Deployment Common Process Across Global Wells Teams—Integrating an Online Project Management Application With Effective Behaviours To Enable High Performance

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Abstract

BP has successfully deployed a web-based project management application across the global wells teams to support common processes used in well delivery. Widespread use of the application is now made in drilling and completions activities and other planning functions within the wells community. This is just one of the tools that have contributed to the 19% drilling and completions performance improvement recorded in BP during 2003.

The project's goal is to standardise the use of proven common processes, creating a shared repository for critical knowledge, reducing time for project initiation and planning, managing risk and supporting the stage gate decision making. An extensive management reporting capability also reduces the administrative burden.

Positive results include quicker start-up of new teams and improved planning. The keys to success are organisational commitment to the common processes and the use of proven project management practices in drilling and completions activities. Behaviours have also been addressed. Over 90% of the application was based on established, commercially available software, increasing reliability, reducing implementation risk and enabling the developers to focus on the key functionality and user interface. The application's process templates are regularly reviewed and are updated periodically to ensure continuous improvement and long term sustainability.

This paper contains a summary of the common processes and presents a case study of the project, its goals, results, critical success factors, challenges and lessons learned, supported by several examples. The paper will be of interest to both managers and engineers.

Introduction

The application of formal project management techniques to wells has increased significantly within the last decade as people have realised the performance benefits they offer. Clay and Hatch summed up the situation well; when they identified that 70% of the deficiencies in their earlier well delivery process lay in the lack of project definition and planning rather than poor performance. They identified that poor planning and scheduling, conflicting goals, poor teamwork, incomplete AFE costs and an inadequate learning process were top of the agenda.

These circumstances may be encountered on any scale, but can be particularly challenging for large organisations, with activities spanning many countries, regions and types of operation. With staff regularly transferring between locations, time must be spent gaining familiarity with local regulations. However, any time spent learning insignificant differences in basic process is a waste and should be eliminated. Wildly disparate approaches to well delivery across the business, increases overheads and ultimately hinders learning and progress. The ideal situation is one where a common process is established in a way that it can be applied and moulded to suit different business scenarios.

By defining and adhering to a common process, effective use can be made of digital technology, and efficient applications can be constructed to support it. In this way, the application becomes part of the common process itself. Common Process Online (CPoL) is BP's latest application to support its common process.

Common Process

BP introduced a common process for well delivery in 2000 as part of its “Beyond the Best” initiative. Common process is the application of best practices and the building of a common language across a multi-disciplined community. When applied to its fullest, it provides greater clarity and efficiency in the way teams work and directs focus toward delivering business value. By defining what is core and mandatory, it reduces
workload and removes noise from the system, freeing up time to work on the tasks that make a difference.

There are four elements that form the common process: Drilling Value Assurance, Right Scoping, No Drilling Surprises and Technical Limit. Fig. 1. The term Minimum Conditions of Satisfaction (MCS) is used to refer to the core and mandatory components of these.

**Drilling Value Assurance**

Drilling Value Assurance (DVA) requires that wells will be managed and delivered as projects using a stage gate approach. The first three stages (Access, Appraise and Select) focus on choosing the right project. The Define stage is concerned with developing the right project and the Execute and Operate stages focus on delivery. Progression through these gates is controlled by a gatekeeper appointed by the business unit. Information is provided by the team, to the gatekeeper to support the request to pass the gate and for the project to continue. It is common for passage to be granted with conditions being imposed and if such dispensation is given, these conditions must be satisfied within a prescribed time. Both the information provided to the gatekeeper and passage through the gate must be auditable.

The overall effectiveness of a wells team’s planning effort and preparedness is measured with a Front End Loading (FEL) assessment and associated score. Assessments are conducted at the end of the Select and Define stages by trained assessors. For critical wells, scores over 80% are expected.

**Right Scoping**

The right scoping process is used to identify the optimal well concept for delivery of value to the business. During this process, teams are expected to develop and explore ideas and options. On conclusion, deliverables are clearly defined in a statement of requirements and the concept is frozen with all stakeholders fully aligned with the objectives, risks, costs and intended delivery. Once frozen, further changes to the concept must be managed through a rigorous management of change process.

Some ideas and options may be discounted due to commercial reasons, or because they are technically immature. Later, they may resurface and find application in another well or development. If duplicated effort is to be avoided, the reasons for rejecting these ideas must be carefully documented, together with the conditions that might make them viable. Since the selected concept greatly influences the commercial outcome of the project, effective knowledge management in this area is critical.

**No Drilling Surprises**

No Drilling Surprises is a disciplined approach to managing the risks the overburden poses to successful well delivery. During the well’s design, the goal is to identify the optimum well trajectory to manage the subsurface hazards. Hazards that cannot be managed during design must be managed through updating the subsurface predictive models while the well is drilled. Visualisation tools are routinely used to display data from offset wells and facilitate discussions between the various disciplines involved. In complex situations, several iterations may be required before the optimum solution is established and in these cases, care must be taken to document the decision path and avoid re-hashing work.

**Technical Limit**

Technical Limit is concerned with targeting the most exceptional performance that could be imagined for a particular project, creating awareness of the possibility for step change and empowering the teams to deliver that change. The ideas behind the technical limit were first described by Bond et al.. Experience shows this process hinges more on how people work; their motivation, behaviours and working habits, rather than on raw analysis. Because of this, engagement and clear definition and understanding of the roles and responsibilities for delivery are pre-requisites for success.

Of equal importance is the commitment to learn from both mistakes and successes with the same focus. The plan-do-measure-learn cycle, in which activities are reviewed following execution, so that they can be improved on and applied in the next well is at the core of performance improvement. Technical limit and DVA stress the importance of documenting the successes and failures on the well and capturing ideas for further improvement. Disbanding rig teams without adequate project closure and knowledge capture needs to be discouraged to avoid loss of knowledge. Without proper closure, new teams must start from scratch or rely on personal contacts with members of the original team.

**History – Early Systems**

The operator’s predecessor to CPoL was the “Well Learning System”, adopted in 1995. This system which originated in Norway provided a drilling project management system with a rigorous learning loop. Minton and Vik described the capture of learning as its primary objective, but recognised other aspects that were of value. These related to the functional elements of the tool and the manner in which it is implemented within the organization. Many of the requirements of a management system, listed by these authors are exactly those that now appear as requirements within the four elements, Drilling Value Assurance, Right Scoping, No Drilling Surprises and Technical limit that comprise the common process.

In 1997, outstanding results from a five well Norwegian exploration drilling programme, involving three different rigs and teams were achieved from deployment of a robust common process for well design, planning and execution. The value of separating a well project into distinct phases, engaging in detailed planning, and adhering to key principles was demonstrated.

These early successes provided valuable learning and laid the foundation for the development of the new system which sought to support these capabilities in a single application and improve ease of use.
Common Process Online
When the “Beyond the Best” program was initiated, the principles, descriptive flow charts, sample documents and references were distributed to the wells community and posted on an intranet website. At the same time, workshops were conducted to build understanding and commitment. It was quickly recognised that the next step was to deploy a web-based delivery system to help teams adopt common behaviours and to serve as a process guide, as well as providing ready access to the process material and the new content generated by the teams. By employing a web-based solution, collaboration, both within the team and externally with other teams, would be facilitated. The name Common Process on Line (CPoL) was adopted for the new system.

Goals and Objectives
The major goal for this new application is to improve project performance by embedding the use of the proven common process in wells teams operating around the world. Specific objectives include:

- Support the implementation with a Process Guide built from proven project management practices, such as management of change, document management, defining roles and responsibilities and providing an auditable trail.
- Create a repository for critical project knowledge.
- Reduce the time required for initial project kickoff and planning.
- Provide near real time update of project status, enabling effective management reporting.
- Provide ready access to a customizable solution.
- Identify and manage risks to successful project delivery.

Specification and Design
A team was chartered to develop the system specifications and conduct a systematic review of available technology platforms. A commercial product, Livelink was selected to provide the collaborative web-based environment and workflow and document management. The front end was provided as a customised component. The Andrew team, based in the North Sea was selected to pilot the system and feedback was used to fine-tune it prior to global deployment. Reduction in staff time attributable to CPoL was rigorously tracked during the pilot project and the results served to justify expansion of the system. CPoL was designed this way to benefit future implementations.

Subsequent steps involve defining any specific local process steps, documents and references to be used. Once the system work areas have been built, they are made available for use to the whole team and training is provided. Subsequent follow-up occurs to ensure proper adoption and use. The final implementation stage includes a post-project review, completion of a scorecard, and generation of lessons learned to benefit future implementations.

Implementation
A detailed master plan was developed and then applied for each team implementation. An implementation typically spans 10-12 weeks but varies depending on the readiness of the team. Teams already familiar with project management principles find the transition to CPoL relatively easy and they rapidly reap the benefits. On the other hand, teams that have only limited experience of project management principles have a more difficult and time-consuming effort in adopting the system.

The first step is to appraise the needs of each team, including existing material and processes. Based on this, key roles are assigned to team members including the roles of project manager, champion, and system power user. The power user has the in-depth skills and personal commitment to help drive the use of the system within the team. The champion provides visible leadership both within the team and externally to the rest of the organization. Based on the common process MCS, the scheduler provides the specialist skills to build the initial task inventory, interdependencies, and durations, and then adjust these as the project progresses.

These activities mirror the well delivery process in many ways and it is worth noting that CPoL also serves as the tool to plan and execute the team implementation process.

System Overview
A project team work area is initiated by modeling the best fit version of the common process in an MS-Project file, a commercial scheduling software program. This file is then imported by the power user or scheduler into CPoL via a synchronous link, avoiding the need for most users to be familiar with the scheduling software. CPoL thus provides the project team members a solution, halfway between a spreadsheet type tool and the more complex scheduling software. CPoL was designed this way to benefit from the functionality provided by both types of software tool, whilst minimizing the impact on users. The team members work with and update their tasks in CPoL, while the underlying scheduling software program file is updated on a batch basis by the system power user or scheduler.

The main project work area includes:

- A high-level visual image and status report of team activity and progress. It identifies the current phase and the main tasks that need focus to achieve compliance for the next stage gate.
- A link to the integrated risk register where all team members can identify, communicate and describe mitigations for risks. The risk register ties directly to the stage gates as well as to project status reports.
- A link to the scheduling software program files to facilitate easy access and updating.

The main project work area has a link for each task that directs the user to the task detail page. Each task defines responsibility by role, as well as scheduling, priority, completion instructions and lessons learned. Attachments
include reference documents, technical work documents and deliverable documents. The deliverable documents require completion before the stage-gate owner will review and approve the current phase and permit the subsequent phase to commence.

The risk register area Fig. 6 allows teams to identify, communicate and record actions to mitigate risks. The design of the risk register augments current risk management procedures. Risk actions show up on a user’s personal work area until they complete them. The risk register can be sorted so that critical and unmitigated risks can be quickly reviewed by the project manager and team. Specific risks can be copied between projects and templates, thereby forming a repository of historical risks for review and inclusion by future teams.

Timely, detailed and accurate reporting of status and progress is critical to successful project management. CPoL accomplishes this in a highly effective manner. Fig. 7 shows a sample program management report for seven projects. Users can rapidly access a color-coded report displaying many important facts including:

- Project phase status (green equals complete, yellow denotes in progress, and blue indicates on hold or not released).
- Project risk status (green equals low risk, yellow denotes moderate risk, and red indicates high risk).
- Project time status (green equals on or ahead of schedule, yellow denotes schedule falling behind, and red indicates behind schedule).

Fig. 8 presents the simplified Gantt chart area based upon the synchronized scheduling software program file. This area includes a high-level timeline and schedule status report of the projects in the program, as well as risk status reports similar to the program management report area.

CPoL’s advantage lies in its ability to be customized for each project and improved upon for subsequent ones, whilst adhering to the MCS to preserve process integrity. This makes it a highly dynamic system. Common process templates can be built from successful projects, promoting both local and global proven practices, thereby enabling organisational learning. Experience has however, emphasized the importance of teams ensuring that the chosen templates meet their needs and is fit for purpose. If time permits, teams are encouraged to build their own to achieve full ownership.

CPoL helps teams integrate required standards. The common process is visible and easily deployed for the team. Team status through the process is tracked and reported. Decision-making through each stage gate is highlighted and managed. The risk management process is embedded from initial risk identification through management of action items, and the repository of risks across teams and regions enables a comprehensive study of the best mitigation efforts and results.

Results

CPoL’s success is reflected in the positive results that have been realised to date. Adoption by the wells teams has been steadily building and teams are starting up more quickly. Direct correlation between common process uptake and delivery of underlying performance improvement can be identified across the company. Rhodes\(^2\) announced that a 19% drilling and completions performance improvement was recorded in BP during 2003. Codification of common process through CPoL has certainly been an enabler of this.

The system has now been adopted by dozens of wells teams managing projects in Europe, the Americas, Africa, and Russia Fig 9. These teams have benefited from the rapidity with which they can create their project plan and then use the system to stay on track. The system’s functionality enables the team to review the common process and associated documents and references, and then quickly tailor it to their own needs. One Team Leader commented that using the system he was able to accomplish in 20 minutes what would normally take weeks. Similar experiences are described in the following case studies:

Case Study 1 - Andrew

The Andrew team piloted CPoL, implementing it during the Select phase of their A16 well and the team has been using it since. Following the A15y well with two sidetracks, the A16 well was drilled and completed with only 13.1% total NPT, including waiting on weather, comfortably beating the aggressive 20% target and high historical levels of NPT recorded on mature fields in the area. Only 9.4% of the total NPT was geologically related. The next well A17 was drilled and completed with 21.4% NPT with only 3% of the total NPT geologically related\(^4\). More recently, two deep sidetracks have been successfully drilled, with two of the sections reaching the technical limit. Drilling NPT has decreased further, though completions NPT has increased. In spite of this, overall, the project has been delivered under the AFE.

The project plans for these wells in CPoL have evolved and now comprise over 400 steps. Though this is regarded as too complex by some people, it was the team’s choice. CPoL’s flexibility means it can easily accommodate another team’s decision to either simplify it in future, or select simpler templates created by other teams.

Case Study 2 - Atlantis

The Atlantis team in the deepwater Gulf of Mexico experienced problems to integrate the team and to follow a common process to deliver the field to first oil. To resolve these issues the team decided to first get the process right and only then implement CPoL to support the process and activities\(^6\).

The Atlantis drilling and completions team adopted (CPoL) in 2004 to help provide assurance and implement the common process. With a high activity level and technical resources in short supply, it was crucial for the Atlantis community to ensure efficiency in project planning and execution. CPoL was launched as a tool to promote standards and tapped for its ability to create transparency within the team and share knowledge with others.
Atlantis quickly achieved these original objectives and has now taken the process to new levels. Within a few months sub-surface, completions, production, project services, leadership, the rig Development Driller II delivery team and others adopted and began to successfully use the system. CPoL is used today to support everything from Right Scoping, Front End Loading, Risk Management, documentation and scheduling, to serving as the platform for running stage gate meetings. With the system in place, management is now able to easily verify that key tasks are being met.

The Atlantis-developed process and behaviour set has not only drastically reduced re-work, but has also helped standardize the approach to work. Verification of processes and critical tasks through this tool / process has given leadership the assurance and confidence to focus on higher level issues; they are much better informed and know what questions to ask at gate meetings.

Because of the enforced rigor, the Atlantis team has improved immensely, as is illustrated by their FEL scores. Now the team consistently delivers scores of 80% plus, compared to earlier scores around 45%. By freeing people to work tasks which deliver the most value this equates to a 60-70% improvement in efficiency.

**Case Study 3 - Chirag**

With a 6.5 km step-out, the Chirag A19 Extended Reach Drilling (ERD) well is the longest step out well in the Caspian. Kidd, Tukshaitov and Navafov described the decision to implement CPoL as a key to its successful delivery, within time and budget and with less than 16% NPT. The system was used to manage tasks and deliverables and clearly define accountabilities. This resulted in a focused multi-disciplinary asset team with a clear understanding of the issues and responsibilities, helping eliminate problems encountered on the earlier wells. A-19 was the first well in the Caspian to implement CPoL.

**Key Success Factors**

Several factors have been identified that have proven vital to successful implementation.

- Clear and visible management commitment has been present to initiate and sustain adoption of CPoL. The commitment to common process prior to the development and deployment of the system allowed it to be positioned as part of the overall effort to support the use of proven practices within the teams. Change is more likely to be accepted when it is seen as part of a larger, more comprehensive program.

- Spending time and resources to focus on behaviors has resulted in improved uptake. These behaviors include openness to new ways of doing things, willingness to commit a reasonable amount of time to learn about and administer the system, and visible sponsorship and support by system champions and management. A positive perception of the system has been created by communicating its role as part of a broader goal and stressing personal benefits such as ease of use and productivity.

- Providing adequate support to the wells teams, both during and beyond the initial implementation and customizing the system to suit their needs. This includes development of the power user, champion and scheduler roles. Training has ensured users acquire the skills needed to deploy the system successfully.

**Lessons Learned**

If not carefully managed, a process with many multi-level tasks, documents and deliverables can quickly get out of hand. The trick is to have the team decide on what is important to the team’s work process and then tailor the system to be fit-for-purpose. Teams are likely to reject a rigid “one size fits all” approach. Care is required to establish the correct balance between the need for standardization and a fit-for-purpose application.

**Future Challenges / Actions**

CPoL was implemented based on previous experience and an intuitive assessment of its value e.g., improved planning and quicker start-up of teams. Though performance to date suggests this decision was justified, an ability to quantify these individual benefits would help justify and target resources to refine of the system.

The common process held within CPoL is updated as follows.

1. The most recent proven practice common process template is maintained in CPoL and is available for download and use by any team.
2. A new project team initializes the template and then tailors it to fit the team.
3. The project team records suggestions to improve the process as they plan and execute their project.
4. The suggestions for improvement are reviewed and appropriate revisions are made to the master template.

This last step requires a commitment by the teams to review and update the common process before departing the project. However, despite DVA process guidelines, there is a tendency for teams to disband without adequately documenting the successes and failures. Though well delivery needs are now being addressed, this requirement applies equally to the supporting processes employed by the team. Critical review of the supporting processes must therefore be brought into the scope of the close-out review. A team has been assigned to work with the wells teams on this task.

The intention is to develop the power users into a community that shares proven practices and reinforces each other’s commitment. Leaders will be encouraged to make greater use the system. In this way, they will gain a better understanding of team performance and identify areas to improve. This requires greater integration of the system into the way management monitors and controls work. One example of how this is being tackled is the creation of a Wells Team Advisory Board. The mission of this Board is to oversee wells teams as they progress through each stage gate. CPoL is an excellent enabler to help accomplish this mission. Integrating
CPoL as part of the Well Advisory Board process will encourage effective and sustained use of the system.

To date, significant effort has been expended to capture user’s suggestions for improvement. This effort will continue, but it is only by incorporating suggestions in new releases, that users will recognize that they are being listened to and that they have a direct impact on the future development of the system. Many of these suggestions will be included in the third release of CPoL, sustaining a fit for purpose system.

Broader Application

The goal remains to broaden application of the system to projects that are not related to drilling and completions. The principles for successful planning and execution of a project are applicable to a wide range of major projects. The CPoL system has potential application across all these. Because of its flexibility, customizing it to match the cycle time, jargon, and mindset prevalent in different project environments should not be a challenge.

Conclusions

• When applied to its fullest, common process provides greater clarity and efficiency in the way teams work and directs focus toward delivering business value.
• Effective deployment of a system such as CPoL is vital to improve uptake of common process across global teams, and hence, improve performance.
• Success in deploying a global system such as CPoL depends on clear and visible management commitment, perceived value by users from deploying the system, and a sustained focus on facilitating effective behaviors.
• Teams are likely to reject a rigid “one size fits all” approach and care is required to establish the correct balance between the need for standardization and a fit-for-purpose application.

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References

Fig. 1 "Beyond the Best" Common Process

Fig. 2 Team Value Measurements
Fig. 3 Synchronisation of the Tasks and Schedule

Fig. 4 Main Project Work Area
Fig. 5 Task Detail Area

Scheduling information
Detailed task instructions
Lessons learned area
Attached documents
Reference links to process website

Fig. 6 Risk Register Area

High risk tasks are identified and mitigation plans put in place to reduce adverse impact
Fig. 7 Program Management Report Area

View project’s status:
- Approval progress
- Risk status
- Schedule – time impact

Fig. 8 Simplified Gantt Chart Area

View more than one project’s status:
- Managers portfolio view
- Team member with multiple project responsibilities
Fig. 9 Location of Teams Using CPoL