Status and Predicted Performance of ESA's Flyeye Telescope

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ESA has recognised the threat that asteroids pose to our planet and in order to detect asteroids days to weeks before their potential impact it was decided to develop a telescope with a large field-of-view within ESA's Space Situational Awareness (SSA) Programme. The innovative idea is to split the incoming light into 16 different paths and place 16 cameras at the end of each optical path, a similar concept as the facets of the eye of a fly. The total field-of-view will be 6.7° x 6.7° or about 45 square degrees. This will allow imaging of about 50 % of a hemisphere three times per night (typical exposure time of 30 to 40 s). The limiting magnitude of this 1-m telescope at such exposure times is estimated to be about 21.5.

For the time being the funding for one Flyeye telescope is granted. To have good access during the development and commissioning phase it is planned to place the first telescope on Monte Mufara in Sicily. When the concept proves to be successful, a second telescope shall be deployed in La Silla, Chile providing coverage of the threat of asteroids approaching from the Southern hemisphere which is hardly monitored today. The long-term plan is to deploy 4 Flyeye telescopes (two in the Northern and two in the Southern hemisphere) to be less weather dependent.

OHB Italy is the prime contractor building this telescope for ESA. The CCD cameras are being built by OHB-I and CREOTECH (PL). Toptech (CZ) delivered the aspherical lenses and the test collimator. The optical system is already integrated and preliminary tests were performed. The Factory-Acceptance-Test is planned for June with two test cameras in Turate, Italy. The equatorial mount was integrated and preliminarily tested. A preliminary building permit was submitted for the site development work on Monte Mufara. The current goal is to have "first light" on the mountain before the end of 2019.