

Accepted Manuscript

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

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PII: S0951-8320(16)30482-3
DOI: [10.1016/j.ress.2017.06.010](https://doi.org/10.1016/j.ress.2017.06.010)
Reference: RESS 5877



To appear in: *Reliability Engineering and System Safety*

Received date: 9 September 2016
Revised date: 17 March 2017
Accepted date: 11 June 2017

Please cite this article as: Liangyan Tao , Desheng Wu , Sifeng Liu , James H. Lambert , Schedule Risk Analysis for New-Product Development: The GERT Method Extended by a Characteristic Function , *Reliability Engineering and System Safety* (2017), doi: [10.1016/j.ress.2017.06.010](https://doi.org/10.1016/j.ress.2017.06.010)

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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.

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