

(4) Title

Applying STAMP/STPA to project management focusing on motivation

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Abstract

This is a report of application of STAMP/STPA to a case of project management. STAMP/STPA allows us to define an accident, undesired and unplanned event resulting in a loss, in a broad sense such as a failure of a project, as well as more narrow ones involving death of humans. In managing a project, we need to identify the dependencies among various stakeholders and workproducts, and keep required constraints for the project on the control structure reflecting the dependencies. One of the problems in project management involving human natures, the fifth pattern of unsafe control action, the control action is issued but not followed. As one of the example case of this pattern, we discuss the case of the PSP (Personal Software Process) training course in a software-process education project at Kyushu Institute of Technology. One of the problems of the class is low completion rate and professors have been trying to resolve the situation. They think the problem is motivation and formalized the motivation process of the PSP course trainees by using state transition modelling based on the Organizational Expectancy Model. The latest model, Practical-STM, treats an individual trainee of the PSP course as a state machine, and formalizes the motivation process of a trainee using the state, values of the factors regarding the trainee's motivation and a set of operations from the course instructors. Theoretically, instructors can decide effective actions for the trainees based on the assumption on the state and the corresponding state transition function of the trainees. However, it is difficult to develop and analyze the instructor scenarios, series of instructions during the PSP course, by considering the trainee's motivation. We use STAMP/STPA make an educational guideline architecture to manage the situations during the course in a top-down manner based on the Practical-STM.

Keywords

- (1) Project management
- (2) Motivation process