

Activity Summary

Evaluation of a Commercial Digital Micro-Mirror Device for Multi-Object Spectrometers



Company Presentations

The consortium to perform this study consists of Visitech (Prime Contractor) and Laboratoire d'Astrophysique de Marseille (Sub Contractor).

Visitech

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Contact Person: Kyrre Tangen (+47 46 68 47 88)

Visitech is an independent DLP product design and development company that offers product design and development on contract for industrial and professional markets and applications. Subsequently Visitech can provide series production of industrial DLP® based light engines, completely assembled and tested DLP electronics or DLP chip sets. Visitech is listed as a DLP distributor for Texas Instruments Inc and Texas Instruments has appointed Visitech sole worldwide distributor for DDP-type DLP chip sets for industrial applications.

Laboratoire d'Astrophysique de Marseille (LAM)

Website: www.oamp.fr/lam

Address: 38 rue Frederic Joliot Curie, 13388 Marseille Cedex 13, France

Contact Person: Frederic Zamkotsian (+33 4 95 04 4151)

Laboratoire d'Astrophysique de Marseille (LAM) is one of the major astrophysical laboratory in France. Its interests concern observational cosmology, galaxies evolution, interstellar matter, solar system and small bodies exploration, and exo-planets detection and analysis. LAM is also involved in instruments design, realization and integration. Since several years, LAM has developed an expertise in MOEMS development and testing for the next generation of astronomical instrumentation.

European Space Agency (ESA) Technical Officer: Laurent Marchand (+31 71 565 4282)

Overview / Scope of Activity

The main objective of this activity is to investigate the suitability of Texas Instruments' DC2K DLP Chip Set for the Euclid mission. Euclid is a medium class mission candidate for launch in 2017 as part of the ESA Cosmic Vision 2015-2025 program and has the primary goal to study the dark universe.

Texas Instrument's DC2K DLP Chip Set is a candidate to be used as the Digital Micro-Mirror Device in Euclid's spectrograph. Texas Instruments' DC2K DLP Chip Set is however today only used for commercial (room temperature) type of applications and must therefore be verified suitable for the Euclid environment.

Visitech and LAM will in co-operation use their state-of-the-art expertise and best practice methodologies to evaluate the suitability of Texas Instruments' DC2K DLP Chip Set for the Euclid mission with focus on environmental, mechanical and radiation testing.

Visitech's main roles in the study is to design and realize the specialized test vehicles that are to be used in the study as well as use their position as a worldwide Texas Instruments distributor to procure the Texas Instruments DC2K DLP Chip Sets to be used in the study. The test vehicles will consist of two connected printed circuit boards holding the DC2K DLP Chip Sets and all supporting electronics specially designed to support the different tests to be performed.

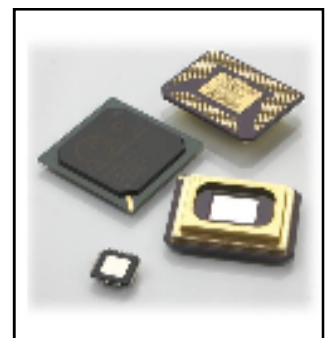


Figure 1: Texas Instruments DLP Chip Set

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Visitech will furthermore organize Radiation Testing and Mechanical Shock and Vibration testing of the test vehicles as well perform the project management and sub contractor management in this study.

LAM's main roles in the study is to design and realize the cryostat and optical bench used to perform environmental testing (including vacuum) and characterization of the Digital Micro Mirror Devices before, during and after the different tests (environmental, mechanical, radiation etc). LAM will furthermore operate the cryostat and optical bench through the whole study, manage most of the environmental testing and use their special equipment to a physical evaluation of the Digital Micro Mirror Devices from Texas Instruments. LAM will also do an evaluation of the performance of TI's DC2K DLP Chip Set in a Euclid type spectrograph.

Activity Approach and Work Structure

The approach to the project and the breakdown into work packages is described in the figure below.

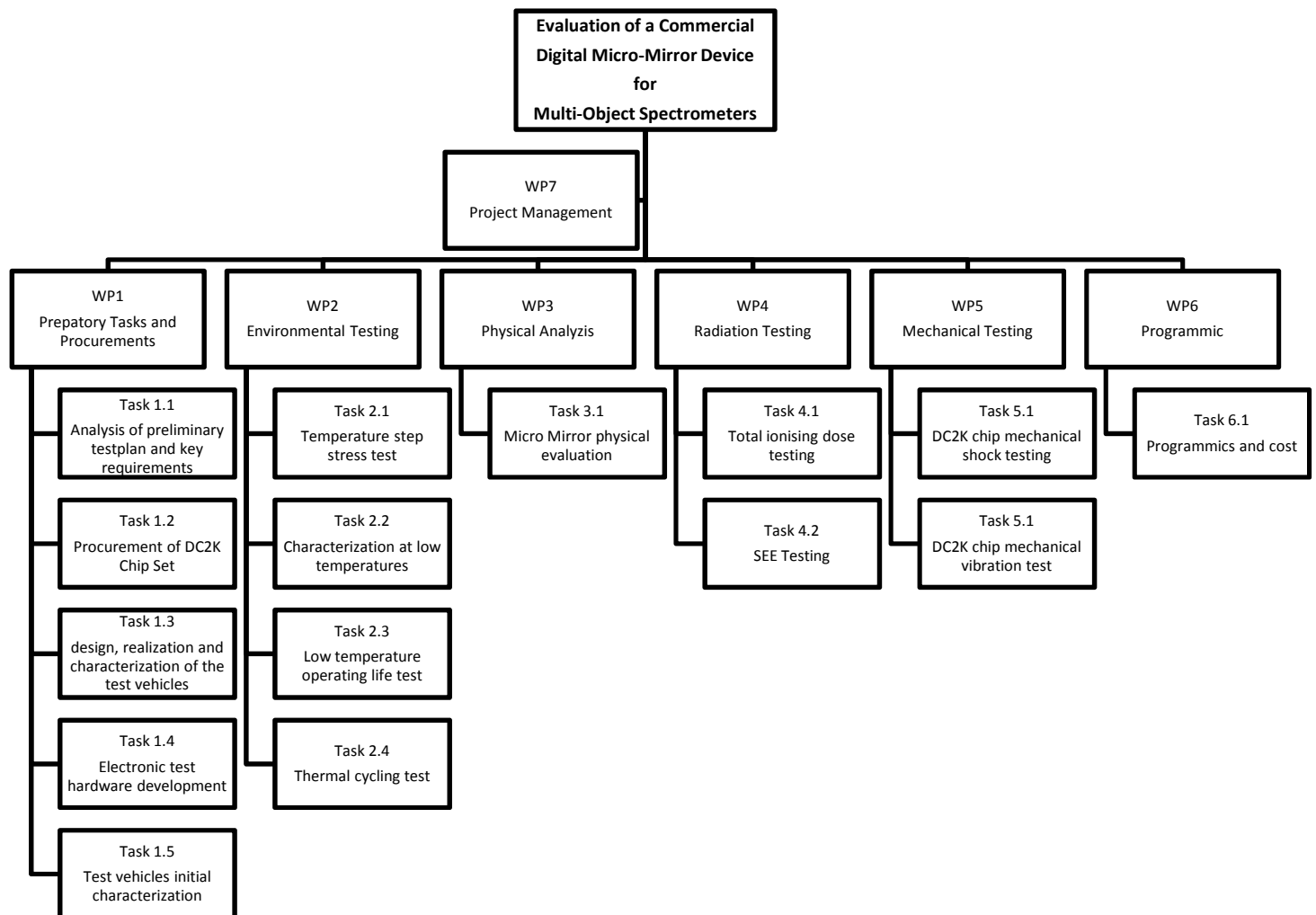


Figure 2: Work Breakdown Structure

The project timeframe is September 2008 to September 2009.