GALORATH

A PRACTICAL GUIDE TO USING THE CRED MODEL FOR COST ESTIMATION

The Cost Risk/Uncertainty Exposure Determination (CRED) Model is a powerful framework that helps organizations identify and manage risks and uncertainties in their cost estimation processes. By using the CRED Model, teams can quantify knowledge gaps that might affect the reliability of their estimates and make informed decisions to mitigate these risks. This guide provides a comprehensive explanation of the CRED Model and how to apply it in various project settings.

Understanding the CRED Model

What is the CRED Model?

The CRED Model is designed to improve the accuracy of cost estimates by addressing the "knowledge gap"—the difference between what should be known about a project and what is actually known. This gap often leads to uncertainty and risk, which can undermine the credibility of an estimate if not managed properly.

Key Elements of the CRED Model:

1. **Material Information:** Critical data that can influence the outcome of a cost estimate. Missing or incomplete material information can lead to inaccuracies.
2. **Risk:** The possibility of negative future events affecting the project's cost, schedule, or performance.
3. **Uncertainty:** The lack of definiteness about the project's baseline, often due to insufficient or imprecise information.
4. **Exposure:** A quantification of the gap between "what should be known" and "what is actually known." Larger exposure indicates higher risk and uncertainty.

How to Use the CRED Model

The CRED Model can be applied systematically to improve the clarity and reliability of cost estimates. Here's a step-by-step guide to using the model:

Step 1: Define Material Information Categories

Start by identifying the key categories of information essential to your project. These vary depending on the type of project but may include:

- Cost environment (work breakdown structure, or WBS)
- Internal software attributes (for software development)
- Program management factors
- External factors (stakeholders, regulatory requirements)

Step 2: Assess "What Should Be Known" and "What Is Known"

For each category, ask two questions:

1. What should I know? This represents the ideal information for making an accurate estimate.
2. What do I know? This is the current state of knowledge, which may be incomplete or uncertain.

Rate each attribute on a scale of 0 to 10, where 10 means you have full knowledge and 0 indicates complete uncertainty.

Step 3: Calculate Exposure

Calculate the exposure for each category using the formula:

$$\text{Exposure} = \frac{\text{What Should Be Known} - \text{What Is Known}}{\text{What Should Be Known}}$$

Larger exposure values indicate areas that require further investigation or adjustment to the cost estimate.

Step 4: Interpret Results

Based on the exposure levels:

- 0 – 0.2: Minimal risk—no major changes needed.
- 0.2 – 0.5: Medium risk—collect more information or adjust the estimate.
- Above 0.5: High risk—indicates significant knowledge gaps that may require adjusting the cost estimate uncertainty range.

Best Practices for Applying the CRED Model

1. Customize the Model: Tailor the categories and attributes to suit your project's unique needs.
2. Update Regularly: Reassess exposure as new information becomes available to ensure continued accuracy.
3. Document Assumptions: Clearly document assumptions behind the exposure calculations to maintain transparency.

The CRED Model is a valuable tool for addressing uncertainties in cost estimation. By quantifying knowledge gaps and adjusting estimates accordingly, organizations can make more reliable project forecasts and mitigate risks. Whether applied in software, aerospace, or civil engineering projects, the CRED Model helps ensure better decision-making and cost estimation accuracy.