Schedule Risk Analysis for New-Product Development: The GERT Method Extended by a Characteristic Function

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Highlights

- Schedule risk analysis plays a key role in **new product development (NPD)**.
- The traditional approach of PERT/CPM falls short in practice.
- This paper introduces a Graphical Evaluation and Review (GERT) model based on a characteristic function and designs its numerical solution.
- First, we derive the probability distribution of the completion time of a product development.
- Second, a novel measure of schedule risk is introduced to give a view of both loss and probability, and accommodate a "due date".
- Third, an elasticity analysis is used to identify the network parameters that facilitate the control of schedule risk.
- A case study in a high-technology enterprise is used to demonstrate the proposed methods.
- The GERT approach is useful for schedule analysis of NPD across domains including engineering, environment, management, economic development, etc.