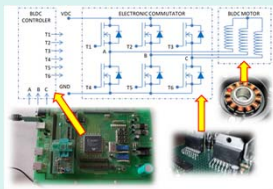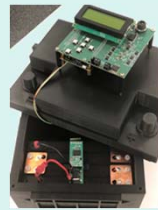# R3-POWER UP

MAKE IT UP

Demonstrators: Application Driven

Automotive, EV

D1. Automotive: high-performance power train for electric automotive supply (Bosch, FhG)

High performance Automotive Battery Mngt. with highly optimized assembly and interconnect technology, enables innovative driving concepts and power train redundancy e.g. for future automotive power nets as for electric driven vehicles.

D2. Electronic speed controller (ESC) for Electric Vehicle Applications (Automatix, ITE)

The ESC chip supports DC motor power control in UAV (drone).

D5. Smart BLDC MOSFET Pre-driver and Controller (ST-I)

Fully integrated motor pre-driver designed to cover a wide range of low/mid-level applications for BLDC motor control Brushless DC motors:

Key Highlight
- 32bit ARM Cortex M4
- CAN FD
- 256KB Phase Change Memory with ECC
- Gate Driver Unit with integrated charge pump
- HW and SW libraries for FOC
- Embedded motor control HW accelerator
- ON/OFF state diagnostics
- Ready for ASIL-A system

Automotive target applications:
- Electronic Water Pumps
- Auxiliary Water Pumps
- Electronic Oil/Fuel Pumps
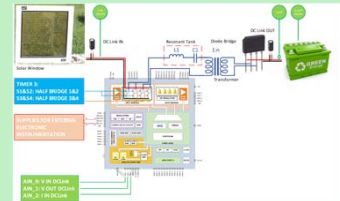
D6. Industrial, BLDC Motor Controller (BUT)

Advanced brushless DC Motor Controller (BLDC). Dedicated to driving sensor-less BLDC motor up to 2 KW, without the need of expensive active cooling solutions.
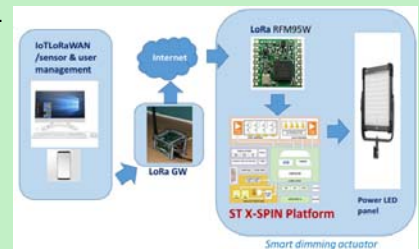
Renewables, Power converters

D3. Renewable Energy, low power converters interfacing PV and ESS (GPTech, UniSE)

DC/DC micro-converter for solar panel. Management of the energy produced by a solar window through a highly optimized DC/DC boost converter
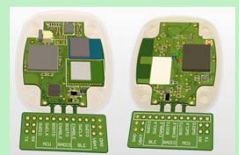
D4. Domotic, Dimming lights actuator (IMA)

Smart power actuator for outdoor/indoor lighting. Scalable for switching up to max 500W power for a wide range light management (smart buildings, smart outdoor public areas, etc.).

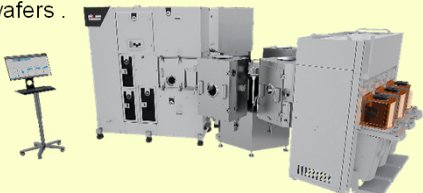### D7. Power management evaluation platform (Nano Design, STUBA)

To be exploited in new electronic designs, for example in monitoring and communication unit for agricultural machines. A IoT platform with a wide potential for industrial implementation.

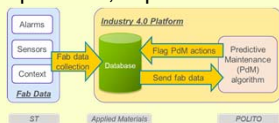## Equipment and Industry 4.0

D8. New solutions for ALD equipment @300mm (Picosun, ST-I)

Development of high-quality ALD cluster tool for the deposition of high uniformity metal oxide and nitride films on batches of 300mm wafers .

D9.1 Pushing Industry 4.0 through new Fab automation and D9.2 Rapid ramp allowing defectivity inspection and yield optimization (AMIR, AMIL, ST-I)

Increase fab efficiency, with automation and yield optimization by defectivity inspection during R&D phase and normal operations, introduction of new products, capabilities and manufacturing process.

D10. Packaging: advanced 3D System-in-Package (APC, ST-I)

IPM compatible with automotive grade qualification, including the smart part with controller and driver and the power part to be controlled.