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Please fill in your manuscript title.	Advanced Work Packaging: The Next Generation Planning Approach	
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## Abstract

### Objectives/Scope:

Capital projects in the oil and gas industry continuously face daunting challenges as they become increasingly complex and technologically demanding. Schedules and budgets are tight, safety is crucial, and every project faces a network of stakeholders concerned about its impact on the environment and communities. Due to these circumstances, many of the traditional planning and execution methods have been demonstrated to be ineffective, resulting in poor project performance. Statistics indicate that two out of three projects have difficulties meeting the three successful criteria: delivered on time, with a final actual cost on or below budget, and in full compliance with the requirements. With additional challenges brought by COVID-19 pandemic, it has accelerated the adoption of new ways of working by the industry to create competitive differentiation. This paper will explore in detail the Advanced Work Packaging (AWP) as an emerging planning approach and discuss its impact on project performance.

### Methods, Procedures, Process:

The AWP approach provides a holistic process for work-packaging execution with a project lifecycle orientation, from preliminary planning to system turnover and commissioning. A comparison method is used to review the difference between Standard Work Packaging and Advanced Work Packaging. The analysis process involved these main areas: AWP process application, organizational implications; technology enablement; implementation challenges, and lessons learned. An AWP implementation case is included to illustrate the impact of AWP on key project performance dimensions, i.e. schedule, cost, quality, and safety.

### Results, Observations, Conclusions:

AWP facilitates an integrated planning process that considers all aspects of a project to account for all possible variables to support a smooth transition between project phases, reducing rework, increasing productivity, and ensuring the maximum use of resources with minimal waste. The AWP methodology consists in an enhanced project breakdown structure that prescribes an organized planning approach. It provides a structure for focused execution and production control alignment between construction, engineering, and procurement disciplines since the preliminary planning phase. It promotes the constraint-free, executable work while improves the alignment between the project delivery functional groups. An actual AWP implementation case is included in this paper to illustrate the impact of AWP on key project performance dimensions, i.e. schedule, cost, quality, and safety. In this case study, we will share how the project is planned and executed based on AWP concept, how does the latest technologies facilitate the AWP implementation, and the anticipated outcomes versus the results. Based on the

findings, it shows that when AWP is implemented properly, it drives remarkable improvements entire project lifecycle.

**Novel/Additive Information:**

AWP is a work process framework based on thinking with the end in mind, therefore detailed work packages are developed early in a project to clarify the construction road map and support the team integration that results in greater project efficiency. When AWP is implemented with appropriate technologies, it drives remarkable improvements for the entire project lifecycle. It promotes the constraint-free, executable works while improves the alignment between the project delivery functional groups. This brings a broad range of benefits, include the smooth transition between project phases, reduced rework, increased productivity, and maximized use of resources with minimal waste. Ultimately, it transforms the project delivery capabilities toward achieving predictability.