

DERMS for the future

Schneider Electric

DIGITAL

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Facing DER disruptions and opportunities

Renewable energy sources



Extreme weather events



Flexible customer contracts



Electric vehicle adoption

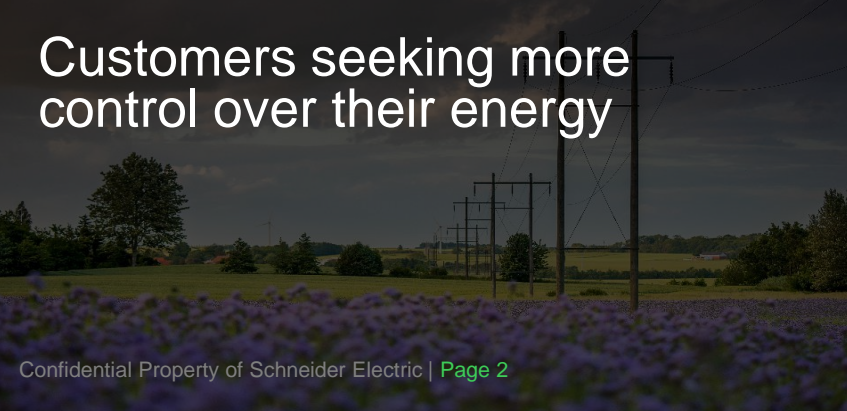


Flexibility

Flexibility markets



Customers seeking more control over their energy



Energy crisis



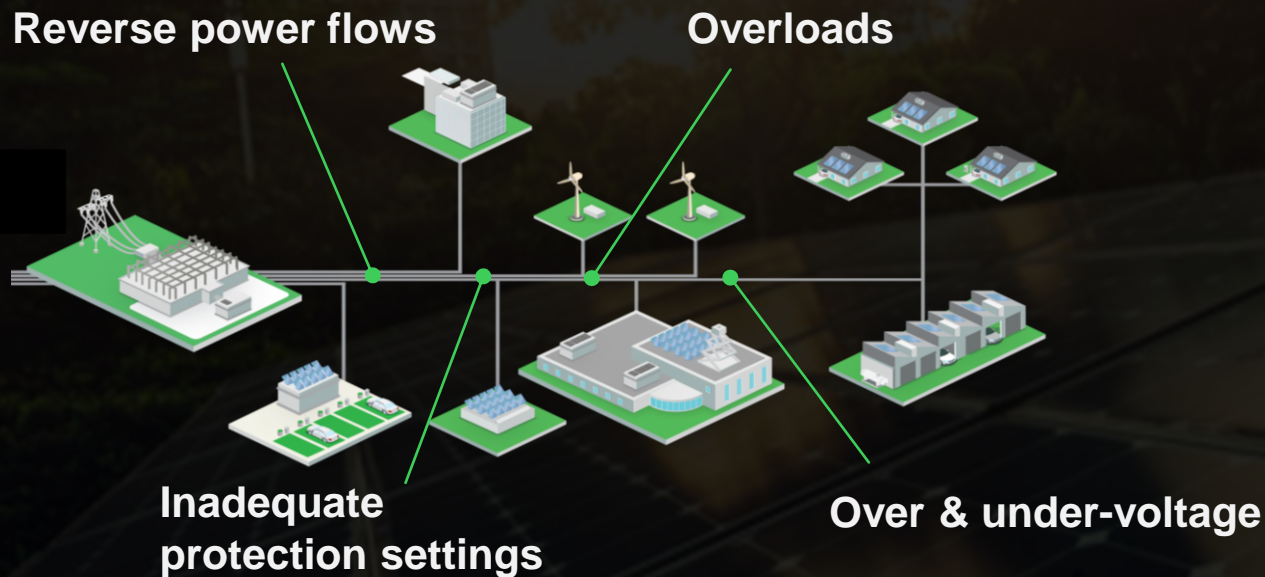
Changing regulation & policy



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Renewables and EVs create challenges. New strategies using DER flexibility options.



New strategies

- ✓ **Flexible contracts**
 - ✓ Flexible connections enabling DER curtailment
- ✓ **Flexibility services**
 - ✓ Flexibility bids for distribution congestion services

Connect more renewables and EV chargers. Active network mgmt is economical & sustainable.



Save or defer investments in grid infrastructure

AND

Reduce time and cost of connections



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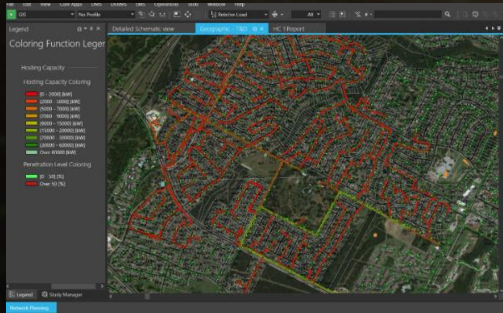
A dark green background with a network diagram consisting of numerous small nodes connected by thin lines, creating a complex web of connections.

SE DERMS solution

EcoStruxure DERMS unlocks grid flexibility

For maximized connection of DERs

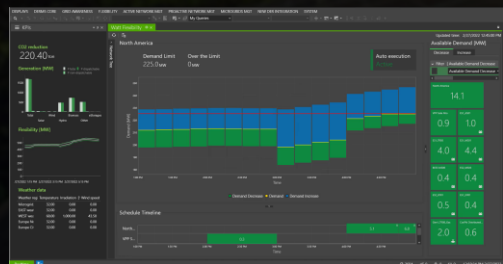
DER Planner



Using EcoStruxure DERMS

DER planning & simulation

DER Operator



**Situational awareness
DER Dispatch
Demand Management
Active Network Management**

Achieve

- Deferred capital investments**
- Maximized renewables & EVs connections**
- Improved grid reliability and power quality**
- Increased customer satisfaction**
- Enabled DER participation in wholesale markets**
- Greater efficiency of everyday work**

DER Planning and Simulation

EcoStruxure DERMS



Problem

The existing grid infrastructure has limited capacity for connecting new DERs



Solution

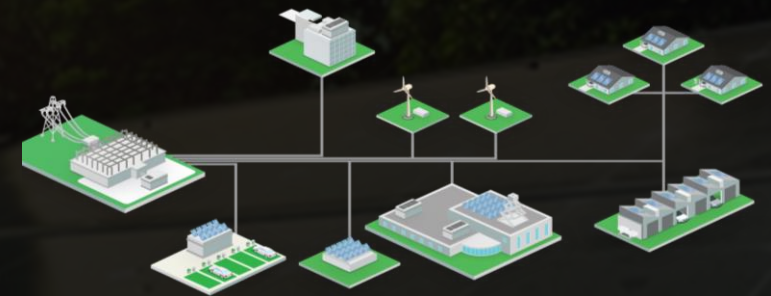
DER planning & simulation

- ✓ Hosting capacity
- ✓ Customer connection analysis
- ✓ Explore and evaluate all options to increase capacity, including NWA
- ✓ What-if analysis

DER Planner



Efficiently develops plans for connecting more DERs



Result

Fast verification of customer connection request and detection of congested areas
Well-informed decisions for opting DER integration strategies



Value

- ✓ Greater efficiency of everyday work
- ✓ Increased customer satisfaction
- ✓ Deferred capital investments

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Situational awareness

EcoStruxure DERMS



Problem

It is becoming increasingly difficult to operate the grid with limited visibility of DERs and their impact



Solution

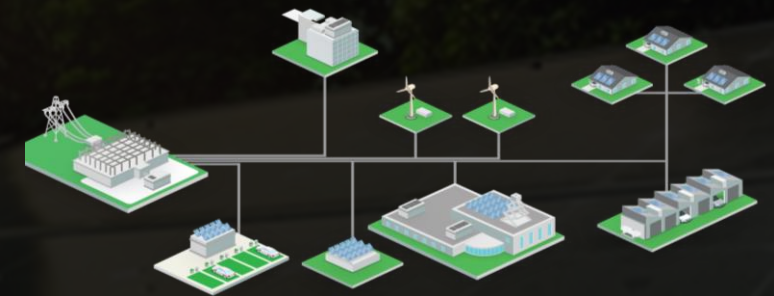
Situational awareness

- ✓ DER Monitoring
- ✓ DER Forecasting
- ✓ DER Aggregation
- ✓ DERMS Dashboard

DER Operator



Visualizes and monitors DERs and their impact



Result

Better informed decisions thanks to enhanced DER visibility



Value

- ✓ Improved operational efficiency
- ✓ Enhanced grid reliability

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DER Dispatch

EcoStruxure DERMS



Problem

With existing systems, it is not possible to efficiently communicate with and control diverse and many DERs



Solution

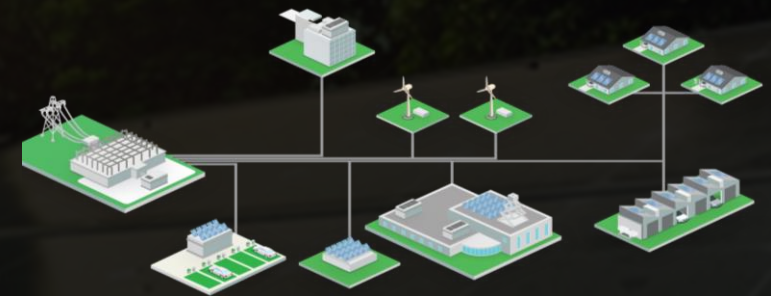
DER Dispatch

- ✓ DER Dispatch Interface
- ✓ Control Sequences

DER Operator



Dispatches DERs for local & system level services



Result

Seamless control of DERs and execution of user-configured rule-based DER dispatch options



Value

- ✓ Improved grid reliability and power quality
- ✓ Avoided high cost of peak spinning reserves and ramping capacity

Active Network Management

EcoStruxure DERMS



Problem

High penetration of renewables & EVs causing:

- Over-current
- Reverse power flows
- Over/under-voltage



Solution

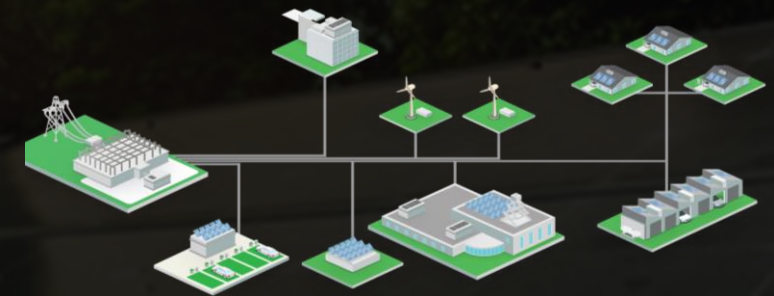
Active Network Management

- ✓ Real Time Constraint Mgmt
- ✓ Look Ahead Constraint Mgmt

DER Operator



Uses flexibility of DERs to manage congestions in the distribution grid



Result

Mitigated grid constraints violations using available DER flexibility



Value

- ✓ Implemented grid flexibility
 - ✓ Improved grid reliability and power quality
 - ✓ Maximized renewables & EVs connections

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Connecting more renewables and electric vehicles with **grid flexibility**

First Schneider Electric customer that leverages system-wide DER flexibility for grid optimization

Active Network Management

- Defers capital investments in infrastructure
- Enables fast connection of customers
- Improves grid reliability and power quality

Increasing end customer satisfaction while facilitating use of low carbon technologies

Active Network Management

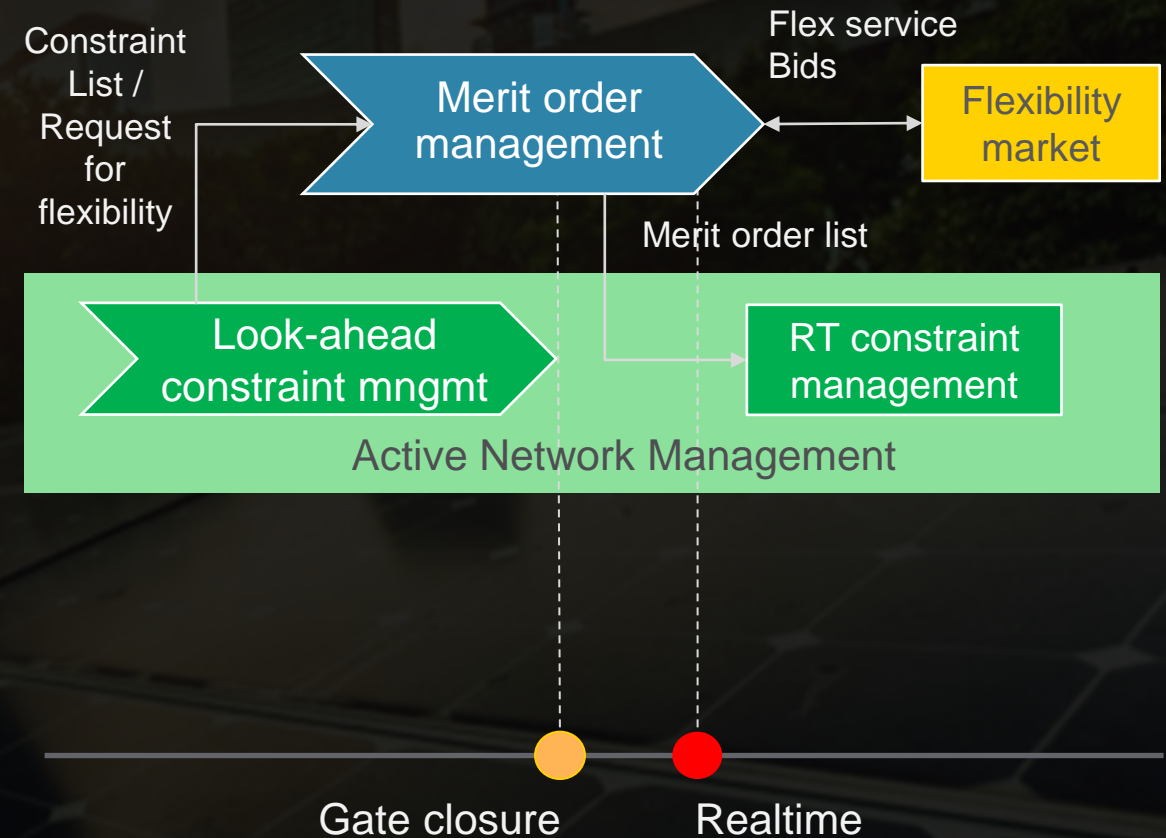
Flexible resources and economic prioritization in Distribution Grid Operation

Look-ahead constraint management

- Look-ahead analysis of power flow and voltages
- Detect potential constraints in look ahead period
- Identify flexible resources to avoid constraints
- Create/send request for flexibility through constraint list to Merit Order Management

Realtime constraint management

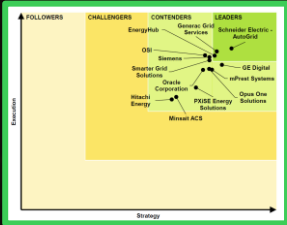
- Monitor and detect violated limits
- Determine control actions
- Utilize DER flexibility per Merit Order List
- Dispatch network assets and flexible resources
- Create/send list of utilized DER flexibility to enable settlement
- Periodically disengage DERs



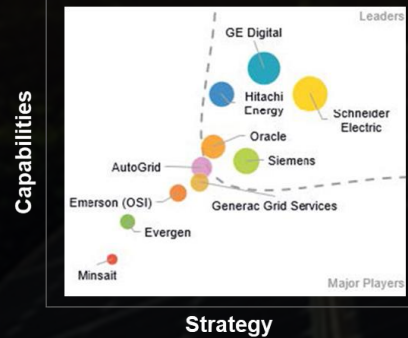
Schneider Electric DERMS in a nutshell

Best in class technology

#1 DERMS vendor according to Guidehouse Insights Leaderboard



IDC MarketScape DERMS Vendors, May 2022



Strategic Partner

Integrating with EcoStruxure Grid solution suite



Flexible deployment options



Standalone Cloud/hosted



Standalone On-prem



Embedded (in ADMS) On-prem

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EcoStruxure™ DERMS cloud options

Subscription-based pricing

Exploratory

Subscription includes:

- ✓ up to **10 feeders** OR **5 MW controllable DER**
- ✓ up to **10 concurrent users**

Increase:

- + **X feeders/Y MW**
- + 3 concurrent users

Package:

- ✓ **DERMS Essential**



- ✓ Latest version
- ✓ Frequent updates
- ✓ Seamless scaling

DERMS Essential

Starting with:

- ✓ up to **X feeders** OR **Y MW controllable DER**
- ✓ up to **Z concurrent users**

Increase:

- + **X feeders/Y MW**
- + 1 concurrent users

Package:

- ✓ DER **monitoring**,
- ✓ DER **forecasting**,
- ✓ DER-aware as-operated network state
- ✓ Measurement-based constraint mgt
- ✓ Verification of DER performances

Optional:

- ✓ SCADA protocols, IEEE 2030.5, OpenADR
- ✓ Integration with AutoGrid

Active Network Management

Starting with:

- ✓ up to **X feeders** OR **Y MW controllable DER**
- ✓ up to **Z concurrent users**

Increase:

- + **X feeders/Y MW**
- +1 concurrent users

Package:

- ✓ **DERMS Essential** +
- ✓ Load flow-based constraint mgt
- ✓ Integration with flexibility markets

Optional:

- ✓ SCADA protocols, IEEE 2030.5, OpenADR
- ✓ Integration with AutoGrid

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