalities and features.

Technical Support and Maintenance: Provision of ongoing technical support and maintenance services to address issues, updates and enhancements related to the mobility solution.

Business Rules

Defined business rules and further updates will be determined during the detailed design phase.

Options considered

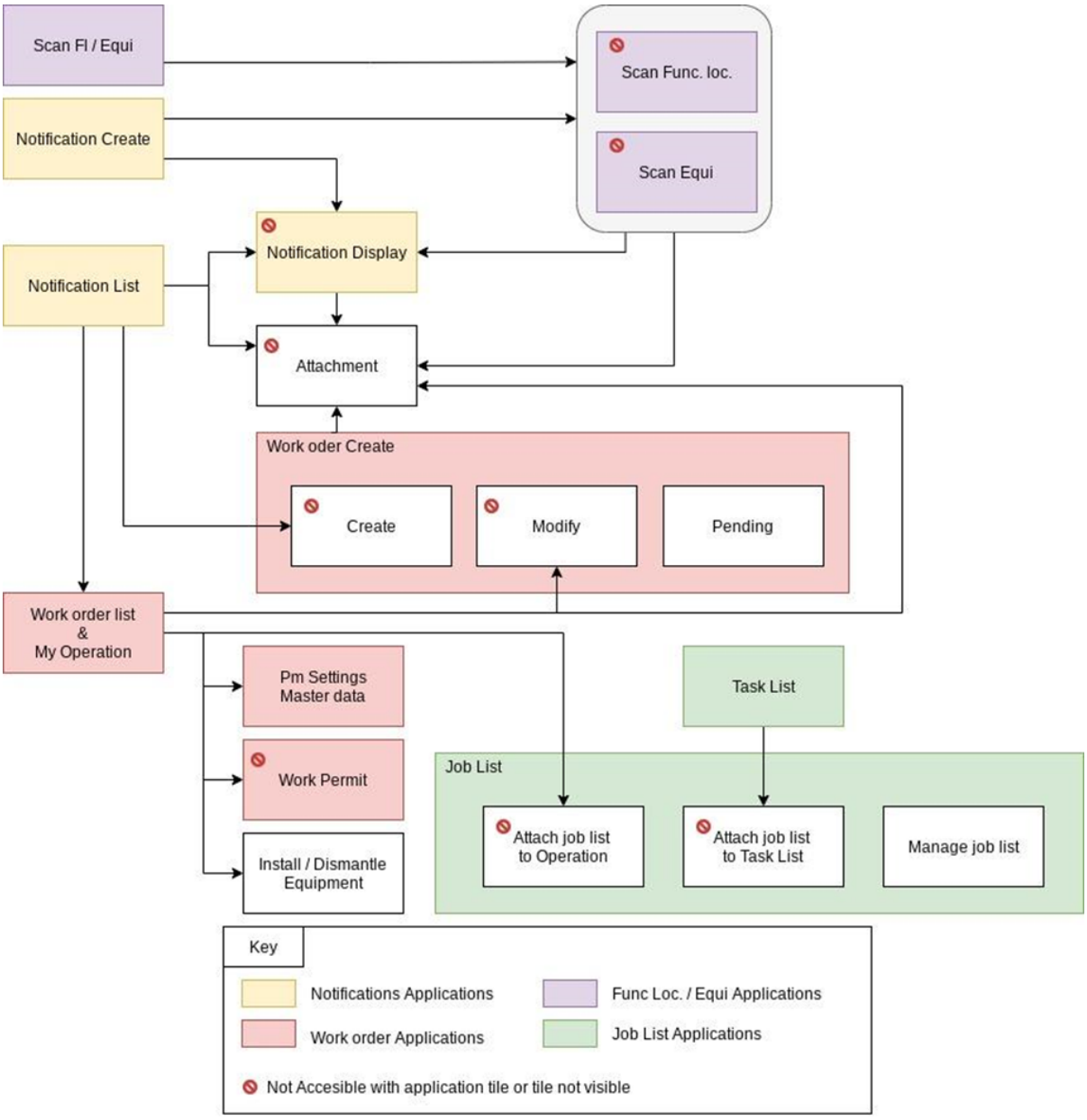
Option A: Existing Syensqo Custom Development (built using Neptune)

Neptune PM Apps software sits on Neptune DX Platform Planet 8 module (formerly known as Neptune UX Platform), which is a SAP-certified application development platform that sits on top of an existing ABAP system. It enables you to design, build, deploy and maintain SAP Fiori apps in a fraction of the time it takes with other platforms-accelerating the delivery of desktop, mobile and offline solutions.

Syensqo's custom-built Neptune PM app currently supports the below applications which are represented as individual “tiles” on the mobile device

- PM Notification – Create
- PM Notification – List
- PM Work Order - Pending
- PM Work Order – List
- My Operations
- PM Operations – Display
- Operation Scan – Status & Time Confirmation
- PM Operations – Time Confirmations
- Inspection Rounds
- Maintenance Checklist
- Generic Job List
- PM Task List
- Material – Display
- Material Reservation
- Equipment Exchange – Install/Dismantle
- Equipment Status – Update
- Scan – Func loc./Equi

Some plant maintenance applications can be accessed from another application. The following schema shows which application has a remote access point. Some functionalities can only be accessed through those points (ex: creating a Work order is only possible from Notification list).



PM Applications interaction

Option B: Specialized EAM Mobile Application

Overview: This approach focuses on utilizing a specialized EAM mobile solution that aligns closely with Syensqo's specific needs in asset and works management. By selecting a dedicated EAM mobile application, Syensqo can leverage advanced features tailored to their industry and operational requirements, enhancing overall efficiency and effectiveness in plant maintenance and asset management.

Integration and Compatibility are a key advantage of the specialized EAM mobile application is its seamless integration with the existing S/4HANA system. This ensures that data flows smoothly between the mobile application and S/4HANA, facilitating real-time updates and synchronization. This integration enables a unified view of assets, work orders and maintenance schedules, reducing the risk of data discrepancies and enhancing decision-making processes.

Functionality: A specialized EAM mobile application offers a robust set of features designed to support Syensqo's asset and works management business processes:

Asset Tracking and Management:

- Real-time tracking of asset conditions.
- Automated updates and alerts for maintenance schedules and asset status.
- Comprehensive asset history and lifecycle management.

Maintenance Planning and Execution:

- Streamlined scheduling and assignment of maintenance tasks.
- Real-Time Progress Tracking provides updates on work progress such as completion status, time spent and any issues encountered.
- Dynamic Resource Allocation, schedules change updates, real-time updates allow for the prompt reallocation of resources, such as personnel, equipment or materials.
- Tools for preventive and predictive maintenance.

Inspection and Compliance Management:

- Dynamic Forms that adapt based on the type of inspection or compliance task. Forms can be customized to include specific fields, questions or validation rules relevant to different asset types or regulatory requirements.
- Inspection forms and compliance checklists with real-time data capture ensuring that information is accurate and immediately available to S/4HANA.
- Offline functionality allowing users to complete inspections and submit reports even without an internet connection. Data is synchronized once connectivity is restored.

Integration with Work Clearance Management:

- Streamlined processes for issuing, tracking and managing Permit to Work and Work Clearances.
- Ensures safety compliance by verifying that all necessary permissions and safety protocols are in place before work begins.
- Digital tracking of work clearance status, reducing manual paperwork and minimizing delays.

Performance Monitoring and Analytics:

- Real-time monitoring of asset performance metrics and key performance indicators (KPIs).
- Advanced analytics for identifying trends and optimizing maintenance strategies.
- Reporting capabilities for performance analysis and management decision support.

User Experience and Accessibility: A specialized EAM mobile application is designed with user experience in mind, providing an intuitive and user-friendly interface. This enhances the usability for field technicians enabling them to quickly access necessary information and perform their tasks efficiently. The mobile application supports various devices and platforms ensuring accessibility regardless of the hardware used by the workforce.

Conclusion: Option B presents a comprehensive and tailored solution for Syensqo's asset and works management needs. The specialized EAM mobile application integrated with S/4HANA offers a robust set of features that enhance operational efficiency, compliance and decision-making capabilities. The detailed design phase will involve a thorough analysis to select the most suitable application ensuring a precise and informed decision that aligns with Syensqo's strategic goals.

Comparison Table

	Option A - Custom-built Neptune PM App	**Option B: Specialized EAM Mobile Application**
Synchronization	**PRO:** Provides synchronization capabilities suitable for typical maintenance tasks **CON:** Customization required for complex synchronization e.g. Workflows and Approval processes may require customization to synchronize these processes across different users and devices.	**PRO:** Strong and integrated synchronization functionality with SAP backend, ensuring real-time updates and data consistency across mobile and desktop platforms
Online & Offline Capabilities	**PRO:** Provides strong support for both online and offline modes, allowing users to perform tasks without constant connectivity.	**PRO:** Provides online and offline capabilities with advanced offline mode features. Supports seamless synchronization of data
Application	**CON:** A customized application tailored to current business needs, which would necessitate extensive redesign to align with an upgrade to S/4HANA and new business processes.	**PRO:** A structured and process-driven application that encompasses a wide range of functionalities, enhancing the overall user experience. Standard Fiori apps are also accessible while online on the Syensqo network.
Technical Objects	**PRO:** Provides functionality for managing technical objects, including Function Locations and equipment.	**PRO:** Provides comprehensive functionality for managing technical objects, also supports detailed management, real-time updates.
Notification		
Create and Manage	**PRO:** Provides functionality to create and update notification with a view of all fields including item codes and previous equipment history. Separate applications used for creating and list of Notifications. **CON:** Separate applications for creating and listing notifications.	**PRO:** Offers comprehensive tools for creating detailed notifications, including templates and predefined fields. Allows for detailed updates to notifications, with seamless integration to reflect changes immediately in the SAP backend.
Attachments	**PRO:** Supports functionality for attaching files to notifications, such as images or documents. Also supports the ability to "markup" the photo, drawing with additional information.	**PRO:** Robust attachment support, allowing various file types to be attached to notifications.

Work Order		
Create and Manage	**PRO:** Provides standard functionality for creating and managing work orders. Users can generate and update work orders based on their authorizations	**PRO:** Offers robust and integrated work order management, with comprehensive features and seamless SAP backend integration, ideal for EAM processes.
Attachments	**PRO:** Supports functionality for attaching files to Work Order, such as images or documents. Also supports the ability to "markup" the photo, drawing with additional information.	**PRO:** Supports functionality allowing various file types to be attached to work orders and integrated within the SAP system.
Work Order Operation	**PRO:** Providing robust tools for creating, managing and tracking maintenance tasks that covers all requirements including choosing an operation from a predefined "standard list". Offers a user-friendly interface that supports seamless navigation and real-time updates.	**PRO:** Offers a user-friendly and intuitive interface that ensures effortless access and management of work order operations. Provides streamlined functionality for executing maintenance tasks efficiently, aligned with business processes.
Task Lists	**PRO:** Provides the ability to search, view and assign Task List associated to the Function Location or Equipment.	**PRO:** Capability to assign, view and import task lists into work orders. Customization may be needed depending on the application. **CON:** Customization may be needed depending on the application.
Spare Parts	**PRO:** Enables users to manually enter, search or scan materials needed for Work Order Operations. Additionally, it supports viewing and assigning spare parts linked to a Bill of Materials (BOM) associated with Function Locations or Equipment.	**PRO:** Enables users to manually enter, search or scan materials needed for Work Order Operations. Additionally, it supports viewing and assigning spare parts linked to a Bill of Materials (BOM) associated with Function Locations or Equipment.
Inspection Round & Checklists	**CON:** Enhancement required, limited offline capabilities. suitable for routine inspections but lacks advanced features.	**PRO:** Provides functionality with extensive features for creating and managing complex inspection rounds.
Form Solution	**CON:** Limited support for dynamic forms, requiring additional customization.	**PRO:** Advanced dynamic forms support, allowing for customizable forms with real-time validation and integration capabilities.
WCM - Permit to Work	**CON:** Requires customization for complex workflows and integrations.	**PRO:** Provides comprehensive WCM Permit to Work functionality, supporting creation, approval and compliance checks for permits. **CON:** Customization may be needed depending on the application.
Time Confirmation	**PRO:** Allows standard time confirmation entry with flexibility for various types of time entries.	**PRO:** Offers extensive functionality for time confirmation, including the ability to enter time for single or multiple operations simultaneously, operations spanning multiple days, clock in/clock out capabilities and confirmation of notification activities.
Scanning	**PRO:** Supports QR and RF scanning capabilities for materials and equipment, enabling real-time asset tracking and efficient management.	**PRO:** Supports QR and RF scanning capabilities for materials and equipment, enabling real-time asset tracking and efficient management.

Evaluation

The evaluation of EAM mobility solutions includes comparing Option A (Syensqo-custom Neptune PM Apps) and Option B (Specialized EAM Mobile Application). Neptune PM Apps provides strong online and offline support with flexibility for customer-specific requirements making it suitable for current business needs, though it requires significant customization to align with new S/4HANA functionalities and business processes. The specialized EAM mobile application excels in integration with SAP systems, offering comprehensive asset management functionalities and real-time data synchronization making it ideal for organizations seeking a seamless, integrated solution with robust process-driven capabilities.

The specialized EAM mobile application stands out for its seamless integration with S/4HANA, ensuring real-time data synchronization and streamlined workflows. This integration is vital for maintaining data consistency and operational efficiency across Syensqo's various functions. The application's process-driven design, advanced synchronization features and strong offline capabilities allow field personnel to perform their tasks effectively even in areas with limited connectivity. Additionally, the application offers robust functionalities for asset inspections and WCM - Permit to Work processes, crucial for maintaining safety, compliance and operational integrity in Syensqo's operations. The application's user-friendly interface, based on the modern Fiori UX design, promotes higher user adoption and productivity.

**The evaluation scoring system ranges from Low to Very High. In this system, a low score indicates a negative attribute, such as high costs.*

Criteria	*Weight*	Option A Custom-built Neptune PM App	Option B Specialized EAM Mobile Application
Synchronization	VH	**High**	**Very High**
Online & Offline Capabilities	H	**High**	**Very High**
Function Location	M	**High**	**High**
Equipment	M	**High**	**High**
Notification	VH	**High**	**High**
Work Order	VH	**High**	**High**
Work Order Operation	VH	**High**	**Very High**
Task Lists	H	**High**	**Medium** (Maybe High Pending Application)
BOMs	H	**Very High**	**High**
Inspection Round & Checklist	VH	**Low**	**High**
Form Solution	H	**Low**	**High**
WCM - Permit to Work	VH	**Low**	**Medium** (Maybe High Pending Application)
Time Confirmation	H	**Medium**	**High**
Scanning	M	**High**	**High**
Spare Parts	H	**High**	**High**
Application	M	**Medium**	**Very High**
Technical Complexity	M	**Medium**	**High**
Interface	L	**Medium**	**High**
Licenses & Cost	M	**High**	**Low/Medium** (reoccurring licensing costs)
User Experience	VH	**Medium**	**High**
Scalability	H	**High**	**High**
Future Roadmap	M	**Low**	**High**
Overall		**Medium**	**High**

See also

The following section describes the reference documentation used. Please note that the documentation for the specialized EAM Mobile Applications is provided only as a reference point for conceptual design.

Document Name	Description
BlueWorx Functionality	Summary outline of the BlueWorx product capabilities from a ‘SAP functional’ perspective
BlueWorx Solution Information	BlueWorx Solution Overview
SAP Service & Asset Manager	Product Overview, Functional & Technical Information
PM Neptune App	PM Neptune application landscape

Business Definitions (Glossary)

Acronym / Term	Definition

BOM	Bill of Materials
EAM	Enterprise Asset Management
PM	Plant Maintenance
SyMax	Syensqo Maintenance Excellence
WCM	Work Clearance Management

Change log

Version	Published	Changed By	Comment
CURRENT (v. 69)	**Aug 13, 2024 15:16**	**LEIGHTON-ext, Dean**	
v. 68	Jul 31, 2024 12:03	**LEIGHTON-ext, Dean**	
v. 67	Jul 31, 2024 11:51	**WENNINGER-ext, Sascha**	
v. 66	Jul 31, 2024 09:28	**WENNINGER-ext, Sascha**	
v. 65	Jul 30, 2024 08:48	**LEIGHTON-ext, Dean**	
v. 64	Jul 30, 2024 03:53	**LEIGHTON-ext, Dean**	
v. 63	Jul 30, 2024 03:52	**LEIGHTON-ext, Dean**	
v. 62	Jul 30, 2024 03:40	**LEIGHTON-ext, Dean**	
v. 61	Jul 30, 2024 03:38	**LEIGHTON-ext, Dean**	
v. 60	Jul 30, 2024 03:27	**LEIGHTON-ext, Dean**	

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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.

Sept 10, 2024	Actor	Type	Activity	Version
Approved	FALL-ext, Cheikh	State	changed state to Approved at 2:53 pm	v69
Pending SteerCo Review	FALL-ext, Cheikh	State	gave *Final Approval* approval at 2:53 pm	
Aug 14, 2024				
	WENNINGER-ext, Sascha	State	changed expiry date to '28 Aug, 2024 02:56 am' at 2:56 am	
		State	changed state to Pending SteerCo Review at 2:56 am	v69

Pending Stakeholder Review	WENNINGER-ext, Sascha	State	gave *Stakeholder Review* approval at 2:56 am *Endorsed on 13 August in a call attended by business stakeholders Mike Ghere, Todd Anderson, Robert Mease, Sadie Zellem, Lucas Hippel, Jalay Kapadia, Nathen Kraemer, Tami Smith*	
		State	changed expiry date to '21 Aug, 2024 02:55 am' at 2:55 am	
		State	changed state to Pending Stakeholder Review at 2:55 am	v69
Edited following DA Endorsement	WENNINGER-ext, Sascha	State	gave *Minor change* approval at 2:55 am	