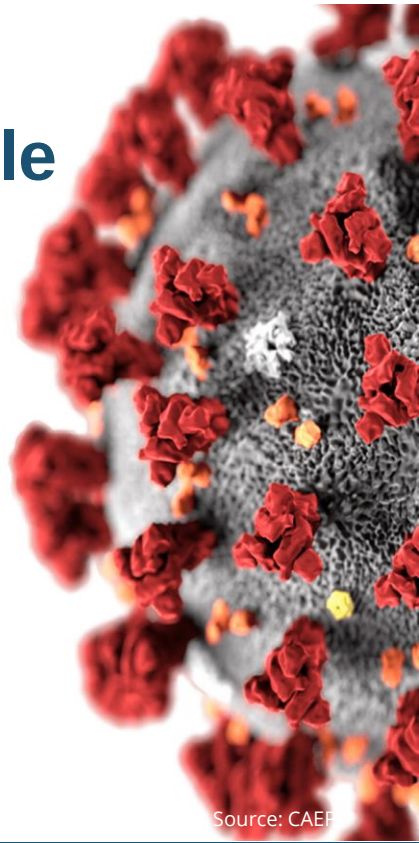
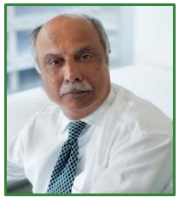
Canadian Institute of Mining's Virtual Convention - CIM 2021
Impact of COVID-19 on the Mining Life Cycle

"How to Plan and Execute Capital Projects in Volatile and Uncertain Times"



May 3, 2021
3:30 PM - 4:00 PM, EST

Introducing the Team



Speaker - Feroz Ashraf, Global Executive Advisor – Capital Projects, P.Eng (Ontario and Quebec)

Mr. Ashraf has extensive **experience** in the resource sector, including mining and metallurgy, oil and gas, infrastructure, power and related downstream industries. He is currently an Executive Advisor, Capital projects at PTAG Inc. He has **35+ years of EPC/EPC experience,** on over **300+ projects** ranging from **$10million to over $5 billion** across Canada and globally in over 25 countries. He was the Senior Project Officer, then COO and then CEO of an operating company with plants / projects in USA, Kazakhstan, Australia, and Tanzania. He is member of OIQ and PEO and is a guest lecturer on Project Management at York University- Schulich School of Mining (MBA program).

Michael Dubreuil, Managing Director, B.Math (Computer Science)

Mr. Dubreuil is the **Managing Director** for PTAG Inc., a leading global capital project/program management firm. He has 35 years of experience leading Projects and Organizations through significant development, restructuring, and process improvement. He currently serves as the **Chairman of the Sector Leadership Team of the Construction Industry Institute**. He is an Advisor to organizations on Contracting Strategies including - Industrial Integrated Project Delivery (I2PD).

Jeremy Rasmussen – Chief Technology Officer

Jeremy is a leading thinker in information and communications technology (ICT), mobile software, and open source intelligence. With both **strategic and hands-on experience** ranging from software development architecture and networking system design for the project management sector. Jeremy is consistently on the leading edge of the role of technology in business and capital projects. He co-published and presented numerous papers on the role of mobile technology in complex industrial environments at industry conferences in Canada, the United States, and China. Jeremy is also a member of the Canadian Nuclear Associations Executive Committee and Board of Directors.

Session – Impact of COVID-19, Health & Safety, Risk Management

Topic: “How to Plan and Execute Capital Projects in Volatile and Uncertain Times”

- **Opening Remarks**
- **PTAG Overview**
- **Topics for Today’s session**
  1. Impact of COVID-19 Globally and what it means for us ?
  2. Challenges Faced by the Mining Industry
  3. Failure as an Industry to Perform and Deliver Projects
  4. Top reasons why projects go off-track
  5. Front-End Planning – what, why, how ? and Leveraging Industry Best Practices
  6. Why a Disciplined Stage-Gate Process is Critical
  7. Project Set-up / Project Management and Project Controls Handbook
  8. Example of Project Complexity Model and Project Delivery Model (PTAG tools)
  9. Why De-Risking the Project, Defining Proper List of Deliverables and Execution Plan are important
- **Summary and Q/A**







PTAG Overview – Program & Project Management Specialists

Supporting our clients through all project phases of Major Project or Sustaining Capital Programs, PTAG Project Management experts have required experience to address complex project concerns, leverage industry best practices, provide proactive solutions to mitigate social, economic, environmental, technical and commercial concerns impacting cost, schedule, safety and quality concerns.

Our mission is to **increase project predictability and success rates** by incorporating collaborative and risk-sharing contracting strategies, foster true-partnerships focused on project objectives, proven and lean project management techniques, and state-of-the-art tools and systems adapted purpose fit for our client's projects.

Canadian Council for ABORIGINAL BUSINESS

Registered Provider

Lets focus on a few key issues

1. Impact of COVID-19 Globally and what it means for us ?
2. Challenges Faced by the Mining Industry
3. Failure as an Industry to Perform and Deliver Projects
4. Top reasons why projects go off-track

Past Crisis and Examples – Why COVID is MUCH MUCH more

Global Financial Crisis - 2008

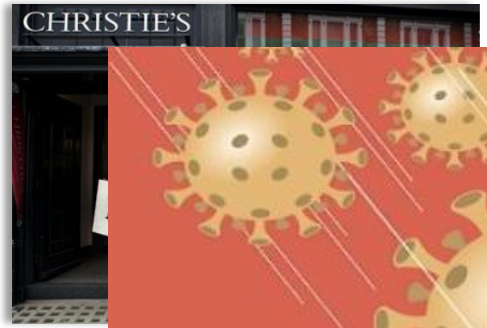
Fukushima Disaster -2011

Calgary Flood 2013

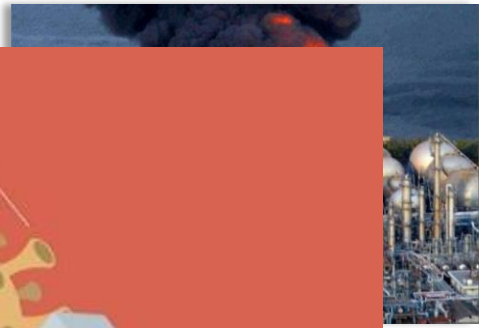
Fort McMurray Wildfires - 2016

Source: Microsoft Bing Search

Past Crisis and Examples – Why COVID is MUCH MUCH more



Globa
2008



-2011

Calgary Flood 2013

Fort McMurray Wildfires - 2016

Source: Microsoft Bing Search

COVID Impact is also GLOBAL and FAR Reaching on EPC Industry

The COVID-19 Impacts are Real

- Industry Study concludes - Construction Productivity **Decrease of 20%** because of COVID-19
- Through open, transparent and frank communications all parties in a project can mitigate these impacts

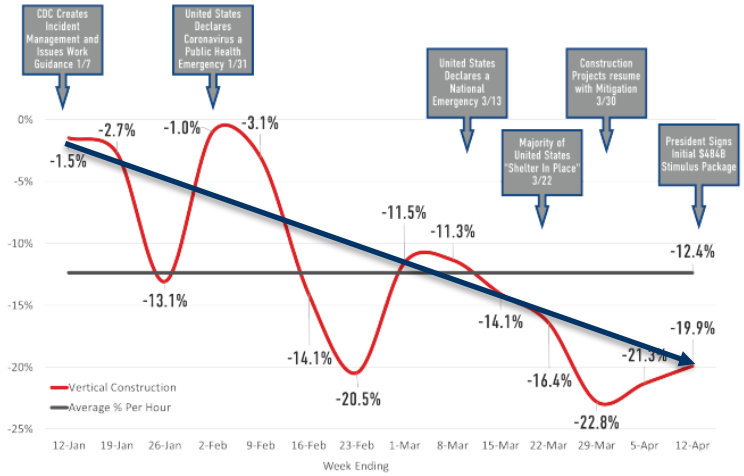


Figure 7: Vertical Construction Productivity Against Events

Pandemics and Construction Productivity: Quantifying the Impact

Figure 3 provides a table depicting the breakdown of hours collected and task coded to mitigation related activities:

	Total Hours	% of Total Hours	% of Mitigation Hours
Total Hours Available	77,205		
Mitigation Safety & Training	1,598	2.1%	29.6%
Mitigation Distancing & Access Rules	1,865	2.4%	34.6%
Mitigation Cleaning & Disinfecting	1,400	1.8%	25.9%
Mitigation Administration	532	0.7%	9.9%
Total Mitigation Hours	**5,394**	**7.0%**	**100.0%**

Figure 3: Hours by Task Code for Mitigation Activities

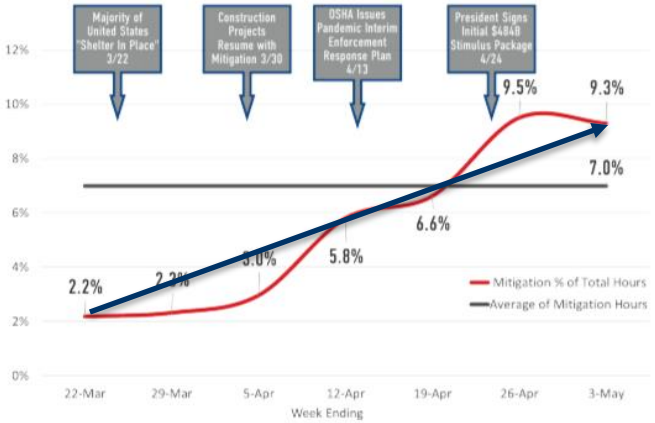
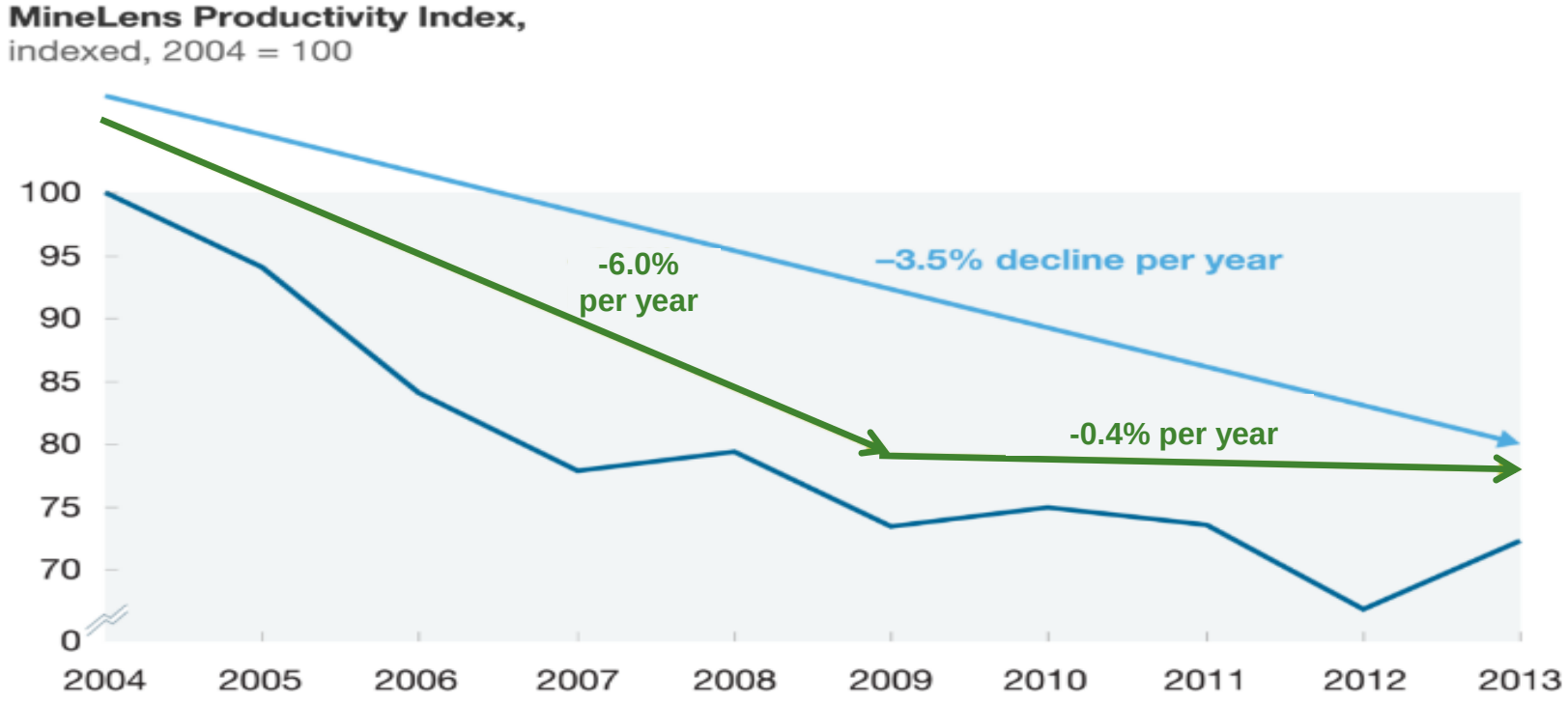


Figure 4: Mitigation Hours as a Percent of Total Hours by Week

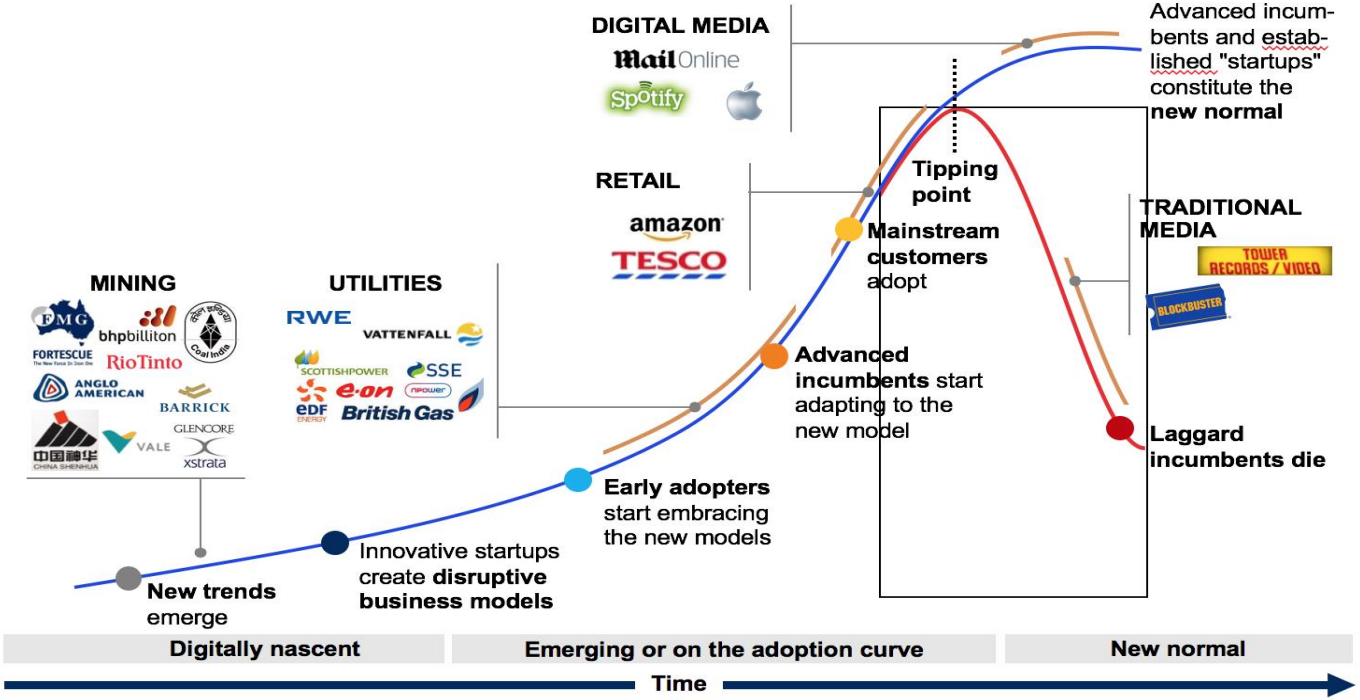
Source: Pandemics and Construction Productivity: Quantifying the Impact By Maxim Consulting Group August 5, 2020

On top of COVID Impact, There has been a global decline in mining productivity over the last 15 years …



Source: McKinsey & Company

Mining lags behind other industries on digital maturity

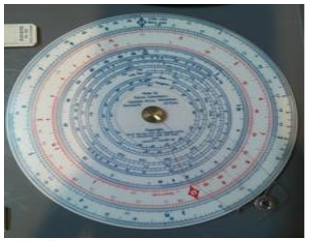


SOURCE: Expert interviews; McKinsey analysis

Do you remember these? Why this is NOT possible in the Mining Industry ?

PTAG

Slide rulers



Land line phone

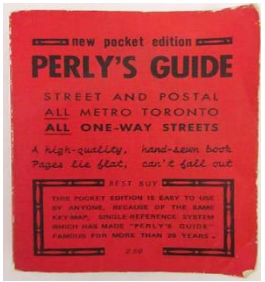
Computer

Now :

Sound system

Camera

Printed Map



All this and MORE!

What next??

Worst of all, Failure as an EPC Industry to Perform! Mining Projects have yielded near zero rate of return since last 50 years…..

98%

Of projects over $1 Billion exhibiting significant cost overruns.

(Source: Brenden Bechtel, CII, Annual Conference 2016)

65%

Of large scale industrial projects FAIL to meet business objectives.

(Source: Merrow 2011)

73%

Of mega-projects experience schedule overruns.

(Source: Ernst & Young 2014)

UP TO 57%

Of resources are wasted in construction, compared with 26% waste in manufacturing.

(Source: CII 2004)

Key Reasons – Why Projects Go Off-Track….?

McKinsey & Company **identifies the following factors accounting for poor productivity and cost outcomes:**

- **Poor Organization and Decision-Making**
- **Inadequate Communication**
- **Flawed Performance Management**
- **Contractual Misunderstandings**
- **Missed Connections**
- **Poor Short-Term Planning**
- **Insufficient Risk Management**
- **Limited Talent Management**

Source: Changali, Mohammed, and Nieuwland "The Construction Productivity Imperative" McKinsey & Company. July 2015.

Mining Industry can gain 50-60% productivity over next 5-10 years by using the 3 distinct formulas

1

RECOVERY & TRANSFORMATION

Rapidly drive cost and capital productivity by instilling an **owner's mindset and a relentless execution discipline** in the organization

18-24 months | **+25-30%** productivity

LEAN MANAGEMENT

Embed a manufacturing system to **drive stability, eliminate variability, and instill** a culture of **continuous improvement**

18-36 months | **+15-20%** productivity

2

DIGITAL TRANSFORMATION

Enable leaner and safer operations by using **data, analytics and automation to create better insights and** translating them into **actions**

18-24 months | **+10-15%** productivity

Full scale transformation

36-72 months | **+50-60%** productivity

3

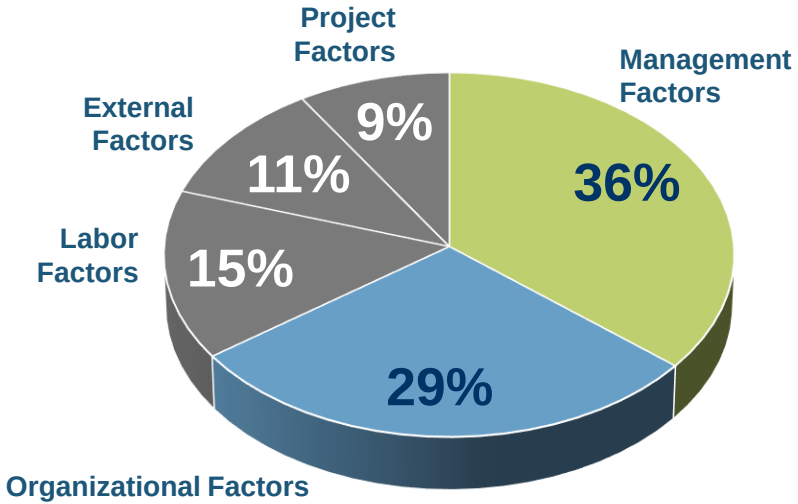
1. **Front-End Planning**
2. **Disciplined Stage-Gate**
3. **Project Set-up**
4. **Project Complexity Model**
5. **De-Risking the Project**

Source: Google Images

Underlying Root Causes ……. + Factors effecting productivity

- Lack of Front-End Planning
- Lack of Stakeholder Engagement
- No Stage Gate Process
- Too Rigid Stage Gate Process
- Critical Scope Changes during Execution

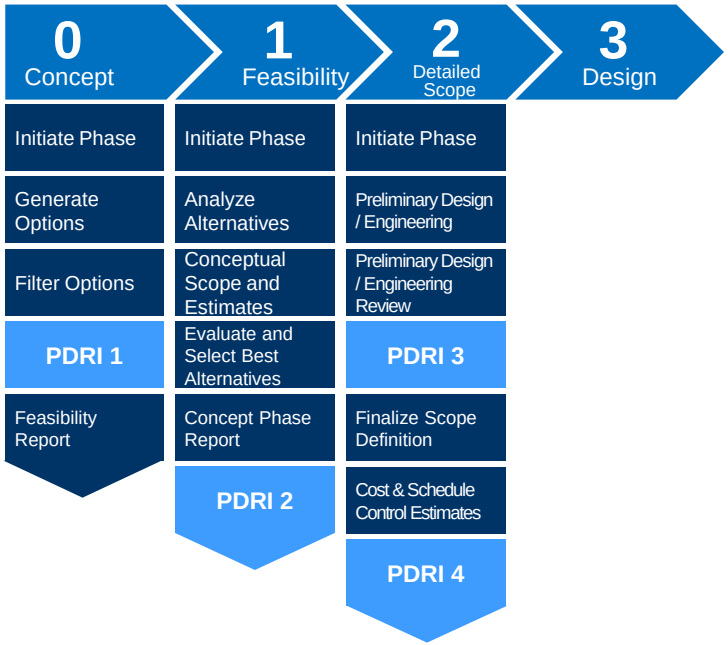
Factors effecting the productivity:

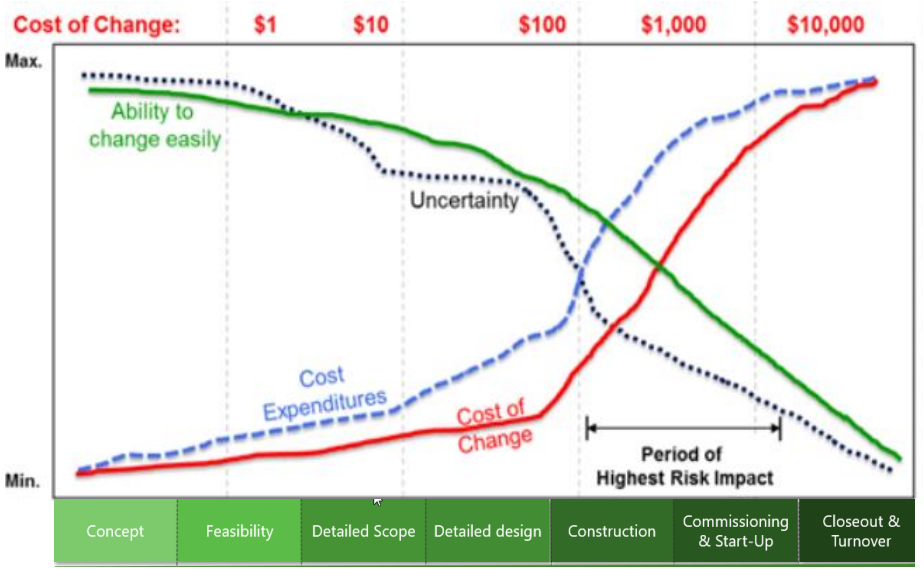


Source: Factors Affecting on Productivity of Oil and Gas Construction Projects: An AHP Analysis Khalegh Barati, Samad M.E. Sepasgozar

Front-End Planning – steppingstone to success

Front end planning (FEP) is the essential process of developing Sufficient Critical Information including Estimates, Schedules, Scope, Execution, and support plans so that owners can assess all the elements of a project to make a fully informed decision to commit resources to execute it.





Cost of Change Increase as Project Phases Advance

Source CII

Complete Project Set-up and Define List of Deliverables

Typically Project Team Follows a Fully Defined Corporate Guidelines (Problem: 1 size does not fit all)

Develop a simple Handbook (50-70 pages) with list of deliverables based on Project Complexity

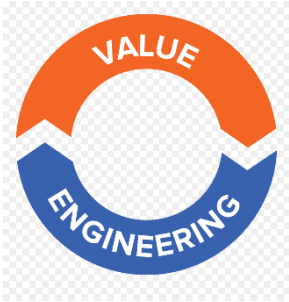
Handbook – A simple guide to success

1. Project Excellence and Best Practices
2. Stage Gate Process & Project Framework
3. Project Set-
4. Cost Manager (Estimation and
5. Planning and Sch
6. Procureme & Contracts Administration

7. Progress, Measurements and Metrics
8. Project Change Management
9. Project Quality Management
10. Project Risk Management
11. Project Analyses and Reporting
12. Construction, Operational Readiness, Handover and Closeouts

What are the other Key drivers to Consider in Improving the Outcome

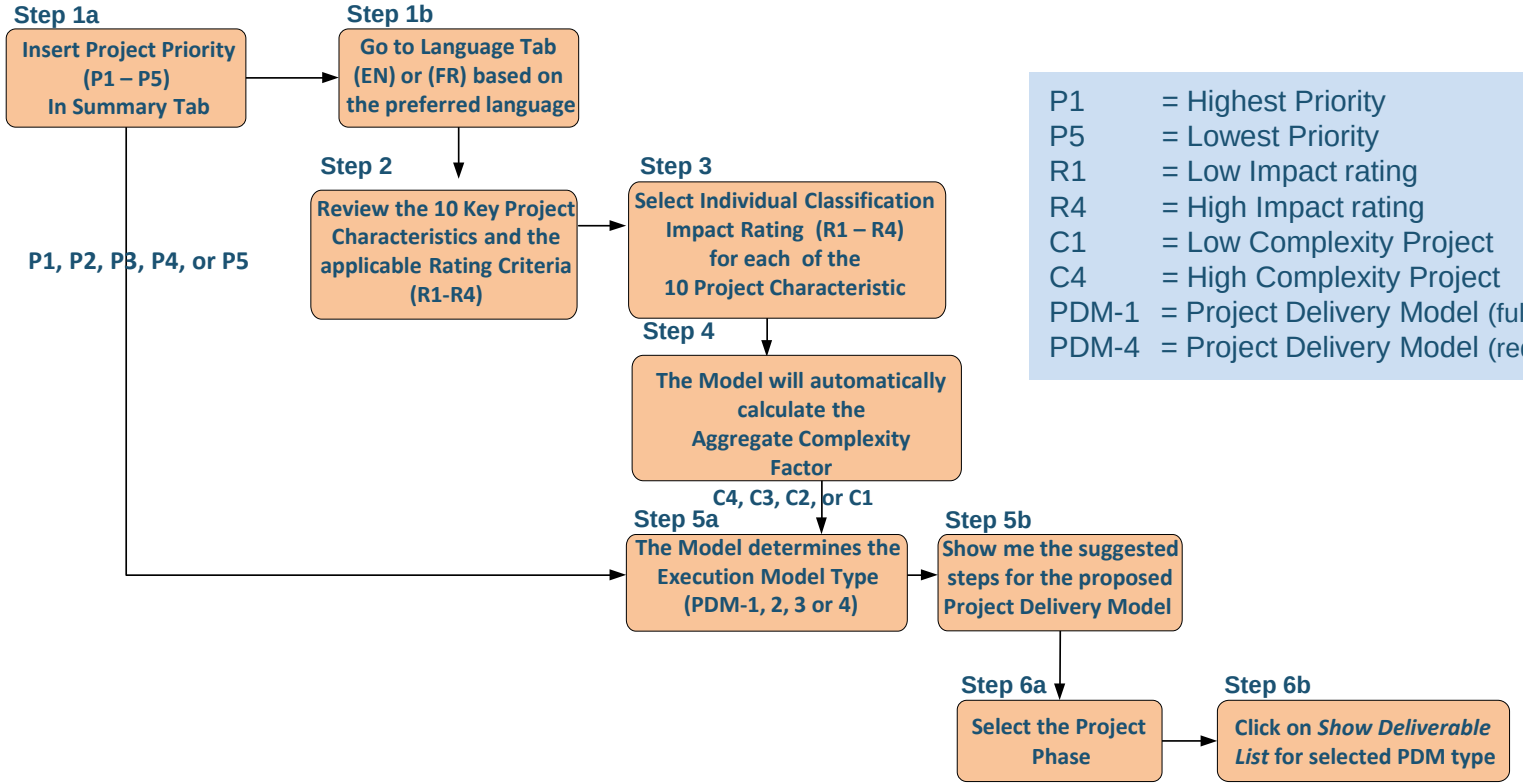
1. **Value Engineering (Value Planning)** a FEP **Best Practice**
2. Project Delivery and Contracting Strategy (PDCS) – Selected in FEP
3. **Integrated Project Execution Plan** (IPEP) – a roadmap to success
4. Rigorous **Project Controls** are Critical
5. **Risk Analysis Methodology** a key part of Front-End Planning
6. More about, Interactive **Project Management & Controls Handbook** – a key to Project Management and Delivery Success
7. Fully Analysing the **Impact of COVID** on HSE and Project Execution



Use a Project Complexity Model and Assess the Type of Project Delivery Model

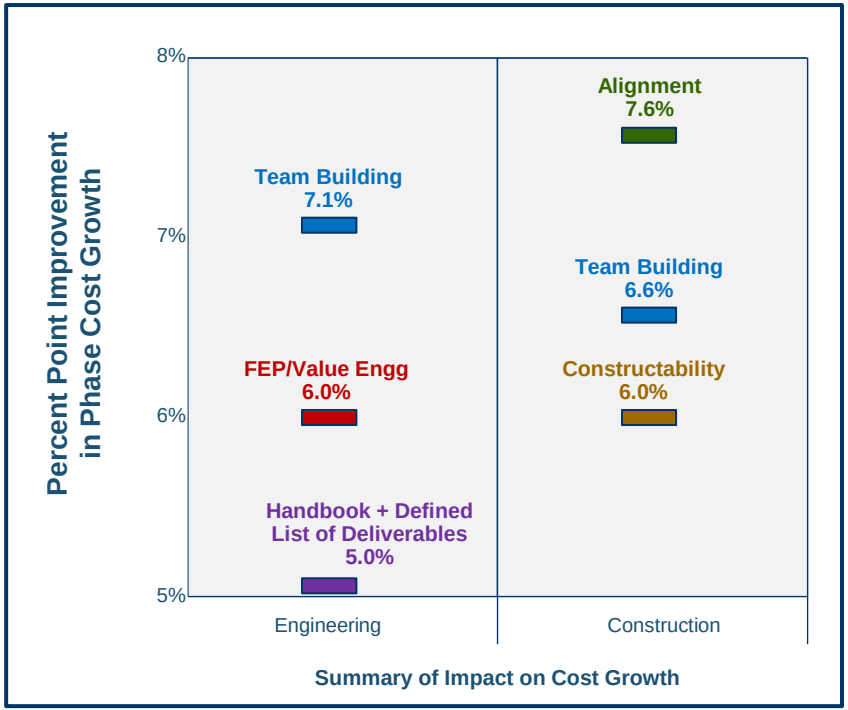
A PTAG tool to determine the List of Deliverables based on the Project Complexity and Project Delivery Model

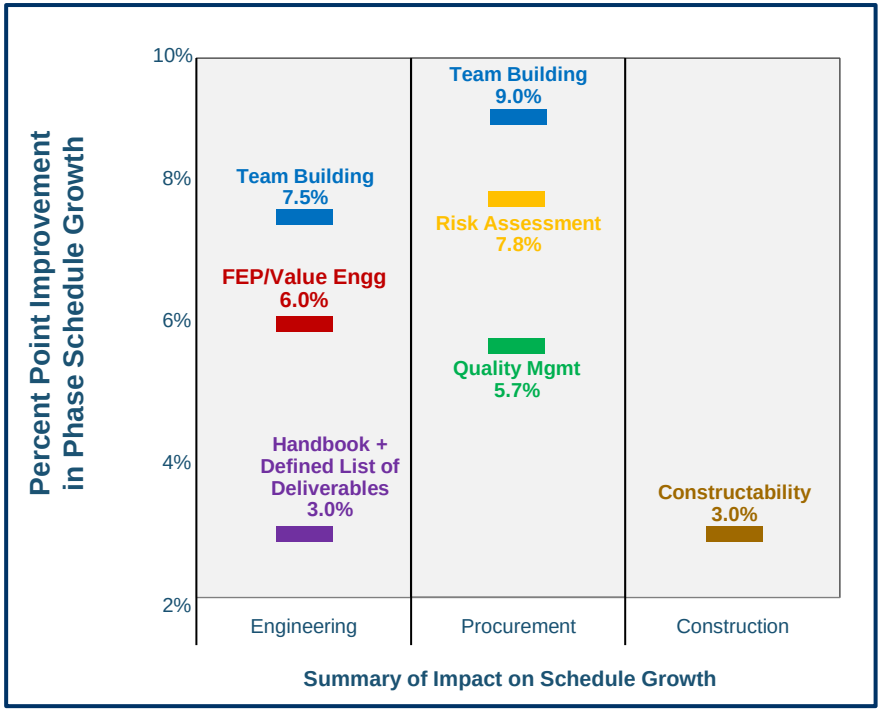
Building the "Project Delivery Model" – 6 Step Approach



P1 = Highest Priority
P5 = Lowest Priority
R1 = Low Impact rating
R4 = High Impact rating
C1 = Low Complexity Project
C4 = High Complexity Project
PDM-1 = Project Delivery Model (full deliverables)
PDM-4 = Project Delivery Model (reduced deliverables)

Value of Front-End Planning & Best Practice Implementation





Summary

1. Project Set-up, Initiation, Kick-off, and Alignment
2. Stage Gate Reviews, Project Audit & Assurance
3. Team Structure & Composition (Owners Team and Contractors)
4. Governance / Policies and Procedures + Deploy & Invest in Industry Best Practices (&Tools)
5. Prioritization with the Operational / Sustaining Capital Objectives
6. Project Risk Analyses Realization and Mitigation Strategies
7. Project Management Information Management, Set-up & Integration
8. QA/QC Reviews, Permits and Stakeholder Management Plan (CSR Plan)
9. Site Planning and Logistics, Technical Issues, Operational Input & Reviews, and Handover
10. Look Ahead Plan with Project Execution Strategy and Resource Loaded Schedule with “pull planning process”

It is not all about technical deliverables but managing the BIG picture (from A-Z) – 10 steps approach

What are other things to consider ?

1) Mitigate or minimise the **impact of force majeure and COVID-19**

2) Develop the **Execution Plan** based on Project Complexity Model and Deploy Suitable Project Delivery Model (PTAG's Tool to determine the List of Deliverables)

3) Ensure that team develops a **Robust Supply Chain** Program with close attention to delivery and fabrication

4) **Constructability, AWP**, Site Planning (pre-assembly and pre-fab) etc.

5) **Bigger Camp** Considerations due to physical distancing

6) **Risk sharing** and collaborative approach – remove execution barriers and duplications.

7) Give the team – a **handbook to align** themselves better

Questions and Answers

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“ We can’t direct the wind but we can adjust the sails” – T. Monson