Current Techniques for Multi Path Analysis of Major Project Schedules

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Paint Scheme Change

- Third ship requiring full paint scheme change on hull plus all external fixtures and fittings
- Ship 1
  - Achieved Duration: 14 Months
  - Actual Labour Hours: 14000+
- Ship 2
  - Achieved Duration: 13 Months
  - Actual Labour Hours 15000+
- Ship 3 – Ops Estimates
  - Planned Duration: **10 Months**
  - Estimated Labour Hours: **8000**

If you choose to ignore project performance data, ensure that there is a very good reason to do so. Question what has materially changed to drive significant performance improvements.

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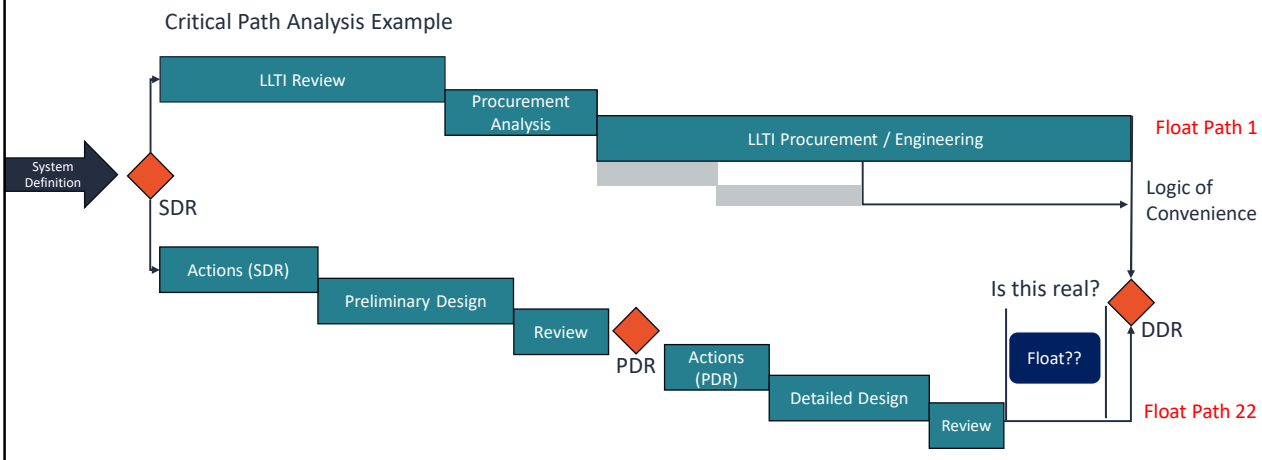
Critical Path Analysis Case Study



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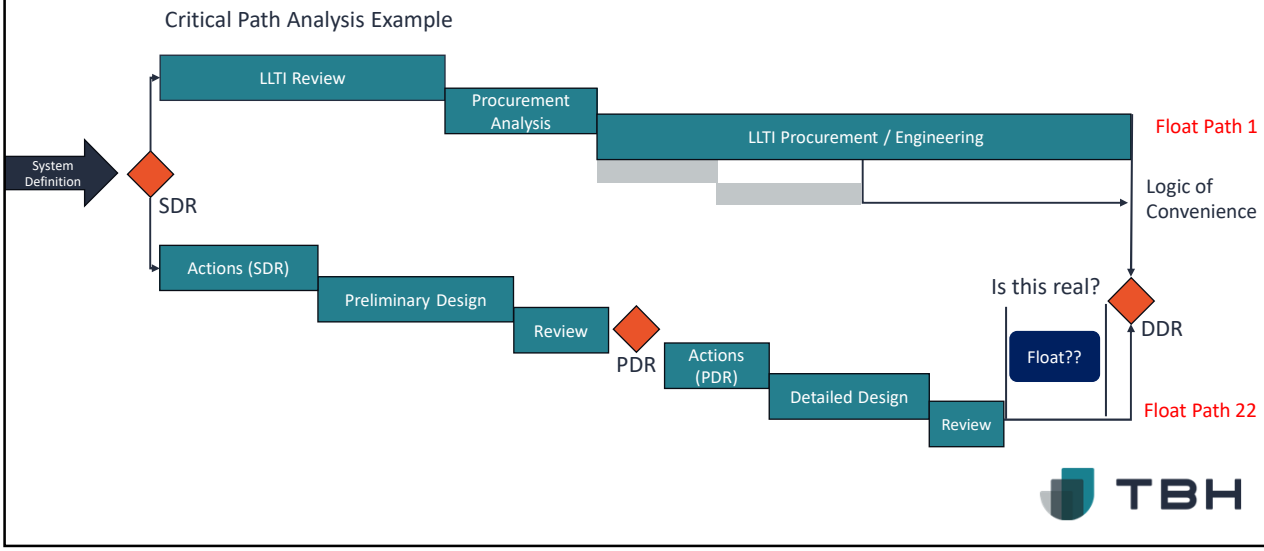
Critical Path Analysis Case Study



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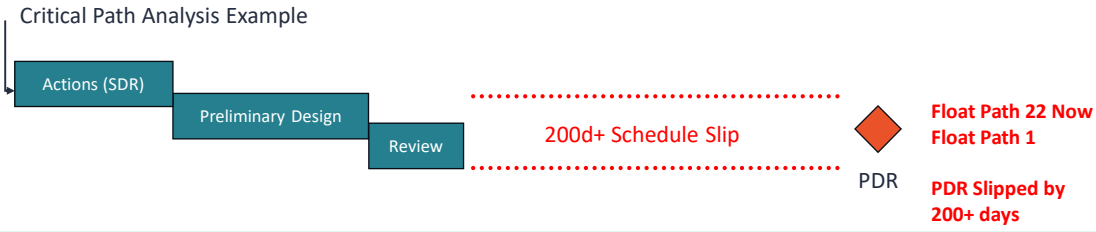

Project Context:

- Chief Engineer Office high trust relationship with Customer
- PMO Producing Critical Path Analysis
- Schedulers Embedded in Engineering and Supply Chain Teams
- Tunnel Vision had Developed on calculated 'Critical Path'
- No Schedule Risk Analysis Conducted
- The Program Manager had 'endorsed the Critical Path'

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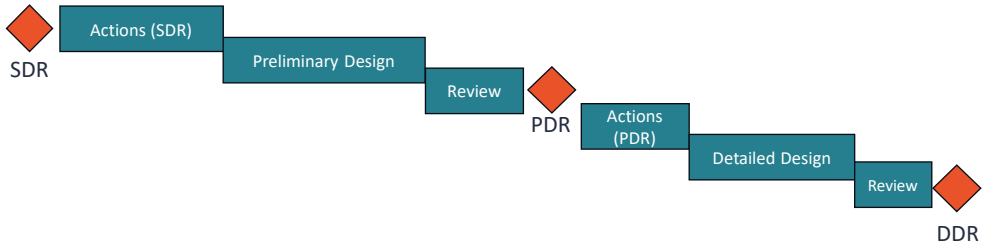
Critical Path Analysis Case Study



- In practice, there is not a singular critical path on major programs
- Focusing on and managing just the current calculated most critical path is potentially risky
- Identify high risk and high uncertainty components of the network (preferably via probabilistic analysis)
- Focus CPA on higher risk milestones/events with higher fidelity focus on nearer term milestones
- Available float is not a reliable indicator of the risk profile of the associated sections of the network
- Running regular, high quality SRAs with both risk and duration uncertainty is strongly recommended
- Beware tunnel vision on calculated 'Critical Path'
- Avoid looking at poor implementations of critical path method and blaming the system!

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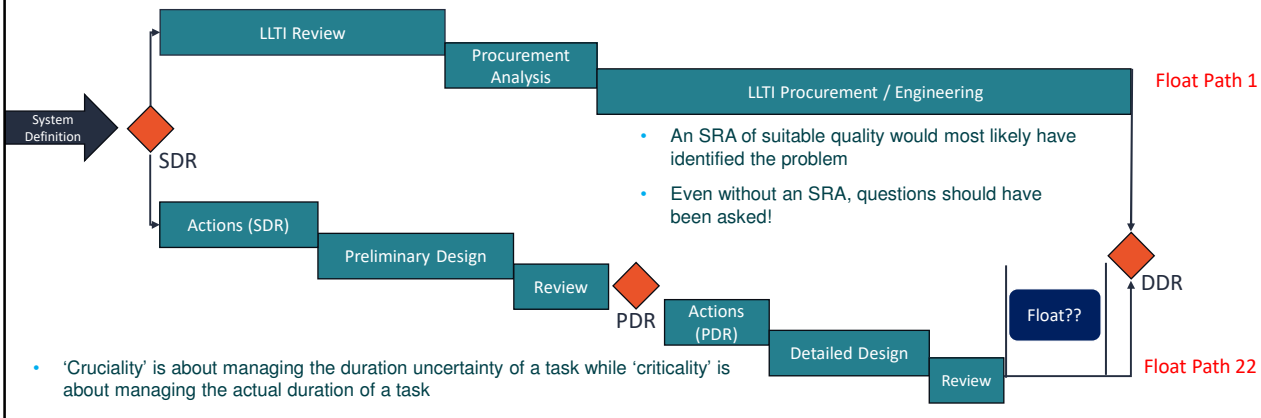
Critical Path Analysis – Criticality vs Cruciality



- 'Cruciality' is about managing the duration uncertainty of a task while 'criticality' is about managing the actual duration of a task
- Both are indexable, the criticality index assesses the probability that an activity lies on the critical path
- the cruciality index assess duration sensitivity of individual activities by correlating the activity duration and the total project duration
- Is there a place for experience based 'anecdotal cruciality'?

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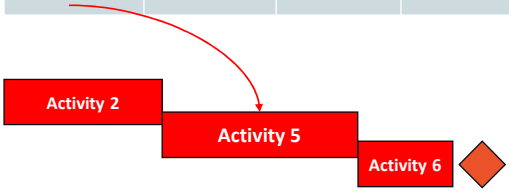
Elapsed Duration Analysis

	% Complete	Elapsed Duration	Schedule Remaining Duration	Performance Factored Remaining Duration
Activity 01	40%	101d	10d	**152d**
Activity 03	24%	40d	2d	**127d**
Activity 05	**52%**	**96d**	**22d**	**89d**



- Activity 5 was sitting on the critical path to a contract milestone with zero days of float
- There was 67 days delta between the entered remaining duration and performance factored calculated remaining duration

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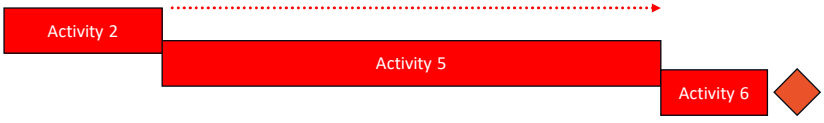
Elapsed Duration Analysis

	% Complete	Elapsed Duration	Schedule Remaining Duration	Performance Factored Remaining Duration
Activity 01	40%	101d	10d	**152d**
Activity 03	24%	40d	2d	**127d**
Activity 05	**52%**	**96d**	**22d**	89d



- Does this analysis appear similar to any other models?
- Looking to implement Earned Schedule on your project, start with analysis of data in your schedule and begin socialising the concepts
- What other explanation could there be here?
- Validate entered % complete before drawing conclusions

Try conducting this analysis and recreating critical path(s) utilising performance factored remaining duration for in progress tasks (> 20%)

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Duration % Complete Analysis

	% Complete (entered)	Schedule Baseline Duration	Schedule Remaining Duration	Duration % Complete (calculated)
Activity 01	40%	50d	10d	80%
Activity 03	24%	28d	2d	93%
Activity 05	52%	62d	22d	65%

$$\frac{\text{Baseline Duration} - \text{Remaining Duration}}{\text{Baseline Duration}}$$

- Delta between % compete entered and duration % complete may indicate an issue with validity of remaining duration
- Look to see if this is being driven by entered expected finish dates not being updated.
- Validate entered % complete before drawing conclusions
- Requires robust baseline durations to produce meaningful analysis

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Key Points Recap

- If you choose to ignore project performance data, ensure that there is a very good reason to do so. Question what has changed or is likely to change
- In practice, there is not a singular critical path on major programs and solely analysing and managing the current calculated most critical path is potentially risky
- Running regular, high quality SRAs with both risk and duration uncertainty is strongly recommended and is one of the best ways of assessing the validity of critical and sub critical paths
- Critical Path schedules contain a lot of useful data, consider how you can utilise this data to stress test the validity and reliability of forecast and increase the value proposition for effective project controls
- ALL project management methodologies are undermined if the quality and accuracy of data flowing in and out of the project controls system is poor, not adequately analysed, or not acted upon

- Generating project reports and artefacts is not what project controls is about. Is your project controls organisation proactively contributing to delivering successful project outcomes?

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Questions?