



III EDICIÓN CONGRESO DE
REDES INTELIGENTES
IV WEBINAR 16 DE SEPTIEMBRE 2025 - FUTURED

Congreso organizado
por:



Patrocinado
por:



gridspertise

SIEMENS

Improving Electric Vehicle Deployment Through Realistic Scenario Development, Distribution Grid Impact Assessment and Validation in a Large-Scale Demonstration in Menorca

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Shaping Energy for a Sustainable Future

e-distribución

The FLOW Project

flow

*Flexible energy systems
Leveraging the Optimal
integration of EVs
deployment Wave*



30 entities:

3 universities and research centres
A TSO, several DSOs, CPOs and aggregators
SMEs specialized in ICT, EV charging infrastructure
and innovation management



FLOW enables and valorizes
EV flexibility through **user-
centric V2X** smart charging
solutions to **enhance** the
upcoming mass **penetration**
of **EV transportation**.

EV Flexibility can alleviate grid
challenges leading to
decarbonization and support
greater **integration of
renewables**.

Focus on 2 customisable tools

(due to dependance on input)

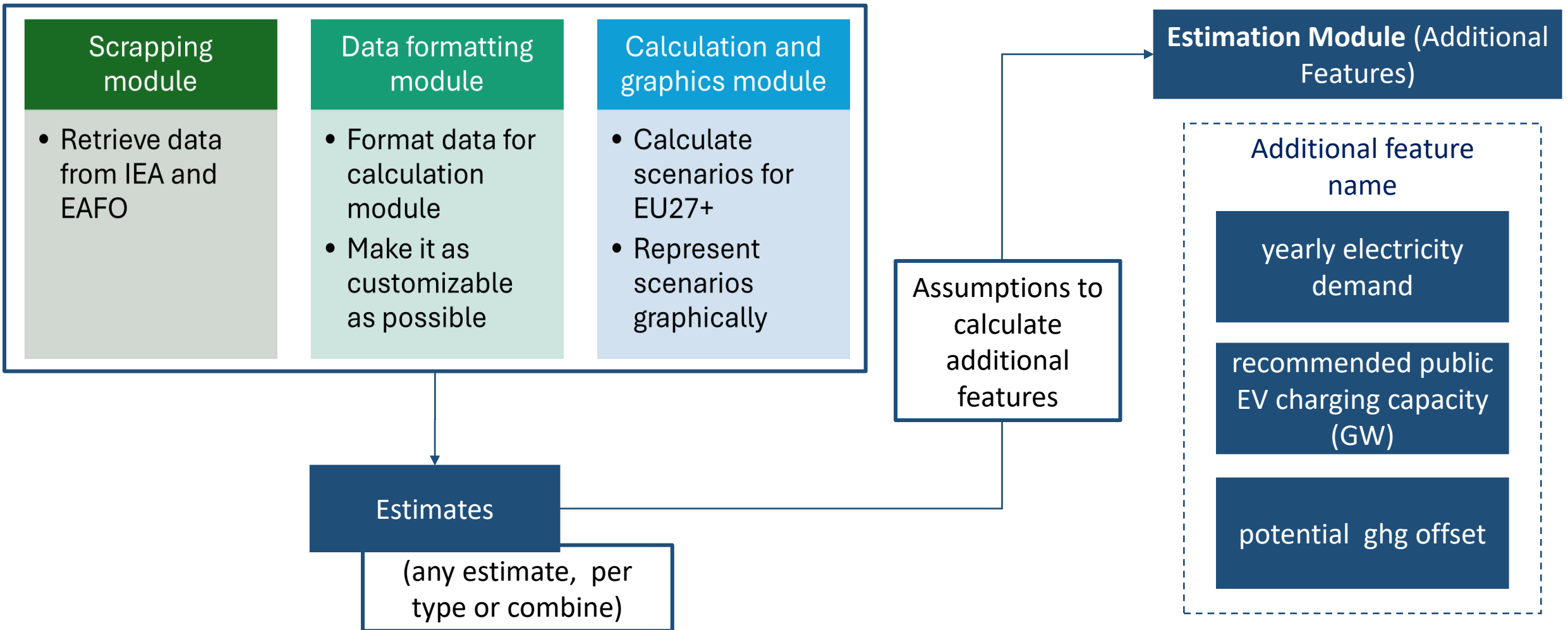
Energy System Impact
Assesment Tool
(ESIT)

Assessing **overall energy requirements** for
large-scale EV adoption at the pan-
European level

Local System Impact
Assesment Tool
(LSIT)

Analyzing the effects of EV **diffusion on
distribution networks** for distribution
grids from the demonstration areas

Energy System Impact Assessment Tool (ESIT)



ESIT Results and Conclusions

The analysis was done with **four** scenarios:

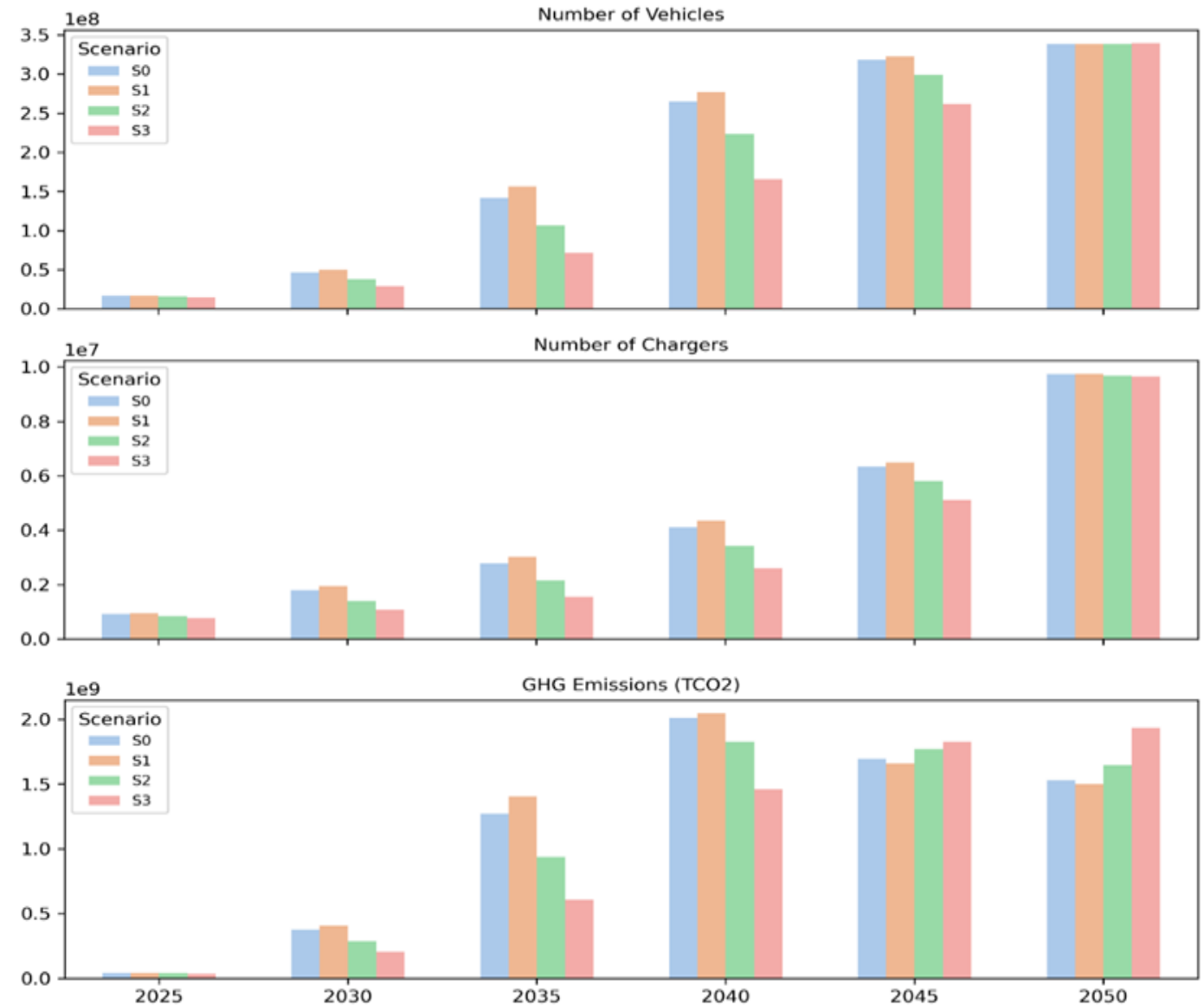
S0 (baseline) - with Announced Pledges
Scenario (APS) values as a 2035 bound.

S1 (optimistic) - with APS values
+10% as a 2035 bound.

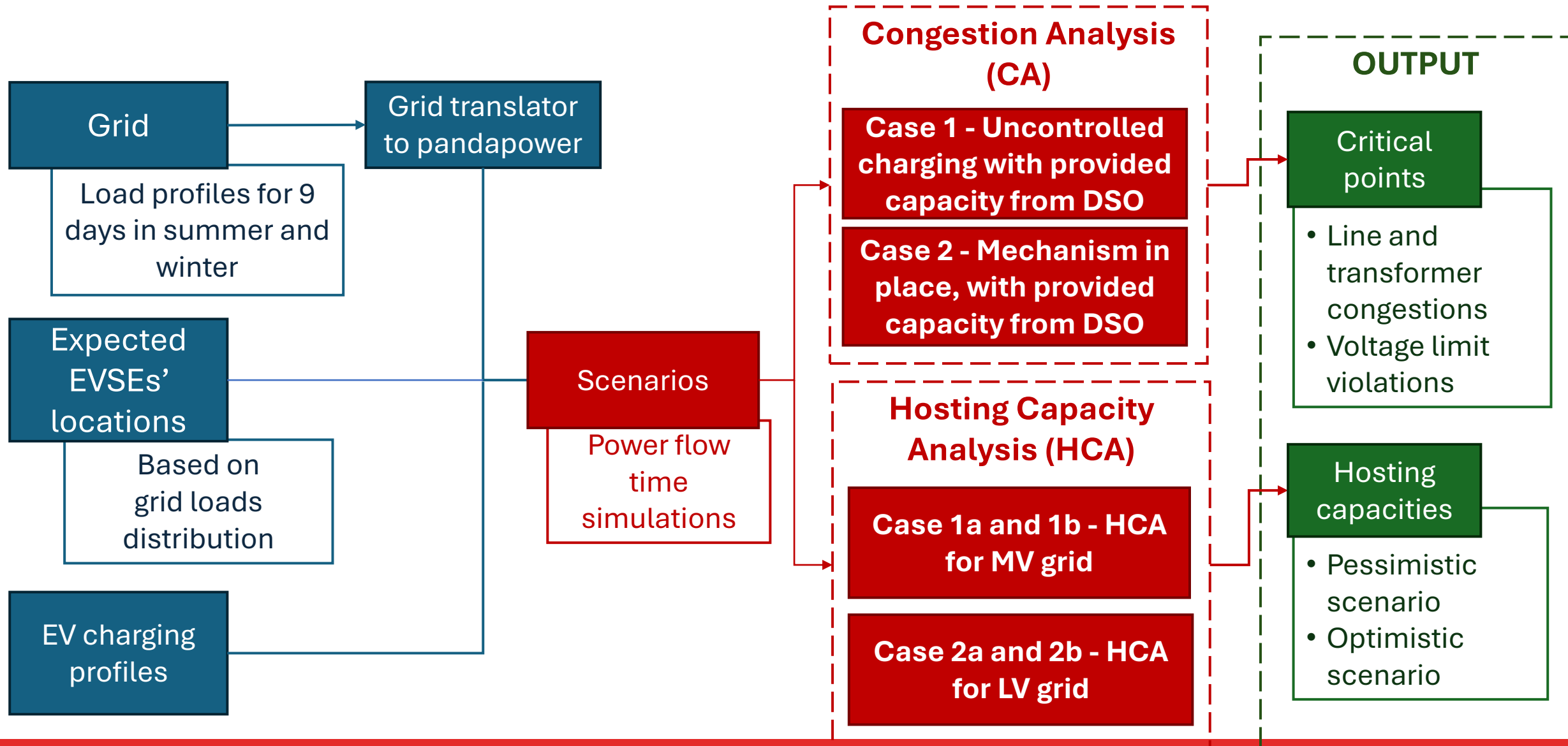
S2 (pessimistic) - with APS values
-25% as a 2035 bound

S3 (very pessimistic) - with APS values
-50% as a 2035 bound

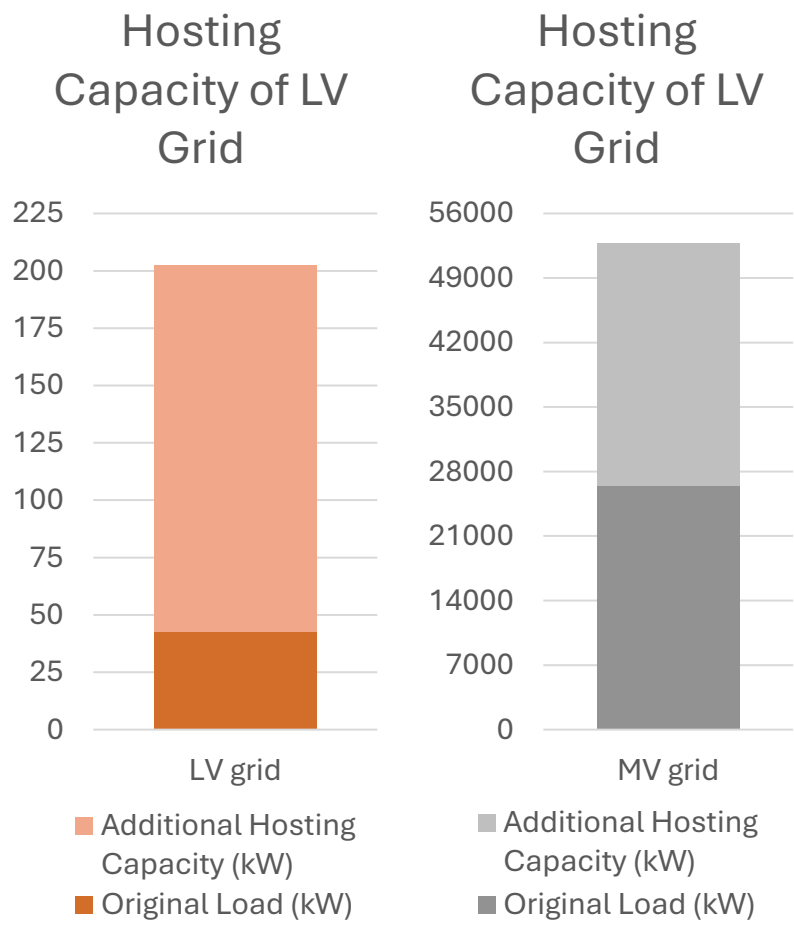
Comparison of all considered metrics, number of vehicles and chargers, energy demand, charging infrastructure capacity and GHG emissions, across all scenarios, S0-S3



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LSIT Results and Conclusions

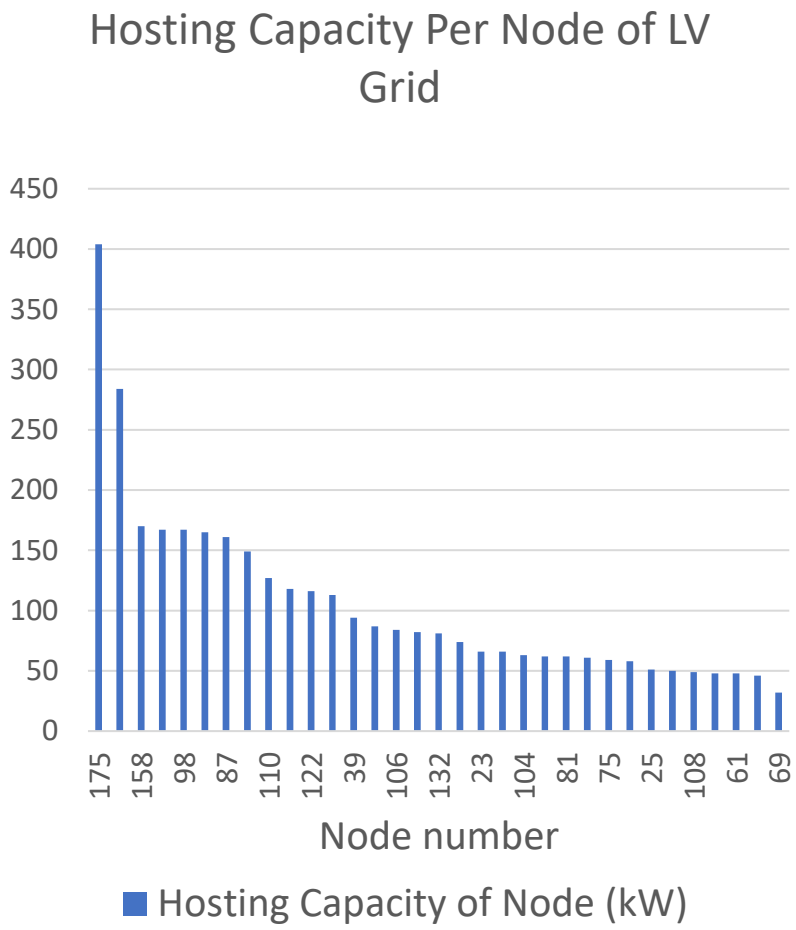


The tool was tested on MV and LV grid for the HCA, and on an LV grid for the CA.

Results are highly dependent on the grid and the input for the profiles, which is why the tool is customizable.

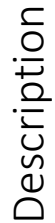
The HCA gives an indication of how much additional capacity the grid can support without the exact EV profiles.

The CA can provide further detail of the grid conditions when these profiles are available.



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Large-scale validation of system-level solutions

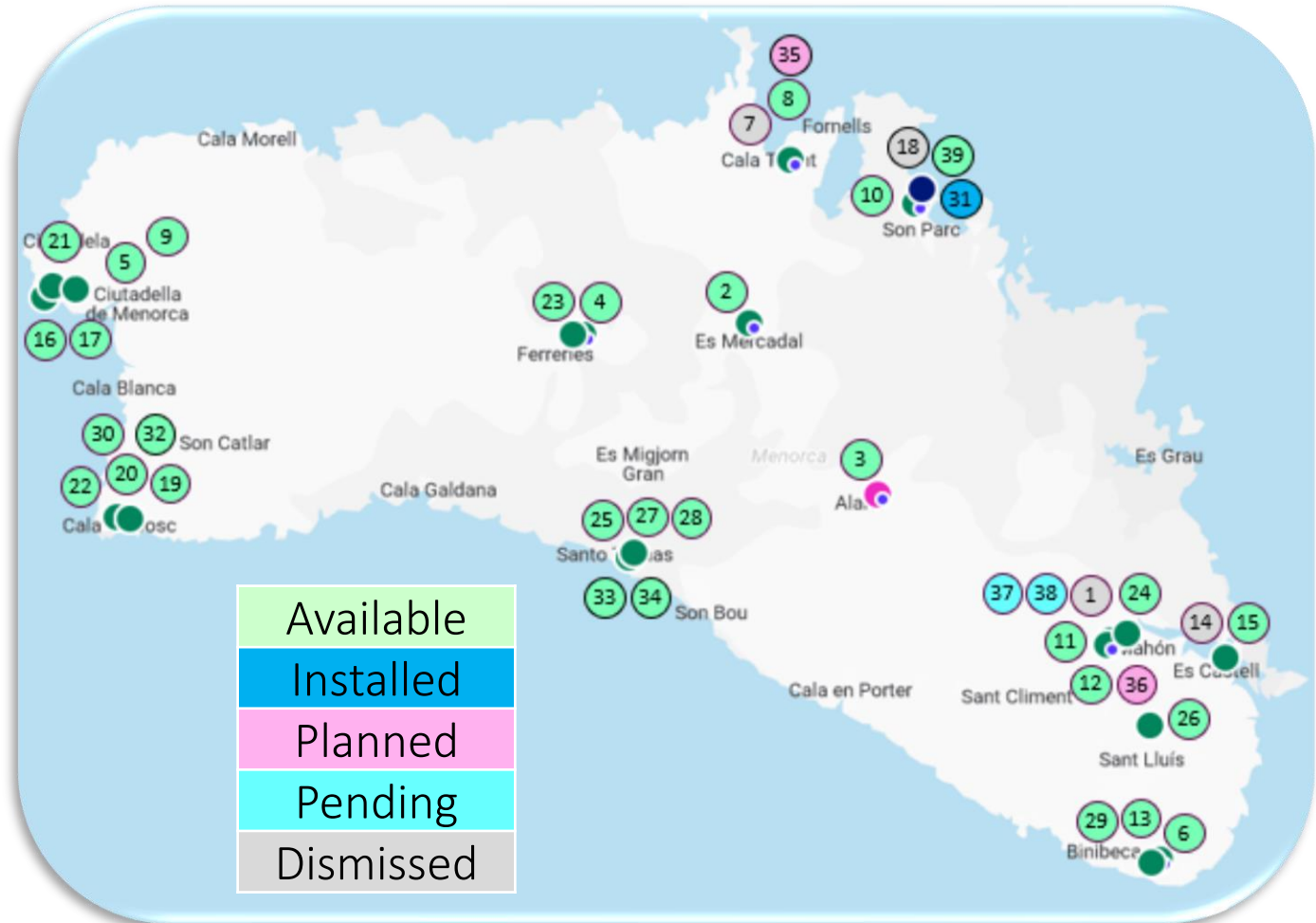


- Demand seasonality on island due to tourism
- Includes rental EVs

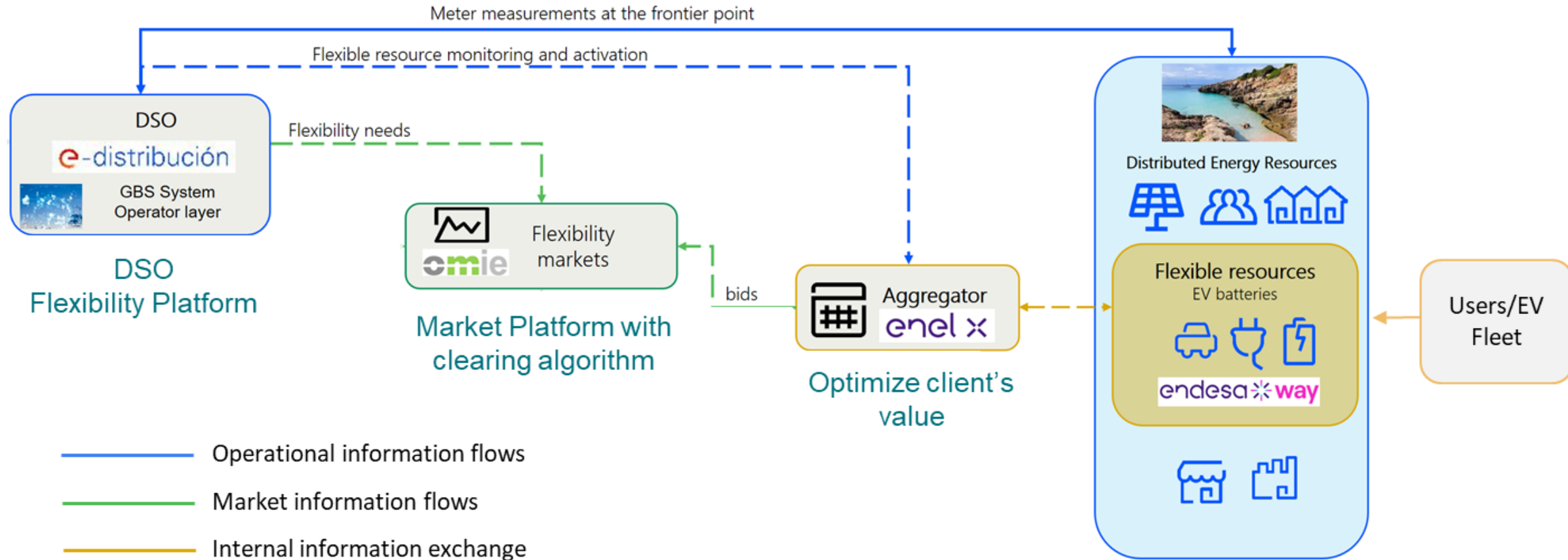
Use Cases

- Flexibility to DSO by linking DSO, market operator, eMSP / charger operator
- Smart & bidirectional

Map of V1G charging points



Menorca Demo Architecture



Congestion Management Product and V2G

Long-term Congestion Management Product

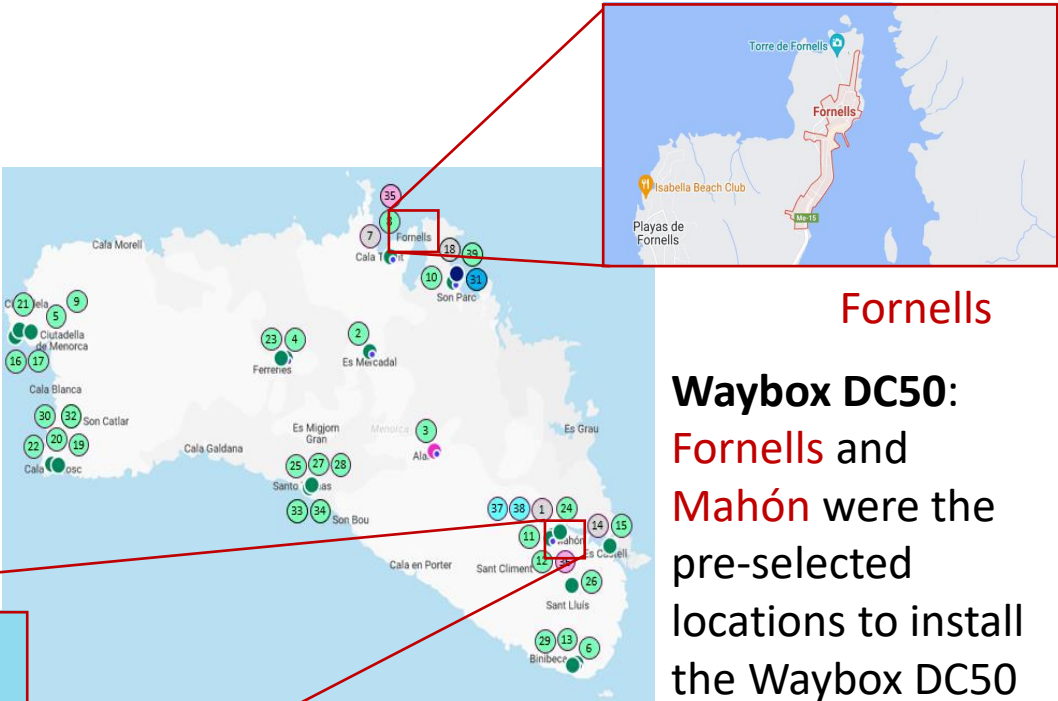
Attribute	Value
Service window	- Start date: DD/MM/YYYY - Duration: 2 months - Selection of days: M, T, W, T, F, S and S - Opening time: 8:00 PM - Closing time: 10:00 PM
Availability	- Capacity: TBD - Direction: Upwards (up for generation, down for consumption) - Estimated hours of activation: 120h
Activation window	- Day: DD/MM/YYYY - Hour: 19h - Duration: Minimum 30min(EDRD preference) - Capacity to modify: TBD - Direction depending on V1G or V2G: Upward/Downward
Local area	Area: postal code
Activation announcement	Time in advance that a DSO informs a FSP that its activation is programmed confirmed
Form of remuneration	- Type of product: availability/activation - Availability/Activation cap price: X €/MW or X €/MWh

V2G Charging Units Estimation

Waybox DC7: In **Mah3n** there is an available location to install 2x V2G up to 7 kW charger when developed



Mah3n



Fornells

Waybox DC50: **Fornells** and **Mah3n** were the pre-selected locations to install the Waybox DC50 DC V2G chargers.

No EVs with the necessary technology available → the focus is on the development of the Waybox DC7.



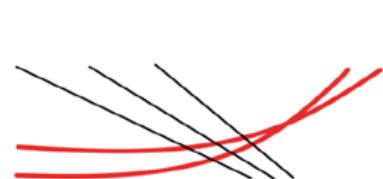
Public release of both tools

- The scraping tool can be use to draw data from different sources.
- Highly customizable modules that can calculate different scenarios.



Demonstration

- The market is implemented and communications are established.
- Tests for V1G are ongoing, results coming soon.



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Gracias por su atención

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