THESIS REVIEWER'S REPORT

I. IDENTIFICATION DATA

Thesis title:	**Ontology-based BPMN tool to support STPA analysis**
Author's name:	**Bogdan Grigorian**
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Computer Science
Thesis reviewer:	doc. Ing. Andrej Lališ, Ph.D.
Reviewer's department:	Faculty of Transportation Sciences, CTU in Prague

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**ordinarily challenging**

How demanding was the assigned project?

The thesis assignment is ordinarily challenging, namely due to existence of BPMN Based Ontology, STAMP ontology and both domain and IT support the student has received during his work.

Fulfilment of assignment	**fulfilled**

How well does the thesis fulfil the assigned task? Have the primary goals been achieved? Which assigned tasks have been incompletely covered, and which parts of the thesis are overextended? Justify your answer.

The assigned tasks are fulfilled, in line with the assignment and the defined goals. The only objection could regard the fact, that some parts were not done by the student himself, but in cooperation with other experts (e.g. integration of BMPN model with STAMP model).

Methodology	**correct**

Comment on the correctness of the approach and/or the solution methods.

Overall, the approach to achieving the thesis goal is appropriate. The method, however, would be sounder if domain experts would participate in application testing and if more complicated process from the Safety Action Group (SAG) agenda would be selected, e.g. including at least some gateways/decision making.

Technical level	**C - good.**

Is the thesis technically sound? How well did the student employ expertise in the field of his/her field of study? Does the student explain clearly what he/she has done?

The thesis is technically sound, and the student employs his expertise in a good manner. But some reasoning and choices remain unexplained (e.g. the ontology requirements raised in section 3.3) and, as mentioned before, several parts of the work are declared as done in cooperation with other experts, not always clearly stating what the student did himself. The thesis also lacks schema of the STAMP ontology (section 2.3.1) for better understanding, as well as screenshots and some presentation of the output extension/software. All these make harder to follow the thesis.

Formal and language level, scope of thesis	**D - satisfactory.**

Are formalisms and notations used properly? Is the thesis organized in a logical way? Is the thesis sufficiently extensive? Is the thesis well-presented? Is the language clear and understandable? Is the English satisfactory?

The thesis is organized logically and overall well presented, with an understandable language. However, the thesis also has some clear shortcomings. List of abbreviations is missing (leaving some unexplained, e.g. SAG), there are excessive blank pages, meaningless text repetitions (e.g. second paragraph in section 2.3 is simple copy/paste from introduction), arguments based on future texts that the reader is not yet familiar with (e.g. sentence below figure 3.13 on page 24), draft comment leftovers (e.g. section 3.4 includes unremoved thesis supervisor comment in Czech), table captions are below tables, and various typos and minor English mistakes in several parts of the work.

Selection of sources, citation correctness	A - excellent.
Does the thesis make adequate reference to earlier work on the topic? Was the selection of sources adequate? Is the student's original work clearly distinguished from earlier work in the field? Do the bibliographic citations meet the standards?	
Adequate references are made to earlier work, selection of resources is also adequate. The work is well meeting bibliographic citation standards.	

Additional commentary and evaluation (optional)
Comment on the overall quality of the thesis, its novelty and its impact on the field, its strengths and weaknesses, the utility of the solution that is presented, the theoretical/formal level, the student's skillfulness, etc.
Please insert your comments here.

III. OVERALL EVALUATION, QUESTIONS FOR THE PRESENTATION AND DEFENSE OF THE THESIS, SUGGESTED GRADE

The thesis deals with ontology-based BPMN tool to support STAMP-based analyses. Overall, the thesis is of a good quality, the student spent reasonable efforts and employed the necessary knowledge to develop the extension and BPMN to STAMP converter. The results are of value to the community of safety engineers in various high-risk industries and may be well used for the business process management and respective safety analyses.

As for shortcomings, the main are missing rationale for some technical choices, lack of schemas and screenshots of the resulting extension/software, missing domain expert testing and several issues listed in my review about the formal and langue level of the thesis.

Questions for the presentation:

1. *In STAMP to UFO mapping, the concept "Role" from the BBO ontology is mapped to ufo:Agent. But UFO ontology has ufo:Role concept available. Why was this concept not used instead?*
2. *In section 4.3.2, you map the "InterruptingBoundaryEvent" class in BBO to "Hazard" concept in STAMP. Boundary events in BPMN are normal events (typically start or end), with no relation to safety. Could you explain, how can they map to hazards?*
3. *Domain experts are limited by BPMN tools, including the Bonita Studio, in the way they can represent organizational structures. E.g. one cannot specify responsibilities and coordination interactions between roles, or various part-of relations between divisions and departments. How do you imagine the domain experts could specify this information with your converter or its future extensions?*

The grade that I award for the thesis is **C - good.**

Date: **20.1.2022**   Signature: