

Newsletter

August 2015 - Issue 1



MAIN PROJECT INFORMATION

M3TERA aims to provide a wide-spread use of **low cost THz technology** in our society, which shall be enabled through a micromachined heterogeneous integration platform providing a unique way to highly-integrated, volume-manufacturable, cost- and energy-efficient, reconfigurable submillimeter-wave and THz systems. In line with technology convergence of advancing microwave semiconductor technology, according to internal and external roadmaps, the proposed **THz microsystem platform** is envisioned to accommodate multiple generations of future THz products in different application fields. The lead application case is to enable compact, low-cost, point-to-point high-speed communication links in the **frequency range from 100 GHz to 500 GHz**, to be deployed in a scenario of a high-density, small-cell base-station network providing ubiquitous high-speed internet access to mobile communication devices in the urban environment. The potential for success and the high impact of this project is ensured through **industrially-driven objectives, application-driven prototype implementation** for different key applications and an excellent industry-driven consortium.

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MESSAGE FROM THE COORDINATOR

The intention of this Newsletter is to open a new communication channel in order to provide news on the project progress and to discuss ongoing topics relevant to M3TERA for internal and external project partners, stakeholders and all other interested parties. For more detailed information on and around the project we warmly invite you to take a look at our project website, which is continuously updated with the latest project related news: www.m3tera.eu.

The project successfully started with the Kick-Off meeting in February 2015 and since then the project has been in its initial stages of formation. The M3TERA project is well-positioned to achieve its objectives by bringing together a European team of leading industrial and research companies. The 7 project partners from 4 different countries form a complete chain stretching from basic research and service design through applied research up to end-user oriented services providers.



M3TERA public deliverables submitted:

- D8.1 Internal and External IT Communication Infrastructure and Project Website
- D8.2 Data Management Plan (DMP)
- D9.1 Process Quality Plan

M3TERA upcoming public deliverables :

- D3.3 Report on Overall MMIC Concept
- D9.2 Risk Assessment Plan

Milestones Achieved:

- MS1 „Successful project kick-off“
- MS2 “Final specification completed”

KEY Data:

Start Date: 1 February 2015
End Date: 31 January 2018
Duration: 36 months
Project Reference: 644039
Project Total Costs: € 4.255.743,75
EC Contribution: € 3.742.961,25

Project Website
www.m3tera.eu

Consortium:
Project Coordinator:

Technical Leader:

Scientific Leader:

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TECHNICAL APPROACH

The work performed in the framework of the M3TERA project is organized in nine tailor-made work packages, which are further structured in tasks, to achieve the maximum of efficiency and output quality. **WP1 "Application and Technology Specification"** intends to analyze system requirements for the applications from a technological as well as from an economical perspective, and further derives the technology specifications for the technical implementation in the project. **WP2 "Heterogeneous Integration Platform"** deals with the development of the micro-machined heterogeneous integration platform with integrated MEMS-tuneable components as well as designing a systems integration packaging concept. **WP3 "Active Circuits and their Intra-Platform Interfaces"** aims to develop monolithic microwave integrated circuits (MMIC) front-end circuits for the telecom and the sensor prototype and novel interface concepts for the micro-machined integration platform. **WP4 "Sensor and Antenna Interfaces"** includes a further development step by composing a platform sensor and antenna interface for primary (telecommunication) and secondary applications (medical, food science, and industrial sensor) prototypes. **WP5 "Telecom Proof-of-Concept Prototype"** targets to develop a proof-of-concept prototype for millimeter-wave wireless link based on the microsystem platform. **WP6 "Ubiquitous THz Sensor Prototype"** was defined to form a basis for the investigation of secondary applications of the THz microsystem platform spreading over a wide range of sensors. **WP7 "Technology Transfer to High-Volume Manufacturer"** involves further key steps as the technology transfer, the design for manufacturability, process documentation and the preparation of the microsystem platform to the high-volume manufacturer in the consortium. **WP8 "Dissemination, Communication, Exploitation and Standardisation"** focuses on the dissemination, communication, exploitations and standardization that obtain inputs from all other preceding work packages. In the final work package **WP9** the **"Project- Risk-, and Innovation- Management"** will draw from the input of all other WPs in order to guarantee a successful project lifetime with respect to Risk- and Innovation-Management.

PAST AND ONGOING ACTIVITIES

After the successful **Project Kick-Off** each partner has enthusiastically looked into their tasks within the particular WPs and started progress towards the objectives. The first deliverables have been submitted and quite some work has been performed during the last 6 project months. In **WP1** a preliminary study on the potential use cases of the heterogeneously integrated hardware platform, focusing on applications for future mobile networks (primary application) and on sensing application (secondary application) has been performed. Further, preliminary results and conclusions by assessing the technology capability of the proposed heterogeneously-integrated THz microsystem have been identified. **WP2** is concentrating on the development of a heterogeneous integration platform together with a system in package concept based on eWLB. Within **WP3** a preliminary version of Process Design Kit for SiGe-BiCMOS MMIC technology has been adjusted. Further, generic circuits for the receiver including low noise amplifier, mixer and IF-amplifier were designed. A continuation of work on the verification of PDK models and parameters, as well as on generic circuit designs is planned. Work within **WP4** has not started within the first 6 project months, but will from this time on concentrate on the composition of a sensor and antenna interface for primary and secondary applications. The definition of demonstrators for the telecom proof-of-concept prototype started in **WP5** and will be further elaborated. Furthermore, **WP6** concentrated on the investigation of sensor applications and a survey about potential applications in the mm-wave and sub-THz domains has been performed. Within the last technical **WP7** discussions about design rules and guidelines for the microsystem platform started and will be further continued. Moreover, within **WP8** a project website has been created as a collaborative platform for information sharing. Also an announcement letter has been published and a project leaflet designed and distributed. The internal and external communication infrastructure has been set up and the respective deliverables submitted within this WP. Furthermore, work within **WP9** regards to administration and project management, such as reporting to the EC, distributing the pre-financing, designing template, and handling day-to-day requests from partners and external bodies has been performed.

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