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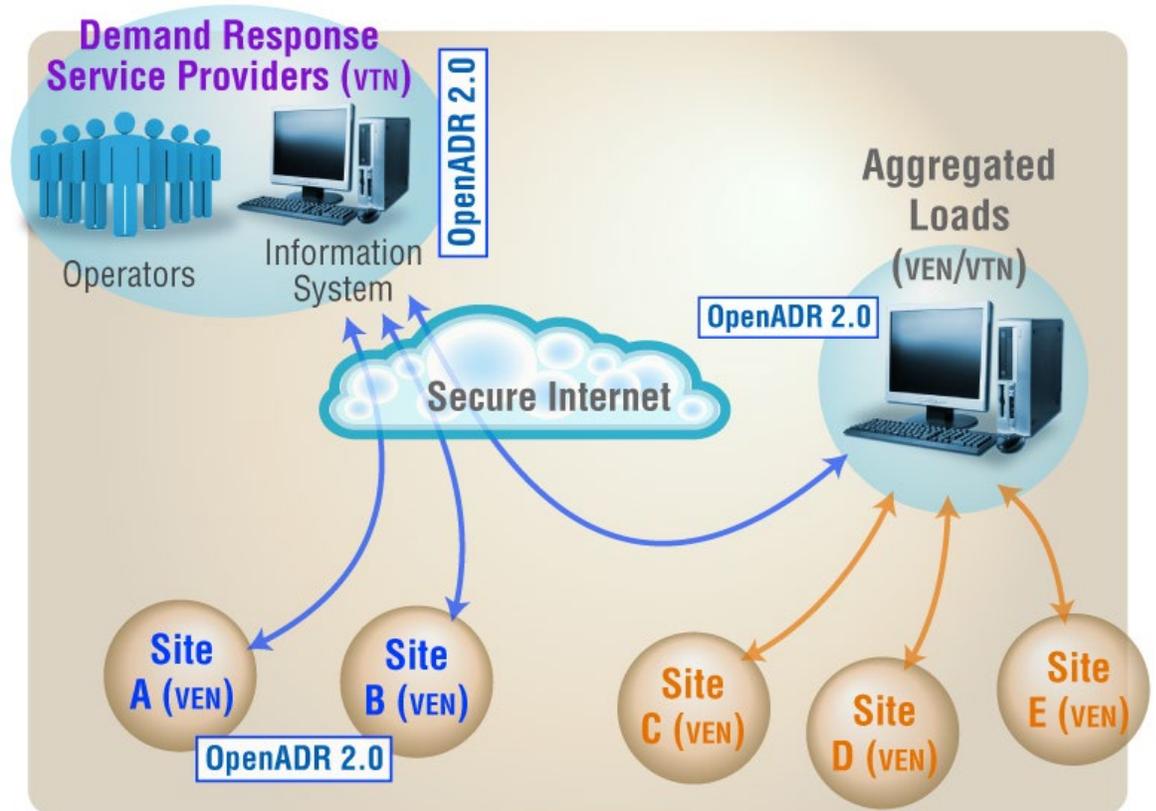
Appliance standards and Demand Response
Workshop December 14, 2020
OpenADR Overview and Updates

Rolf Bienert, Technical & Managing Director

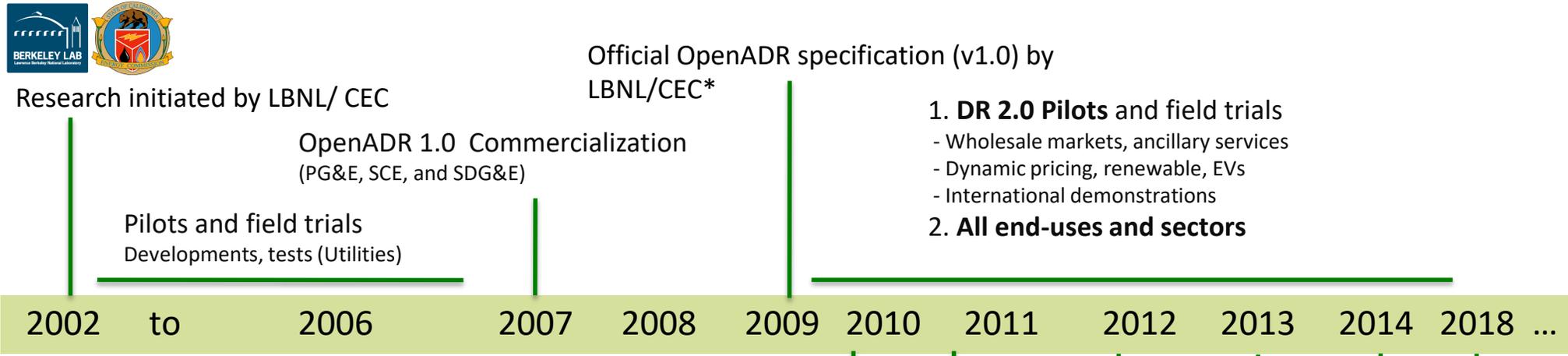


OpenADR in a Nutshell

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



1. OpenADR Standards Development - OASIS (EI TC), UCA, IEC
2. NIST Smart Grid, PAP 09

EI 1.0 standards
- OpenADR profiles**

OASIS

1. OpenADR 2.0 specifications - International standards (IEC) - OpenADR 2.0 products/deployments.
2. USGBC national pilots
3. Codes (CA T24)



1. Foster Adoption
2. Test/Certify (v2.0)

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 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?



OpenADR certified product database

Welcome to our new and improved certified products database! Please feel free to search through the growing pool of OpenADR 2.0 certified products. We are proud of our existing products and hope to add many more for you to choose from. Happy searching...

FILTER PRODUCTS ▶

Show: [All](#) [ABC](#) [DEF](#) [GHI](#) [JKL](#) [MNO](#) [PQR](#) [STU](#) [VWX](#) [YZ](#) View: [5](#) [10](#) [20](#) All [1 2 3](#) ... [20](#) Next »

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Acuity Controls | LC&D ADR

The GR2400 L2 ADR / GR1400 L2 ADR client, by Acuity Controls, allows an LC&D system to integrate with an OpenADR 2.0a Demand Response Automation Server (DRAS). The device communicates with the configured OpenADR DRAS to retrieve live power demand information from the utility company...

Product Type: VEN (Client) | OpenADR Profile: 2.0a

[View full profile](#)
- 

Acuity Controls | nADR

The nADR client, by Acuity Controls, allows an nLight system to integrate with an OpenADR 2.0a Demand Response Automation Server (DRAS). The device communicates with the configured OpenADR DRAS to retrieve live power demand information from the utility company and shed load according to pre-configured...

Product Type: VEN (Client) | OpenADR Profile: 2.0a

[View full profile](#)
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Advanced Institutes of Convergence Technology | AutoDR Service on National Virtual Power Plant Business Platform

National Virtual Power Plant (NVPP) Business Platform is being developed by government funding mainly for research purposes. As an open platform, it contributes to deliver or minimize peak load, balancing power at short time frame or energy exchange with consideration of grid bottlenecks. Major functional...

Product Type: VTN (Server) | OpenADR Profile: 2.0a+b

- 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

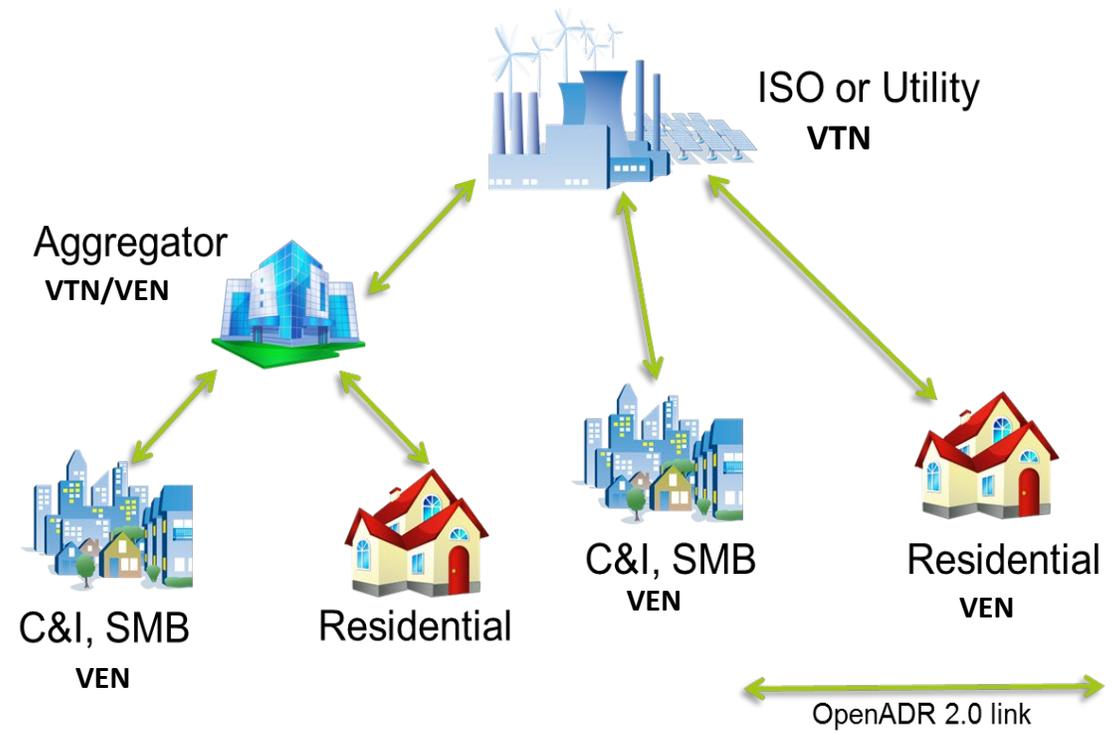
OpenADR is a message exchange protocol with two primary actors aka 'entities'

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

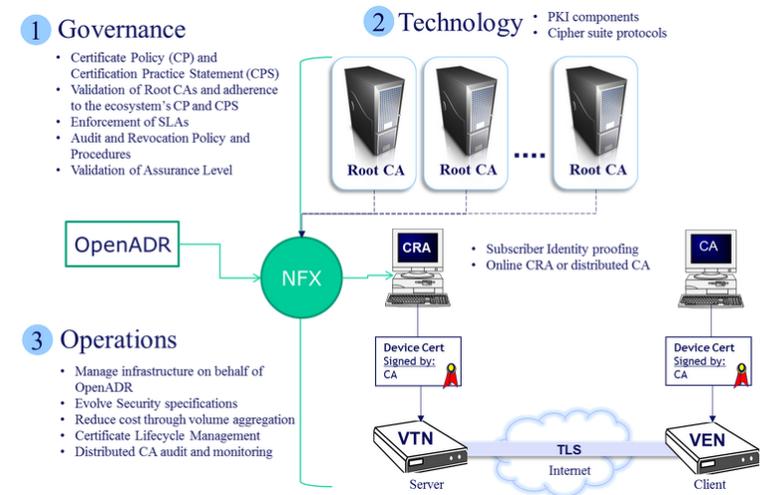


The 'Services' of OpenADR

- 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

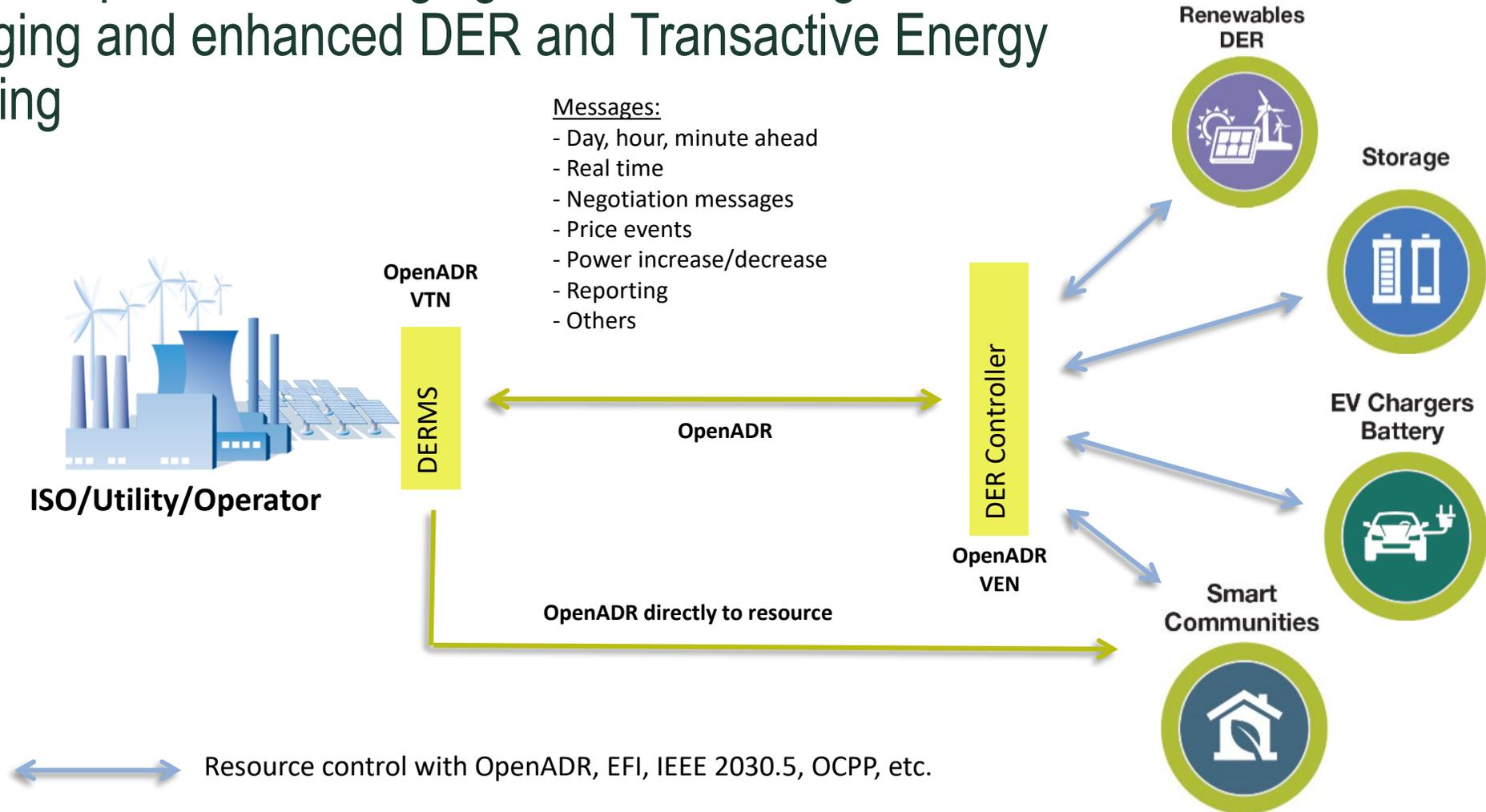
Cyber Security Aspects

- 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



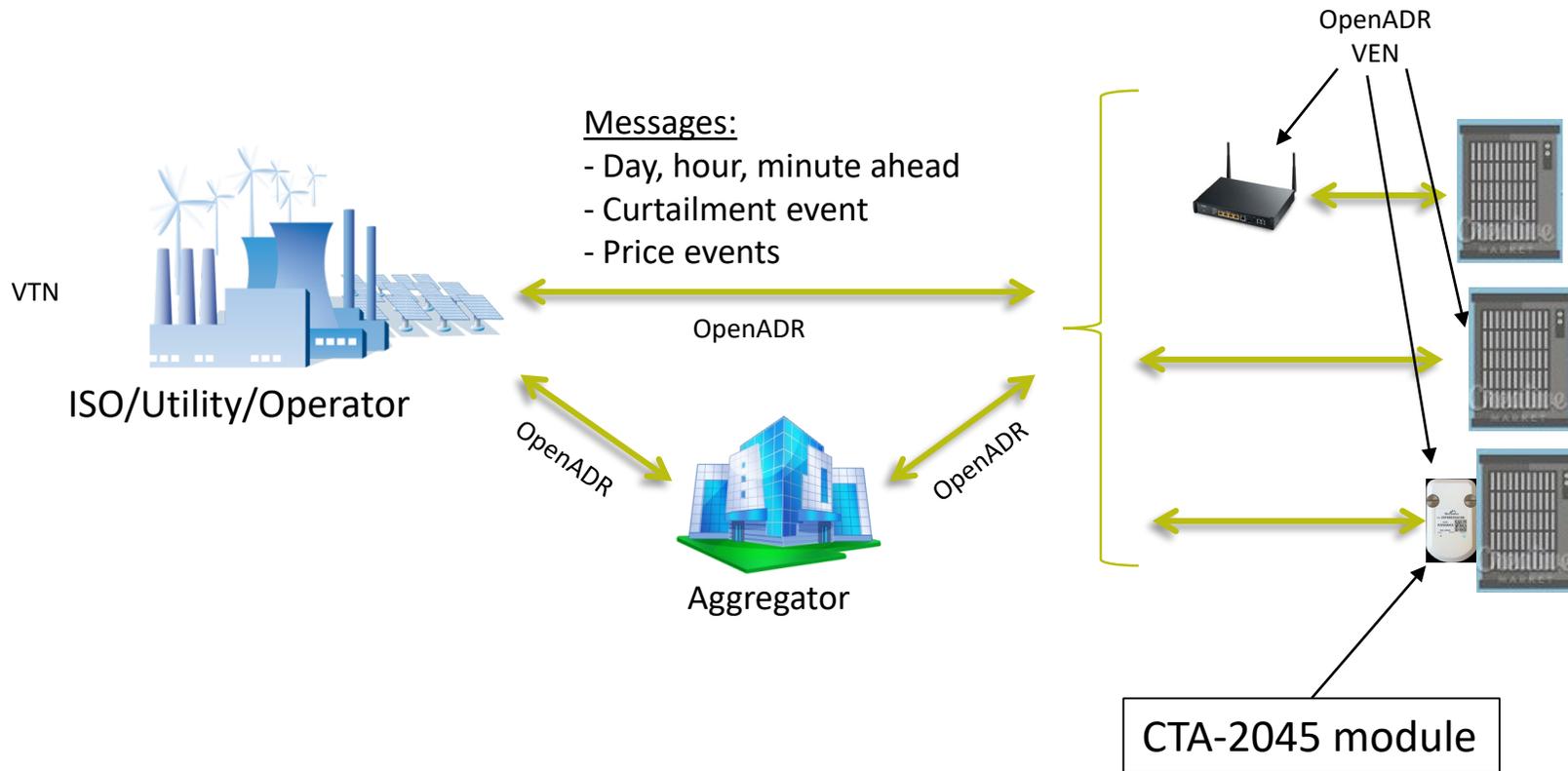
DER Control Made Easy

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

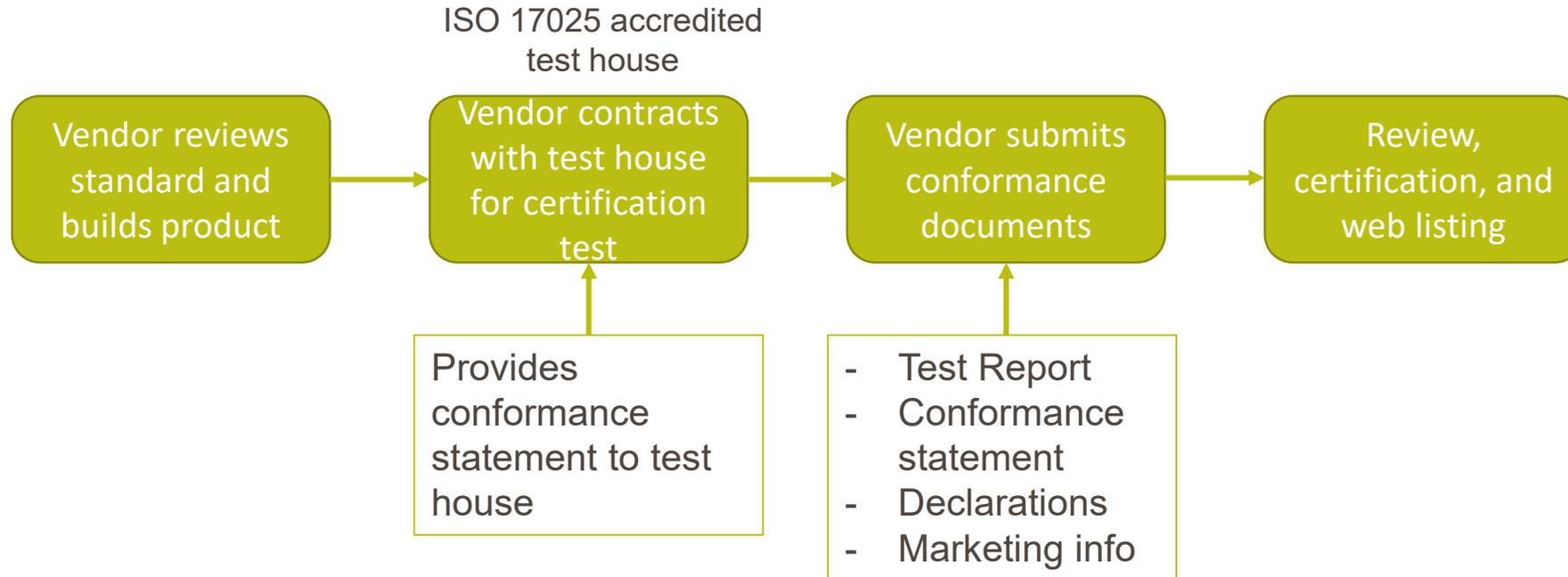


Options for local connectivity

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



Certification Process



Thank you!

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