

Digital Transformation of Medical Equipment Maintenance: Implementing the Medical Equipment Maintenance Management System (MEMMS) for Enhanced Oversight and Operational Efficiency

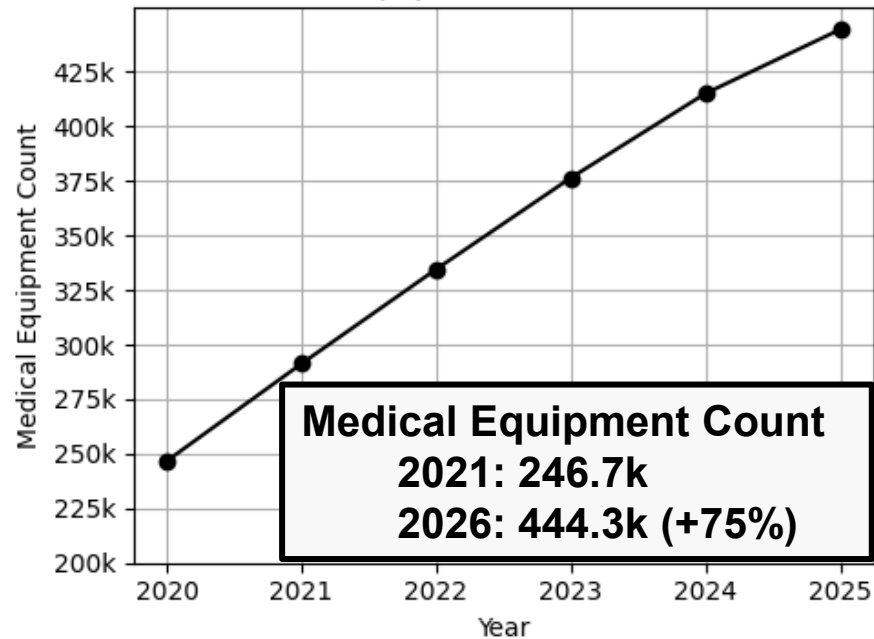
Leong CWM⁽¹⁾, Ling SW⁽¹⁾, Wong CK⁽²⁾, Cham WM⁽³⁾

- (1) *Biomedical Engineering Services Section, Business Support Services Department, Cluster Services Division, Hospital Authority Head Office,*
- (2) *Information Technology and Health Informatics Division, Hospital Authority Head Office,*
- (3) *Business Support Services Department, Cluster Services Division, Hospital Authority Head Office*

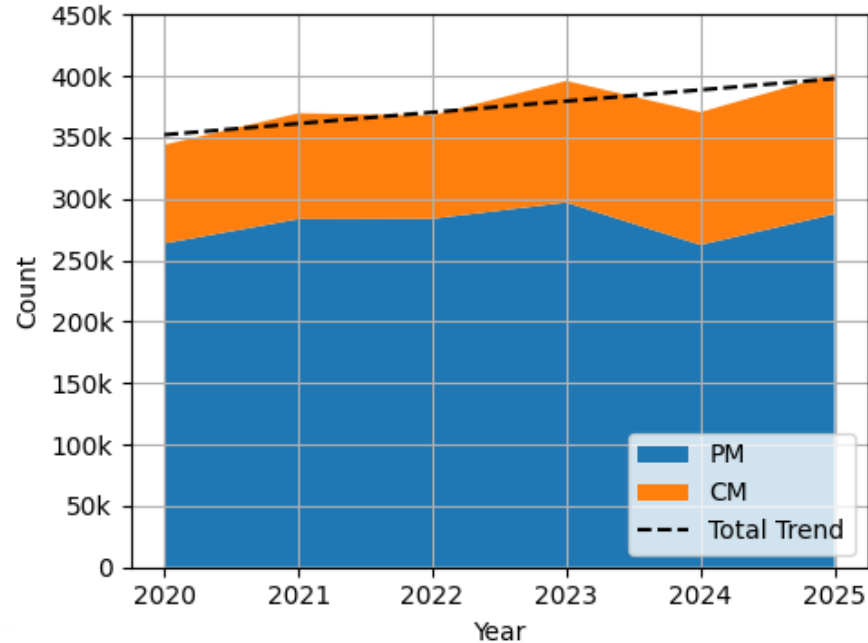
Background

- Increased concerns on quality of outsourced medical equipment maintenance services and expectations for heightened surveillance

Medical Equipment Count Over Years



PM and CM Stacked Over Years



Total PM Work Orders
2021: 263.7k
2026: 287.6k (+9%)

Total CM Work Orders
2021: 80.3k
2026: 114.2k (+42%)

Total Work Orders
2021: 344.0k
2026: 401.8k (+16%)

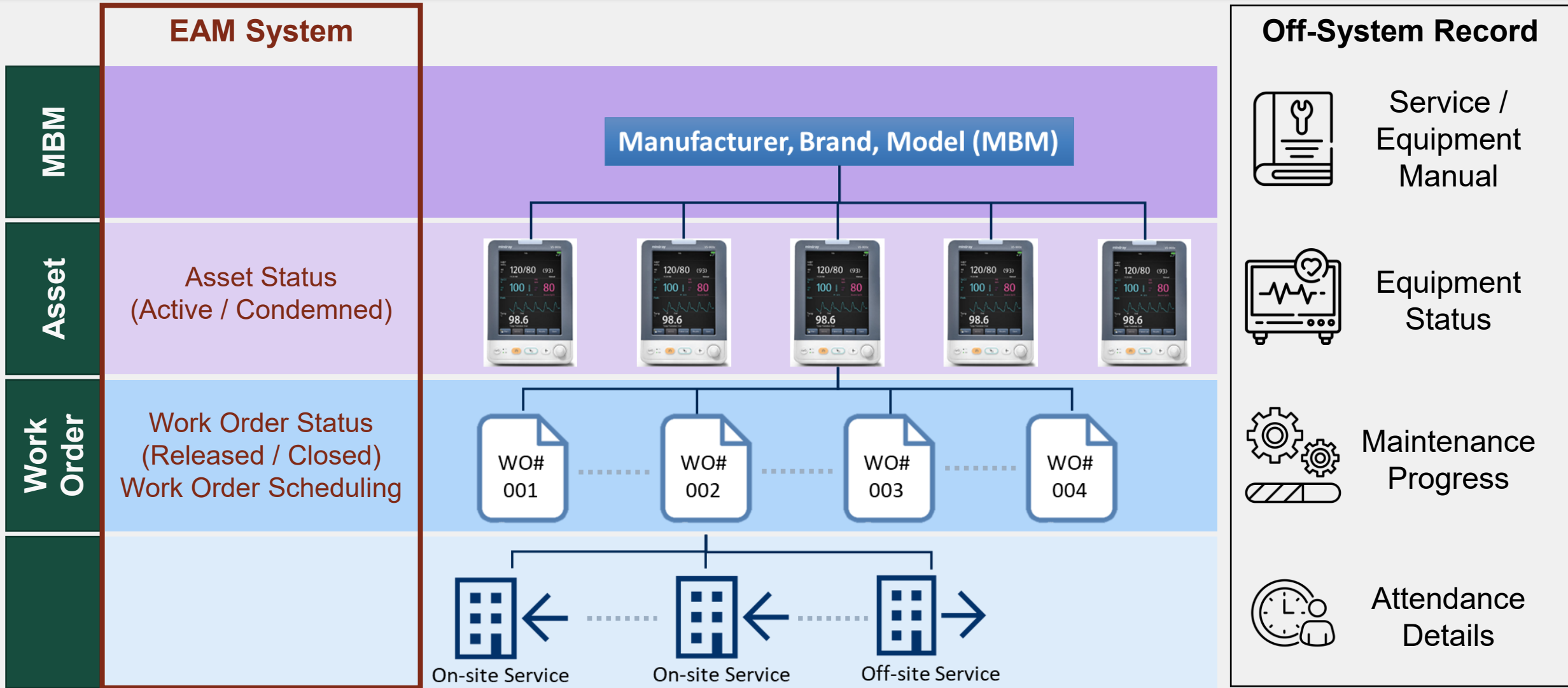
一站式醫療設備保養維修管理系統

MEMMS

Medical Equipment Maintenance Management System

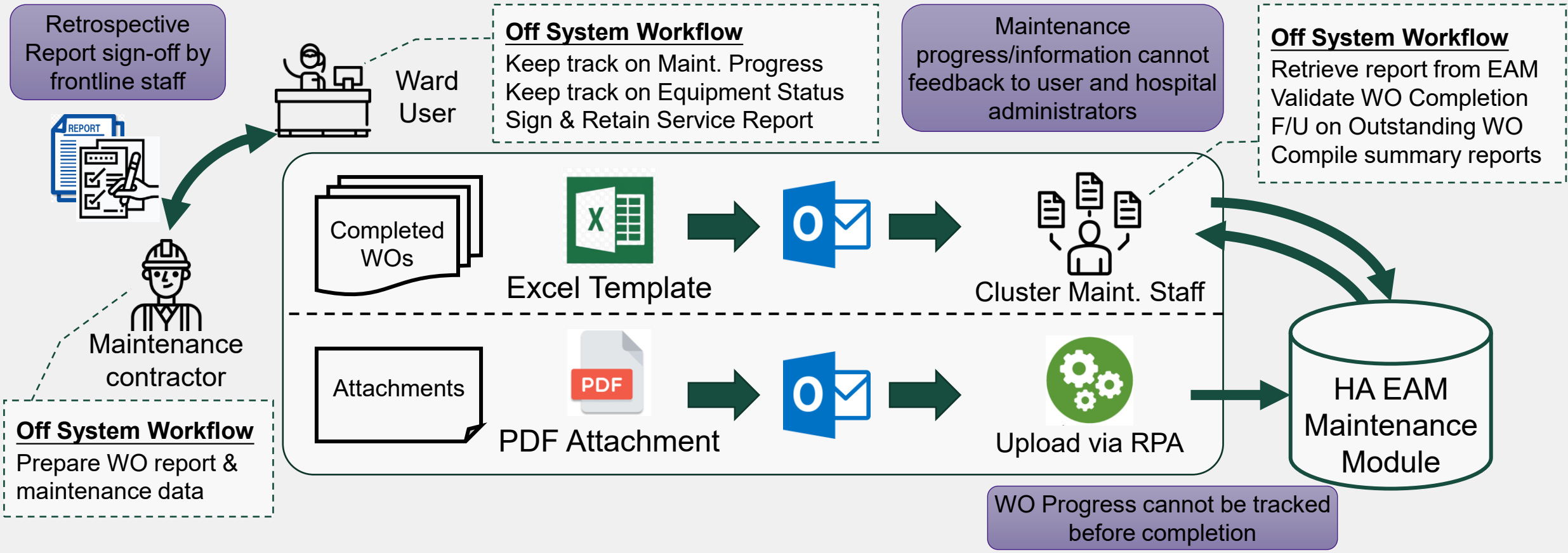
A Comprehensive, Digital Platform to support enhanced process and oversight on maintenance operations

Equipment Maintenance Management in HA



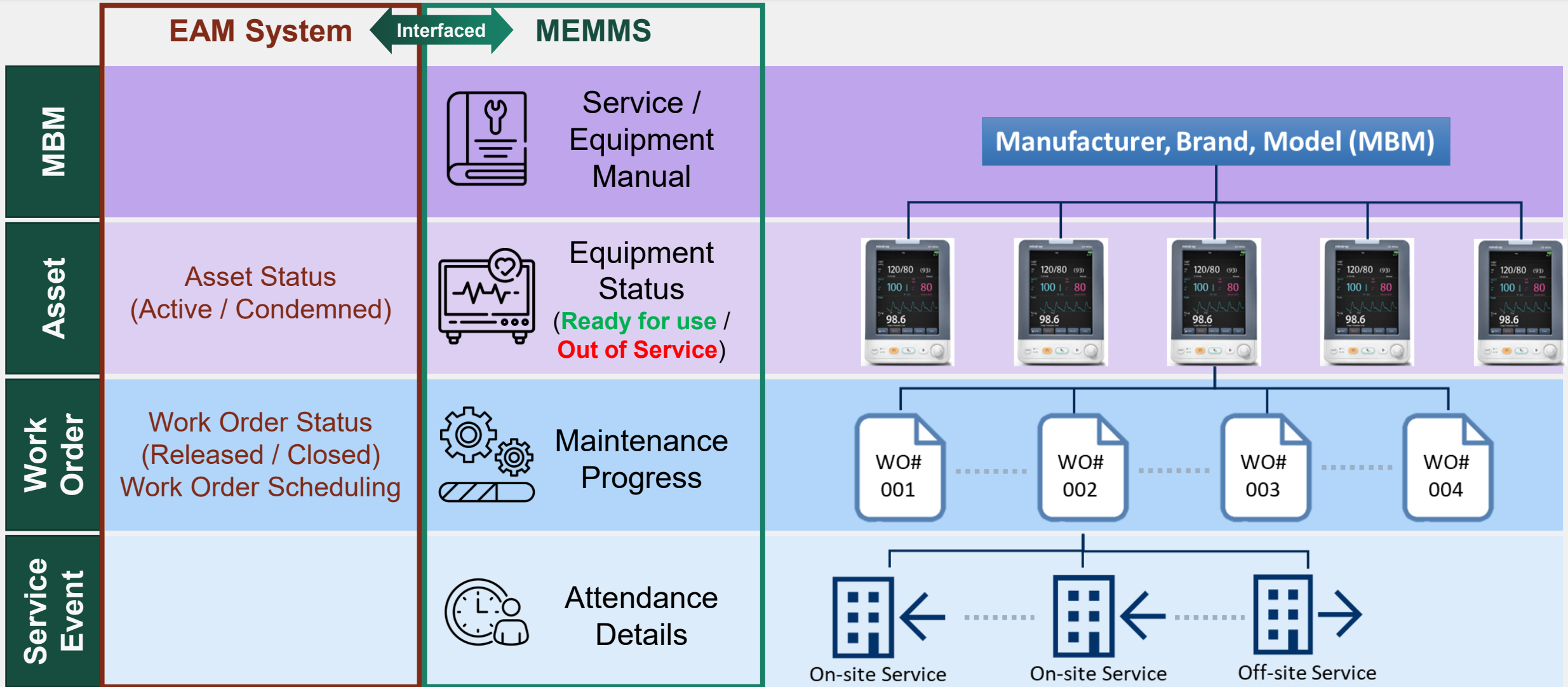
Challenges before MEMMS Implementation

- Massive amount of manual workload for Users, Contractors, and Hospital Equipment Maintenance Management Teams



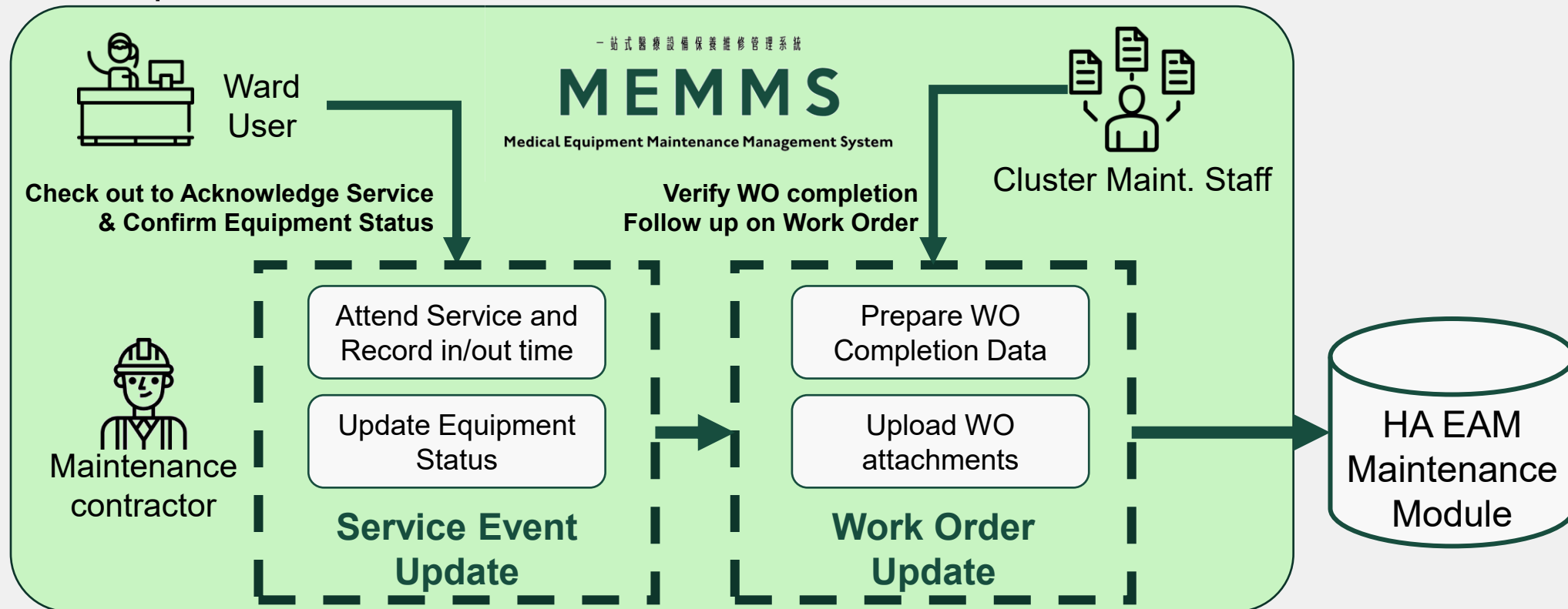
The absence of centralised, real-time visibility on work order progress hindered effective monitoring and oversight

Equipment Maintenance Management in HA with MEMMS



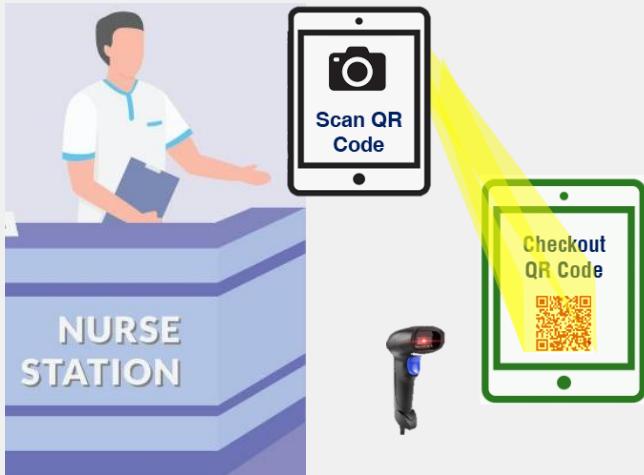
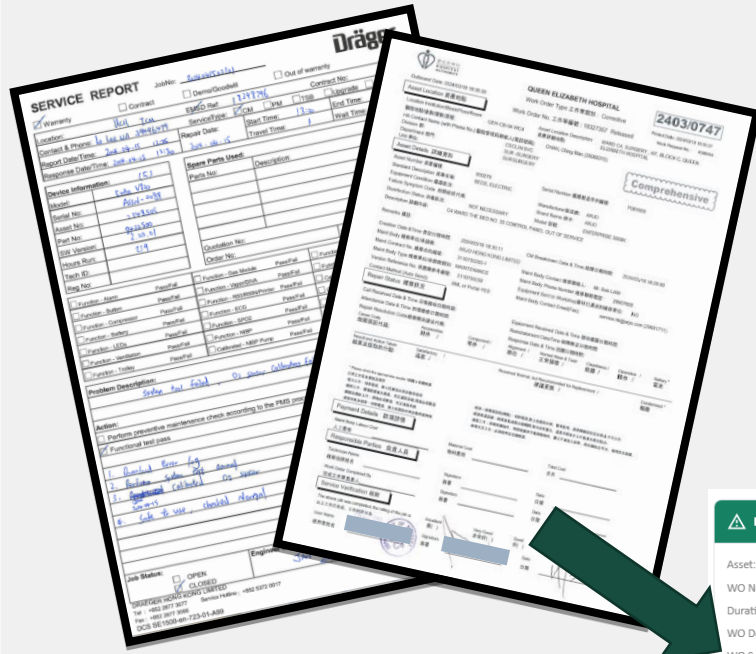
Work Order Management Workflow with MEMMS

- MEMMS provides a unified, collaborative platform for all stakeholders for:
 - Timely work order progress update
 - Effective documentation on equipment status
 - Comprehensive maintenance records



Digitalisation of Service Reporting

- Service Event reports provide instant overview on maintenance progress
 - Record Contractor Staff In/Out time
 - Service Status – *Work Order Completed?*
 - Equipment Status – *Equipment Ready for Use?*
 - Service Summary
 - Follow up Actions, if any



Maintenance Service Overview

Asset: 717510
 WO No.: 20071654
 Duration: 0h 0m
 WO Description: [MEMMS] Test reject/cancel
 WO Sub Status: Attended → Pending Submit
 Service Status: **CM Completed**

Equipment Status: Out of Service → Pending Check

Follow up actions: Not Required

Service Event Attachment available
[Demo Check in photo 690984.jpg](#)

Service Event Remarks available
 PM passed [PM] / Rectification applied [CM] - Rectification applied [CM]

SERVICE EVENT DETAILS

Technician Name: GE01 UAT
 Affiliation: GE MEDICAL SYSTEMS H.K. LTD (09970)
 Check in time: 14 Nov 2025 16:59
 Last saved time: 14 Nov 2025 16:59

Cancel
Confirm Checkout

SERVICE STATUS ?

CM Completed CM Pending Completion

EQUIPMENT STATUS

Unchanged (Ready for use) Out of Service

FOLLOW UP ACTIONS

NOT Required Further Follow Up

Quotation for parts to be provided
 Condemnation letter to be provided

PENDING HA ACTIONS

Required NOT Required

Pending PO/parts/accessory from hospital
 Asset label damaged/missing
 Equipment S/N update required

SERVICE CONCLUSION

PM passed [PM] / Rectification applied [CM]
 Performed check and await further actions
 Replaced parts (Please specify)*
 Awaiting PO / Ordering parts (Please specify)*
 Pending subcontractor actions
 Equipment not available / not found
 Recommended condemn
 Others (Please specify)*

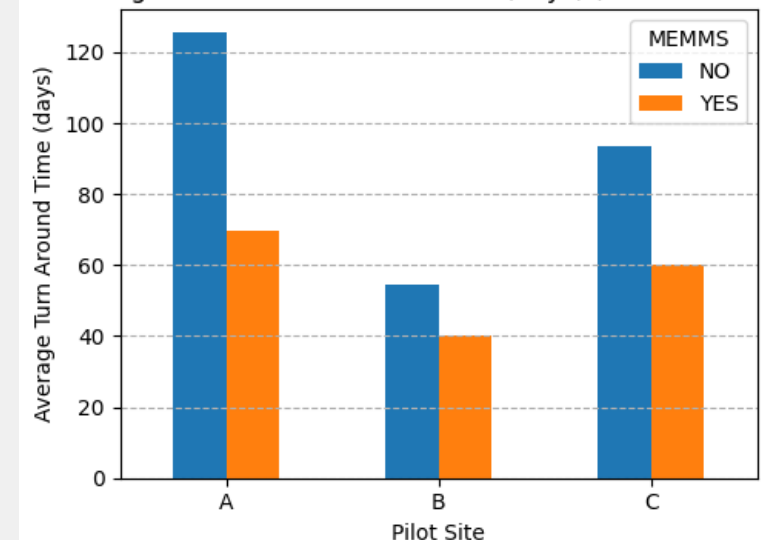
Operational Pilot Rollout Results (Feb – Dec 2025)

- Pilot rollout in 3 sites within an acute hospital
- Initial promising results on pilot sites
 - Measured administrative efficiency gain in reduction of work order turnaround time (from release to closure)
 - Average Corrective Maintenance Turnaround time: **↓34%** (80.6 days → 53.6 days)
- Possible contributing factors:
 - **Digital Standardisation**
 - Pre-validated forms ensure complete contractor submissions, eliminating delays from missing attachment or information
 - **Collaborative Platform**
 - Real-time activity logging removed manual consolidation efforts and streamlined communication with contractors

Avg. WO Turnaround Time (days)

Site	✗ MEMMS	✓ MEMMS	Δ%
A	125.7	69.7	-45%
B	54.5	40.2	-26%
C	93.7	60.1	-36%
Total	80.6	53.6	-34%

Average CM WO Turn Around Time (days) (Release-> Close)



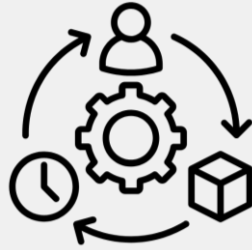
Future Plans

- Progressive rollout to additional sites
 - Full HA-wide deployment targeted by 2026

1Q 2025	2Q 2025	3Q 2025	4Q 2025	1Q 2026	2Q 2026	3Q 2026	4Q 2026
Stage 1		Stage 2		Stage 3		Stage 4	
Pilot rollout at a selected major hospital of HKEC and KWC		Pilot rollout at a selected major hospital of remaining clusters		Full rollout at selected cluster major hospitals		Full rollout at other cluster hospitals	

- Key metrics in enhancing quality assurance and contractor oversight:
 - Service Report Compliance Rate
 - Measure accuracy and timeliness of service report submission
 - Repeat Repair Incidence:
 - Track equipment requiring recurrent maintenance interventions

Key Benefits of MEMMS



One integrated platform

For more effective and efficient management of maintenance activities



Real-time information

more real-time information and record on work order progress status



Enhance safety

with equipment status information



Enhance compliance

by supporting improved processes



Identity verification

system verification of maintenance personnel's identity and authorisation



Data analytic

capture standardised and digitalised data for better record keeping and monitoring

Thank you

