

Design and evaluation of an embedded system for small satellites in Colombia based on light linux - IAA-

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The great challenge to put a picosatellite in orbit is to guarantee its stability during the duration of the mission, one of the most important sub-systems is the control module or the OBC, which is responsible for controlling and communicating With all the other modules and this way the necessary instructions are sent to control the processes of the system, Due to this it is necessary that there is an independence between all the sub processes and that these are attended in real time, in this way it is possible to propose The use and the advantages of Opensource operating systems, this document presents the use of a Linux-based operating system that can be implemented in a Raspberry Pi and a real-time operating system type FreeRTOS that can also be implemented in a device Arduino also performed a review of the main microcontrollers that have been used by manufacturers such as Texas Instrument, and finally implemented a test on a Rasberry Pi 3 where it is analyzed the performance of the tasks that are executed to demonstrate that if possible Have processes that are developed independently and in real time; In this way it is possible to construct in a simpler and simple way new picosatellites by students and teachers and in this way it is faster to understand how the small satellites.