

Successful Project Delivery- It's Common Sense

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In his blog [‘Net ZERO 2050 – Is it achievable or at risk?’](#) John Fotherby referred to modern tools, processes, and practices that, together, if used properly, can greatly assist project delivery teams to radically improve performance, but which are not being used universally on Engineering Construction projects.

Constructing Excellence (CE) and the European Construction Institute (ECI) will be hosting monthly on-line events throughout 2023 - [Energy Transition Revolution – Powering the New Age of Project Delivery](#). In these events, since Engineering Construction will remain engaged in conventional industrial projects as well as becoming more involved in Energy Transition projects, we will be considering both aspects with the aim of identifying what is effective delivery for conventional projects that can be applied to energy transition projects and what is needed to deliver energy transition projects that is new and innovative and can be applied to conventional projects.

ECI Active Principles

Foremost, the Common Sense mentioned on the title, although appearing obvious, can be portrayed in the eight ECI Active Principles:

- Effective Project Concept and Definition
- Effective Project Team Management
- Effective Supply Chain Relationships
- Effective Information Management and Communication
- Effective Project Risk Management
- Effective Innovation and Continuous Improvement
- Effective Project Execution

These principles are taken to be so obvious that they are often forgotten at the beginning of projects, resulting in waste and, eventually, extra costs. This is amplified in new projects characterized by an execution speed, the implications of which can no longer be considered included in the broad concept of a “fast-track project”.

Further, the engagement and onboarding of different actors are different requiring a collaborative contracting scheme, but which has yet to become mainstream because much of the industry remains wedded to and constrained by traditional contracting solutions.

Collaborative working and contracting certainly fits well with the minimum three ECI Active Principles:

- Effective Supply Chain Relationships
- Effective Information Management and Communication
- Effective Project Execution

Project Concept and Definition, as well as project Team Management are two upstream directly connected Active Principles that will also be discussed in the forthcoming Energy Transition Revolution – Powering the New Age of Project Delivery on-line events.

Collaboration necessarily works with modern project management tools, and which in some cases may be applied differently by Owners, EPC Contractors and Construction Contractors, but with same working process base.

Now let's think about some of tools, processes and practices that are often not utilised – Lean Construction, BIM, Standardisation, Modularisation, Factory Thinking and Off-site manufacturing, 4 / 5/ 6 D Planning, Design for Manufacturing and Assembly (DfMA), Early Contractor Involvement, Artificial Intelligence (AI), Collaborative Working, Procuring for Value, Collaborative Contracting, Digitalisation, Advanced Work Packaging (AWP) etc. What have all of these got in common? They are primarily a common-sense approach to effective project delivery. Many of these will be addressed in the Energy Transition Revolution on-line events through case studies, exchange of experiences and input from practitioners and specialists.

In this paper we are addressing just three of these and which, individually, demonstrably contribute to improved project performance and delivery but when used collectively they enhance performance very significantly - digitalisation, collaborative working and AWP.

AWP is most effective when utilised in a highly digitalised and collaborative project environment. Together they represent a powerful process that can contribute significantly to project management capability and performance in driving successful projects, as enlightened organisations across various industry sectors have experienced.

However, AWP is very often misunderstood, even in North America where it is becoming institutionalised in owner and contractor organisations engaged in Engineering Construction projects, and which limits its appeal and utilisation. It is first and foremost a common-sense-based project management process and is not confined to projects' construction phase.

Further, AWP is misrepresented by myths. Let's consider just three.

AWP can only be used on large, complex Oil & Gas projects- *not true*

Since AWP implementation has been a game-changer on large, well-known, complex mega Oil & Gas projects, it comes as no surprise that AWP utilisation is often assumed to be confined to such projects.

However, the fact is that AWP has expanded into and has been successfully used in other diverse sectors of the global Engineering Construction Industry, such as Mining, Minerals & Metals and Infrastructure, and including projects under USD 100m. Scalable AWP is about implementing it without compromising the seven core AWP principles that drive project performance improvement;

1. Project scope: what does it include and what is excluded?
2. Project contracting strategy: who will do Engineering/ Procurement/ Fabrication/ Construction?
3. Path of Construction: path of the project, how will it be built?
4. Work breakdown: how will the work be organized and managed?
5. Project Resource Requirements: such as: documents, materials, equipment, labour...

6. Satisfying Project Resource Requirements: how to determine readiness prior execution?
7. Monitoring and management: how will construction be progressed and managed including turnover, commissioning, and start-up?

These principles are common sense and apply universally to all projects, whether or not they are labelled as AWP. Actual project practices are often not so different to AWP processes which provide structure to what many project teams have been doing intuitively (most of the time) across multiple business sectors.

AWP can be tailored to fit projects of all types, sizes and all levels of complexity.

So - where next? Achieving Energy Transition and Net-zero emissions by 2050 will require an extraordinary level of engineering and construction activity to be sustained for the next 28 years. This will require nothing short of transformation of the global energy system, and the capital projects sector will face unprecedented challenges in speed, predictability, technology, capacity, and safety & environment. AWP, in conjunction with digitalisation and collaborative working, tackles these challenges and can help project teams to optimise the delivery of Energy Transition projects.

AWP can only be implemented if a 3D Model is available, and expensive software is required – *not true*

Firstly, AWP is project delivery process, not a software. For it to be an effective solution, project teams must understand the AWP processes and the benefits that these can deliver in terms of effective and successful project execution from engineering through the various stages to plant start-up and beyond. Hardware and software are tools – not solutions.

There are a variety of competing work packaging tools in the market, offered by technology providers, many of them based on 3D Models - “a picture is worth a thousand words”. These are promoted in presentations and videos showcasing a 3D Model from which workplace planners can produce packages by dragging & dropping. Therefore, the common misinformed assumptions are “without a 3D Model, let’s not include AWP for this project” or, “there is a 3D Model available, hence let’s implement AWP, but it’s too expensive for this project”.

Adhering to the AWP principles by applying the appropriate AWP processes can, in principle, be implemented without any tools. However, in today’s data-heavy project environment it is not possible to manage the volume of information efficiently and effectively without appropriate data management systems. Such tools must be suitable for the work processes and scope.

Most of the data required for work packaging is authored in non-3D model systems. Visualisation (3D,4D,5D...) can still be achieved by linking external data sources to 3D Models.

The costs of AWP outweigh the benefits – *not true*

The cost of implementing AWP should not be the primary question. The global Engineering Construction industry has a legacy of capital projects costing significantly more than the commitment budget and delivered substantially later than the planned start up and operation date. Therefore, the primary question should be – what value can AWP add in terms of assuring that delivery times and costs are kept under control and forecast outturn project results throughout delivery are realistic and sustainable?

Studies undertaken by CII reveal;

- 25 % improvement in field productivity,
- 12% manpower efficiency increase
- 10% better than planned schedule

In addition, there is improved time on tools, effective constraint management, timely decision making, and improved safety and quality. Advanced Work Packaging is creating the conditions in which projects can spot ‘minor’ problems long before they manifest as ‘major’ failures.

Of course, such significant improvements cannot be achieved without investment. Therefore, the question must be what is the ROI? Lack of clarity in this respect makes the cost to implement become a barrier. But don't let the cost to implement to become a barrier. There is plenty of material already available to help you with your AWP journey, like RT-365 AWP Concierge, review case studies that include implementation costs and monetize AWP benefits; many of these, have been developed by Construction Industry Institute (CII), as well as other industry experts.

CII has also developed a ROI tool to help projects identify AWP implementation level and estimate the expected benefits related to the project scope; there are a few actions that can be taken to bring clarity to the AWP cost/ benefits, such as:

- Identify specific components of AWP related cost for the project scope and understanding AWP scalability potential.
- Determine fit-for-purpose AWP application for a project scope and provide training on cost-effective implementation.
- Carefully evaluate using automation tools to improve data management efficiency for a project.
- Deploy AWP in phases, such as selecting smaller scopes to begin the AWP journey and then scale up slowly.

There is a common misunderstanding that the above benefits can only be achieved under direct hire construction contracts, and that AWP implementation under Construction Management Scope / Sub-Contracting Unit Rate Contracts has no benefits in terms of direct labour savings to the EPCm Contractor and Client. This limited view ignores the benefits for the project which delivers a win-win for all stakeholders.

Engineering Construction needs to re-think principles and consider how we can deploy the capabilities we have and build new ones to defend our competitive position while meeting industry demands. Boosting project performance by using effective processes such as AWP, can help us to win the short games that will enable us to prevail in the long ones - don't miss the opportunities.

Opportunities Missed

The notion that AWP is too costly, and that it is a software misses completely the key point that AWP provides a common-sense approach to projects through collaboration by stakeholders having the mindset of focussing from the outset on the completion objectives, and what is good for the whole project and its stakeholders.

So many projects are executed in silos where, typically for example, one company performs the preliminary design, another the detail engineering, and another builds it, very often in an environment where none of parties are aligned, there is no effective collaboration and each stakeholder's primary goal is to make profit, often to the detriment of other stakeholders. This frequently results in schedule overruns, significant additional costs for stakeholders and spoiled relationships.

Although all commercial enterprises need to make profit, the opportunity to do so is often lost because without true collaboration on what is good for the overall project, the potential profitability is eroded by cost and schedule over-runs, arising from with problems within and between stakeholders over interpretation and understanding of what has been designed and what has to be built.

This is seen most often within owner organisations, many of whom have engineering, construction and operations teams, all having different requirements, expectations, and directions for the project.

AWP provides the opportunity to guide projects along their entire journey through collaboration between stakeholders across the project and where everyone involved has the mindset of what is good for the whole project is good for our own organisation. By not taking this approach the opportunity for successful project outcomes for all stakeholders is most likely missed.

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