Project Controls EXPO

Project Controls Expo – 16th Nov 2017
Emirates Stadium, London

Improving forecasting to optimise programme and project decisions

Chris Beach

About the Speaker

wood.

Chris is **Strategy Director** of the **Programme and Project Solutions** service at **Wood**, supporting customers in environment and infrastructure sectors in the UK, Europe and Middle East.

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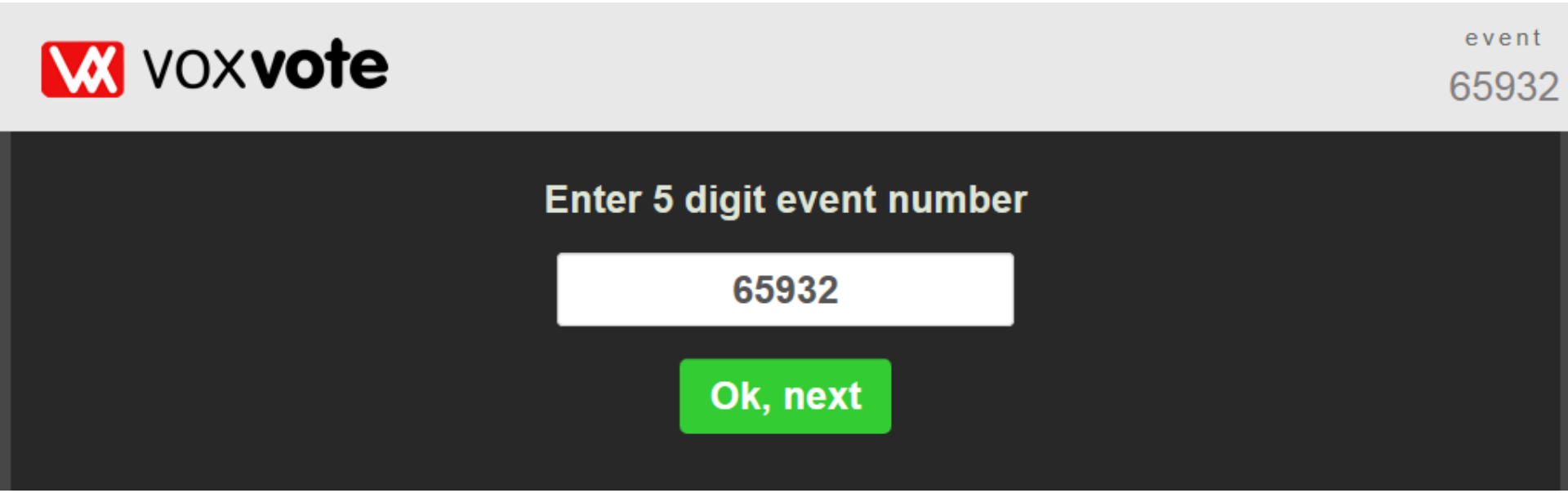
About the Topic

The presentation will provide a perspective on:

- How well we can predict the future success of projects and what can be learned from other industries
- Importance of considering uncertainty in forecasts
- Using trends to improve forecasting
- Use of scenario analysis to understand the range of possible project results

Your Participation

Live.voxvote.com



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Of course my project will be a success!

- ☐ On time
- ☐ On budget
- ☐ Quality achieved
- ☐ Happy stakeholders
- ☐ Zero harm
- ☐ Benefits delivered

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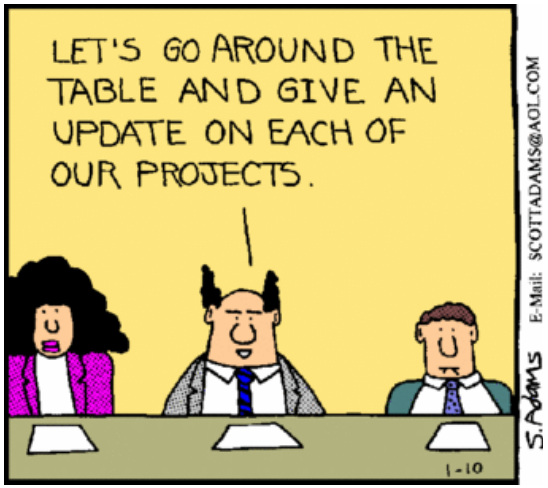
Of course my project will be a success!



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Decisions will be required

Strategic (Direction)

- ☐ Project Scope
- ☐ Pass a stage gate
- ☐ Contract strategy
- ☐ Which option to select
- ☐ Risk appetite

Tactical (Control)

- ☐ Specification detail
- ☐ Resource allocation
- ☐ Supplier payment
- ☐ Sequencing of work
- ☐ Allocation of contingency

Others?

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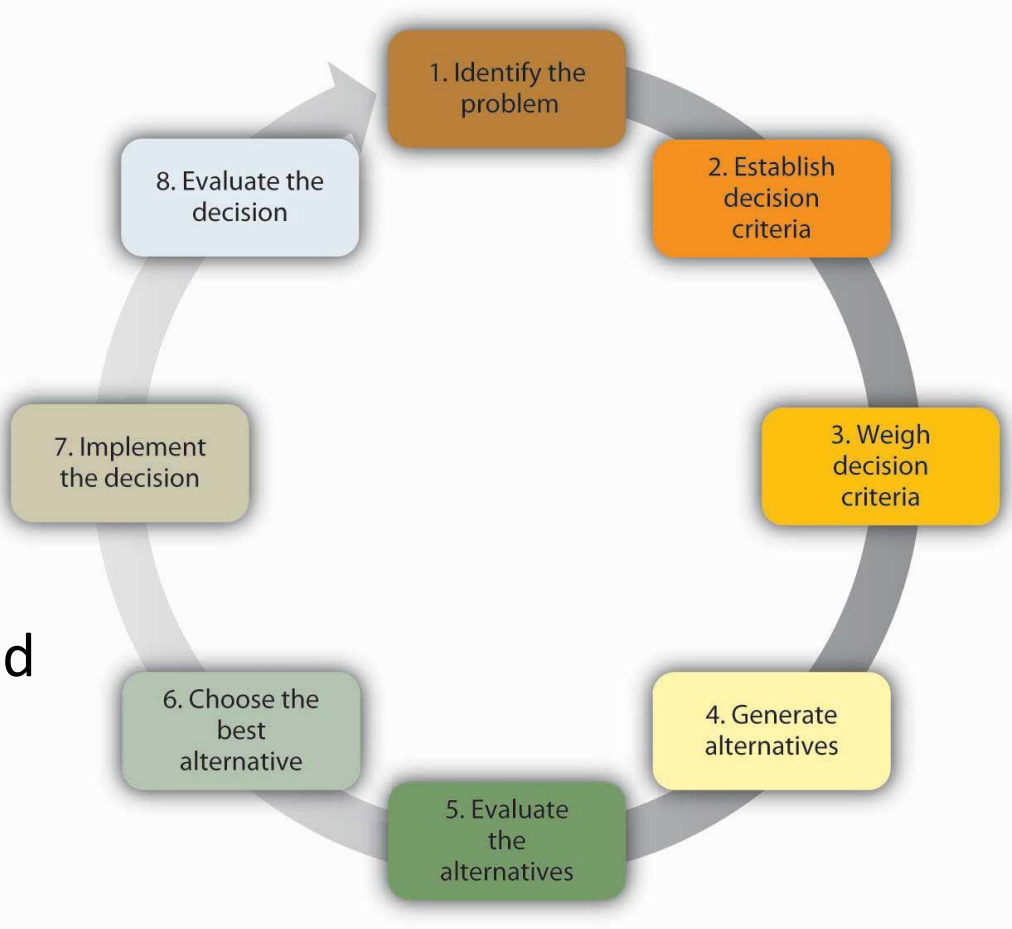
Decision-making process

Assumes

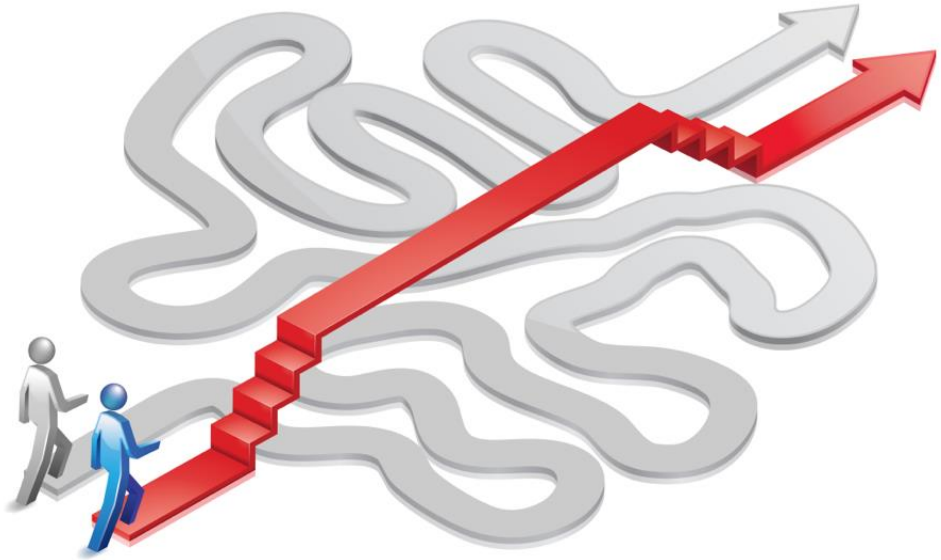
- Full and accurate information is available
- Measurable criteria exist for which data can be collected and analysed.
- Decision-maker has the cognitive ability, time, and resources to evaluate each alternative against the others



Role of Project Controls

Support decision-makers by:

- Creating structure
- Simplify complexity
- Converting data into Information



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Forecasting - Lessons from other industries – Resource Planning

- 18,000 flights cancelled from November to March
- Grounding 25 of its 400 aircraft
- Suspended 34 routes over the winter
- Cost of €34.5m

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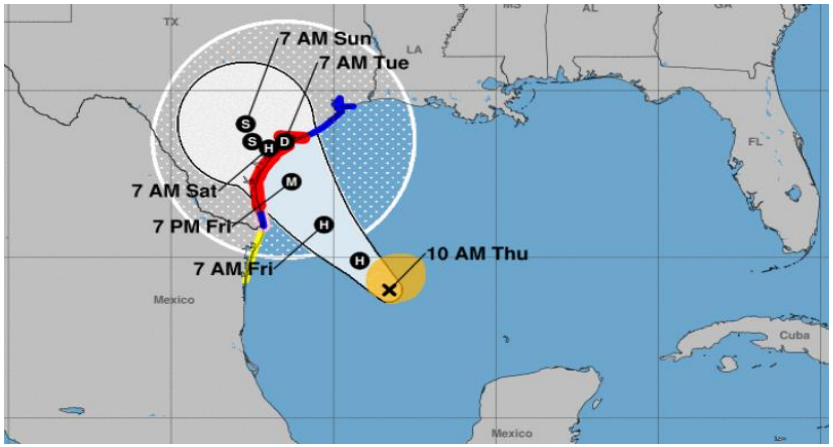
Forecasting - Lessons from other industries – Weather Forecasting

- Weather data up to a 500-meter resolution from 200,000 personal weather stations across the globe, providing 2.2 billion forecasts daily.
- Hurricane Harvey – detailed modelling incorporating historic data and monte-carlo simulation



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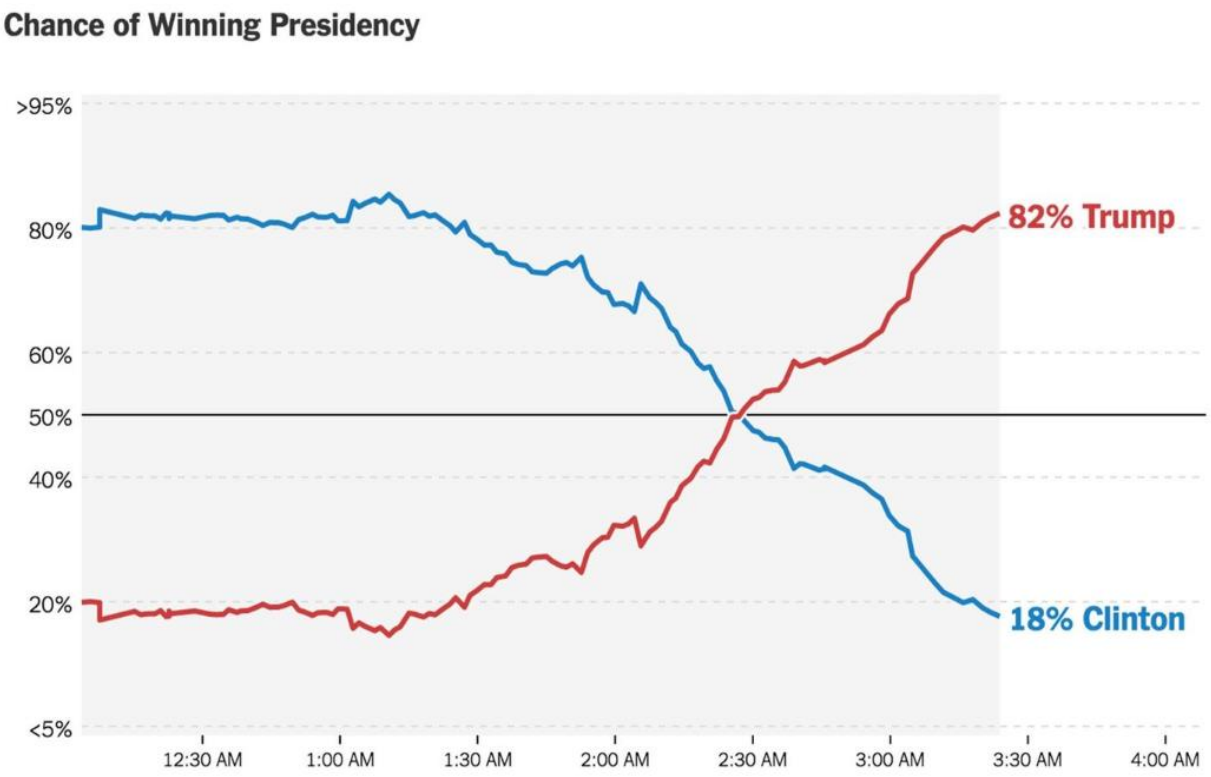
Forecasting - Lessons from other industries – Election Forecasting

Ahead of election probability of Clinton win -

- New York Times – 85%
- Huffington Post – 98.3%



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What do these examples tell us?

Requirements for a reliable forecast:

- Robust historic information
- Incorporation of uncertainty
- Understanding the drivers of trends
- Simulation modelling of potential outcomes

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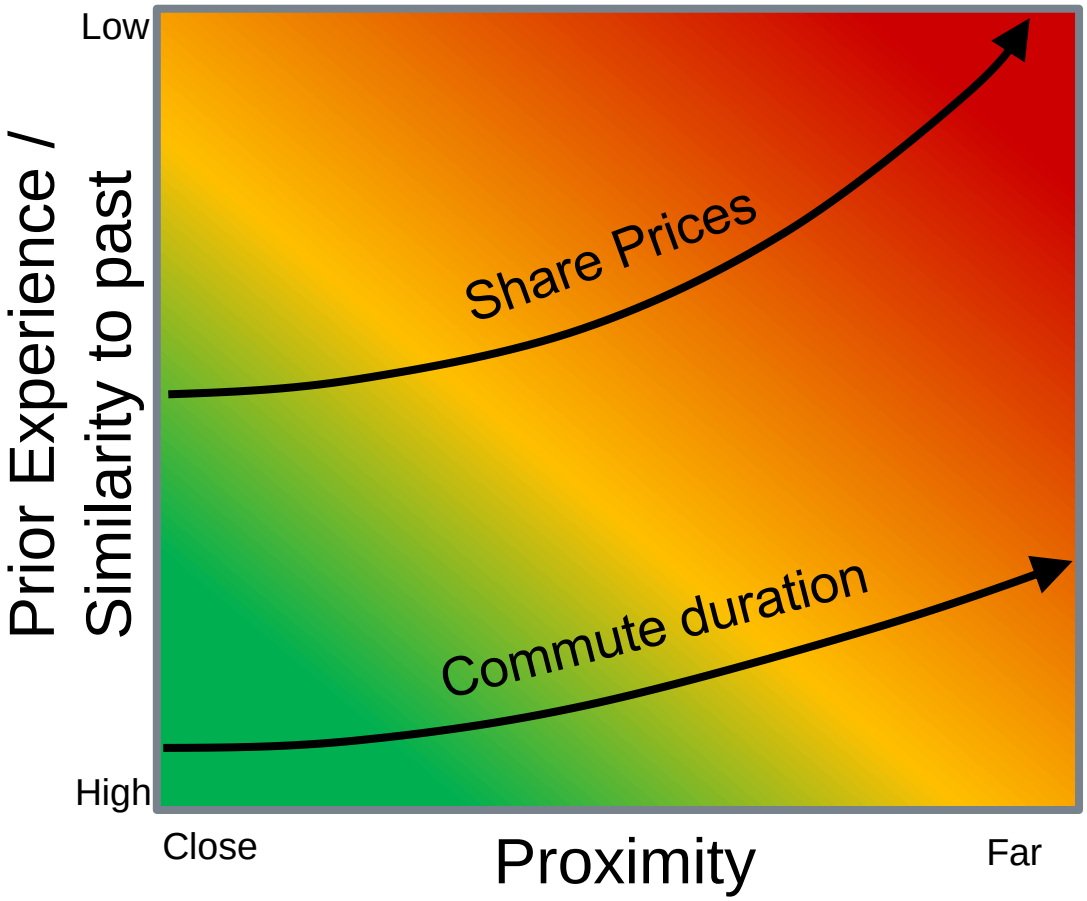
Factors affecting ability to forecast



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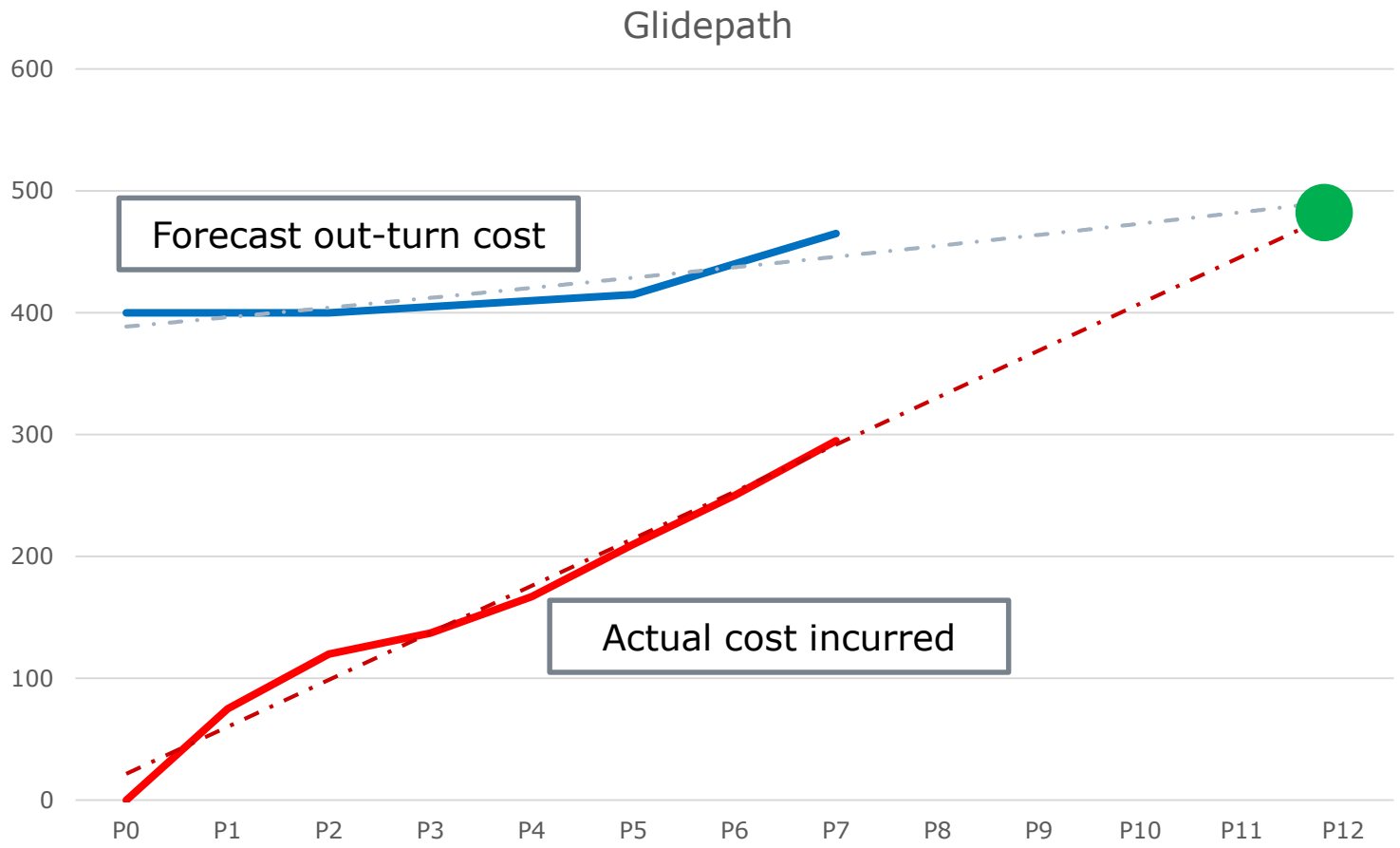
Using Trends to Validate EAC



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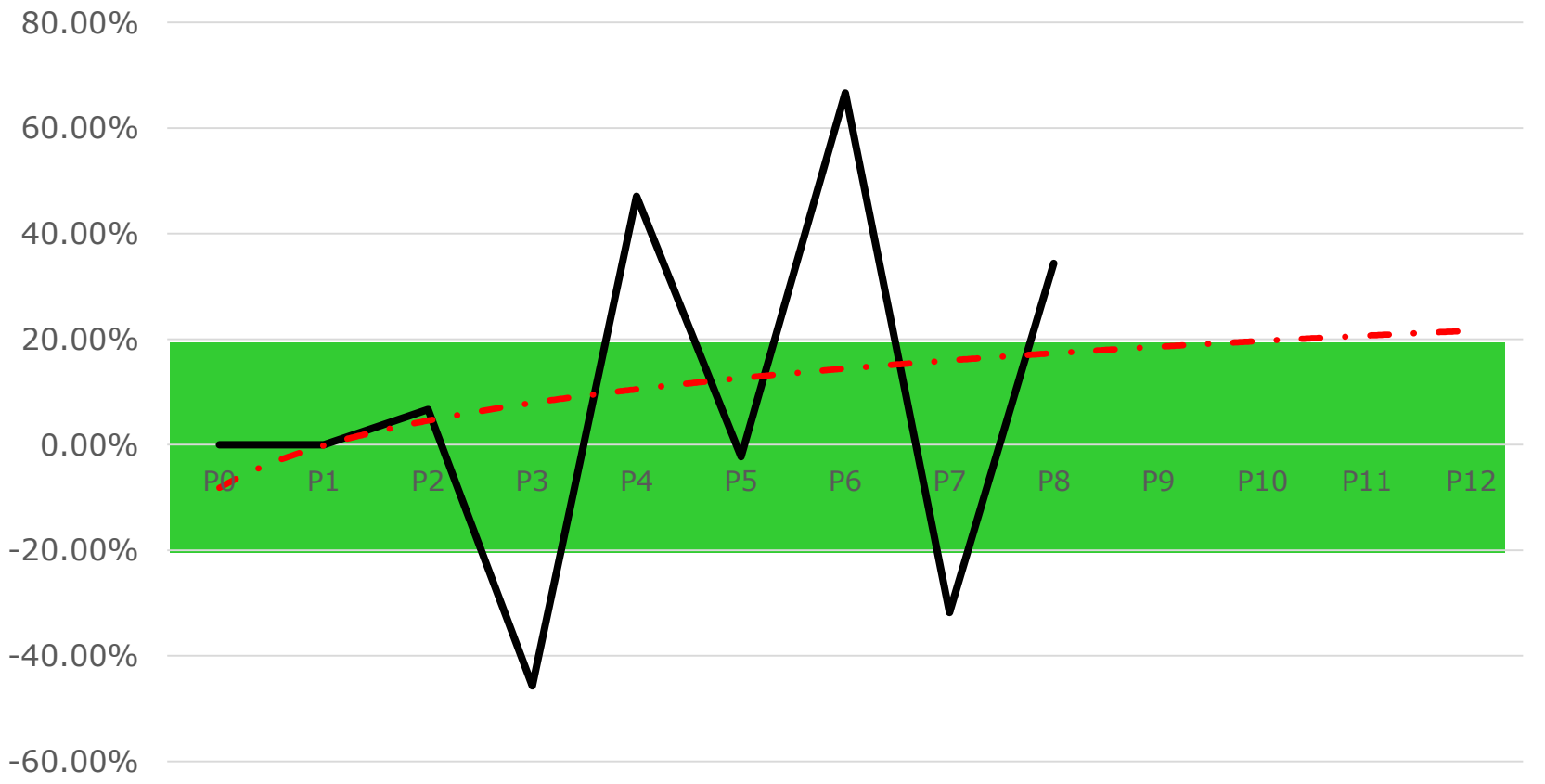
Measuring Forecast Accuracy



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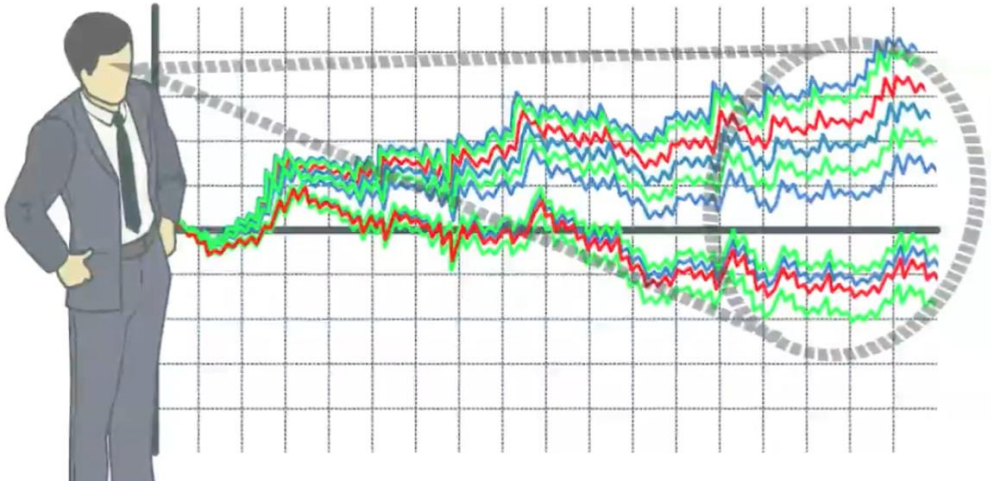
Deterministic vs Stochastic Forecasts

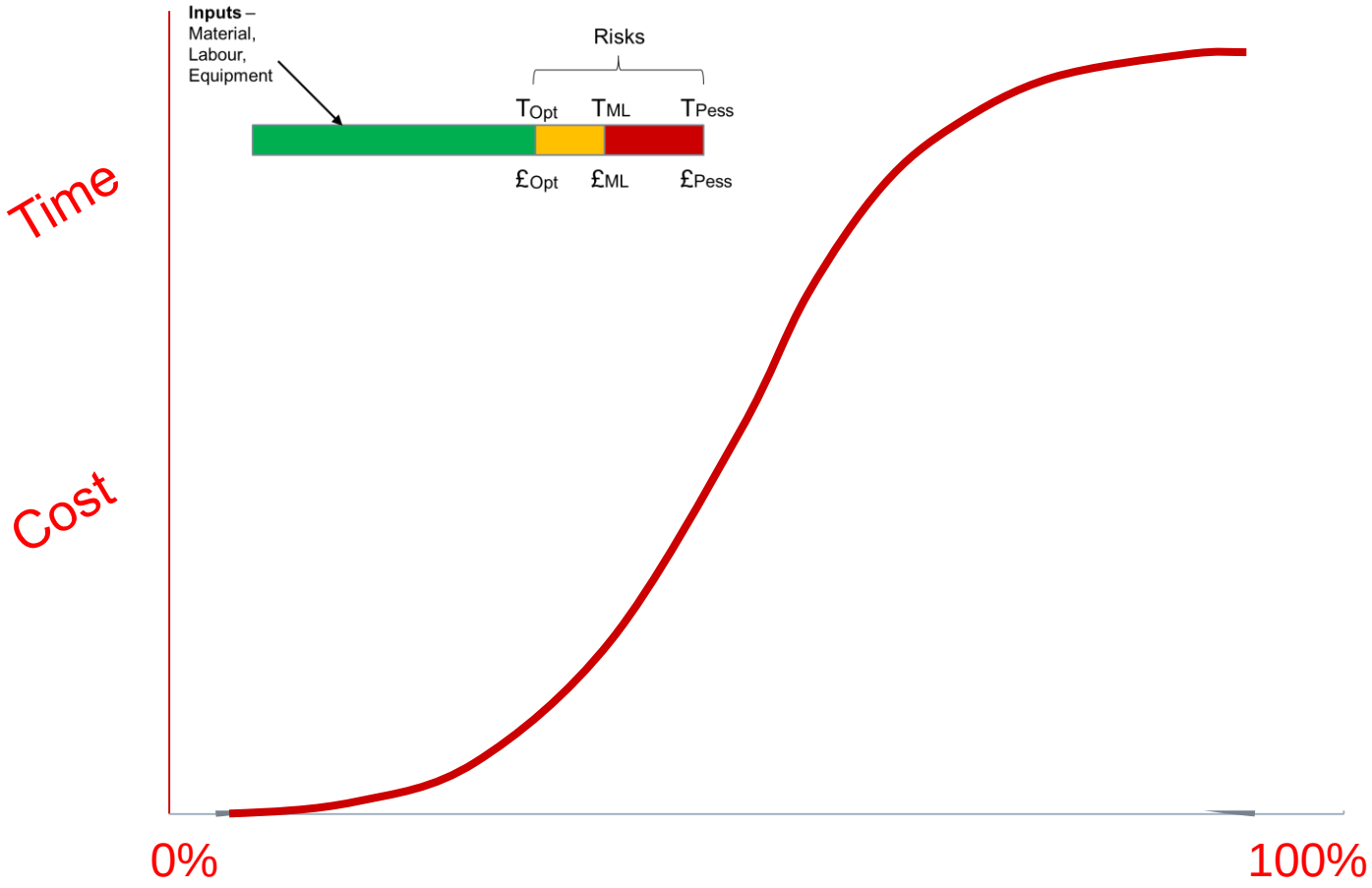
- The outcomes of Projects are uncertain and have inherent risk
- Single point (deterministic) forecasts will be incorrect

Therefore

- Modelling of potential range of outcomes can aid decision-making (Stochastic Forecasts)



Monte Carlo Simulation



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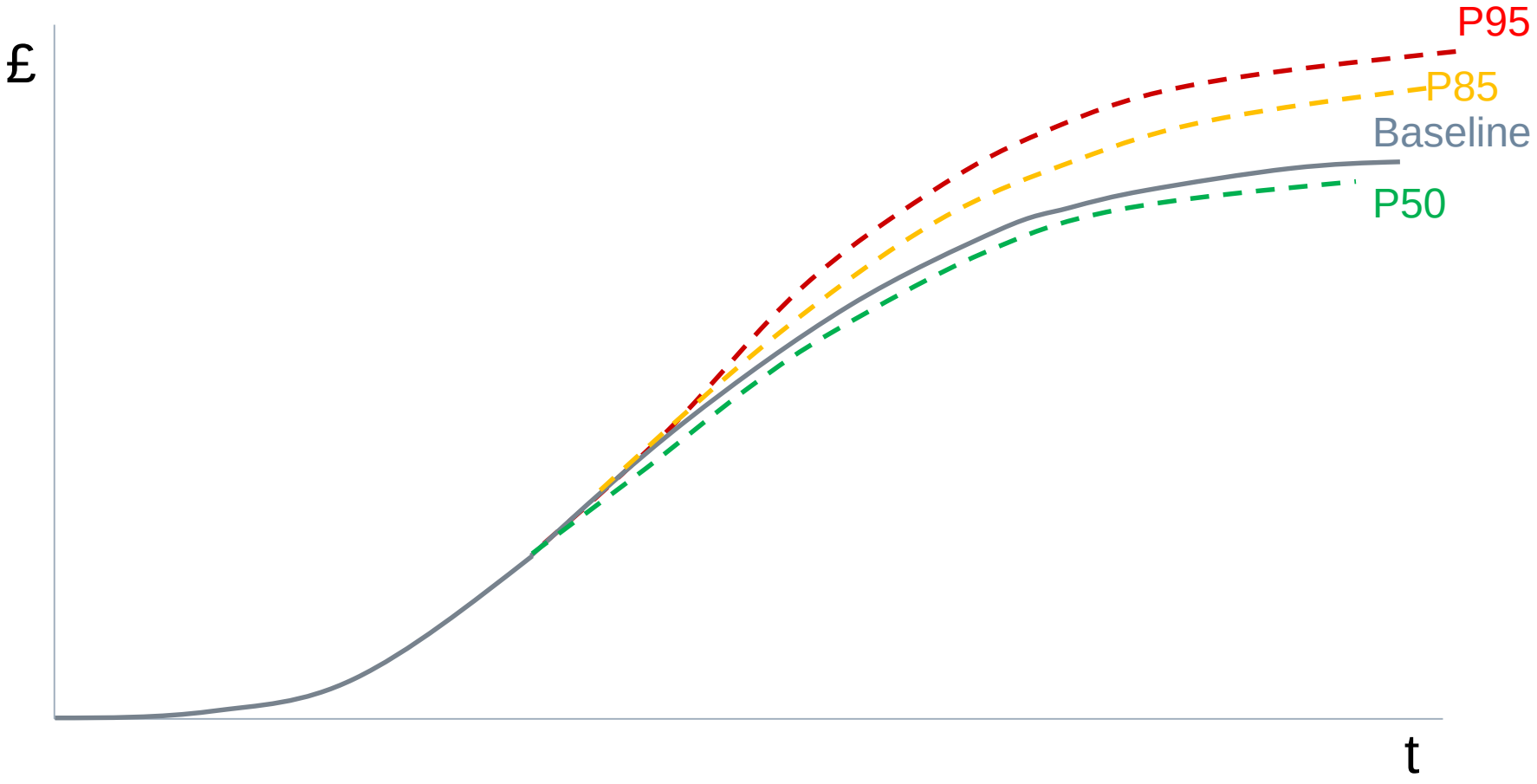
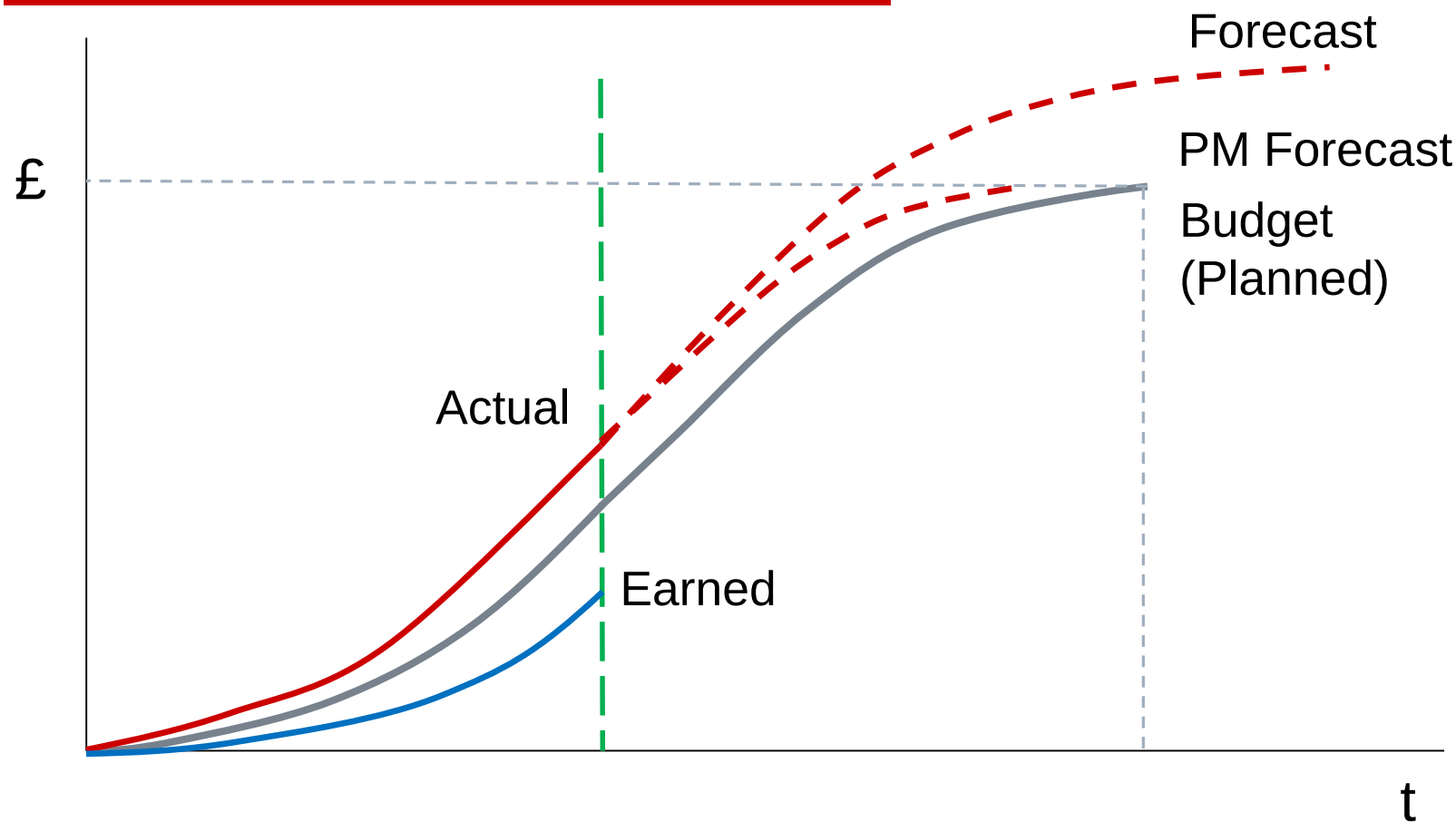
Fan Curves



Earned Value



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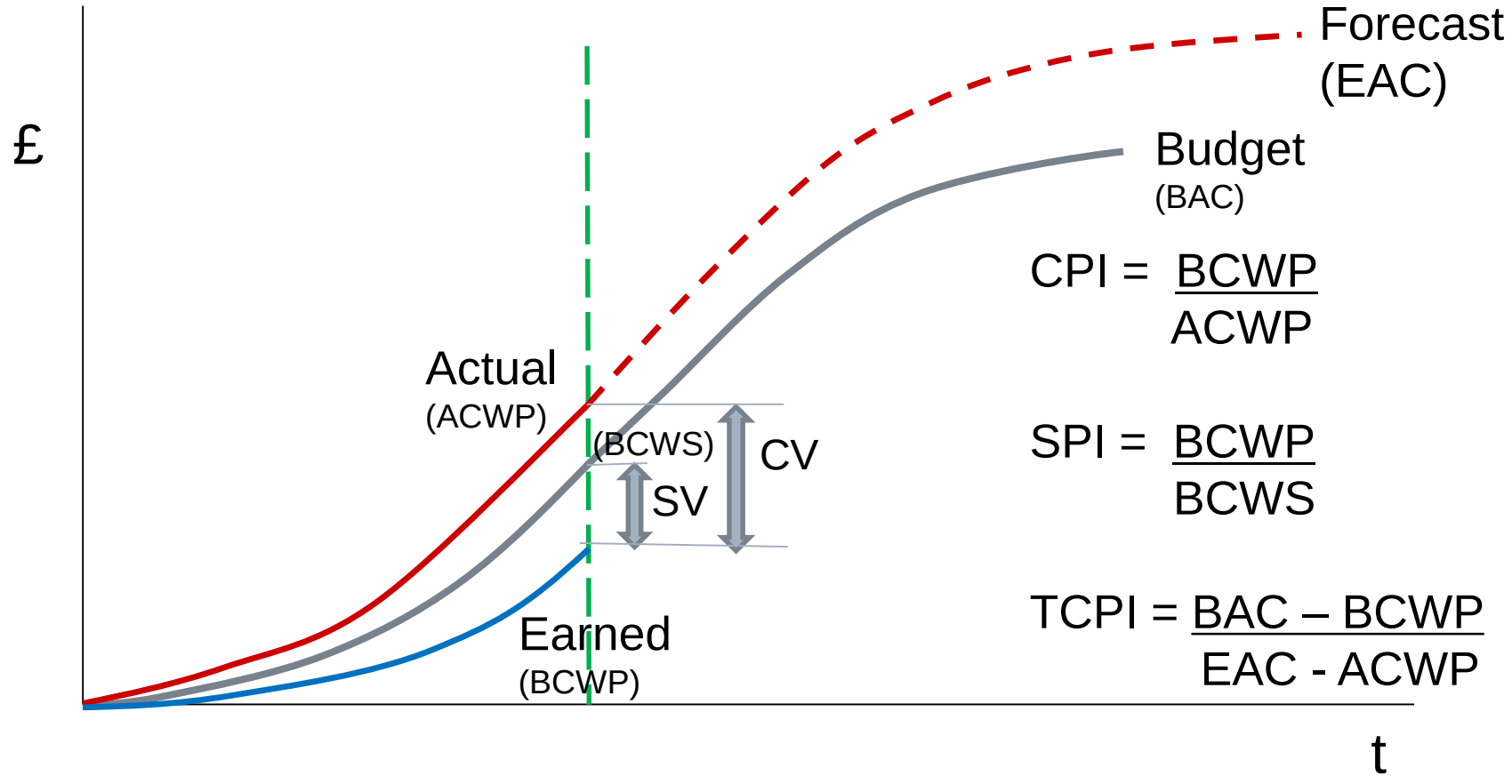
Basic Earned Value



$$CPI = \frac{BCWP}{ACWP}$$

$$SPI = \frac{BCWP}{BCWS}$$

$$TCPI = \frac{BAC - BCWP}{EAC - ACWP}$$

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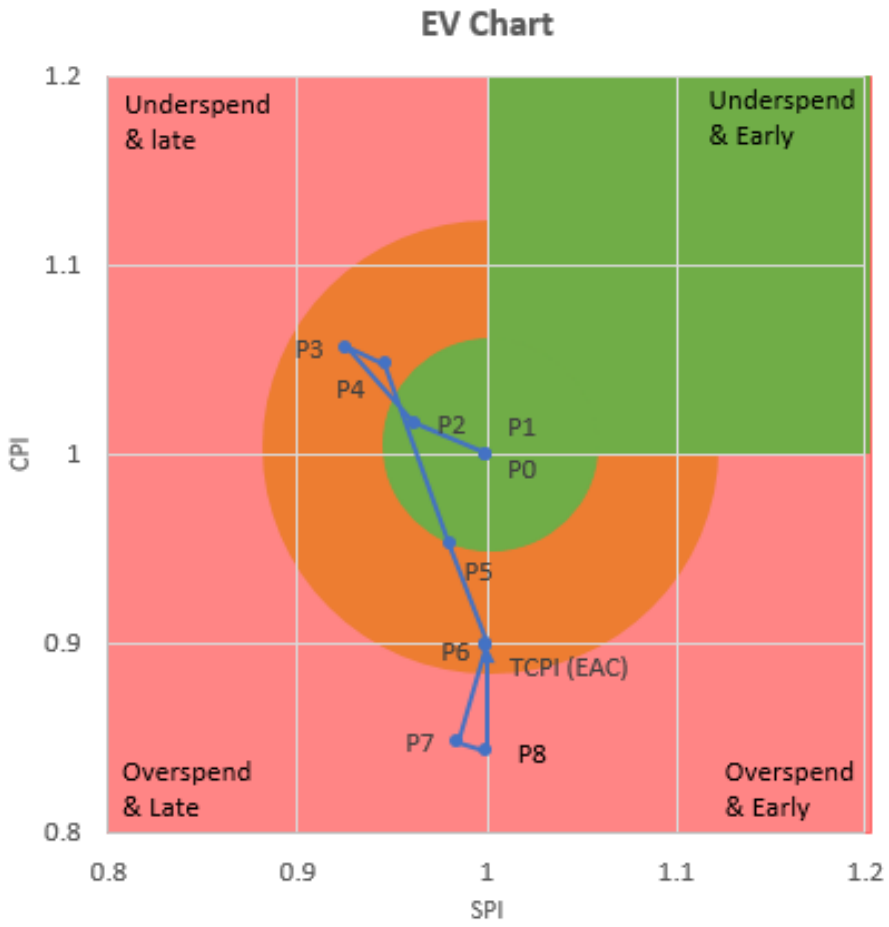
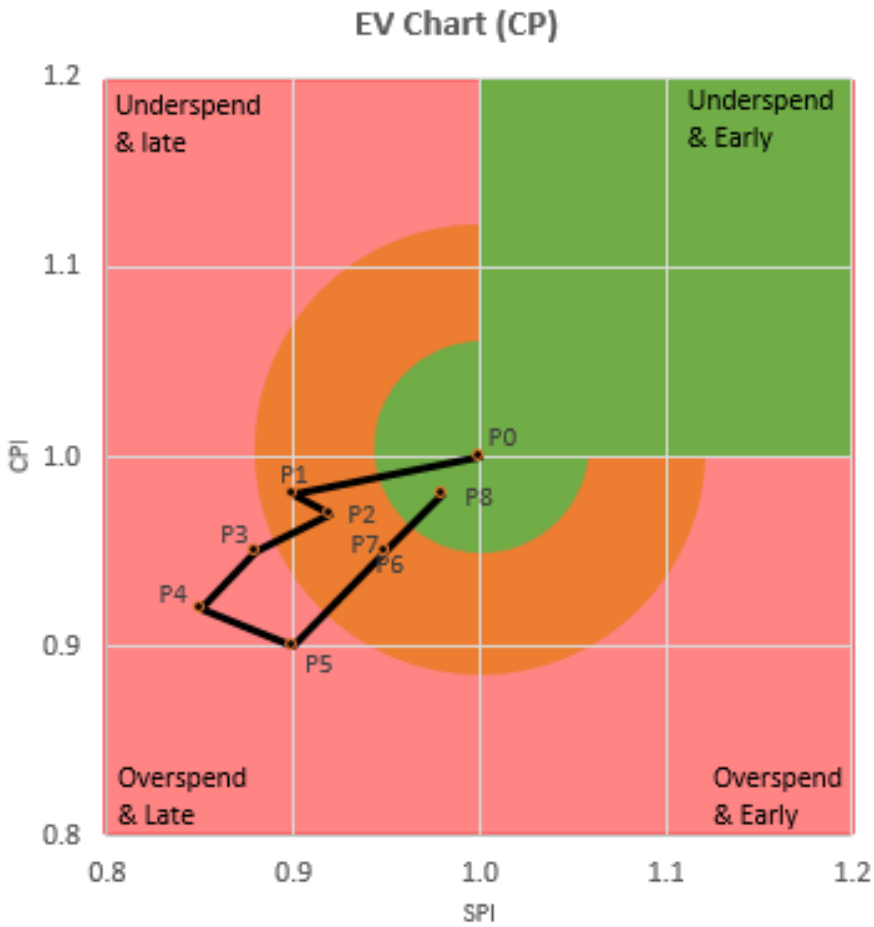
Bullseye charts





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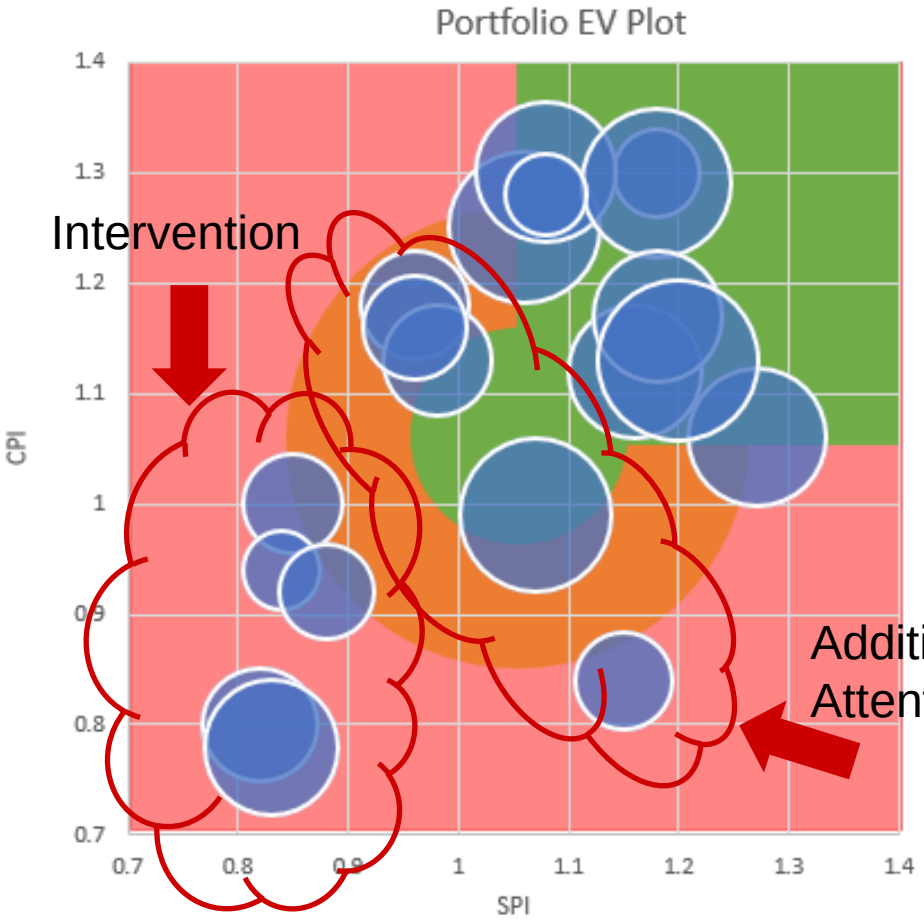
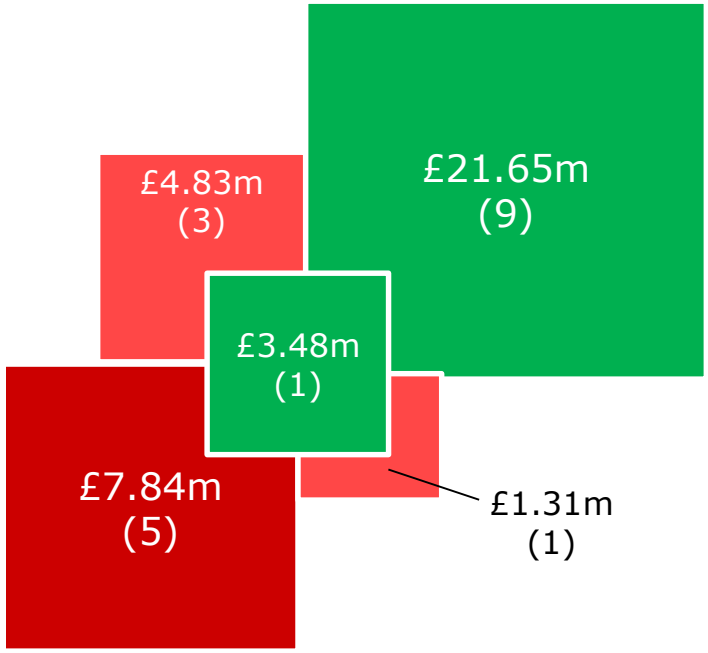
Programme / Portfolio Bulls-eye





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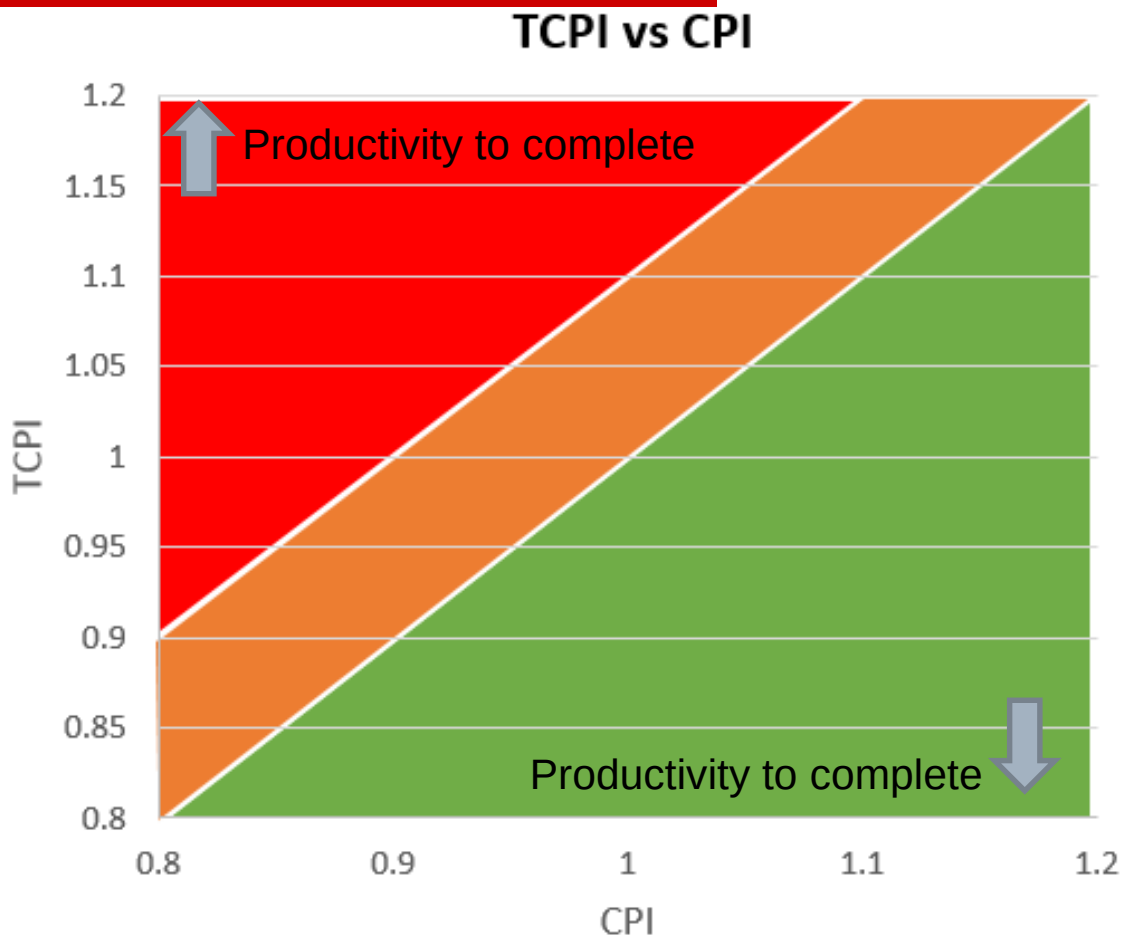
Evaluating Estimate to Complete



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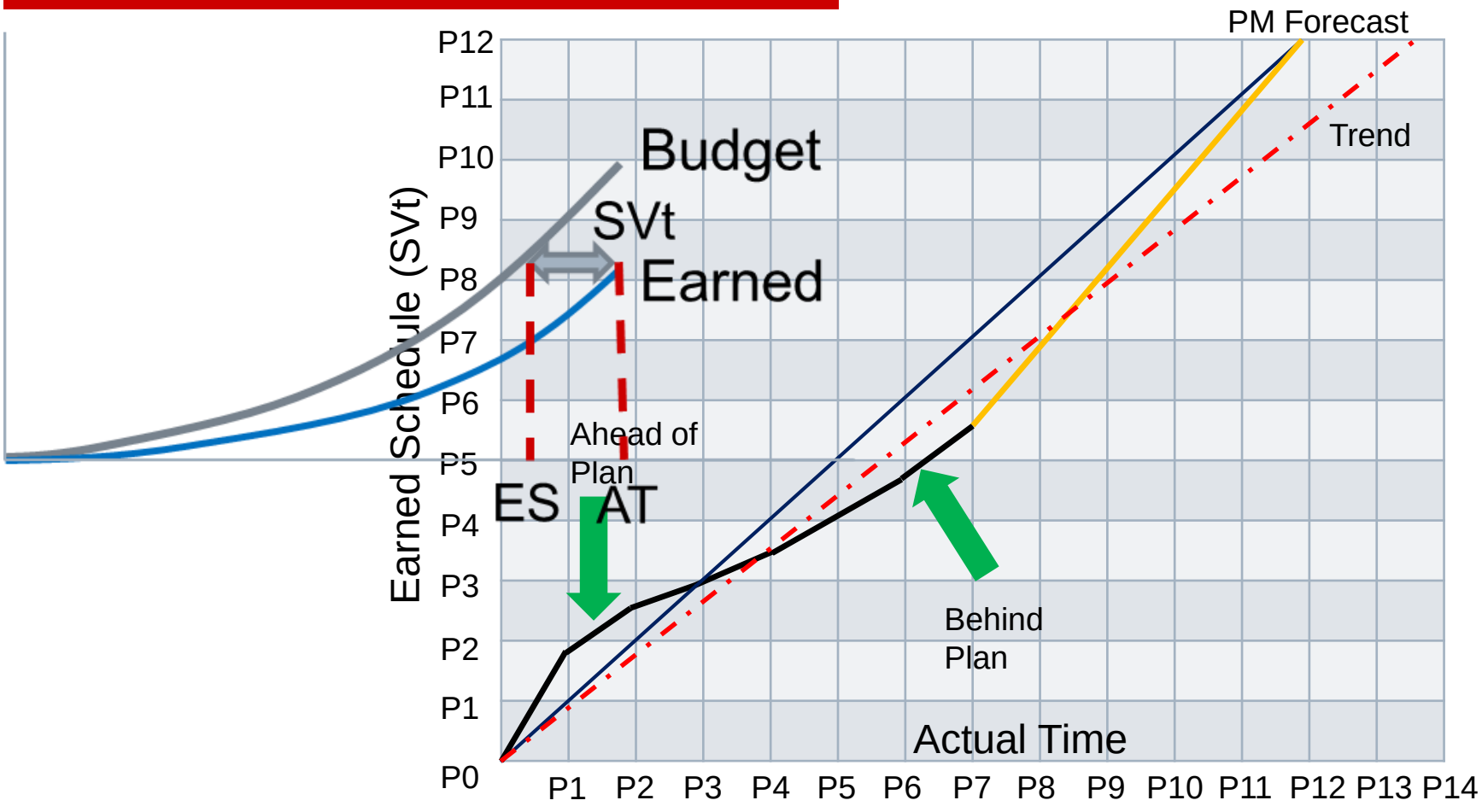
Earned Schedule



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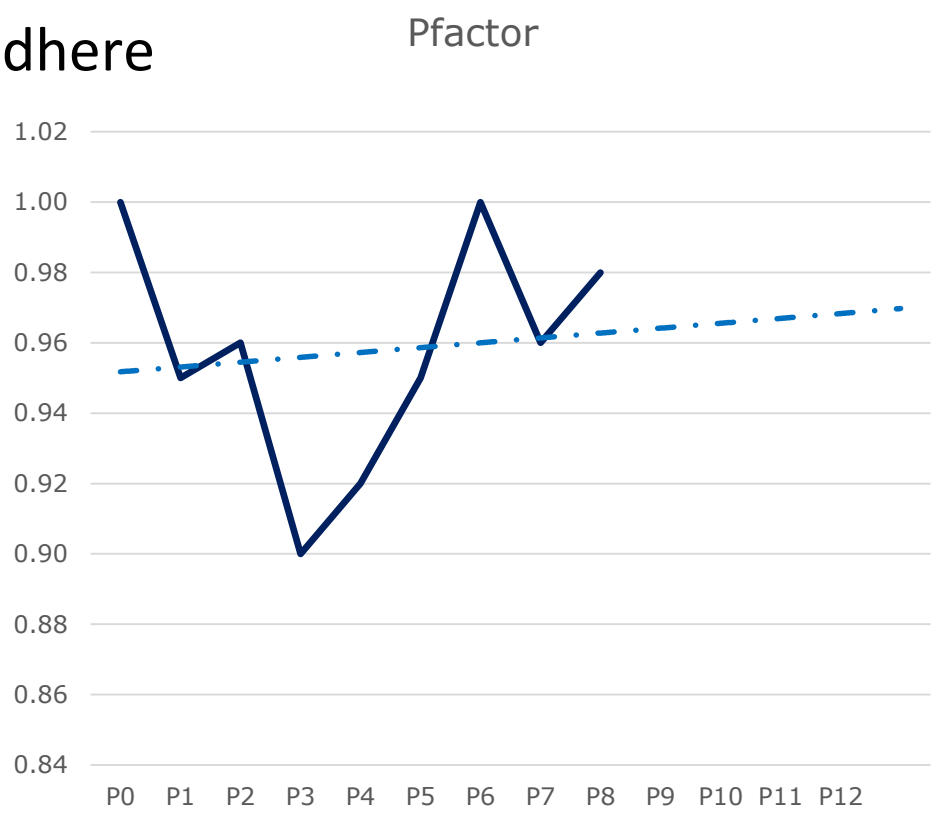
Schedule Adherence - the P-Factor

- P-Factor demonstrates how well the activities completed adhere to the plan

- Calculate P-Factor

$$\frac{\sum \text{Min}\,(PV_{ES}\, EV_{AT})}{\sum PV_{ES}}$$

ES = Earned Schedule Date
AT = Actual Time Date



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Success - Delivering the return on investment

$$\text{Return} = \frac{\text{Benefits}}{\text{Cost}} = \text{BCR}$$

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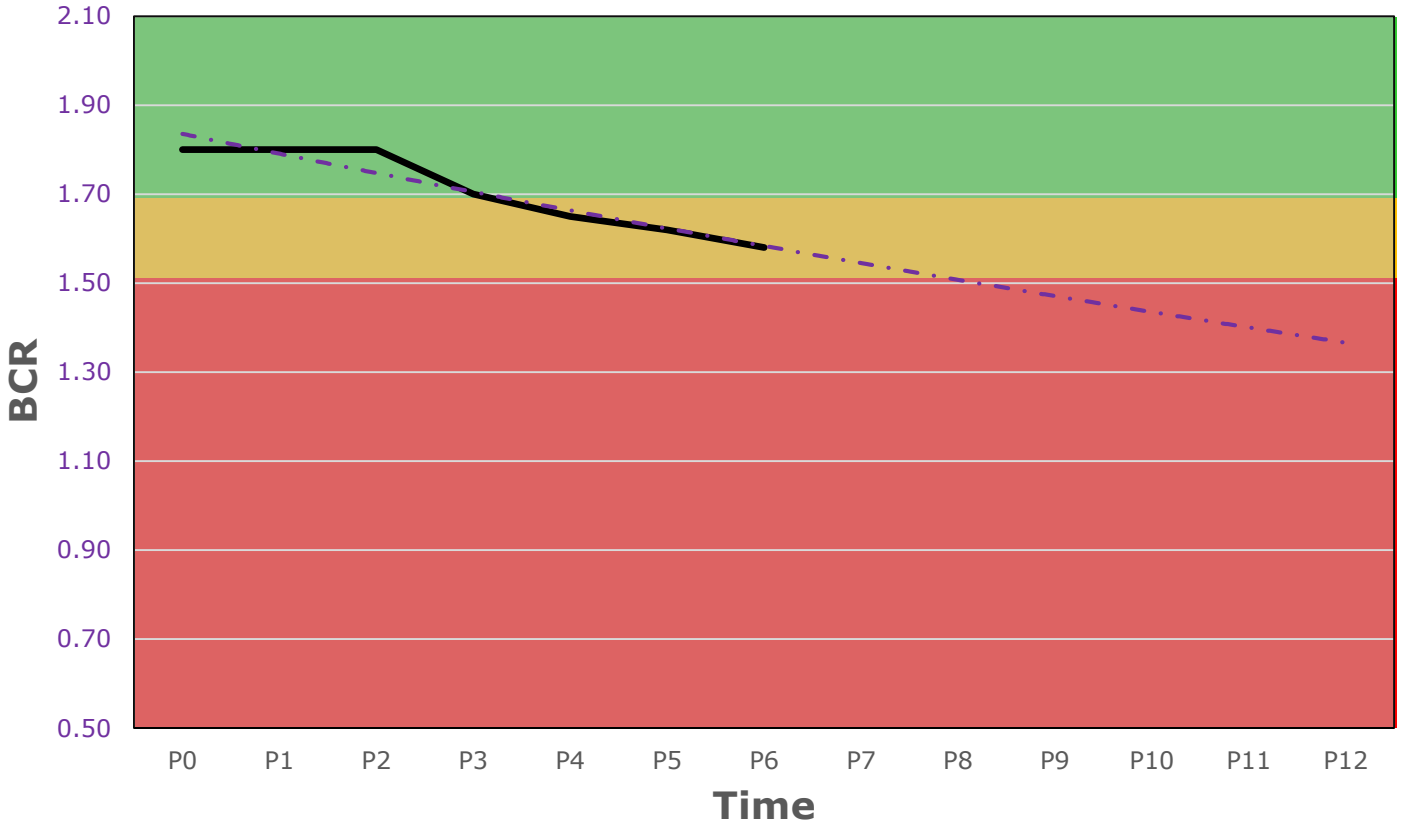
Forecasting Return on Investment



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Summary

- Project delivery is driven by management decisions
- Project Controls must support decision-making through independent structured analysis
- Accurate forecasts are fundamental to effective decision-making
- Good forecasts derived by using:
  - Range of analytics to validate the forecast
  - Incorporation of uncertainty to simulate future outcomes
  - Making data interpretable to facilitate decisions

Enjoy the rest of the day

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