DOCKETED	
Docket Number:	20-FDAS-01
Project Title:	Flexible Demand Appliance Standards
TN #:	236167
Document Title:	Presentation - Rolf Bienart openADR Alliance SB 49 Lead Commissioner Workshop December 14 2020
Description:	Presentation discussing the appliance standards and demand response processes for SB 49 implementation.
Filer:	Messay Betru
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	12/24/2020 4:33:35 PM
Docketed Date:	12/24/2020

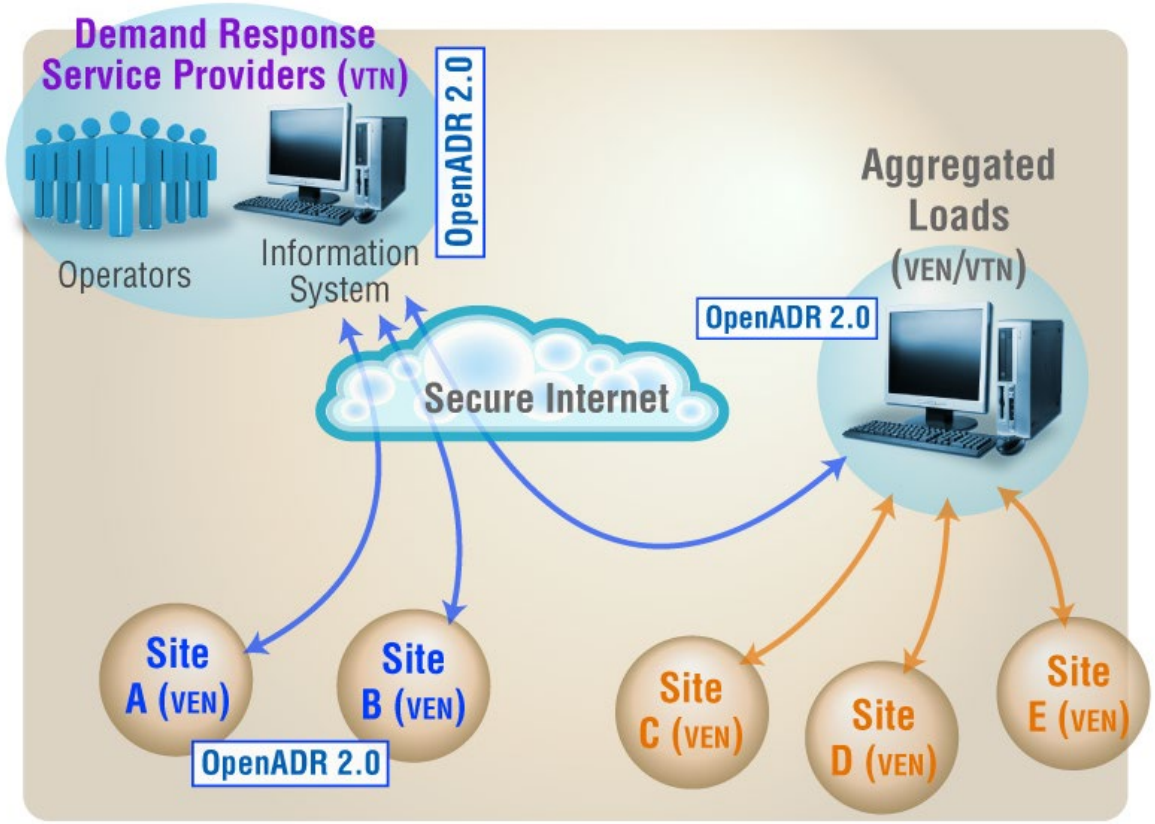
Appliance standards and Demand Response Workshop December 14, 2020

OpenADR Overview and Updates

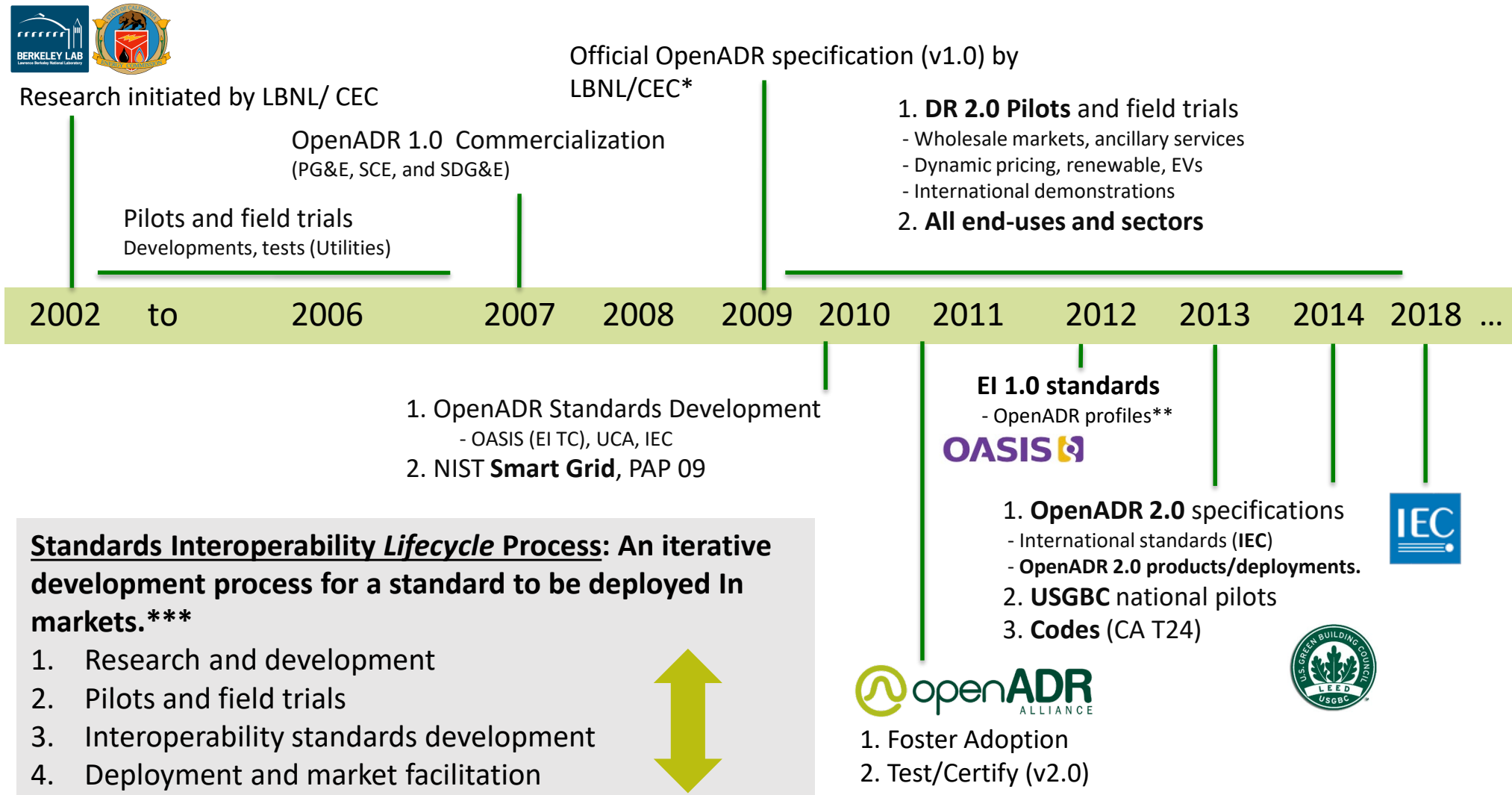
Rolf Bienert, Technical & Managing Director

OpenADR in a Nutshell

OpenADR provides a non-proprietary, open standardized Demand Response (DR) & Distributed Energy Resources (DER) interface that allows DR service providers to communicate DR, DER, and TE (Transactive Energy) signals directly to existing customers using a common language and existing communications such as the Internet.



OpenADR Progression



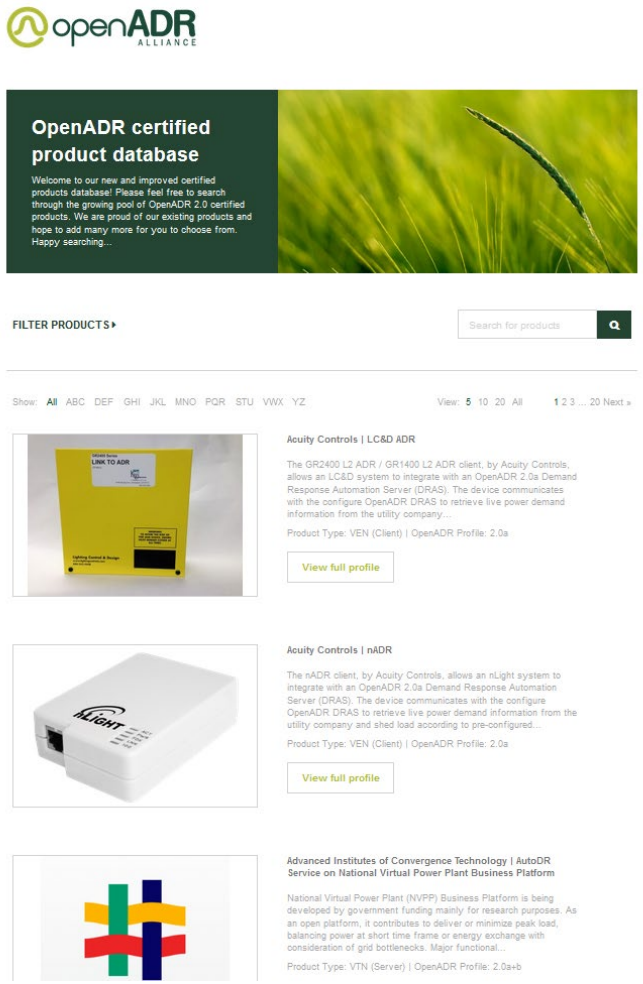
Standards Interoperability *Lifecycle* Process: An iterative development process for a standard to be deployed In markets.***

1. Research and development
2. Pilots and field trials
3. Interoperability standards development
4. Deployment and market facilitation

openADR ALLIANCE

* OpenADR v1.0: http://openadr.lbl.gov/
** OASIS EI 1.0 standards: http://www.oasis-open.org/committees/download.php/45425/energyinterop-v1.0-cs01.zip
*** Publication: http://drrc.lbl.gov/sites/drrc.lbl.gov/files/LBNL-5273E.pdf

Where are we today?



- Two completed specifications
  - >7 years for 2.0a
  - >6 years for 2.0b
- 8 test houses validated
- > 215 certified systems
- ~ 165 member companies

The ‘Entities’ of OpenADR

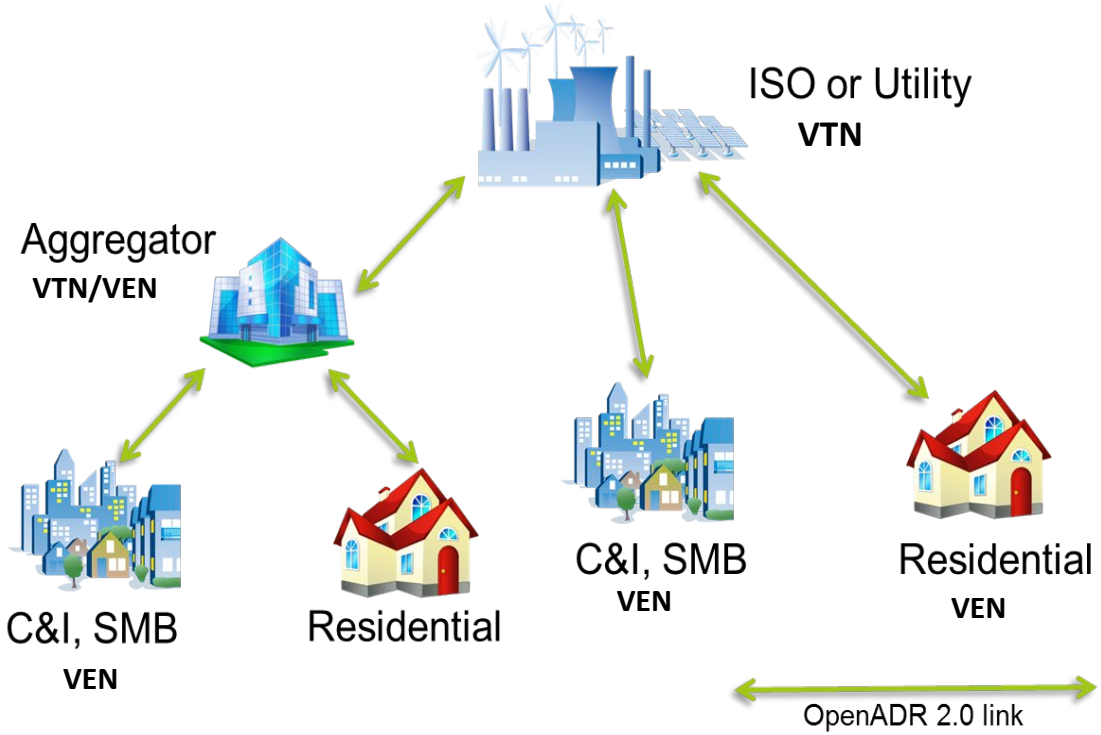
OpenADR is a message exchange protocol with two primary actors aka ‘entities’

Virtual Top Nodes (VTN)

- Manages Resources
- Creates/Transmit events
- Request Reports

Virtual End Nodes (VEN)

- Receive events and respond to them
- Generate reports
- Control demand side resources

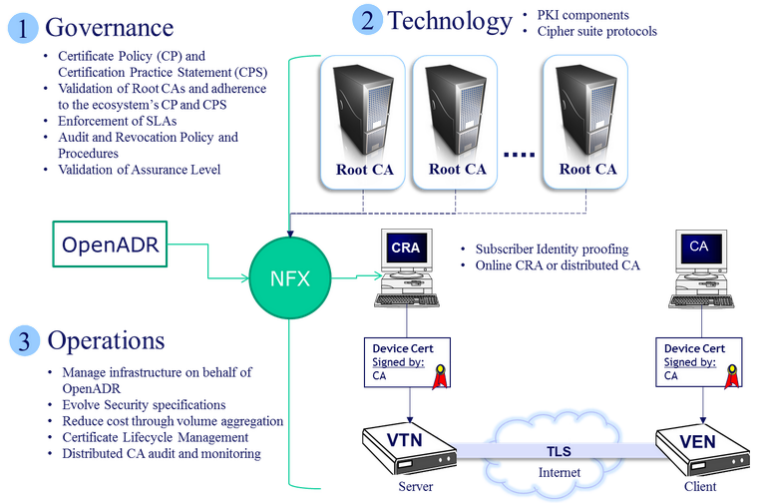


The ‘Services’ of OpenADR

- Web Service like logical request-response services
  - Event Service – Send and Acknowledge DR Events
  - Opt Service – Define temporary availability schedules
  - Report Service – Request and deliver reports
  - RegisterParty Service – VEN Registration, device information exchange
- XML Payloads
- Communication through broadband or dedicated internet connection
- Security: TLS1.2 with server and client cyber sec certificates

Cyber Security Aspects

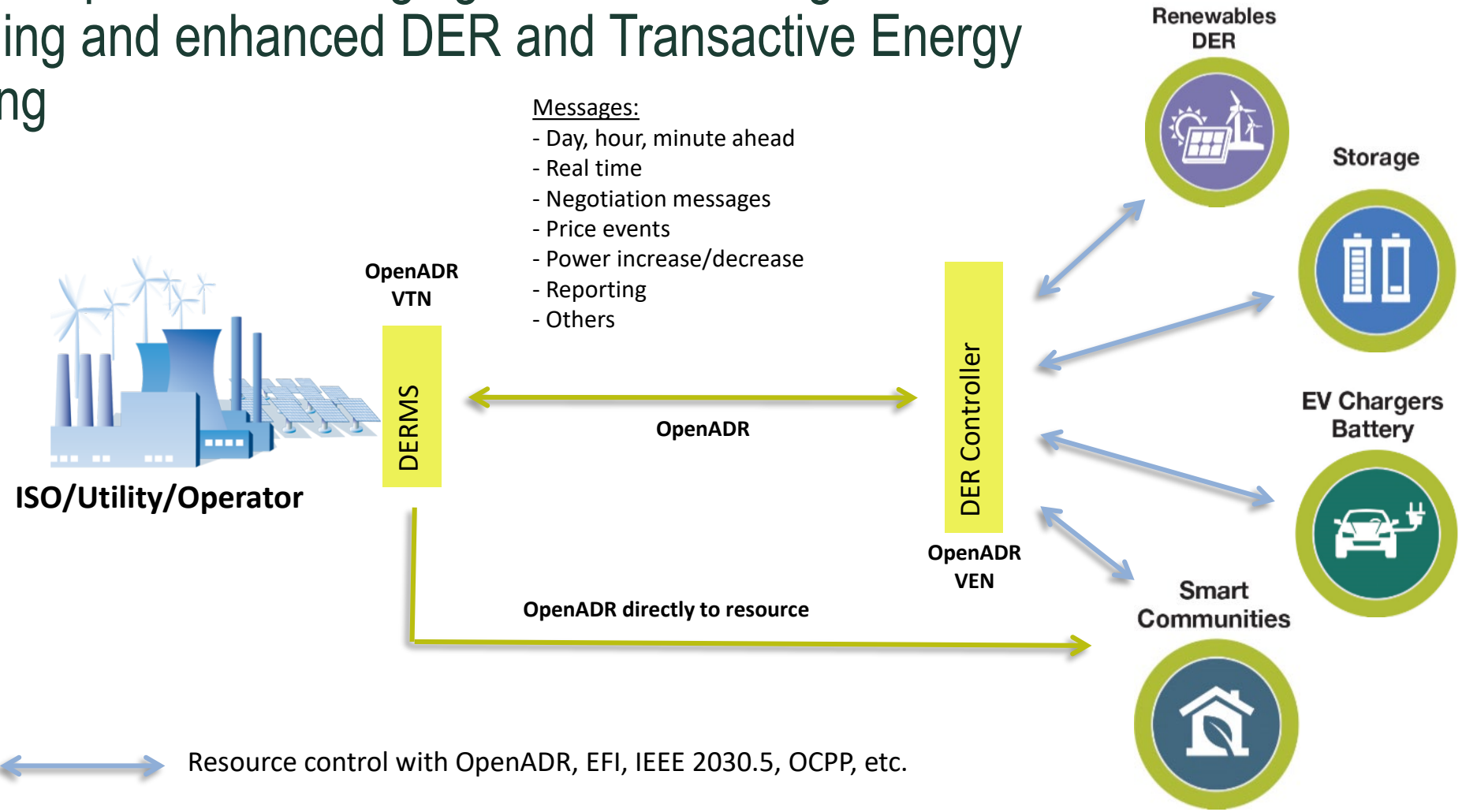
- Transport Layer Security 1.2
- Server and Client certificates
- Dedicated OpenADR ECC and RSA certificate authority



- Application up to user → utilities
- OpenADR allows for demarcation between utility network and customer owned equipment
- Security reviews performed by NIST/SGIP and IEC working groups

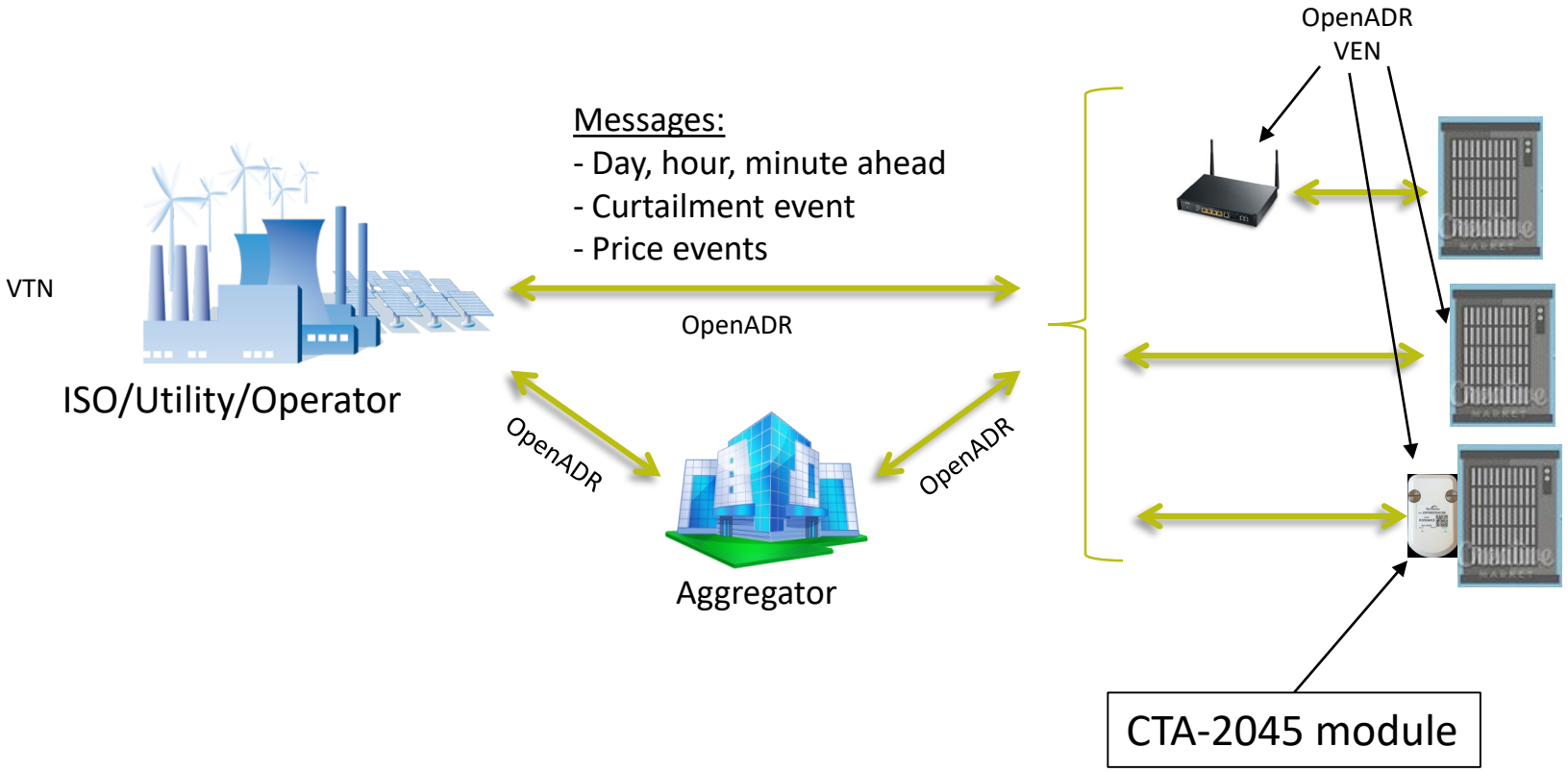
DER Control Made Easy

OpenADR is capable of managing resources using classical DR messaging and enhanced DER and Transactive Energy (TE) signaling

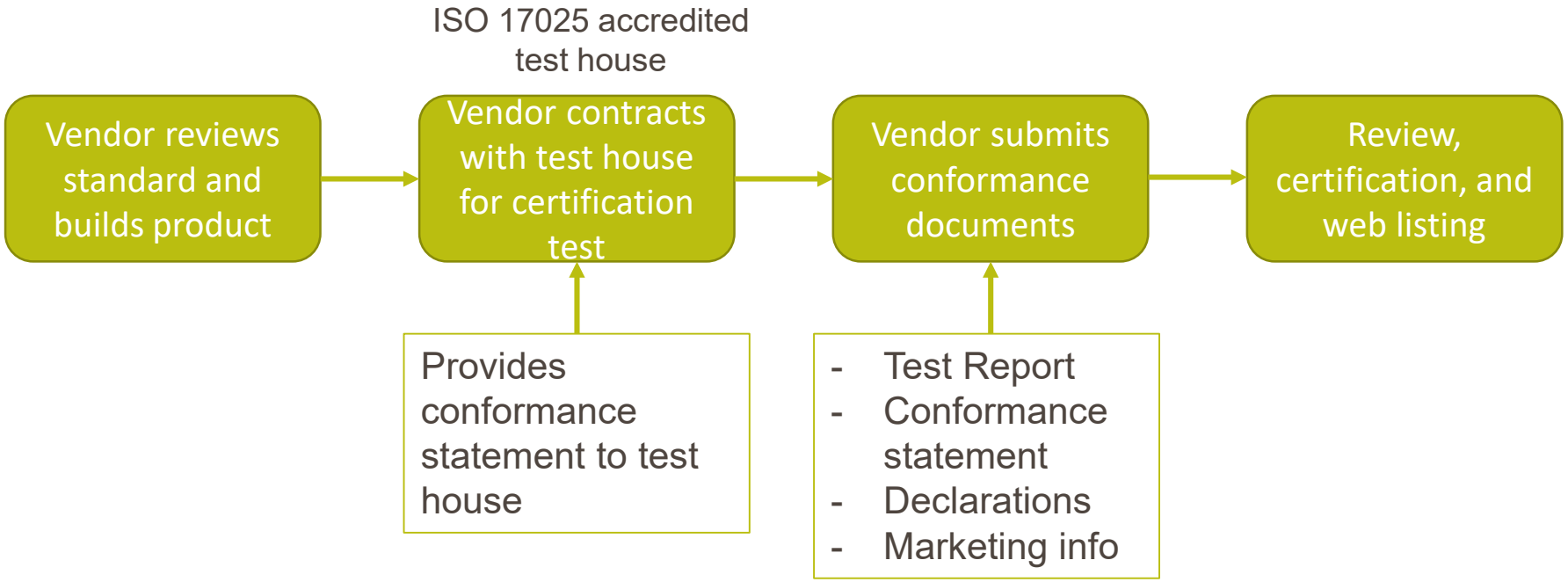


Options for local connectivity

- Flexible architecture using a gateway, direct control, or CTA 2045 modular communications



Certification Process



Thank you!

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