

CONFERENCE PRESENTATION · 2026

Best Use of Technology in FM

Enabling Sustainable, Data-Driven and
ESG-Accountable Facilities Management

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Manual FM



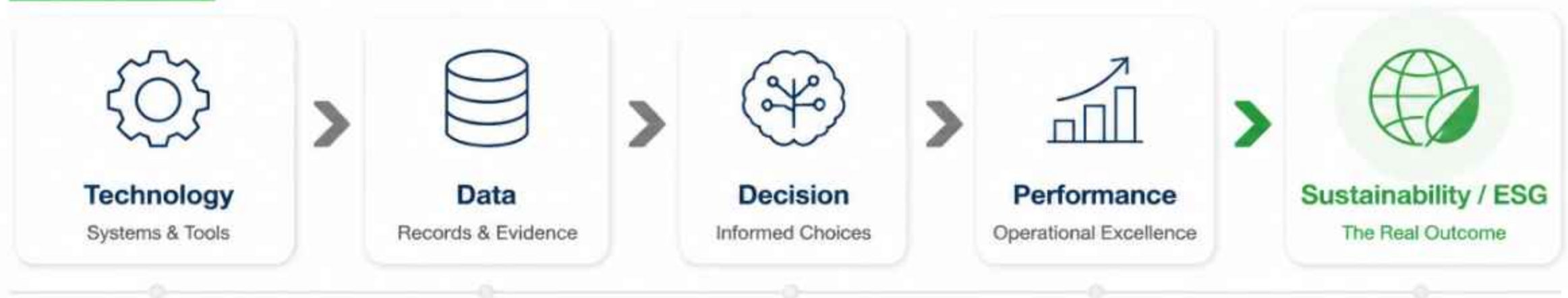
Digital FM



Sustainable &
ESG-Accountable FM



Technology Is Not the Destination — It Is the **Enabler**



The real value of technology is measured by FM outcomes — not by the systems installed.

- Not about buying more systems — about improving how FM work is performed
- Supports better operations and trusted, reliable data
- Enables sustainability outcomes and ESG accountability
- Value is only real when daily FM practice changes

FM Has Always Managed the Same Core Responsibilities

Technology changes HOW we manage them — not what we manage.



KEY MESSAGE

FM's core mandate has not changed. We still manage the same eight domains — assets, space, maintenance, energy, safety, users, cost, and compliance.

What technology changes is **HOW** we manage them: from manual and fragmented methods to structured, data-driven and accountable operations.

Traditional FM: Familiar but Limited

Traditional methods were adequate — until buildings became more complex.

- Paper-based records
- Excel registers and spreadsheets
- Phone calls and WhatsApp instructions
- Manual checklists and forms
- Hardcopy drawings / CAD / PDF files
- Monthly manual reporting
- Experience-based decision-making

*As buildings grow more complex,
these methods become barriers —
not just limitations.*



Paper Records



Excel Registers



WhatsApp / Phone



Manual Checklists



CAD / PDF Drawings



Monthly Reports



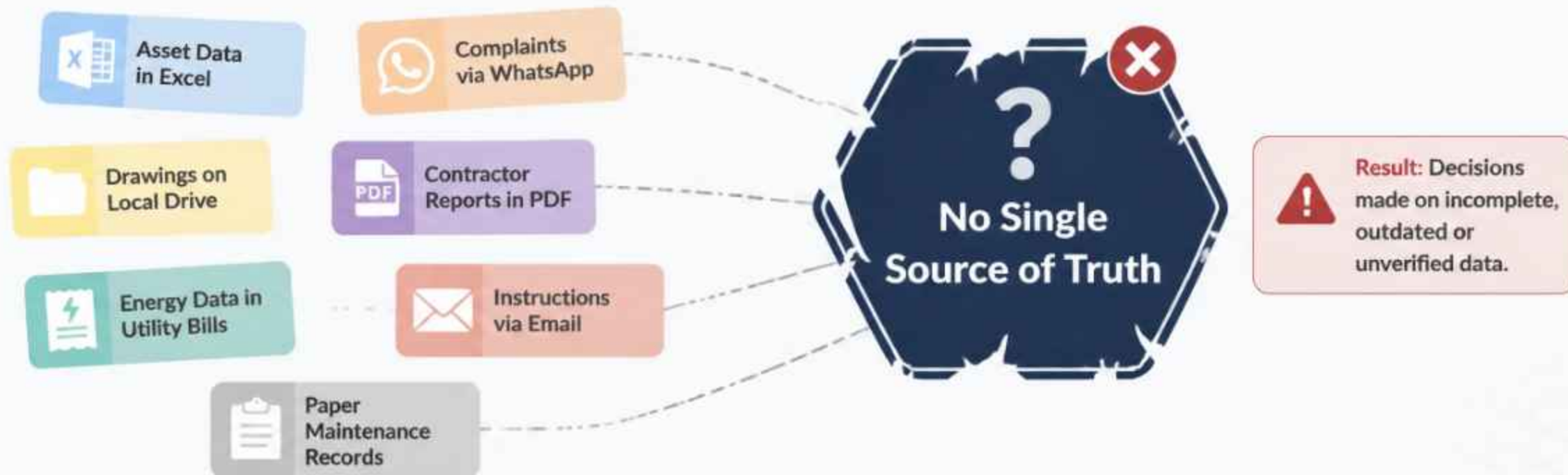
Experience-Based



Limits Visibility &
Accountability

The Problem Is Not Lack of Information – It Is **Fragmented** Information

FM data exists – but it is scattered, outdated, and disconnected.

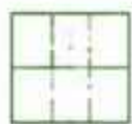


The problem is not that FM professionals are not working hard – it is that the information they need is scattered across different files, channels and tools.

Technology Now Available in Facilities Management

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Each technology supports a specific FM function — their real value comes when connected to actual FM workflows.



CAFM

Computer-Aided Facilities Management

Space management, asset register,
FM information



CMMS

Computerised Maintenance
Management System

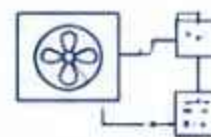
Work orders, preventive maintenance,
maintenance history



BIM

Building Information Modelling

As-built data, space and asset
location, building information



BMS / BAS

Building Management /
Automation System

HVAC, lighting, electrical system
monitoring and control



IoT

Internet of Things Sensors

Real-time monitoring of
environment, energy, equipment



AI / ML

Artificial Intelligence &
Machine Learning

Pattern analysis, predictive
maintenance, anomaly detection



Digital Twin

Digital Twin Technology

Building simulation, performance
modelling, scenario planning



Dashboard

Analytics & Reporting Dashboard

KPI monitoring, performance
reporting, management visibility

CAFM and CMMS: Structuring FM Records and Maintenance Work



CAFM and CMMS convert informal FM records into structured, traceable FM information.

CAFM Supports:

- Space management, asset register and occupancy tracking
- Reduces dependence on Excel for FM information

CMMS Supports:

- Complaints, work orders and preventive maintenance schedules
- Builds a trusted, system-generated maintenance history

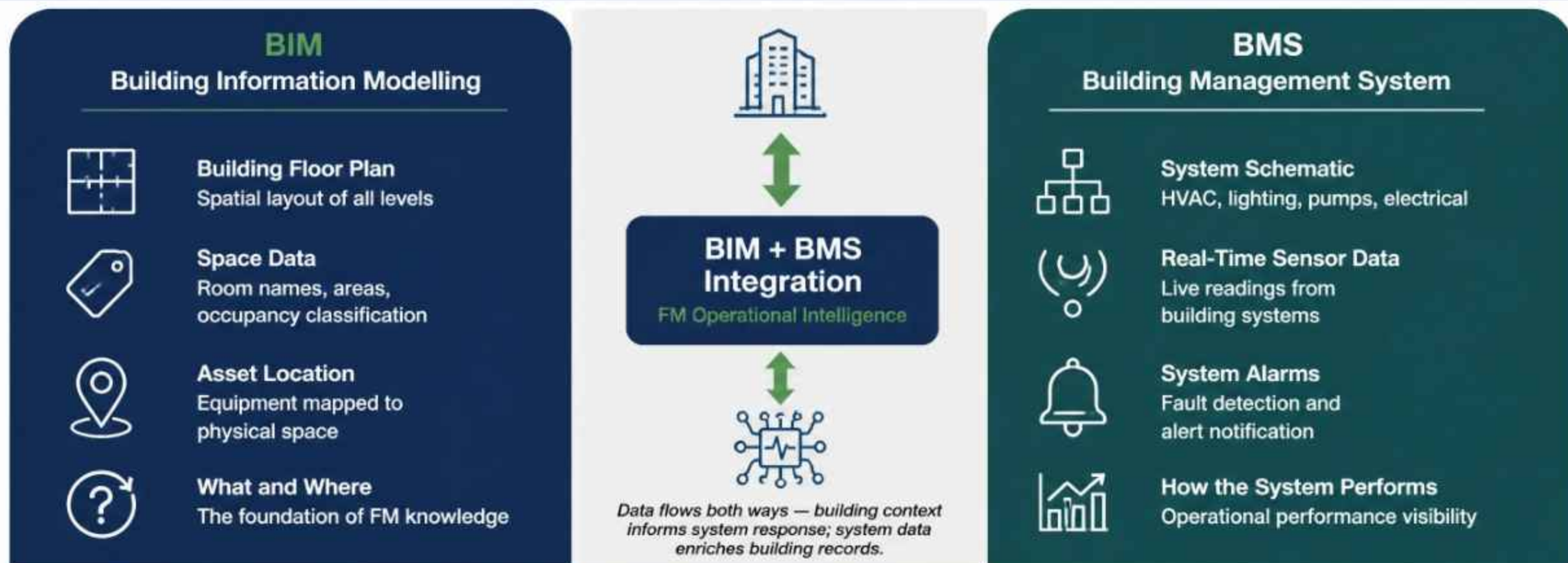
TRADITIONAL PRACTICE	CAFM / CMMS PRACTICE
✗ Asset list maintained in Excel spreadsheet	✓ Asset register in system – linked to location, condition and full maintenance history
✗ Verbal complaint received via phone call	✓ Work order raised in CMMS with SLA, status tracking and photographic evidence
✗ Preventive maintenance checklist on paper	✓ Digital PM schedule with completion tracking and automatic reminders
✗ Maintenance history stored in folders or memory	✓ System-generated maintenance log – searchable, auditable, complete
✗ No visibility on overdue or outstanding work	✓ Real-time work order status dashboard with overdue alerts

Note: The value of CAFM and CMMS depends entirely on accurate, updated and trusted data.

BIM and BMS: Connecting Building Information and System Performance

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BIM gives structured building information; BMS gives operational system visibility — together, they enable informed and proactive FM.



BIM without FM use is a design archive. BMS without action is just noise. Together, they create FM intelligence.

From Real-Time Monitoring to Prediction and Simulation

IoT → AI → Digital Twin: The Advanced FM Technology Progression



KEY MESSAGE

"AI and Digital Twin cannot work without trusted FM data foundations."



IoT Foundation —
Real-time building data streams



AI Intelligence —
Pattern learning from FM history



Digital Twin —
Live building model with simulation capability

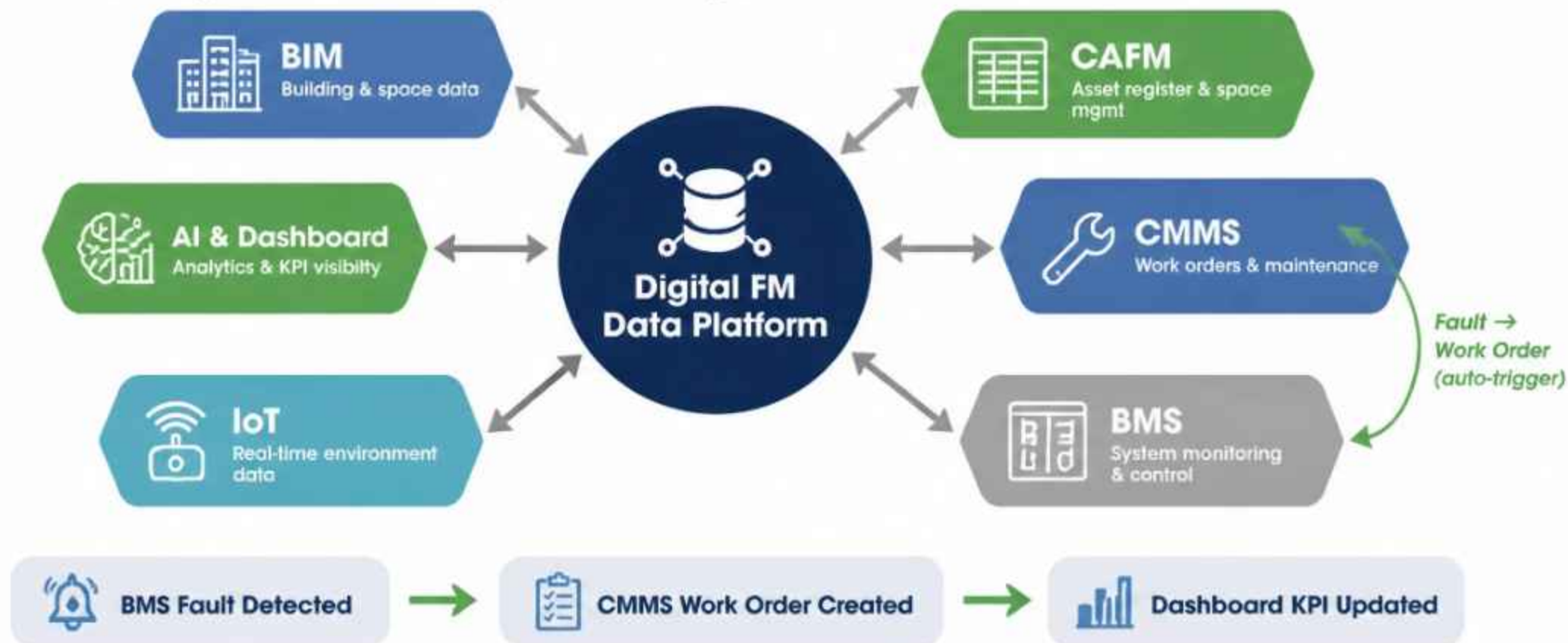
Turning FM Data into Management Visibility

A dashboard is valuable only when it supports decision-making — not when it becomes a decorative screen.



The Real Value Comes From Integration

Isolated systems create digital silos. Connected systems create **Digital FM value**.



Technology as an Enabler of Sustainability and ESG in FM

Technology supports sustainability and ESG when FM data is measurable, traceable and auditable.



FM technology creates the measurable evidence that turns sustainability intentions into ESG accountability.

How FM Contributes to ESG

FM translates ESG commitments into daily building operations.



Environmental

- ✓ Energy efficiency monitoring BMS · IoT · Dashboard
- ✓ Water consumption tracking Smart Meters · IoT
- ✓ Waste reduction & recycling CAFM Waste Module
- ✓ Equipment efficiency & asset lifespan CMMS Preventive Maintenance



Social

- ✓ Occupant health & comfort (IEQ) IoT Air Quality Sensors
- ✓ Safety compliance & emergency response CAFM Safety Register
- ✓ Service quality & complaint resolution CMMS Work Orders
- ✓ Wellbeing & accessibility Space Management System



Governance

- ✓ Audit trail & approval workflow CMMS · CAFM Records
- ✓ Regulatory compliance evidence Compliance Dashboard
- ✓ Contractor accountability Work Order Tracking
- ✓ Data ownership & access control System Governance Protocols

Every maintenance task completed, every energy reading recorded, every safety check conducted — these are FM's daily ESG contributions.

The Real Issue: Technology Exists, But **Manual Work** Continues

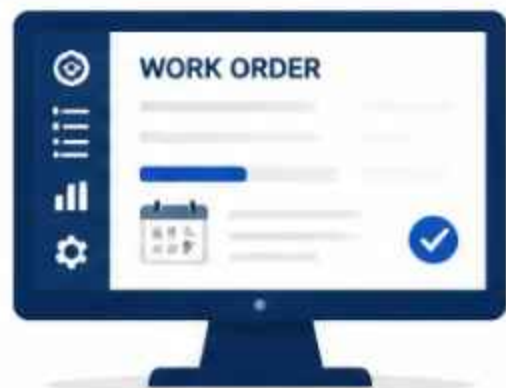
Having technology is not the same as being digital.

 Technology Available	 What Actually Happens
 CMMS	Complaints received via WhatsApp; work orders raised manually after the fact
 CAFM	Asset data maintained in parallel Excel files
 BIM	FM team uses old CAD/PDF drawings; BIM model not maintained
 BMS	System alarms acknowledged but reports printed manually
 Dashboard	KPIs displayed but management requests separate PowerPoint reports



Digital Tool, Manual Mindset

When behaviour stays manual, digital tools become extra work — not transformation.



Digital System

Work order raised in CMMS



Manual Habit

Complaint still via WhatsApp



Double Work

Staff update system manually after the fact



Incomplete Records

System data lags behind reality.
What happened in the field is not what the system shows.



Wasted Time

Every task is done twice —
once through the old channel,
once entered into the system.



Lost Accountability

No audit trail. No traceability.
Management cannot trust
the system data.

Having a System Is Not the Same as **Being Digital**

“ Digital FM is achieved when the system becomes the normal and official way of working. ”

	 Having a System	 Being Digital
Data Entry	Optional, entered when convenient	• Mandatory, embedded in official workflow
Reporting	Manual summaries prepared from system data	• System-generated dashboards used directly in meetings
Work Instructions	Verbal or via WhatsApp	• Work orders raised and tracked in system
Accountability	Difficult to trace or verify	• Full audit trail visible in system
Decision-Making	Based on experience and memory	• Supported by system data and analytics
FM Culture	System treated as extra administrative work	• System is the instinctive first point of reference

 *The measure of transformation is not the system installed — it is the behaviour of the organisation.*

Transforming Traditional FM into Technology-Enabled FM

From fragmented and informal – to traceable, measurable and data-driven

 OLD PRACTICE	 TECHNOLOGY-ENABLED PRACTICE
⊗ Asset list in Excel	✓ Asset register in CAFM – linked to location, condition and maintenance history
⊗ Complaint via phone call	✓ Work order raised in CMMS with SLA, status tracking and evidence
⊗ Manual space audit	✓ CAFM/BIM occupancy data with real-time utilisation analytics
⊗ Monthly utility bill review	✓ Smart meter + BMS energy dashboard with alerts and trend analysis
⊗ Monthly manual report	✓ Live dashboard with KPI monitoring and automated reporting
⊗ Experience-based maintenance	✓ PM schedule in CMMS with predictive maintenance from IoT and AI
⊗ Paper compliance checklist	✓ Digital compliance register with audit trail and automated reminders

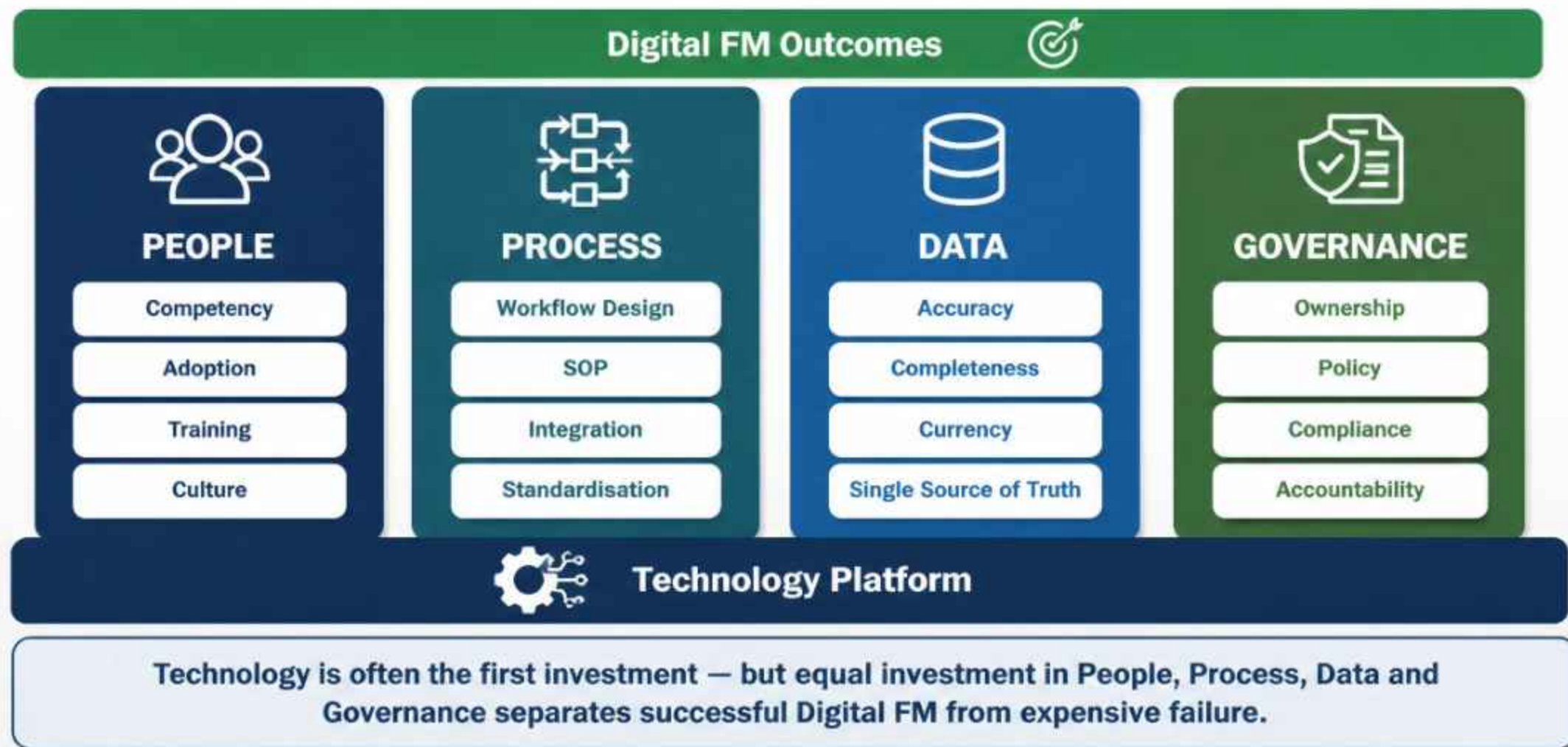


Every row in this table is a choice – between the way FM has always worked and the way FM must work.



People, Process, Data and Governance

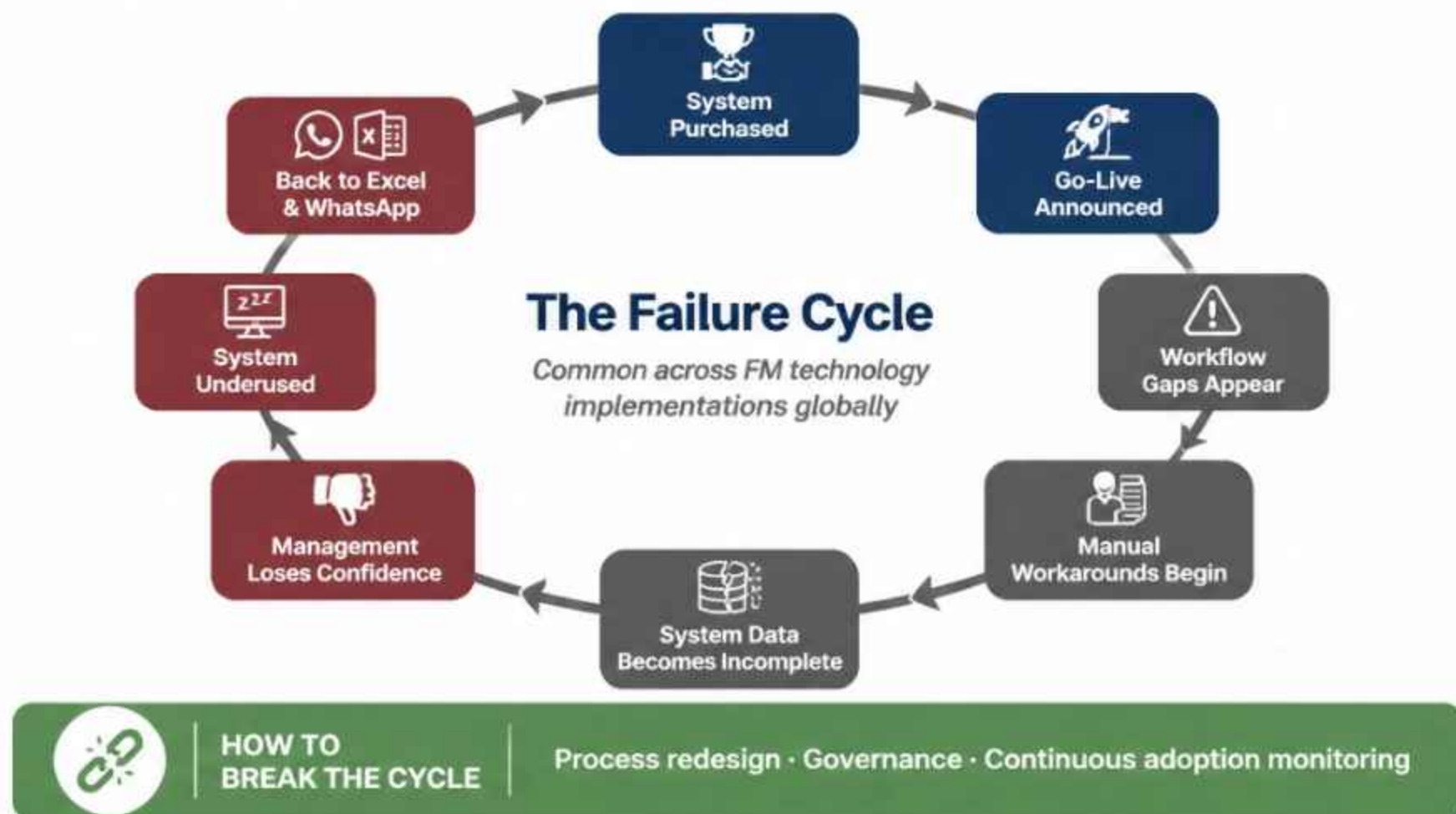
Technology creates value only when all four pillars work together



FM Capability ↑ · ESG Accountability ↑

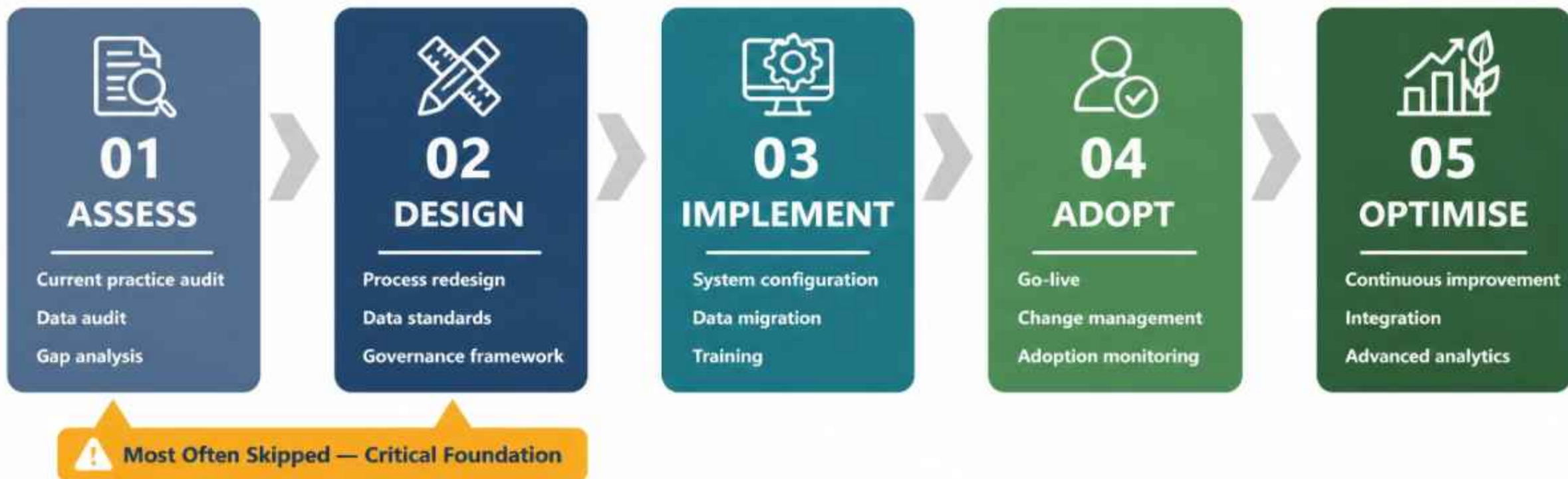
Go-Live Is Not the End — It Is the Beginning of Adoption

Most systems fail not at launch — but in the months that follow.



How to Move from Manual FM to Digital FM

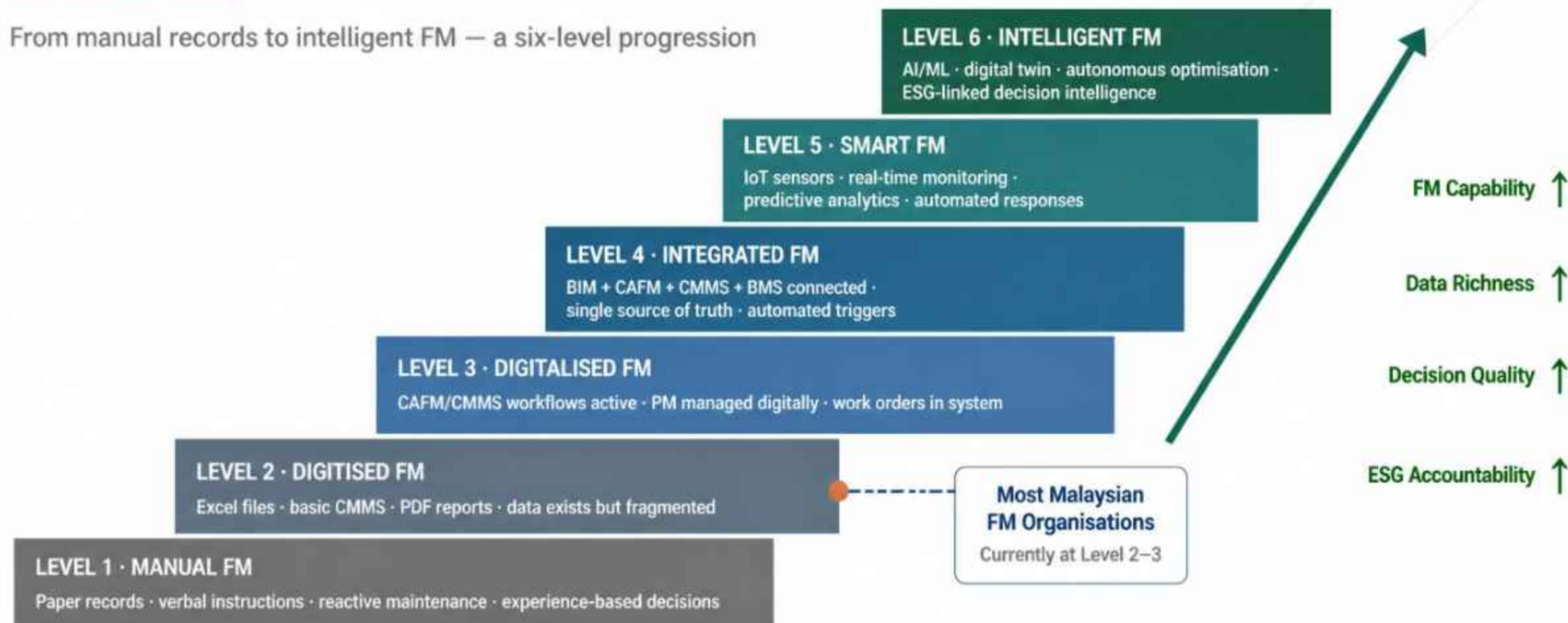
A deliberate, stage-by-stage transition — not a switch



 Each stage builds on the previous one. Skipping ASSESS and DESIGN is the most common cause of Digital FM failure.

Digital FM Maturity Journey

From manual records to intelligent FM — a six-level progression



The maturity journey is not about jumping to Level 6 — it is about building the right foundation at each stage.

Technology Success Depends on Critical Success Factors

Technology alone is not enough — organisational conditions determine success



The limiting factor is not technology availability — it is whether the organisation has the right **conditions** to implement, adopt and sustain it.

Critical Success Factors for Digital FM Implementation in Malaysia

Eight validated CSF domains grounded in Malaysia's FM context



Validated using
Rasch Measurement Model (RMM)

These eight domains determine Digital FM implementation success — regardless of technology platform.

Technology Must Change the Way FM Works



KEY MESSAGE

Digital FM is achieved when the system becomes the normal and official way of working.

**The measure of success is not the system installed.
It is the **behaviour** changed.**

Technology is successful when it changes how FM works — every day.

“

The best use of technology in FM is not simply to create smart buildings, but to create sustainable, data-driven and ESG-accountable facilities management.

— Ts. Ahmad Sha'rainon bin Md Shaarani, Managing Director, Microcorp Sdn. Bhd.



Where We Started

Paper, Excel, reactive practice



The Transformation

Structured, traceable, data-driven



The Destination

Measurable, accountable, future-ready

OPEN FLOOR

Questions & Discussion

Welcoming perspectives from FM practitioners, researchers, industry partners and policymakers.

Ts. Ahmad Sha'rainon bin Md Shaarani

Managing Director | Microcorp Sdn. Bhd.

• Thank you for your time, attention and commitment to advancing FM excellence.