openADR
ALLIANCE
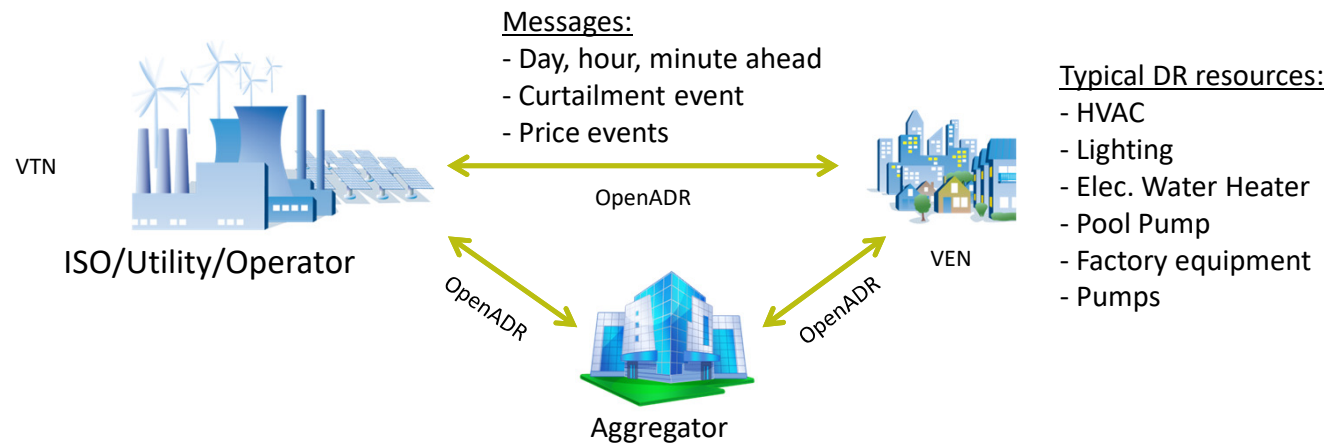
DER and OpenADR
How does it fit in?

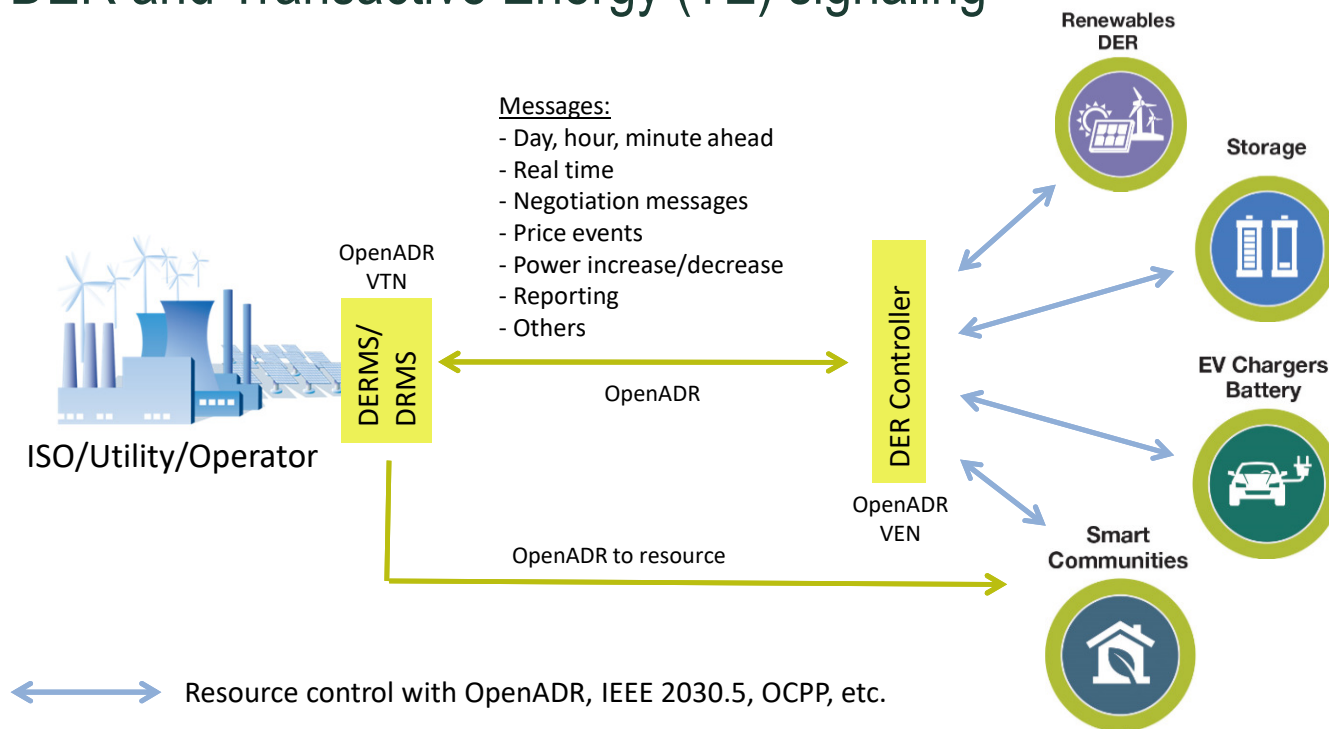April 24, 2018

Rolf Bienert

General Demand Response with OpenADR

- Original Demand Response (DR) is defined as "…action taken to reduce electricity demand in response to price, monetary incentives, or utility directives so as to maintain reliable electric service or avoid high electricity prices" (FERC 2007)

Messages:
- Day, hour, minute ahead
- Curtailment event
- Price events

OpenADR

VTN

ISO/Utility/Operator

OpenADR

OpenADR

Aggregator

VEN

Typical DR resources:
- HVAC
- Lighting
- Elec. Water Heater
- Pool Pump
- Factory equipment
- Pumps

DER Control with OpenADR

- OpenADR can help managing resources using classical DR messaging and enhanced DER and Transactive Energy (TE) signaling

Messages:
- Day, hour, minute ahead
- Real time
- Negotiation messages
- Price events
- Power increase/decrease
- Reporting
- Others

OpenADR VTN

DERMS/ DRMS

ISO/Utility/Operator

OpenADR

DER Controller

OpenADR VEN

OpenADR to resource

Renewables DER

Storage

EV Chargers Battery

Smart Communities

Resource control with OpenADR, IEEE 2030.5, OCPP, etc.

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DER Control with OpenADR

- OpenADR 2.0b already provides a large variety of services and functions to accommodate DER controls

- OpenADR also provides a defined demarcation point between the utility and the resource

- Alliance has reviewed a number of different use cases and sources to form the strategy for the next steps
  - Use cases provided by Japan
  - Smart aggregator model of DER management based on IEC 61968-5
  - CA Rule 21 requirements

Tiered Approach – Tier 1 Modifications

- Tier 1 – Update the existing OpenADR 2.0b specification with editorial and explanatory modifications → no functional changes to OpenADR 2.0b
  - Clarify implicit semantics for negative values for curtailment and dispatch and reports
  - Better define Charge State
  - Some better definitions for Load_Control
  - Define additional reports
  - … more discussion in the working group meetings tomorrow

Tiered Approach – Tier 2 Companion Document

- Tier 2 – Create a Companion Specification to OpenADR 2.0b
  - No changes to OpenADR 2.0b
  - Tier 2 & 3 changes will be in a companion document. Name TBD
  - IEC 61968-5 – DER Management Systems – Part 5: Enterprise Integration
    - DER group creation – a mechanism to manage DER in aggregate
    - DER group maintenance – a mechanism to add, remove, or modify the members and/or aggregated capabilities of a given group of DER
    - DER group status monitoring – a mechanism for quantifying or ascertaining the current capabilities and/or status of a group of DER
    - DER group forecast – a mechanism for predicting the capabilities and/or status of a group of DER for a given time period in the future
    - DER group dispatch – a mechanism for requesting that specified capabilities of a group of DER be dispatched to the grid
- Review of 61968-5 and transform essential requirements into OpenADR

Tiered Approach – Tier 3 Companion Document

- Tier 3 – Create a Companion Specification to OpenADR 2.0b
  - No changes to OpenADR 2.0b
  - Rule 21 and CSIP compliance
    - Compared CSIP requirements and OpenADR functionality
      - 51% is already supported or easily supported in OpenADR
      - 38% could be added with some implementation guidance and without major changes
      - 11% would require additional services and modification
  - Using OpenADR to an aggregator/facilitator
  - Working group discussion on which requirements should be covered
  - NOTE: Rule 21 allows for other standards upon mutual agreement between the utility and the DER controls vendor

Thank you!

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