

Improving Cost Performance Index (CPI) in the Early Stages of Project Execution

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Project Controls
EXPO
London, UK

لِعَمَان
FOR OMAN



شركة تنمية نفط عمان
Petroleum Development Oman

ABOUT THE SPEAKER



Cost & Planning Engineer, Petroleum Development Oman



9+ years experience in Project Controls within Oil & Gas Industry covering various phases of the project life cycle (FEL, Detail Design, Procurement & Construction)



Hands-on experience in various Project Controls tools & systems, e.g., Oracle Primavera, MS Projects, Easy Risk, SAP, SPO etc.



Worked with Multi-challenging projects and developed Project Controls expertise in all key phases of a project from Initiation phase to final handover



INFLATED CPI IS A HIDDEN DANGER !

A false sense of security!



A "perfect" budget performance
Slow & Safe

Speeding towards a problem
out of control



AGENDA

 **About the Company**

 **Introduction – Ineffective CPI Reporting**

 **Case Study – Root Causes**

 **Key Challenges**

 **Optimised Solution**

 **Way Forward**

About PDO

Petroleum Development Oman (PDO) is the leading exploration and production company in the Sultanate of Oman. We deliver the majority of the country's crude oil production and natural gas supply, but above all we focus on delivering excellence, growth and sustainable value creation within and well beyond our industry.

PDO Shareholders:

Oil

60% EDO

(Representing
The Government of Oman)

34% Shell

4% TotalEnergies

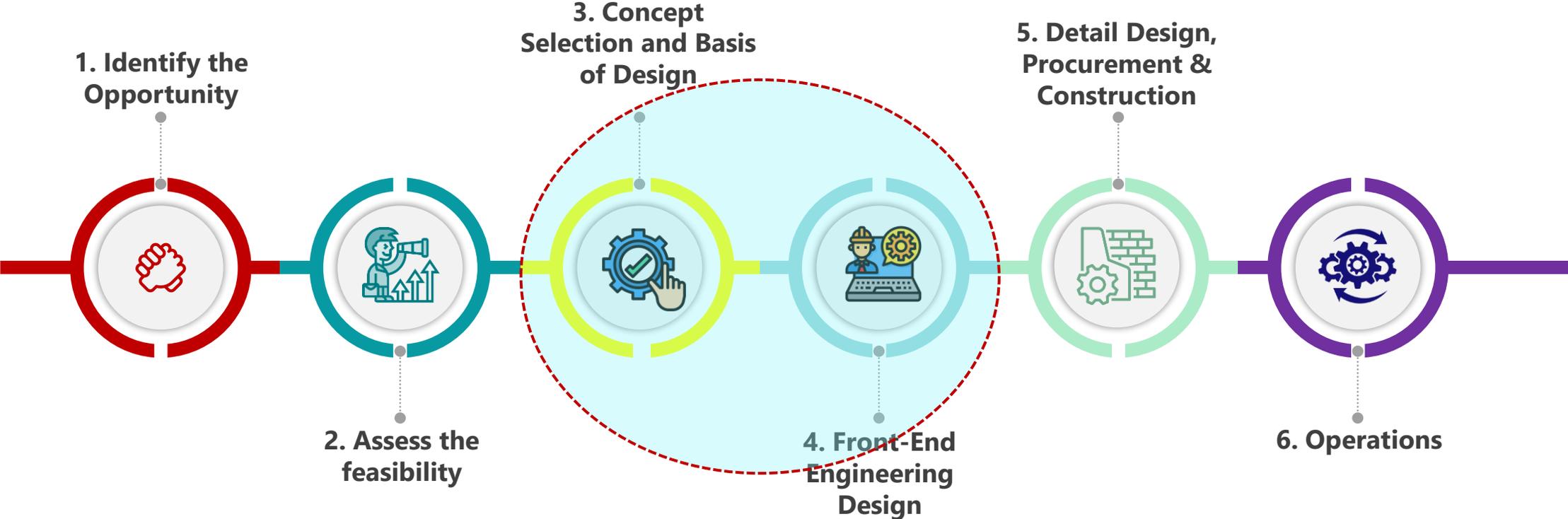
2% PTTEP

Gas

100% EDO (Representing The Government of Oman)

Gas fields and processing plants are operated by PDO exclusively on behalf of EDO.

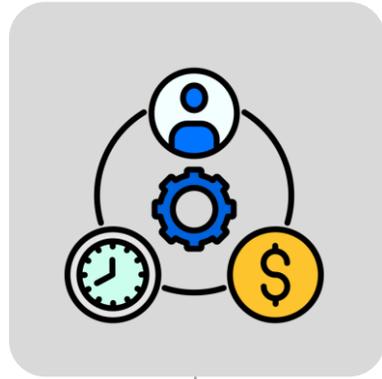
PROJECT EXECUTION LIFE CYCLE



WORKFLOW OF CPI REPORTING



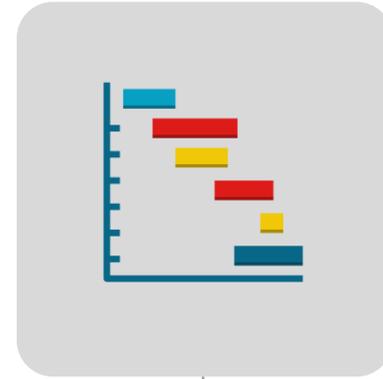
Project Initiation



CTR Estimation



Budget Approval



**Schedule
Preparation &
PMS Issuance**

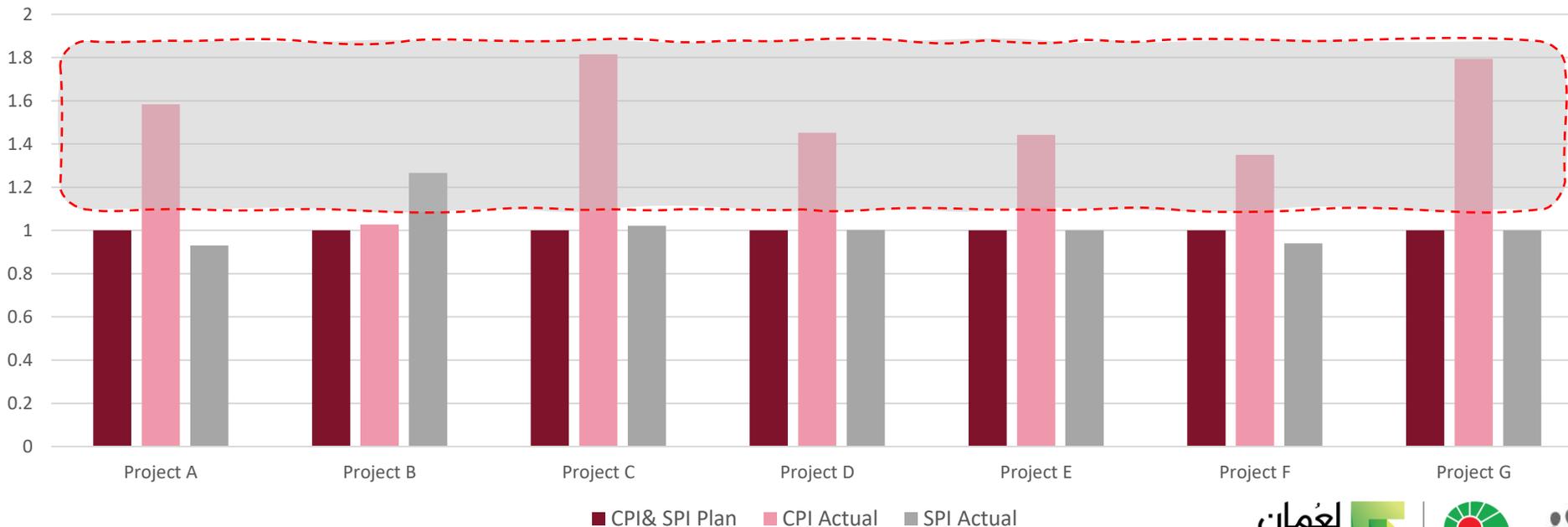


**Weekly / Monthly
Reporting**

CASE STUDY: PROJECT ALPHA – INEFFECTIVE CPI REPORTING

- **Earned Man-Hours** significantly **exceeding Consumed Man-Hours** in the initial stages of the **project (0-50% progress)**, resulting in an inflated CPI beyond the acceptable limit of +/- 5%
- Ideally, CPI can be controlled if it is within an acceptable range to ensure the project remains on track in terms of the budget.

Actual Average Project's CPI & SPI Vs Planned Average in (0-50% Progress)



KEY CHALLENGES IN CPI REPORTING



1. Pressure of explaining significant discrepancies

2. Distrust in reported progress

3. Scope change timely approvals or resource adjustments

4. Delaying crucial interventions

5. Hinders Proactive Cost Management

6. Hindered Decision-Making

STRATEGIC INTERVENTION – STRUCTURED AND COLLABORATIVE APPROACH



1: Refining Progress Measurement

2: Optimising Man-Hour Allocation

3: Revamping the Progress Measurement System (PMS)

4: Expediting Timesheet Bookings

1: REFINING PROGRESS MEASUREMENT

Removed one-time, pre-project generic activities from progress measurements. These activities didn't reflect true project execution:

- **Input to CTR development**
- **Review of Scope of work**
- **Input to Establish level 3 schedule**

Claiming all these **pre-execution activities** causes a massive, **one-time spike in earned man-hours**, which gives a misleadingly **higher CPI** that did not reflect the actual progress of the project.



2: OPTIMISING MANHOUR ALLOCATION

Optimize man-hours for routine, recurring activities by ensuring that time charged is directly aligned with the actual work performed. Examples include:

- Weekly progress meetings
- Contributions to weekly progress reports
- Attendance at weekly and kick-off meetings

"**optimize**" means to streamline these activities to be more:



Efficient



Focused



Productive

- Thereby, **reducing the total time and effort** spent on them.
- In project management practice , the goal is to **maximize the value** derived from the time invested on these activities.

3: REVAMPING PROGRESS MEASUREMENT SYSTEM

Updating the PMS sheet to calculate progress from quantities of the deliverables at different stage gate

New PMS		Progress This Week						Activity / Deliverable	Total	Started	Draft	Verification	Comment incorporated	Issued
CTRNo	Activity	StartDate	FinishDate	F-Plan	Actual	Variance	Forecast Finish							
Project WBS	Project Alpha A	3-Feb-25	4-Sep-25	21.7%	23.2%	1.5%								
WBS.1	Project Management	3-Feb-25	4-Sep-25	27.3%	26.0%	-1.3%								
WBS.1.A	Project Leadership Scope	3-Feb-25	4-Sep-25	100.0%	100.0%	0.0%								
Z01	Activity 1	15-Jun-25	16-Jun-25	100%	100.0%	0.0%		Act						
Z02	Activity 2	22-Jun-25	22-Jun-25	100%	100.0%	0.0%		Act						
Z03	Activity 3	14-Jul-25	15-Jul-25	100%	100.0%	0.0%		Act						
Z04	Activity 4	28-Jul-25	28-Jul-25	100%	100.0%	0.0%		Act						
Z05	Activity 5	17-Aug-25	21-Aug-25	100%	100.0%	0.0%		Act						
Z06	Activity 6	28-Aug-25	28-Aug-25	100%	100.0%	0.0%		Act						
WBS.1.C	HSSE & SP	27-Feb-25	27-Aug-25	27.5%	13.0%	-14.5%								
H01	Activity 9	27-Feb-25	5-Mar-25	100%	100.0%	0.0%		Del	1	1	1	1	1	
H02	Activity 10	4-Mar-25	27-Aug-25	20%	20.0%	0.0%		Act						
H03	Activity 11	10-Mar-25	17-Mar-25	100%	11.8%	-88.2%	30-Mar-25	Del	50	10	8	7	1	
H04	Activity 12	19-Mar-25	14-Apr-25	87%		-86.7%	27-Apr-25	Del	1					
H05	Activity 13	14-Apr-25	11-May-25	0.0%	10.0%	10.0%		Del	1	1				
H06	Activity 14	23-Apr-25	29-Apr-25	0.0%		0.0%		Del						

For all Activity and Deliverables in Delay it will be mandatory to enter Forecast Finish Date

For Deliverables; Discipline to enter quantity at each step

4: EXPEDITING TIMESHEET BOOKINGS

Focusing on process improvements to ensure that timesheets were booked on time, which is critical for real-time accuracy.

Improving the Cost Performance Index (CPI) by providing project managers with timely and accurate data for better decision-making.

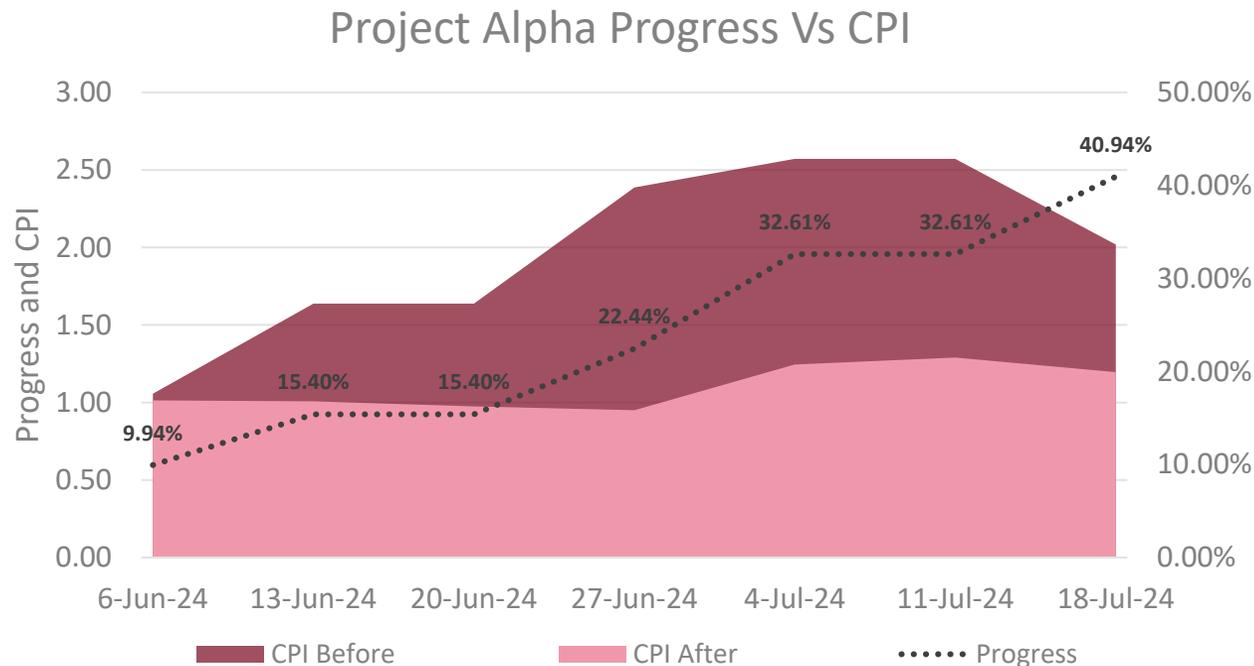
$$CPI = \text{Earned Value (EV)} / \text{Actual Cost (AC)}$$

Timely timesheet entries **directly impact** the accuracy of the "**Actual Cost (AC)**" variable in this formula, allowing project managers to correct issues sooner and prevent budget overruns.

Weekend	Period Month-Year	Employee Name	Project Discipline	Position_Name	Project No	Project WBS	Project_Name	Activity_Description	Normal Hrs	Overtime Hrs	Week Total Hrs
01/03/2025	Feb-2025	Nabila	C&A	Sr. C&A Designer	2024-XYZ	CX.Z.AB	Project Alpha - A	Discipline Drawings	10	0	10
19/04/2025	Apr-2025	Mohamed	Civils	Civil Engineer	2024-XYZ	CX.Z.AB	Project Alpha - A	Discipline Project Management	13	0	13
31/05/2025	May-2025	Subhash	Electrical	Sr. Electrical Engineer	2024-XYZ	CX.Z.AB	Project Alpha - A	Design Activities	7	0	7
26/04/2025	Apr-2025	Siva	HSE	HSE Engineer	2024-XYZ	CX.Z.AB	Project Alpha - B	Technical Safety	7	0	7
03/05/2025	May-2025	Mazin	IM	Document Controller	2024-XYZ	CX.Z.AB	Project Alpha - B	Project IM and DCC Support	5	0	5
24/05/2025	May-2025	Abdullah	Static	Static Eq. Engineer	2024-XYZ	CX.Z.AB	Project Alpha - C	Discipline Project Management	2	0	2
15/03/2025	Mar-2025	Sreekanth	Plant Piping	Piping Engineer	2024-XYZ	CX.Z.AB	Project Alpha - D	Piping Layout	10	0	10
10/05/2025	May-2025	Hilal	Rotating	Rotating Eq. Engineer	2024-XYZ	CX.Z.AB	Project Alpha - E	Design Studies	6	0	6
22/03/2025	Mar-2025	Rajashekara	Pipelines	Sr. Pipeline Engineer	2024-XYZ	CX.Z.AB	Project Alpha - E	Calculations, Design Reports	8	0	8
17/05/2025	May-2025	Mohammed	Process	Sr. Process Designer	2024-XYZ	CX.Z.AB	Project Alpha - F	Discipline Drawings	16	0	16
31/05/2025	May-2025	Sultan	PM	Sr. Project Engineer	2024-XYZ	CX.Z.AB	Project Alpha - F	Project Engineering Scope	10	0	10
24/05/2025	May-2025	Ahmed	QA/QC	QA/QC Engineer	2024-XYZ	CX.Z.AB	Project Alpha - F	Project Quality Assurance & Audit	7	0	7
10/05/2025	May-2025	Salim	Project Services	Project Control Engineer	2024-XYZ	CX.Z.AB	Project Alpha - G	Project Cost Control & Reporting	15	0	15

RESULTS & OUTCOME – THE CPI TRANSFORMATION

- The CPI for Project Alpha improved from a misleading 1.9 to an accurate 1.09 within the first 40% of project progress.
- This represented an 81% reduction towards the ideal CPI of 1.0.

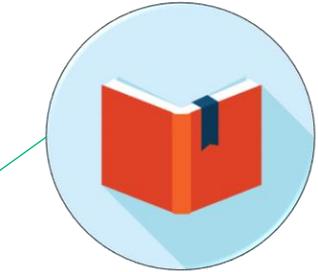


Beyond the numbers, this improvement led to tangible benefits:

- A precise understanding of our project's true health.
- Data-driven decision-making and proactive cost control.
- Restored credibility with stakeholders and leadership.

STANDARDISED APPROACH

To sustain these improvements and ensure broader impact:



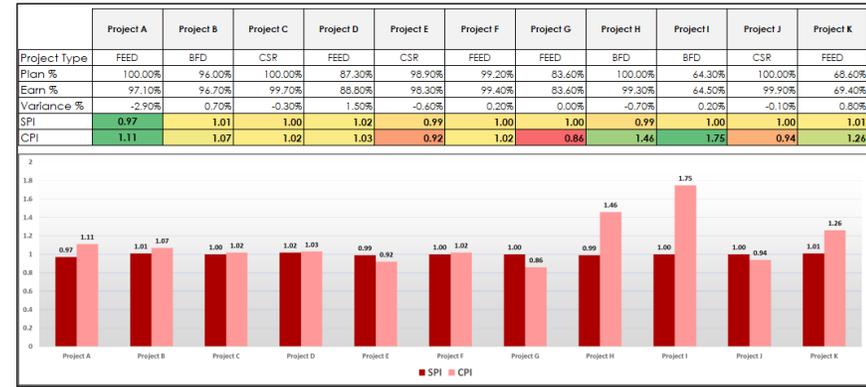
Updates to the norm book



Enhance Progress Measurement Tool

To Monitor SPI and CPI on regular intervals:

Weekly Progress Report



Monthly Progress Report



CONCLUSION – CPI ACCURACY DRIVE SUCCESS

- This **standardized approach** provides a clear pathway to accurately assess and correct an inflated CPI, ensuring that data reflects reality.

By enhancing CPI accuracy early in a project, we can:

- Gain a **precise understanding** of project health through an accurate reflection of project status.
- **Implement** timely and effective project **control measures** by identifying **cost overruns or underruns** promptly.
- Make data-driven decisions to optimize resource allocation and mitigate risks.
- **Increase the likelihood of project success** by proactively addressing potential issues.

Thank
You