



INSTITUTE OF COMMISSIONING & ASSURANCE MONTHLY NEWSLETTER



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CEO's Message

By Paul Turner, P.Eng., PMP

Major capital projects represent some of the most ambitious undertakings in modern industry. They bring together vast financial investment, complex technologies, and the coordinated efforts of owners, EPC contractors, operators, suppliers, and regulators. When successful, these projects create the infrastructure and facilities that power economies, enable energy systems, and support communities around the world.

Yet despite the sophistication of modern project delivery, many projects still struggle to consistently achieve their intended operational outcomes. Cost overruns, schedule delays, and

facilities that fail to perform as intended remain persistent challenges across industries.

One of the reasons for this gap is that, historically, the industry has lacked a neutral, independent institution focused specifically on advancing the practices that ensure projects ultimately achieve the outcomes they were built to deliver.

The Institute of Commissioning and Assurance (ICxA) exists to fill that role.

ICxA is an independent, non-profit professional institute established to advance the body of knowledge, professional practices, and standards that support reliable project outcomes. As a non-profit organization, ICxA does not represent the commercial interests of any single company, service provider, or

technology vendor. Instead, it serves the broader industry by providing a neutral platform for collaboration, knowledge development, and professional advancement.

This independence is fundamental to the institute's purpose. Because ICxA operates without commercial bias, it is able to bring together professionals and organizations from across the project ecosystem - including owners, EPC contractors, operators, consultants, and technology providers - to collectively advance the practices that improve project delivery.

Independent professional institutes have historically played a critical role in advancing industries. Organizations such as engineering institutes, project management bodies, and asset management institutes have helped establish shared frameworks, professional standards, and bodies of knowledge that enable industries to evolve and improve over time. ICxA performs a similar function for the disciplines that ensure projects ultimately achieve operational success.

Through the development of professional standards, industry guidance, and global benchmarking initiatives such as the Outcome Assurance Index (OAI), ICxA provides a neutral foundation for advancing outcome-focused project delivery practices. These initiatives are designed to help organizations better understand their capabilities, identify potential risks to project outcomes, and continuously improve how projects transition from construction completion to reliable operational performance.

Equally important, ICxA provides a professional community where practitioners can share knowledge and contribute to the advancement of the discipline. The institute's

technical committees, research initiatives, and publications all contribute to strengthening the body of knowledge that supports the industry.

As the institute continues to grow, its mission remains clear: to serve the global project community by advancing independent standards, shared knowledge, and professional leadership focused on achieving reliable project outcomes.

The progress ICxA has made is the result of the many professionals and organizations that support the institute's work. Their participation helps ensure that the knowledge, standards, and practices developed through ICxA reflect the collective wisdom and experience of the industry.

Together, we are building a stronger foundation for delivering projects that not only reach completion but also achieve the outcomes they were intended to deliver.



Paul Turner
Founder & CEO
Institute of Commissioning & Assurance (ICxA)

“Cost overruns, schedule delays, and facilities that fail to perform as intended remain persistent challenges across industries.”

THE ANALOGY CORNER

Distilling key ICxA themes into clear, concise, and engaging perspectives

by Peter Foxley

Director of Governance and Policy
Integration, ICxA



Welcome to ICxA's Analogy Corner - where complex ideas in infrastructure performance are decoded through vivid analogies. Each month, we bridge technical detail with institutional vision, helping practitioners, policymakers, and the public see how governance can evolve into a licensed profession of public trust.

THE INTELLIGENCE WE DIDN'T KNOW WE HAD

There is a habit in infrastructure governance of looking for what went wrong in the systems, the processes, and the frameworks. Rarely do we look for what went wrong in the thinking.

I want to make the case this month that we have been looking in the wrong place.

What the craft siloes actually were

For most of the twentieth century, infrastructure organizations didn't govern through frameworks. They governed through people - specifically, through deep craft siloes. Civil engineers, mechanical fitters, electrical technicians, control specialists, operators, and maintainers. Each discipline held a distinct body of tacit knowledge, built over careers, refined through failure, sharpened by proximity to the asset.

These weren't just organisational units. They

weren't boxes on a structure chart.

They were the organization's original neural network.

Each craft acted like a specialised node: sensing different signals from the asset, interpreting them through its own worldview, applying heuristics shaped by decades of practice. Collectively, they formed a distributed cognitive system - not perfect, not integrated, but genuinely intelligent.

It could recognize when something was wrong. It could anticipate failure modes before they appeared in a report.

It made decisions grounded in direct experience rather than abstracted models.

This was the organisational brain that kept infrastructure safe, reliable, and resilient. We just never called it that.

What modernization quietly removed

As the sector digitized, outsourced, centralized, and standardized - driven by efficiency, cost, and the logic of specialization - we dismantled the craft siloes. And in doing so, we unintentionally



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THE ANALOGY CORNER CONT'D...

removed the cognitive architecture that once underpinned decision-making.

We kept the governance structures.
We kept the reporting lines.
We kept the assurance processes.

But we lost the intelligence that made those structures meaningful.

What remained was a hollowed-out governance structure - the shape of an organisational brain, without the cognitive substance that once filled it. Today, many organisations find themselves with governance frameworks that lack grounded insight, data that accumulates without interpretation, assurance that feels procedural rather than insightful, and risk registers that record risk without genuinely sensing it.

We modernized the machinery of governance. We didn't replace the intelligence that powered it.

Why is this the right diagnosis

I want to be precise about what I am and am not arguing here.

A colleague reviewing this article made a fair challenge: the industry never actually left siloes. He is right. The craft disciplines still exist. The tacit knowledge, the pattern recognition, the

hard-earned expertise - it is still there, in the market, carried by practitioners across the delivery ecosystem.

But here is the critical distinction. The siloes have not disappeared. They have migrated.

They used to sit inside the owning organisation - embedded in the institutional body that carried long-term accountability for the asset, close to the asset across its full lifecycle, accumulating memory that no contract could capture. Now they sit outside it. Fragmented across contractors, consultants, and supply chain partners, engaged project by project and then gone. The owning organisation no longer holds the intelligence. It has become dependent on an intelligence it can no longer independently verify - and in some sectors, no longer even recognises when it is being misled.

The consequence is exactly what that colleague also named: brute force and tribal knowledge to get projects across the line. That is what happens when there is no integrating intelligence inside the governance body. The delivery ecosystem substitutes energy and experience for architecture. It works, after a fashion. But it is not governance. And it is not an assurance.

So, this is not an argument for returning to siloes. It is an argument for returning

Distilling key ICxA themes into clear, concise, and engaging perspectives



THE ANALOGY CORNER CONT'D...

custody of intelligence to the organizations accountable for long-term outcomes.

We removed the nodes of intelligence from where they needed to be. We did not build a new architecture to replace them.

That gap is why things keep going wrong in ways that governance frameworks never seem to anticipate.

Asset failures. Cost overruns. Handovers that fall apart. Decisions are made too late, with too little understanding of what the asset is actually telling us.

We are not diagnosing symptoms. We are naming the root cause.

What the gap demands

The challenges facing modern infrastructure - complexity, interdependency, digital systems, climate pressures, regulatory scrutiny - demand more organizational intelligence, not less.

If the old crafts were the neural nodes, then what we need now is a new architecture: one that integrates lifecycle assurance, commissioning intelligence, operational sensing, outcome-based governance, and systems thinking into a coherent, professionalized discipline.

Not a framework. Not a platform. Not a

consultant engagement.

A discipline - with the credentials, the standards, and the independent accountability to match.

A closing thought

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THE ANALOGY CORNER CONT'D...

The craft siloes were never just an organisational design choice. They were the accumulated intelligence of people who understood their assets deeply, and who carried that understanding as professional responsibility. We dismantled them without realizing what we were dismantling. The question now is not whether we can afford to rebuild. It is whether we can afford not to.

We dismantled the craft siloes, but we never rebuilt the organizational brain that replaced them.

Modern governance has structure - but it has lost the intelligence spine that once made decisions trustworthy.

CONTRIBUTE TO THE GLOBAL OUTCOME ASSURANCE BENCHMARK



For the first time, the Institute of Commissioning and Assurance (ICxA) is establishing an independent global baseline for Outcome Assurance capability across major project organizations.

This international research initiative spans sectors, regions, and project types.

Organisations selected to participate receive their confidential Outcome Assurance Index (OAI) Score, providing an independent reference point reflecting their position relative to the Outcome Assurance Standards, the emerging global benchmark, as well as peer organisations.

Participation contributes to advancing professional standards and improving project outcome reliability worldwide.

PARTICIPATION IN THE INITIAL BENCHMARK COHORT IS CURRENTLY UNDERWAY. TO LEARN MORE AND PARTICIPATE IN THIS RESEARCH INITIATIVE, PLEASE VISIT:

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COGNITIVE LOAD AND HUMAN ERROR DURING FAT/SAT

*by Manoj Segamoney,
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Commissioning is, in my experience, one of the most mentally demanding phases of a project.

It is inherently high stress, as you are responsible for getting machines and systems working as designed, often against immovable deadlines and under the direct gaze of clients and management. On top of that, you are typically away from home, living out of a suitcase, with disrupted routines and support networks.

That background stress is always there, and it quietly eats into your capacity to concentrate, think clearly, and make sound decisions.

Cognitive load becomes a real issue when the technical reality on site does not match what was promised on paper.

I have repeatedly seen designs that were never fully finished, integrated, or tested prior to being shipped, with an unspoken assumption that “commissioning will sort it out on site.”

In those situations, the commissioning team is not just executing test scripts; they are debugging incomplete designs, negotiating scope gaps, and reverse engineering intent while the clock is ticking.

Every missing detail, undocumented feature,

or late change adds another item to the mental stack the engineer has to juggle.

Under these conditions, working memory takes a beating.

You might be tracking multiple alarms, monitoring live trends, remembering temporary workarounds, and fielding questions from construction teams and the client, all at once.

It is very easy to forget a step, misread a tag, or overlook a small but important anomaly. I have felt that moment where your head is full, someone asks a simple question, and you realize you have no spare bandwidth left to think.

That is exactly where human error sneaks in, not because people are careless, but because the mental load has quietly exceeded what any person can reliably handle.

Over time, I have learned that treating this as a purely “personal resilience” issue is a mistake.

While individual coping strategies matter, like sleep, nutrition, and saying no to yet another late-night tweak, the real leverage comes from how we design and manage the work.

Clear, well-structured procedures and checklists dramatically reduce the need to hold every detail in your head.

Insisting on checklists for critical tests is not bureaucracy, it is an external memory aid that frees people to focus on judgment rather than recalling the next step.

Good preparation is important.

When designs are properly reviewed, integrated, and bench tested before anything leaves the factory, the on-site cognitive load drops sharply.

Fewer surprises mean fewer ad hoc decisions under pressure.

Where that is not possible, we should push for realistic planning, like extra time for troubleshooting, defining clear boundaries on scope, and honest communication about what is genuinely ready.

This helps prevent the all too common trap where every unresolved design issue is casually pushed into the commissioning window.

Talking openly about cognitive load within the team makes a difference.

When people have permission to say "I'm at my limit" or "We need to pause and regroup," it becomes easier to catch errors before they spread.

Commissioning will probably never be a low-stress activity, but by recognising the mental demands and deliberately designing how we

work, we can make Factory Acceptance Tests (FAT) and Site Acceptance Tests (SAT) more robust, safer, and far more sustainable for the people doing the work.

"While individual coping strategies matter, like sleep, nutrition, saying no to yet another late night tweak, the real leverage comes from how we design and manage the work."



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THE END OF DELIVERY-BASED PROJECT MODELS

by Paul Turner, CEO | ICxA

For decades, projects have been defined - and determined to be successful or not - based strictly on delivery. On time, on budget, and scope complete are the metrics used to determine whether or not a project is successful.

These metrics are clear and easy to define in contracts, and widely understood by all project stakeholders. They have shaped how projects are planned, executed, and reported across all industries.

But a different reality has emerged over time. A reality that shows delivery is not enough. Projects are far too complex and interconnected for delivery-based models to handle.

Projects are delivered, but outcomes are not achieved. Assets are handed over that do not perform as intended. Systems are complete, but not fully integrated. Operations inherit unstable systems that are a nightmare to operate and maintain, with elevated risk and underperforming assets.

The project is considered successful by delivery standards (on-time and on-budget), but the outcome is nowhere near the original intention.

This is not an isolated issue that occurs on a few projects. This is a systemic condition that

is deep-rooted in the industry. This common occurrence reflects a fundamental limitation in delivery-based project models.

Delivery-based project models measure completion.

Outcome-based delivery models measure system performance.

These are not equivalent, not even close.

A project can satisfy every delivery metric defined in contracts and still fail to achieve its intended function, reliability, or value.

The industry has optimized for what is measurable and assignable, but what

ultimately matters - whether the asset performs as required in operation - has

remained poorly defined and inconsistently assured for decades.

The industry has not plateaued, it has never matured.

Between project delivery and project outcome, there is a gap that is never really addressed - the unspoken part of projects where assets magically transition to provide value.

This gap encompasses system-level integration, operational readiness, and

performance verification under real-world conditions - where the rubber hits the road.

This transitional time is often compressed into the final stages of a project (with less time than originally planned), distributed across multiple parties (all with their own individual objectives), or deferred into operations for operators to address issues.

In many cases, this transition is assumed rather than intentionally verified with evidence.

This produces predictable results - the same occurs on all projects in all industries all over the world.

Projects reach completion, but outcomes remain uncertain, unverified, and unstable.

Delivery-based models are still the predominant model for projects not because they ensure success, but because they provide structure (and because that's the way it's always been done).

Delivery-based models align with contractual frameworks, establish clear milestones, and allow responsibility to be assigned for completion.

However, they do not assign responsibility for project outcomes.

Typically, no single role on projects is accountable for ensuring that the project, as a whole, will achieve its intended performance once delivered – no group is assigned accountability – right from the start – to assure that the project achieves its intended outcome.

This absence of outcome accountability is the root cause of recurring underperformance across capital projects. Full stop.

A different model is clearly required. Not a different delivery-based model (progressive design-build, early contractor involvement, etc), those are just variations of the same delivery-based models proven to miss outcomes. Also, we don't need a model that just adds layers of oversight to delivery.

What we need is a model that reframes the project objective itself.

Outcome Assurance introduces a shift from measuring completion to validating readiness for performance. Progress is no longer defined solely by what has been built, but by the degree of confidence that the intended outcome will be achieved, as well as evaluating the risk to the project outcome throughout the project lifecycle.

Outcome-based projects require that, at each stage of the lifecycle, there is sufficient evidence to demonstrate that the next stage will be successful – not wishful thinking, but

evidence that proves it.

Outcome-based delivery, defined by Outcome Assurance, requires that systems are not only complete, but proven to function together as one intentional plant process or energy system - that operational readiness is established before transfer of control, not after.

Most importantly, it requires that the outcome is treated as the primary reference point and objective for all project decisions, rather than an assumed result of installation.

This mindset shift demands clear accountability.

Outcome-based models assign responsibility for verifying that the project is capable of achieving its intended performance. This is not a redistribution of existing roles, but the establishment of a distinct authority









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responsible for outcome validation and authorization.

As projects increase in complexity, integration, and scale, the limitations of delivery-based models become more pronounced – delivery-based models simply do not scale with project size and complexity. The cost of outcome failure rises, and with it, the consequences of relying on completion as a proxy for success just do not work. What was once manageable on smaller projects through experience and intervention becomes increasingly difficult (or impossible) to control as complexity and size increase.

The transition away from delivery-based models to outcome-based models is therefore not a matter of preference, it is a project necessity. Delivery will remain essential, but it

will no longer define success. Success will be determined by whether the asset performs as intended, reliably and consistently, without dependence on late-stage heroic leadership to fix broken projects. This is a tough lesson to learn, as people transition from smaller projects to bigger projects – what worked to complete smaller projects won't scale to larger projects, and a new mindset must be learned. The industry has spent decades refining delivery, and assuming that we need better delivery to improve project performance. That hasn't worked, and the next phase will be defined by the ability to assure project outcomes with Outcome Assurance.

The question is no longer whether a project has been delivered on-time and on-budget. It is whether a project will perform as intended when it was originally funded.



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