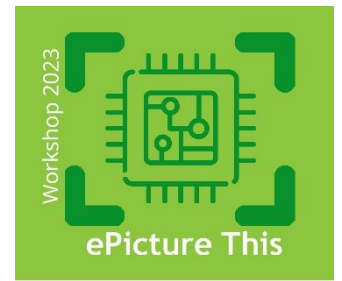


ABSTRACT PRESENTATION for <https://project-mantis.eu/#epicture>



Title: Development of a Thermal Infrared Image Sensor Module

Presenter name: Dirk Meier

Company name / Institute: Integrated Detector Electronics AS

Project name: MANTIS Vision

Funding group: Penta / ~~Xecs~~ / Euripides / ECSEL / KDT

Abstract can be published on website: YES NO

Provide abstract of 500 words maximum. Use font ARIAL, size 11.

If figures are used, the text plus figures must stay within this one page.

Our company and project partners are developing thermal infrared image sensor modules with meta lens optics, microbolometer arrays and new electronic readout integrated circuits. These modules consist of an optical lens and a focal plane array. Thermal infrared imaging is important for various applications in security, industry, and transport, as it allows for the measurement of heat and surface temperature from objects, even in low visibility conditions such as darkness, smoke, fog, and dust. Currently, state-of-the-art thermal infrared image sensor modules use refractive lenses and broadband microbolometer arrays with slow and relatively noisy readout electronics. The partners aim to improve upon this technology by implementing a new image sensor module with meta lens optics for imaging by diffraction. These meta lenses are a low-weight and low-cost alternative to refractive lenses. The microbolometers in this module have metal-insulator-metal absorbers for specific wavebands similar to red-green-blue sensitivity, enabling multi-spectral sensing and remote detection of gas clouds. The readout integrated circuit acquires up to 60 frames per second with VGA/QVGA resolution and 12- μm /24- μm pixel pitch, respectively, and the sensor module outputs digital data serially at 480Mbps.

In the presentation we share the main features and preliminary results from the design phase. The emphasis will be on the CMOS design and fabrication of the integrated circuits and the packaging of the microbolometers. We acknowledge the contributions from our partners and funding from MANTIS Vision PENTA, Norwegian IPN, APPLAUSE ECSEL, SPEKTIR Eurostars, and Agrarsense KDT.