

INDUSTRIAL COMMISSIONING ASSOCIATION MONTHLY NEWSLETTER

For commissioning professionals working on
industrial plant processes and energy system projects



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CEO MESSAGE

By Paul Turner, P.Eng., PMP

Happy Holidays, I hope you enjoyed the break. This is a rare time of year when projects slow down, the email volume decreases just a bit, and everyone gets to enjoy time with friends and family. Projects start up again very quickly, and it's back to the fast pace of projects for another exciting year of building great things!

At the Industrial Commissioning Association, we've got lots of exciting initiatives that we're working on to help you achieve commissioning excellence in 2025:

- Release of the ICA Global Commissioning Standard – this will be the first international

standard for commissioning, that sets the gold-standard for commissioning excellence on projects, and is available for everyone to use. No more guessing about what takes place for commissioning during early project stages. Finally a standardized approach to commissioning to help people move from one project to another. No more confusion on the terminology to use so that everyone is speaking the same language. And finally a tool to help everyone working on projects understand what commissioning is really all about. The standard is in its final stages of development and review, and members of the Industrial Commissioning Association will be the first to know when it is released.

- Meetup Series – The Industrial Commissioning Association will be hosting a series of live virtual meetups to introduce the new standard. Participants will be able to

become familiar with the standard and see how it can help them on projects for more efficient planning and execution of projects. This will help commissioning professionals become familiar with the standard and understand how to implement these industry best-practices for improved project performance and achieve the pinnacle of commissioning success. Watch for the invite to this series, you won't want to miss any part, so you can see how to apply all aspects of the standard to your projects for the most efficient commissioning of projects.

- Release of our prestigious companion training programs - for commissioning professionals to gain the tribal knowledge of commissioning excellence.

With these intermediate and advanced planning strategies for commissioning, you are in complete command of your project outcome. You are able to start with the end in mind, and determine your project success before it even starts. Follow these advanced commissioning strategies, and there is no longer a reason for late and over-budget projects.

The Industrial Commissioning Association is looking forward to helping you transform your project commissioning and take you and your projects to the highest levels of commissioning excellence! We're happy to have you part of our commissioning community, and looking forward to your success with commissioning in 2025!

Paul Turner, P.Eng, PMP

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TRANSFORMING INFRASTRUCTURE PERFORMANCE

- ADAPTIVE PLANNING AND INTEGRATED COMMISSIONING OF SOCIO-ECONOMIC INFRASTRUCTURE PROJECTS

by Peter Foxley

*ALIM Systems | Chapter Lead UK -
Industrial Commissioning Association*

The McKinsey & Company August 2024 report, "Delivering on Construction Productivity is No Longer Optional," highlights that the construction industry, with an annual spending of \$13 trillion, is the world's largest industry and is projected to escalate to \$22 trillion by 2040. To meet this demand, the construction industry needs to double by 2040.

For over 30 years, the UK has struggled to improve productivity, repeatedly failing to deliver critical infrastructure projects on time and within budget. Recent high-profile

examples such as HS2, Crossrail, and Hinkley Point C plainly illustrate the ongoing challenges.

The staggering costs of these failures have sparked a wave of politically driven initiatives to reform the architecture, engineering, construction, and operations (AECO) industry. These efforts highlight our persistent inability to integrate information and knowledge across the project lifecycle and to bridge the divides between stakeholders, fragmented project management, design, construction teams, and essential professional services.

As a result, we have witnessed significant financial losses, inefficiencies, and waste within the world's largest value creation ecosystem. This has led to the politically charged conclusion that the traditional transactional delivery model for critical infrastructure projects is fundamentally flawed.

The effective management of complex infrastructure systems, whether critical or not, hinges on two major components:

- The design, construction, and maintenance of the physical asset.
- Core information about the asset's purpose, composition, interaction of its electro-



***"For over 30 years, the UK
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infrastructure projects on
time and within budget"***

mechanical and automated parts, intended outcomes, optimal maintenance, and continuous improvement.

The delivery ecosystem understandably focuses on the first component, given its visibility and greater capital cost during the project execution phase. However, the second component often gets neglected until its absence becomes glaringly problematic, usually late in the commissioning process. At this point, rushed and limited remedies are implemented, leading to inefficiencies, waste, and frustration throughout the asset's lifecycle.

Since the early 1990s, project management has followed a 'prescriptive' construction-led approach, rooted in our historical achievements—buildings, roads, rail formations, tunnels, viaducts, and bridges. This tried-and-tested methodology relies on institutional best practices and judgmental decision-making to effectively manage both simple and complicated tasks.

The introduction of the ISO 19650 information management series in 2019 sparked a flood of innovative Building Information Modelling (BIM) technologies, advanced data management systems, and specialised point solutions across various organisations. This has significantly elevated standards, practices, and standalone technology approaches. McKinsey reports that \$50 billion was invested

in AECO technology between 2020 and 2022, marking an 85% increase compared to the previous three years.

Despite these advancements, it has become evident that technology focused solely on the design and construction phases fails to meet the global socio-economic and climate objectives required to transform infrastructure performance. Therefore, we must prioritize core information and knowledge as the foundation of asset lifecycle models, enabling evidence-based decisions to navigate and master complexity.

Achieving this necessitates a paradigm shift: an innovative adaptive planning and integrated commissioning solution that seamlessly combines flexible planning with coordinated commissioning processes. Founded on an information management framework, it transcends the executive sponsor-driven concept development phase and transforms the management and execution of large, complex projects.

Concept:

Adaptive Planning: involves continuously adjusting the project plan based on real-time data, evolving design, and new information. This approach ensures that the project remains on track despite changes and uncertainties. Adaptive planning is crucial for complex projects where a fixed scope of work, cost, and timeline may not be practical.

Integrated Commissioning: This aspect focuses on coordinating all systems and components of the



project to ensure they work together effectively. Commissioning includes testing, verification, and validation processes that confirm each stage of the project meets the required standards and performs as expected.

Importance:

Flexibility and Responsiveness: By using adaptive planning, project teams can respond swiftly to changes and mitigate risks effectively.

Seamless Integration: Collaborative and cooperative commissioning ensures that all project components are aligned and function together smoothly. This alignment is crucial for the successful operation of complex systems.

Enhanced Efficiency: Combining these approaches improves productivity during project execution, reducing delays and cost overruns.

Improved Quality: Rigorous commissioning processes help maintain high standards and ensure the final outputs and resulting outcomes meet or exceed expectations.

Adaptive planning and integrated commissioning solutions unite the executive sponsor and delivery team from the very outset of critical industrial projects. This systematic and holistic approach tackles the inherent complexity and scale of such infrastructure programs, ensuring a dynamic and coordinated commissioning strategy that sets projects up for lifecycle success.



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ICA Global Commissioning Standard, Procurement Best-Practices, Lessons Learned Repositories, To Complete Commissioning as Efficiently as Possible

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QUALITY DATA LEADS TO QUALITY DECISIONS

by Paul Turner, P.Eng., PMP

Data is how we make decisions, and decisions are arguably the most important thing we do on projects. The sequence of decisions we make determine the success of projects, whether we make the right decisions that leads to success, or the wrong decisions that lead us to expensive mistakes to fix later during commissioning. This constant stream of decisions, and the quality of the decisions we

make on projects, will determine project success.

This means having an intelligent infrastructure system for gathering, collecting, analyzing, and displaying information is a priority for all projects. Systems that make access to quality information easy are essential, so we are not forced to make decisions based on gut-feelings alone.

Some project teams are running an Excel empire – they've built tracking spreadsheets that create the "allusion" of a data system, but are only scratching the surface with the bare-minimum of information. The reason that people use Excel spreadsheets is because they're incredibly flexible, they can change, and there is not a huge investment.

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The downside is they can be broken very easily. They're hard to organize. You have to update them manually, and this is not an efficient use of data. Using Excel spreadsheets becomes a constraint on projects, and a lot of project teams don't even know they are suffering from this bottleneck.

This data deficiency is understandable – projects can be hectic, and most people will typically prioritize doing almost anything else rather than taking time to upgrade and maintain their data systems. Projects are busy, and there is a long list of higher priorities rather than improving data systems on projects. Besides, projects are typically a one-time effort – why would you want to go through the effort of setting up better data systems, when the project will end in a few years anyways...

However, the risks on projects are just too great not to invest in better data management systems. There is just so much data generated on projects these days, and you need a system to sort through all this data, analyze it in real-time, and push high-quality data to you so you can make fully informed high-quality decisions. It's the only way to be able to keep

up with projects, avoid delays, and make data-based decisions on projects, rather than just relying on your gut. The vast majority of decisions being made on projects are just being made by gut-feelings. And it doesn't matter how good you think your gut is, it's not going to be better than data.

Many project teams realized that they can't just keep chicken scratch notes all around their office trailer and think that's somehow going to result in having good data to make good decisions for projects. They're investing in the best data systems they can get to make project completion as efficient as possible, and so they can make informed decisions to avoid project failure.

But many other project teams do not have high-quality data for commissioning. They either don't have data in general, or the data that they do have is not correct. And when they don't have any confidence in the data that they do have, this is just as bad. Basically, many project teams can't use data on projects to make decisions, and instead make decisions based on people's opinions or their own incentives they want to achieve on projects, which may or may not align with delivering



“There is just so much data generated on projects these days, and you need a system to sort through all this data, analyze it in real-time, and push high-quality data to you so you can make fully informed high-quality decisions.”

high quality systems during commissioning.

If you're still tracking commissioning using Excel spreadsheets, then it's safe to assume that you are making the vast majority of decisions based on intuition and not data. Because if you were making all your decisions based on data, then you would have good data systems and good reporting, which an Excel spreadsheet is just not capable to provide.

There are over 25 different CMS Software systems available on the market to help you manage your commissioning data. Some are more powerful than others, and some are tailored for specific industries to manage specific commissioning workflows. Choose the right CMS software to give you high-quality data, and you'll be in a much better decision to

make high-quality decisions on your projects

TLDR on this process

#1. It is OK to have an Excel empire in the beginning, but overtime you will need to transition because data is going to be one of the biggest constraints of your projects, and probably quickly depending on the size of projects.

#2. Invest in the proper data systems at the start of projects, because there won't be a time later to catch up. The data systems to choose from are all listed in the member's area of the Industrial Commissioning Association. Become a member here: <https://icxa.net/join>



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COMMISSIONING MANAGER

BREAKING BARRIERS: LESSONS LEARNED FROM REMOTE COMMISSIONING

*By Amer Atieh, Commissioning
Manager*

Most project execution challenges require creative solutions. I was working on a project that experienced unexpected disruptions due to conflict in the area. The project consisted in the commissioning of a specialized production line – a once-in-a-lifetime experience. But because the project was taking place in a war-torn area, we were required to implement some unique remote commissioning scenarios in order to keep the project moving forward. This was a challenging and rewarding experience that taught me the importance of technology, teamwork, and adaptability, and these skills will be very useful for other projects in the future.

The Challenge

In 2015, we needed the specialized production line to be engineered, procured, and then constructed, working with an internationally recognized supplier. As construction neared completion, regional conflict made it impossible for the supplier's experts to be on site for the critical commissioning phase. Considering the huge investments so far on the project, and also considering the very specialized requirements for dynamic commissioning (which was not available locally), the only valid option to keep the project moving was to figure out a way to complete commissioning remotely. This was certainly not ideal, but we had to be creative.

Despite war being a contract clause for force majeure, we still needed to make progress on the project.

This was definitely a unique challenge I had not experienced on a project before, but I was working with an amazing team that was up for the challenge.

The Implementation

Success of this remote commissioning effort depended upon the synergy between the two closely-knit teams. While the contractor was unable to travel to site, we did have the owner's engineers and technicians on site to perform testing. We quickly devised a plan for the on-site team and off-site remote experts to work together to continue progress.

The Onsite Team

Under the contractor's direction, the owner's on-site team was able to perform pre-commissioning and commissioning activities. Check sheets were provided by the contractor for execution on site. If the on-site team ran into any challenges or had questions, the contractor's remote team was available to support by phone or by video-call, and while this wasn't as efficient as having everyone on-site, this arrangement actually worked really well to complete the necessary steps of our commissioning process. The detailed results gathered in check sheets were reviewed by the contractor, and any issues were identified and addressed remotely. This kept the project moving toward readiness for further commissioning stages.

The Remote Team

Supplier specialists, including automation, mechanical, and process engineers, walked

the onsite team through complex hot-testing sequences. In the role of "eyes and hands" on-site, the onsite team carried out detailed instructions under remote supervision, which optimized safety and efficiency.

Infrastructure Enhancements:

Strategically placed remote workstations at control points, such as in the control room, at each of the PLC cabinets as they were being tested, at each of the MCC lineups, and at the HMI stations, allowed for easy interaction with the control systems to make adjustments of parameters and set up programs by the remote team. With these mobile workstations, we were able to keep the remote team informed of testing taking place, and allow them to guide the on-site team on tests to conduct. A full-time remote station coordinator for this mobile setup, who was an automation engineer with strong technical, communication, and English language skills, facilitated smooth interactions between the on-site team and remote team to minimize miscommunications.

Challenges and Solutions:

Of course, there were many challenges with this situation, but we were able to implement solutions for each challenge we encountered.

Connectivity Issues:

The remote location of the project and tight timelines made for unstable temporary network connections because cables were laid in haste without proper infrastructure. In the future, I would consider putting resiliency into the communication network, with a backup system such as options for wireless redundancy, since any downtime in

connectivity immediately halted progress.

Communication Barriers:

Language differences and total dependence on text and voice-related communication made misinterpretation problematic. For complex technical jobs such as commissioning, where misaligned understanding of objectives quite often cause delays and rework, the details matter, and we needed to pay special attention to communications to ensure everyone had a clear understanding. In order to overcome this, all the instructions were thoroughly scrutinized and cross-checked by both the on-site team (owner representatives) and remote team (supplier experts) for clarity and precision. Illustration tools, annotated drawings, and detailed diagrams were used extensively to pictorially describe the objectives of tasks, which reduced ambiguity and enhanced understanding across language barriers.

Media Sharing and Documentation:

File size limited the resolution of media shared for remote assessment. Our network



connection was bandwidth limited, and we needed to make the best use of the connection we had, given the circumstances. Cloud platforms with better data transfers and secure storage should be engaged if this situation rise again in the future to ensure shared data does not compromise on quality.

Cybersecurity Risks:

Increased data exchanges, with increased remote access by many personnel, heightened vulnerabilities. Robust cybersecurity protocols with encrypted communications, firewalls, user access controls, and audits should be put in place to safeguard sensitive data and networks.

First Startup Challenges:

The Operations Team of the owner was highly challenged on the first startup – They had never done this before for such a sophisticated system, with detailed instructions and guidance being received remotely from the supplier experts. Miscommunication and delays in decision-making further aggravated the situation. But this is all we could do given the circumstances. Onsite operator pre-startup training could have certainly been more comprehensive, prior to proceeding with the actual startup activities, with more detailed step-by-step procedural guides to reduce reliance on real-time instructions.

Scheduling Delays:

Planning and troubleshooting took longer in this remote coordination situation. A more complete introduction of structured workflows such as outlined in the ICA Global Commissioning Standard certainly would have been beneficial, making use of more advanced

scheduling tools, and taking advantage of new technologies such as AR for efficiency optimization and reduction of project duration.

Lessons Learned:

While certainly a challenging experience, I did learn a lot by undertaking commissioning remotely.

Preparedness is Key:

Strong pre-planning, including secure IT infrastructure and reliable communication tools, is necessary for remote commissioning – even more than would be typically done for on-site commissioning activities. The extra layer of coordination required between on-site and remote teams adds another level of complexity that requires precise planning in advance.



The advertisement for BlueRithm Commissioning Management Software features a woman in a yellow safety vest and white hard hat holding a tablet, standing in an industrial setting. The text is arranged in a clean, modern layout with a dark background and white text.

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Trust and Training:

Empowerment of onsite teams through comprehensive training made for accurate execution under remote guidance. We can always have done more, but the steps we took were beneficial to help prepare the on-site team for what to expect during commissioning and startup tasks.

The Power of Redundancy:

Verification of instructions to confirm accuracy and the use of redundancy in systems reduced expensive mistakes. Since the on-site team did not necessarily have the experience to deal with unexpected issues in real-time, more detailed instructions as well as extra levels of redundancy helped them address issues much quicker.

Adaptability and Innovation:

Flexibility and embracing new technologies made progress possible under severe constraints. Without some of the network connectivity or collaboration tools that did not exist 10 years ago, we would not have been able to continue project progress in this situation.

Unlocking the Potential:

Augmented Reality (AR): One thing we could have used more on the project was Augmented Reality (AR). While we were not able to make use of this technology, this would have provided real time guidance to the on-site team, with overlaid instructions to guide the team on the systems at site.

Annotated live video feed for quicker troubleshooting:

There are some new and innovative technologies that would have helped us as well, such as annotated live video. This is essentially a video call, with real-time annotations overlaid in an AR environment to provide direction to the on-site team. As AR tools become more accessible, they stand to enhance collaboration, reduce risks, and make remote commissioning much more accessible to the industry.

Recommendations for Future Projects:

Now I cannot recommend that remote commissioning should be the default method to plan for all commissioning activities on projects, but it can be a useful scenario in certain situations.

Remote commissioning is definitely a tool to consider given the resource constraints in the industry, making access to experts more challenging. As the project workload continues to rise, and the challenges with finding experienced commissioning experts, remote commissioning can give you access to the skillsets you need to complete projects.

These are my recommendations when considering remote commissioning on your projects:

- **Strategy of Communications:** Establish clear protocols for languages, tools, and information sharing. Ensure that seamless communication channels are in place, and how these remote communication channels will be used to facilitate exchange, not hinder it.

- **Exploiting New Technologies:** Make use of AR and sophisticated tools to enhance efficiency. These technologies can certainly be intimidating when first being implemented, but we must leverage these new technologies to increase productivity and get the industry expertise applied to projects to maximize efficiency.
- **Focus on Cybersecurity:** There will always be bad actors in the world trying to disrupt and interfere with major capital infrastructure, especially in warzones. Impose strong security measures in the early stages of the project to prevent disruptions.
- **Team Empowerment:** When working in this remote situation, you are relying entirely on your team to apply their skillsets to projects. Both onsite (owner representatives) and remote (supplier experts) teams need training for confident and accurate collaboration.
- **Implement Risk Mitigation:** Include in the project risk assessment various scenarios that would force a shift to remote commissioning; make sure backup plans, alternative tools, and resources are prepared for seamless transitions.
- **Adopt Media-Sharing Solutions:** Invest in secure, cloud-based platforms for efficient and smooth sharing of high-quality data and media.
- **Improve Operator Readiness:** Onsite operations teams need training and simulation to prepare for remote-first environments with minimal reliance on real-time guidance. HMI simulators are essential to prepare operators for the normal and abnormal operating scenarios they will encounter, and become familiar with the automation systems to help them manage the facilities.

Summary

As I mentioned, this was a challenging and rewarding project to work on. I'm extremely proud of the team I was able to work with in such a difficult situation. We were still able to deliver results for the project.

With the innovative potential of remote commissioning, not only for situations like this one that forces remote commissioning, but also for regular project situations, using these methods as a tool can certainly help all sorts of projects get the work done.

I encourage you to see how remote commissioning can help you and your projects navigate uncertainty and achieve success with confidence.

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