SPACE SYSTEMS SYMPOSIUM (D1)
Training, Achievements, and Lessons Learned in Space Systems (5)

Author: Dr. Mohammad Ebrahimi
Aerospace Research Institute, Iran, mebrahimi@ari.ac.ir

EXPERIENCES ON TRAINING SYSTEM ENGINEERS FOR MULTI-DISCIPLINARY SPACE PROJECTS

Abstract

In this paper, our experience with engineers coming from different branches of knowledge and our difficulty in training good system engineers for our space life projects is described. It is well known that Space biology is a multi-disciplinary field and requires good knowledge of both space science and biology. Scientists and engineers in these fields are trained with different education methodologies in Iran and when they come together in a research team, they find it very difficult to cooperate. Engineers have a routine way of solving problems through simplifying and modeling them with proven methods. Graduates of medicine schools are more familiar with statistical investigations and formulate problems with a quite different strategy.

The job of a system engineer is very difficult in space projects and when difficulties in communication and mutual cooperation happen for the members of the team it becomes even more difficult. As an institute engaged with space biology research, we have to carry out projects with large research teams and system engineers are a corner stone in our effort. This obliged us to find ways for training system engineers with high quality to tackle with the obstacles in our research campaign. One of the first ideas was on-the-job training through simple projects. These projects should have the same difficulties in a smaller scale and let the trainees learn system engineering methods throughout the lifetime of the projects. Our experienced system engineers helped trainees with tools and methods and taught them how to extract system data matrices, how to define, track and assign importance index to system requirements and how to use similar technical means. This effort was later standardized as a method of training and system engineering department utilizes it regularly. Some student competitions involving simple space biology projects are also designed and system engineering tools and methods are indicated throughout the project so that students learn them in a six month to one year period.

Details of the training program and simple tools used in it would be described in the paper and the flowchart of the program would be explained in detail. It would be tried to show how this method can be applied to similar cases and be used effectively.