Engineering Change Planning with Consideration of Change Effect on the Project

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Abstract

This research aims to provide practical guidance of engineering change for project manager and engineer. Most of products in recent are not developed from scratch. Design based on previous projects or other existing product should be modified to meet new requirements. Likewise, engineering change is one of the powerful driving force and unavoidable work in product development. Therefore, it has been widely researched. However, few researches consider whole development project not only product system, though many previous researches provide the insight into how engineering change effects on the product.

This research's distinctive points are:

1) Changeability of change propagation route

2) Evaluate the change plan from perspective of project management

We assumed that engineer could change the direction of propagation. Actually, an engineer decides where to change and how to change based on the knowledge and experience. Hence, various plans could exist in response to same change request. Each plan has different impact on the development project. This means that the impact on the project from engineering change will vary by the engineer's skill. It means that comparative superiority exists between engineering change plans. Skilled engineer comprehends the change impact quickly and makes efficient plan. However, these processes are still unclear and considered as a tacit knowledge unfortunately. Therefore, this research tried to reproduce skilled engineers' tacit knowledge for provide practical guidance of engineering change.

At first, to describe our assumption that propagation route can be changed, we adopted constraint network from previous research. It enables to deduce various change plans automatically. Then, we made evaluation indices that evaluate change plans from perspectives of Quality, Cost and Delivery indices.

And proposed method validated by using prototype system and case study(build-to-order product). As a result, we concluded that the effectiveness of proposed method seems clear, though there are clearly more work to be researched.

Keywords: Engineering Change, Change Propagation, Design Process and Constraint Network

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