

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Hands-on Space Education and Outreach (8)

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MODEL BASED SYSTEMS ENGINEERING EDUCATION WITH HANDS-ON ACTIVITIES USING
CUBESAT KIT**Abstract**

In this study, we aim to build a space engineering education package that can learn not only knowledge of satellite system but also practical design method step by step in a short time by incorporating contents of practical system design using MBSE for satellite into HEPTA-Sat Training Program. In recently year, although it is expected that the market of nano/micro-satellite will be higher in the future, there is shortage of human resources in the space field such as a space engineer who can develop satellites. In order to develop the future space industry, it is urgent to develop human resource having knowledge and technology of space engineering. The HEPTA-Sat Training Program is a hands-on type educational program using a material called HEPTA-Sat (CubeSat Educational Kit) and a textbook (Self-learning textbook) with the aim of experiencing the development process of nanosatellite in a short time and acquiring the basic knowledge of space engineering. We already conducting Training Sessions in many different places across the world. Altogether, 211 participated from 37 countries from 2017 to 2019. HEPTA-Sat Training Program is possible to understand the satellite system by repeating the flow of understanding, assembling, integrating and testing the function of HEPTA-Sat in a hands-on manner step by step from the component level to the system level. In order to develop a complex system such as a satellite system, we think that knowledge of design/development methodology is needed to design/develop smoothly like systems engineering. Satellite where multiple independent systems cooperate with each subsystems/components, it is pointed out that there are many problems with conventional document-based design/development methods. Therefore, by using Model Based Systems Engineering (MBSE) to visualize requirements and systems on a model basis, it become possible to design a consistent and prospective system. So, it is expected to improve the problems pointed out in the conventional design/development method. In this presentation, we will show the contents of MBSE hands-on education material and effectiveness.