

SPACE OPERATIONS SYMPOSIUM (B6)
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THE EUCLID GROUND SEGMENT AND OPERATIONS - CHALLENGES IN THE QUEST FOR
DARK ENERGY AND DARK MATTER

Abstract

Euclid is an European Space Agency's (ESA) medium class science mission of ESA's Science Programme currently under development and is due to be launched in 2020 on a Soyuz-Fregat from Kourou, French Guyana. Euclid is a space-based optical/near-infrared survey mission designed to investigate the nature of dark energy, dark matter and gravity by observing their signatures on the geometry of the Universe and on the formation of large structures over cosmological timescales. Euclid will use two main techniques in the detection of the signature of dark matter and energy: Weak gravitational Lensing, which requires the measurement of the shape and photometric redshifts of distant galaxies, and Galaxy Clustering, based on the measurement of the 3-dimensional distribution of galaxies through their spectroscopic redshifts. To achieve its scientific objectives the spacecraft is planned to perform a survey of more than 35 billion galaxies. This paper will provide a brief overview of the Euclid mission, its science objectives and the mission and spacecraft design. It will then describe the ground segment architecture which needs to provide the solutions to some of the operational challenges of Euclid and which features many novelties (ka-band, CFDP, file based operations, etc) to implement the ground segment and allow for cost efficient operations.