ESEIAAT

Cubesat Constellation
Astrea

Technical sheet

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Contents

List of Tables

List of Figures

0.1 Communication Protocols

0.1.1 Definition and requirements

The communication protocols are a list of rules that allow different entities to communicate between them, enabling the transference of information.
In Astrea constellation, the communication protocols are very important because are the ones that allow the constellation to work together and accomplish de function it has been designed for. The protocols used in Astrea constellation have to be:

High-speed	Reliable	Secure	Compatible with external satellites

Table 0.1.1: Requirements of the communications protocol

In order to accomplish the requirements, the standards of the Consultative Committee for Space Data Systems (CCSDS) have been followed, toguether with the ISO model. Regarding the protocols of the Ground Segment, security has been the most important requirement to decide the protocol. The chosen protocols are exposed in the following table.

Space segment: CCSDS Standards		
Transport Layer	Space communication protocol specification transmission protocol: SCSP-TP	
Network layer	Main protocol Routing protocol Complementary protocols	Internet Protocol version 6 (IPv6) Open Shortest Path First (OSPF) IP over CCSDS
Data Link Layer	Data Link Protocol Sublayer Sync and Channel Coding Sublayer	TC Space Data Link Protocol TC Sync and Channel Coding
Ground segment		
Presentation of the data to the client		Application
Protocol		Secure Shell (SSSH)

Table 0.1.2: Communications protocol overview

Chapter 1

Bibliography