

(24)Title

A rubber “STAMP” was analyzed using “STAMP” based Process Analysis.

Speaker, Authors

OMRON Automotive Electronics Co.Ltd. Hajime Tamanaha

Abstract

STAMP/STPA which has been propounded by Prof. Nancy Leveson at MIT is a new safety analysis technique based on systems theory and a technique which is focused on interaction between elements of composing a system. In the IoT age arrival, a human, a machine and a system that social infrastructure link complicatedly, and a complicated and large-scale system is going to be organized. In such a system, it is extremely difficult to do analysis of safety using a traditional technique, i.e. a deductive analysis or an inductive analysis such as FTA or FMEA, which is focused on a failure of a part in reliability engineering: it increases in an analyzed element of composing a system explosively. Thus, STAMP/STPA is the analysis technique which is based on systems theory, i.e. it's regarded as the whole system that components of a system are abstracted to subsystems and subsystems interact with one another, and indeed proper analysis method in the IoT age.

On the other hand, as this technique is different from a traditional technique in the way of thinking of an analysis, it is the case that the technique's challenge level is high.

Thus, IPA/SEC published a booklet titled “HAJIMETENO STAMP/STPA”, and the contents of the booklet are easy to understand, so companies which uses this safety analysis technique are also gradually increasing in Japan.

In the present paper, I made a hazard analysis of a rubber stamp, e.g. commemoration stamp in many sightseeing spots, using the technique and explained the results of analysis.

Table. Example : Identify accidents, hazards and safety Constraints

Accident	Hazard	Safety Constraints
(A1)A seal impression wasn't solid	(H1-1)A stamp face wasn't flat	(SC1-1)Shall make a stamp face flatly
	(H1-2)Didn't put ink a stamp face evenly	(SC1-2)Shall put ink a stamp face evenly
	(H1-3)A stamp mat wasn't flat	(SC1-3)Shall make a stamp mat flatly
(A2)A seal impression was slanted or upside down	(H2-1)A direction of a seal wasn't easy to understand	(SC2-1)Shall make a direction of a seal easy to understand
(A3)A seal impression was out of position	(H3-1)A position of a seal impression wasn't easy to understand	(SC3-1)Shall make a position of a seal impression easy to understand

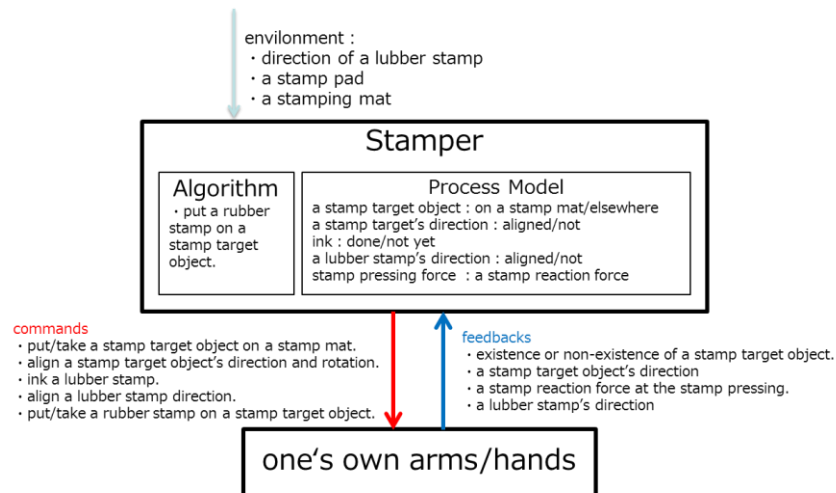


Fig. Example : control structure

Keywords

- (1) STAMP/STPA
- (2) a rubber stamp
- (3) beginner