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NEOSTEL FLY EYE SENSORS FOR THE NEO DISCOVERY

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ABSTRACT

The Fly-Eye optical sensor architecture applied for NEO discovery and tracking has been originally proposed by CGS and further refined in the framework of the Space Situational Awareness (SSA) Preparatory Programme studies. The high level architecture of a Telescope based on the Fly-Eye concept has been defined in the TELAD Study. Following TELAD conceptual design, the NEOSTEL ESA Project activities are currently supporting the Detailed Design phase. The NEO Survey Telescope based on the Fly-Eye concept satisfies a complete list of key requirements, essential for an effective Optical Survey network.

The novel Optical sensor is conceived to support the Wide Survey methodology that requires an extremely large Field of View (i.e. 44 square degrees), is capable to scan the full visible sky in few hours, with seeing-limited High Optical Resolution and one meter equivalent aperture. The instrument is able to take a sky image of 256 Megapixels corresponding to a FoV of 6,7 x 6,7 degrees acquiring 800Gbytes of raw data per night. The Sensor can operate in both Survey and Tracking mode. The detailed design generated under the NEOSTEL Project will be directly applied for the manufacturing of the first NEO Survey Telescope prototype, planned to be launched by the ESA SSA Programme in 2015. In addition, the result of the detailed design will produce the documentation necessary to prepare the future site that will host the NEO Survey Telescope prototype as well as the high level architecture of the data processing SW that will be required at the telescope site. The product prototyping activity will therefore constitute a first key element of the European ESA network dedicated to the NEO thematic.