HTA – 10 Year Anniversary

1. VTT

1.1. MEMS micro mirror for environment scanning

MEMS micro mirrors have microscopically small mirrors, which states are controlled by applying a voltage between the two electrodes around the mirror arrays. They can be used for controlling the intensity and direction of light. In this demo, LIDAR (light detection and ranging) method has instantaneous control of the beam direction by using MEMS micro mirrors. LIDAR is crucial f.ex. in autonomous driving by enabling full detection of the car's surroundings with all the relevant objects.

1.2. Flexible display demonstrator for automotive and architectural infrastructure lighting solutions

Flexible alpha-numeric display demonstrator is based on thin and flexible led foils printed and assembled by scalable and cost-effective roll to roll printing and assembly processes. These methods allow manufacturing of flexible led foils in large areas. Displays have Bluetooth connection and VTT's TinyNode sensors integrated, which allows display to gather information of its surrounding (temperature, lightness etc.). Led foil technology has been applied for example in bus wind screens, where embedded laminated led foils function as innovative info screens for driver and passengers. It can also be applied in different architectural infrastructure lighting solutions.

2. FRAUNHOFER

2.1. Mirau Interferometer (supported by the "VIAMOS" project; Fraunhofer Institute for Electronic Nano Systems ENAS)

This Mirau Interferometer is the key component of an Optical Coherence Tomography System used for non-invasive skin cancer detection that is extremely small and affordable in comparison to conventional ones. The Interferometer consists of a micro-lense-doublet, a micro-mirror array, a focus-adjustment spacer and a beam splitter plate, joined by a multi-wafer bonding technology combined with electrical connection functionality.

2.2. Spectrocube (supported by the “GateOne” project; Fraunhofer Institute for Photonic Microsystems IPMS)

Spectrometers allow the qualitative and quantitative analysis of substances in all physical conditions. Their electromagnetic radiation-based measuring method is neither contacting nor destructive. The near-infrared region of the electromagnetic spectrum is required for the analysis of organic substances in food chemistry or pharmacy. This demonstrator comprises illumination, optical parts, the Spectrocube itself and all necessary electronics.

3. CEA LETI

3.1. Healthcare innovations > Magnetic imaging diagnosis devices

The demonstrator shows first magnetometers (MEG) operated at ambient temperature sensitive enough for delivering real-time images of currents circulating in the brain and the heart for medical diagnosis. MEG sensors that can lower the cost of MEG scans by at least a factor of five while improving diagnosis of epilepsy and guiding surgeons during brain surgery.

3.2. Outdoor Super Wi-Fi: wireless broadband internet everywhere with flexible infrastructure

Wireless communications below 6GHz face the dilemma of Spectrum Crunch: a lack of sufficient wireless frequency spectrum needed to support consumer devices, resulting in profound ramifications for the future. Outdoor Super Wifi addresses this issue by targeting maritime communications and rural broadband, overcoming the deficiencies inherent in conventional technologies 4G and Wi-Fi: robustness to interference, versatility and flexibility.

4. CSEM

4.1. H2020 DataBio – Data-driven Bioeconomy

Using Big Data for sustainable agriculture, forestry, and fishery

DataBio handles massive flows of information collected through sensors placed in the soil and air, as well as from aerial and satellite imagery. This facilitates the decision-making of farmers, foresters, and fishermen.

The main goal of the DataBio project is to demonstrate the benefits of Big Data technologies for raw material production from agriculture, forestry and fishery/aquaculture, and thus to produce food, energy and biomaterials responsibly and sustainably in ways that maximize added value.

4.2. H2020 AMPERE – Towards a European ecosystem of photovoltaic solar energy

Automated– cell and Module – industrial photovoltaic Production for regaining and securing European Renewable Energy markets

The main objective of the AMPERE project is to develop an innovative and sustainable European manufacturing (full-scale and automated) industrial pilot line, to produce highly efficient, bi-facial, heterojunction technology (HJT) silicon solar cells and modules. AMPERE will contribute to the re-building of a PV ecosystem in Europe, and will help in regaining competitiveness in the entire European photovoltaic value chain (from materials to equipment and cell/module manufacturers).

The final deliverable of the AMPERE project will be the setting-up of an innovative 100 MWp full-scale automated pilot line in a production environment (in Catania, Sicily) while preparing the next stages (250 MWp and the GWp scale).