

Preliminary Study on the Model for Automatic Generation of Innovative
Alternatives

吳誌銘, 余文德, 鄭紹材

Construction Management

Architecture

shaotsai@chu.edu.tw

Abstract

Product/technology conceptualization is the most time-consuming and influential stage in a technology or product research and development project. The efficient generation of effective product/technology alternatives is the key to successful product/technology conceptualization. This paper presents the results of a preliminary study on the development of the Model for Automatic Generation of Innovative Alternatives (MAGIA) that offers a solution of automatic and efficient generation of effective product/technology alternatives. The proposed MAGIA integrates several existing methods including Function Modeling, TRIZ, and a specific genetic algorithm called Genetic Operation Tree (GOT), which can manipulate on the function models from an initial state to generate a final solution of a product/technology concept. In order to test the feasibility of the proposed MAGIA, an existing manhole construction technology is selected for case study. The preliminary results show promising potentials of the proposed MAGIA for innovation of construction technologies.

Keyword : Function Modeling, Genetic Operation Tree (GOT), Innovation