

SCOPE DEFINITION AND PROJECT PLANNING

Pilot Projects Lookback Assessment

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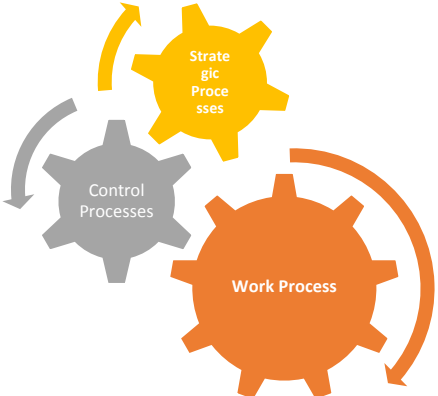


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INTRODUCTION

A brain storming session held in Q1 2015 with the participation of active industry members of the PAAD initiative, revealed that the current state of the industry's performance in Scope Definition and Project Planning is seen to require focused improvement in some key areas of the strategic, control and work process streams of the project delivery lifecycle to achieve excellence in project delivery:

	<p>Strategic Processes: Enable the projects to be defined and plans and strategies to be developed to realise the maximum value of the project</p>
	<p>Control Processes: Provide the framework within which the work to produce the project is performed. These are used to cost, plan, monitor and control the day-to-day work of the project that is realized through the work strategic processes.</p>
	<p>Work Processes: Are those processes that are used to get the work done and do conform the five project development lifecycle phases for the implementation and delivery of capital projects.</p>

AREAS OF IMPROVEMENT

Strategic Processes	Control Processes	Work Processes
<ul style="list-style-type: none"> ▪ Strategic Formation <ul style="list-style-type: none"> > Project Execution Planning > Contracting Strategy ▪ Risk Management <ul style="list-style-type: none"> > Downside Risk > Upside Risk > Insurance ▪ Improvement <ul style="list-style-type: none"> > Performance Indicators > Stretch Targets > Critical Success Factors ▪ People <ul style="list-style-type: none"> > Alignment > Team formation 	<ul style="list-style-type: none"> ▪ Work Planning ▪ Cost Management ▪ Contracts & Procurement ▪ Change Management ▪ Reporting, Monitoring & Analyzing 	<ul style="list-style-type: none"> ▪ Front End Planning <ul style="list-style-type: none"> > FEL1: Businesses Planning > FEL2: Facility Planning > FEL3: Project Planning

PILOTS BACKGROUND

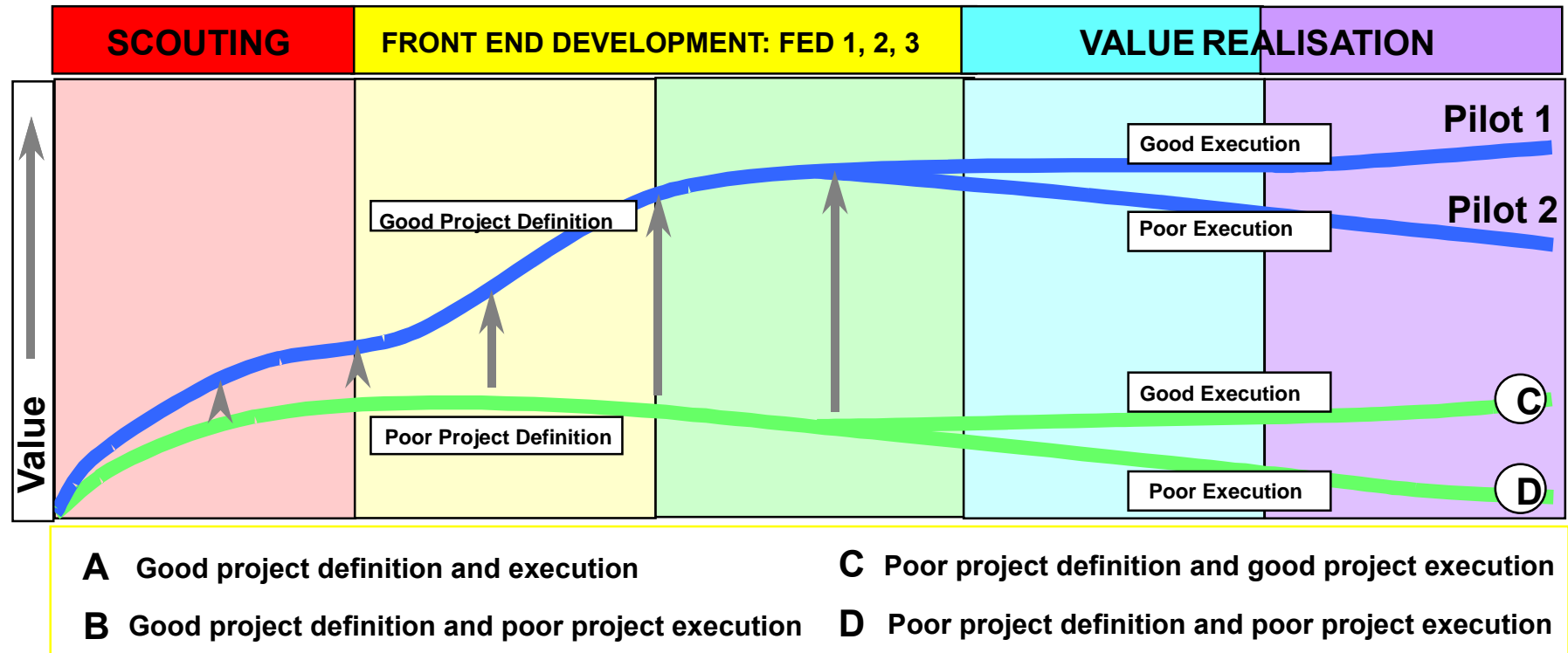
Description	PILOT Project 1	PILOT Project 2
• Project	• Design and construction of an external tailings facility at an Oilsands facility near Fort MacMurray, Northern Alberta, with a total installed cost of >\$500 million	• Design and construction of a redundant tailings delivery system at an Oilsands facility near Fort MacMurray, Northern Alberta, with a total installed cost of >\$100 million
• Scope	• 10+ km of pipelines, 7 skid mounted modularized booster stations, 2 dredges, 680 ha of tree clearing, 150 ha of soil salvage, 20 million tons of earthworks, 8 km of starter dyke construction, 14+ km of high voltage transmission lines.	• 1.5+ km of pipelines, 3 skid mounted modularized booster stations, 1 stick built booster station, high voltage and medium transmission lines
• Settings	• A semi greenfield project, with minor alterations to operating assets	• 100% brownfield scope with significant scope in an extraction facility.

Objectives/Premises	PILOT Project 1	PILOT Project 2
• Business	<ul style="list-style-type: none"> • Provide the out-of-pit tailings storage requirements for operations beyond the existing ETF design. • Achieve best in class project delivery • Optimize CAPEX/OPEX for life cycle cost 	• Improve system reliability above design. Capture additional barrels of production capacity.
• Project Characteristics	<ul style="list-style-type: none"> • Schedule driven project (first schedule, then cost, then quality) • Regulatory/Maintain Operation 	<ul style="list-style-type: none"> • Schedule driven project (first schedule, then cost, then schedule) • Reliability/Enhance Operations
• Operational Performance	<ul style="list-style-type: none"> • Ability of new structure to contain tailings and meet regulatory requirements • Minimize project impact on plant production during construction • Achieve flawless start up and meet production targets 	<ul style="list-style-type: none"> • Ability of new system to deliver a rated capacity • Minimize project impact on plant production during construction • Achieve flawless start up and meet production targets
• HSSE	<ul style="list-style-type: none"> • Meet PORTFOLIO commitments/expectations • No harm to people • 0 LTIs, TRCF <1.9 • 0 Environmental incidents 	<ul style="list-style-type: none"> • Meet PORTFOLIO commitments/expectations • No harm to people • 0 LTIs, TRCF <1.9 • 0 Environmental incidents
• Cost and Schedule	• Meet AFE promises – Deliver project on P50 on cost and schedule	• Meet AFE promises – Deliver project on P50 on cost and schedule
• Development Process	• Follow company’s project delivery process for PILOTS >\$100 million (based on project headline size)	• Follow company’s project delivery process for PILOTS <\$100 million (based on risk and complexity)

10 TOP LESSONS LEARNED

- Best in Class Safety Performance – PILOT1 was delivered incident free capitalizing on portfolio HSSE strategy: Visible Safety Leadership and Behavioural Change.
- Best in Class Project Performance – PILOT1 was delivered 12% below budget and 3 months ahead of schedule. However, achievements can be undermined by Outliers.
- Opportunities to improve deployment of implementation of standardization and replication strategies – Be aware of the Learning Curve.
- Behavioral signals / key checks to ensuring impacts of changes to business priorities are understood and effects are mitigated – business and Project Teams need to Understand Domino Effects.
- Behavioral signals / key checks to address contractors' underperformance – through proper intervention mechanisms.
- Opportunities for testing and implementing strong management of change – holistic approach to assess effect of changes to portfolio and project performance.
- Opportunities to improve assessment of contractors' organizational robustness and capacity – processes and people.
- Opportunities for testing and improving alignment across functions in large multi-projects portfolio environment (both owners and contractors).
- Opportunities to improve key project processes to enable projects controlled start – establish the foundation right from the get go.
- Opportunities to improve Human/ Organization factors key areas – Project Controls and Field Construction Management.

PILOTS OUTCOMES



KEY MESSAGES

- Both PILOTS were implemented as part of a large / multi-year PORTFOLIO of projects at an Oilsands Facility.
- Both PILOTS followed a rigorous project delivery process, supported by assurance gate reviews at key development milestones and with full adherence to company's capital project delivery and governance systems. Front end loading indexes were done for both PILOTS using the IPA self assessment tool, resulting in FEL indexes adequate for the level of definition required before PILOTS were sanctioned and funds approved.
- PILOTS delivery was highly dependant on collaboration and close working relationship amongst business partners – the asset, contractors, vendors and company's project delivery team. Maintaining a strong respectful working relationship with stakeholders was a prerequisite to developing and executing projects successfully,
- Key overarching strategies, including, a standardized project delivery model, a master project execution plan, a contracting and procurement strategy and central modularization program were key enablers for project delivery. Both PILOTS incorporated these strategies,
- A PORTFOLIO wide HSSE plan was implemented to support the execution strategies of both PILOTS with the target of achieving "Goal Zero" and to promote an efficient construction, with the premise that the same measures implemented to improve HSSE performance would also result in improved productivity, better quality and ultimately improved cost and schedules. After a backdrop in performance, PORTFOLIO achieved best in class HSE performance with a 12 months TRCF rolling average of 1.2 with PILOT1 being delivered incident free and with only 1 recordable after >2.7 million field man-hours. In contrast, PILOT2 suffered from several recordables and lost time injuries that impacted the overall performance of the PORTFOLIO,
- The contracting and procurement strategy was build upon the establishment of long term relationships with key contractors as to essentially execute the PORTFOLIO as if it was "one large project". The intent was to develop a one team mentality where Company and Contractors worked together to continuously improve the development and delivery of projects. Late contract award for module fabrication impacted the completion of PILOT2. In addition, a significant deviation to the contracting strategy, consisting on the change of one of the construction contractors due to underperformance was implemented before the mechanical completion of PILOT2, with minimal impact to the completion of PILOT1.
- Design standardization and modularization of critical delivery systems were implemented during the early phases of PILOTS formation. The modularization program was a key element of project delivery and constituted the central pillar for the implementation of these two projects. The early modules for PILOT2 were shipped to site incomplete and learnings from their fabrication, field installation and final hook up were applied and implemented on PILOT1 which capitalized benefits on cost and schedule.
- Labour strategy was supported by load leveling work activities across the PORTFOLIO, primarily to improve HSSE performance, sustain a more stable workforce that will deliver higher quality projects at lower cost and shorter schedule durations. Both PILOTS conformed to this strategy.
- Company's owners team considered early involvement of key functions as to ensure early buy and support to plans and strategies. Team alignment with clear division of responsibilities & accountabilities within the project / PORTFOLIO organization and supporting functional departments,
- Despite proceeding through the project development process (with project assurance steps and decision gates), the results of both PILOTS were mixed. PILOT1 delivered exceptional results on all fronts (safety, cost, schedule and operational performance). In contrast, PILOT2 experienced an extremely poor outcome on safety, cost and schedule (vs. plan).
- Despite relative simple scope, project technicalities requirements for both PILOTS were particularly challenging mainly due to changes to business premises, regulatory pressure on technology selection and unreliable effluent characteristics. Changes to business plans led to changes to project priorities ultimately impacting the delivery of PILOT2.

SUMMARY OF RECOMMENDATIONS

- Focus on Maximizing value.
- Adopt a Project Development and Implementation Process.
- Set the foundation for successful project delivery – Focus on Key Project Development Processes:
 - > Strategic Processes – business objectives.
 - > Control Processes – means and methods.
 - > Work Processes – stage gate process.
- Focus on Key Improvement Areas:
 - > Business planning – through development business strategies, boundary conditions and business drivers during Scouting and FEL1 phases.
 - > Front end loading – use of a rigorous Front End Development process with a ‘gated’ review process at key development milestones.
 - > Project Execution Planning – execution planning strategies that need to be matured through the front-end planning phases.
 - > Contracting and Procurement Strategy – use of contracting and procurement tactics and strategy assessments early during front end.
 - > Risk Management – throughout development and implementation.
 - > Robust management of change process – after FEL2 and through implementation
 - > Alignment of Functions – Business, technology, Project Management, stakeholders.
 - > Use of Value Improving Practices and Best Practices (CII’s and IPA’s).
 - > Use of integrated teams – clarity of roles, responsibilities and working relationships from all parties who need to work together to deliver maximum value.

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