

## MISSION OF M3TERA

M3TERA's mission is to provide a wide-spread use of **low cost THz technology** in our society, enabled by a micromachined heterogeneous integration platform, which provides an unique way to **highly-integrated, volume - manufacturable, cost- and energy-efficient, reconfigurable submillimeter-wave and THz systems**.

## OBJECTIVES

The primary objective of M3TERA is to develop a **heterogeneous microsystem integration platform** which facilitates high volume manufacturing of compact, reliable, energy-efficient and advanced-performance millimetre-wave and THz systems at drastically reduced costs. For this purpose the suggested THz platform goes substantially beyond the state of the art through innovative concepts in multiple domains of the system such as silicon-micromachined THz integration platform, wafer-scale integrated micro-mechanically-tuneable THz front-end components, heterogeneously-integrated millimetre-wave active circuits, novel low-loss signal and sensor interfaces tailor-made for THz frequencies.

This **primary objective** is accompanied by 3 further key aims:

- Primary technology prototype
- Developing a system-in-package concept
- Enabling a manufacturable and efficient technology transfer

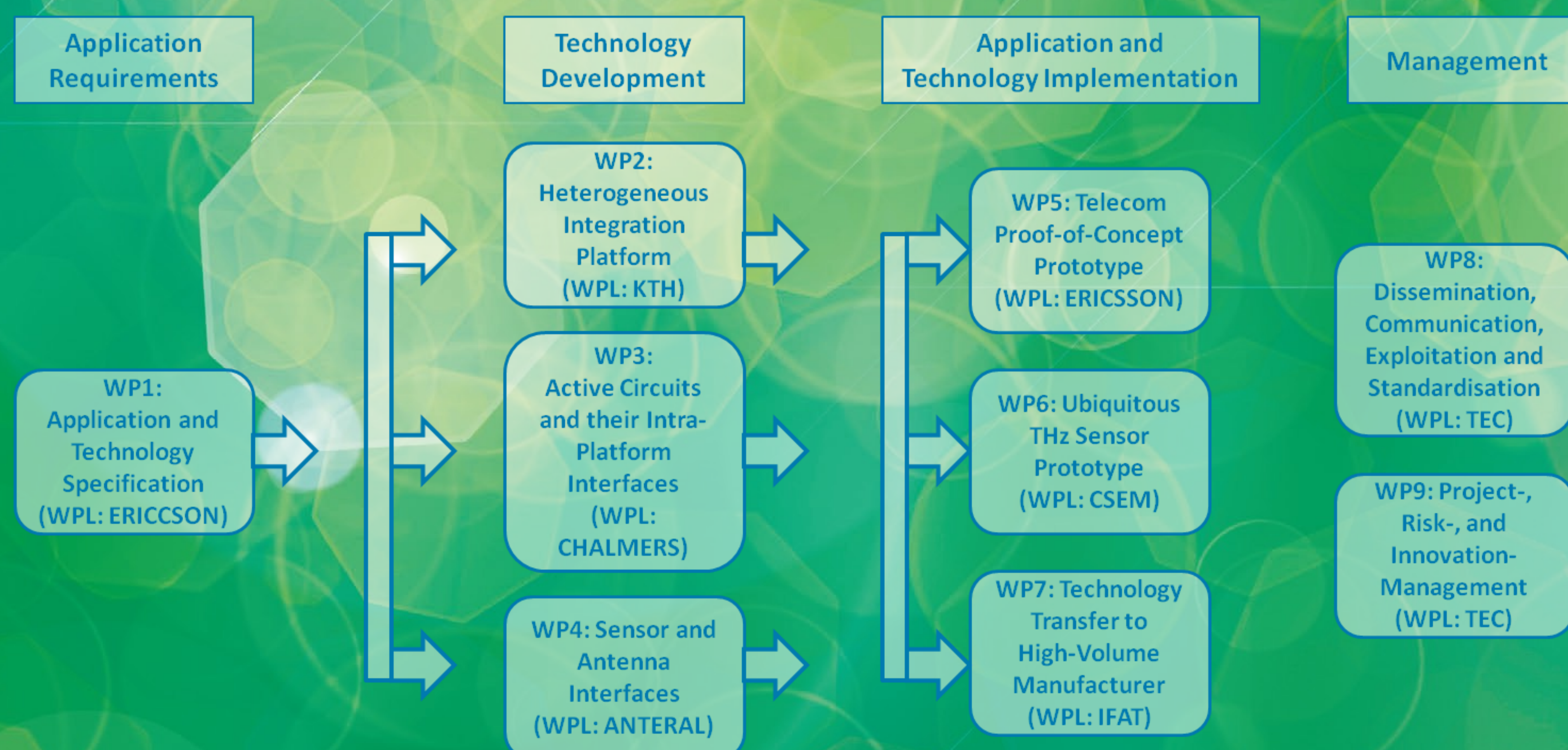
The high-volume manufacturable THz microsystem platform is envisioned as a **secondary objective** of M3TERA. The goal is to enable the ubiquitous usage of low-cost THz sensors in various applications in society. Possible target areas are millimeter-wave food quality control and food safety. Other sensor application could include medical diagnosis, industrial sensors and radar.

## MOTIVATION

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 concrete business and lead application case is THz microsystems enabling compact, low-cost point-to-point high-speed communication links in the frequency space between 100 GHz and 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 urban environment. The potential for success and high impact of this project is given by **industrially-driven objectives, application-driven prototype implementation** for different key applications and an **excellent industry-driven consortium**.

## TECHNICAL APPROACH

The M3TERA project envisions the wide-spread use of low-cost THz technology in our society, enabled by the proposed micromachined heterogeneous integration platform, which provides an unprecedented way to highly-integrated, volume-manufacturable, reliable, reconfigurable, cost- and energy efficient submillimeter-wave and THz systems. The work performed in the framework of this project is organized in **nine different WPs** tailor-made to achieve the maximum of efficiency and output quality:



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### Other Project Partners



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