

## 6 Publishable Summary

The “Advanced Distributed Pilot Line for More-than-Moore Technologies” project (ADMONT) is focused on a powerful and versatile More-than-Moore (MtM) pilot line for Europe, increasing the diversification of CMOS process technologies. The combination of existing expertise, technological capabilities and the manufacturing capacity of industrial and research partners creates a whole new ecosystem within Europe’s biggest silicon technology cluster “Silicon Saxony”. The distributed pilot line utilizes various MtM platform technologies for sensor and OLED processing in combination with baseline CMOS processes in a unique way and incorporates 2.5D as well as 3D integration of silicon systems into one single production flow. The technology modules, equipment and processes are not located in one single clean room, but are distributed between partners located in Dresden. This local concentration of micro- and nanotechnology facilities has various advantages for potential customer since it enables a short production cycle time and fast delivery. Such a distributed MtM pilot line is not only unique in Europe but also worldwide. The pilot line will be implemented as a “one-stop-shop” for partners and customers. It is supported by advanced design technologies to address the challenges of modelling and simulation of MtM-relevant aspects like reliability, degradation effects, and process variability. Furthermore, IT solutions aspects for MtM smart fabrication, fab automation and data processing will become the foundation for a new type of smart infrastructure. The distributed pilot line is working as an open platform and is able to integrate future technologies for autonomous and smart system solutions. ADMONT is focused on four main key applications: smart energy, smart mobility, smart health and smart production. It also addresses and utilizes the essential capabilities such as semiconductor process equipment and materials, design technology and smart system integration. The project consortium is organized and working along the value chain for Electronic Components and Systems (ECS) technologies in Europe. The consortium consists of 16 partners from 6 countries and focuses on industrial companies, especially SME’s, accompanied by leading research institutes with a clear focus on production in Europe. While the semiconductor manufacturing of the pilot line is concentrated in Saxony within the Dresden area, the system production spreads over different countries in Europe. ADMONT is an excellent project to bridge the gap between research exploitation, industrial development and innovative system design for future key applications and markets.

The work packages are organized along the production value chain from silicon wafer production, MtM CMOS fabrication with fab automation, sensor material and sensor/actuator integration, organic semiconductor processing, 2.5/3D silicon-system integration. Demonstrator development and qualification for smart system solutions address TRL’s 4 to 8. The performance and capability of the ADMONT pilot line will be demonstrated by several smart integrated systems for key applications like:

- Lab-on-chip for smart health & diagnostics,
- RFID transponder systems for smart mobility,
- Energy-efficient LED driver for smart energy
- Real-time factory information systems for smart production.

The design of such smart systems will be supported by advanced design technologies enabling modelling and simulation of fundamental MtM-relevant aspects like reliability, lifetime, and the safe-operating-area (SOA). In combination with advanced modelling approaches for high-voltage devices and their characteristics, the pilot line aims to achieve first-time-right design for customers. This is a crucial aspect for time-to-market, especially for complex smart systems. Furthermore, the ADMONT pilot line will target cost-effectiveness and energy-efficiency in production, robust and stable processes, as well as technology and product diversification using MtM technologies with high yield and outstanding quality in a world-class environment.

The ADMONT project creates a new ecosystem for MtM technologies and smart system integration to enable innovative ECS solutions as a crucial building block to tackle societal challenges and to strengthen Europe’s industrial leadership. ADMONT will improve the competitiveness of industrial small, medium and large companies and strengthen the position of research institutes. This will influence the long- and medium-term position in key markets leading to economic and employment growth in the European Union. The smart system development and

production in Europe will also strengthen the world market position through new innovative products and smart solutions. The ADMONT pilot line is acting as a regional competence cluster for micro- and nanotechnology with a European dimension for system integration and supports the ECS industry to reach leadership in key technologies. The pilot line is planned and organized to operate sustainably and will be open for additional customers during and after the duration of the project.