

I. IDENTIFICATION DATA

Thesis name:	Simulation model of customer center
Author's name:	Ozgun Saydanoglu
Type of thesis :	master
Faculty/Institute:	Faculty of Electrical Engineering (FEE)
Department:	Department of Circuit Theory
Thesis supervisor:	Ing. Petr Hampl, Ph.D.
Supervisor's department:	Department of Telecommunication Engineering

II. EVALUATION OF INDIVIDUAL CRITERIA

Assignment	challenging
<i>Evaluation of thesis difficulty of assignment.</i>	
The aim of this thesis is to create complex simulation model and determine key characteristics of customer center in terms of GoS. The difficulty of thesis is challenging because of complexity of selected simulation environment OMNeT++.	

Satisfaction of assignment	fulfilled
<i>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.</i>	
The final thesis corresponds to the assignment in its entirety.	

Activity and independence when creating final thesis	A - excellent.
<i>Assess that student had positive approach, time limits were met, conception was regularly consulted and was well prepared for consultations. Assess student's ability to work independently.</i>	
The student's activity was high. The student worked independently and conception was regularly consulted. He was always well prepared for consultations.	

Technical level	A - excellent.
<i>Assess level of thesis specialty, use of knowledge gained by study and by expert literature, use of sources and data gained by experience.</i>	
The student has demonstrated the use of knowledge gained during studies. The selection of methods and used data processing is at appropriate level.	

Formal and language level, scope of thesis	B - very good.
<i>Assess correctness of usage of formal notation. Assess typographical and language arrangement of thesis.</i>	
The thesis fulfills all formal requirements. The language expression corresponds with the level of the graduate. Graphical layout is good as well. The student respects the content structure, uses logical and orderly sorting of chapters. However, selection of some parameters and their index names maybe decrease the readability of the thesis.	

Selection of sources, citation correctness	A - excellent.
<i>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.</i>	
The student used 23 references in his thesis. The choice of sources is relevant to the topic of work and concerns mainly call centers and queuing theory models. The author correctly uses citations and his thesis is in accordance with citation standards and habits.	

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.

The simulation core was written according assignment in OMNeT ++ environment. Data analysis and statistical processing was done in the Python scripting language by means of Pandas, NumPy, Matplotlib and SciPy libraries.

III. OVERALL EVALUATION, QUESTIONS FOR DEFENSE, CLASSIFICATION SUGGESTION

The goals of assignment was completely fulfilled. The student implemented all important function blocks like traffic generators, groups of agents, IVR module ACD module and others. The developed simulation core can be used to verify the correctness of operation profile proposed by dispatchers. The correctly designed time profile of number of agents can significantly reduce customer center operating costs while the required grade of service can still stay on the same level.

The student implemented other useful features that were not specified by the thesis assignment like model of impatient costumers or time profiles of most of input parameters.

I evaluate handed thesis with classification grade **A - excellent**.

Date: **5.6.2019**

Signature: