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The ExoMars PanCam Instrument

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The ExoMars mission has evolved into a joint European-US mission to deliver a trace gas orbiter and a pair of rovers to Mars in 2016 and 2018 respectively. The European rover will carry the Pasteur exobiology payload including the 1.56 kg Panoramic Camera. PanCam will provide multispectral stereo images with 34 deg horizontal field-of-view (580 microrad/pixel) Wide-Angle Cameras (WAC) and (83 microrad/pixel) colour monoscopic "zoom" images with 5 deg horizontal field-of-view High Resolution Camera (HRC). The stereo Wide Angle Cameras (WAC) are based on Beagle 2 Stereo Camera System heritage [1]. Integrated with the WACs and HRC into the PanCam optical bench (which helps the instrument meet its planetary protection requirements) is the PanCam interface unit (PIU); which provides image storage, a Spacewire interface to the rover and DC-DC power conversion.

The Panoramic Camera instrument is designed to fulfil the digital terrain mapping requirements of the mission [2] as well as providing multispectral geological imaging, colour and stereo panoramic images and solar images for water vapour abundance and dust optical depth measurements. The High Resolution Camera (HRC) can be used for high resolution imaging of interesting targets detected in the WAC panoramas and of inaccessible locations on crater or valley walls. Additionally HRC will be used to observe retrieved subsurface samples before ingestion into the rest of the Pasteur payload. In short, PanCam provides the overview and context for the ExoMars experiment locations, required to enable the exobiology aims of the mission.

In addition to these baseline capabilities further enhancements are possible to PanCam to enhance it's effectiveness for astrobiology and planetary exploration:

1. Rover Inspection Mirror (RIM)
2. Organics Detection by Fluorescence Excitation (ODFE) LEDs [3-6]
3. UVIS broadband UV Flux and Opacity Determination (UVFOD) photodiode

This paper will discuss the scientific objectives and resource impacts of these enhancements.

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