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TDWG B3 Focus Group Workshop Debrief

Nov 25 2024

Agenda

- Workshop objectives
- Overviews by breakout room
  - Grid services
  - Pre-market operations
  - Market operations
  - Post-market operations
- Next steps

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B3 Focus Group Workshop Objectives

- What grid services are offered in Ontario today, to help inform the shared platform context.
- What key data points are needed during
  - User registration
  - Asset registration
  - Asset pre-qualification
  - Grid needs in terms of required resources
  - Resource bidding in markets
  - During resource activations and deployments
  - Outage coordination
  - Measurement and verification
  - Settlements

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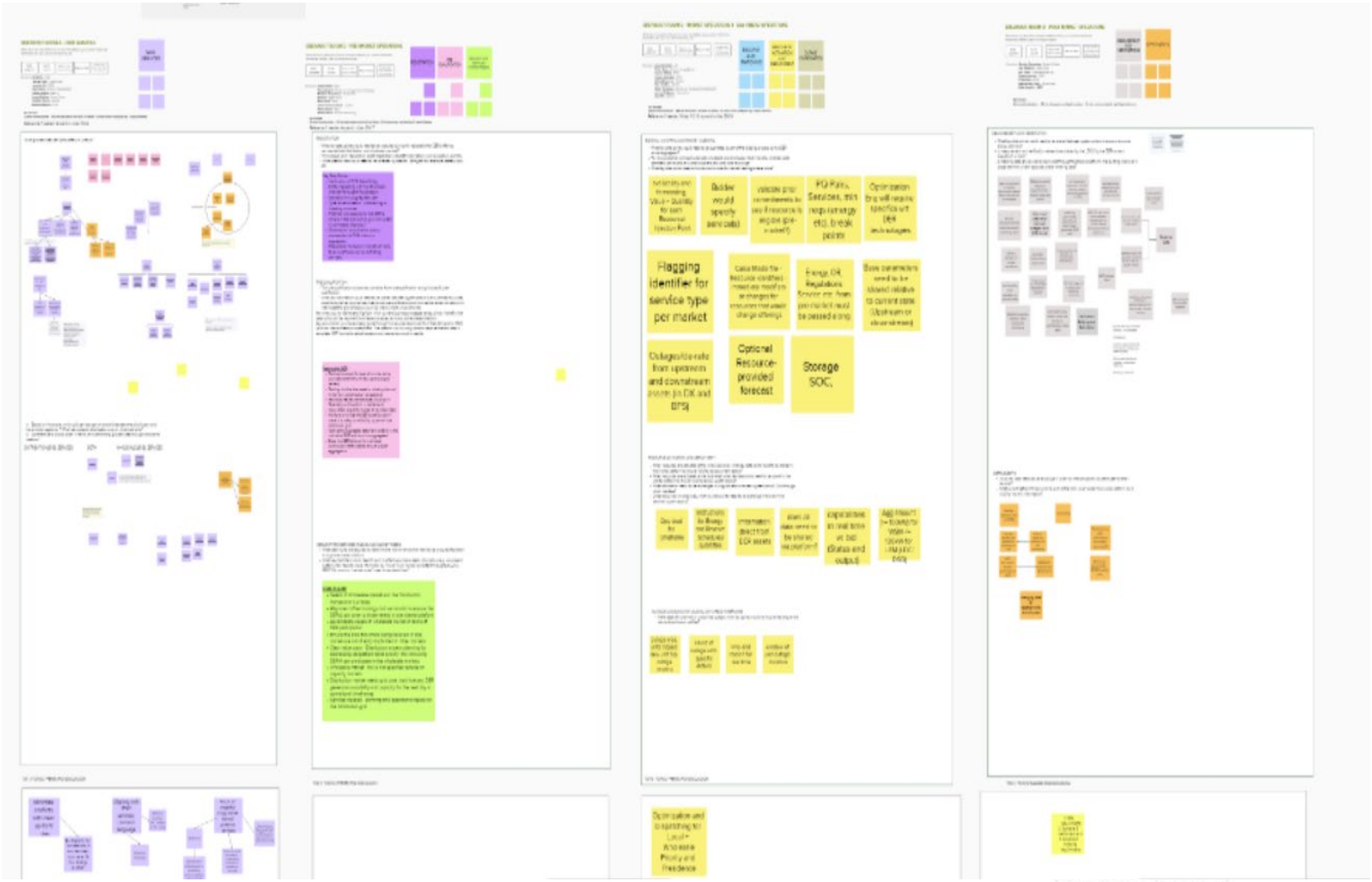
B3 Focus Group Workshop

- The workshop was run virtually with voluntary participation from ~30 TDWG members. Virtual collaboration tool Mural was used to facilitate discussion.
  - IESO
  - Hydro One
  - Ontario Energy Board
  - Essex Power
  - Piclo
  - Ministry of Energy and Electrification
  - EPRI
  - Quanta Technology
  - ENWIN Utilities
  - GE Vernova
- This workshop helped gather insights for input to defining the requirements of a Market/Shared Platform concept.



Grid Services Breakout Room

- The IESO currently procures the following services for the wholesale market: Energy, capacity and ancillary services such as operating reserve, frequency regulation, RSVC (reactive support voltage control) and black start.
- For distribution, possible grid services could include: Avoided distribution capacity, load shifting, peak reduction, loss minimization or loss reduction, EV voltage regulation, VAR support, avoided OM&A, outage reduction and outage avoidance, reserve capacity, black start or islanding, flexible connections.
- Distributors can also provide services through their current infrastructure Some services can be offered by DERs, and some services can be offered by LDCs thorough their own infrastructure - to benefit the transmission grid. Details on this will be determined at a later time.
- Capacity deferral is the most common use case in Europe
- Load following and redispatch is also a common market service – but these services have limited relevance in Ontario since we don’t have this technical constraint currently.
- Materiality is important: High value services that offer material value to both Tx and Dx should be prioritized.
- Stripping this discussion down to first principles, DERs can offer: energy right now or energy in the future. How and where this energy is used determines the “service” the DER would provide. For future discussion: will the relevant services dictate what information needs to be collected from DERs? Or is DER coordination data relevant for the shared platform independent of grid services?

Grid Services Breakout Room

- Aligning with the IAMs as much as possible but not limit ourselves to what distributors intend to procure, at least at this expletory stage.
- Based on this discussion, the likely service shared between Tx and Dx is Capacity.

Things to consider moving forward

- Understanding stacking services: In order to allow stacking of grid services, the following clarity is required:
  - Distinction between technical stacking and contractual stacking
    - For technical stacking, is it based on resource type? Or key resource capabilities?
    - For contractual stacking, is it dependent on shared market rules and market constructs?
  - Merit order and priority rules: important to frame stacking services to consider overall system, as opposed to assigning priority based on Dx or Tx need.
- Revenue stacking is an important discussion. Some relevant questions:
  - How do we avoid cross-subsidization?
  - How do we ensure resources are renumerated at “market value”?
  - How would shared resource subsidization work?
  - Important: for the purposes of the shared platform, it is important to understand what data would be required from respective system actors to make these decisions.

Pre-Market Operations Breakout Room

Key Data Points to be collected during the registration process:

- Verification of DER MeterID/tag
- Entity interacting with the IESO/DSO (Market Participant Registration)
- Standalone vs aggregated DER
- Type of participation - withdrawing or injecting resource, heterogeneous or homogeneous resource mix?
- Potential bid capacity for the DER/A
- Where in the distribution grid is the DER/A connected (Address, mapping to meter number ID, and to accompanying T-D interface)?
- Operational co-ordination status - composition of DER within an aggregator.
- Registration for type of market services to ensure there are no conflicting services.

Key actions during pre-qualification stage

- Testing the asset for type of service being provided (telemetry review, control signal review)
- Testing whether the asset is violating thermal limits from a distribution perspective
- Technical Review of the asset (Visibility -> Telemetry -> Operation -> Settlement)
- Value stack eligibility (based on grid services)
- Ability to override the DER asset dispatch if there is a safety or reliability issue with the Distribution grid
- Testing the aggregate data from a DERA vs the individual DER and how it is aggregated
- Does the DER/A have the individual contributor meter data to ensure proper aggregation

Pre-Market Operations Breakout Room

Request for services/publishing market needs:

- Needs of Wholesale market and the Distribution market at a T-D node
- Alignment of terminology and vernacular to ensure the DER/A can cater to those needs in one shared platform
- Accommodate needs of wholesale market in terms of DER participation
- Ensure the bids and offers being received in one market are not already duplicated in other markets
- Clear value stack - Distribution system planning for addressing congestion takes priority; the remaining DER/A can participate in the wholesale markets
- Wholesale market - this is not specified outside of capacity markets
- Distribution market needs grid date, load forecast, DER generation capability and capacity, for the next day in operational timeframes
- Services needed - planning and operational needs for the distribution grid

Market Operations Breakout Room

- Information that would need to be shared during market operations
  - Changes to base parameters submitted during pre-qualification stage
  - Changes in availability plans
  - Changes in contributor DERs for aggregators
  - Resource specific parameters such as state of charge for storage resources
  - Outage information – duration, reason for outage etc.
  - Price quantity pairs (PQ pairs) for energy
- Bidder to specify services? Or resources to select specific services during registration?
  - Resource should submit information based on the services they are providing
    - Price and quality through bids/offers
    - Also ensure it does not conflict with prior commitments
- Some base parameters of the resource would need to be shared as part of the ‘pre-qualification’ stage
  - CAISO market has a “master file” which stores key resource attribute
  - This information would help determine what resources can participate in which services
  - The information required would be dependent on resource type. For example, for storage - charge profile, state of charge vs for a generating resource, different base parameters might be required.

Market Operations Breakout Room

- Capacity level derates
  - If the system operator(s) need to limit the capacity the resources can provide, this information should be shared via the shared platform
  - This also feeds into allowing resources to update resource availabilities, for most up-to-date visibility into availability.
- Important to build features that help end user (DER owners/aggregators) and make it easy to use, to remove barriers to participation.
- Real-time telemetry
  - More discussions required on how real time telemetry might be shared. The latency requirements needs to be satisfied by the correct tool i.e. through shared platform or existing modes of communication.
- Outage information from the participants, and ability to update availabilities based on resource outages.

Post-Market Operations Breakout Room

M&V

- Type of data required, and quantity, is multi-faceted
- Architecture of the platform to be influenced by which post market operations will be handled by the platform
- Were the requirements of the dispatch met? Not just a check of metering data
- Distributed intelligence models in advanced metering infrastructure will enable higher levels of functionality for post market operations on the platform
- Block DER from participating, and getting paid for, participating in concurrent markets
- Define baseline data coming in (historical loading, weather) and at what intervals

Settlements

- A lot of settlement requirements map to M&V requirements
- Need to settle for capacity as well, not just energy delivered
- Estimation and validation for service delivery
- Resettlements and disputes (changing data after the fact)

Key takeaways:

- Data requirements need to be ironed out based on amount of tasks carried out on platform
- Platform architecture needs to be scalable to respond to more advanced data coming in over the years (AMI 2.0, etc.)

Next steps

- The B3 team is drafting the first draft of the requirements documentation.
- The business and functional requirements will be captured, with technical requirements deemed out of scope at this time.
- The requirements will be divided into two sections:

Administrative component

- User registration management
- Asset registration management
- Contract management
- Contributor DER management
- Connection assessment completion management
- Asset meter management
- Reporting
- Dispute management

Coordination and Market Components

- Bids/offers
- DER limits
- NWA Schedules
- Wholesale schedules
- Dispatch
- Outage management
- Measurement and Verification data coordination*
- Settlement data coordination*

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*Note: M&V and settlement process will not run on the shared platform. Data might be shared through and/or store on the platform for reporting/visibility purposes.

Requirements – Excerpt from draft report

For example, for asset registration management

Business requirements

1) The platform must allow DER participant(s) to register a single DER resource
2) The platform must allow DER participant(s) to register an aggregated DER resource
3) The platform must allow system operators to approve/reject registered resources
4) The platform must allow platform administrators to update available resource types
    a. This is to ensure we are future proofing the platform architecture to make updates to resources eligible to participate in select markets
5) The platform must allow DER participant(s) to edit information for existing resources
6) [TBD: planned or registered asset? Can planned assets be added to the platform – similar to the NWA demonstration? Between capacity vs energy auction]
7) Asset register for system operators?
8) Allow for asset owners to change aggregator? Or allow for assets to change owner? (is this use case required)
9) The platform must display which markets/products the asset is prequalified for
10) The platform must display information for wholesale market participants that are part of the IESO Administered Markets

Functional requirements

1) The following DER resource information needs to be captured to allow a single DER to register
    a. Resource name
    b. Resource address
    c. [based on resource address, service territory should be identified]
    d. Resource type
    e. Ramp up and ramp down speeds
    f. Meter IDs
    g. [TBD: specific market eligibility?]
2) The following DER resource information needs to be captured to allow an aggregated DER resource to register
    a. Aggregated resource name
    b. Add contributor DER meter IDs
    c. Add contributor DER addresses
    d. Add contributor DER resource types (homogeneous or heterogeneous resources based on IESO MRP updates)
    e. Add contributor DER ramp up and ramp down speeds
    f. [TBD: specific market eligibility? Which market is the asset prequalified for?]
3) The system operators should have the functionality to verify that the meter IDs registered are active and valid within the specified service territory
    a. The platform would include a go/no-go check to make sure the meters are verified by the system operator
    b. Where in the distribution grid is the DER/A connected (Address, mapping from meter ID to transformer station, and to accompanying T-D interface – this will ensure this information can be shared with the IESO)?
4) API connections to be built to pull asset registration information from IESO online system
    a. Input from IESO IAMs communication platforms

Feedback questions

1) Do you have any additional feedback to the data inputs identified in the workshop?
2) Do you have any additional feedback on what components should be captured within in administrative and coordination and market components of the shared platform requirements documentation?

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THANK YOU

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