31st IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
25th Workshop on Small Satellite Programmes at the Service of Developing Countries (1)

Author: Mr. Jorge Rubén Casir Ricaño
Kyushu Institute of Technology, Japan

Mr. Tasuku Matsui
Kyushu Institue of Technology, Japan
Mr. Yudai Etsunaga
Kyushu Institue of Technology, Japan
Mr. Guillaume Berson
Kyushu Institute of Technology, France
Mr. Rintaro Nakao
Kyushu Institue of Technology, Japan
Mr. Eladio Javier Ferrer Torres
Kyushu Institute of Technology, Japan
Mr. Sirash Sayanju
Kyushu Institute of Technology, Japan
Mr. Ndukayo Zamba Leonel
Kyushu Institue of Technology, Japan
Mr. Souta Miyajima
Kyushu Institue of Technology, Japan
Dr. Pooja Lepcha
Kyushu Institue of Technology, Japan
Mr. Tharindu Dayarathna
Arthur C. Clarke Institute for Modern Technologies, Sri Lanka
Dr. Takashi Yamauchi
Kyushu Institute of Technology, Japan
Dr. Hirokazu Masui
Kyushu Institute of Technology, Japan
Prof. Tetsuhito Fuse
Kyushu Institue of Technology, Japan
Prof. MENGU CHO
Kyushu Institute of Technology, Japan
Mr. ACCIMT BIRDSX
Arthur C. Clarke Institute for Modern Technologies, Sri Lanka
Mr. Hariharan Krishnan
University of Alberta, Canada
Mr. EIRU Paraguay
Paraguayan Space Agency, Paraguay

DEMOCRATIZING SPACE: CONCLUSION AND LESSONS LEARNED FROM THE BIRDS-X APRS PAYLOAD COMPETITION.

Abstract

This study outlines the conclusions and lessons learned from the BIRDS-X APRS Payload Competition to be flown on the Dragonfly CubeSat. The mission has two objectives: fostering global engagement in the Amateur Radio community and advancing APRS technology in space. The three-phase competition culminated in the selection of five outstanding payload designs, which were given the opportunity to participate in the BIRDS-X project. Payload boards were received from the participants working from their countries of origin. The final selection was made based on compliance with the ICD and general performance. Following the rigorous evaluation, 11 teams from 10 countries advanced to the Engineering Model (EM) development stage, demonstrating the feasibility of their APRS payloads, and five teams went to the Flight Model (FM) stage. Following release from the International Space Station, the payloads will undergo performance evaluations focusing on their transmission and reception capabilities. The assessment will utilize the APRS beacon and digipeating functions, with data collection occurring during satellite passes using the APRS store and forward capabilities. Dragonfly's two APRS reference boards will facilitate ground-based testing to complement the payload competition. This paper discusses the overarching goal of democratizing space through community involvement and technical skill enhancement. The study underscores the successful execution of the BIRDS-X APRS Payload Competition, emphasizing the lessons learned for future competitions focusing on rideshare and technological advancements in space amateur radio communications.