



CMCS INSIGHTS · GOVERNMENT & PIF · PMO

# Digitalizing the PMO Mandate

Why a PMIS is mandatory, not optional, for government, semi-government and PIF entities delivering capital projects under the Mashroat NPMO framework: from the PMO as a data mandate to the control tower and a 180-day plan.

By Bassam Samman, PMP, PSP, EVP, GPM  
CEO & Chairman, CMCS

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## The PMO Mandate Is Now a Data Mandate

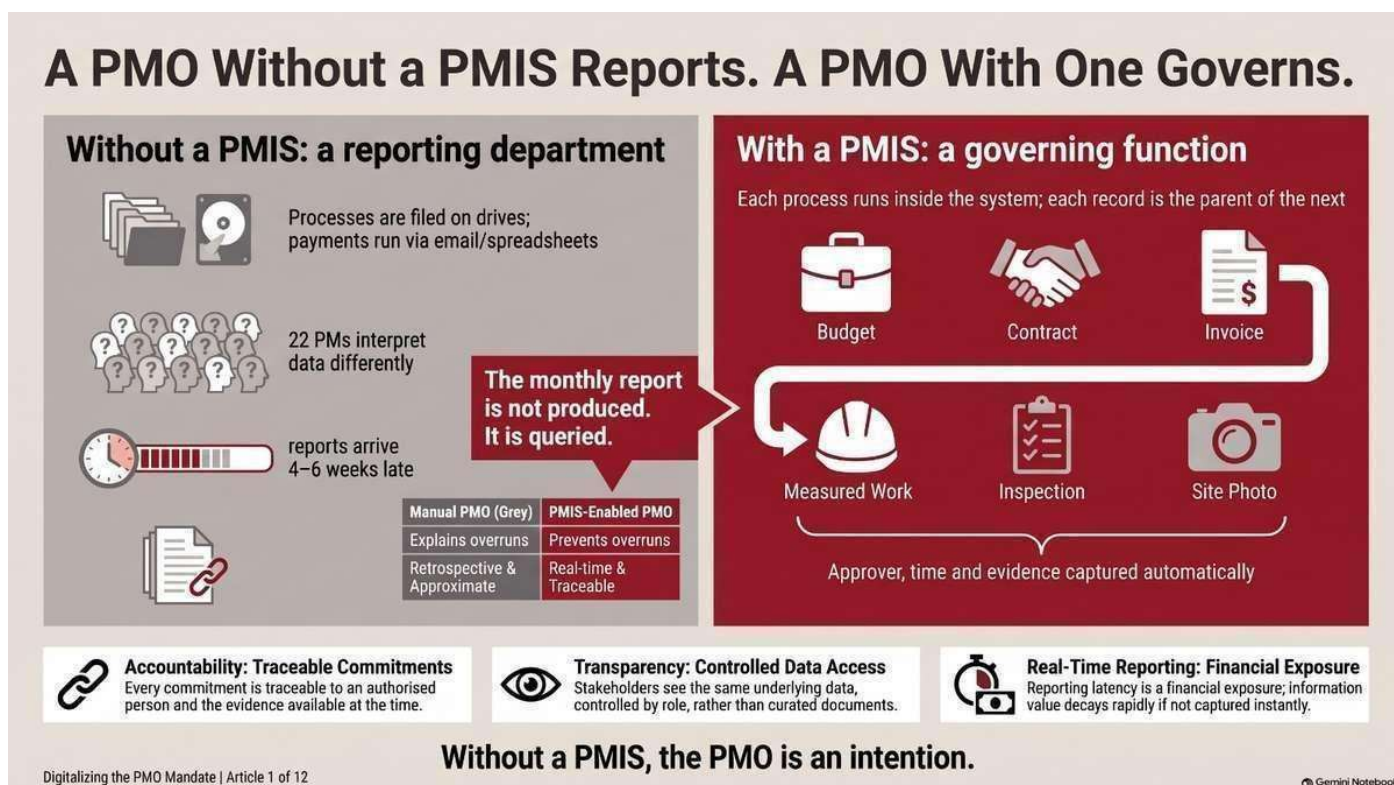
*A Project Management Office established without a Project Management Information System is a reporting department, not a governing function.*

Every government, semi-government and PIF-affiliated entity in Saudi Arabia that delivers capital construction projects is now required to establish a Project Management Office. This is no longer a matter of organisational preference. It is a condition of how public and quasi-public capital is permitted to be spent.

The requirement exists for a reason that is easy to state and difficult to satisfy. Capital projects in the Kingdom are being delivered at a scale and concurrency that has no historical precedent anywhere. Giga-projects, municipal infrastructure, healthcare and education facilities, transport corridors, stadiums, housing developments and industrial estates are being procured simultaneously, often by entities that were themselves established in the last five years. The institutional memory that older organisations rely on does not yet exist. The PMO is the mechanism intended to supply that memory by design rather than by accumulation.

Mashroat, the National Project Management Office, has provided the content of that design. The NPMO framework sets out the processes an entity is expected to run across the full project life cycle — from the identification and justification of a need, through planning, procurement, design, construction, commissioning and handover, into operation. It describes who is accountable for each decision, what evidence supports it, and what has to be reported upward.

That framework is the answer to the question of *what* a PMO should do. It does not, by itself, answer the harder question, which is *how* an entity actually executes hundreds of processes across dozens of projects, hundreds of contractors and consultants, and thousands of people who have never met each other.



## A PMO without a system is a reporting department

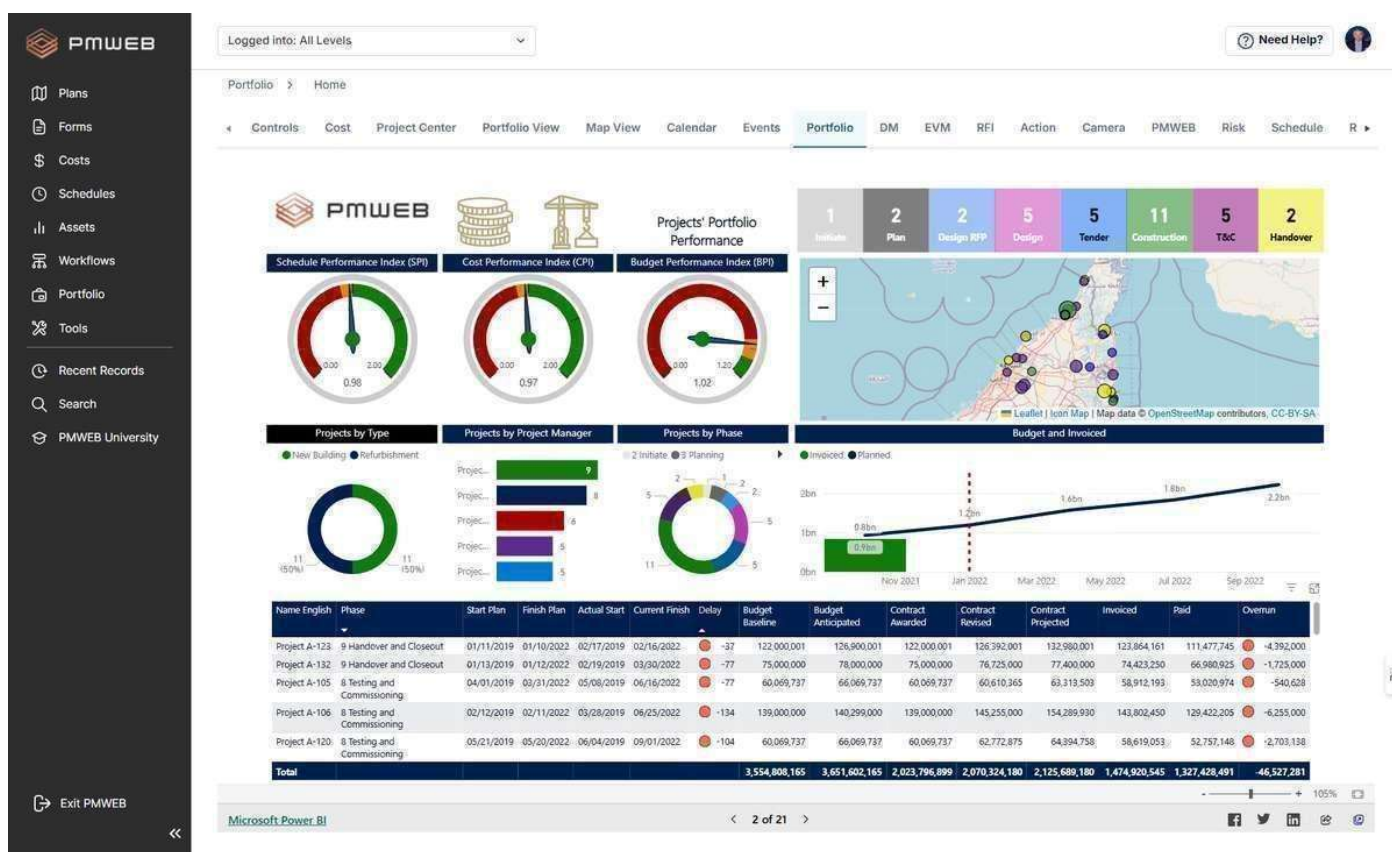
Here is what happens in practice when a PMO is established without a Project Management Information System underneath it.

The processes are written. They are approved, printed, circulated and put on a shared drive. Then delivery begins, and the processes meet reality. A payment certificate is raised in a spreadsheet. A variation is agreed in a meeting and confirmed by email. A design change is issued as a PDF and superseded three weeks later by another PDF that some parties receive and some do not. A risk is identified on site and mentioned verbally to a project manager who is transferred to another project two months later.

The PMO, meanwhile, is asked for the monthly report. So it sends out a template. Twenty-two project managers fill it in, each with a slightly different interpretation of what "percentage complete" means. The PMO consolidates, reconciles the obvious contradictions, formats the deck, and presents it to the executive committee four to six weeks after the period it describes.

That PMO has not failed. It is doing exactly what it can do with the tools it has been given. But it is not governing anything. It is describing, late and approximately, events it had no ability to influence.

The distinction matters enormously to anyone with a stake in the outcome of these projects. A PMO that governs prevents overruns. A PMO that reports explains them.



## What "digitalization" actually means here

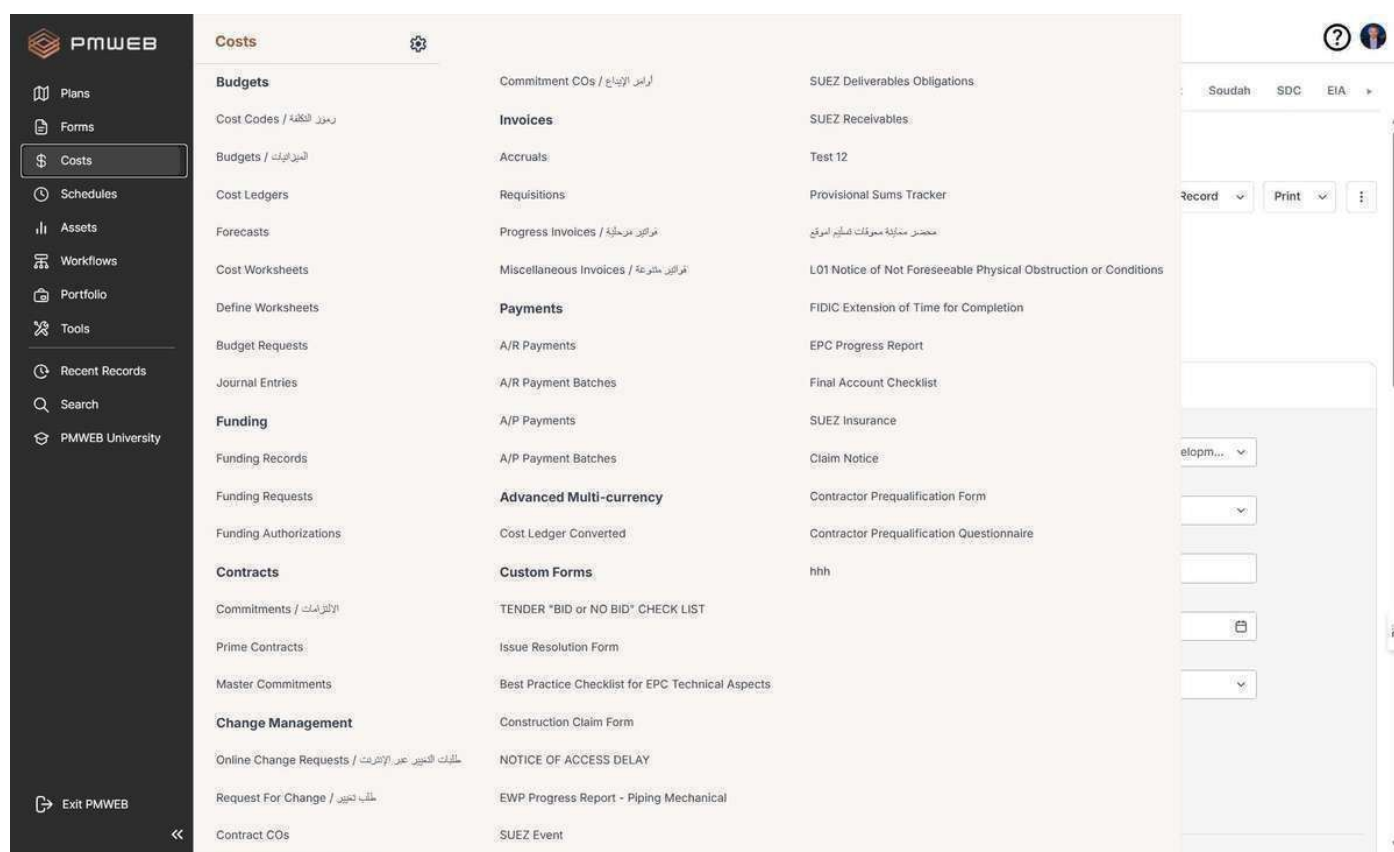
Digitalization is a word that has been degraded by overuse, so let me be precise about what it means in this context. It does not mean scanning documents. It does not mean moving spreadsheets to the cloud. It does not mean buying a reporting tool that reads other people's data.

It means that the process defined in the NPMO framework is executed *inside* a system. The budget request is raised as a record. It routes to the approver defined in the delegation of authority. The approver acts, and the system captures

who acted, when, and on what version of what supporting evidence. The record then becomes the parent of the contract, which becomes the parent of the progress invoice, which draws on the measured work, which is linked to the inspection that approved it, which is linked to the photograph taken on site.

When that chain exists, the monthly report is not produced. It is queried. The distinction between those two verbs is the entire argument of this series.

A Project Management Information System such as PMWEB is the layer that makes this possible. It holds the forms, the workflows, the delegation of authority, the cost ledger, the schedule integration, the document register, the correspondence, the risk register, the inspections and the records — in one structure, with one set of project and cost breakdowns, accessible to every party to the project at the level of visibility their role permits.



## Three obligations that a PMIS makes achievable

**Accountability.** Every entity spending public or sovereign-linked capital must be able to demonstrate that each commitment was authorised by a person with the authority to authorise it, on the basis of evidence that existed at the time. In a document-and-email environment, this is reconstructed after the fact by people searching mailboxes. In a PMIS, it is a permanent property of the record.

**Transparency.** Stakeholders — ministries, boards, investment committees, auditors, regulators, and the communities whose lives are affected by these projects — are entitled to a view of status that is not curated by the party being assessed. A PMIS provides that by giving each stakeholder controlled access to the same underlying data rather than to a document written about it.

**Real-time reporting.** The value of information about a capital project decays rapidly. A cost overrun identified in the month it originates can often be absorbed. The same overrun identified two quarters later has usually been compounded by decisions taken in ignorance of it. Reporting latency is not an administrative inconvenience. It is a direct financial exposure.

## Why this matters to stakeholders beyond the PMO

If you are reading this as a board member, a ministry official, a regulator, an investment committee member, a lender, a contractor or a consultant, the argument above is not an IT argument. It is an argument about whether the organisation you are dealing with can answer questions.

Ask an entity how much of its approved capital budget is committed today. Ask what the forecast final cost of a specific project is and what evidence supports the forecast. Ask which contractor submissions have been sitting with the engineer beyond the contractual review period. Ask how many variations have been instructed but not yet valued.

An entity running a properly implemented PMIS answers these in minutes, on screen, with the underlying records one click away. An entity without one answers in weeks, with numbers assembled by hand, carrying an error rate nobody can quantify.

That gap is the subject of this series.

## What this series will cover

Over the next eleven articles I will work through the argument in detail: how the NPMO process architecture maps onto a digital system; how accountability, transparency and real-time control are actually enforced; how cost, schedule, documents, risk, quality and safety are governed; why the growing demand for artificial intelligence use cases makes a PMIS a precondition rather than a complement; and how PMWEB data combined with GIS and construction site cameras produces a genuine control tower for an entity's entire capital portfolio.

The conclusion I will argue for is stated plainly at the outset. For an entity in the Kingdom delivering capital projects under an NPMO-aligned mandate, a Project Management Information System is not a productivity tool that improves an existing capability. It is the capability. Without it, the PMO is an intention.

*Next in the series: mapping the NPMO process architecture into a working digital system.*

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## About the Author

**Bassam Samman, PMP, PSP, EVP, GPM** is the Chairman and Chief Executive Officer of CMCS FZ-LLC, the PMWEB Authorised Global Partner for the Gulf Cooperation Council and broader Middle East and North Africa region. CMCS holds the PMWEB Partner of the Year 2025 designation. The firm's client portfolio across UAE, Saudi Arabia, Qatar, Kuwait and India spans real-estate development, capital construction and government programmes, including ROSHN, DAMAC, Al-Futtaim, Saudi Downtown Company, Riyadh Development Company, Dubai Municipality, Dubai Aviation Engineering Projects, among many others.

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CMCS (Collaboration, Management and Control Solutions) is the regional PMWEB implementation partner for the GCC and MENA regions, awarded PMWEB Partner of the Year 2025. CMCS specialises in digital project management solutions for real estate developers, infrastructure owners, and construction companies across the Middle East and North Africa.

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# From Manual to System: Turning the NPMO Process Architecture Into Something People Actually Use

*A process written in a document is an instruction. A process built into a system is a behaviour.*

In the first article of this series I argued that a Project Management Office without a Project Management Information System is a reporting department rather than a governing function. This article deals with the mechanics of closing that gap: how a written process framework becomes a system that people use because it is the path of least resistance, not because they have been instructed to.

The NPMO framework issued by Mashroat is comprehensive. It describes the processes an entity should run across the project life cycle, the roles accountable for each, the decisions to be taken at each stage gate, and the deliverables that support them. It is a serious piece of work and the entities adopting it are not short of guidance.

The difficulty is one that every organisation which has ever written a procedures manual will recognise. A process written in a document is an instruction. A process built into a system is a behaviour. Instructions are followed when people remember them, have time, and understand why. Behaviours happen by default.

## The three components of a digitalized process

Any process in the NPMO framework, when properly digitalized, resolves into three components.

**The record.** What information is captured, in what fields, with what validation, referencing what other records. A variation request is not a memo. It is a record with an originating instruction, a cost impact, a time impact, a WBS allocation, a contract reference, supporting attachments, and a status.

**The route.** Who reviews the record, in what order, within what time limit, and what happens if they do not act. This is where the delegation of authority stops being a table in a policy document and becomes a set of rules the system enforces.

**The evidence.** What is attached, what is referenced, and what audit trail is created. In a digitalized process the evidence is not stored alongside the record. It is part of it.

PMWEB is built around exactly this structure. Records are created from configurable forms. Routes are configurable workflows with defined actors, sequences, conditions and escalation. Evidence is attached to the record and inherits its permissions, versioning and retention.

The screenshot displays the PMWEB software interface. On the left is a dark sidebar with navigation links: Plans, Forms, Costs, Schedules, Assets, Workflows, Portfolio, Tools (highlighted), Recent Records, Search, and PMWEB University. At the bottom of the sidebar is an 'Exit PMWEB' button.

The main content area has a top header with 'Logged into: All Levels', navigation tabs (Tools, Form Builder, EX00102 - Recommendation to Award Construction Contract), and user icons. Below this is a toolbar with icons for saving, adding, deleting, and refreshing.

The 'Define Fields' tab is active. It shows configuration for a form with ID 'EX00102' and name 'Recommendation to Award Construction Contract'. The 'Module' is set to 'Tools' and 'Use With' is 'Initiatives and Projects'. A checkbox for 'Use Advanced Design' is checked.

Below the form configuration are two tables:

**SYSTEM FIELDS**

| SHOW                                | FIELD # | REQUIRED                            | FIELD        | DATA TYPE    | DEFAULT VALUE | WIDTH (PX) | NOTES                                                              |
|-------------------------------------|---------|-------------------------------------|--------------|--------------|---------------|------------|--------------------------------------------------------------------|
| <input checked="" type="checkbox"/> | 1       | <input checked="" type="checkbox"/> | Project      | List         |               | 400        | This field is always shown and always required.                    |
| <input checked="" type="checkbox"/> | 2       | <input checked="" type="checkbox"/> | Record #     | Alphanumeric | NEXT          | 100        | This field is always shown and always required.                    |
| <input checked="" type="checkbox"/> | 3       | <input type="checkbox"/>            | Record Date  | Date         | TODAY         |            |                                                                    |
| <input checked="" type="checkbox"/> | 4       | <input type="checkbox"/>            | Subject      | Text         |               | 400        |                                                                    |
| <input checked="" type="checkbox"/> | 5       | <input type="checkbox"/>            | Budget Total | Currency     |               |            |                                                                    |
| <input checked="" type="checkbox"/> | 6       | <input type="checkbox"/>            | Revision     | Number       | 0             | 200        |                                                                    |
| <input checked="" type="checkbox"/> | 7       | <input type="checkbox"/>            | Date         | Date         | TODAY         |            | This field is read-only. It is controlled by the workflow process. |

**CUSTOM FIELDS**

| SHOW                                | FIELD # | REQUIRED                 | LABEL*                 | VALUE    | W |
|-------------------------------------|---------|--------------------------|------------------------|----------|---|
| <input checked="" type="checkbox"/> | 1       | <input type="checkbox"/> | Scope of Work          | Text     |   |
| <input checked="" type="checkbox"/> | 2       | <input type="checkbox"/> | Budget In Words        | Text     |   |
| <input checked="" type="checkbox"/> | 3       | <input type="checkbox"/> | Contract Title         | Text     |   |
| <input checked="" type="checkbox"/> | 4       | <input type="checkbox"/> | Awarded Contract       | Currency |   |
| <input checked="" type="checkbox"/> | 5       | <input type="checkbox"/> | Awarded Contract Words | Text     |   |
| <input checked="" type="checkbox"/> | 6       | <input type="checkbox"/> | Schedule Start         | Date     |   |
| <input checked="" type="checkbox"/> | 7       | <input type="checkbox"/> | Duration               | Integer  |   |

**CUSTOM TABLES**

| SHOW                                | ORDER | ID  | TABLE NAME                       | WIDTH (PX) |
|-------------------------------------|-------|-----|----------------------------------|------------|
| <input checked="" type="checkbox"/> | 29    | 004 | Tenderers who Withdrew or Failed |            |
| <input checked="" type="checkbox"/> | 30    | 003 | Addenda Issued during Tender Po  |            |
| <input checked="" type="checkbox"/> | 31    | 001 | Prequalification Period          |            |
| <input checked="" type="checkbox"/> | 32    | 005 | Late Tender Submissions          |            |
| <input checked="" type="checkbox"/> | 33    | 006 | Tender Opening Summary           |            |

At the bottom of each table is a pagination bar showing 'PAGE SIZE 250'.

## Configuration, not customisation

There is a distinction here that determines whether a digitalization programme succeeds or becomes a permanent development project.

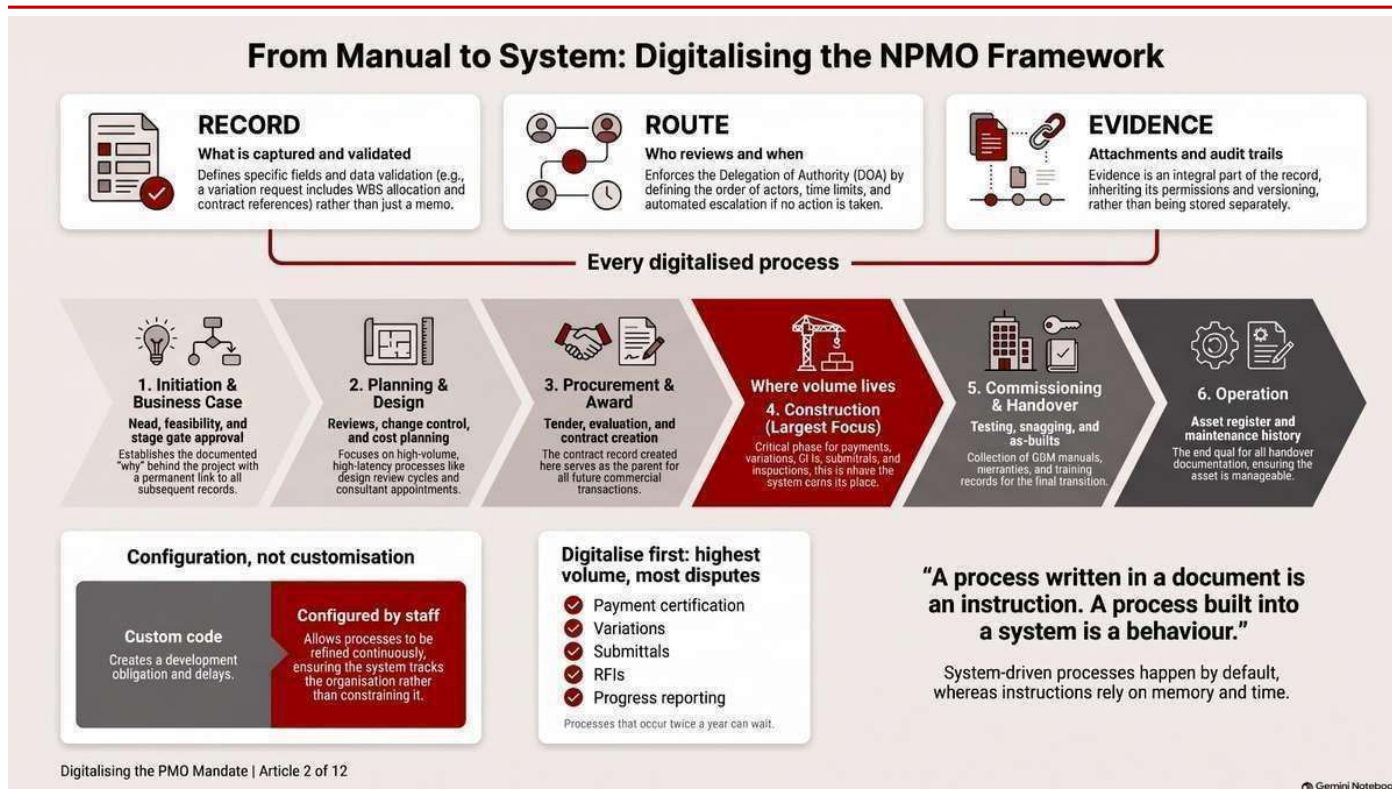
If digitalizing a process requires software to be written, the entity has bought a development obligation. Every change to the process — and processes change, particularly in the first two years of a new entity — becomes a change request, a cost, a test cycle and a delay. Over time the organisation stops improving its processes because improving them is expensive. The system, which was bought to enforce good practice, ends up freezing whatever practice happened to exist on the day it was configured.

If digitalizing a process is a configuration activity performed by the entity's own PMO staff, the opposite happens. Processes are refined continuously. The system tracks the organisation rather than constraining it.

This is why the evaluation question for a PMIS is not "can it do X." Almost any platform, given enough budget and time, can be made to do X. The question is: *who* can make it do X, *how long* does it take, and what happens the third time the process changes.

## Mapping the life cycle

A practical mapping exercise for an NPMO-aligned entity looks roughly like this. I present it as an illustration of method rather than as a prescription, because every entity's adoption of the framework has local characteristics.



**Initiation and business case.** Need identification, feasibility, benefits definition, initial budget estimate, stage gate approval. These become forms with defined approval routes and a permanent link to everything that follows, so that at any later point the question "why are we building this" has a documented answer.

**Planning and design.** Design brief, consultant appointment, design submissions and reviews, design change control, value engineering, cost planning, procurement strategy. The design review cycle in particular is a high-volume, high-latency process that benefits enormously from digitalization.

**Procurement and award.** Prequalification, tender issue, clarifications, evaluation, award recommendation, contract creation. The contract record created here becomes the parent for every commercial transaction over the following years.

**Construction.** Progress measurement, payment certification, variations, claims, RFIs, submittals, site instructions, inspections, non-conformance, safety observations, daily reports. This is where volume lives, and where a system either earns its place or does not.

**Commissioning and handover.** Testing records, punch lists, snagging and de-snagging, as-built documentation, O&M manuals, warranties, asset registers, training records.

**Operation.** The asset register, the warranty position and the maintenance history — the reason the handover documentation was collected in the first place.

Logged into: All Levels | Workflows > Business Processes > (System)

Roles: Business Processes (BPM) | Defaults | APM Rules

Select Template: D026 - GCC, RED, Commitment Co - Contractor

BPM ID\*: D026

Template Name\*: GCC, RED, Commitment Co - Contractor

Recalculate Due Dates On Actions: ☒

Single "All Must Approve" Email: ☐

Associate With: Commitment Change Orders

BPM MANAGERS

OVERDUE ALERT

Alert Active: ☒

Days (+/-): 0

Role(s): -- Overdue Approver --

Email: ☒

Onscreen: ☐

ROLES & APM RULES

Roles

- ☐ Roles
- ☒ -- Document Manager --
- ☒ -- Submitter --
- ☐ admin (Qussay PM - Qussay Qumssan)
- ☐ Alf Contractor (ASKHAN - AS KHANNAN)
- ☐ Alf Designer (aswini - Aswini Nag)
- ☐ Alf owner (indhu - Indhu)
- ☐ Ambika (Ambika - Ambika S)

Branch Rules

STEPS

| STEP # | TYPE   | DESCRIPTION               | LEVEL  | ACTION        | RETURN TO | DELEGATE                            | DECISION                 |
|--------|--------|---------------------------|--------|---------------|-----------|-------------------------------------|--------------------------|
| 1      | System | PMT L2                    | System | Next Step     |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2      | System | PMT L1                    | System | Next Step     |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3      | System | Commercial Manager        | System | Next Step     |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4      | System | GM - Projects             | System | Next Step     |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 5      | System | The value is more than 5M | System | Branch        |           | <input type="checkbox"/>            | <input type="checkbox"/> |
| 5.1    | System | Finance Team              | System | Final Approve |           | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

VISUAL WORKFLOW

☒ SHOW ROLES

☐ SHOW USER NAMES

SUBMITTER → PMT L2 → PMT L1 → COMMERCIAL MANAGER → GM - PROJECTS → THE VALUE IS MORE THAN... → FINAL APPROVE (green) or REJECT (red)

WITHDRAW

Exit PMWEB

## The delegation of authority is the heart of it

Of everything described above, the component that most directly serves the governance objective is the encoding of the delegation of authority into workflow rules.

Consider a variation order. The entity's DOA might specify that variations up to a certain value are approved by the project director, above that by the executive committee, and above a further threshold by the board — with additional rules where the cumulative value of variations on a contract exceeds a percentage of the original sum.

In a document-based environment, compliance with that table depends on individual project managers knowing the rules and applying them correctly under time pressure while a contractor waits. Non-compliance is usually discovered by internal audit, long after the money is committed.

In PMWEB, the value in the record determines the route. There is no discretionary step. The variation cannot reach execution without passing through the authority level the rules require, and the record permanently shows that it did.

This single capability changes the character of governance in an entity. It converts a policy that is audited retrospectively into a control that operates continuously.

## Why the phasing matters

A word of caution for entities beginning this journey. The instinct is often to configure the entire framework before going live, on the reasoning that a partial implementation is an inconsistent one.

In practice this is the most reliable way to produce an implementation that never goes live. The processes take months to configure, the organisation changes underneath them, and the first release arrives already out of date and unowned.

The approach that works is to prioritise by volume and pain. Identify the processes that generate the most transactions and the most disputes — typically payment certification, variations, submittals, RFIs and progress reporting — and

digitalize those first. Deliver them, let the organisation experience the difference, and use that credibility to fund the rest. The processes that occur twice a year can wait.

## What the stakeholder should take from this

If you are assessing whether an entity's PMO is real, the diagnostic question is not whether it has a manual. Most do. The question is whether the processes in that manual exist anywhere other than the manual.

Ask to see a variation approved last month, and follow it back to the instruction that caused it and the authority that permitted it. Ask how long it took, and how that compares to the target. If the answer to both requires someone to go and look, the framework has been adopted on paper.

*Next in the series: how accountability stops being a value and becomes a property of the record.*

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## Accountability Has a Name, a Date and a Time Stamp

*Who decided, when, under what authority, and on the basis of what evidence — and why establishing that should never take a week.*

Accountability is the most frequently stated and least frequently operationalised value in capital project delivery. Every entity's governance charter contains it. Every project kick-off presentation includes a slide on it. And on the majority of projects, when something goes wrong, establishing who decided what, when, and on what basis takes weeks of forensic effort and produces a contested answer.

This article is about how a Project Management Information System converts accountability from a stated intention into a structural property of every transaction.

### What accountability actually requires

Strip away the language and accountability in a capital project requires four things to be knowable, permanently and without dispute.

Who was authorised to make this decision. Who actually made it. When they made it. What information was in front of them at the moment they made it.

The fourth is the one that is almost always lost. It is usually possible, with effort, to establish that an approval happened and who signed it. It is much harder to establish what the approver was looking at. Was the cost impact known at the time, or added later? Had the design been superseded? Was the risk already on the register? In disputes and in audits, this is where positions become unrecoverable.

A PMIS resolves this because approval is an action taken on a record, and the record has a version history. The system knows what the record contained at the moment of approval because it retained that state. This is not a reporting feature. It is a property of how the data is stored.

The screenshot displays a PMIS interface for a user logged in as 'All Levels'. The breadcrumb trail shows: Costs > Commitment COs / التكاليف > Manager Page > 001 - Office Modifications. The main header indicates the record is 'Submitted (Step 5 of 6)' for 'RV50104 - Boston Medical Center' under 'Commitment COs / 001 - Office Modifications'. Navigation tabs include Main, Adjustments, Additional Information, Checklists, Clauses, Notes, Attachments (6), Workflow (Step 5 of 6), and Notifications. The 'Business Process' is '11 - Change Order Approval'. The 'Progress' section shows the current step as 'Step 5 of 6' by 'Project Accountant Bassam Samman' with a due date of 'November 21, 2021'. The furthest step is also 'Step 5 of 6' by 'Project Accountant Bassam Samman' with an occurrence date of 'May 11, 2023 (9:17 PM)'. The 'Last Activity' shows 'Approved by Bassam Samman (admin)' with a comment 'Comments:' and an occurrence date of 'May 11, 2023 (9:17 PM)'. The 'Log' section shows a table of actions:

| Step | Due Date    | Role               | User                 | Image | Action  | Action Time          | Signature            | Action  | Delegate | Team In... | Docume... | Comme |
|------|-------------|--------------------|----------------------|-------|---------|----------------------|----------------------|---------|----------|------------|-----------|-------|
| 4    | Nov-16-2021 | Superintend...     | Bassam Samman(admin) |       | Submit  | Nov-11-2021 08:36 PM | <i>Bassam Samman</i> | Submit  |          |            |           | 70000 |
| 5    | May-11-2023 | Project Accountant | Bassam Samman(admin) |       | Approve | May-11-2023 09:17 PM | <i>Bassam Samman</i> | Approve |          |            |           | 70000 |

The interface also shows a sidebar with navigation icons, a 'Group by: None' dropdown, a 'Layout: System Default Layout' dropdown, and a '250 Rows' pagination control.

The delegation of authority, enforced

I raised this in the previous article and return to it because it is the single control that most changes an entity's exposure.

Every government, semi-government and PIF entity has a delegation of authority matrix. It defines financial thresholds, approval levels, and the conditions under which a decision escalates. It is typically a well-drafted document, approved at board level, and reviewed periodically.

The question is what enforces it between reviews.

In a manual environment, enforcement is individual knowledge plus retrospective audit. The project manager is expected to know the thresholds. The finance function is expected to catch errors at payment stage. Internal audit samples transactions after the fact. Each of these is a real control, and each of them operates either at the wrong time or on a fraction of the population.

When the DOA is configured as workflow logic in PMWEB, enforcement moves to the point of transaction and covers the entire population. A commitment above a threshold physically cannot reach approved status without the required authority acting on it. The control is preventive rather than detective — which is the distinction that matters most to an audit committee.

There is a secondary effect that entities often value more than the primary one. Because escalation is automatic, project teams stop managing approvals politically. Nobody has to decide whether to escalate. The system decides, and the decision is not a reflection on anyone.

## ACCOUNTABILITY HAS A NAME, A DATE AND A TIME STAMP

### WHAT ACCOUNTABILITY REQUIRES



**THE FOUR KNOWABLE PILLARS**  
Accountability requires knowing permanently who was authorised, who decided, when, and what information was present.



**THE ONE USUALLY LOST**  
Without a PMIS, it is nearly impossible to prove exactly what information an approver saw.



**STRUCTURAL VERSION HISTORY**  
PMWEB retains the exact state of a record at the moment of approval for undisputed evidence.



**THE ONE USUALLY LOST**  
Without a PMIS, it is nearly impossible to prove exactly what information an approver saw.

### THE DELEGATION OF AUTHORITY, ENFORCED

|                 | MANUAL DOA                                                                                                   | DOA AS PMWEB WORKFLOW LOGIC                                                                                                 |
|-----------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| When it acts    |  After the fact, by audit |  At the point of transaction           |
| Coverage        |  A sample of transactions |  The entire population                 |
| Type of control |  Detective                |  Preventive                            |
| Escalation      |  A political judgement    |  Automatic, not a reflection on anyone |



**SILENT DELAY**

A submittal with a reviewer for six weeks.  
An RFI unanswered for a month.  
A payment neither certified nor rejected.

The PMIS tracks elapsed time against review periods, escalates automatically and ranks what is stuck.

**IF IT TAKES AN HOUR, IT IS A GOVERNANCE SYSTEM.  
IF IT TAKES A WEEK, IT IS A GOVERNANCE POLICY.**

Digitalizing the PMO Mandate | Article 3 of 12



The problem of silent delay

Accountability failures in capital projects are less often about wrong decisions than about absent ones.

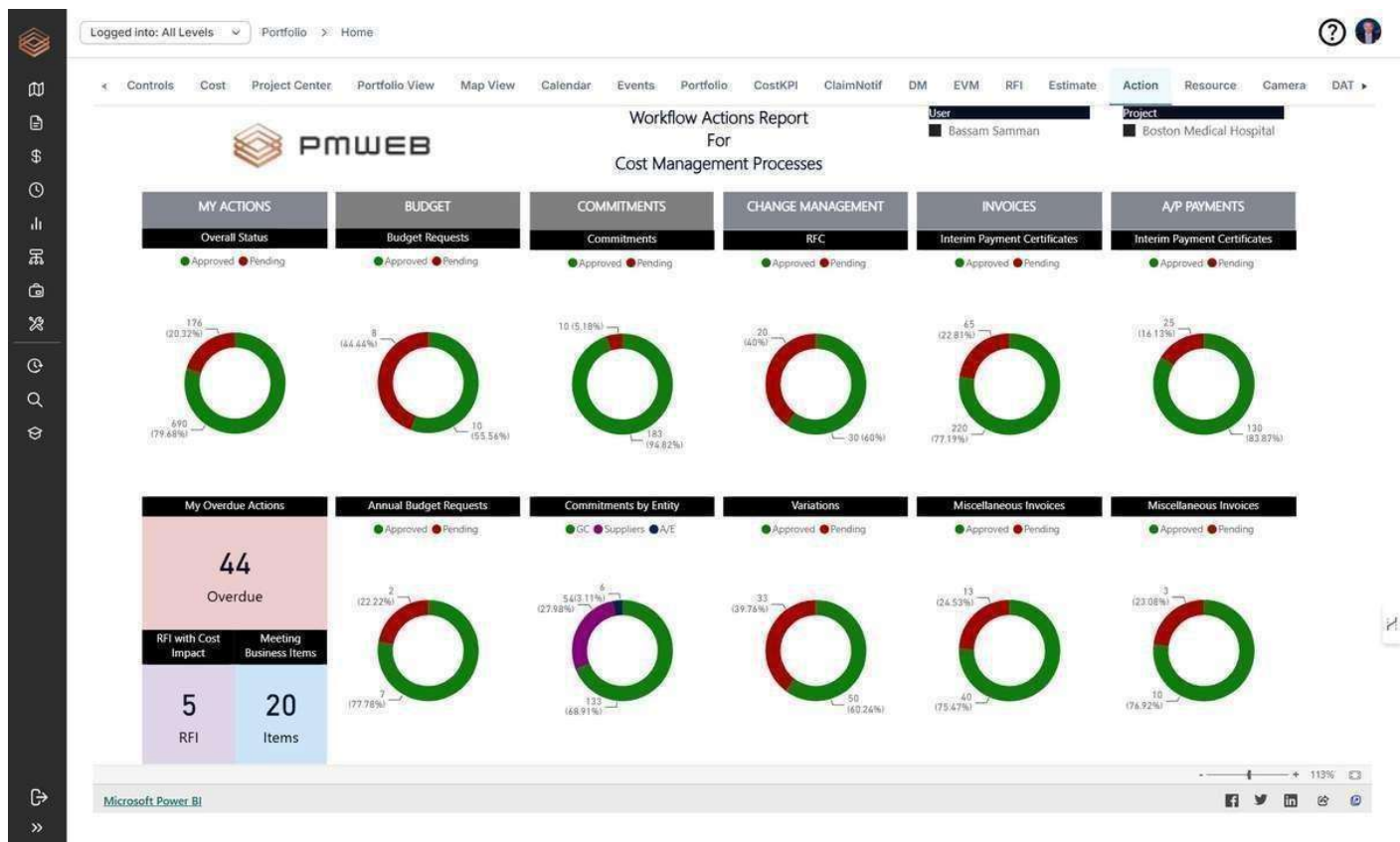
A submittal sits with a reviewer for six weeks. An RFI is unanswered for a month. A payment application is neither certified nor rejected. A variation is neither approved nor refused. Nobody made a bad decision, because nobody made

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a decision. And in almost every case the delay is invisible until a contractor puts it in a claim, at which point the entity discovers its exposure with the clock already run.

This category of failure is uniquely well addressed by a PMIS, because a system that holds the record knows exactly how long it has been held and by whom.

Configured properly, PMWEB tracks the elapsed time on every open item against contractual or policy review periods, escalates automatically when the limit is approached, and reports the aging of every pending action across the portfolio. The PMO no longer has to ask project teams what is stuck. It can see what is stuck, ranked by how long and by how much it matters.



## Accountability across organisational boundaries

A capital project is delivered by an entity, one or more consultants, a main contractor, subcontractors and suppliers. The processes that most often fail are the ones that cross between these organisations, because each party keeps its own records and the boundary is bridged by email.

The consequence is that on many projects there are three parallel and non-identical records of the same events. The contractor's log of RFIs, the consultant's log, and the entity's log rarely reconcile. Each is maintained honestly. They differ because they were built from different sources.

When all parties transact in a single system, this class of dispute disappears. There is one RFI register. It contains the date the RFI was raised, because the contractor raised it in the system. It contains the date the response was issued, because the consultant issued it in the system. Neither party is relying on the other's word, and neither is exposed to the other's record-keeping quality.

Extending system access beyond the entity's own staff is often resisted at first, usually on security grounds. It is worth working through, because the value of a PMIS is roughly proportional to the completeness of the transaction

population it holds. A system used only internally captures the entity's half of a two-sided process, which is the half that was never in dispute.

## What accountability is not

Two clarifications, because this argument is sometimes heard as something it is not.

Accountability enforced through a system is not surveillance of individuals. The purpose of knowing that a submittal has been with a reviewer for six weeks is to unblock the project, not to build a case against the reviewer. In practice, teams working in a well-implemented PMIS report the opposite of the feared effect: because their own work is visible, they stop absorbing blame for delays that originated elsewhere. Visibility protects the diligent.

Nor is it a substitute for judgement. The system does not decide whether a variation is justified. It ensures the question reaches the person entitled to answer it, with the relevant evidence attached, within a period that does not damage the project.

## The stakeholder's test

If you have an interest in the delivery of a capital project — as a board member, a funder, a regulator, an auditor or a citizen affected by its outcome — accountability is what allows you to rely on the assurances you are given.

The test is simple. Select any significant commitment made on the project in the past quarter. Ask to see who approved it, when, under what authority, and what supporting information was attached at the time of approval.

If that takes an hour, the entity has a governance system. If it takes a week and produces a reconstruction rather than a record, it has a governance policy.

*Next in the series: why transparency is a question of access, not of reporting.*

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## About the Author

**Bassam Samman, PMP, PSP, EVP, GPM** is the Chairman and Chief Executive Officer of CMCS FZ-LLC, the PMWEB Authorised Global Partner for the Gulf Cooperation Council and broader Middle East and North Africa region. CMCS holds the PMWEB Partner of the Year 2025 designation. The firm's client portfolio across UAE, Saudi Arabia, Qatar, Kuwait and India spans real-estate development, capital construction and government programmes, including ROSHN, DAMAC, Al-Futtaim, Saudi Downtown Company, Riyadh Development Company, Dubai Municipality, Dubai Aviation Engineering Projects, among many others.

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## Transparency Is Not a Report. It Is Access.

*A report is a selection of facts made by the party whose performance is being described. Transparency is something else.*

---

Most organisations believe they are transparent because they publish a lot. Monthly reports, quarterly board packs, steering committee decks, dashboards exported to PDF. The volume of material produced by a large capital programme is genuinely impressive.

Very little of it constitutes transparency, and it is worth being precise about why.

A report is a curated selection of facts, chosen by a party, presented in a sequence that party constructed, at a moment that party controlled. This is not an accusation of dishonesty. Every report is a selection, because complete disclosure of everything that happened on a project in a month would be unreadable. Someone has to select. But the party doing the selecting is usually the party whose performance is being described, and this is a structural problem that no amount of professional integrity fully resolves.

Transparency is the ability of a legitimate stakeholder to look at the underlying data directly, without asking, and to reach their own view.

### The single source of truth, understood properly

The phrase "single source of truth" is used loosely enough to have lost most of its meaning. In the context of a capital project it has a specific and testable definition.

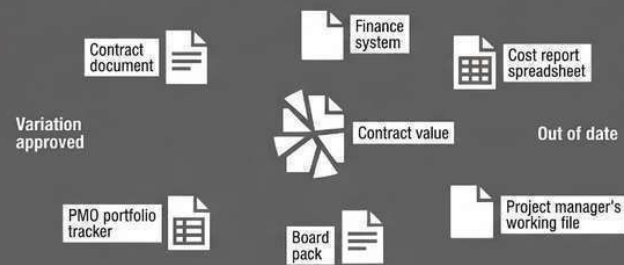
There is one place where a fact is recorded. Everything that needs that fact reads it from there. Nothing holds a copy.

Consider the contract value of a construction contract. In a typical entity, that number exists in the contract document, in the finance system, in the cost report spreadsheet, in the PMO's portfolio tracker, in the board pack, and in the project manager's own working file. Six locations. Each was correct when created. A variation is approved and four of the six update. Nobody notices for a quarter.

This is not a hypothetical failure mode. It is the normal condition of capital programmes managed without an integrated system, and it is the reason why the question "what is the current approved value of this contract" so often produces different answers from different parts of the same organisation.

# One Fact, One Place: Transparency Is Access, Not a Report

When one contract value lives in six separate files, updates rarely reach every location.



'Four of six update. Nobody notices for a quarter.' Fragmented systems create a 'normal condition' where different departments hold different truths.

**Data Integrity:** High risk of divergence/re-keying errors.

A single PMIS record calculates the current value; dashboards merely display it without holding copies.

**Single Central Contract Record**  
Original value + executed variations  
= current approved value

Cost report  
Displays it, does not hold a copy

Dashboard  
Displays it, does not hold a copy

Board view  
Displays it, does not hold a copy

Transparency is access, not a selection. Real transparency allows stakeholders to reach their own views directly from the underlying data.

**Data Integrity:** Nothing to reconcile; nothing can diverge.

**A REPORT IS A SELECTION. TRANSPARENCY IS ACCESS.**



## CONTRACTOR

Focus on own contract, submittals, and invoices.



## MINISTRY STAKEHOLDER

Focus on programme cost, schedule, and milestones.



## INTERNAL AUDITOR

Focus on full system access and audit logs.



## PUBLIC AND COMMUNITY

Focus on what/where/when and disruption alerts.

Digitalizing the PMO Mandate | Article 4 of 12

Gemini Notebook

A PMIS resolves this by holding the contract as a record. The original value, every executed variation, and the current approved value are properties of that record. The cost report does not contain the number; it displays it. The dashboard does not contain the number; it displays it. There is nothing to reconcile because there is nothing to diverge.



PMWEB

## Commitment Log by Project

ROCARC - Rockwell Architects

| Project               | Record #  | Description     | Date                    | Original     | Approved CO  | Pending CO | Revised      | Invoiced     | Balance     | Retained   |
|-----------------------|-----------|-----------------|-------------------------|--------------|--------------|------------|--------------|--------------|-------------|------------|
| Original Commitment   |           |                 |                         |              |              |            |              |              |             |            |
| Boston Medical Center | 001       | Design Services | 23-Sep-2011 10:00:57 PM | \$493,000.00 | \$23,345.00  | \$500.00   | \$516,345.00 | \$503,350.00 | \$12,995.00 | \$1,700.00 |
| Change Orders         |           |                 |                         |              |              |            |              |              |             |            |
|                       | 001       | Design Changes  | 27-Sep-2011 12:00:00 AM |              | \$12,500.00  |            |              |              |             |            |
|                       | 004       |                 | 02-Jun-2024 12:00:00 AM |              | \$845.00     |            |              |              |             |            |
| Total Changes         |           |                 |                         |              | \$13,345.00  |            |              |              |             |            |
| Invoices              |           |                 |                         |              |              |            |              |              |             |            |
| 1                     | Invoice 1 |                 |                         |              | \$147,900.00 |            |              |              |             | \$0.00     |
| 2                     | Invoice 2 |                 | 05-Mar-2018 12:00:00 AM |              | \$54,514.20  |            |              |              |             | \$0.00     |
| 3                     | Invoice 3 |                 | 05-Mar-2018 12:00:00 AM |              | \$65,568.00  |            |              |              |             | \$0.00     |
| 4                     | Invoice 4 |                 | 05-Mar-2018 12:00:00 AM |              | \$64,090.00  |            |              |              |             | \$0.00     |
| 5                     | Invoice 5 |                 | 05-Mar-2018 12:00:00 AM |              | \$69,518.80  |            |              |              |             | \$0.00     |
| 6                     | Invoice 6 |                 | 05-Mar-2018 12:00:00 AM |              | \$69,729.00  |            |              |              |             | \$0.00     |
| 7                     | Invoice 7 |                 | 13-Aug-2019 12:00:00 AM |              | \$34,000.00  |            |              |              |             | \$2,700.00 |
| 8                     | Invoice 8 |                 | 16-Mar-2025 12:00:00 AM |              | \$1,000.00   |            |              |              |             | \$1,700.00 |
| Total Invoices        |           |                 |                         |              | \$503,350.00 |            |              |              |             |            |

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## Role-based visibility is what makes openness safe

The reasonable objection to transparency is confidentiality. Not every stakeholder should see everything. Contractor rates are commercially sensitive. Claim positions are legally sensitive. Personnel matters are personal. Some information is restricted by regulation.

This objection is often used to justify closed systems, and it should not be, because the two requirements are not in tension. They are solved by the same mechanism.

Role-based permissions in a PMIS mean that access is defined once, at the level of role and record type, and applied consistently everywhere. A contractor sees its own contract, its own submittals, its own invoices, and the drawings relevant to its scope. It does not see other contractors' commercial terms. A ministry stakeholder sees programme-level cost, schedule and milestone status across the portfolio without seeing individual claim correspondence. An internal auditor sees everything, and the system records that they looked.

The result is more openness and better control simultaneously — which is not the trade-off most people expect. Under an email-and-spreadsheet regime, confidentiality is protected by each individual's judgement about what to attach to what message, and it fails regularly. Under a permissioned system it is protected by configuration, and it fails rarely.

The screenshot displays the 'Security' management interface of a PMIS. The top navigation bar shows 'Logged into: All Levels', 'Portfolio', and 'Security'. Below this, a sub-header reads 'Manage your group and user security settings'. A breadcrumb trail includes 'Licenses', 'Groups' (69), 'Users' (143), 'User Access', 'Conditional Security' (7), 'Activity Monitor' (1), 'Password Setup', and 'External Users' (63). The main content area is titled 'Group\*' and shows the 'Contractor' group selected. A list of permissions is displayed on the left, with 'Guest Users' checked. The right side shows a table of permissions for the 'Contractor' group, with columns for 'ALF Owner', 'Commercial Lead ...', 'ContractManager', and 'Contractor'. The table lists various permissions such as 'Attachments', 'Company', 'Cost Code', 'Cost Type', 'CurrencyName', 'Curve', 'Description', 'FinishDate', 'Funding', 'Line #', 'Location', 'Notes', 'Period', and 'Phase'. Each permission has a corresponding checkbox or icon indicating its status.

## Bringing the delivery supply chain inside

The most significant decision an entity makes when implementing a PMIS is whether external parties transact within it.

An internal-only deployment gives the entity a better version of its own records. That has value. But the events that determine project outcomes largely occur at the interface between organisations — a submittal issued, a response returned, a payment application made, an instruction given. If those events enter the entity's system by re-keying from email, the system holds a delayed and lossy copy of reality.

When contractors and consultants transact directly in PMWEB, three things change immediately. The data becomes contemporaneous rather than reconstructed. The administrative burden of re-keying disappears, along with the errors

it generates. And the record becomes jointly created, which removes an entire category of dispute about what happened when.

There is a fourth effect that entities discover later. Contractors who work in the owner's system develop a strong interest in the accuracy of what it contains, because it is the basis on which they are paid. Data quality improves for reasons that have nothing to do with instruction.

## Transparency toward the public interest

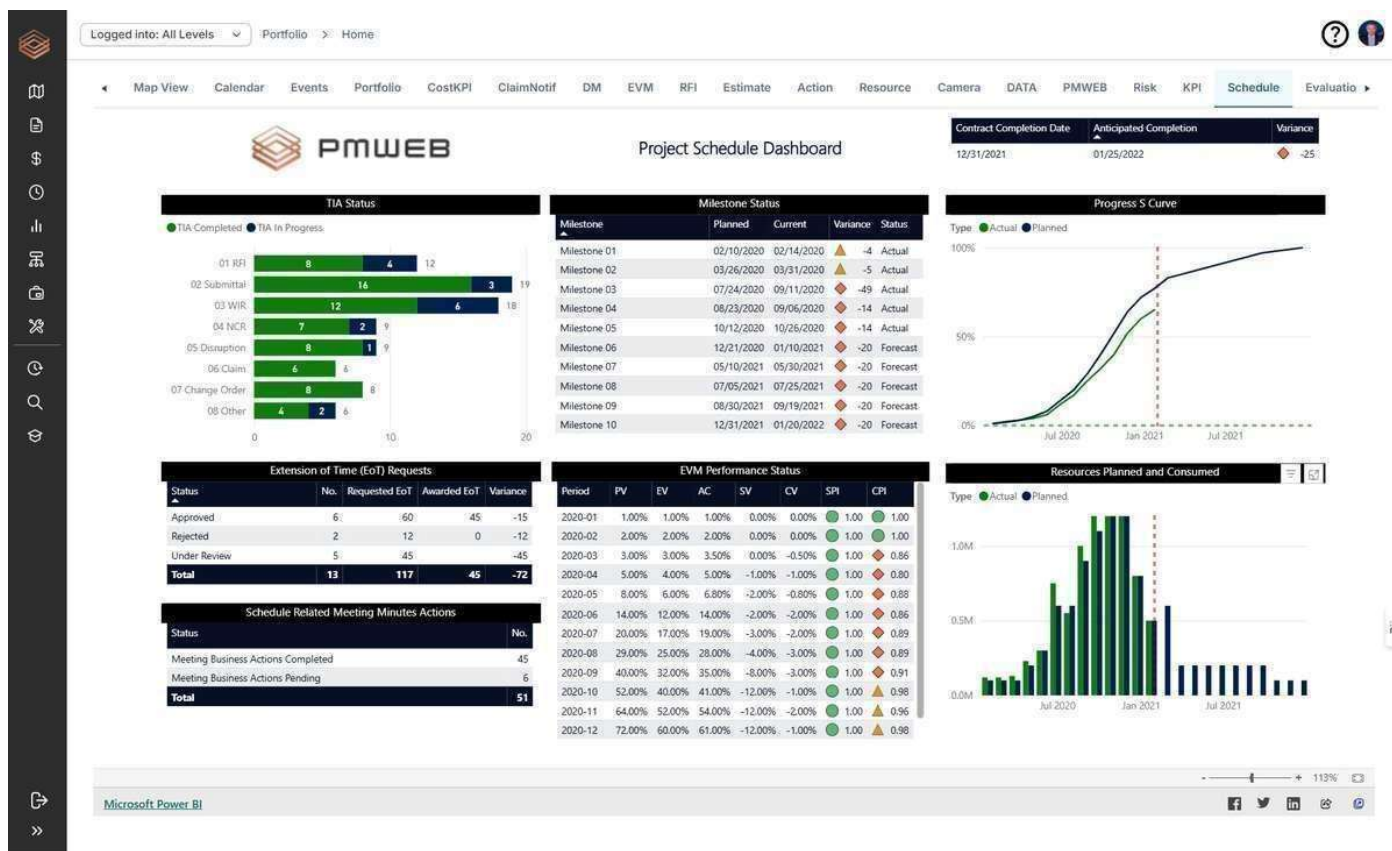
For entities delivering projects that shape communities — hospitals, schools, roads, housing, transport, stadiums, municipal works — there is a category of stakeholder that governance discussions frequently omit.

The people who will use the asset. The residents whose neighbourhood is a construction site for three years. The businesses whose access is affected. The ministries answerable for the outcome.

These stakeholders do not need the cost ledger. What they need is reliable answers to a small number of questions: what is being built, where, by when, what disruption to expect, and whether the current answer differs from the one given last time.

An entity with a properly maintained PMIS can answer these continuously and consistently, because the answers come from the same records that drive its internal governance. An entity without one publishes a milestone date, revises it privately three times, and communicates the revision only when it becomes undeniable. The reputational cost of that pattern is significant and entirely avoidable.

The credibility of large capital programmes with the public rests substantially on whether stated dates prove to be real. Systems that keep internal and external statements drawn from the same source make that far more likely.



## The uncomfortable part

Transparency is genuinely uncomfortable at the start of an implementation, and any consultant who tells an entity otherwise is not being straight with them.

When a portfolio moves into a live system, problems that were previously distributed across many spreadsheets and many mailboxes become visible simultaneously. Projects that were reported as on track appear as at risk. Approval bottlenecks that everyone privately knew about become measurable and attributable. The first quarter of accurate reporting frequently looks like a deterioration in performance, when in fact it is the first period of accurate measurement.

Entities that push through this emerge with control. Entities that respond by softening the reporting return to where they started, having spent the money.

Senior sponsorship is what determines which happens, and it is needed most in month three, not at signature.

*Next in the series: the cost of reporting latency, and why the monthly cycle is no longer defensible.*

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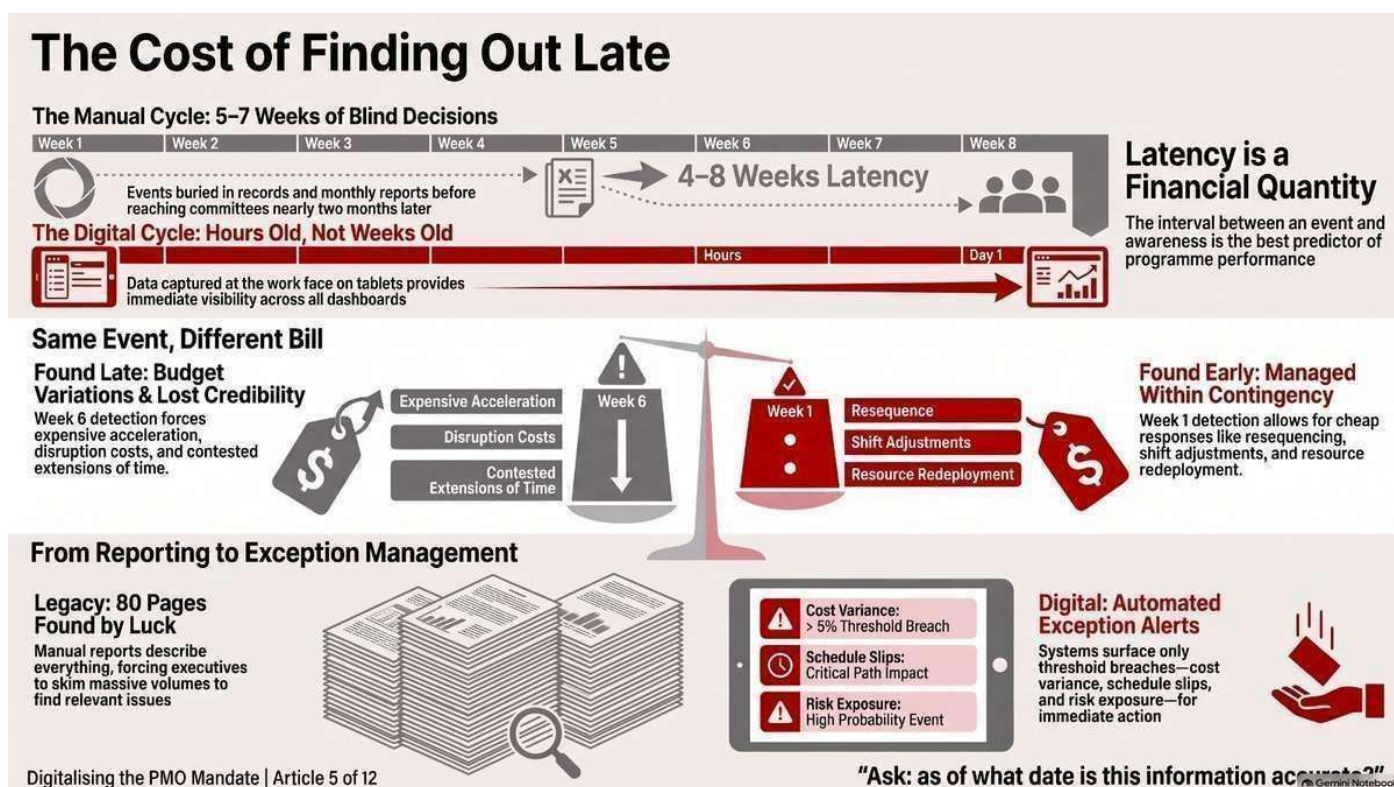
## Real-Time Reporting: The Cost of Finding Out Late

*The interval between an event on site and the decision-maker learning of it is a financial quantity, not an administrative one.*

There is a number that almost no entity measures and that predicts capital programme performance better than most of the numbers that are measured. It is the interval between an event occurring on a project and the responsible decision-maker becoming aware of it.

Call it reporting latency. On a typical capital programme managed through periodic reporting cycles, it runs between four and eight weeks. Something happens on site in the first week of a month. It is captured in the project manager's records. It enters the monthly report submitted in the second week of the following month. That report is consolidated by the PMO, reviewed, formatted and presented to the executive committee in the third or fourth week.

By the time the decision-maker learns of the event, five to seven weeks of subsequent decisions have been taken by people who did not know about it.



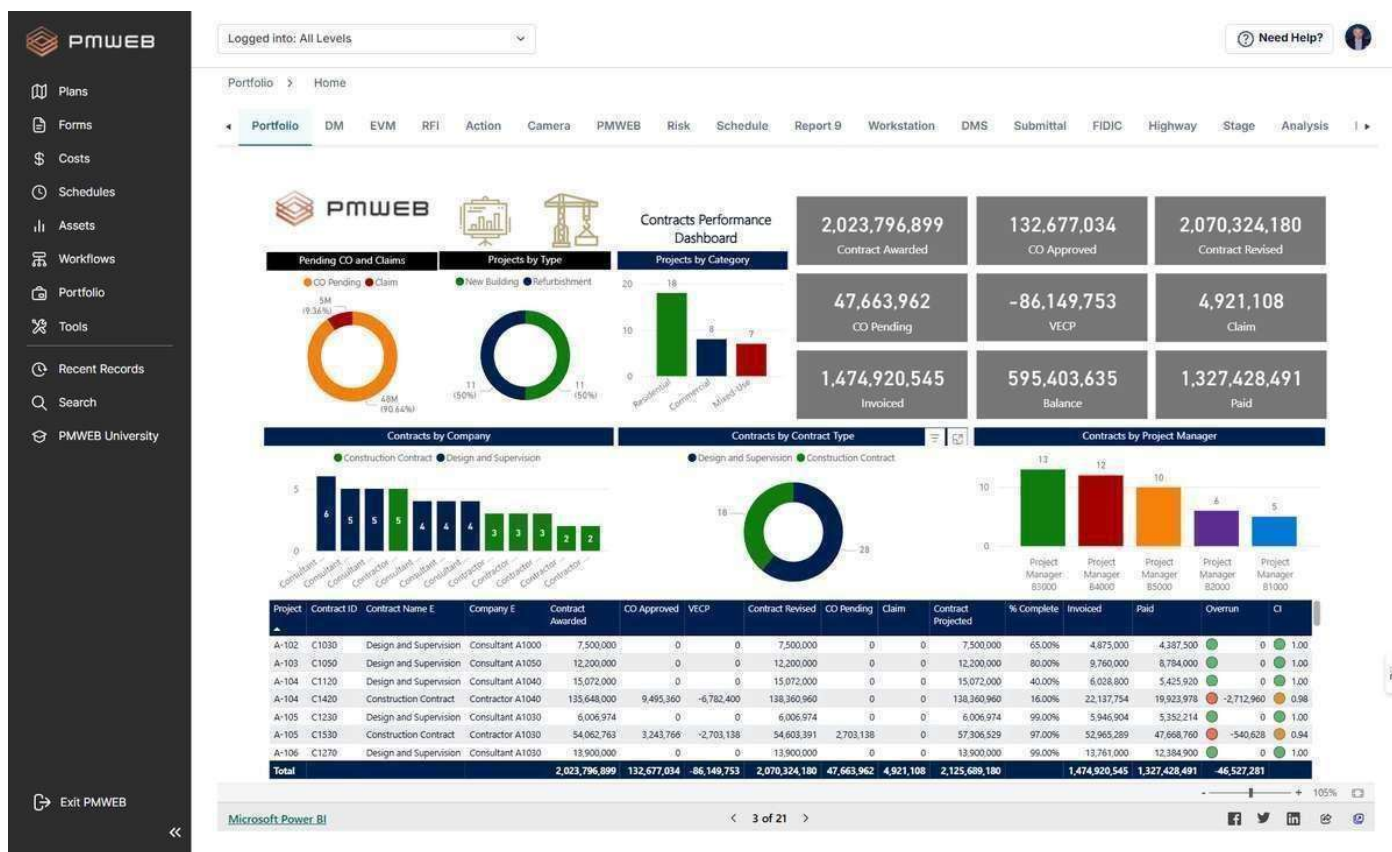
### Latency is a financial quantity

The instinct is to treat this as an administrative inefficiency. It is more usefully treated as a cost, because it behaves like one.

Consider a productivity shortfall on a critical activity. Identified in the week it emerges, the available responses are cheap: resequence, add a shift, redeploy resources, adjust the look-ahead. Identified six weeks later, the shortfall has propagated. Successor activities have been planned against dates that will not hold. Subcontractors have been mobilised for the wrong periods. The available responses are now acceleration, disruption cost, or an extension of time — all expensive, and some of them contested.

The same pattern applies across every domain of project control. A cost trend detected early is managed within contingency. Detected late, it is a budget variation requiring approval, an explanation to a committee, and a loss of credibility that affects the next request. A quality issue caught during construction is a rectification. Caught at handover it is a programme delay.

In every case the cost of the underlying event is a small fraction of the cost of learning about it late. This is the central economic argument for a real-time system, and it is stronger than the efficiency argument that is usually made.



## Why the monthly cycle exists

It is worth understanding why capital programmes settled on monthly reporting, because the reason is no longer valid and this is not widely recognised.

The monthly cycle is an artefact of manual data collection. When information had to be gathered by people from other people, consolidated by hand and formatted for presentation, the effort was substantial enough that doing it more than twelve times a year was not feasible. The cycle length was set by the cost of producing the report, not by the rate at which the project changed.

Projects have never changed on a monthly rhythm. They change daily. The monthly report was always a compromise imposed by the technology of reporting.

That constraint no longer exists. When transactions are captured in a system as they occur, the marginal cost of a report is close to zero, and the reporting frequency can be set by what the project requires rather than by what the PMO can produce. Some information genuinely warrants monthly review. Cash flow position, contractual exposure, safety performance and approval bottlenecks do not.

## From reporting to exception management

The more consequential shift is not from monthly to daily. It is from reporting to exception management.

A monthly report describes everything, because it has no way of knowing in advance what will matter. The reader receives eighty pages, of which perhaps six are relevant, and has to find them. Senior readers cope by skimming, which means the six pages are found by luck.

A system with continuous data does not need to describe everything. It needs to surface deviation. Configure the thresholds that define acceptable performance — cost variance, schedule variance, approval aging, open non-conformances, risk exposure against contingency — and let the system report only what breaches them.

This inverts the executive's role. Instead of reading a description of the portfolio and attempting to detect problems, the executive receives a short list of items that require attention, each one clickable through to the underlying record. Attention goes where it is needed rather than where it is spread.

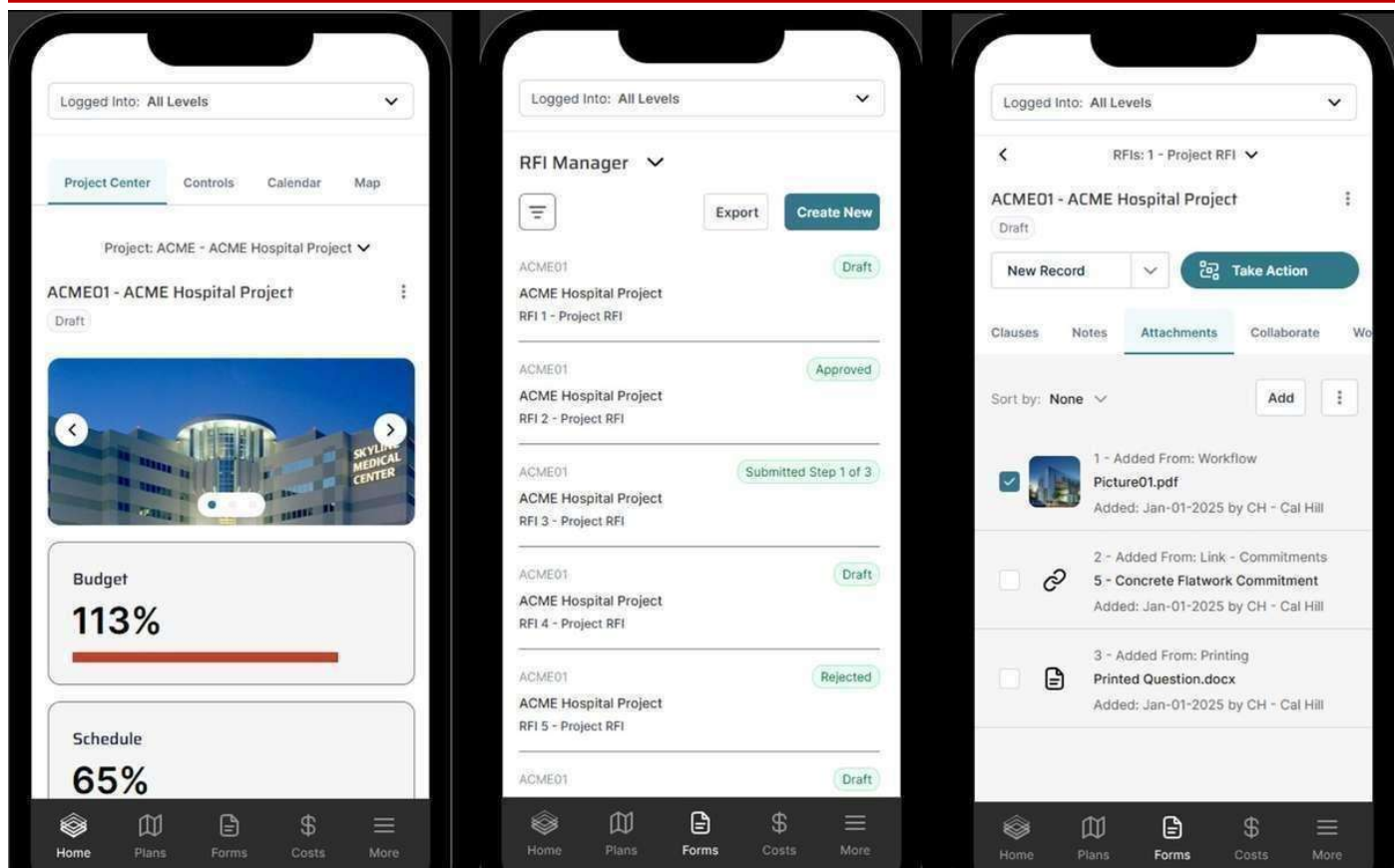
## What "real time" honestly means

I want to be careful here, because "real time" is often oversold and the overselling damages credibility with the audiences that matter most.

Real time in a PMIS means that a transaction is visible the moment it is entered, and every report and dashboard drawing on it reflects it immediately. It does not mean that the physical state of the project is known instantaneously. It means the latency between recording and reporting falls to zero, leaving only the latency between the event and its recording.

That residual latency is a genuine constraint, and it is addressed differently: by moving data capture to the point of occurrence. Site inspections completed on a tablet at the work face. Progress recorded against measured quantities as they are surveyed. Safety observations logged when observed. Photographs attached where taken. Each of these compresses the gap between event and record from days to minutes.

Combine that with zero recording-to-reporting latency and the entity approaches genuine currency. Not perfection, but a portfolio picture that is hours old rather than weeks old. That is a different management proposition.



## The consolidation problem disappears

There is an operational benefit that PMO leaders tend to value even more than the management benefit.

In a manual environment the PMO spends the majority of its capacity on consolidation. Chasing submissions, reconciling formats, resolving contradictions, correcting arithmetic, assembling decks. On many programmes this consumes most of a team's month, every month, in perpetuity.

None of that work adds analytical value. It is the cost of assembling data that should already have been assembled.

When the data is captured at source in a common structure, that cost approaches zero, and the PMO's capacity is released for the work it was actually established to do — analysing trends, challenging forecasts, identifying systemic issues across the portfolio, developing the entity's delivery capability. Entities frequently find that they have effectively doubled their PMO's analytical capacity without adding headcount.

## The stakeholder's question

If you rely on reports from an entity delivering capital projects, there is a question worth asking that reveals more than any content in the report itself.

*As of what date is this information accurate?*

If the answer is the last day of the preceding month and you are reading it in the third week of the current one, you are making decisions on information that is up to seven weeks old, about a portfolio that changes daily.

The question that follows is whether it could be otherwise. For an entity running an integrated PMIS, it can, and the cost of continuing to work from stale information is a choice rather than a constraint.

*Next in the series: governing the public riyal — budget, commitment, certification and cash flow.*

---

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# Governing the Public Riyal: Budget, Commitment, Certification and Cash

*Budget, commitment, actual and forecast at completion — and the chain that runs from an approved budget to a paid invoice.*

---

Entities delivering capital projects in the Kingdom are spending money that belongs to the public, to the sovereign fund, or to shareholders whose interests are aligned with national development objectives. The standard of financial governance expected is correspondingly high, and it is rising.

This article deals with the chain that runs from an approved budget to a paid invoice, and with why that chain so often breaks in ways that are not discovered until the end.

## Four numbers that must always reconcile

Financial control on a capital project rests on four quantities. Every serious cost management discipline is a way of keeping them consistent.

**Budget** is what has been approved for expenditure. **Commitment** is what has been contractually promised to third parties. **Actual** is what has been certified as earned and is payable or paid. **Forecast at completion** is what the project will ultimately cost given everything currently known.

The relationships between them are the substance of cost control. Commitment must not exceed budget without an approved variation to budget. Actual must not exceed commitment without an approved change to the commitment. Forecast at completion must reflect known trends, approved changes, pending changes and risk exposure, not simply the current commitment.

In an environment where these four quantities live in different systems maintained by different functions, they diverge continuously and are reconciled periodically, usually with difficulty and always with a lag. Most cost overruns that "appear suddenly" were visible in the divergence months earlier and nobody was positioned to see it.



## Budget Single Project (Pend & App)

Project RVS0104 - Boston Medical Center

|                                |                                | A               | B              | C=A+B              | D                    | E                     | F                    | G=D+E+F          | H=C-G           | I              |
|--------------------------------|--------------------------------|-----------------|----------------|--------------------|----------------------|-----------------------|----------------------|------------------|-----------------|----------------|
| Code                           | Description                    | Original Budget | Budget Changes | Anticipated Budget | Original Commitments | Commitments Revisions | Forecast to Complete | Anticipated Cost | Variance        | Actual Cost    |
| <b>00 - Sales</b>              |                                |                 |                |                    |                      |                       |                      |                  |                 |                |
| 000000                         | Sales                          | \$12,000,000.00 | \$0.00         | \$12,000,000.00    | \$121,000.00         | \$50,000.00           | \$0.00               | \$171,000.00     | \$11,829,000.00 | \$1,960.00     |
| Subtotals for: 00 - Sales      |                                | \$12,000,000.00 | \$0.00         | \$12,000,000.00    | \$121,000.00         | \$50,000.00           | \$0.00               | \$171,000.00     | \$11,829,000.00 | \$1,960.00     |
| <b>01 - Land Costs</b>         |                                |                 |                |                    |                      |                       |                      |                  |                 |                |
| 000001                         | Land Acquisition               | \$1,200,000.00  | \$0.00         | \$1,200,000.00     | \$0.00               | \$60,000.00           | \$0.00               | \$60,000.00      | \$1,140,000.00  | \$1,201,000.00 |
| 000002                         | Land Permits and Fees          | \$430,000.00    | \$0.00         | \$430,000.00       | \$0.00               | \$0.00                | \$0.00               | \$0.00           | \$430,000.00    | \$60,000.00    |
| Subtotals for: 01 - Land Costs |                                | \$1,630,000.00  | \$0.00         | \$1,630,000.00     | \$0.00               | \$60,000.00           | \$0.00               | \$60,000.00      | \$1,570,000.00  | \$1,261,000.00 |
| <b>02 - Hard Costs</b>         |                                |                 |                |                    |                      |                       |                      |                  |                 |                |
| 010002                         | General Conditions             | \$197,500.00    | \$0.00         | \$197,500.00       | \$200,000.00         | \$800.00              | \$0.00               | \$200,800.00     | \$-3,300.00     | \$228,430.00   |
| 020000                         | Existing Conditions            | \$1,100,000.00  | \$30,000.00    | \$1,130,000.00     | \$90,000.00          | \$0.00                | \$0.00               | \$90,000.00      | \$1,040,000.00  | \$900,180.00   |
| 030000                         | Concrete                       | \$875,800.00    | \$262,400.00   | \$1,137,400.00     | \$4,887,760.00       | \$45,000.00           | \$-850,000.00        | \$4,082,760.00   | \$-2,945,360.00 | \$1,337,740.00 |
| 050000                         | Metals                         | \$850,000.00    | \$21,000.00    | \$871,000.00       | \$825,100.00         | \$25,000.00           | \$0.00               | \$850,100.00     | \$20,900.00     | \$495,000.00   |
| 061000                         | Rough Carpentry                | \$122,500.00    | \$85,000.00    | \$207,500.00       | \$165,000.00         | \$40,000.00           | \$0.00               | \$205,000.00     | \$2,500.00      | \$99,000.00    |
| 071000                         | Dampproofing and Waterproofing | \$0.00          | \$0.00         | \$0.00             | \$0.00               | \$0.00                | \$0.00               | \$0.00           | \$0.00          | \$0.00         |
| 080000                         | Openings                       | \$0.00          | \$40,000.00    | \$40,000.00        | \$51,500.00          | \$0.00                | \$0.00               | \$51,500.00      | \$-11,500.00    | \$6,100.00     |

## The commitment gap

The most common and most damaging failure in capital project cost control is the pending commitment gap.

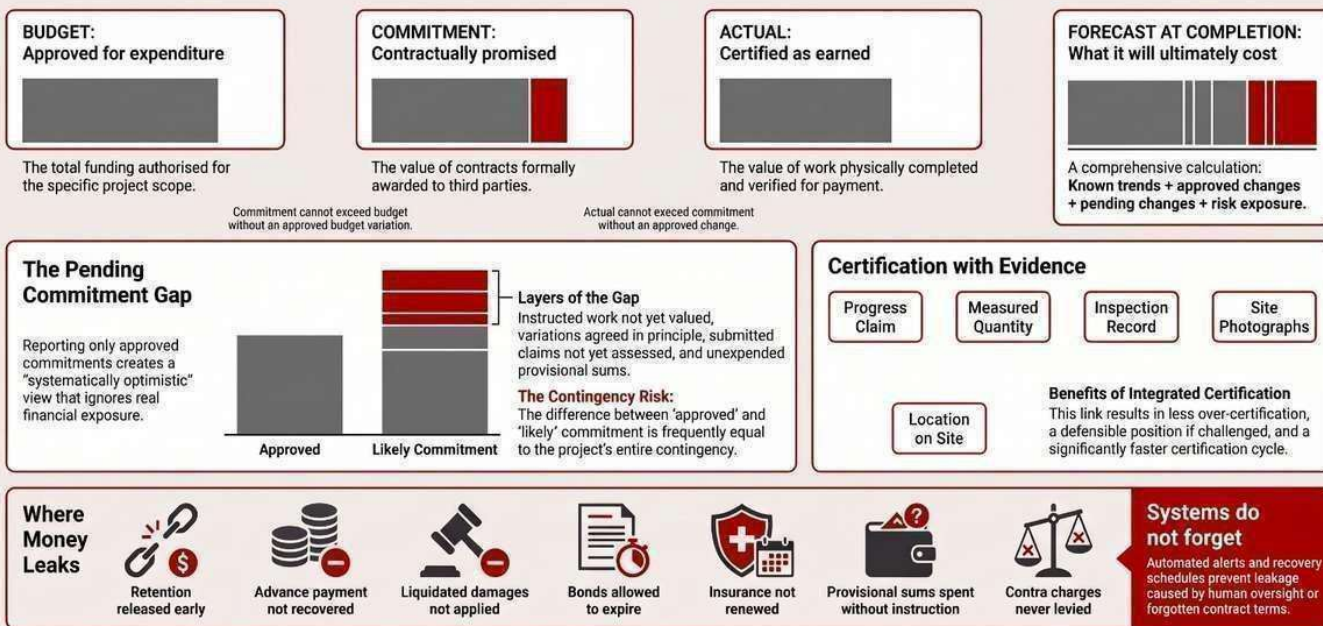
At any moment on an active construction project there is work that has been instructed but not yet valued, variations agreed in principle but not yet approved, claims submitted but not yet assessed, and provisional sums not yet expended. None of this appears in the commitment figure, because it has not been formally committed. All of it will become commitment.

Entities that report only approved commitment against budget are therefore reporting a systematically optimistic position — not through any impropriety, but because the reporting structure excludes a real and often large exposure.

A properly configured PMIS holds pending items as a distinct category with its own value and status, and includes them in the forecast. The result is a cost report that shows the entity what it is likely to owe, not merely what it has already agreed to owe. The difference between these two figures on a large project is frequently the entire contingency.

## Governing the Public Riyal: Four Numbers, One Chain

What is the forecast final cost, and what changed since last month?



Digitalising the PMO Mandate | Article 6 of 12

Gemini Notebook

### Progress certification is where money meets evidence

Payment certification is the point at which the entity converts a contractor's assertion of progress into an obligation to pay. It is the highest-value repeated transaction on any construction project and deserves more scrutiny than it usually receives.

The integrity of certification depends on the link between the payment application and the evidence that the work was done and was acceptable. In a manual environment that link exists in the professional judgement of the engineer, supported by site records that live somewhere else.

In an integrated system the link is explicit. The progress claimed against a line item connects to the measured quantity, which connects to the inspection record that approved it, which connects to the photographs taken at the time and the location on site. The certifier is not exercising judgement in the absence of evidence. The evidence is attached to the thing being certified.

This matters for three separate reasons. It reduces the risk of over-certification, which is a real financial exposure. It gives the entity a defensible position if the certification is later challenged. And it substantially accelerates the certification cycle, because the reviewer stops spending time assembling supporting information.

Logged into: All Levels Costs Progress Invoices / 6 Progress Invoice #6 Manager Page 6 - Progress Invoice #6

**RV50104 - Boston Medical Center** Approved

Progress Invoices / 6 Progress Invoice #6

Main Adjustments Additional Information Checklists 43 Clauses Payments Notes Attachments 1 Workflow Notifications

Header Fields

Details

Group by: None Layout: Progress Invoice Preview Conversions

| Line # / ... | Attach... | Cost Co... | Description / وصف    | Currency / عملة       | Sched...       | Prior I...     | Curren...    | Total T...   | Total I...     | Total S...     | Total ... | Balanc...      | Prior |
|--------------|-----------|------------|----------------------|-----------------------|----------------|----------------|--------------|--------------|----------------|----------------|-----------|----------------|-------|
| 1            | [0]       | 02-010002  | General Conditions   | USD - Dollar (Unit... | \$415,000.00   | \$186,750.00   | \$41,500.00  | \$41,500.00  | \$228,250.00   | \$228,250.00   | 55 %      | \$186,750.00   |       |
| 2            | [0]       | 02-020000  | Existing Conditions  | USD - Dollar (Unit... | \$1,000,000.00 | \$700,000.00   | \$200,000.00 | \$200,000.00 | \$900,000.00   | \$900,000.00   | 90 %      | \$100,000.00   |       |
| 3            | [0]       | 02-030000  | Concrete             | USD - Dollar (Unit... | \$850,000.00   | \$510,000.00   | \$255,000.00 | \$255,000.00 | \$765,000.00   | \$765,000.00   | 90 %      | \$85,000.00    |       |
| 4            | [0]       | 02-050000  | Metals               | USD - Dollar (Unit... | \$825,000.00   | \$412,500.00   | \$82,500.00  | \$82,500.00  | \$495,000.00   | \$495,000.00   | 80 %      | \$330,000.00   |       |
| 5            | [0]       | 02-061000  | Rough Carpentry      | USD - Dollar (Unit... | \$185,000.00   | \$82,500.00    | \$16,500.00  | \$16,500.00  | \$99,000.00    | \$99,000.00    | 60 %      | \$66,000.00    |       |
| 6            | [0]       | 02-099000  | Painting and Coating | USD - Dollar (Unit... | \$250,000.00   | \$62,500.00    | \$37,500.00  | \$37,500.00  | \$100,000.00   | \$100,000.00   | 40 %      | \$150,000.00   |       |
| 7            | [0]       | 02-210000  | Fire Suppression     | USD - Dollar (Unit... | \$425,000.00   | \$85,000.00    | \$85,000.00  | \$85,000.00  | \$170,000.00   | \$170,000.00   | 40 %      | \$255,000.00   |       |
| 8            | [0]       | 02-220000  | Plumbing             | USD - Dollar (Unit... | \$400,000.00   | \$0.00         | \$100,000.00 | \$100,000.00 | \$100,000.00   | \$100,000.00   | 25 %      | \$300,000.00   |       |
| 9            | [0]       | 02-230000  | HVAC                 | USD - Dollar (Unit... | \$400,000.00   | \$0.00         | \$100,000.00 | \$100,000.00 | \$100,000.00   | \$100,000.00   | 25 %      | \$300,000.00   |       |
| 10           | [0]       | 02-260000  | Electrical           | USD - Dollar (Unit... | \$500,000.00   | \$0.00         | \$0.00       | \$0.00       | \$0.00         | \$0.00         | 0 %       | \$500,000.00   |       |
| 11           | [0]       | 02-310000  | Earthwork            | USD - Dollar (Unit... | \$480,000.00   | \$0.00         | \$0.00       | \$0.00       | \$0.00         | \$0.00         | 0 %       | \$480,000.00   |       |
|              |           |            |                      |                       | \$5,710,000.00 | \$2,039,250.00 | \$918,000.00 | \$918,000.00 | \$2,957,250.00 | \$2,957,250.00 |           | \$2,752,750.00 |       |

## Retention, advance payments and the details that leak money

Beyond the headline figures there is a category of commercial administration that is unglamorous, entirely mechanical, and responsible for a surprising quantity of value leakage on capital programmes.

Retention that is released when it should be held. Advance payments recovered at the wrong rate or not fully recovered before final account. Liquidated damages not applied. Performance bonds allowed to expire while the obligation remains live. Insurance certificates not renewed. Provisional sums expended without instruction. Contra charges never levied.

Each of these is small individually and each is entirely avoidable. Collectively, across a portfolio of dozens of contracts, they represent material sums.

They leak because they depend on someone remembering a date or a rate written in a contract signed years earlier by someone who has since moved on. Systems do not forget. Retention rules, recovery schedules, bond and insurance expiry dates and milestone-linked obligations configured against the contract record generate the correct treatment automatically and alert before an expiry rather than after it.

Logged into: All Levels Portfolio Adjustments

Drag a column header and drop it here to group by that column

Edit Add Delete Refresh Layouts

| COLUMN*      | ID*    | DESCRIPTION                  | VENDOR | %       | COST TYPE | CUMULATIVE                          | MANUAL                   | CURRENCY         | ADJUSTMENT AMOUNT | NEW LINE                            | ADJUSTMENT TYPE | INACTIVE                 | NOTES |
|--------------|--------|------------------------------|--------|---------|-----------|-------------------------------------|--------------------------|------------------|-------------------|-------------------------------------|-----------------|--------------------------|-------|
| Adjustment 1 | 001    | 10 % Profit                  |        | 10%     | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 002    | 2 % Insurance                |        | 2%      | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 003    | 1 % Bond                     |        | 1%      | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 1AN    | Anticipo                     |        | 30%     | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 200    | Down Payment                 |        | 5%      | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 2RA    | Amortization                 |        | -30%    | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Tax          | 300    | VAT                          |        | 12%     | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 310    | MA Sales Tax                 |        | 6.25%   | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 315    | City Tax                     |        | 2%      | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 320    | CA State Tax                 |        | 9.25%   | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 325    | County Tax                   |        | 3%      | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Adjustment 2 | 3RE    | Guarantee Fund               |        | -5%     | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 1 | 400    | CPI                          |        | 2%      | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 2 | 4DR    | Return Guarantee Fund        |        | 5%      | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 2 | 5OT    | Other Fines                  |        | 0%      | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Tax          | 6IV    | IVA                          |        | 16%     | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Tax          | EU1    | XC - 15% Partially Deductibl |        | 15%     | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Tax          | EU2    | RS - 0% VAT EU / 3d country  |        | 5%      | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Tax          | EU3    | GD - 7% VAT Partially Deduct |        | 7%      | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Tax          | EU4    | PA - 19.6% VAT Standard      |        | 19.60%  | +All*     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Adjustment 1 | OMT1   | Advance Payment              |        | 10%     | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | AED - United Ar  | AED0.00           | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 1 | OMT2   | Recovery of Advance Payment  |        | -10%    | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | AED - United Ar  | AED0.00           | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 2 | OMT3   | Other deductions             |        | 0%      | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | AED - United Ar  | AED0.00           | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Adjustment 2 | RETISR | Retención ISR                |        | -10%    | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Adjustment 2 | RETIVA | Retención IVA                |        | -10.67% | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> |                  | \$0.00            | <input type="checkbox"/>            |                 | <input type="checkbox"/> |       |
| Tax          | SU01   | VAT - onshore                |        | 0%      | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Tax          | SU02   | NBT - onshore                |        | 0%      | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Tax          | SU03   | VAT - offshore               |        | 0%      | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |
| Tax          | SU04   | NBT - offshore               |        | 0%      | +All*     | <input type="checkbox"/>            | <input type="checkbox"/> | USD - Dollar (Ur | \$0.00            | <input checked="" type="checkbox"/> |                 | <input type="checkbox"/> |       |

1 PAGE SIZE 250

This is not the most intellectually interesting benefit of a PMIS. In pure financial terms it is frequently among the largest.

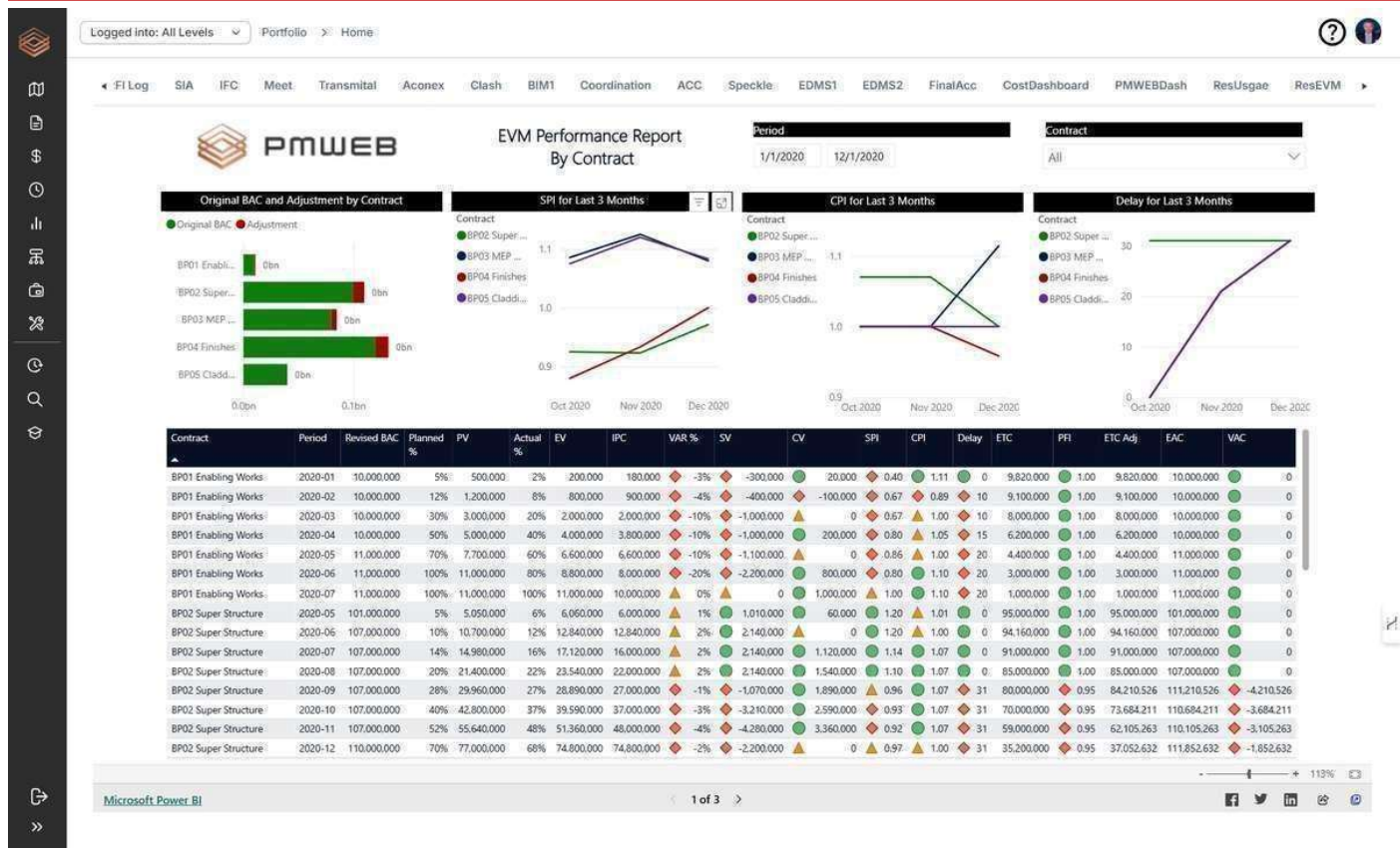
## Cash flow: the forecast that actually gets used

Capital programmes are funded through budget cycles, and the accuracy of an entity's cash flow forecast determines whether it can secure and retain its allocations.

Forecasting cash requirements manually is difficult because it requires combining the schedule, the contract payment terms, the certification cycle, the retention profile and the current progress position — five sources of information that usually live in five places.

When they live in one, the forecast becomes derivable rather than estimated. The system knows the schedule, the contract terms and the current position, and can project the cash requirement by period across the portfolio, updating as reality changes.

Entities that achieve this find their relationship with their funding authority changes character. Requests are supported by traceable derivation rather than assertion. Variances against previous forecasts can be explained by reference to specific events. Credibility accumulates, and credibility is what determines allocations in a competitive funding environment.



## The interface with financial systems

A question that arises in every implementation is the relationship between the PMIS and the entity's financial system — an ERP, a government financial platform, or both.

The answer that works is a division by function rather than by data. The PMIS is where project cost is *managed*: where the budget is structured against the work breakdown, where commitments are raised against contracts, where progress is measured and certified, where changes are assessed and approved, where the forecast is built. The financial system is where money is *accounted for and disbursed*: the general ledger, the payment run, the statutory accounts.

The interface between them carries approved transactions in one direction and payment status in the other. It should be narrow and well-defined. Attempts to manage project cost in a general ledger fail because the ledger has no concept of a work breakdown structure, a variation, a pending commitment or a forecast at completion. Attempts to run financial accounting in a PMIS fail for equivalent reasons.

Where the two are properly interfaced, the entity has project-level control and enterprise-level accounting without duplicated data entry and without reconciliation disputes between the PMO and finance — a dispute that consumes a remarkable amount of senior time in organisations that have not solved it.

## What to ask

For anyone assessing an entity's financial control over a capital programme, one question separates the organisations that have it from those that do not.

*What is the forecast final cost of this project, and what changed since last month?*

The first half of that question is usually answerable. The second half is the test. An entity that can decompose the movement in its forecast into specific approved changes, specific pending changes, specific trend adjustments and

specific risk movements is in control of its cost position. An entity that produces a revised number without being able to explain the delta is producing an estimate, not a forecast.

*Next in the series: the schedule as a governance instrument rather than a contractor deliverable.*

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## About the Author

**Bassam Samman, PMP, PSP, EVP, GPM** is the Chairman and Chief Executive Officer of CMCS FZ-LLC, the PMWEB Authorised Global Partner for the Gulf Cooperation Council and broader Middle East and North Africa region. CMCS holds the PMWEB Partner of the Year 2025 designation. The firm's client portfolio across UAE, Saudi Arabia, Qatar, Kuwait and India spans real-estate development, capital construction and government programmes, including ROSHN, DAMAC, Al-Futtaim, Saudi Downtown Company, Riyadh Development Company, Dubai Municipality, Dubai Aviation Engineering Projects, among many others.

Bassam has over four decades of experience providing project management, project controls services and project management information systems to more than two hundred capital projects with a combined value exceeding one hundred billion US dollars. He is the author of four published books on project management digitalisation, has lectured at more than three hundred and fifty international events and conferences, and has published over three hundred articles on project management and PMIS topics in international and regional publications. He is a co-founder of the Project Management Institute Arabian Gulf Chapter (PMI-AGC) and served on its board of directors for more than six years.

He holds a Master's degree in Engineering Administration (Construction Management), with Faculty Commendation, from George Washington University, Washington DC, and a Bachelor's degree in Civil Engineering from Kuwait University. He has completed executive management programmes at Harvard Business School and London Business School.

## About PMWEB

PMWEB is an enterprise-class, web-based capital construction project management platform trusted by organisations worldwide including Harvard University, the United Nations, and Atlanta Airport. Built on Microsoft .NET technology, PMWEB manages the entire project lifecycle within a single integrated platform — from portfolio planning and cost management through document control, procurement, scheduling, asset management, and business intelligence. With 150+ pre-configured SSRS reports, drag-and-drop dashboard design, multi-currency support, and open REST/SOAP API integration, PMWEB delivers enterprise capability with implementation timelines measured in months, not years.

## About CMCS

CMCS (Collaboration, Management and Control Solutions) is the regional PMWEB implementation partner for the GCC and MENA regions, awarded PMWEB Partner of the Year 2025. CMCS specialises in digital project management solutions for real estate developers, infrastructure owners, and construction companies across the Middle East and North Africa.

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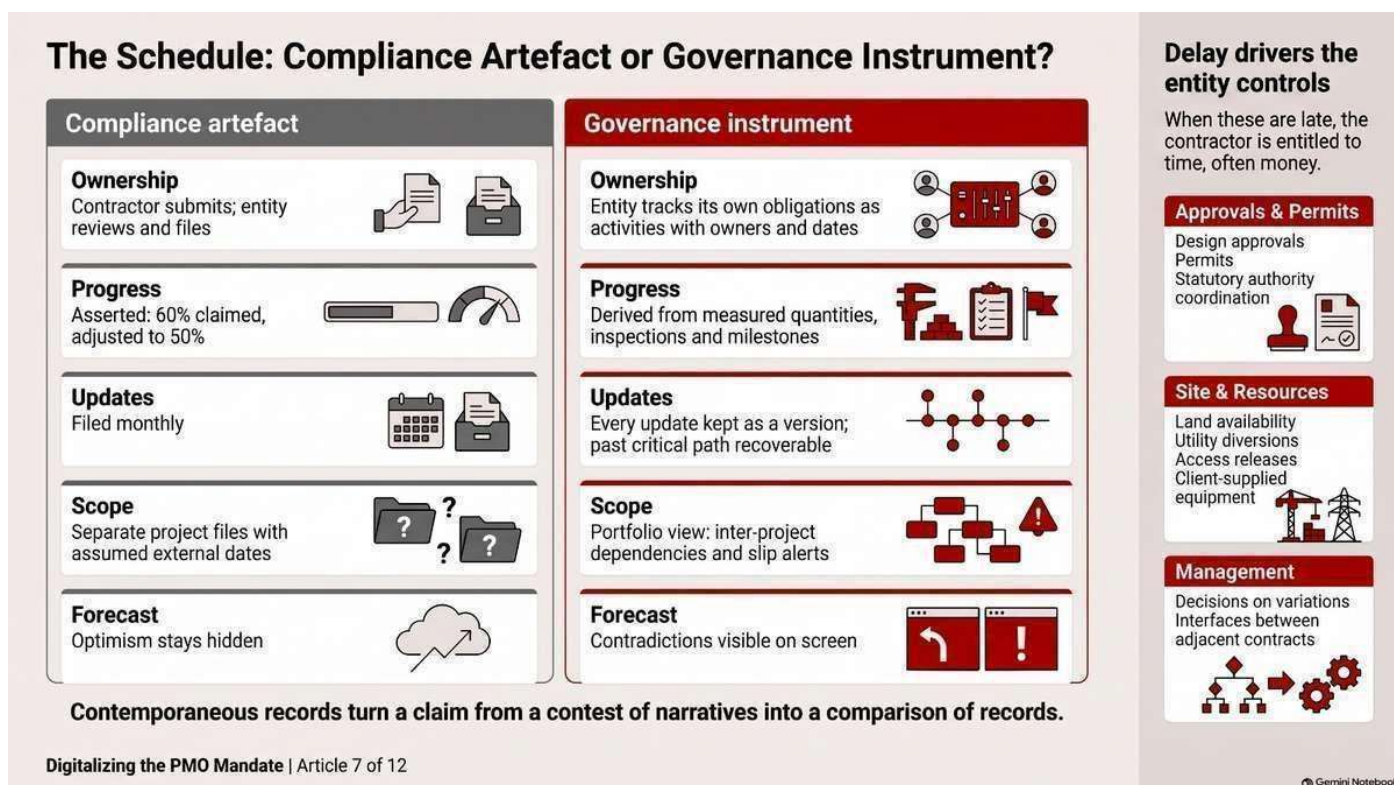
# The Schedule Is a Governance Instrument, Not a Contractor Deliverable

*The programme is not a contractual deliverable to be reviewed and filed. It is the instrument against which decisions are tested.*

On a large number of capital projects, the programme is treated as something the contractor produces to satisfy a contractual requirement. It is submitted, reviewed, commented on, revised, and eventually accepted. It is then updated monthly, and the update is filed.

That schedule has no governance function whatsoever. It is a compliance artefact.

A schedule that governs is one against which decisions are tested before they are taken, one whose critical path is understood by people who are not planners, and one whose forecast dates are believed by the executive committee. The gap between the two is where most programme delay originates.



## Why entity-side schedule capability is not optional

There is a view, still common, that scheduling is the contractor's responsibility and that the entity's role is to review submissions. This is a misunderstanding of where delay risk sits.

The entity controls a large share of the activities that drive completion. Design approvals. Permit applications. Land availability. Utility diversions. Statutory authority coordination. Client-supplied equipment. Decisions on variations. Access releases. Interface coordination between adjacent contracts within the same programme.

When these are late, the contractor is entitled to time, and frequently to money. The entity that has no independent schedule capability discovers this at claim stage, from the contractor's analysis, and is in a weak position to contest it — not because the analysis is wrong, but because it has no contemporaneous record of its own performance against the dates it was obliged to meet.

An entity-side schedule model, maintained in the PMO and integrated with the PMIS, records the entity's own obligations as tracked activities with owners and dates. This changes the claim conversation from a contest of narratives into a comparison of records.

Logged into: All Levels > Schedules > Schedules > Manager Page > 41 - Waterfront 1

**RVS0104 - Boston Medical Center** Submitted (Step 1 of 1)  
Schedules: 000041 - Boston Medical Center-Waterfront 1

New Record Print Recap

This is a legacy record and it is locked. Click here to learn more.

Main Gantt Chart **Linked Schedule** Notes Attachments 8 Workflow **Step 1 of 1** Notifications

Application: Primavera XML File ☐ Update previously linked tasks ☒ Lock schedule to prevent recalculation ☐ Import WBS Codes

EC00515.xml Hours Per Day: 8.00 Percent Complete Method: Percent Complete:

Group by: None Layout: System Default Layout

| UID   | Parent UID | Summary | Code                 | Name                           | Start                   | Finish                  | Duration Days | Actual Start            | Actual Finish |
|-------|------------|---------|----------------------|--------------------------------|-------------------------|-------------------------|---------------|-------------------------|---------------|
| 23665 | 0          | Yes     | Mechanicals          | Mechanical/Electrical Systems  | 14-Apr-2011 12:00:00 tt | 26-Jun-2013 12:00:00 tt | 805           | 14-Apr-2011 12:00:00 tt |               |
| 23666 | 0          | Yes     | Ex-Finish            | Exterior Finishes              | 17-Feb-2011 12:00:00 tt | 19-Jun-2012 12:00:00 tt | 489           | 17-Feb-2011 12:00:00 tt | 28-Apr-20     |
| 23667 | 0          | Yes     | Int-Finish           | Interior Finishes              | 25-Feb-2011 12:00:00 tt | 03-Jul-2013 12:00:00 tt | 860           | 25-Feb-2011 12:00:00 tt | 11-Apr-20     |
| 23668 | 0          | Yes     | D&E                  | Design and Engineering         | 01-Nov-2010 12:00:00 tt | 06-Apr-2011 12:00:00 tt | 157           | 01-Nov-2010 12:00:00 tt | 06-Apr-20     |
| 23669 | 0          | Yes     | Found                | Foundation                     | 23-Feb-2011 12:00:00 tt | 19-Sep-2011 12:00:00 tt | 209           | 23-Feb-2011 12:00:00 tt | 18-Apr-20     |
| 23670 | 0          | Yes     | Structure            | Structure                      | 19-Sep-2011 12:00:00 tt | 20-Apr-2012 12:00:00 tt | 215           |                         |               |
| 23671 | 23667      | Yes     | Int-Finish.Fixtures  | Plumbing and Lighting Fixtures | 08-Apr-2013 12:00:00 tt | 10-Jun-2013 12:00:00 tt | 64            |                         |               |
| 23672 | 23666      | Yes     | Ex-Finish.Win        | Doors and Windows              | 27-Apr-2012 12:00:00 tt | 08-May-2012 12:00:00 tt | 12            |                         |               |
| 23673 | 23667      | Yes     | Int-Finish.Coverings | Floor and Carpeting            | 25-Feb-2011 12:00:00 tt | 04-Jun-2013 12:00:00 tt | 831           | 25-Feb-2011 12:00:00 tt | 11-Apr-20     |

1 - 99 of 99 250 Rows

## Progress that means something

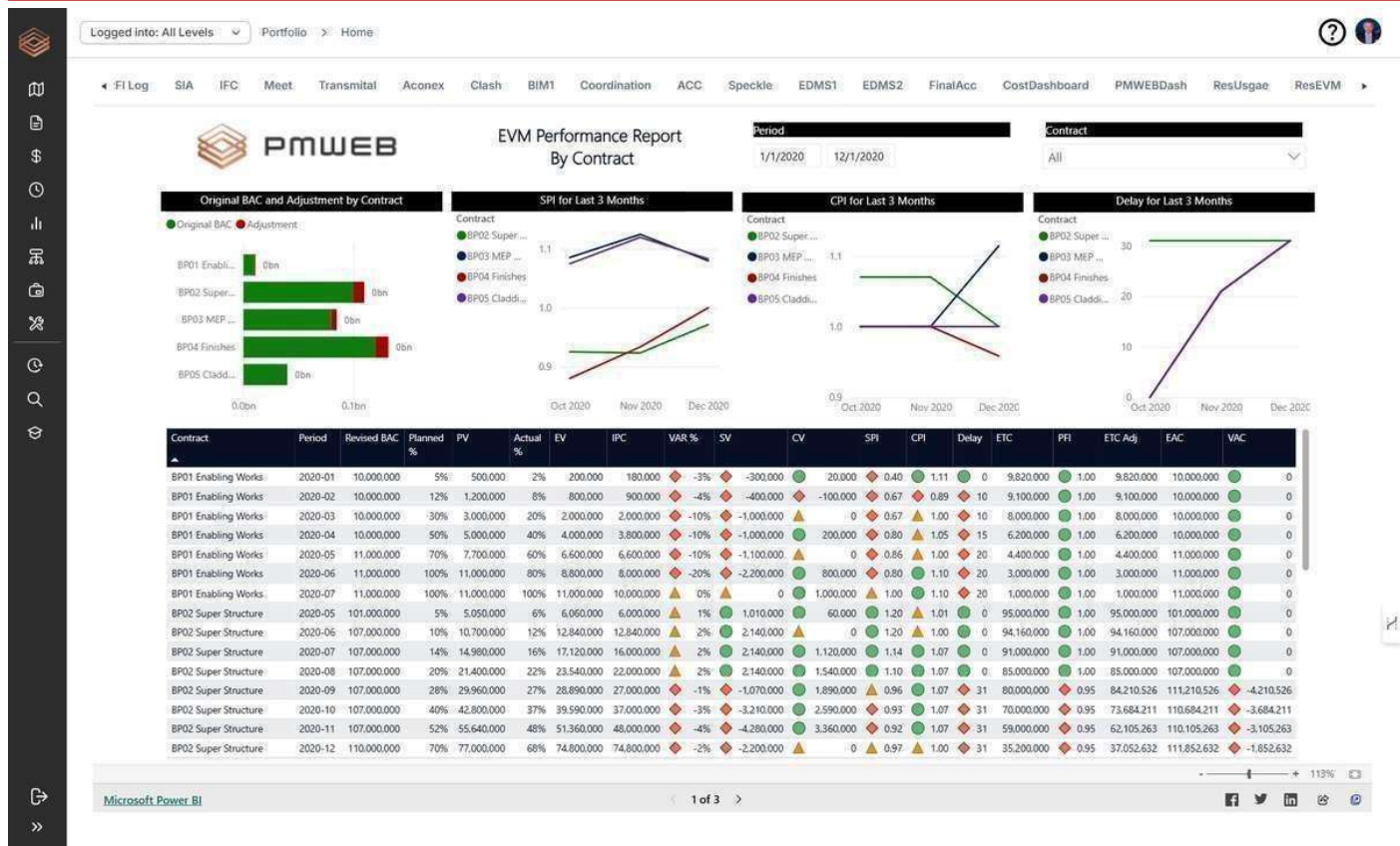
The percentage complete figure is the single most abused number in construction.

It is abused because it is usually asserted rather than derived. A contractor states that an activity is sixty percent complete. A consultant, lacking a better basis, adjusts it to fifty. The figure is entered, aggregated up through the WBS with some weighting, and reported to a board as portfolio progress. Nobody at any level of that chain can say what evidence supports it.

Deriving progress rather than asserting it requires linking it to something measurable — installed quantities, completed deliverables, passed inspections, milestones achieved. When progress is calculated from measured quantities that were surveyed and inspected, and those records exist in the same system as the schedule, the percentage complete figure becomes an output rather than an opinion.

This has an immediate commercial consequence, because on most contracts progress determines payment. An entity paying against asserted progress is exposed. An entity paying against derived progress, with the derivation visible, is not.

It also has a forecasting consequence. Productivity trends calculated from derived progress are meaningful and can be extrapolated. Trends calculated from asserted progress are noise, which is why so many project forecasts hold steady for months and then move catastrophically at the point where assertion collides with physical reality.



## Delay, and the discipline of contemporaneous records

Extension of time claims are decided on evidence, and the evidence that decides them is contemporaneous. What was the accepted programme at the time. What was the actual progress at the time. When did the delaying event occur. What was its effect on the critical path as it then stood. What mitigation was available and what was instructed.

Entities lose extension of time claims they should win, and settle claims they should contest, for one reason above all others: they cannot reconstruct the position as it stood at the relevant time. The programme updates were not retained. The progress records are incomplete. The correspondence establishing when the entity was notified is scattered across mailboxes. The analysis is therefore conducted on the contractor's records, which are complete because the contractor understood their value.

A PMIS holding schedule versions, progress records, site records, instructions and correspondence in a single time-stamped structure removes this asymmetry entirely. Every monthly update is retained as a version. The critical path at any past date is recoverable. The instruction, the notification, the response and the delay are linked records with dates that nobody disputes.

The entities that invest in this discipline find that the number of claims they face falls, independently of how the claims are decided. Contractors assess the strength of a claim partly by assessing the quality of the opposing record.

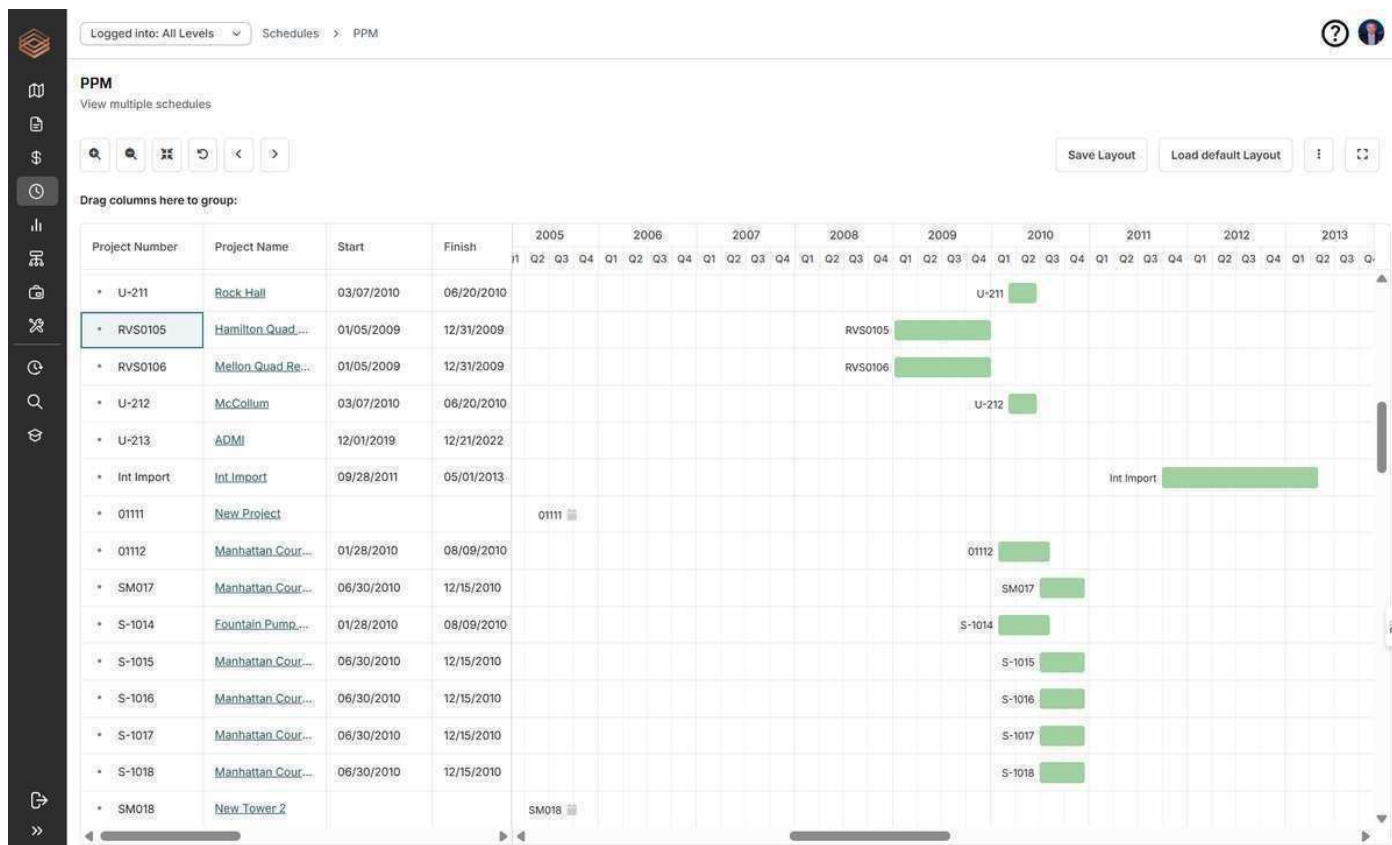
## Interface risk in a portfolio

Most of what is written about scheduling concerns individual projects. For an entity delivering a portfolio, the more consequential risk is between projects.

A road that must open before a development can be occupied. A substation that must energise before a facility can commission. A utility corridor shared between three contracts. A road closure that can only be taken by one project at a time. A specialist subcontractor market that cannot serve four simultaneous packages.

These dependencies are typically invisible in individual project schedules, each of which treats the external dependency as an assumed date. When the assumption fails, the effect propagates through projects that had no visibility of the cause.

Managing this requires a portfolio-level view where inter-project dependencies are modelled explicitly and a slip in one project raises an alert in the others. This is only practical when all project schedules are held in a common structure — which is precisely what a PMIS with integrated scheduling provides, and precisely what a collection of separately maintained schedule files cannot.



## Forecasting honestly

A final observation, directed at PMO leaders rather than at systems.

Schedule forecasts on capital projects are optimistic with remarkable consistency, and the mechanism is not technical. It is that the forecast is produced by parties who have an interest in it being acceptable, reviewed by parties who have an interest in not being the bearer of bad news, and presented to an audience that has previously reacted badly to bad news.

No system fixes this. What a system does is make optimism visible. When a forecast holds a completion date while the productivity trend, the open change position and the approval backlog all point elsewhere, the contradiction is on the screen. Someone still has to raise it. But they can raise it with evidence rather than with intuition, and that is usually the difference between the conversation happening and not happening.

*Next in the series: records as evidence — document control as institutional memory.*

## About the Author

**Bassam Samman, PMP, PSP, EVP, GPM** is the Chairman and Chief Executive Officer of CMCS FZ-LLC, the PMWEB Authorised Global Partner for the Gulf Cooperation Council and broader Middle East and North Africa region. CMCS holds the PMWEB Partner of the Year

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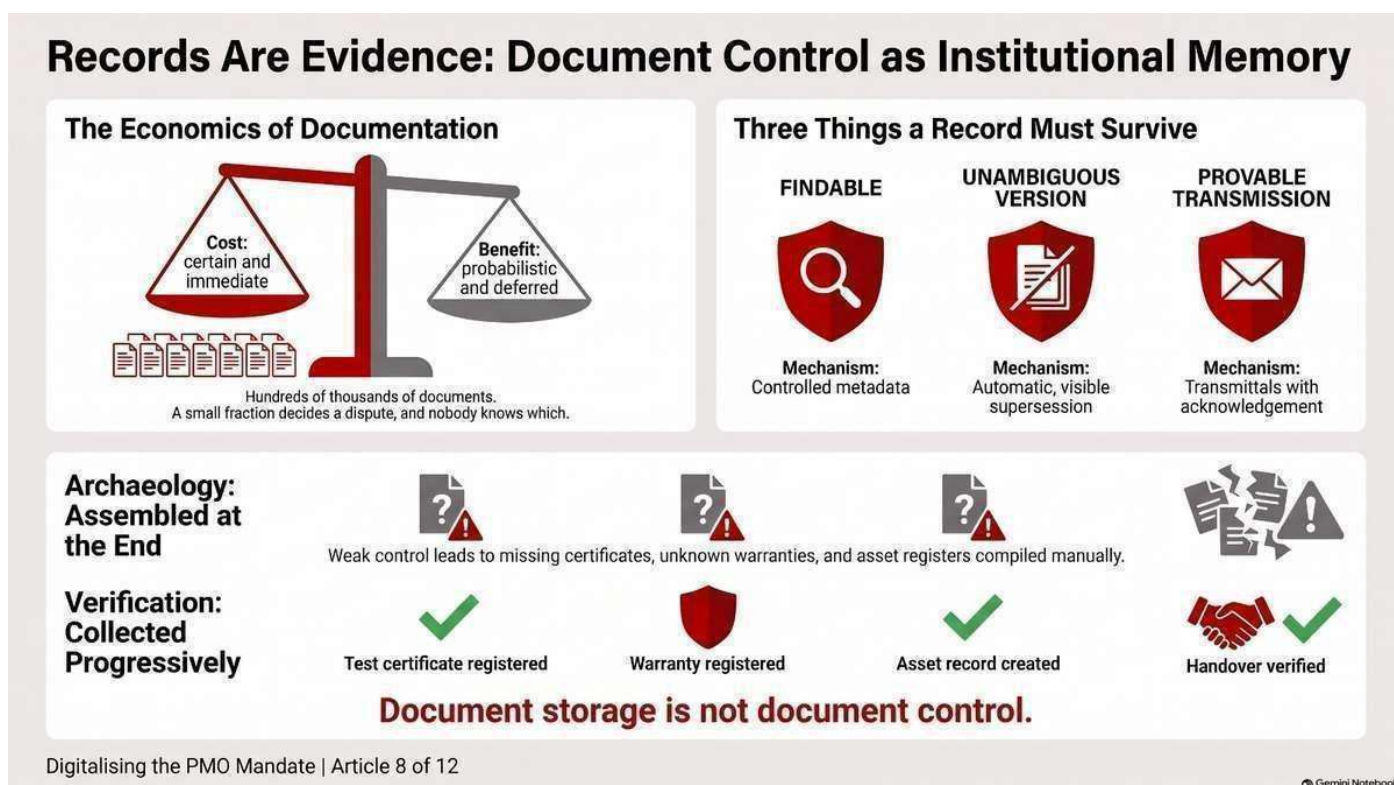
## Records Are Evidence: Document Control as Institutional Memory

*Almost none of a project's documents will ever be read again. A small fraction will decide a dispute, and nobody knows which.*

A capital project generates an enormous quantity of documents. Drawings, specifications, method statements, material submittals, shop drawings, test certificates, inspection records, correspondence, minutes, instructions, reports, contracts, invoices, permits, warranties, as-builts and operating manuals. On a large project the count runs into hundreds of thousands.

Almost all of it will never be read again. A small fraction of it will determine the outcome of a dispute involving very large sums, and nobody knows in advance which fraction.

This is the fundamental economics of document control, and it explains why organisations systematically under-invest in it. The cost is certain and immediate. The benefit is probabilistic and deferred. Under budget pressure, the certain immediate cost loses.



### The three things a record must survive

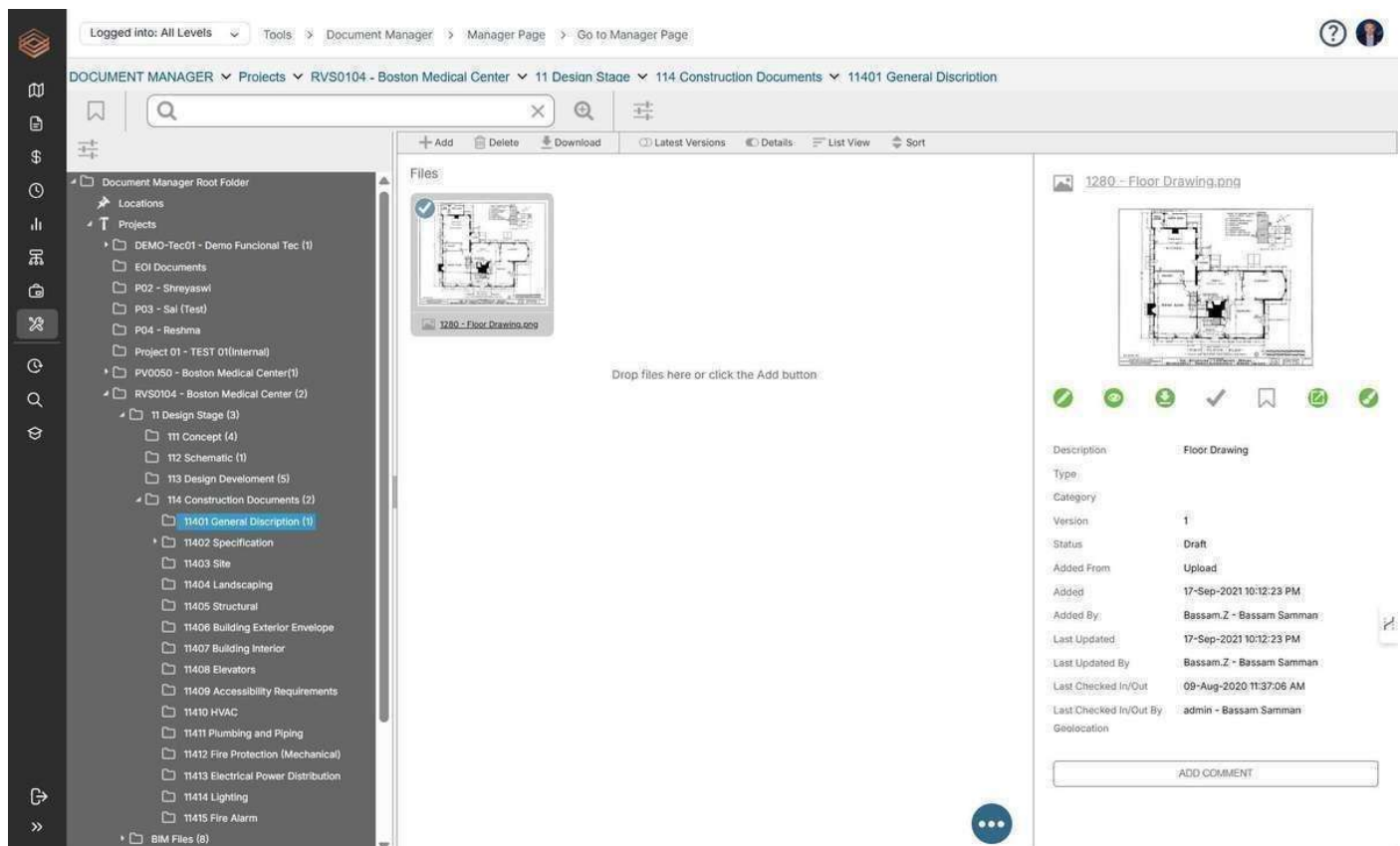
For a document to be useful when it eventually matters, three properties must have been preserved from the moment of its creation.

**It must be findable.** Not "stored somewhere" but retrievable by someone who does not know it exists, searching by subject, by date, by project element, by party, or by relationship to another record.

**Its version status must be unambiguous.** The single most expensive document control failure in construction is work executed to a superseded drawing. It occurs constantly, and it occurs because the recipient had no reliable way to know that the version in their possession was no longer current.

**Its transmission must be provable.** Who sent it, to whom, when, and whether it was received. A very large proportion of contractual disputes turn on notice — whether something was communicated, to the right party, within the required period. Email provides weak proof and no register.

These three properties are what an Electronic Document Management System within a PMIS provides as a structural matter. Documents are registered with controlled metadata. Revisions supersede predecessors automatically and visibly. Transmittals are records with recipients, dates and acknowledgement status.



## The submittal and RFI cycle

Two processes account for a disproportionate share of both administrative volume and project delay: material and shop drawing submittals, and requests for information.

The mechanics are simple and the failure modes are consistent. A submittal is issued, reviewed, returned with comments, revised and resubmitted, sometimes several times. An RFI is raised, routed to the party who can answer it, answered, and closed. In principle both are straightforward. In practice both routinely take three to five times longer than the contract allows.

The reasons are almost never technical. They are queueing failures. The item sits with a reviewer who has forty others. It is routed to the wrong discipline and returns after a week. It is answered by email to one person who does not circulate it. Nobody has a consolidated view of what is outstanding and how long it has been outstanding, so escalation happens when someone complains loudly rather than when a threshold is breached.

Digitalizing these cycles addresses the queueing directly. Every item has a status, an owner, a target date and an elapsed time. The register is complete and shared by all parties. Overdue items escalate automatically. The distribution of a response is defined by the workflow rather than by whoever happens to be on the email.

The effect on programme is frequently larger than anything achieved by construction acceleration, and it costs nothing to implement beyond configuring the process properly.



PMWEB

RFIs Summary Log

Projects

Boston Medical Center

RFIs

| Project Name          | RFI #  | Description                        | Date                       | From                                 | To                                            | CSI Code | Category                       |
|-----------------------|--------|------------------------------------|----------------------------|--------------------------------------|-----------------------------------------------|----------|--------------------------------|
| Boston Medical Center | 001    | Protect the Heritage Listed Podium | 15-Jan-2019<br>12:00:00 AM |                                      |                                               |          |                                |
| Boston Medical Center | 001    | Sample RFI                         | 06-Feb-2019<br>12:00:00 AM |                                      |                                               |          |                                |
| Boston Medical Center | 002    | HSS Location at Window Jamb SK-5A  | 23-Aug-2006<br>12:00:00 AM | Best Door and Window - Neil Youngers | Hillcrest General Contractors - Mike Marshall | 08000    |                                |
| Boston Medical Center | 002    | Query No. 1                        | 15-Jan-2019<br>12:00:00 AM |                                      |                                               |          |                                |
| Boston Medical Center | 002    | Ambiguities in Mechanical Drawings | 06-Mar-2019<br>12:00:00 AM |                                      |                                               |          |                                |
| Boston Medical Center | 003    | Questions over document 2314HU     | 15-May-2010<br>12:00:00 AM | A+ Electric, Inc. - Tom Harker       | Wagner & Williams - Karen Watson              |          |                                |
| Boston Medical Center | 003    |                                    | 05-Dec-2019<br>12:00:00 AM |                                      |                                               |          |                                |
| Boston Medical Center | 003    |                                    |                            | A+ Electric, Inc. - Tom Harker       | JFK Finishes - Alex Franklin                  |          | 02 Construction Coordination   |
| Boston Medical Center | 004    | Conflict                           | 01-Jul-2011<br>12:00:00 AM | PMWeb, Inc. - Matt Damon             | CW Millwork, Inc. - Ned Furbish               |          | Alternate Proposal             |
| Boston Medical Center | 004    | Sample RFI for New template        |                            |                                      |                                               |          | 06 Change in Method or Process |
| Boston Medical Center | 005    | Drawing A-500 Issues               | 19-Sep-2011<br>12:00:00 AM | Best Door and Window - Neil Youngers | Rockwell Architects - Janice Rockwell         | 08100    |                                |
| Boston Medical Center | 006    | Banner Pole Assemblies             | 21-Sep-2011<br>12:00:00 AM | Best Door and Window - Frank Jones   | Rockwell Architects - Ann Rockwell            | 13200    |                                |
| Boston Medical Center | 007    | General Requirements for RFI 007   | 21-Sep-2011<br>12:00:00 AM | A+ Electric, Inc. - Carol Nash       | Rockwell Architects - Cliff Rockwell          |          |                                |
| Boston Medical Center | 007    | HSS Location at Window Jamb SK-5A  | 13-Jul-2011<br>12:00:00 AM | Best Door and Window - Neil Youngers | Hillcrest General Contractors - Mike Marshall | 08000    |                                |
| Boston Medical Center | 008    | Questions over document 2314HU     | 18-Jun-2015<br>12:00:00 AM | A+ Electric, Inc. - Tom Harker       | Wagner & Williams - Karen Watson              |          |                                |
| Boston Medical Center | AA0012 | Drawing Issue                      | 19-Aug-2016<br>12:00:00 AM | ESCALA - Israel Guzman               |                                               |          |                                |

1 of 2

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21 - PMWEB

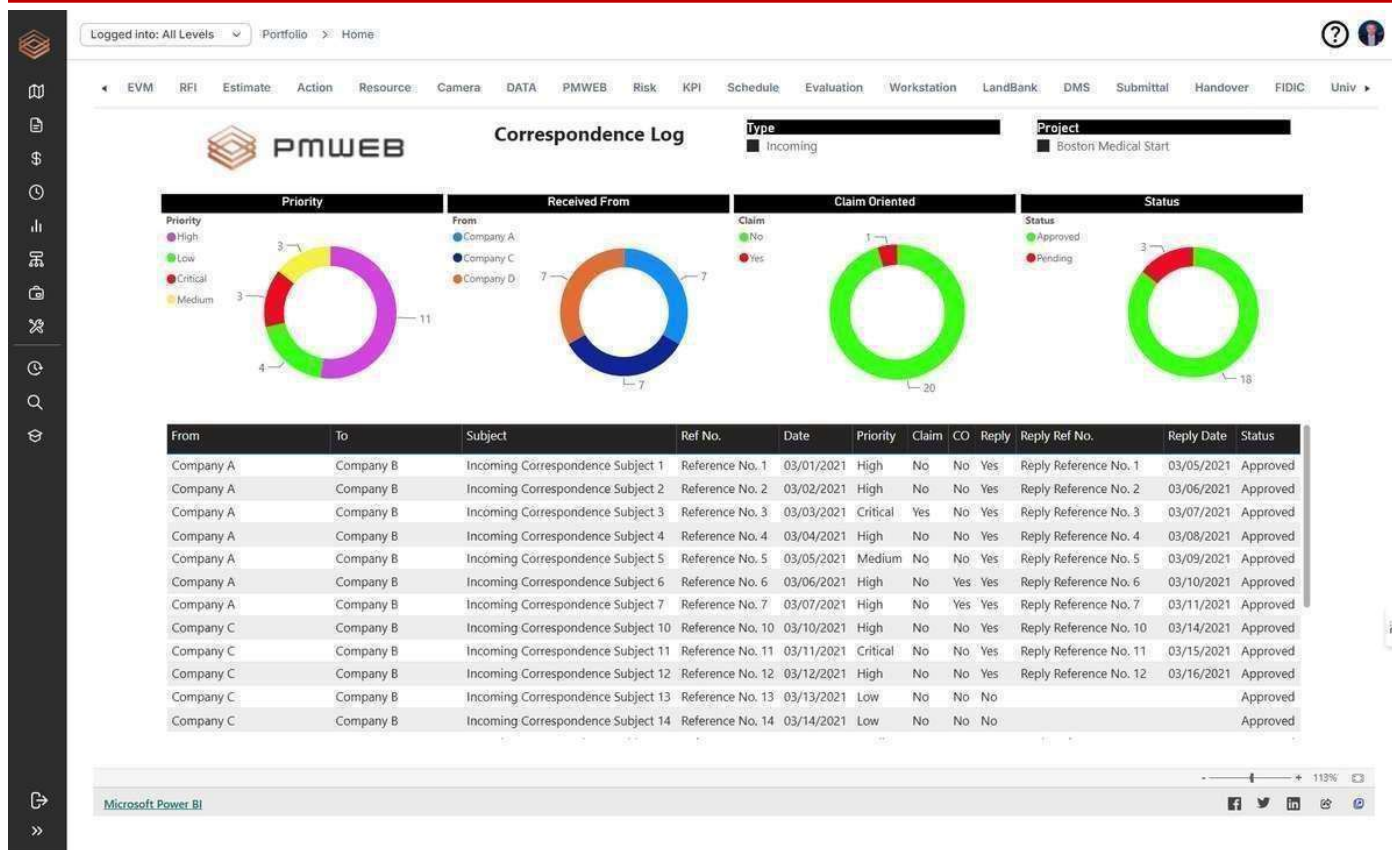
## Correspondence is a contract instrument

Letters, notices and formal correspondence on a construction project are not administration. They are the mechanism by which contractual rights are preserved and lost.

Notices of delay must be served within contractual periods. Notices of claim likewise. Instructions must be confirmed. Objections must be raised in time. Approvals must be given or deemed given. A right not exercised within its window is frequently a right lost permanently, regardless of the underlying merits.

Managing this through email is managing it without a system. There is no register, no time bar tracking, no assurance that the correct recipient received it, no reliable way to identify which correspondence relates to which contractual provision, and no institutional record when the individual leaves.

Correspondence managed within a PMIS is a registered record: numbered, categorised, linked to the contract clause, the project element and the related records, with transmission and acknowledgement captured, and with time bars tracked as a status rather than remembered as an obligation.



## The handover problem

There is a moment on every capital project when the accumulated cost of poor document control becomes payable in a single instalment. It is called handover.

The entity requires as-built drawings, operation and maintenance manuals, test and commissioning records, warranties, spare parts schedules, asset data and training records. These are contractual deliverables, usually tied to final payment.

Where document control has been weak, this material is assembled at the end from whatever can be found. Test certificates for equipment installed three years earlier are missing. Warranty start dates cannot be established. As-builts do not reflect late variations. The asset register is compiled by someone walking the building.

The consequence is a delayed handover, a facilities management function that begins operating an asset it does not understand, warranties that lapse unclaimed, and a maintenance regime built on incomplete information. The cost falls on the operating budget for the life of the asset, which is decades.

Where handover documentation is collected progressively — the test certificate registered when the test passes, the warranty registered when the equipment is accepted, the asset record created when the asset is installed — handover becomes a verification exercise rather than an archaeology exercise. This requires nothing more than deciding at the outset that the O&M deliverable is a running obligation rather than a final one, and configuring the system to enforce it.

The screenshot displays a software interface for managing physical assets. On the left, a sidebar shows a hierarchical tree of locations: Bridges, Hotels, Commercial Development AAAAA, Corporate Office, Malls, Metro Station, Offices, Plants, Stadiums, Towers, Crystal Towers, East Tower, Floor 1, Office 301, Office 302, Office 303, Office 304, Office 305, Floor 2, Office 201, Office 202, Office 203, Office 204, Floor 3, West Building, New York Towers, Underground Rail, University Campuses, Harvard Business School, Aldrich Hall - Main Classroom, and Baker Library. The main area is titled '29 - Window Air Conditioner' and contains several tabs: Main, Additional Information, Moves, Components, Log, Work Orders, Cost Worksheet, Notes, and Attachments (1). The 'Main' tab is active, showing fields for:
 

- Installed equipment ID\*: 29
- Name\*: Window Air Conditioner
- Current Factory\*: Crystal Towers/East Tower/Floor 2/Off
- Component Of: (empty)
- Installed equipment Type: A/C - Installed
- Ownership: Owned
- Function Status: (empty)
- Condition: (empty)
- Condition Date: (empty)
- In Service Date: (empty)
- Status: Draft
- Received Date: 07-Nov-2016 12:00:00 AM
- Vendor: (empty)
- Manufacturer: Cambridge HVAC
- Manufacturer #: WAC-008X1
- Serial #: (empty)
- Lot #: (empty)
- Item: (empty)
- Price: \$1,000.00
- Warranty Expires: (empty)
- Component Type: (empty)
- Geolocation: (empty)
- Barcode: (empty)

 On the right, there are sections for 'PREDICTIVE MAINTENANCE' (with fields for Track Use By, Service Interval, Last Service, Service Due, Current Usage, Life Remaining, and % Remaining) and 'LINEAR DEFINITION' (with fields for Begin, End, Length, Area, and DIRECTION). Below these are 'USER DEFINED FIELDS' for Check In, Check Out, Retired, and BIM ID.

## Records and the audit

Entities in the government, semi-government and PIF categories are audited, and the audit population includes procurement, commitment, certification and payment.

An audit conducted against a well-maintained digital record is a different experience from one conducted against shared drives and mailboxes. Sampled transactions are produced with their full approval history and supporting evidence in minutes. Population-level testing becomes possible rather than sample-based, because the population is queryable. Findings relate to substance rather than to the inability to locate documentation.

The reverse case is familiar to anyone who has lived through it: weeks of staff time diverted to document retrieval, findings raised because evidence could not be produced rather than because a control failed, and a management response that commits to improvements in record-keeping, again.

## The stakeholder's view

Documents are the least visible part of project governance and among the most consequential. For a stakeholder assessing an entity's control environment, one request is diagnostic.

Ask for the current approved revision of a specific drawing, the transmittal that issued it, the list of parties who received it, and the previous revision it superseded.

If that arrives within the hour, the entity has document control. If it takes days and arrives with caveats, then the entity has document storage — and the difference will become apparent at handover, in the first significant claim, or in the next audit.

*Next in the series: the processes that protect people and assets — risk, quality, safety and compliance.*

## About the Author

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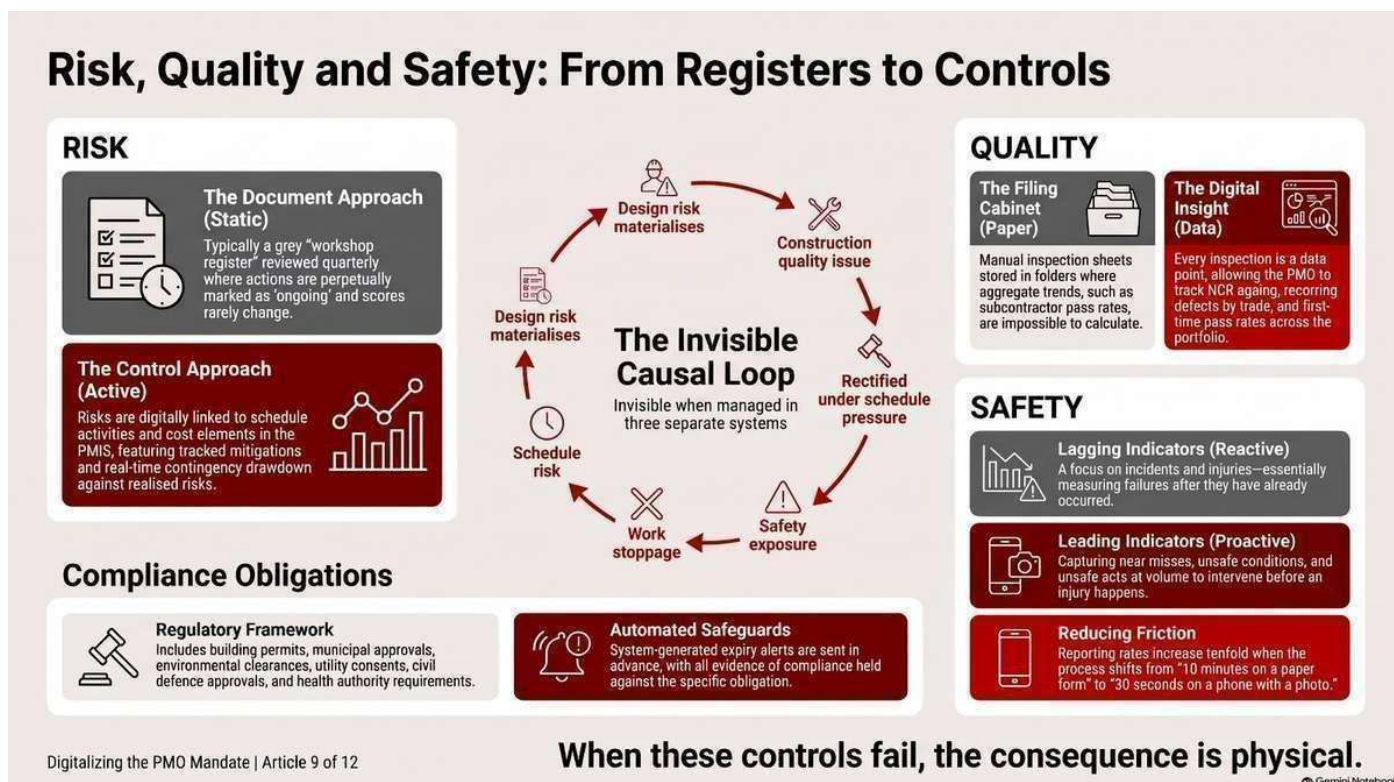
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# Risk, Quality and Safety: The Processes That Protect People and Assets

*When cost control fails, the consequence is financial. When these controls fail, the consequence is physical.*

The processes covered in this article differ from the others in the series in one important respect. When cost or schedule control fails, the consequence is financial. When risk, quality or safety control fails, the consequence can be a collapsed structure, a defective hospital, a contaminated water supply, or a person who does not go home.

That difference should govern how seriously these processes are digitalized, and frequently it does not. Risk registers, inspection records and safety observations are among the last processes to be brought into a system, and among the first to be maintained as a compliance exercise rather than as a control.



## The risk register that nobody uses

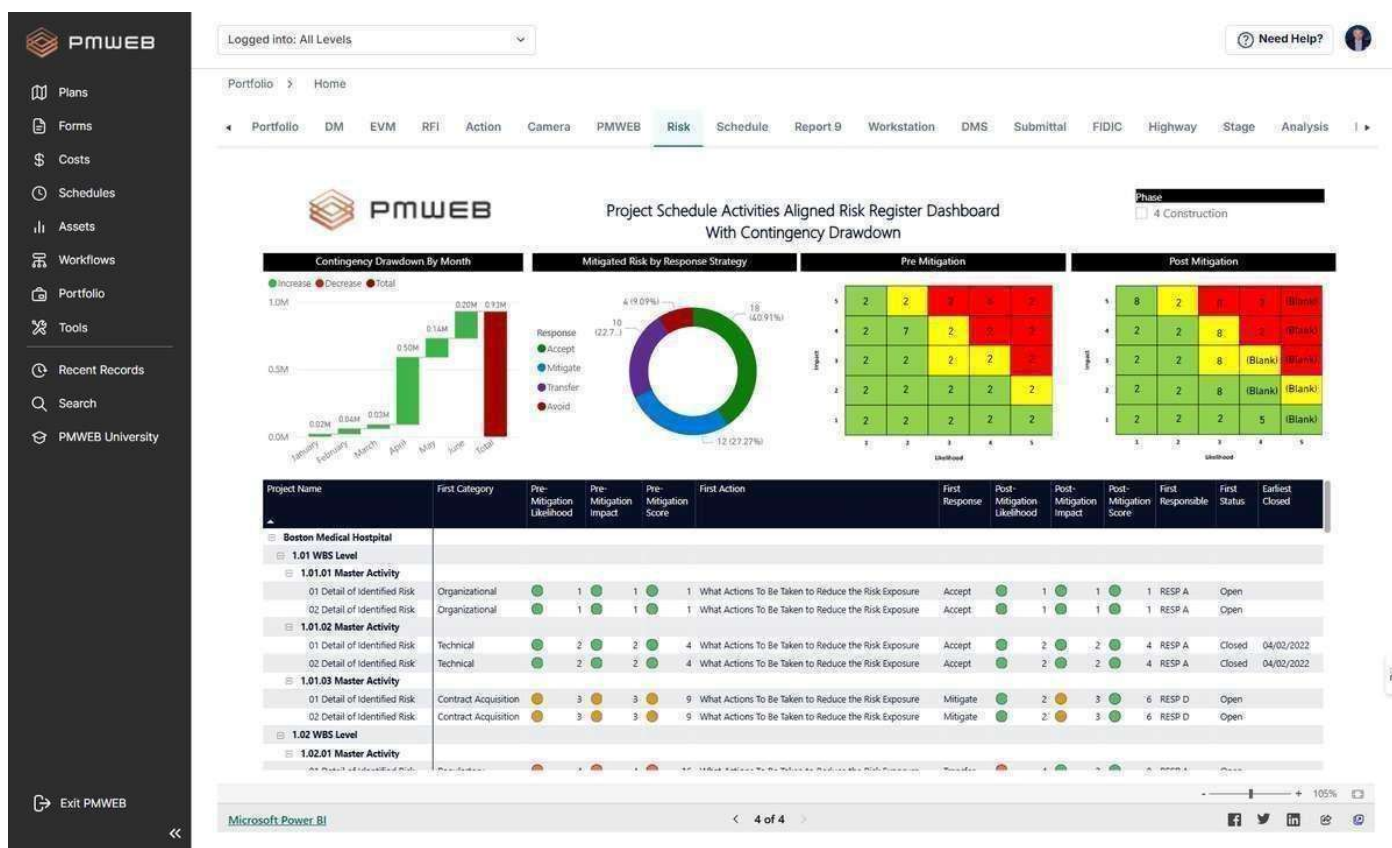
Almost every capital project has a risk register. A small minority have a risk register that changes anyone's behaviour.

The typical failure sequence is well known. The register is produced during planning, in a workshop, with the right people present. It contains thirty to sixty risks, scored for probability and impact, with owners and mitigation actions. It is included in the project execution plan.

It is then reviewed quarterly, in a meeting where the scores are largely unchanged because nobody has revisited the underlying assessment, the mitigation actions are marked "ongoing," and the register grows slightly. It is never used to inform a decision. When one of the risks materialises, the register is not consulted, because by then the event is an issue and is being managed as one.

The register failed because it was a document rather than a control. A risk register that functions has properties that a document cannot have: risks linked to the specific schedule activities and cost elements they threaten, so that exposure is quantified rather than described; mitigation actions with owners and dates that are tracked like any other

action and escalate when overdue; a contingency drawdown that is explicitly linked to risk realisation, so the entity can see what its remaining exposure is against its remaining reserve; and periodic revaluation triggered by project events rather than by the calendar.\



## Quality: inspection as data, not as paper

Quality assurance on a construction site is a high-volume, repetitive, evidence-generating process. Inspection and test plans define what is checked. Checklists define how. Records are produced at each inspection. Non-conformances are raised, dispositioned and closed.

Executed on paper, this process produces a filing cabinet and nothing else. The individual record exists. The aggregate — which is where the information is — does not, because nobody is going to tabulate four thousand inspection sheets to determine whether a particular subcontractor's first-time pass rate is deteriorating.

Executed in a system, every inspection is a data point. And once inspections are data, questions become answerable that were previously unaskable.

Which trades are generating the most non-conformances. Which subcontractors have declining first-time pass rates. Which types of defect recur across projects, indicating a specification or design issue rather than a workmanship issue. Whether inspection coverage is actually complete or whether certain work is being closed out without record. How long non-conformances remain open before closure.

An entity delivering a portfolio can compare across projects and identify systemic issues that no single project team could see. That is a capability that only exists when the records are structured, and it is one of the clearest arguments for a common system across a portfolio rather than project-by-project tools.

Logged into: All Levels Forms > Non Compliance Report (NCR) > Manager Page > 2 -

Main Notes Attachments (2) Workflow (1/5)

**PMWeb** Non Compliance Report (NCR)

Project: RVS0104 - Boston Medical Center ID: 2 Date: 11-Oct-2019 12:00:00 AM  
 Company: Dexter Concrete Priority: High Location: Basement  
 Revision: 0 Date: 11-Oct-2019 12:00:00 AM Status: Submitted

**REASON FOR ISSUING THE NCR**

Reason for Issuing NCR

| SELECT                   | NO.  | REASON                                                                                            | PHOTO                    |
|--------------------------|------|---------------------------------------------------------------------------------------------------|--------------------------|
| <input type="checkbox"/> | 1.00 | Work that was not built as indicated in the approved Issued for Construction drawings.            | <input type="checkbox"/> |
| <input type="checkbox"/> | 2.00 | Work that fails to meet specified tolerances as established in the project specifications         | <input type="checkbox"/> |
| <input type="checkbox"/> | 3.00 | Work that is being performed using non-approved methods or standards                              | <input type="checkbox"/> |
| <input type="checkbox"/> | 4.00 | Failure to follow the approved testing and inspection plan                                        | <input type="checkbox"/> |
| <input type="checkbox"/> | 5.00 | Testing results demonstrate that the product does not meet established and approved standards     | <input type="checkbox"/> |
| <input type="checkbox"/> | 6.00 | Material used that has not been approved as a substitute (equal or similar)                       | <input type="checkbox"/> |
| <input type="checkbox"/> | 7.00 | Design is not accurate and does not represent actual field conditions                             | <input type="checkbox"/> |
| <input type="checkbox"/> | 8.00 | Approved procedure was not followed, and quality defects have been identified by the project team | <input type="checkbox"/> |

8 Items in 1 pages

**NCR DETAILS AND CORRECTIVE ACTION STATUS**

What is the main reason for the NCR or what went wrong?  
 AAAA BBBB CCCC DDDD EEEEDD DIAI>HLAHDL

Why the work doesn't meet specifications?  
 AAAA BBBB CCCC DDDD EEEEDD DIAI>HLAHDL

What can be done to prevent the problem from happening again?  
 AAAA BBBB CCCC DDDD EEEEDD DIAI>HLAHDL

Explanation of corrective action taken or to be taken  
 AAAA BBBB CCCC DDDD EEEEDD DIAI>HLAHDL

NCR Corrective Action Details Status: Acceptable Date: 11-Oct-2019 12:00:00 AM

## Safety, and the value of the near miss

Safety management has a characteristic that distinguishes it from other project controls: the most valuable data is generated by events that caused no harm.

Near misses, unsafe conditions and unsafe acts are the leading indicators. Incidents and injuries are the lagging ones. An organisation that only records lagging indicators is measuring its failures. An organisation that captures leading indicators at volume can act before the failure.

The obstacle to capturing them has always been friction. A worker or supervisor who observes an unsafe condition must decide whether reporting it is worth the effort of finding a form, filling it in, and submitting it to someone. If the process takes ten minutes, most observations go unreported. If it takes thirty seconds on a phone, with a photograph, at the point of observation, reporting rates rise by an order of magnitude.

That is not a hypothesis about technology. It is the consistent experience of organisations that have moved safety observation capture to mobile devices.

Once the observations exist as data, they can be located, categorised, trended and mapped. Recurring hazard types can be identified. Specific areas of a site generating disproportionate observations can be investigated. Corrective actions can be tracked to closure with evidence. Contractor safety performance can be compared on a like-for-like basis across a portfolio.

For an entity delivering public infrastructure, the ability to demonstrate this — not to assert a commitment to safety, but to show the leading indicator data and the actions taken on it — is increasingly a condition of operating.

Logged into: All Levels Forms > Safety Forms / نموذج السلامة > Manager Page > 001 - slip and fall in snowy conditions

**RV50104 - Boston Medical Center** Submitted

Safety Forms / 001 نموذج السلامة - slip and fall in snowy conditions

Main Additional Information Checklists Clauses Notes Attachments 6

**Header Fields**

|                                        |                                        |                                                 |                             |
|----------------------------------------|----------------------------------------|-------------------------------------------------|-----------------------------|
| Project* / مشروع*                      | Record #* / سجل #*                     | Description / وصف                               | Phase / مرحلة               |
| RV50104 - Boston Medical Center        | 001                                    | slip and fall in snowy conditions               | 2 - Construction -          |
| WBS / تسمية العمل                      | Submitted By / تم تقديمه من            | Company / شركة                                  | Type / نوع                  |
| B - Construction                       | Wilson Contractors - Tom Wilson        | Wilson Contractors                              | Slip and Fall               |
| Category / فئة                         | Reference / مرجع                       | Incident Date / تاريخ الواقعة                   | Incident Time / وقت الحادثة |
| General Accident                       |                                        | 18-Jan-2014 12:00:00 tt                         | 08:45 AM (UTC+4)            |
| Report Date / تاريخ التقرير            | Report Time / وقت التقرير              | Conditions / ظروف                               | Temperature / درجة الحرارة  |
| 18-Jan-2014 12:00:00 tt                | 09:30 AM (UTC+4)                       | Multiple                                        | 20.00                       |
| Temperature Scale / مقياس درجة الحرارة | Precipitation Amount / كمية الهطول     | Precipitation UOM / وحدة قياس الهطول            | Status / حالة               |
| F                                      | 100.00                                 | %                                               | Submitted                   |
| Revision / مراجعة                      | User Assigned / تم تعيينه إلى المستخدم | User Due Date / تاريخ الاستحقاق الخاص بالمستخدم |                             |
| 0                                      |                                        |                                                 |                             |

**User Defined Fields**

|                 |                   |                     |               |
|-----------------|-------------------|---------------------|---------------|
| Impact HR       | Impact Production | Impact Cost         | Primary Cause |
|                 |                   |                     |               |
| Secondary Cause | Immediate Cause   | Contributing Factor | Root Cause    |
|                 |                   |                     |               |
| Task            | CBS               |                     |               |
|                 |                   |                     |               |

Detailed

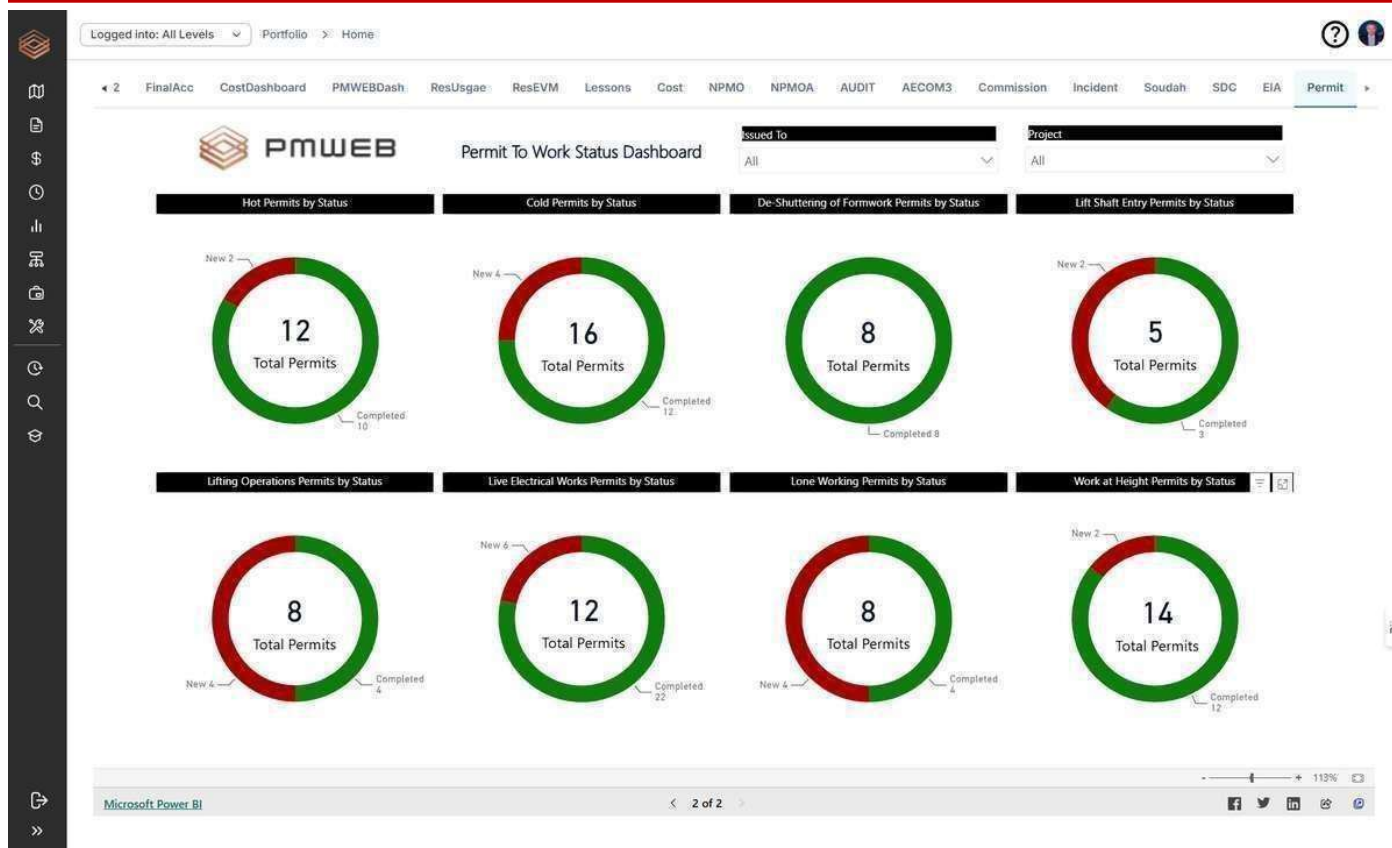
## Permits, licences and regulatory compliance

Capital projects in the Kingdom operate within a substantial regulatory framework — building permits, municipal approvals, environmental clearances, utility authority consents, civil defence approvals, health authority requirements for healthcare facilities, and sector-specific obligations that vary by asset type.

Each of these has an application process, a lead time, a validity period and a renewal requirement. Individually they are manageable. Across a portfolio of thirty concurrent projects they represent hundreds of live obligations with hundreds of dates, and the consequence of missing one is a work stoppage.

A compliance obligations register within the PMIS — obligations linked to the projects and elements they affect, with status, responsible owner, expiry date and evidence of compliance attached — converts this from a memory exercise into a monitored one. Expiry alerts are generated in advance. Evidence of compliance is retained against the obligation rather than in a personal folder.

The same structure serves any obligation framework the entity must satisfy, whether regulatory, contractual, funding-related or, in the case of major events, imposed by an international governing body.



## The connection between these three

Risk, quality and safety are usually managed by three different functions, using three different systems or none, reporting through three different channels.

The events they manage are not independent. A design risk that materialises produces a construction quality issue. A quality issue rectified under schedule pressure produces a safety exposure. A safety incident produces a work stoppage that produces a schedule risk. The causal chains run continuously between the three domains and are invisible when each is managed in isolation.

Holding them in a common system, linked to the same projects, elements, contracts and locations, makes the chains visible. That is not merely an efficiency gain. It is the difference between managing three registers and managing the actual exposure of the project.

*Next in the series: no data, no AI — why the artificial intelligence ambition of every entity begins in the PMIS.*

## About the Author

**Bassam Samman, PMP, PSP, EVP, GPM** is the Chairman and Chief Executive Officer of CMCS FZ-LLC, the PMWEB Authorised Global Partner for the Gulf Cooperation Council and broader Middle East and North Africa region. CMCS holds the PMWEB Partner of the Year 2025 designation. The firm's client portfolio across UAE, Saudi Arabia, Qatar, Kuwait and India spans real-estate development, capital construction and government programmes, including ROSHN, DAMAC, Al-Futtaim, Saudi Downtown Company, Riyadh Development Company, Dubai Municipality, Dubai Aviation Engineering Projects, among many others.

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# No Data, No AI: Why the Intelligence Ambition Begins in the PMIS

*The first phase of a capital delivery entity's artificial intelligence programme is not an artificial intelligence project.*

Every entity in the Kingdom delivering capital projects is now being asked what it is doing about artificial intelligence. The question comes from boards, from ministries, from investment committees and from national digital transformation objectives. It is a reasonable question and it deserves a better answer than most entities are currently able to give.

The honest answer, for the majority, is that they cannot yet do anything meaningful with AI, because the data on which it would operate does not exist in a usable form.

This article is about why that is the case, and about what has to be true before an AI programme in capital project delivery produces anything other than a pilot that impresses in a demonstration and is never deployed.

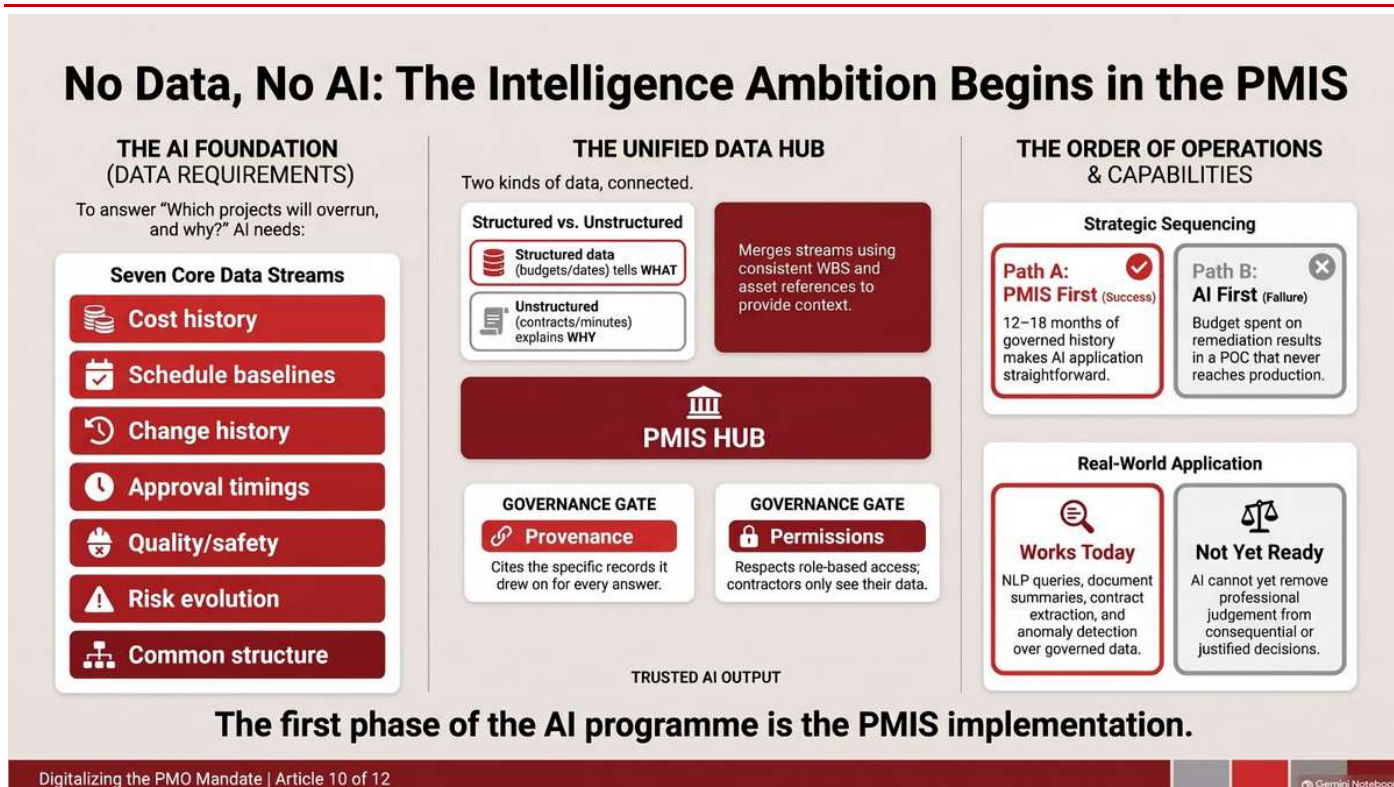
## What AI needs from a capital programme

Set aside the technology for a moment and consider what would have to be true for an artificial intelligence system to answer a question like *which of our projects are most likely to overrun, and why*.

It would need the cost position of every project, structured consistently, with history. It would need the schedule position, with baselines and updates retained over time. It would need the change history, with values, causes and approval dates. It would need the approval performance data — how long decisions took, and where they queued. It would need the quality and safety record. It would need the risk position and how it evolved. And it would need all of this expressed in a common structure so that a pattern observed in one project is recognisable in another.

Now consider where that data sits in an entity without a PMIS. Cost in spreadsheets with project-specific structures. Schedules in individual files with inconsistent WBS coding. Changes in a mixture of registers and correspondence. Approval timings nowhere, because nobody recorded when things arrived and left. Quality records on paper. Risk in documents. Nothing linked to anything.

No model can be built on that. Not because the algorithms are inadequate, but because the input does not exist. The most common and most expensive mistake in enterprise AI is treating data preparation as a phase of the AI project. On a capital programme it is not a phase. It is years of operational discipline that either happened or did not.



## The two kinds of data, and why both matter

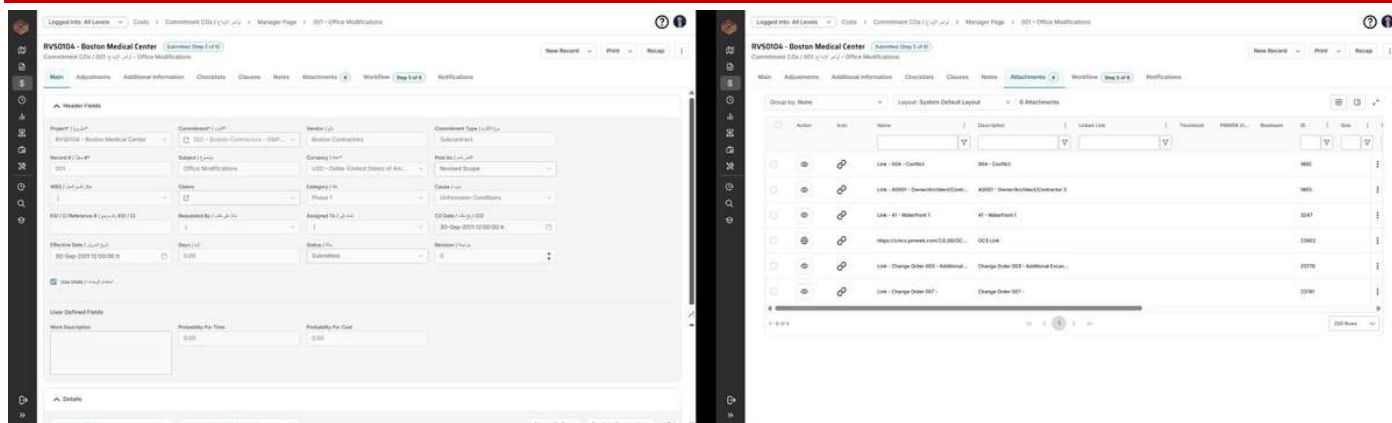
Capital project data divides into two categories, and useful AI applications require both.

**Structured data** is the transactional record: budget lines, commitment values, certified amounts, activity dates, progress quantities, risk scores, inspection results, approval timestamps. It is numeric or categorical, it fits in fields, and it is what makes quantitative prediction and anomaly detection possible.

**Unstructured data** is the documentary record: correspondence, minutes, contracts, specifications, reports, method statements, technical submissions, photographs. It is language and images, and it is where the explanation of what happened lives. Large language models are unusually good at working with exactly this material — retrieving relevant passages, summarising positions, identifying obligations, comparing documents against requirements.

The value emerges when the two are connected. A model that knows a project's cost variance is useful. A model that knows the cost variance *and* can retrieve the correspondence, instructions and change records that explain it is transformative, because it can answer *why* rather than only *what*.

That connection is not something an AI layer creates. It is a property of how the data was captured. A PMIS captures both categories in the same structure, with the same project, contract, WBS and asset references, and with the relationships between records preserved. This is why the PMIS is the foundation of the AI capability rather than a component of it.



## Provenance, permissions and the trust problem

There are two requirements that determine whether an AI output is usable in a governance context, and both are frequently discovered late.

**Provenance.** An answer without a source is an opinion. When an AI system tells an executive that a project's forecast is unreliable, the immediate and correct response is "on what basis." A system built over a governed data repository can cite the records it drew on, and the reader can open them. A system built over an unstructured document dump cannot, and it will not survive its first challenge in a board meeting.

**Permissions.** An AI assistant that answers questions must respect the same access rules as the underlying data. A contractor asking a question of the system must not receive an answer synthesised from another contractor's commercial information. This is not solvable by instructing the model. It is solvable by ensuring the retrieval layer operates under the same role-based permissions as the source system — which requires the source system to have them.

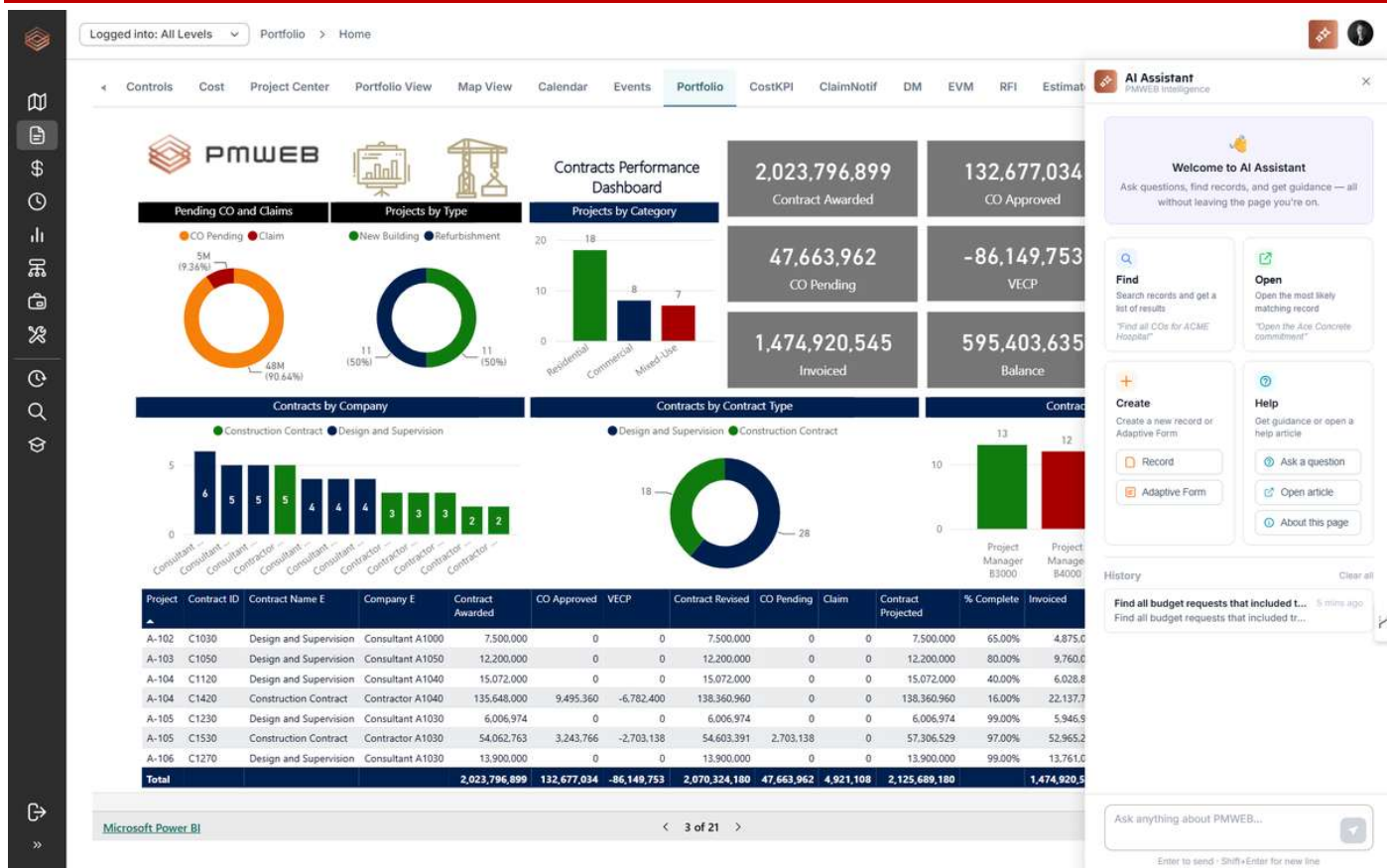
Both requirements point in the same direction. AI in capital project delivery is safe and useful when it operates over a governed system of record, and unsafe or useless when it operates over a data lake assembled from exports.

## What is actually achievable, and what is not

It is worth being direct about the realistic near-term applications, because the gap between what is marketed and what is deployed is wide.

Applications that work well today over a governed PMIS include: natural-language querying of project and portfolio data, so that a senior stakeholder can ask a question directly rather than requesting a report; retrieval and summarisation across the documentary record, which compresses tasks like identifying every instruction relating to a disputed area of work from days to minutes; automated extraction of obligations and dates from contracts into a tracked register; assisted review of submissions against specification requirements; anomaly detection across transactions, flagging patterns that would not be visible in aggregate reporting; and predictive indicators built on historical patterns across a portfolio, provided the portfolio has enough history to learn from.

Applications that are not yet reliable include anything that removes professional judgement from a consequential decision. AI can identify that a variation is unusual for its category. It cannot decide whether it is justified. The distinction matters, and entities that blur it in their internal messaging create expectations that will not be met.



## The order of operations

The practical conclusion for an entity is a sequencing argument.

An entity that implements a PMIS today and operates it with discipline is, within twelve to eighteen months, in possession of a structured, governed, permissioned, complete and growing record of its capital delivery. At that point, AI applications become straightforward to introduce, because the difficult part is already done.

An entity that pursues AI first, over the data it currently holds, will spend its budget on data remediation, produce a proof of concept over a cleaned subset, and be unable to move to production because the underlying capture process has not changed and the data degrades again immediately.

This is not an argument for delaying AI. It is an argument about what the AI programme's first phase actually is. For a capital delivery entity, the first phase of the AI programme is the PMIS implementation. Everything after that is comparatively easy.

## The question worth asking

For a board or a ministry assessing an entity's readiness to deploy AI in capital delivery, the diagnostic is not what tools it has evaluated.

*Where does your project data live, in what structure, and how much history do you have in it?*

If the answer describes a single governed system with two or more years of consistently structured transactional and documentary history, the entity is ready and the AI conversation is worth having in detail.

If the answer describes an intention to consolidate data from multiple sources into a lake for the purpose, the entity is at the beginning of a longer road than it currently believes, and the honest recommendation is to build the record first.

*Next in the series: the control tower — PMWEB data combined with GIS and construction site cameras.*

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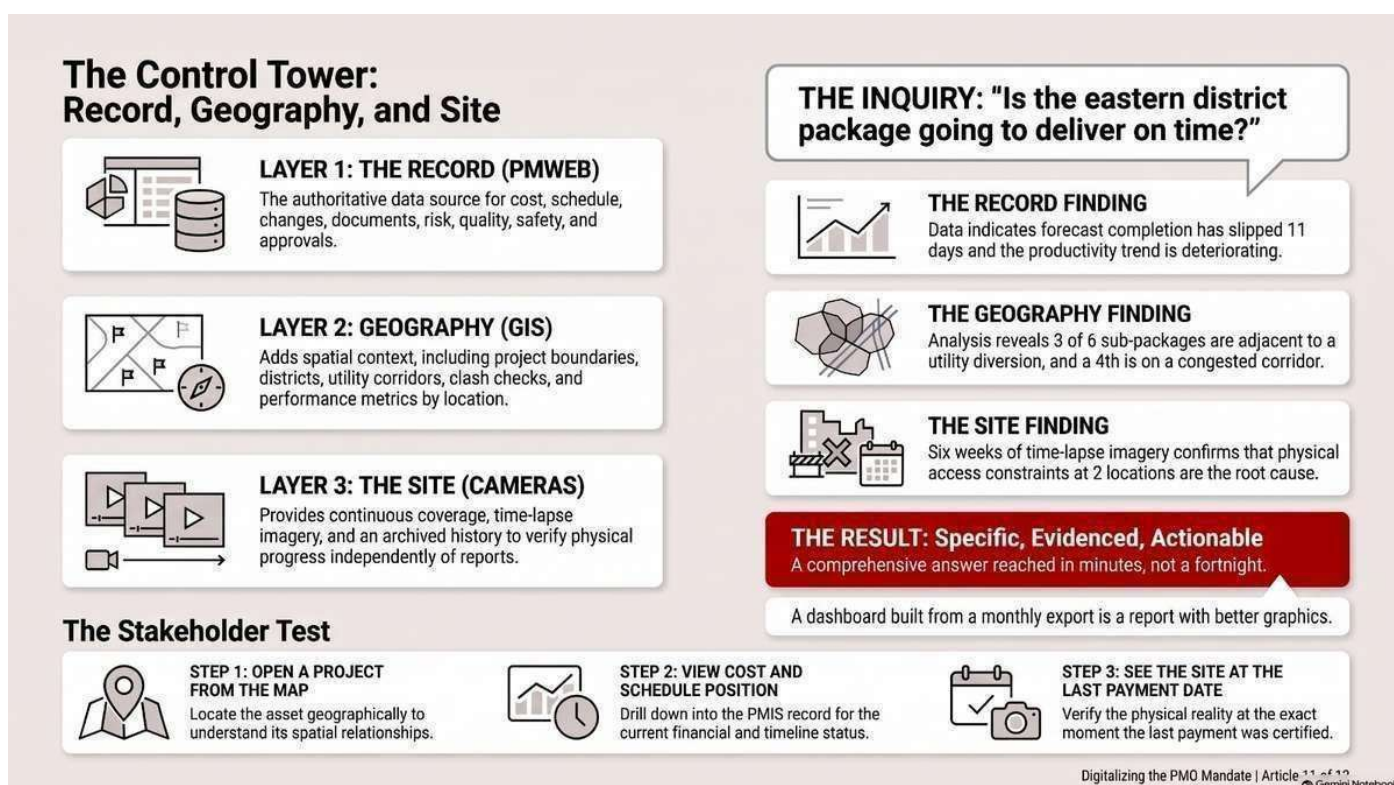
# The Control Tower: Where Project Data, Geography and the Site Itself Converge

*What the records say, where things are, and what is physically happening on the ground — the three layers of portfolio control.*

An entity delivering thirty, a hundred or three hundred capital projects concurrently faces a problem that no individual project team experiences. It has to know, at any moment, the true state of the whole.

Not a summary of the whole. The state of it — accurate enough to act on, current enough to matter, and detailed enough that a concern raised at portfolio level can be pursued to the specific record that caused it.

This is what a control tower is. It is not a room with screens, although it often has one. It is the capability to observe a portfolio continuously, in a way that connects three normally separate kinds of knowledge: what the records say, where things are, and what is physically happening on the ground.

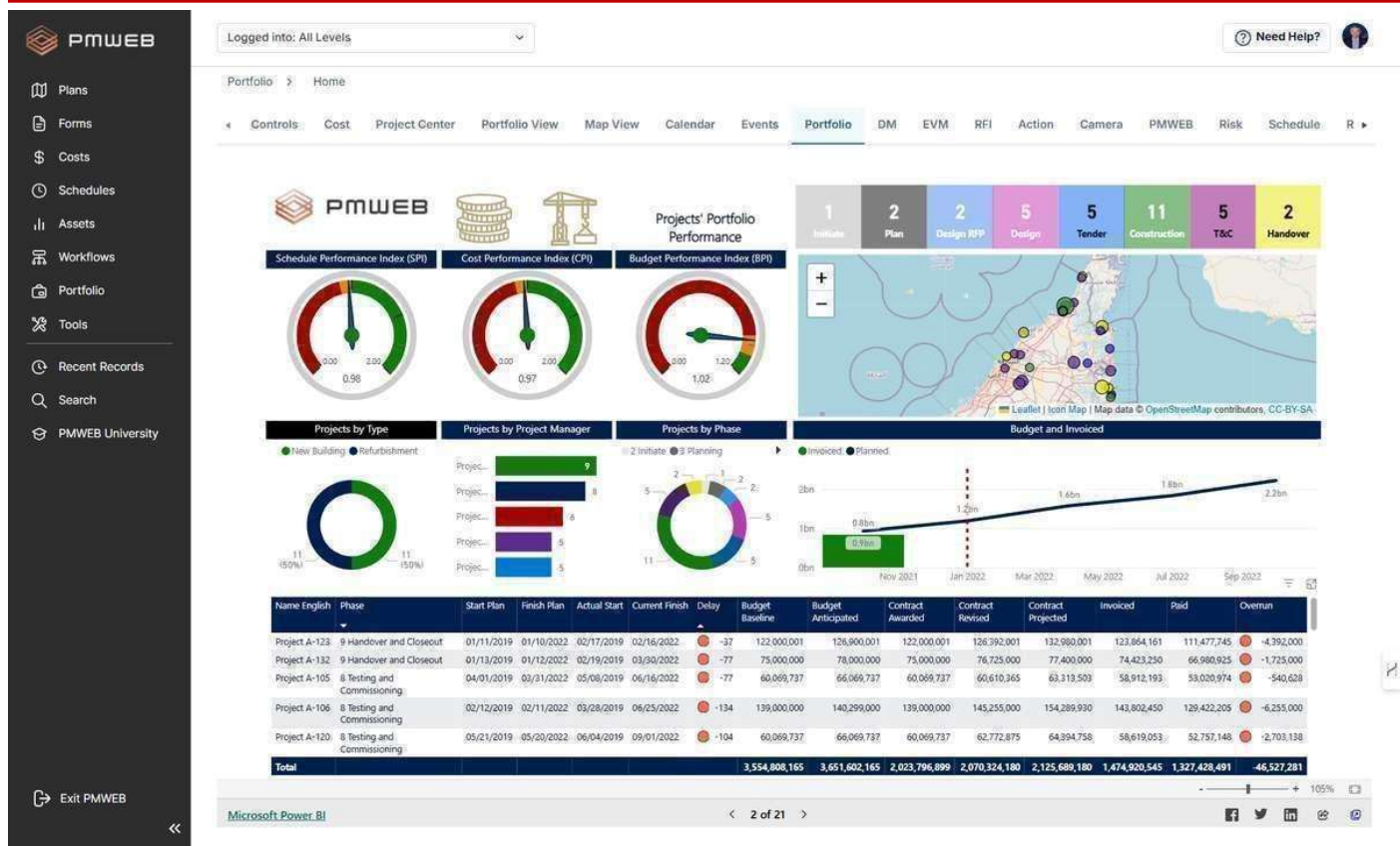


## Layer one: the record

Everything in the previous nine articles constitutes this layer. Budget and commitment. Schedule and progress. Changes, claims and contractual exposure. Documents, submittals and RFIs. Risk, quality, safety and compliance. Approval performance and open actions.

Held in a PMIS, this layer answers the question *what do our records say is happening*. It is authoritative, complete, current and traceable, and for most management purposes it is sufficient.

It has one limitation. It describes the portfolio as a list. A hundred projects presented as rows in a table, however well-instrumented, do not convey the relationships between them — and for infrastructure, municipal, transport and development programmes, many of the most important relationships are spatial.



## Layer two: geography

Capital projects occupy space. They have boundaries. They affect the land around them. They interact with other projects, with existing assets, with utilities, with transport networks and with the communities that live alongside them.

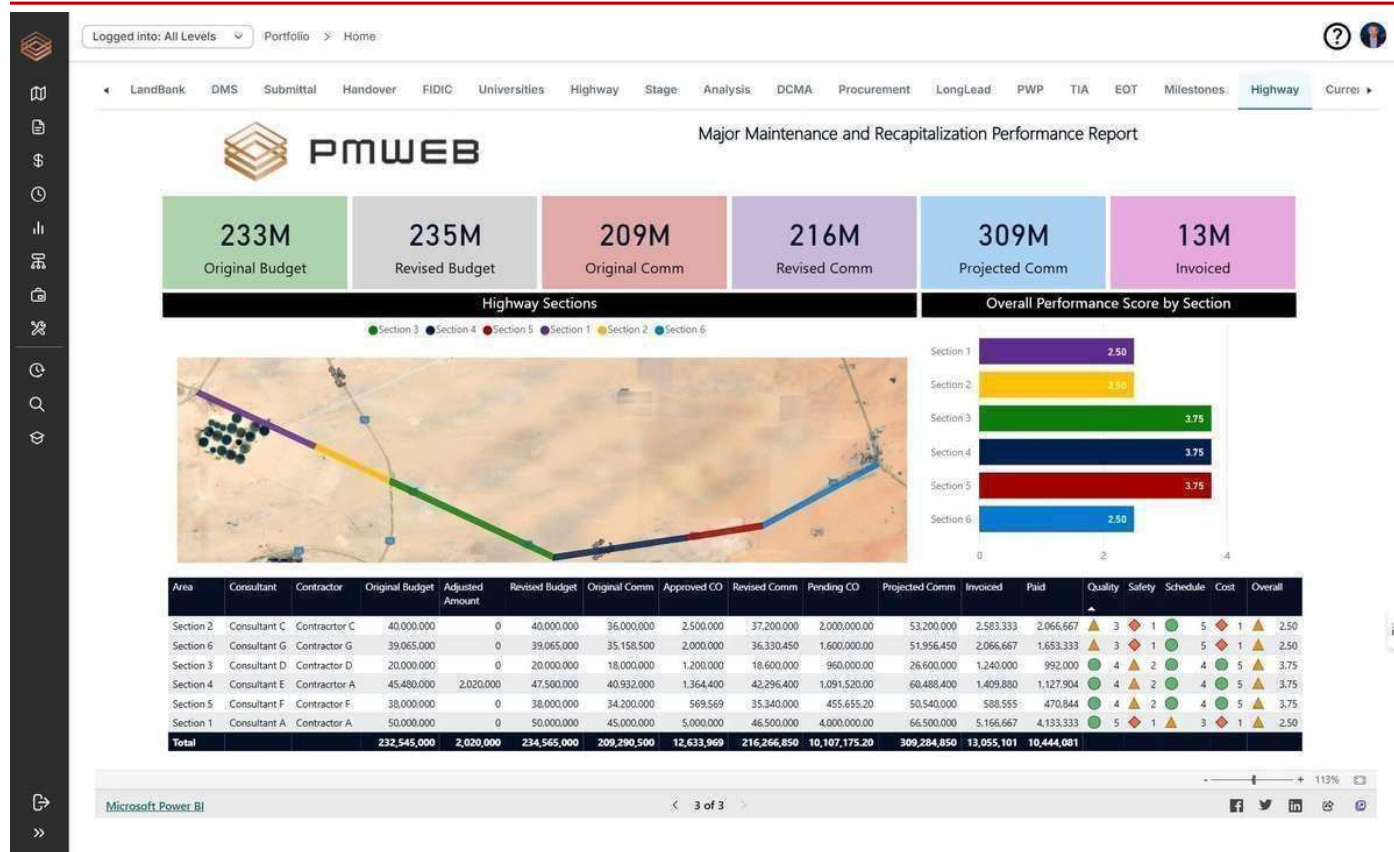
A geographic information system holds this. When PMWEB project data is associated with GIS, the portfolio becomes viewable as a map rather than as a list, and a set of questions becomes answerable that were previously extremely difficult.

Which projects are located within a district, and what is their combined status. Do the boundaries of two projects overlap or conflict. Which projects are affected by a planned utility corridor. What is the concentration of works in an area, and what is the cumulative disruption to residents. Which projects sit on a route that must remain operational during a specific period. Where are the assets we already own in relation to the assets we are building.

The mechanism is straightforward. Projects in PMWEB carry positional attributes — longitude, latitude and elevation — which provide the basis for associating project records with spatial features in an enterprise GIS. Integration between the two is delivered through APIs scoped to the specific use cases the entity needs, which keeps the integration proportionate rather than open-ended.

CMCS has delivered this combination in production. For a Saudi municipal client, we implemented PMWEB with Primavera P6 and ESRI GIS in a fully Arabic-language interface, providing project boundary geometry capture and editing, intersection and clash checking performed by drawing directly on the map, Shapefile and KML/KMZ import, an approval workflow operating on geospatial boundaries and details, and performance indicators for quality, health and safety, actual progress and financial progress rendered by department, by consultant and by contractor.

That last capability is worth pausing on. Performance indicators rendered spatially answer a question that no table answers: *is our delivery performance geographically uneven, and if so, where and why*. For a municipality, a development authority or a national programme, that is a governance question of the first order.



## Layer three: the site

The third layer addresses the residual weakness of any record-based system, which I raised in the article on real-time reporting.

A record reflects what someone entered. It is only as current and as accurate as the process that produced it. The entity managing by records alone is managing a representation of the project, and the representation can be wrong — through delay, through error, or occasionally through optimism.

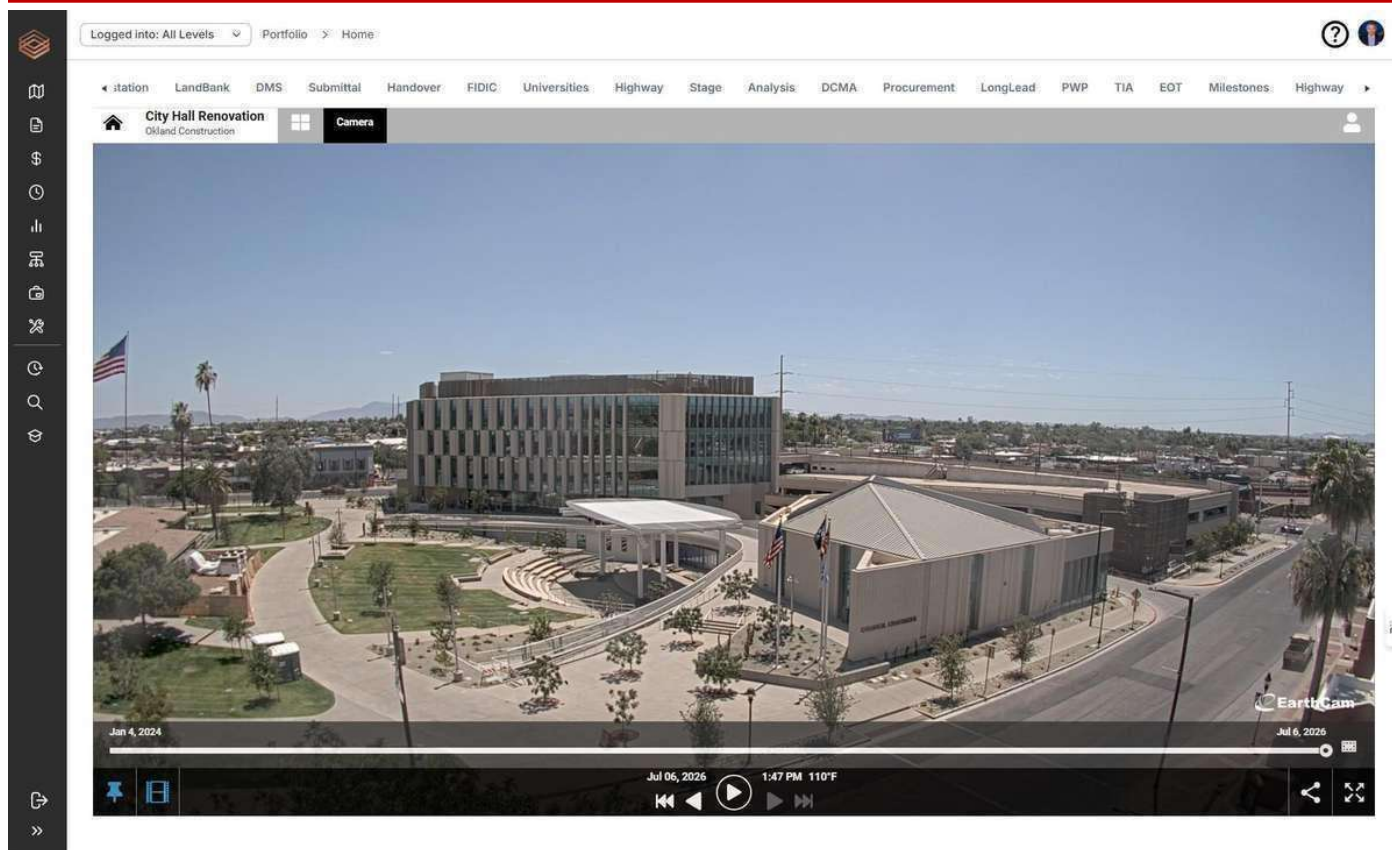
Construction site cameras close this gap. Fixed cameras providing continuous coverage of a work area, with time-lapse capture and archived history, give an entity direct observation of physical progress that is independent of what anyone has reported.

The value is not in watching. Nobody has time to watch. The value is in the ability to verify a specific assertion at a specific moment.

A contractor claims a structure was complete at the end of the month. The camera archive for that date settles the question in thirty seconds. A delay is attributed to weather on specific days. The archive shows conditions on those days. A claim asserts that access was obstructed for three weeks. The archive shows the access. A progress payment is certified against installed quantities. The imagery is available alongside the certification record.

When camera feeds and archives are linked to the project record in PMWEB, verification becomes part of the transaction rather than a separate investigation. The certifier reviewing a payment application can look at the site as it was on the date claimed. The reviewer assessing a delay notice can look at the conditions described.

This changes contractor behaviour before it changes anything else. Assertions that will be checked against imagery are made more carefully.



## What the three layers produce together

Take a single question and follow it through all three layers, because that is where the argument lands.

*Is the eastern district package going to deliver on time?*

The record layer shows the schedule position, the progress trend, the open change exposure, the approval backlog and the risk register. It says the forecast completion has slipped eleven days and the productivity trend is deteriorating.

The geographic layer shows that three of the six sub-packages in that district are adjacent to a utility diversion scheduled for the same period, and that a fourth sits on a corridor already congested with two other programmes' works. The productivity deterioration has a spatial explanation that no individual project team could see.

The site layer shows the actual condition of the work areas over the past six weeks, confirming that access constraints in two locations are real and not merely asserted.

Three layers, one question, an answer that is specific, evidenced and actionable — reached in minutes rather than in a fortnight of investigation.

That is the control tower. It is not a technology purchase. It is the accumulated consequence of having built the record layer properly, which is why every article in this series before this one was necessary.

## For the stakeholder

Entities across the Kingdom are describing control towers in their strategy documents. It is worth knowing how to distinguish one that exists from one that is planned.

Ask to see the portfolio on a map, and ask to open a project from it. Ask to see the same project's cost and schedule position. Ask to see the site on the date of the last certified payment.

An entity that can do all three in one sitting has a control tower. An entity that shows a dashboard assembled from a monthly export has a report with better graphics.

*Next in the series: the closing article — from option to obligation, and what an entity should do in the next one hundred and eighty days.*

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# From Option to Obligation: What to Do in the Next One Hundred and Eighty Days

*Where entities actually stand, what the next one hundred and eighty days should contain, and what each stakeholder should do next.*

Over eleven articles I have argued a single proposition from eleven directions. For a government, semi-government or PIF entity in the Kingdom delivering capital construction projects under an NPMO-aligned mandate, a Project Management Information System is not a tool that improves the Project Management Office. It is the mechanism by which the PMO exists as a governing function rather than as a reporting one.

This closing article is about what an entity does with that conclusion.

## The maturity question, answered honestly

Before deciding on a course of action, an entity should establish where it actually stands. Five questions are sufficient, and they should be answered by evidence rather than by intention.

**Can you state your committed position across the portfolio today, without asking anyone?** Not the budget. The committed position, including pending commitments.

**Can you produce the complete approval history of any transaction from the last quarter within one hour?**

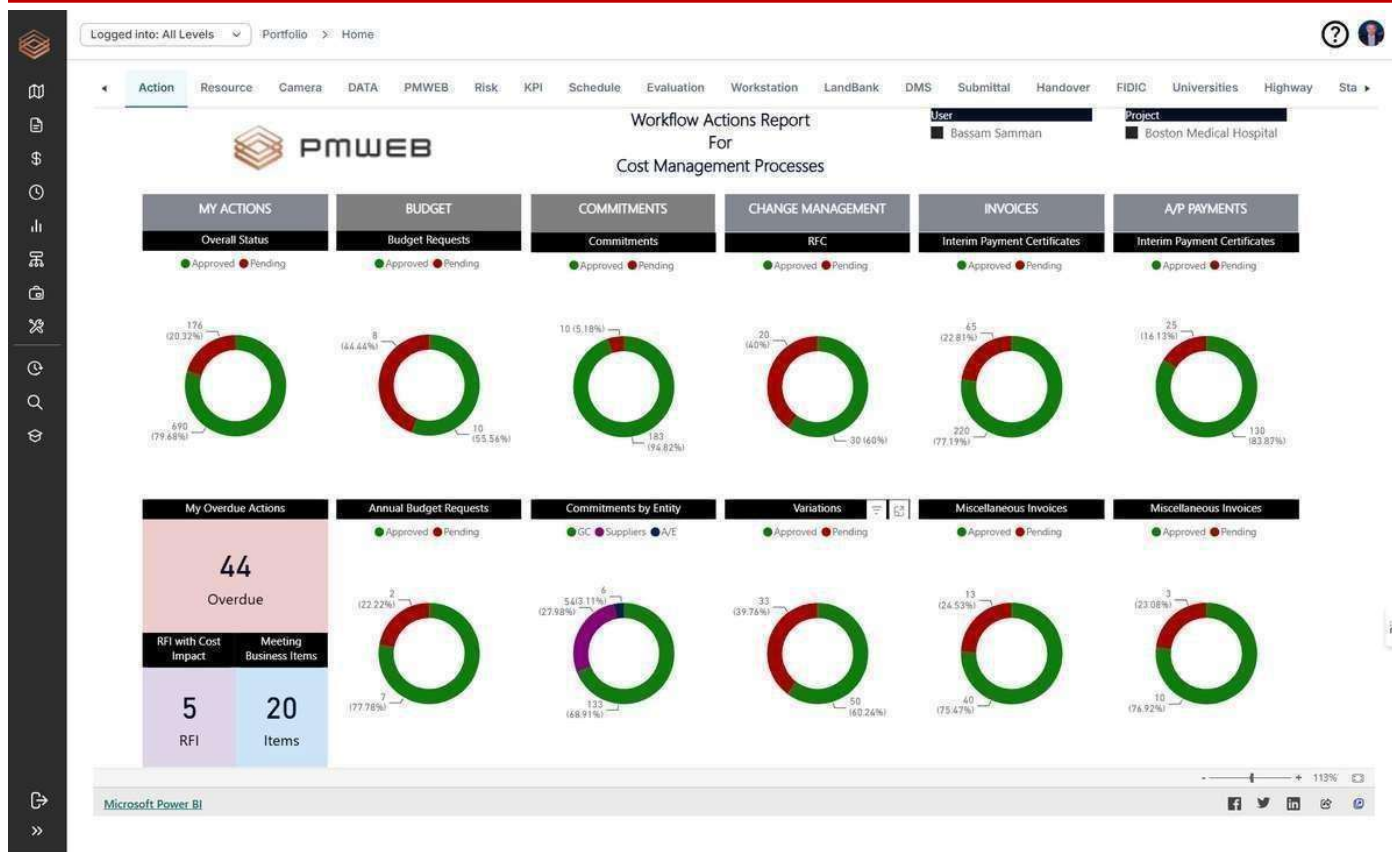
**Do your contractors and consultants transact in your system, or do they send you documents that your staff re-enter?**

**Is your reporting produced or queried?** If someone assembles it, it is produced.

**How much consistently structured project history do you hold, and in what system?**

An entity answering all five affirmatively has a functioning PMIS and should be reading this series as validation rather than as advice. An entity answering none of them has an intention rather than a capability, and the gap is larger than an IT project.

Most entities answer two or three, which is the normal and manageable position.



## A realistic sequence

The following is the sequence that works, based on implementations across the region. It is deliberately unambitious in its first phase, because the failure mode of PMIS implementation is scope, not technology.



**Days 1 to 30 — Decide what you are governing.** Not a software selection exercise. An agreement, at executive level, on which processes will be governed in the system in phase one, who owns each, and what the delegation of authority

actually is. Most entities discover during this month that their DOA contains ambiguities that have been resolved informally for years. Resolving them is the real work and it cannot be delegated to a vendor.

**Days 31 to 90 — Configure the high-volume processes.** Payment certification, change management, submittals, RFIs, correspondence, progress reporting. These six account for the overwhelming majority of transactions and disputes. Configure them properly, with the real approval routes, the real thresholds and the real forms. Resist the pressure to add the quarterly processes now.

**Days 91 to 120 — Pilot on live projects.** Not a test environment. Two or three real projects, chosen because they are active enough to generate volume, with real contractors transacting in the system. A pilot on a quiet project proves nothing.

**Days 121 to 150 — Fix what the pilot revealed, then extend.** Every pilot reveals process ambiguities and workflow errors. Fix them in configuration, which is a matter of days when the platform supports it. Then extend to the remainder of the active portfolio.

**Days 151 to 180 — Turn off the alternatives.** This is the step entities skip and it is the one that determines success. As long as a parallel path exists — the spreadsheet, the email approval, the manual certificate — a proportion of transactions will use it, the record will be incomplete, and the reporting will remain untrustworthy. The system becomes authoritative on the day the alternatives stop being acceptable, and not before.

Six months is enough for this. It is not enough for a full NPMO framework configuration, and entities that attempt that in the same window will finish neither.

## The five conditions for success

Across a large number of implementations, the ones that succeed share five characteristics and the ones that fail lack at least two.

**An executive sponsor who is present in month three.** Signature is not sponsorship. Month three is when the visibility becomes uncomfortable and someone senior has to say that the discomfort is the point.

**Configuration ownership inside the entity.** If every process change requires a vendor, process improvement stops within a year. The entity's own PMO staff must be able to configure forms, workflows and reports.

**External parties inside the system.** A PMIS holding only the entity's half of each process captures the half that was never in dispute.

**Phasing by volume, not by framework order.** Digitalize what happens a thousand times before what happens twice.

**A decision that the system is the record.** Not a copy of the record. The record.

## What each stakeholder should do next

**If you lead a PMO.** Run the five diagnostic questions above with your own team this month and write down the answers honestly. The result will tell you whether your next investment should be in process definition, in system implementation, or in enforcement of what you already have. All three are common answers and they lead to very different programmes.

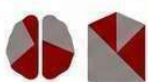
**If you sit on a board or an investment committee.** Ask the five questions of the entities you oversee, and treat the time taken to answer as part of the answer. Governance assurance that rests on reports which take four weeks to assemble is weaker than it appears.

**If you are a ministry or regulatory stakeholder.** The consistency of data across entities is a policy variable. Entities running structured PMIS platforms can be compared, aggregated and benchmarked. Entities running spreadsheets cannot, and no amount of reporting requirement will change that.

**If you are a contractor or consultant.** Working within an owner's PMIS is frequently perceived as an administrative imposition. In practice it is the strongest protection available to a delivery party, because it produces a joint contemporaneous record. The party with the better record wins the disagreement, and in an integrated system neither party has a worse one.

**If you are affected by these projects as a resident, a user or a future occupant.** The systems described in this series are the reason a stated completion date can be relied upon, a public budget can be accounted for, and a facility can be operated properly from the day it opens. They are not administrative overhead. They are the difference between a programme that delivers what it promised and one that explains why it did not.

## What Each Stakeholder Should Do Next



### **PMO Leaders: Run the Diagnostic**

Run the five diagnostic questions with your team and record the answers honestly.



### **Boards & Investment Committees: Interrogate Overseen Entities**

Ask the five questions; treat the time taken to answer as part of the answer.



### **Ministries & Regulators: Standardise Policy Variables**

Use structured PMIS data to compare and benchmark consistency across various entities.



### **Contractors & Consultants: Embrace the Joint Record**

An owner's PMIS provides your strongest protection through a joint contemporaneous record.



### **Residents & Users: Verify Reliability**

These systems ensure that stated completion dates and public budgets can be relied upon.

**For an entity delivering capital projects in the Kingdom today, a PMIS is not an option.**

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Gemini Notebook

## The closing argument

The Kingdom is delivering the largest concurrent capital programme in the world. The institutional frameworks to govern it — the PMO requirement, the NPMO process architecture, the accountability and transparency expectations — have been defined with unusual clarity.

What remains is execution, and execution at this scale is not achievable through documents, spreadsheets and monthly reports. It requires that the processes be executed inside systems that enforce them, capture the evidence, and make the resulting position visible in something close to real time.

That capability then becomes the foundation for everything that follows: the control tower that combines project records with geography and direct site observation, and the artificial intelligence layer that will only ever be as good as the data beneath it.

A Project Management Information System is where all of it starts. For an entity delivering capital projects in the Kingdom today, it is not an option. It is the condition of being able to do the job.

CMCS is the exclusive PMWEB Authorized Implementation Partner for the GCC and MENA region and PMWEB Partner of the Year 2025. We have implemented PMWEB for government, semi-government, PIF-affiliated and private capital delivery organisations across Saudi Arabia, the UAE, Qatar and Kuwait, including integrated PMWEB, Primavera P6 and ESRI GIS deployments in Arabic-language environments for Saudi public sector clients.

If your entity is establishing or maturing a PMO under an NPMO-aligned mandate, we run structured assessment workshops that produce a phased digitalization roadmap against your own process framework. Send me a message.

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### About the Author

**Bassam Samman, PMP, PSP, EVP, GPM** is the Chairman and Chief Executive Officer of CMCS FZ-LLC, the PMWEB Authorised Global Partner for the Gulf Cooperation Council and broader Middle East and North Africa region. CMCS holds the PMWEB Partner of the Year 2025 designation. The firm's client portfolio across UAE, Saudi Arabia, Qatar, Kuwait and India spans real-estate development, capital construction and government programmes, including ROSHN, DAMAC, Al-Futtaim, Saudi Downtown Company, Riyadh Development Company, Dubai Municipality, Dubai Aviation Engineering Projects, among many others.

Bassam has over four decades of experience providing project management, project controls services and project management information systems to more than two hundred capital projects with a combined value exceeding one hundred billion US dollars. He is the author of four published books on project management digitalisation, has lectured at more than three hundred and fifty international events and conferences, and has published over three hundred articles on project management and PMIS topics in international and regional publications. He is a co-founder of the Project Management Institute Arabian Gulf Chapter (PMI-AGC) and served on its board of directors for more than six years.

He holds a Master's degree in Engineering Administration (Construction Management), with Faculty Commendation, from George Washington University, Washington DC, and a Bachelor's degree in Civil Engineering from Kuwait University. He has completed executive management programmes at Harvard Business School and London Business School.

### About PMWEB

PMWEB is an enterprise-class, web-based capital construction project management platform trusted by organisations worldwide including Harvard University, the United Nations, and Atlanta Airport. Built on Microsoft .NET technology, PMWEB manages the entire project lifecycle within a single integrated platform — from portfolio planning and cost management through document control, procurement, scheduling, asset management, and business intelligence. With 150+ pre-configured SSRS reports, drag-and-drop dashboard design, multi-currency support, and open REST/SOAP API integration, PMWEB delivers enterprise capability with implementation timelines measured in months, not years.

### About CMCS

CMCS (Collaboration, Management and Control Solutions) is the regional PMWEB implementation partner for the GCC and MENA regions, awarded PMWEB Partner of the Year 2025. CMCS specialises in digital project management solutions for real estate developers, infrastructure owners, and construction companies across the Middle East and North Africa.

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