

R3-POWERUP

300mm Pilot Line for Smart Power and Power Discretes

Challenges and objectives

The project will push innovation in three sectors:

- Innovation in Power device technology, by integrating in a 300mm line an advanced 90nm logic process, requiring advanced 193nm lithography, low voltage devices, embedded non-volatile memory, multiple Copper metal levels, with high power high voltage devices, requiring dedicated isolation structures.
- Innovation in Equipment and Materials, by adapting existing equipment for power devices to new levels of reliability and control, compatible with 300mm substrates, and developing a new ALD equipment, a dedicated fab control platform, and specific assembly solutions.
- Innovation in Application and future Products, by supporting seven application demonstrators, expressly developed for the Smart Power technology, and covering a variety of high potential fields, from Automotive to green energy, domotics and industrial control

Technical goals

The goals of the project are:

- To develop and demonstrate a brand new 300mm advanced manufacturing facility for 90nm Smart Power technology, configured as a multi-KET Pilot Line (i.e. Nanoelectronics, Nanotechnology, Advanced Manufacturing).
- To improve productivity and competitiveness of integrated IC solutions for Smart Power and power discrete technologies.
- To support a variety of applications in the Automotive and industrial domains.

Expected impact

Smart power ICs are key enabling components for applications in which Europe is playing a leading role: from mid-power automotive, to industrial power, battery management systems for HEV, FEV and electric bikes, domotics, LED lighting for both indoor and outdoor, computer and industrial peripherals.

Power and RF nanoelectronics represents about 30% of the industrial semiconductors business, and has been characterized by a stable growing market. The global demand for power electronics in systems is expected to have a CAGR of 2% until 2020 (CAGR: Compound Annual Growth Rate). This will drive the market to 134 Billion US\$ within the 2020. At the moment, 300mm fabs for Smart Power devices are present or announced only in the USA and in Asia.

R3-POWERUP will establish the first 300mm Pilot Line in Europe for Smart Power and discrete power devices featuring 90nm lithography for high-density logic, analogue and power devices and embedded Non Volatile Memories for the realization of complex Systems-on-Chip. As such, it will fill the existing gap in the availability of 300mm Pilot Lines in Europe, which covers only Logic CMOS and discrete power devices.



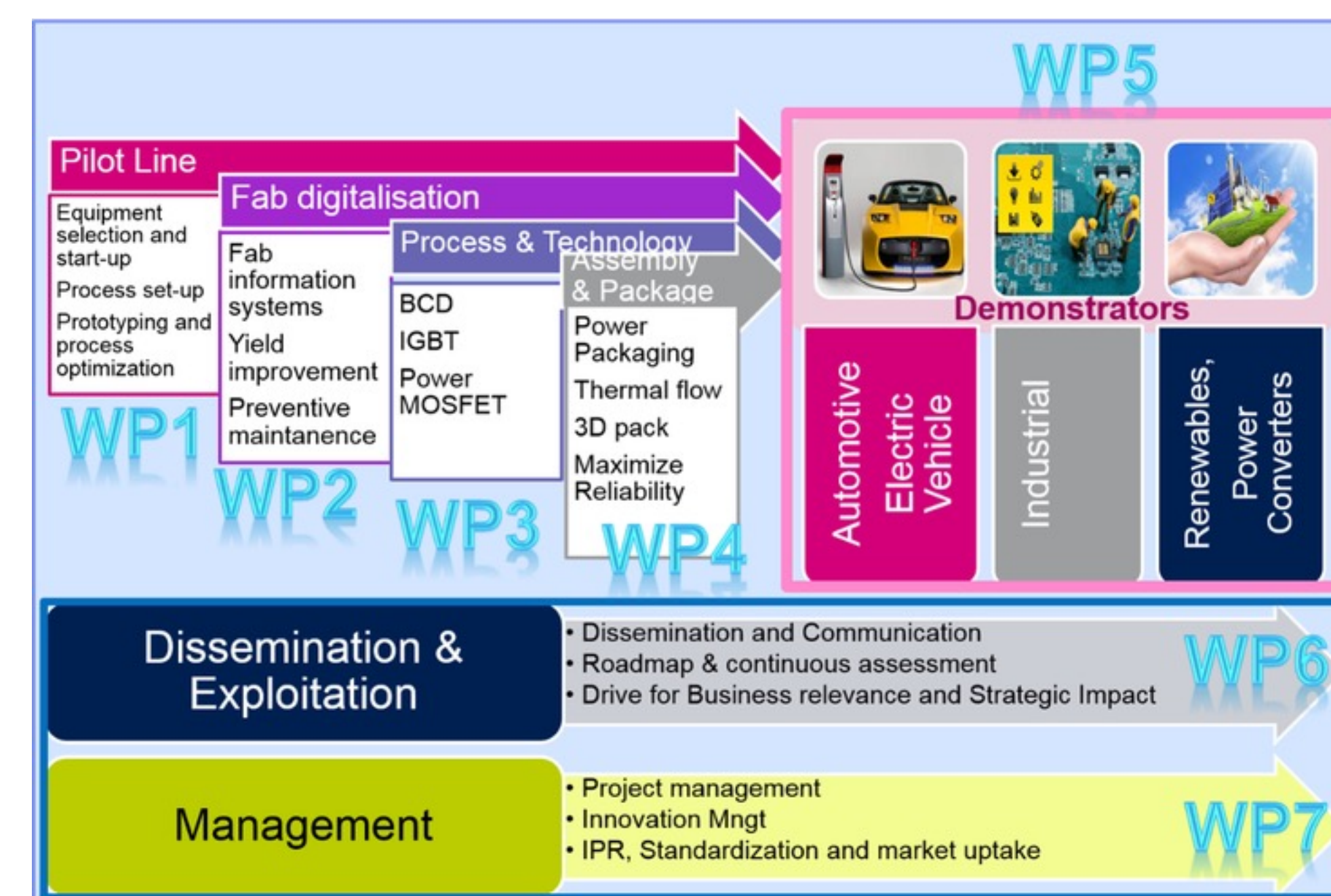
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Additional information

Start: 1-11-2017

Total investment: €M 180.7

Duration: 42 months

Participating organisations: 35

Number of countries: 14