REVIEWER'S OPINION OF FINAL THESIS

I. IDENTIFICATION DATA

Thesis name:	**Control System Development of Traffic Signal Control in MATLAB for PTV VISSIM**
Author's name:	**Bc. Filip Skružný**
Type of thesis :	master
Faculty/Institute:	Faculty of Transportation Sciences (FTS)
Department:	Department of Transport Telematics
Thesis reviewer:	Ing. Jan Krčál, Ph.D.
Reviewer's department:	Department of Applied Informatics in Transportation, CTU in Prague FTS

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	**challenging**

Evaluation of thesis difficulty of assignment.

I assess the thesis assignment as challenging, since the candidate demonstrated not only his ability to work with the VISSIM program (including demonstration of transportation engineering competence), but also his ability to master the Matlab application, which he used to program an extensive code for his work presentation.

Satisfaction of assignment	**fulfilled**

Assess that handed thesis meets assignment. Present points of assignment that fell short or were extended. Try to assess importance, impact or cause of each shortcoming.

The thesis assignment meets the requirements.

Method of conception	**correct**

Assess that student has chosen correct approach or solution methods.

The overall approach and chapter organization, proceeding from explaining the VISSIM program using the Matlab application to practical testing of chosen scenarios, was correct and clear. I especially appreciate that the candidate applied a systematic approach to handle the issue.

Technical level	**A - excellent.**

Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.

The thesis assignment testifies to the candidate´s expertise in the issue.

Formal and language level, scope of thesis	**A - excellent.**

Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.

I reserve no formal or language-related objections.

Selection of sources, citation correctness	**C - good.**

Present your opinion to student's activity when obtaining and using study materials for thesis creation. Characterize selection of sources. Assess that student used all relevant sources. Verify that all used elements are correctly distinguished from own results and thoughts. Assess that citation ethics has not been breached and that all bibliographic citations are complete and in accordance with citation convention and standards.

In the thesis assignment, I miss an analysis of whether the examined issue enjoys international attention. Juxtaposing own research with other research or approaches in order to accent own contribution to the field is an essential component of any scientific work. The search for keywords such as VISSIM + COM + Matlab suggests that the topic is not entirely new.

Additional commentary and evaluation
Present your opinion to achieved primary goals of thesis, e.g. level of theoretical results, level and functionality of technical or software conception, publication performance, experimental dexterity etc.
I appreciate that the thesis assignment handles the traffic signal control not only using the Matlab program. The thesis assignment includes a chapter dealing with the possibility of modeling the traffic movement of a group of vehicles (platoon) in the VISSIM program, which does not support this possibility as a default.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

The thesis assignment is inspirational and presents new possibilities for transportation modeling using the PTV VISSIM program run by the Matlab program. Conducting simulation using the COM interface seems to be an effective way to simulate different scenarios and to change the model parameters directly in the external application – Matlab. By using the Matlab program, as opposed to C language or Python, for example, the candidate allows application of a strong mathematical-analytic apparatus of this program for the sake of subsequent evaluation. A possible drawback of this approach is the commercial nature of the Matlab program and thus the associated costs. The program code created for the demonstration by the candidate is legible and not insignificant in its extent. I equally appreciate that the candidate did not forget to take precautions against false values of entry parameters in the proposed GUI Matlab. The candidate thus demonstrated that he has a grasp not only of the area of traffic engineering but of other expert areas as well.

I would pose these follow-up questions to the candidate:
1. How can the changed parameters in "Driving behavior" impact the behavior of vehicles and the evaluation. Can these parameters be changed directly in the COM interface?
2. Are you aware of any specific project (model) using the COM interface to conduct simulation in PTV VISSIM?
3. Would it be useful to use the COM interface to simulate exceptional situations, such as the impact of a traffic accident on the traffic flow?

I evaluate the presented thesis assignment with classification grade **A - excellent.**

Date: **15.6.2017**   Signature: