POWER ELECTRONICS DEVICE
a RESOLVD key exploitable result

DESCRIPTION

Power electronic solution that integrates multiple battery types and manages their dynamic energy and power flows.

DEVELOPER

CITCEA

TARGET CUSTOMERS

DSO, System Integrators, Aggregator, Charging Station Operators, Prosumers

PROBLEM ADDRESSED

In order to facilitate the increase of RES in electric grids, dedicated energy storage systems can be used to manage dynamic energy and power flows. However, different battery systems are needed to address specific power and energy needs. These investments are costly, and their management is complex.

VALUE PROPOSITION

The hybrid energy storage solution provides simultaneously energy and power related services to a variety of end user(s) in energy grids. This minimizes the installed capacity cost (in €/kWh) of battery storage systems.

KEY FUNCTIONALITIES

- Providing flexibility to the low voltage grid
- Ensure security of supply in case of grid failure
- Active & reactive power compensation
- Current harmonics compensation
- Battery system management

EXPLOITATION AMBITION

CITCEA-UPC aims for through licensing agreements. Prototype tested in RESOLVD. Next steps include fine-tuning, improving robustness, and commercial prototyping.

Decision support
Integration layer
Data collection
Actuation
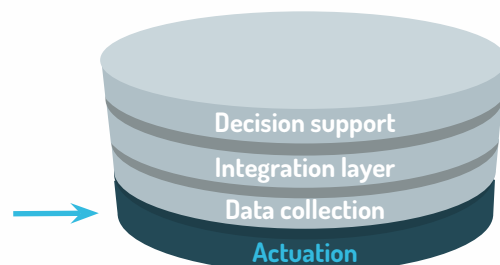
Where the PED fits in the RESOLVD solution, see model on page 2

RESOLVD
Next generation LV grid management

WHY IS THIS RELEVANT TO YOU?

The RESOLVD H2020 project is a 42 month Research & Innovation project that proposes hardware and software technologies that address European DSOs challenges in accommodating an increased presence of renewables in LV grids.

With the project now coming to a close, a consortium of leading institutions and technology developers have developed the next generation solutions to meet tomorrow's challenges and these are being tested in a real-life pilot in Catalonia, Spain.

DSO CHALLENGES

Fault detection and self-healing	Low resolution grid observability	Congestion and voltage compliance
Uncontrolled islanding	Continuity of supply after fault	Power quality issues
Technical power loses	Cyber Security	Technical power loses

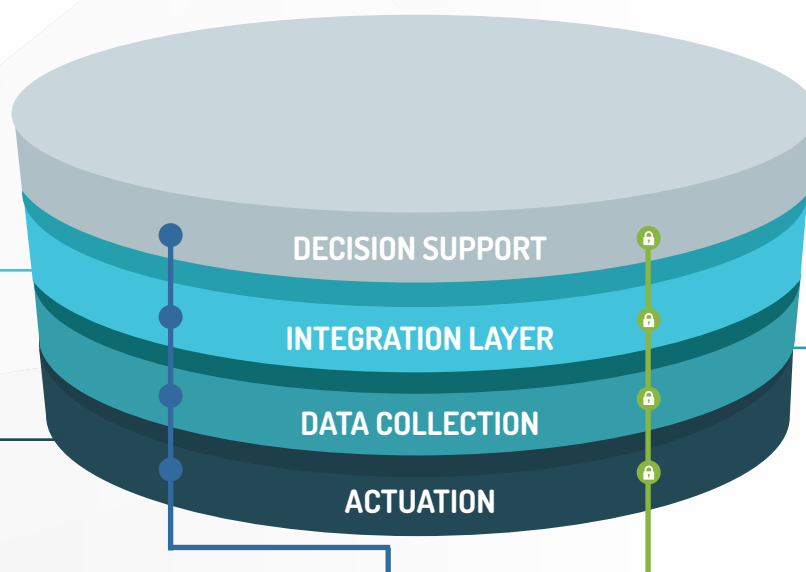## THE RESOLVD SOLUTION

INTEGRATION LAYER
Enterprise Service Bus (ESB) and Data Management Platform – Integration middleware software that facilitates interaction among various software applications and manages data exchange, analytics and visualisation.

ACTUATION
Power electronic device (PED) Integrates multiple battery types and manages their dynamic energy and power flows.

DECISION SUPPORT
Low-Voltage Distribution Decision support toolkit (LVD-DST) – A suite of web services that provides enhanced energy monitoring and scheduling capabilities.

DATA COLLECTION
Phasor measurement unit (PMU) & edge computing – A wide area monitoring solution that provides increased observability of the LV grid & has edge computing capabilities **Smart Gateway** to measure power quality in the buildings or charging areas and communicates to 3rd party.

DECISION SUPPORT

INTEGRATION LAYER

DATA COLLECTION

ACTUATION

RESOLVD BRINGS INNOVATION AND CYBER SECURITY IN THESE LAYERS

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