

53rd IAA SYMPOSIUM ON SAFETY, QUALITY AND KNOWLEDGE MANAGEMENT IN SPACE
ACTIVITIES (D5)

Quality and Safety, always a beginning! (1)

Author: Mr. Chiranthan K

Ramaiah Institute of Technology, India, chinnuk1729@gmail.com

Mr. Sushmith Thuluva

Ramaiah Institute of Technology, India, sushmith.thuluva@gmail.com

Mr. Ajay Sriram

Ramaiah Institute of Technology, India, ajaysriram2k@gmail.com

Ms. Anusri s

Ramaiah Institute of Technology, India, anusri1499@gmail.com

Mr. RAHUL S

Ramaiah Institute of Technology, India, rahulchintu184@gmail.com

Mr. SOMA ROHITH

Ramaiah Institute of Technology, India, mintu1842000@gmail.com

Mr. Gaurav R

Ramaiah Institute of Technology, India, gauravten1989@gmail.com

Mr. T Ananda Mukesh

Ramaiah Institute of Technology, India, tmmukesh@gmail.com

Mr. Pruthvi Jagadeesh

Ramaiah Institute of Technology, India, pruthvi219shewag@gmail.com

Mr. Suraj R

Amrita Vishwa Vidyapeetham University, India, surajr2607@gmail.com

A DEPLOYABLE REDUNDANT UNIT FOR SPACECRAFT CAUSALITIES

Abstract

One of the major setbacks in spacecraft missions is the availability of a redundant unit that determines the error or the cause of a failure of any mission. Many missions so far have experienced this fate wherein the cause of the failure remained unknown. This fate cannot be compromised for the future missions to come. On the light of the above necessity, this abstract propounds a design that helps analyze the causalities experienced by a spacecraft during a communication loss or any unpredicted event. The idea is to build a mini backbox akin deployable spacecraft unit that gets deployed under the command from the central unit on possible danger for the spacecraft. This deployed unit ensures to picture and measure the spacecraft parameters at the time of deployment and store the data within it. This Deployable unit also serves the purpose of storing the backup payload data of a spacecraft under uncompromisable fate. This helps in learning the potential dangers for a spacecraft alongside preventing the complete loss of mission data during any causalities. The overall design of the structure and internal architecture of the redundant unit will be described in the paper, with all the required subsystems, technologies involved and scenario based theoretical results. The deploying mechanisms, payloads of the redundant unit and methods employed will be presented on the basis of the most common possible fates for a spacecraft.