

SPACE SYSTEMS SYMPOSIUM (D1)
Innovative and Visionary Space Systems Concepts (1)

Author: Prof. Mehran Mirshams

K. N. Toosi University of Technology, Iran, mirshams@kntu.ac.ir

Mr. Mohsen Khosrojerdi

K. N. Toosi University of Technology, Iran, khosrojerdi.m@gmail.com

Mr. Hamid N. Toosi

K. N. Toosi University of Technology, Iran, hojattaie@gmail.com

Ms. Shabnam Yazdani

K. N. Toosi University of Technology, Iran, shabnamyazdani@yahoo.com

SPACECRAFT GROUND STATION VIRTUAL SIMULATOR

Abstract

The purpose of this article is to describe the results of a research project which has been developed in the Space Research Lab of K.N. Toosi University of Technology. Training spacecraft ground-station operators, with the help of virtual environment, is the main objective of the mentioned research project. Using this virtual simulator, operators will be able to study the behaviour of a satellite with profound intuition of the space and satellite which is generated online by simulation software as 3d images. Satellite dynamic and control simulation accomplishes as to enhance the control authority for large attitude and orbital maneuvers. This is for increasing the intuition of operators when they execute attitude or orbital maneuvers. Coach designs the educational scenario and operators corresponding with it determine the mission commands and send them to the satellite. Operators can trace the satellite behaviour by 3d images and 2d graphs which generates by telemetry data. Data transferring between satellite and ground station occurs in various environment conditions and climates. Operators can study the effects of various climate and ground station and satellite antennas specification on telemetry and command datapackets. Design and development procedure of this system with all elements will elements will be presented in this paper.