

INDUSTRIAL COMMISSIONING ASSOCIATION MONTHLY NEWSLETTER

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



INSIDE

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**ICxA Global Commissioning Standard
Revolutionizing Commissioning
Incorporate Commissioning Into
Your Early Project Planning**

CEO MESSAGE

By Paul Turner, P.Eng., PMP

The ICA Global Commissioning Standard is now available for download! You can get a copy of the standard in the ICxA Member's Area. Log in and get access to the standard now. If you're not already a member, join for free and get access to this new and modern commissioning standard. If you are still referencing a commissioning standard written before the iPhone was invented, then it's time for an upgrade, a lot has changed since then. The ICA Global Commissioning Standard is a new modern standard for today's integrated and most challenging projects, incorporating the latest software systems to manage commissioning, and the lowest risk approach when developing your

project delivery strategy.

How can you use the ICA Global Commissioning Standard?

- Use it as a tool when discussing with your project management team, for why projects need early commissioning involvement, and to help them see how the right commissioning strategy from the start saves time and money on projects.
- Use the standard to understand best-practices when systematizing your project.
- Use the standard to make the transition from area-based construction to systems-based commissioning as smooth as possible.
- Use the standard to build out new commissioning processes for your team if you're setting up a new department.
- Use the standard as a teaching tool to help

others on your project understand the commissioning phases & handover model.

- Use the standard to justify upgrading your CMS software tools to improve project efficiency.
- Use the standard to align construction and commissioning groups.
- Use the standard to help engineering groups start with the end in mind.
- Use the standard to finally see what commissioning is really all about.
- Release of our prestigious companion training programs - for commissioning professionals to gain the tribal knowledge of commissioning excellence.

There are lots of ways you can use the ICA Global Commissioning Standard to help you and your projects.

How was the standard developed?

The ICA Global Commissioning Standard was developed by a team of industry experts, packing all their lessons-learned and best-practices into this set of documents.

There are over 200 years of combined commissioning expertise jammed into this standard, from oil & gas expertise, power industry expertise, renewable energy systems, water and wastewater treatment best-practices, mining, chemical processing, and many more.

Decades of lessons learned and best-practices are outlined in this industry-leading approach to commissioning, so you don't have to make the same expensive mistakes on your projects.

We begin with the end in mind.

At Novus, we understand that effective Systems Completions (SC) and CSU (Commissioning, Start-Up) planning at the project's start is key to avoiding rework, overruns, and delays.

Our experience shows that the final 5% of project execution can be the most challenging and costly. Early engagement sets projects up for a smoother start and more efficient production.



Why is this standard available at no cost?

Commissioning is not a well understood discipline on projects. Yet it is the most complex and most critical process on projects if you want to deliver high quality systems on-time and on-budget. The Industrial Commissioning Association is making this standard available to everyone working on projects at no cost, so everyone has access to this information to understand how to successfully complete projects. No more excuses for late and over-budget projects, OK?

Why is standardization important for commissioning?

Since there has been no commissioning standard available for industrial plant process and energy system projects, each company has had to develop their own processes for commissioning. This has led to a very disjointed industry, where each project and each company takes a different approach to commissioning. Individuals moving from one project to the other have to re-invent the wheel each time, to learn new vocabulary, and learn new workflows specific to each project. This makes it very difficult for people to transition between projects, and very difficult to build up a common understanding of commissioning best-practices. The construction/commissioning industry has suffered because of this.

We've got a lot of projects to build for electrification of our infrastructure, global climate change initiatives, and for our growing technological infrastructure. The construction industry is forecast to almost double from \$13 Trillion annual spending to \$22 Trillion in annual spending by 2040, and we must do better as an industry if we are to accomplish

such huge initiatives. A standardized and common understanding of what commissioning is really all about is the first step to improve project performance.

Most other industries have developed standards and have benefited from the productivity gains that come along with standardization. But the construction/commissioning industry has lagged behind and has not been able to improve project performance. This standard is a step in the right direction to help projects become more efficient.

The ICA Global Commissioning Standard aims to help project teams establish proven methods for commissioning, and for existing project teams to migrate over time to a standardized approach to commissioning.

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What does the ICA Global Commissioning Standard Include?

The figure below is from the ICA Global Commissioning Standard, and is the basis for each of the 9 documents that make up the standard.

There are 9 documents that make up the standard to define the commissioning process:

- ICA-001 Phases of the Commissioning Process
- ICA-002 Terminology
- ICA-003 Roles & Responsibilities
- ICA-004 Commissioning Strategy & Planning
- ICA-005 Commissioning Engineering, Manufacturing, and Construction Completions
- ICA-006 On-Site Testing
- ICA-007 Handover, In-Service, Closeout
- ICA-008 Safety & Risk Management
- ICA-009 Lessons Learned & Continuous Improvement

If you are new to commissioning, get a copy of this standard to see what commissioning is really all about.

If you’re experienced with commissioning, get a copy of this standard to see how your commissioning processes line up with these industry-leading processes.

If you’re part of the project management team, get a copy of this standard to see how to integrate commissioning best-practices into all stages of your projects.

If you’re part of the operational team receiving new plant facilities, get a copy of the standard and ask your project group what they are doing to implement this standard.

If you have any role on projects, from the project controls group, to project leadership, to technicians doing the testing, to engineering groups incorporating commissioning into designs, to construction groups planning completions to align with commissioning – you need a copy of this standard to see how your role leads to project success during commissioning, so you can

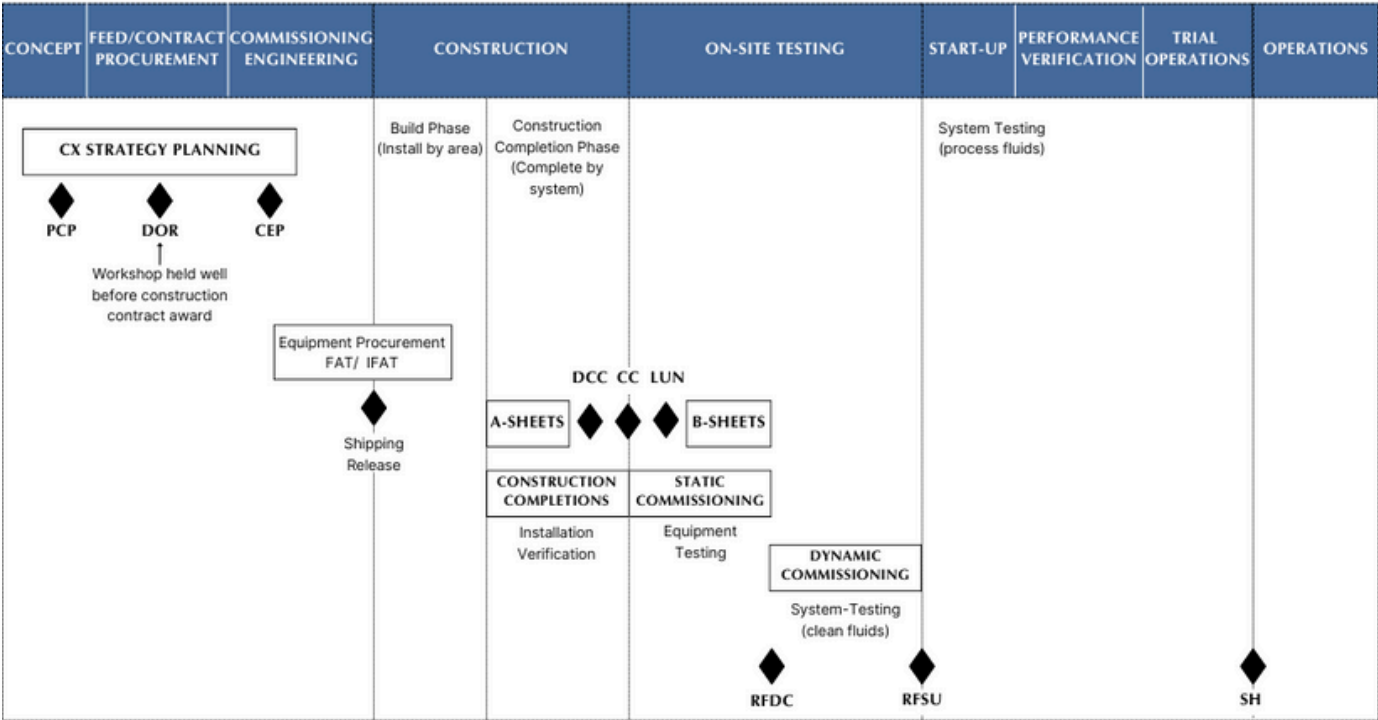


Figure 1 Commissioning Phases & Handover Model

implement best-practices on your projects to save time and money.

What Makes the ICA Global Commissioning Standard Different?

In ICA-002 Terminology, there are several terms that are being retired and no longer used to define part of the commissioning process. For example, the term “commissioning” on its own is not very helpful and causes confusion – this term on its own gets mixed up with testing, gets mixed up with a stage of testing, when it really is meant as the commissioning process. For this reason, the term commissioning is being retired.

Another example is the term pre-commissioning. Ask 10 people what pre-commissioning refers to and you’ll get 10 different answers. It’s no wonder commissioning is not a well understood discipline, when the industry itself can’t even agree on what pre-commissioning is. So the term pre-commissioning is being retired as well, and replace with more modern terminology.

Get your copy of the standard and see all the terminology that is being retired, so we all have a common understanding of the commissioning language and can all have clearer communication.

This standard doesn’t take anything for granted as “the way it’s always been done”. This standard pushes the envelope and rethinks a more modern approach to commissioning.

Why Do You Need this Standard?

All of the commissioning folks you speak with

will all tell you that commissioning involvement is required earlier in projects. But can you believe that up until now, there has been no standard that defines what takes place at the beginning of projects for commissioning? It’s no wonder it’s difficult to get project management buy-in for early commissioning involvement, when commissioning is so misunderstood, and they certainly don’t “test” at the beginning of projects.

The ICA Global Commissioning Standard covers the entire commissioning process, starting right from the beginning of projects during conceptual and FEED stages, all the way through to handover of the project to operations. No more confusion on what takes place during early commissioning involvement, since there is now a standard that is widely available to everyone that defines the complete commissioning process.

Thank You

Thanks to everyone that poured their commissioning expertise into this standard. I’m please to make this standard available to the commissioning industry. I’ve had a lot of success in my career and worked on some amazing projects, and I want you to have the same success on your projects.

Go get a copy of the standard and start applying it to your projects today. If you need any help implementing the standard, we’ve got tools, training, and resources to help you achieve commissioning excellence faster on your projects!

Paul Turner, P.Eng, PMP

ICXA GLOBAL COMMISSIONING STANDARD: ELEVATING ISO 19650 PRACTICES

by Peter Foxley

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

Around the globe, we've seen the widespread advocacy for the implementation of building information modelling (BIM) Execution Plans for civil engineering contracts under the ISO 19650 series. These plans are particularly prevalent in high-cost and highly visible components of major infrastructure projects, such as roads, bridges, railways, tunnels, and buildings. They effectively outline the strategies and processes for delivering the contract requirements.

The BIM Execution Plan (BEP) outlines the processes, workflows, and protocols to be followed in order to meet the project's

information requirements objectives, primarily focusing on the design and construction phases. This ensures that the area-based physical outputs align with the contract obligations in a timely and cost-efficient manner, providing a clear roadmap for managing information, collaboration, and quality control throughout the project lifecycle.

While we have extensive guidance on adopting the BEP for high-cost capital civil engineering contracts under the **ISO 19650 series**, there is relatively little direction and counsel on applying this approach to contracts comprising **electro-mechanical and automated industrial systems**. This gap highlights the urgent need for more tailored guidance and best practices for complex projects within a highly regulated environment.

Transforming the Built Environment Landscape

The Industrial Commissioning Association's (ICxA) Global Commissioning Standard is revolutionizing how complex projects are set up for success. A crucial element of this standard is the paradigm shift towards establishing **Commissioning Execution Plans** (CEP) from the outset, which profoundly impacts how we develop, select, and source capital infrastructure projects.



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Rooted in a principles-based framework for information management, the CEP harnesses core information, knowledge, and knowhow (referred to as intellectual capital).

The CEP serves as a comprehensive living document, outlining the strategy, processes, roles, responsibilities, and protocols for managing information at every stage of the FEED (Front End Engineering Design) and project implementation phases. This systems-based lifecycle approach navigates and overcomes the complexities of developing social, economic, and natural systems through evidence-based decision making, thereby elevating the ISO 19650 series beyond its current linear design and construction BIM focus.

At its heart, the intellectual capital digital thread ensures the seamless integration, leveraging, and preservation of essential expertise and best practices throughout the project lifecycle. The ICxA CEP approach cultivates collaboration, sharpens insights, and fuels innovation, significantly enhancing the overall net worth of critical electro-mechanical and automated systems within the built environment.

What do we do to make this happen?

Utilizing the ISO 19650 series to integrate the Commissioning Execution Plan (CEP) into an EPC's (Engineering, Procurement, and Construction) contractual obligations is a

strategic and foundational step-change.

The ISO 19650 series, provides a standardised framework for managing information throughout the lifecycle of a built asset, ensuring consistency, collaboration, and efficiency.

By embedding the CEP into the contractual obligations, you ensure that all parties are aligned with the information management processes and best practices outlined in the ISO 19650 standards. This alignment not only enhances project execution but also promotes transparency and accountability, reducing errors and wastage, and ultimately improving project outcomes.

Bringing the CEP to life

Through ensuring all stakeholders understand **what** needs to be done to achieve the desired outcomes, as defined by the Project Business Case, the CEP provides further details on **how** the social, economic, and environmental objectives and goals will be attained. The ICxA Global Commissioning Standard offers guidance to enable the following key steps:

Define the CEP Requirements: Clearly outline the organization's objectives, scope, and deliverables of the CEP in alignment with ISO 19650 standards. This includes core information management processes, roles and responsibilities, and intellectual capital integration.

Incorporate into Contract Documents: Include the CEP as a mandatory part of the contract documents. Ensure that all parties involved in

the project are aware of and agree to adhere to the CEP.

Specify Compliance with ISO 19650: Clearly state that the project must comply with ISO 19650 standards for information management.

This ensures that the CEP aligns with internationally recognized best practices.

Detail Information Management Protocols: Provide detailed protocols for managing and exchanging information throughout the project lifecycle, including data collection, change-control, storage, sharing, and security measures.

Assign Responsibilities: Clearly define the responsibilities of each party in relation to the CEP and ISO 19650 compliance. This includes who is responsible for maintaining the intellectual capital digital thread and ensuring continuous improvement.

Monitor and Enforce Compliance: Establish mechanisms for monitoring compliance with the CEP and ISO 19650 standards. This may include regular audits, reviews, and reporting requirements.

Include Penalties for Non-Compliance: Specify penalties or consequences for failing to comply with the CEP and ISO 19650 standards. This ensures that all parties take their obligations seriously.

By following these steps, you can effectively integrate the CEP with ISO 19650 protocols into contractual commitments, ensuring a structured and efficient approach to information management across the entire value creation ecosystem.

The ICxA Global Commissioning Standard raises the bar for the ISO 19650 series by integrating the executive investment sponsor with the project execution team from the concept development stage of industrial infrastructure systems.

This comprehensive and holistic lifecycle approach addresses the complexities and scale of major socio-economic and environmental capital programs. It forges a dynamic and coordinated pathway to commissioning excellence, laying the foundation for project success and realising unparalleled value.

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REVOLUTIONIZING COMMISSIONING: THE ROLE OF 3D MODELING IN INDUSTRIAL MEGAPROJECTS

by Paul Turner, P.Eng., PMP

A robust commissioning process is your digital thread connecting early engineering design details to asset management systems used for the life of the new facilities. Without digitalized commissioning processes, project teams are left with unorganized and redundant PDF documents and reports, making it difficult for ongoing operation and maintenance of the new facilities.

Software systems used for mechanical, electrical, and control systems designs, such as 3D modelling systems, are your data source to supply high quality engineering data, and this data integrity must be maintained through all stages of projects.

The goal is to connect high-quality engineering data with asset management systems by implementing robust construction completions and commissioning data management systems for seamless and reliable operation for several decades.

What is 3D Modeling in Commissioning?

We've all heard of 3D modelling used for quite some time for detailed engineering and design activities.

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3D modelling has been used for clash detection and design validation for a while. When 3D CAD systems are used properly, there should be no reason that your cable tray is planned to be installed in the same location as your HVAC ductwork.

But how is 3D modelling used for commissioning?

One of the main functions of a well-defined commissioning process is to facilitate the transition from area-based construction to systems-based completions, as defined in the ICA Commissioning Phases & Handover Model.

When approximately 60% to 70% of construction activities are complete, the build phase transitions to the construction completions phase, where installations are completed by systems.

This transition takes a lot of planning, and 3D modelling with high-quality engineering data makes this transition much smoother.

Projects are complex, and there are a lot of moving parts. On the surface, it may seem straight forward to determine subsystems and systems for completion.

But when one small component gets missed, it causes costly delays later.

When systematization takes place within 3D software systems, everything is accounted for. Nothing gets missed. Every tagged piece of equipment is itemized and prioritized and sequenced within your construction completion and commissioning workflows. Systematization in 3D software systems sets the stage for high-quality data to be used in the field for completions and commissioning.

What data is being managed?

A common misconception is that the commissioning data to be managed consists of checklists, procedures, documents, and reports - and that all these documents can be managed within a document control system. The data to be managed are the reports to be sent back and forth between the various groups working on the project. While document control is certainly important, this is only one part of the dataset required for commissioning.

Equally important is the digital data representation of the equipment and systems that make up the project.



“Systematization in 3D software systems sets the stage for high-quality data to be used in the field for completions and commissioning.”

This consists of the equipment tag numbers, the information deliverables associated with each tag ID (O&M manuals, etc), and the subsystem/system definition of how the project is broken up into manageable functional portions of work for completions and commissioning. This digital data is the digital twin representation of the real-world assets in the field, digitally modelled and tracked in software to complete projects using a systems-based approach.

The data being managed for completions and commissioning is much more than a set of PDF documents. The data being managed is the high-quality data produced from engineering design groups, supplemented with real-world operational data for a complete dataset deliverable to operations groups at the end of projects.

What is the Digital Thread?

The quality of data can degrade as projects progress without robust commissioning systems and processes. High-quality data produced from 3D models during detailed engineering processes can get lost during the project if project teams resort to paper and spreadsheets to manage commissioning. The concept of the digital thread is to maintain high-quality data through all stages of projects, with traceability and accountability from beginning to end, in order to deliver high-quality data that can be used in asset management information systems once projects are complete.

When the digital thread is maintained, all phases of projects, and groups responsible to operate and maintain the new facilities once



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the project is complete, benefit from high-quality data that is easy to use and easy to find, making everyone's jobs easier and more efficient.

Key Applications of 3D Modeling and Data Management in Commissioning

Any project with multiple mechanical, electrical, and automation systems can quickly get lost during commissioning, with multiple systems at various stages of completion through commissioning workflows, and thousands of punch items to determine when each needs to be complete. Completing projects becomes much easier with an upfront definition of how the project will be completed when systems are being designed in 3D systems.

- **Systematization and Segregation:** Structuring systems for commissioning while being designed in 3D modelling software sets the stage for smooth handovers are each staged gate of your commissioning process, with high-quality digital information accompanying each system definition - this digital thread ensures traceability of data from design to operation.
- **Simulation and Testing:** Sophisticated "virtual commissioning" scenarios become possible when high-fidelity models of systems are created to allow real-time data inputs, to verify functionality and integration before equipment is even installed in the field. PLC logic can be integrated and verified in advance of on-site testing, significantly reducing delays due to troubleshooting in the field.
- **Operator Training:** It is becoming more common to use software simulated HMI controls enriched with data from asset management systems for immersive,

scenario-based training, to prepare operators for operation of complex plant processes, and to support a software handover at the in-service date with teams ready for on-going operation and maintenance of the new facilities.

Benefits of Integrating 3D Modeling and Data Management

Plant process and energy system projects are a data-rich environment, and we must gather and use this data to our advantage to make commissioning more efficient. This data-rich environment is a best-use case for the emerging AI systems, since there is too much information for any one person to comprehend on a daily basis. By starting with high-quality data from 3D modelling information created during detailed engineering and design, and leveraging AI systems to manage all the data generated on projects, we can start to make sense of the information overload, and have systems push the data to us, rather than have to search for the information needed on a daily basis to make informed decisions.

- **Enhanced Accuracy and Traceability:** When the high-quality digital thread is maintained from the beginning to end of projects, project teams can get to the level of precision required to deliver high-quality systems that can be used for decades of reliable operation. When an issue is encountered in any stage of projects, the data exists for traceability right back to the root cause, incorporating lessons learned and continuous improvement along every step of the way for improved project performance each time.
- **Improved Collaboration Across Stakeholders:** Centralizing data in digital models to ensure all teams—engineering,

commissioning, and operations—have access to the same information and are aligned. This is more than just dumping all your PDF document files into a share repository. Digital models represent each project system, with all data centralized where is needed. With a 3D model of systems, the information you need is organized by system, information is at your fingertips, rather than having to search a document database trying to find what you need.

- **Risk Reduction:** When information flows more easily, it becomes much easier to be proactive, rather than continually chase issues. We've all had many days, weeks, or months of constant fire-fighting. But when project teams leverage data-driven 3D model simulations, they are able to easily predict and prevent issues in advance, and

reduce or even avoid constant fire-fighting of daily issues.

- **Streamlined Documentation:** A 3D model representation of project assets automatically generates and links documentation. For example, when commissioning test results or compliance reports are generated, these are automatically linked to the commissioning plan/procedure, linked to the tagged piece of equipment, all within the 3D model. Nothing gets lost, and everything is in the place it should be for easy reference.
- **Operational Readiness:** 3D modelling systems in a data-rich environment enable smoother transitions to asset management systems, giving plant operators everything they need for easy access to information on a daily basis.



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Challenges and Considerations

Now these data management systems do not come without their challenges. Project teams are often hesitant to implement more sophisticated data management systems because of these reasons.

- **Quality of Data:** Garbage-in, garbage out, right? This common saying definitely applies in this case. Without the upfront effort to have high-quality data produced in 3D modelling systems during detailed engineering design, then these systems are not much use. The cost and time required for implementing 3D modeling and robust data management systems can be intimidating to project teams. And when projects only last 3-5 years, some project teams don't think it's worth the effort. But without robust data management systems, project timelines can easily double, or worse, the entire project fails to achieve its original objectives. If a second or third project follows the original project effort to establish robust data management systems, that's when enormous efficiencies are achieved as lessons learned from past projects are incorporated for continuous improvement.
- **Data Integration:** There is a lot of data produced on projects, and it can seem challenging to ensure seamless connectivity between 3D models, engineering data, commissioning management systems, and asset management platforms. But with a robust digital data management strategy, data doesn't get lost, and all information flows between all stages of projects. Construction completions and commissioning becomes much easier when integrated with engineering data.
- **Model Accuracy and Updates:** Keeping

the digital thread unbroken as the project evolves, including handling late-stage changes, can be challenging. When time and cost pressure increase at the end of projects, it can be tempting to break the digital thread just to get things done. Keeping models intact, updated, and accurate becomes everyone's responsibility to maintain the digital thread.

- **Cybersecurity:** While protecting sensitive engineering and asset data used to be challenging in the past, today's modern server systems utilize the most sophisticated security algorithms. The big data companies like Amazon AWS, Google, and Microsoft, with teams of thousands of people, have implemented advanced cryptography to protect cloud-based data systems. While you may still hear of smaller systems being compromised, these big data companies are at the leading edge of data security.

Future of 3D Modeling, Data Management, and Commissioning

The current systems being used are only the beginning – with advances in AI, it's hard to predict how quickly things will change in the short term and in the long term.

- **Emerging Technologies:** AI Agents are coming. How will this change the construction and commissioning industry? It seems like 2025 is the year to declare the end of old/outdated methods for data management. The integration of AI, and digital twins for real-time commissioning insights, is clearly the way of the future. Will project teams still be using paper and spreadsheets to manage their data in 5 years from now? Or will companies still using legacy methods still be around in a

few years?

- **Sustainability:** We have a lot of projects to build in the next few decades to accomplish our global objectives – with climate change initiatives, electrification of our infrastructure, clean energy, and much more. The role of data-driven modeling in green commissioning and operational efficiency will clearly be part of the solution to accomplish these goals.
- **Unified Digital Ecosystems:** The goal is to advance the digital thread to ensure that data from commissioning seamlessly transitions into long-term asset management and operational systems. And this is only possible with an upfront effort to establish high-quality data during detailed engineering design.

Conclusion

3D modeling and advanced data management

are revolutionizing the commissioning process, transforming it into a streamlined, efficient, and data-driven practice.

By maintaining a robust digital thread, projects can connect high-quality engineering data through every stage—design, commissioning, and long-term operations—ensuring traceability, accuracy, and seamless transitions.

The projects industry must embrace these integrated technologies to achieve better outcomes, meet future sustainability goals, and remain competitive in a rapidly evolving landscape.

Now is the time to implement these practices and future-proof commissioning strategies, setting the stage for a smarter, more connected, and resilient project ecosystem.



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INCORPORATE COMMISSIONING INTO YOUR EARLY PROJECT PLANNING

by Paul Turner, P.Eng., PMP

When you talk to commissioning folks, every one of them will tell you that commissioning must be involved early in projects.

But what does this actually mean? Why do projects need to plan for commissioning so early?

- Is it just a bunch of meetings to talk about testing that will take place in 3 years?
- Is early commissioning involvement just creating a bunch of unnecessary work and slowing down project progress?
- Are commissioning folks just looking for more work, and want to be involved during more of the project?

Surprisingly, there has been no publicly available standard or guideline that defines what is required for commissioning during project concept and FEED stages. And it's no wonder that project teams are hesitant to start planning for commissioning early when it's not clear what needs to be done at the beginning of projects. There certainly is no testing at the beginning of projects, so what's going on with commissioning so early?

When I speak to most people on projects, their to-do list is very long, and commissioning is at the very bottom of the list. They've got a lot of higher-priority items to focus on, such as creating design specifications, awarding

contracts, and getting construction started. When there is so much to do on projects, it's natural for people to focus on the highest-priority activities – they never get time to focus on commissioning that's taking place in 2 years from now.

But early commissioning planning is actually not that difficult. At early stages of projects, the important aspect to consider is commissioning strategy. It may be clear to some people what needs to be done for commissioning, but not everyone has this same understanding of commissioning. So it's important to define your commissioning strategy in your Project Commissioning Plan. This is the strategy document to complete during project concept stages or during FEED that defines the big-block elements of how your project will be completed at the end. Your PCP commissioning strategy document defines “what” needs to be done for commissioning. This can be determined in the early stages of projects, and does not get into the detailed planning at the equipment tag level quite yet. Your commissioning strategy will actually confirm if what you're planning during preliminary design planning can actually be accomplished during testing at the end.

Only once there are sufficient engineering design details available can you start to define your Commissioning Execution Plan. This is the document that defines “how” to complete testing in more detail, and is written later in detailed design or early construction phases, once sufficient design details are available to fully define the details of on-site testing.

This is how you integrate early commissioning planning into your projects – with your PCP to define your commissioning strategy early in projects and your CEP to define the next level

of details for commissioning once sufficient design details are available. These 2 documents are critical to defining your commissioning success, and helping everyone working on projects understand what success looks like during commissioning, to allow all projects groups to start with the end in mind and focus on the end goal of successful commissioning and startup to meet project in-service dates.

These 2 planning documents are easy to create. They are each defined in the ICA Global Commissioning Standard, to define the contents of each of these documents. You can then also download the templates for each of these documents, so you can easily get started with each. The Industrial Commissioning Association wants to make it as easy as possible for you to include commissioning early in your projects, and we're giving you all the tools to make it easy for you.

Because if you're only focused on awarding contracts at the beginning of your projects, or only focused on engineering design, or only focused on design and construction, then you're only looking at the project tasks to complete, and not focused on the project outcome. Instead of focusing on the tasks and actions, focus on the outcome of the project, which is to deliver high-quality systems that can be used for decades of reliable operation. The only way to do this is to involve commissioning in the early project planning phases in conjunction with design and construction planning, so that 3 phases of projects are planned in conjunction for improved project integration.

The steps are simple to include commissioning planning in projects right from the start:

- **Step 1** – Download the ICA Global Commissioning Standard, it includes all

the tasks to complete for early commissioning planning.

- **Step 2** – Download the associated PCP and CEP document templates, so you know exactly what to include in each document.
- **Step 3** – Engage someone knowledgeable with commissioning to help plan and prepare your PCP and CEP – someone who's been involved in commissioning of the type of project you're working on right to the end, who has the experience to see what worked well, and what didn't work well. This person will be able to apply the lessons learned of past projects into your PCP and CEP, so that your project can avoid the same mistakes.

With these 3 steps, you've done the best you can to "Start with the end in mind" and focus on the outcome of your project and not just the tasks along the way to finishing.

I recently noticed a post on LinkedIn from the UK National Infrastructure Commission – lately, they signed off 150 development consent orders for new infrastructure projects. And when they signed off to initiate these projects, they highlighted the need to *"jump start the lethargic planning system currently in place for projects"*. This is a clear indication that projects need improved project planning for better success. And not just improved planning for design and construction – commissioning must be included in early project planning as well, if all stages of projects are to succeed.

Get access the ICA Global Commissioning Standard that defines the contents of your PCP and CEP, then download the document templates for each of these. Prepare these documents on your projects, and you're well on your way to plan for commissioning success, starting right at the beginning of projects.