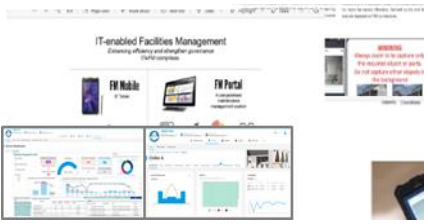
Adopting a Shared Service Model – Transformation of FME



Mr Alson Goh
Deputy Group Chief Operating Officer
Environmental Services, Facilities & Transformation
SingHealth

Chief Operating Officer
KKH

Mr Terence Tan
Assistant Director
Facilities Management
KKH

Date: 17 Aug 2022

Shared Services Formation

2015 – Shared Services Formation was mooted in Cluster Strategic Retreat

Shared Services Formation

Story of a wheelchair in SGH Campus

SGH Campus

Shared Services Formation

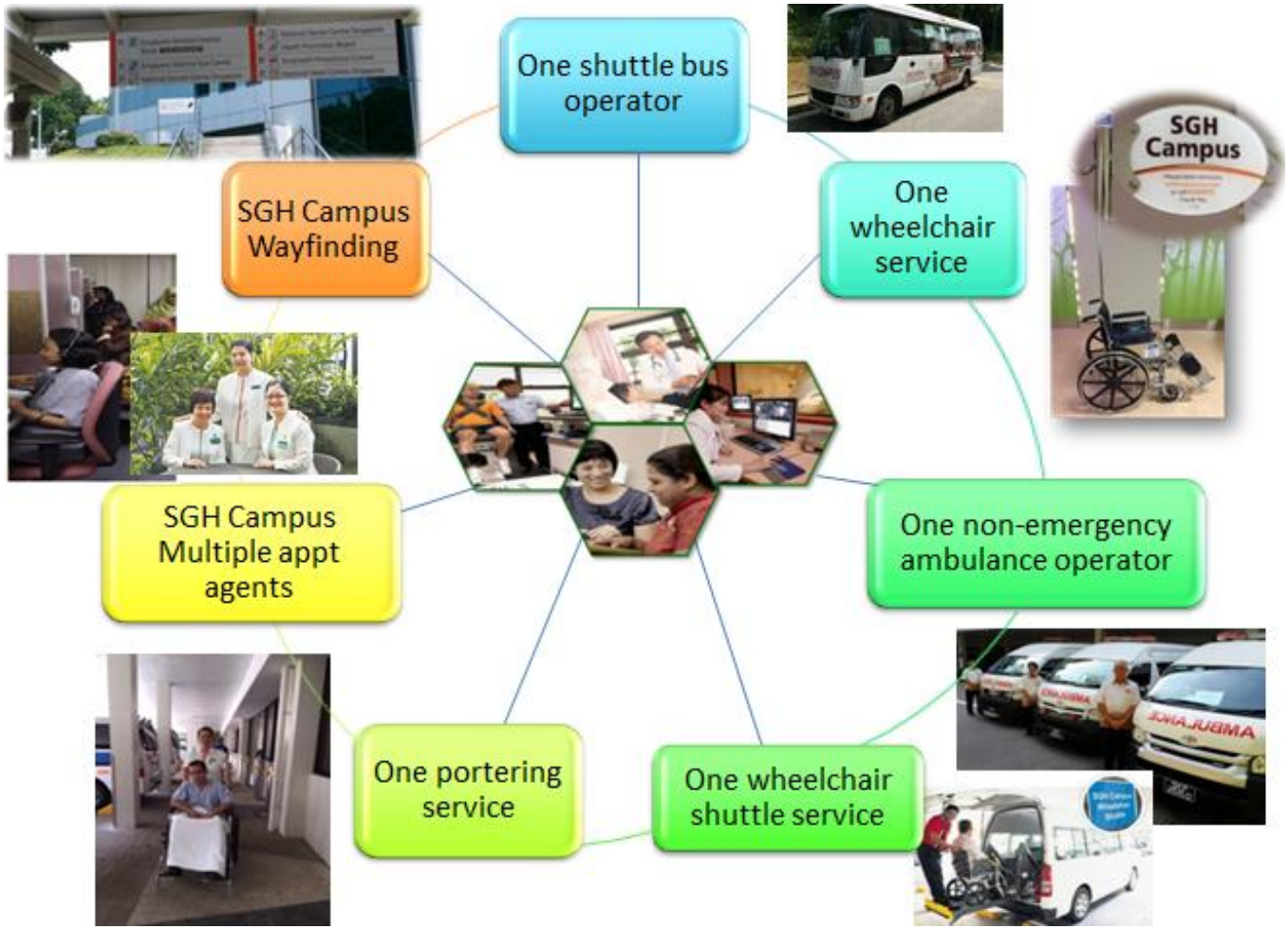
One Campus Operator – Governance & Structure

Group Operations

SingHealth

Shared Services Formation – Let's re-cap : Seamless Operations

One Campus Operator – Some Past Completed Major Initiatives



Shared Services Formation

One Campus Operator – Common contractor

- Past One Campus Operator initiatives worked on a *common contractor* with a focus on standardisation in day–to-day operations and service standards.
- Operations continued to be managed by individual institutions - lack of cluster-wide strategic direction.

Shared Services Formation

Seamless Operations – Rethinking the Ops Structure

Rethink of Ops structure to best support new clinical care models eg. SingHealth Duke-NUS Disease Centres (SDDC), Regional Health System (RHS) via possible:

- Dual / Matrix Reporting
- Horizontal Ops Management Structure
- Concurrent Appointments

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Shared Services Formation

2016 – Shared Services Study Trip in USA

Shared Services Formation

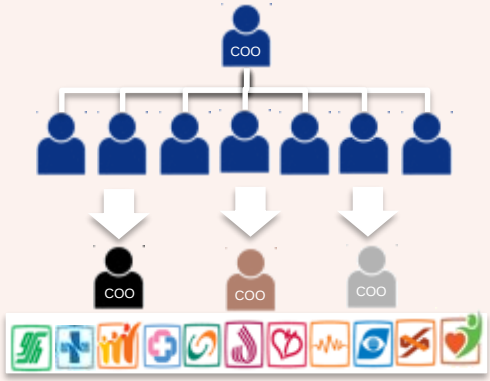
SingHealth

Shared Services Formation

Centralised Management & Oversight by SingHealth

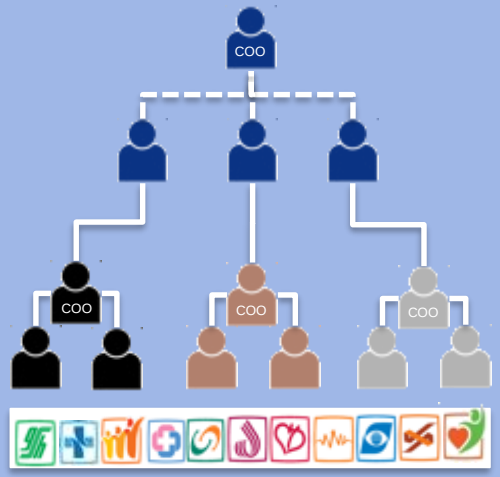
SingHealth Pharmacare

SingHealth Call Centre



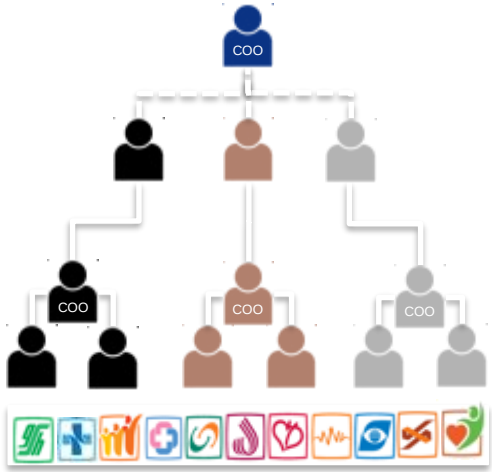
Centralised Technical Expertise with Management & Oversight by Institutions

Examples:
Biomedical Engineering
Facilities Management & Engineering



Harmonised Standards & Practices with Management & Oversight by Institutions

Examples:
Food Services
Retail Services



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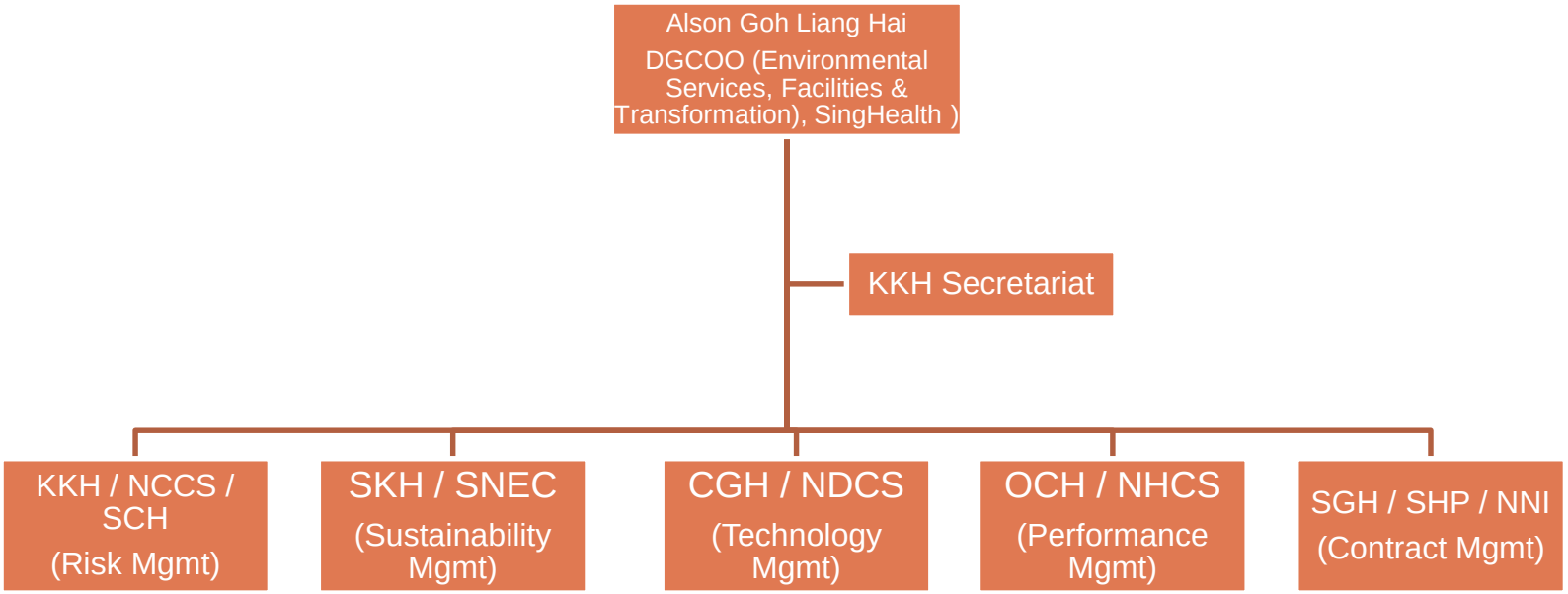
FME Shared Services



FME Shared Services – Harmonized Career Development Plan

1. **Alignment of job titles** provides better assessment of job level across SingHealth

2. **Harmonised career path** across SingHealth for all levels to provide a structured and transparent career path

3. **Identified generic and functional competencies** for your development and progression

SingHealth

SingHealth

FME Shared Services – Harmonized Career Development Plan

SingHealth Harmonised Career Development Path For Facilities Management Engineering

Harmonised Job Title	Minimum Qualification & Experience
Senior Manager	Degree in Engineering / related fields or equivalent + 10 yrs exp & demonstrated competency
Manager	Degree in Engineering / related fields or equivalent + 8 yrs exp & demonstrated competency
Assistant Manager (Apex job grade for Diploma holders)	Degree in Engineering / related fields or equivalent + 6 yrs exp & demonstrated competency; ***OR*** Facilities Management Engineering-related Advanced / Specialist Diploma + 12 yrs exp & demonstrated competency
Senior Engineer	Degree in Engineering / related fields or equivalent + 4 yrs exp & demonstrated competency; ***OR*** Diploma + 10 yrs exp & demonstrated competency
Engineer I	Degree in Engineering / related fields or equivalent + 2 yrs exp & demonstrated competency; ***OR*** Diploma + 8 yrs exp & demonstrated competency
Engineer II	Fresh Degree in Engineering / related fields or equivalent ; ***OR*** Diploma + 6 yrs exp & demonstrated competency
Senior Associate Engineer	Diploma in Engineering / related fields + 4 yrs exp & demonstrated competency; ***OR*** NITEC/Higher NITEC + 8 yrs exp & demonstrated competency
Associate Engineer I	Diploma in Engineering / related fields + 2 yrs exp & demonstrated competency; ***OR*** NITEC/Higher NITEC + 6 yrs exp & demonstrated competency
Associate Engineer II	Fresh Diploma in Engineering / related fields; ***OR*** NITEC/Higher NITEC + 4 yrs exp & demonstrated competency

Note:

Progression is subject to availability of higher level job with enhanced scope, staff's demonstrated very good performance and potential of the staff to perform higher le

FME Shared Services – Harmonized Key Performance Indicators

Objectives:

1. To achieve standardized processes to attain consolidation opportunities in lower operation cost

2. To have an oversight of the utilities consumption and actively monitor their usage.

Harmonized Key Performance Indicators

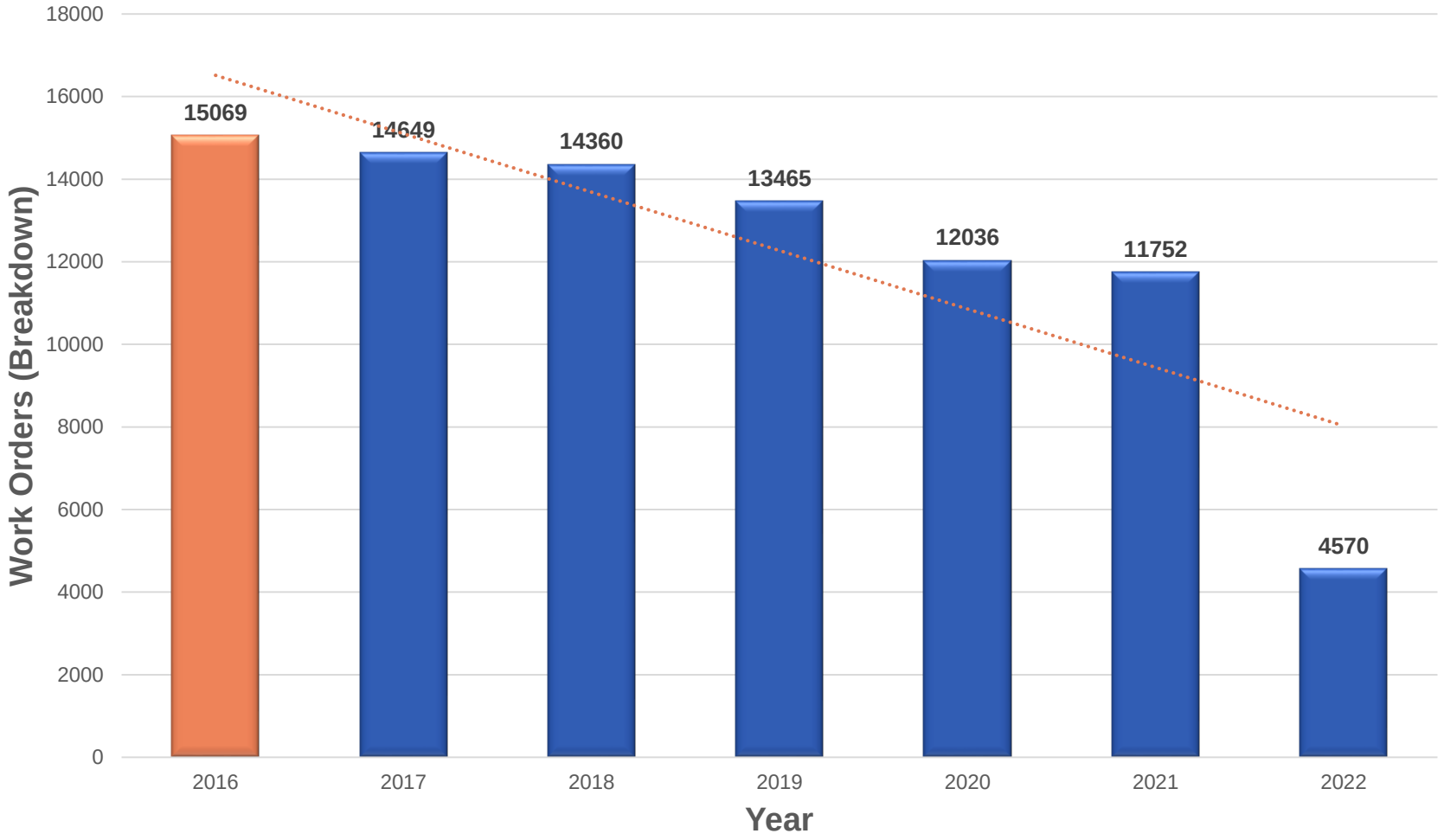
1. 90% of Response Time for Work Order to be within 20 minutes
   (For ALL institutions except for SHP to remain at 3 hours)

2. 90% of Rectification/Completion Time for Works Order to be within 4 hours
   (For ALL institutions except for SHP to remain at 24 hours)

3. Utilities Consumption Index is adopted where Monthly Consumption is divided by Gross Floor Area of the Institution

FME Shared Services – Harmonized Key Performance Indicators

Average Work Orders (Breakdown) per Calender Year



FME Shared Services – Enterprise Risk Management

Key Risks

Shared Services track and monitors the following key risk:-

- Power Outage;
- Loss of Water Supply;
- Failure of Medical Gas System;
- Air Conditioning and Mechanical Ventilation Failure and
- Structural Integrity.

FME Shared Services – Enterprise Risk Management

Facilities Infrastructure Objective (KKH):

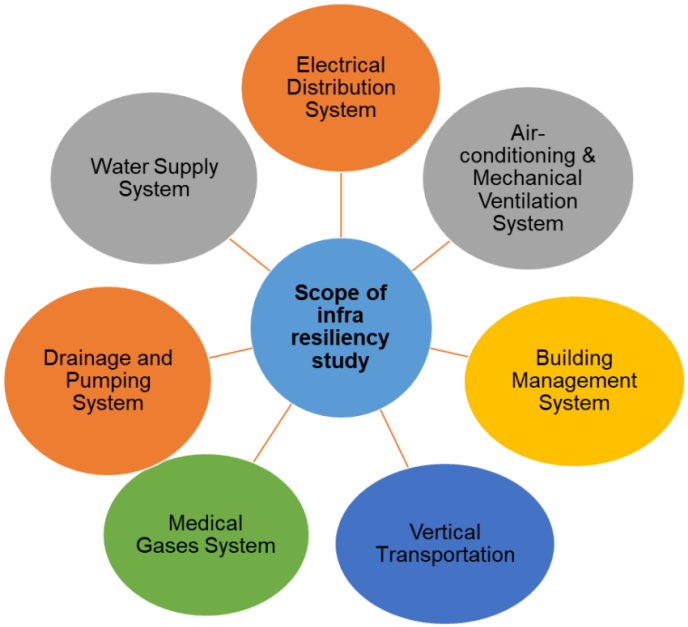
Ensuring seamless day-to-day support and zero major utilities disruption and events of significant impact to users' operations

Risks associated with Operational Objectives	Domain	Impact	Likelihood	Potential Consequences of Control Failure	Risk Owner(s)	Mitigation Measures
Total Power Outage	Operations	Major	Possible	1.Immediate impact (if) total loss of power to ongoing business activities from administrative, operations, ancillary to clinical functions 2.Minimal impact if power trip at lower feeds to user level circuits 3. Moderate impact if power trip to non-critical circuits like lightings and power sockets for individual PCs and office equipment	FME	**(1) Power Incoming Supply** a) There are 2 incoming electrical power supply from Singapore's power-grid sub station network. **(2) Backup Generators** a) There are provisions of adequately sized generators with rated capacity to support the Critical electrical. **(3) Generators' Diesel Storage Capacity** a) All hospitals with inpatient and 24/7 facilities sufficient on-site fuel storage for minimum of 1 day continuous generators' run.
Total Air-Conditioning & Mechanical Ventilation Failure	Operations	Major	Rare	(1) Loss of air con will compromise indoor air quality as occupants perspire and ventilate more during high temp and humidity. Significant impact to critical rooms like OT, ICUs, UO&G and CE	FM	**1. System Redundancy** a) System design for central main aircon and cooling tower system includes system redundancy and built-in buffer for cooling capacity. b) Deliberate provisions are separately catered for specific and targeted cooling loads

FME Shared Services – Enterprise Risk Management

M&E Infrastructure Resiliency Assessment Consultancy Updates

Seven systems, based on their criticality to the functions in the PHIs, are selected for infrastructure resiliency study



Critical Services requiring zero downtime in M&E systems

- Emergency Department (ED)
- Operating Theatre (OT)
- Intensive Care Unit (ICU)
- Negative Pressure and Positive Pressure Isolation (ISO) Wards

Key Services requiring no more than 4 hours of downtime in M&E systems

- High Dependency (HD)
- Normal Pressure Isolation (ISO) wards
- Pharmacy
- Diagnostic Radiology
- Labs
- Blood Bank

FME Shared Services – Fire Safety Consultancy

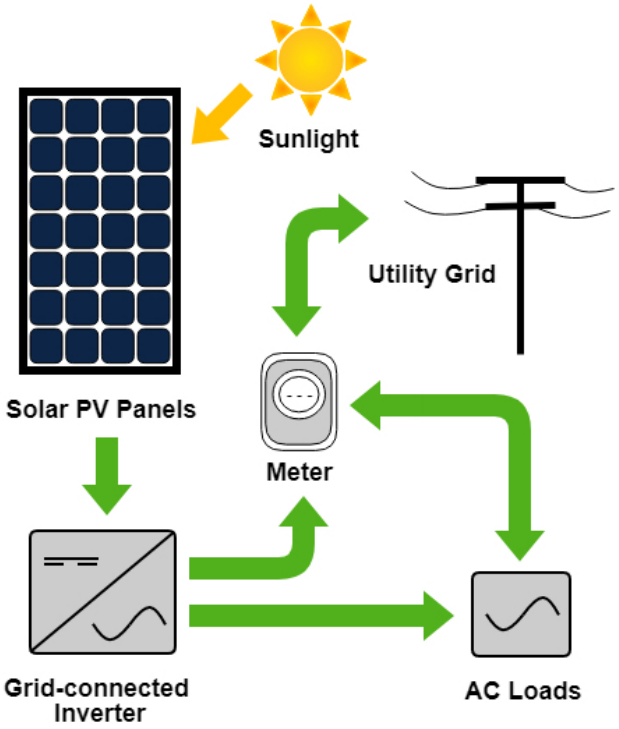
Compliance with Fire Safety Act Amendments

- Authoritative status to be assessed and confirmed by QP consultants.
- Status below based on interim evaluation by internal assessment.

Fire Safety Requirement	SGH	KKH	CGH
At least 2 protected staircases	Partial	Partial	Partial
At least 2 compartment rooms for horizontal evacuation	Partial	Partial	Partial
Provision of fire alarm system	Yes	Yes	Yes
Provision of emergency lightings	Yes	Yes	Yes
Provision of exit signage	Yes	Yes	Yes
Provision of fire hosereels	Yes	Yes	Yes
Provision of fire extinguishers	Yes	Yes	Yes

FME Shared Services – Environmental Sustainability

1. Calling of cluster wide Solar Photo-voltaic implementation



2. Calling of cluster wide Electric Vehicle Charging Stations

FME Shared Services – Adoption of Technology

Smart Technology – Façade Inspection Using Drone


THE STRAITS TIMES

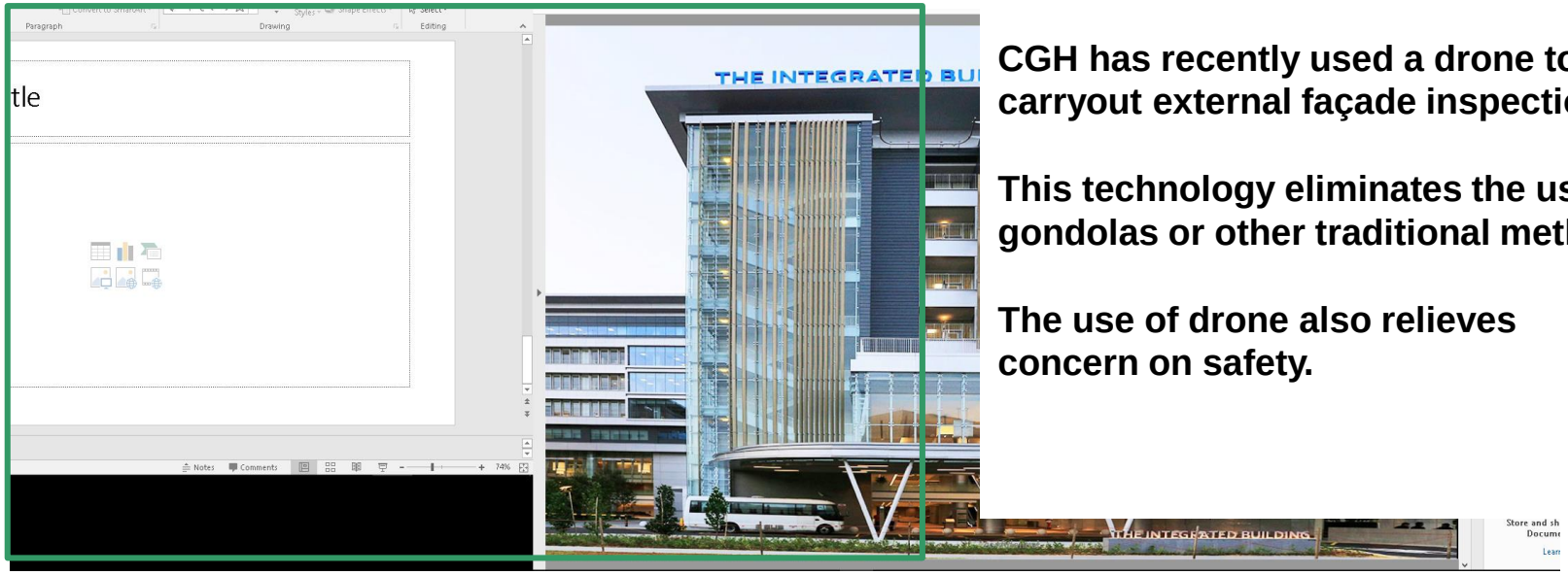
Building owners urged to use drones for facade inspections as new BCA guidelines rolled out

A drone will allow a closer visual inspection as well as better coverage of the entire structure. ST PHOTO: NG SOR LUAN

WHAT?

By 2022, façade checks will have to be carried out every seven years for structures that are over 13m in height & 20 years old. At least 30,000 buildings are slated for inspection over the next seven years.

As such, BCA has urged inspectors to tap on artificial technology (AI) by using drone to get the job done.



CGH has recently used a drone to carryout external façade inspection.

This technology eliminates the use of gondolas or other traditional method.

The use of drone also relieves concern on safety.

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FME Shared Services – Adoption of Technology

Use of wireless IOT sensor

1) Ambient Temperature Sensor

Remote temperature monitoring of drug storage room as recommended by JCI

Features:

- Temperature and Humidity monitoring
- Data trending and extraction
- Automated report generation
- Alarm via email/SMS notification
- Direct setting of threshold
- Map view

2) Drug Fridge Sensor

Wireless monitoring of drug fridge as a cheaper means.

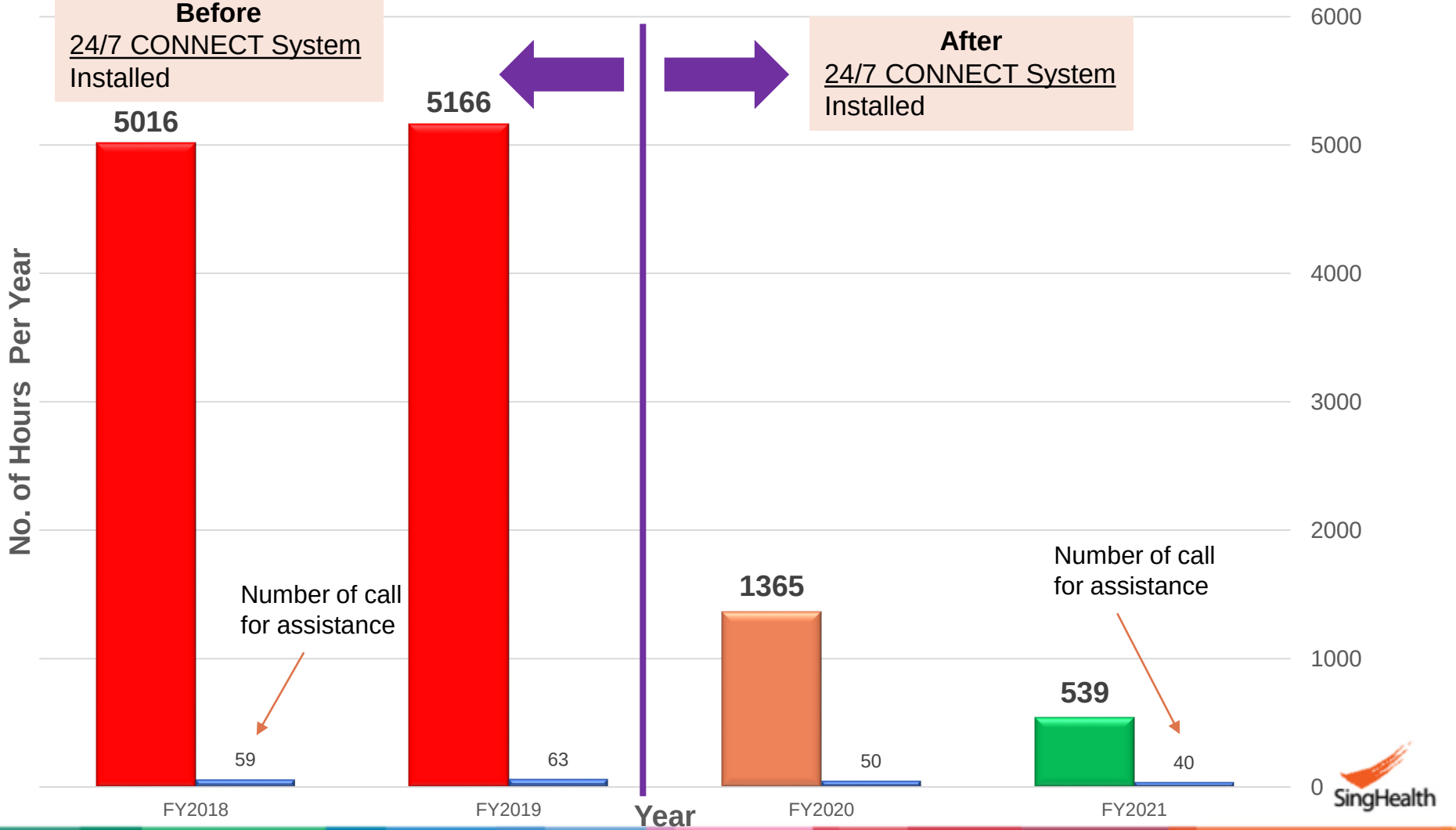
Features:

- Monitor temperature within medication fridge
- Ensures that medications are kept in good condition
- In compliance with quality standards

FME Shared Services – Adoption of Technology

Proactive & Predictive Lifts Monitoring in KKH

Total Operating Hours Lost Per Year



FME Shared Services – Talent Development

- EDB-Singapore-Industry Scholarship

  - Our outsourced partner offers scholarships to top 15% of cohorts to embark on their employment journey with them upon graduation;

- Internships for local students from Institute of Higher Educations

  - Our outsourced partner worked with NUS, SIT, Singapore Polytechnic and Ngee Ann Polytechnic for student internships;

FME Shared Services – Talent Development

- Partner the Institute of Technical Education in support of Work Study Diploma.

- Local Bursary Awards, e.g. Singapore Institute of Technology.

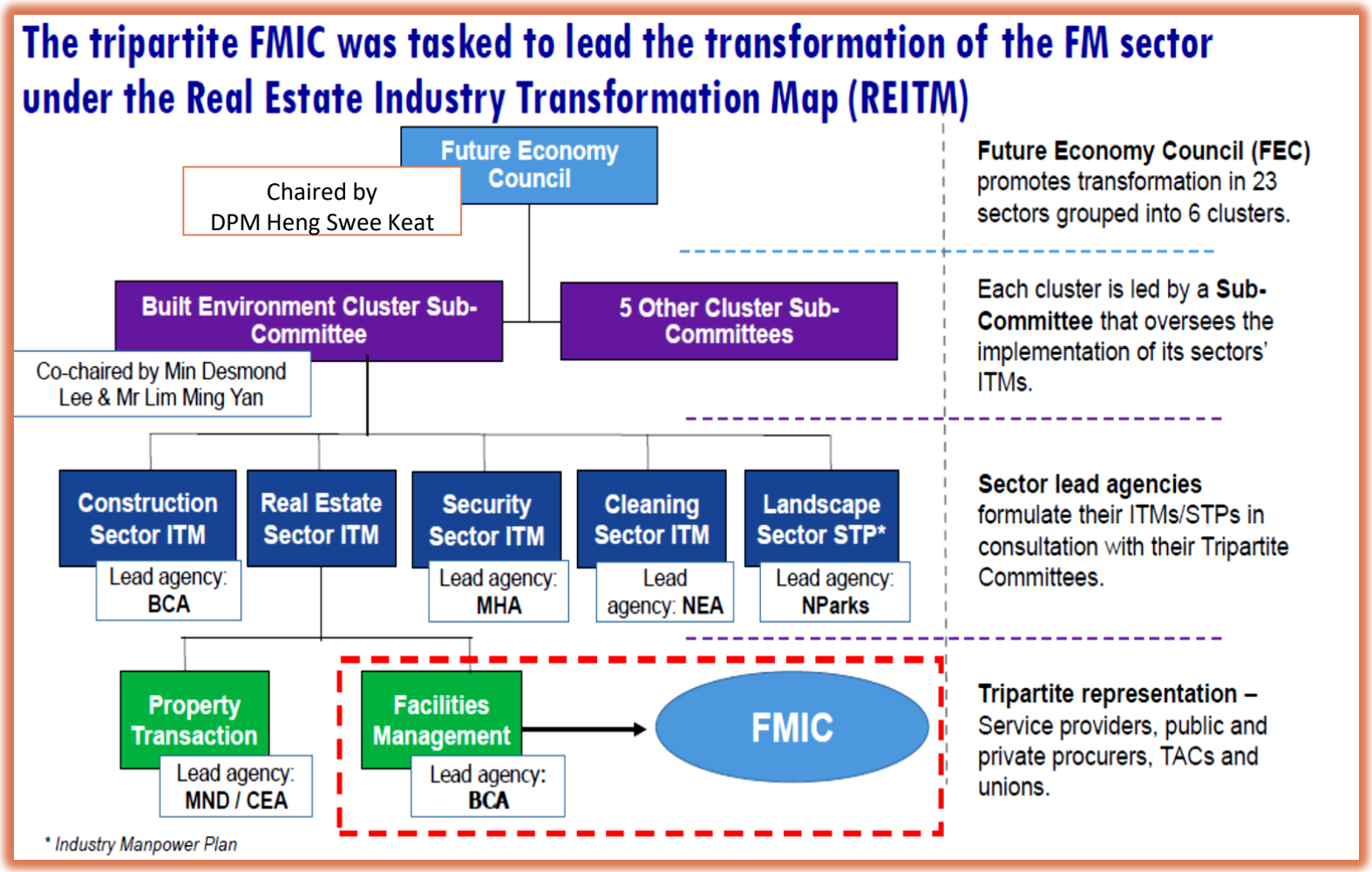
  - Our outsourced partner offered bursary awards to their staff for upgrading purpose.

- Mentorship – Senior staff provides mentorship to other Institution staff.

2022 onwards

FME Transformation Roadmap

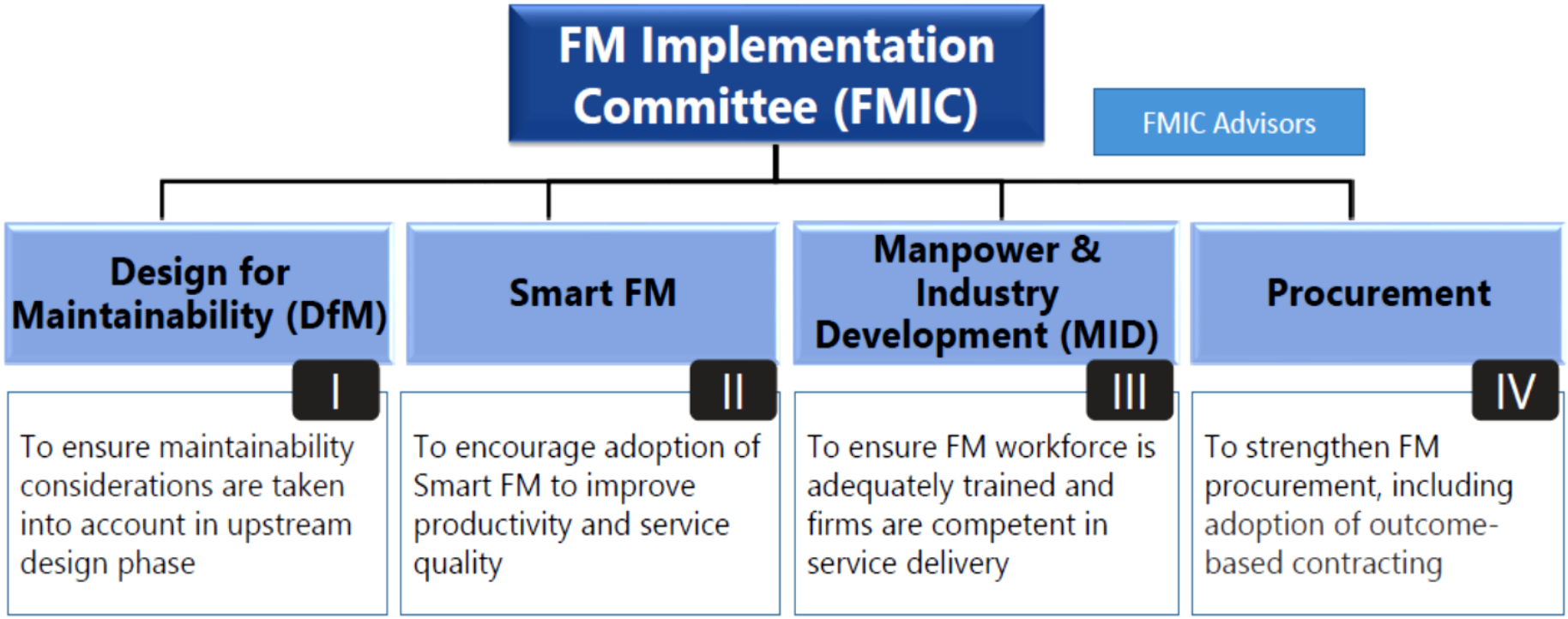
FME Transformation – FM Industry Transformation Map



In Apr 2018 – FM Implementation Committee (FMIC) was set up

Credit : SIFMA

FME Transformation – FM Industry Transformation Map



FMIC TOR

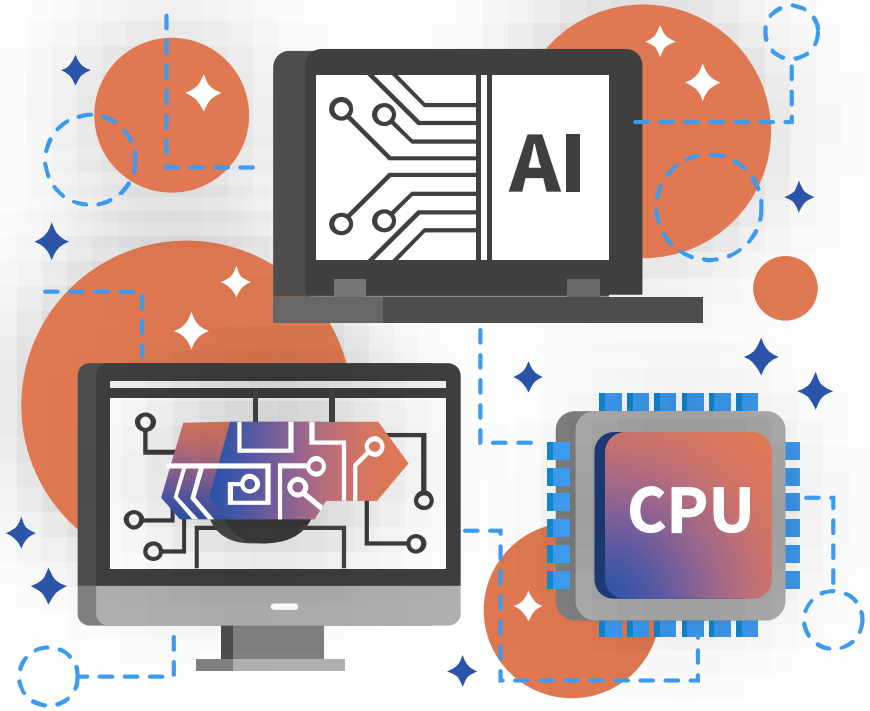
a) Conduct stock-take on the challenges and to identify current and emerging best practices in the FM sector
b) Formulate detailed implementation plan
c) Oversee the implementation of action plan to develop the FM sector
d) Review and provide post-implementation feedback on the ITM

ITM – Industry Transformation Map

Credit : SIFMA

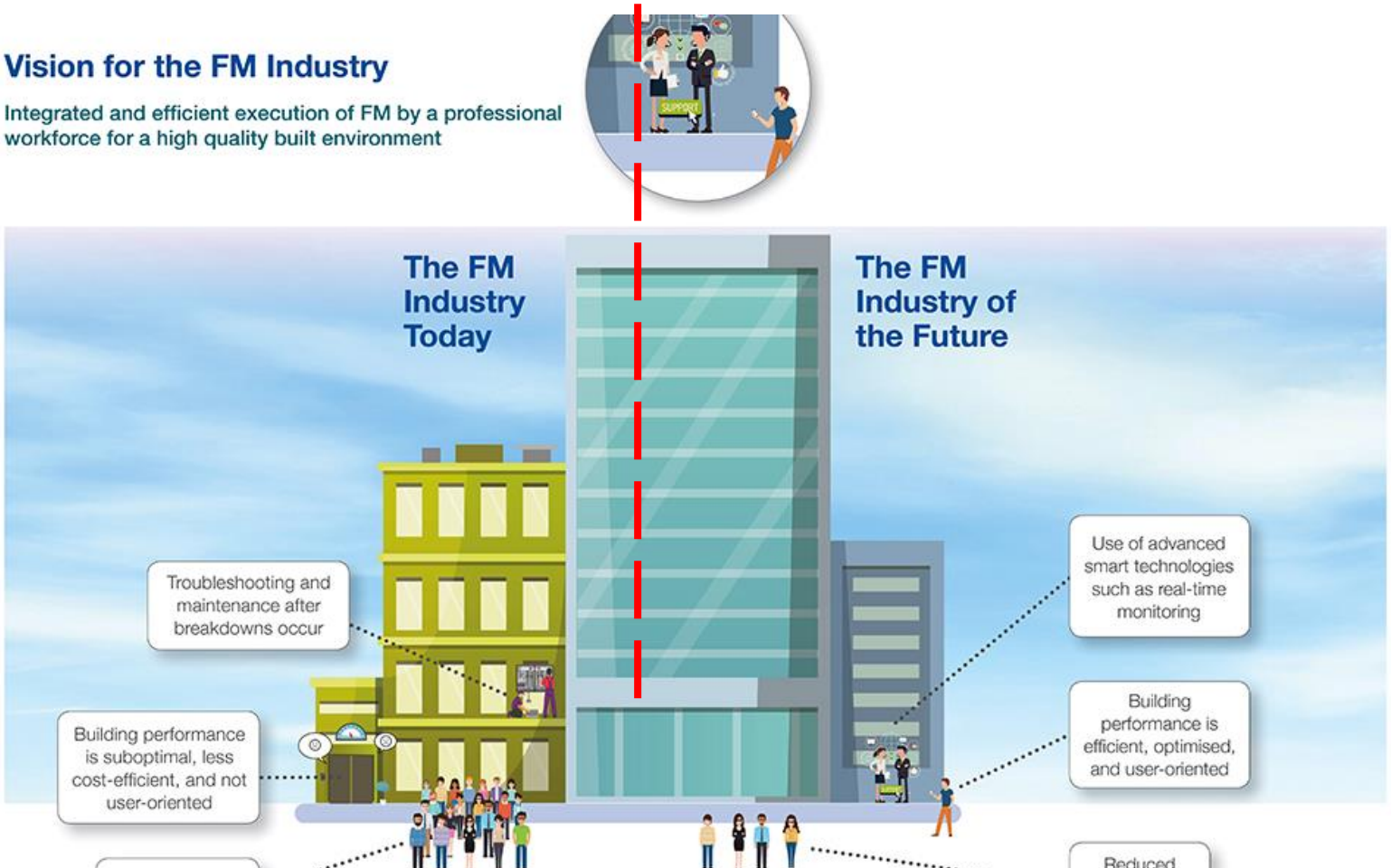
FME Transformation – FME's Mission

To provide a safe, healthy, clean and conducive environment for people to work and patients to rest and heal by leveraging on digital and smart technologies.



FME Transformation – FME's Vision

An integrated FM managed by a professional workforce for a sustainable and efficient healthcare environment.



FME Transformation – How?

By aligning with FMIC's objective and key focus areas.

Objective:

- To advance the FM industry from a labor-intensive industry to a productive one using data analytics, condition monitoring, predictive maintenance and smart solutions.

Key focus areas:

(A) Design for maintainability;

(B) Adoption of Smart FM technologies;

(C) Developing capabilities to ensure that the FM workforce receives adequate training and are credible through accreditation;

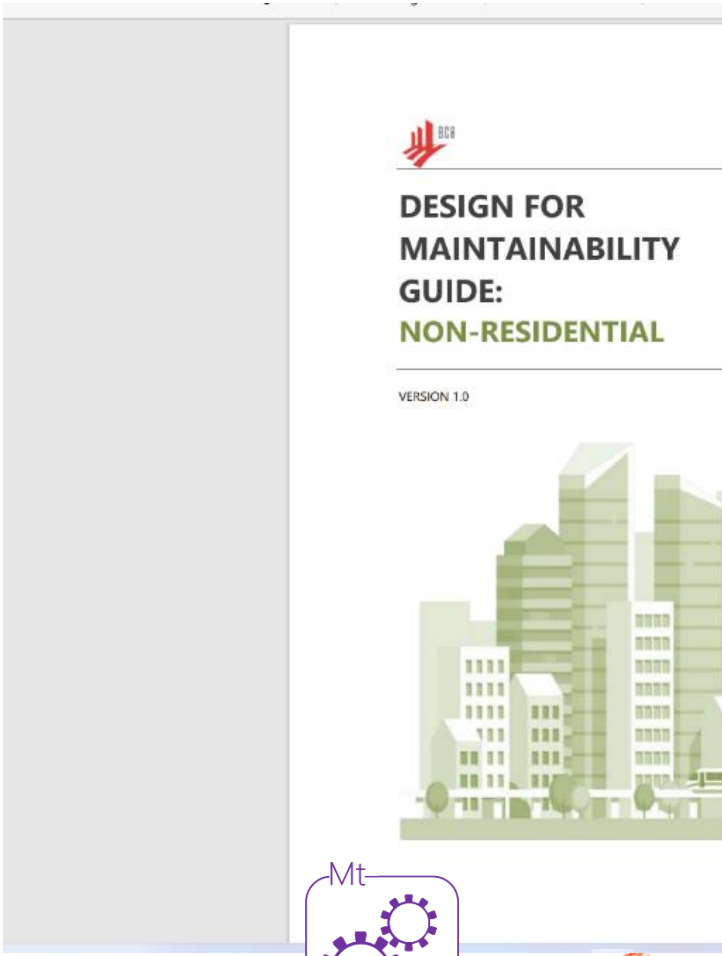
(D) Outcome-based requirements driving performance and technology adoption.

FME Transformation – Design for Maintainability

Adopting BCA's Design for Maintainability (DfM) Guide :

The 4 main principles of DfM are –

- Forecast Maintenance
- Access for Maintenance
- Minimize maintenance interventions
- Enable simple maintenance



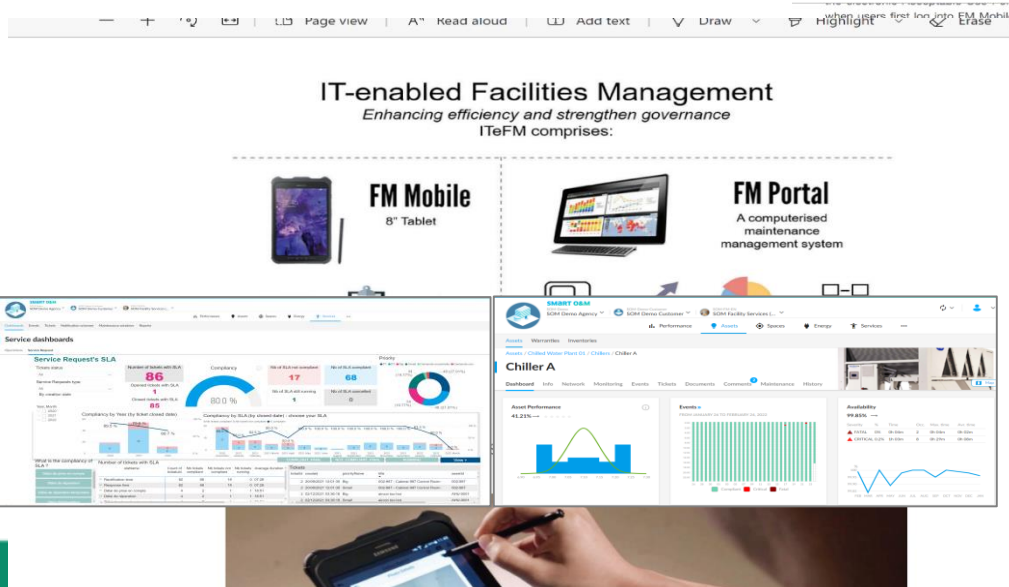
Extracted from www1.bca.gov.sg/docs/default-source/docs-corp-buildsg/sustainability/dfm-guide-non-residential.pdf

FME Transformation – Adoption of Smart FM Technologies

(1) Greater Efficiency

(2) Better Governance

(3) Enhanced Effectiveness



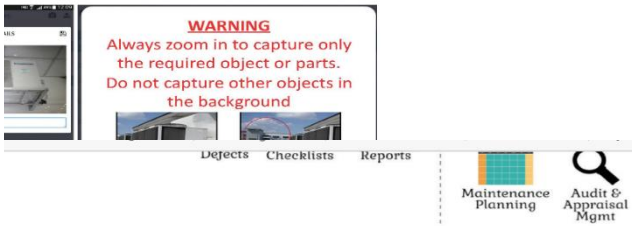
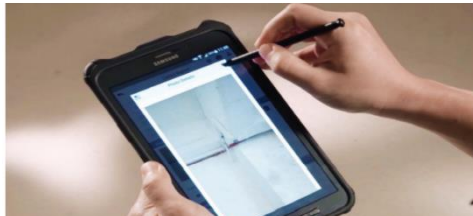


Figure 1. Summary of ITeFM capabilit

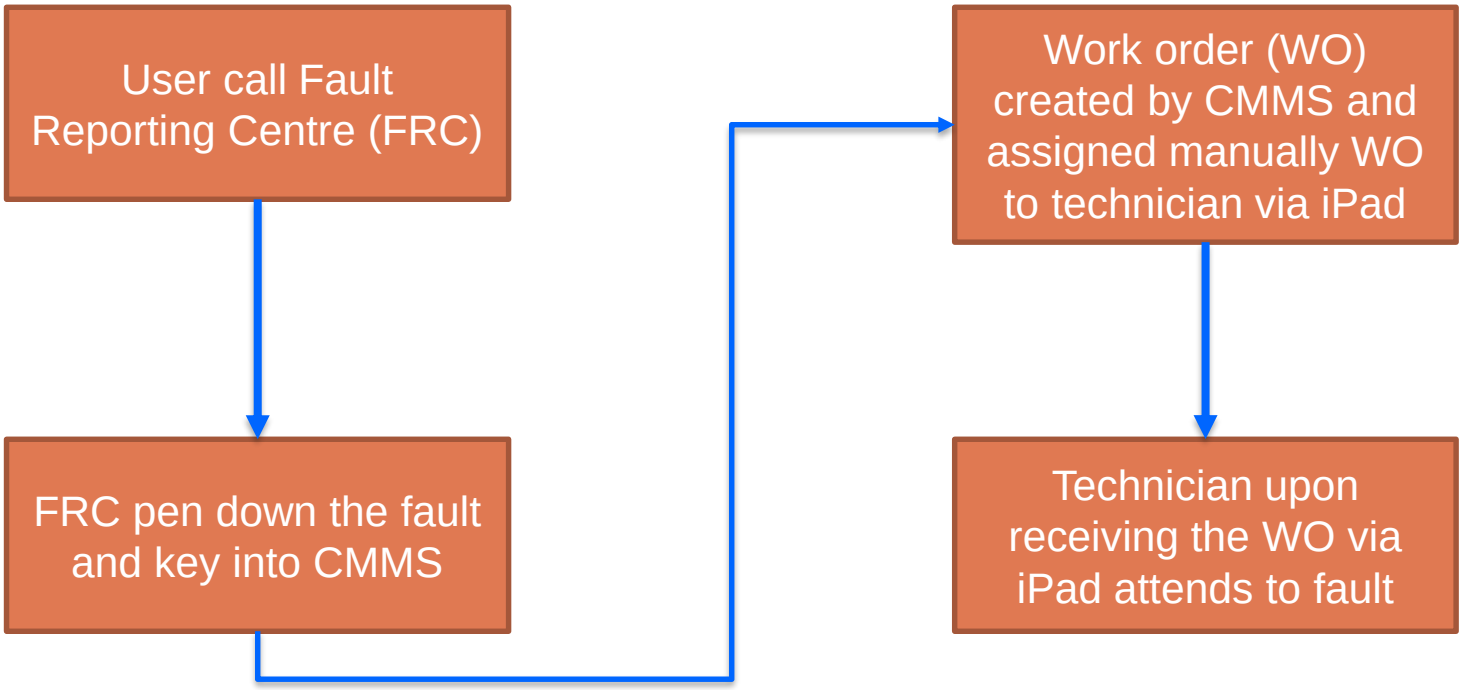


FME Transformation – Adoption of Smart FM Technologies

Current

Current Vs Future

Breakdown Maintenance

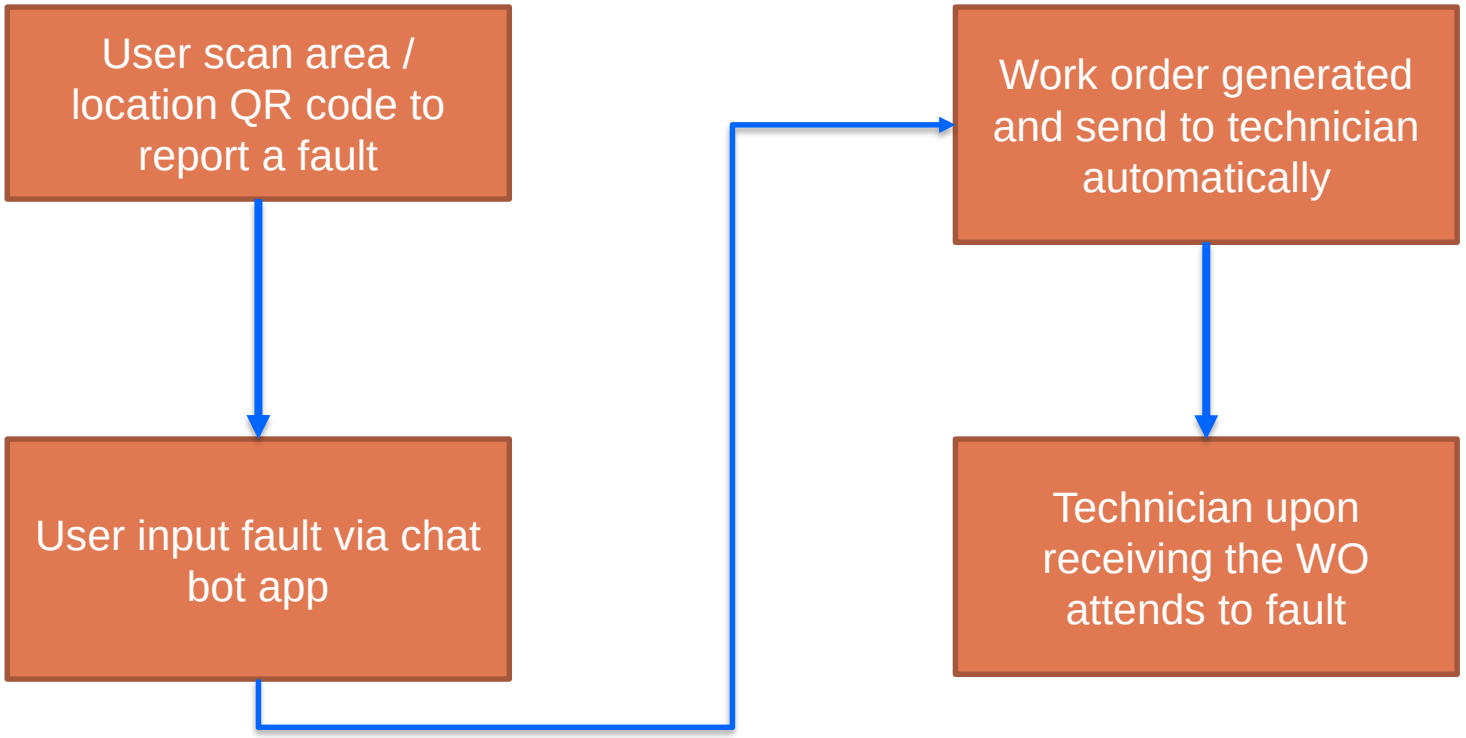


FME Transformation – Adoption of Smart FM Technologies

Future

Current Vs Future

Breakdown Maintenance

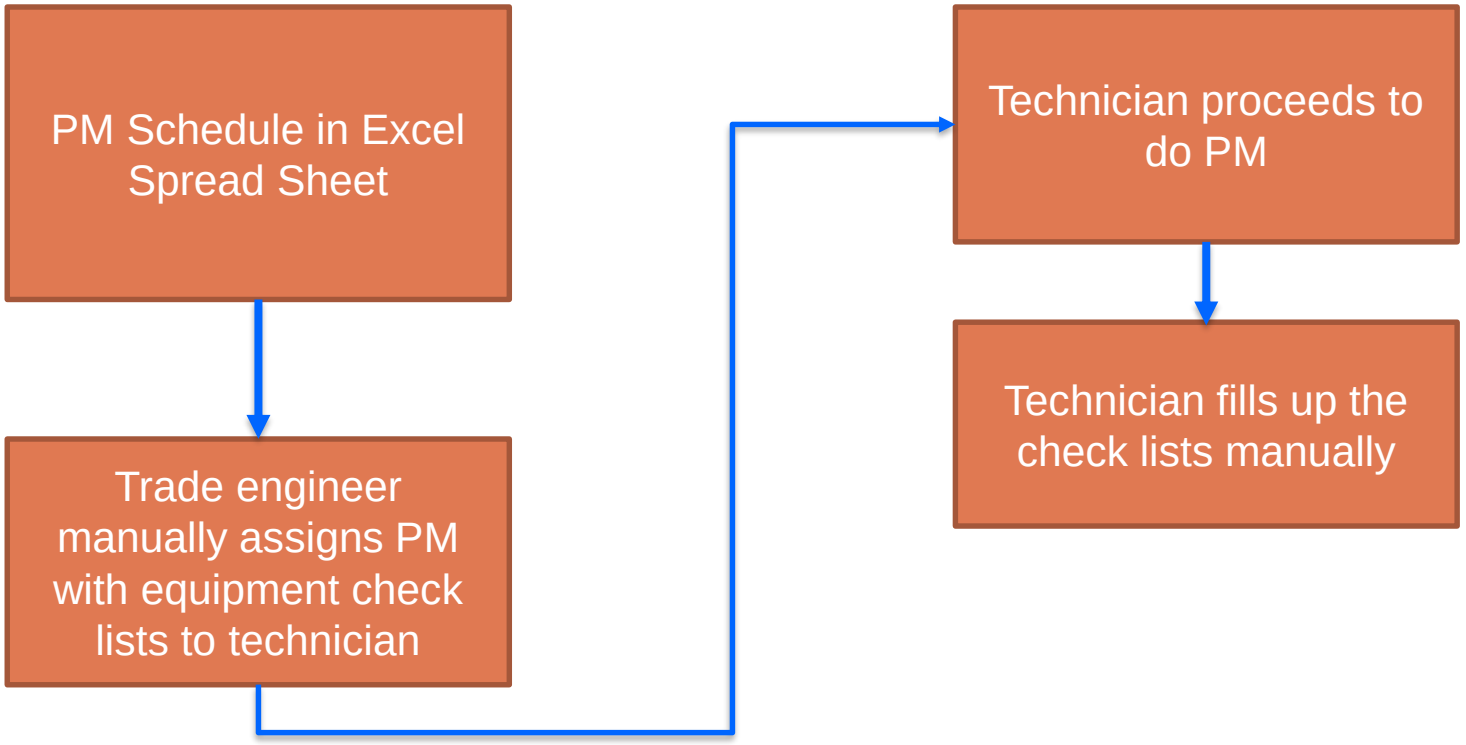


FME Transformation – Adoption of Smart FM Technologies

Current

Current Vs Future

Preventive Maintenance (PM)



FME Transformation – Adoption of Smart FM Technologies

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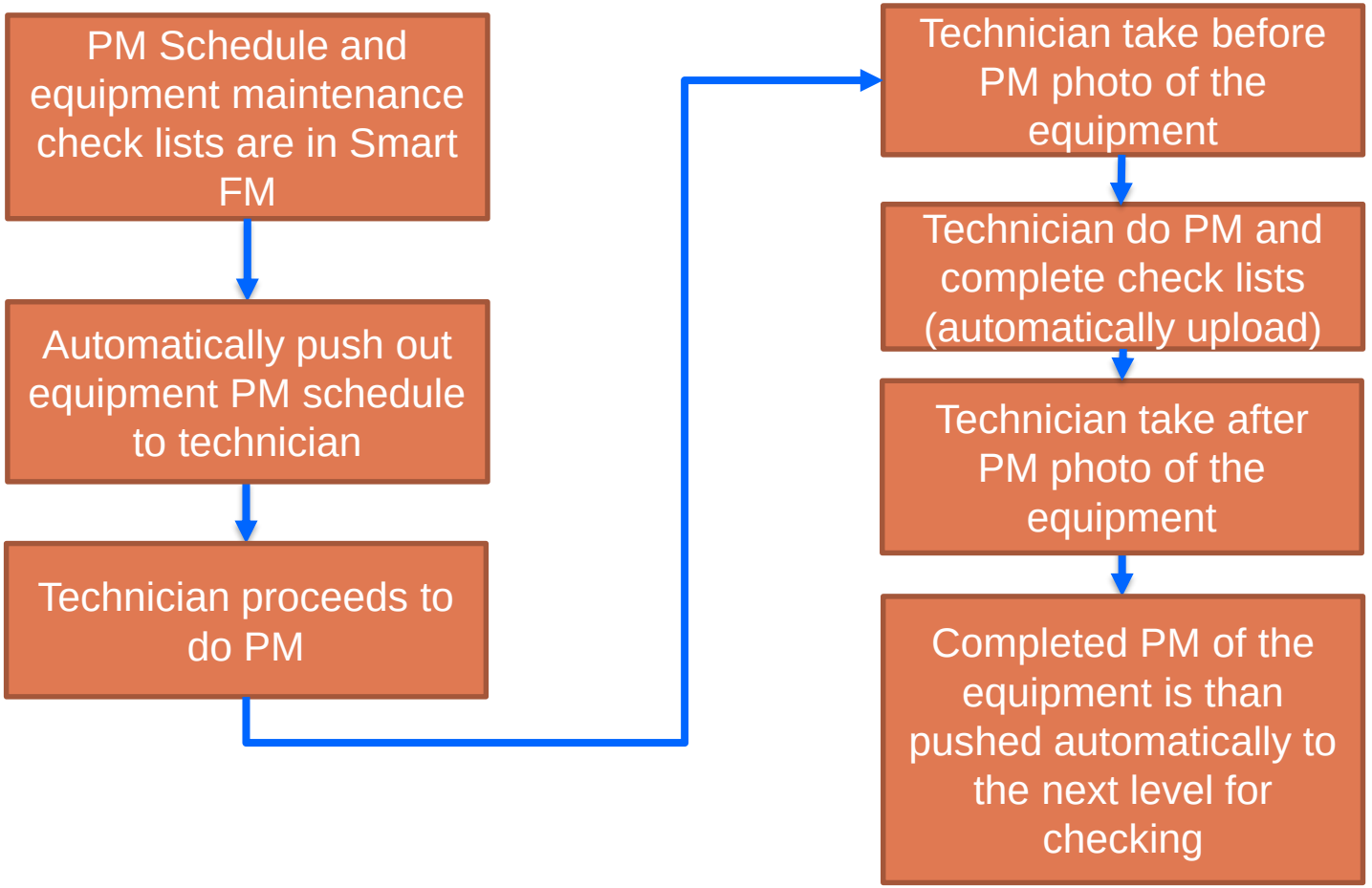

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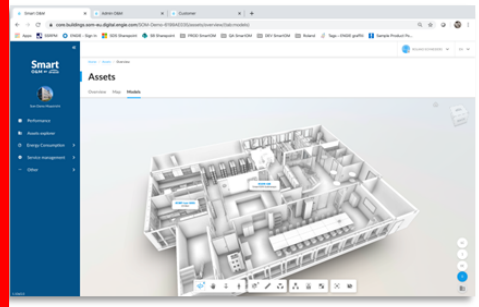
FME Transformation – Adoption of Smart FM Technologies

What are we going to do **next?**



Asset Performance	
Monitoring of any asset	optimize the lifecycle management & condition over time
Smart alerts	enable condition-based maintenance
2D / 3D navigation	improve your asset analysis & remote discovery (incl. usage)
Digital Twin	support asset lifecycle management including documentation

Energy Performance	
Monitoring of any meter	capture in detail the energy flows
Smart alerts	inform the energy manager on daily targets & deviations
Space and time navigation	track and analyze your energy consumption
$ and CO2 calculation	report on economics & sustainability

Service Performance	
Connection to any CMMS	simplify ticket management experience for field technicians
Operation portal	manage and optimize internal & subcontractors' operations
Contract Management	steer and report on commitments & SLA with BI analytics
Customer view	display in real time information about assets & service

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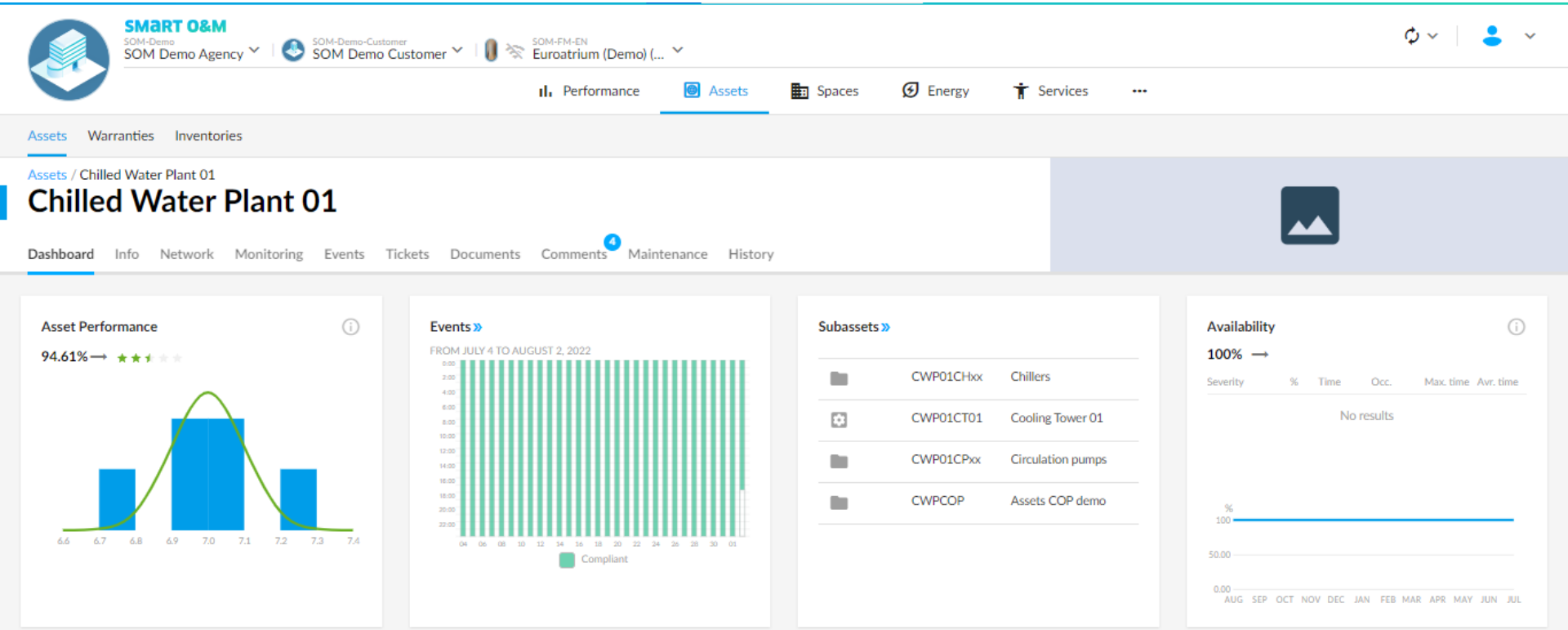
FME Transformation – Adoption of Smart FM Technologies



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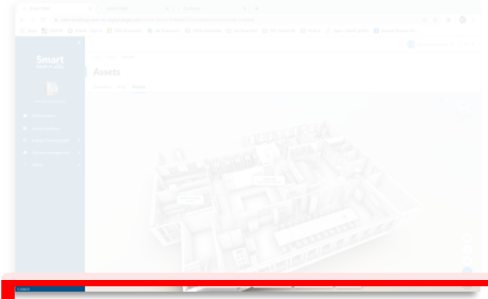

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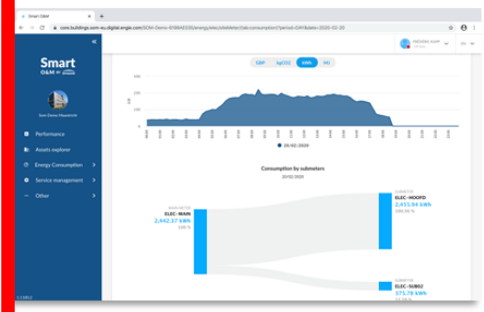

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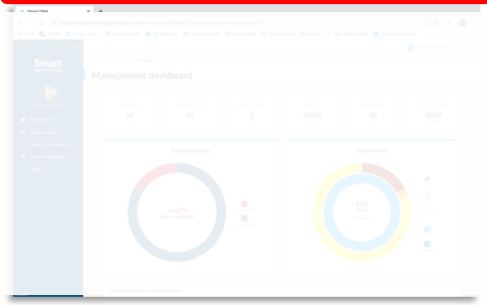

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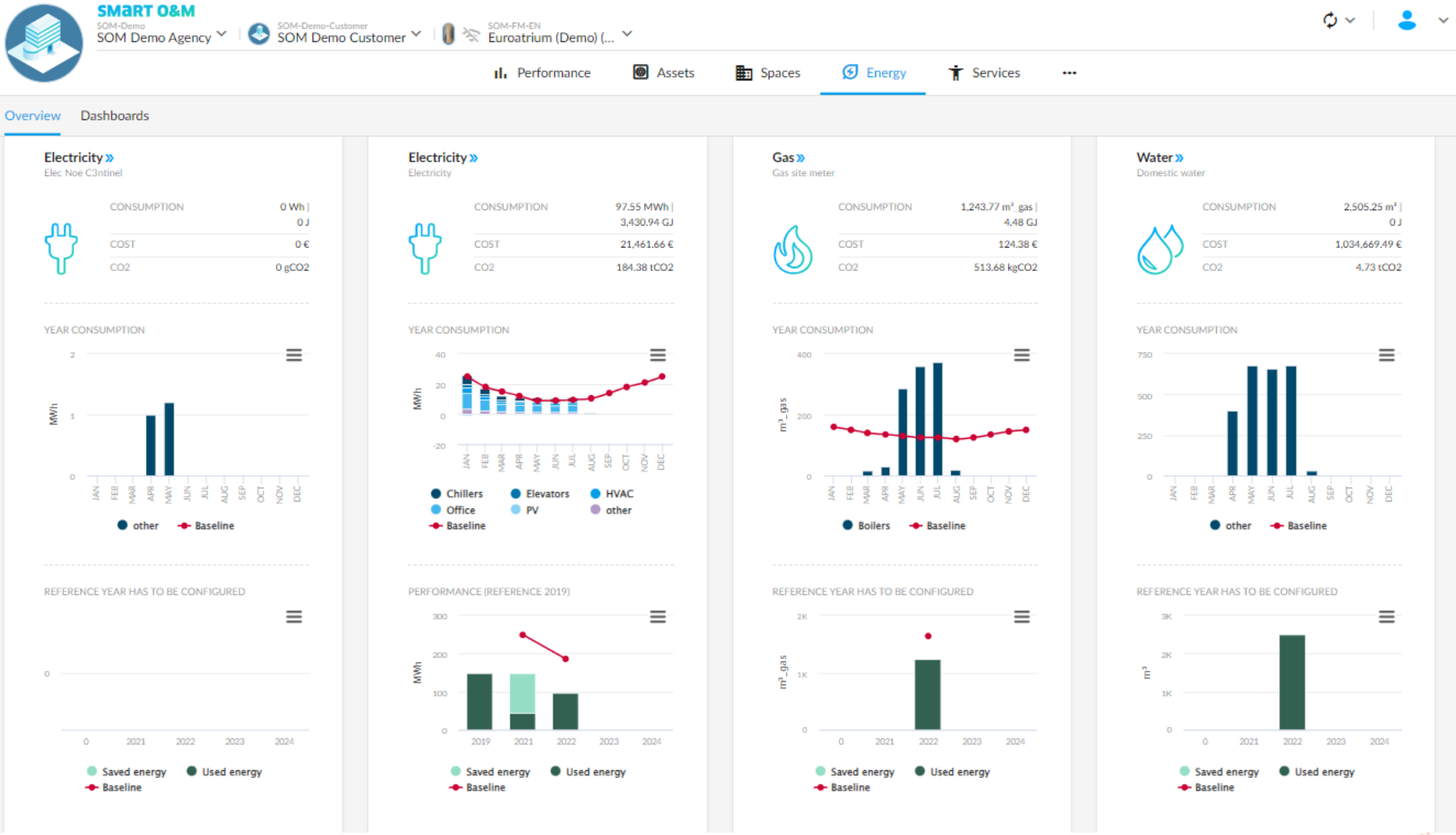

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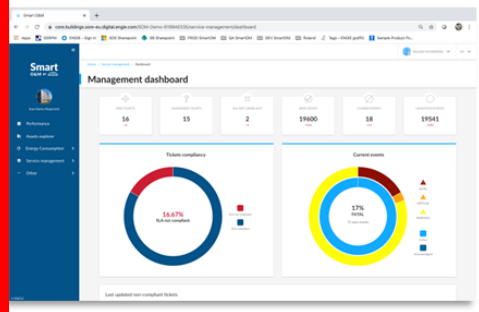

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FME Transformation – Adoption of Smart FM Technologies

FME Transformation – Developing Capabilities

- To establish a FM training framework;
- To upgrade and certify skillsets of FM workers.

FME Transformation – Developing Capabilities

Work with Future Workforce Unit on the following:-

- Horizon scanning;
- Evolving Competency;
- Incorporate into Training road maps; and
- Specialised Career Development Pathway, e.g. trade (Electrical, Air Conditioning & Mechanical Ventilation, etc.)

FME Transformation – Developing Capabilities

To collaborate with Institute of Higher Learning (IHL) in:

- Exploring possibilities to equip IHL students with healthcare related FM knowledge;
- Enhancing IHL's existing syllabus to incorporate Healthcare related content.

FME Transformation – Outcome-based Contract

Prescriptive and headcount-based to outcome-based.

FME Transformation – Summary

(A) Design for Maintainability

(B) Adoption of Smart Technologies

(C) Developing Capabilities

(D) Outcome-based Contract

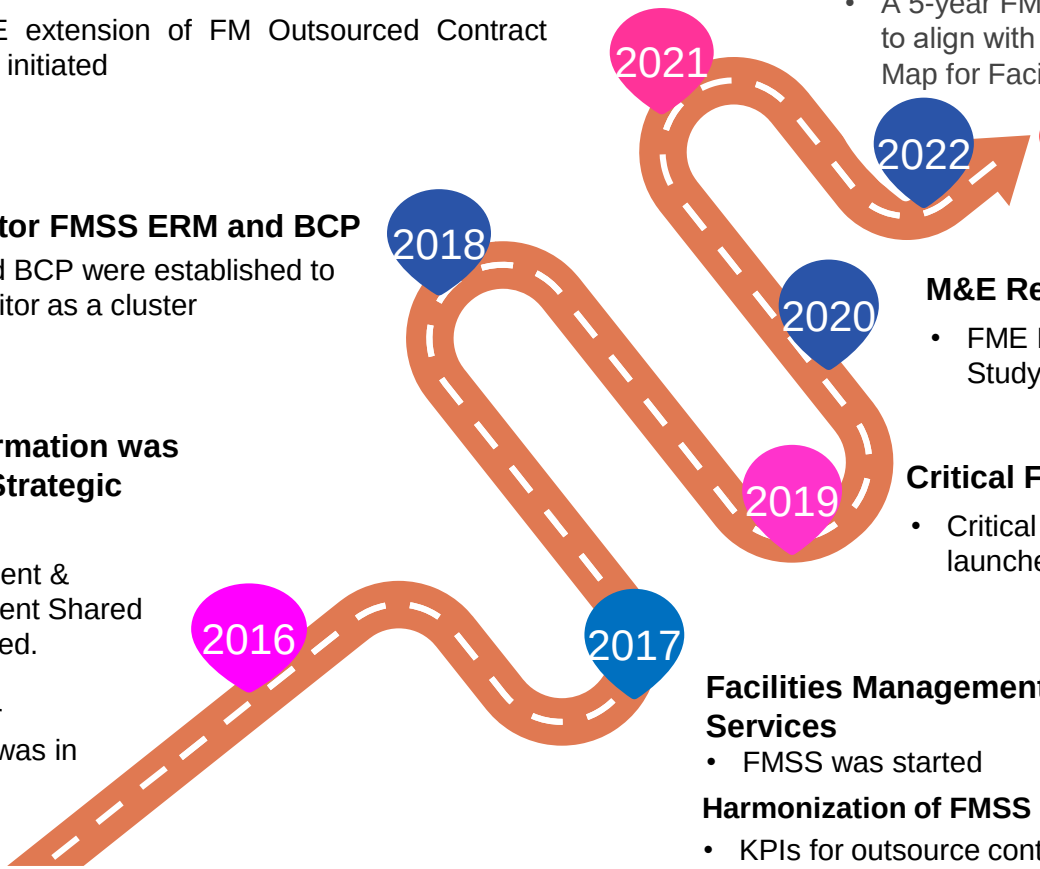
FME Transformation – FME Roadmap

Extension of Cluster Facilities Management Outsourced Vendor Contract

- FME extension of FM Outsourced Contract was initiated

Transformation FME

- A 5-year FME transformation roadmap planned to align with FMIC's Industry Transformation Map for Facilities Management Sector



Track and monitor FMSS ERM and BCP

- FME ERM and BCP were established to track and monitor as a cluster

M&E Resiliency Consultancy Study

- FME M&E Resiliency Consultancy Study was launched

Shared Services formation was mooted in Cluster Strategic Retreat

- Facilities Development & Facilities Management Shared Services were formed.
- Harmonized Career Development Plan was in progress

Critical Fire Consultancy Study

- Critical Fire Consultancy Study was launched for 7 critical parameters

Facilities Management & Engineering Shared Services

- FMSS was started

Harmonization of FMSS KPIs

- KPIs for outsource contract performance and energy consumption were harmonized

SingHealth