27-05

CIRED Voorbereidingsdag

SPREKER:

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Introduction of the Realtime Interface (RTI)

The RTI Initiative

- Initiated in **2020** by Netbeheer Nederland (NBNL) and market partners.
- Purpose: Define a **DSO-DER interface** to manage congestion **in real time**.

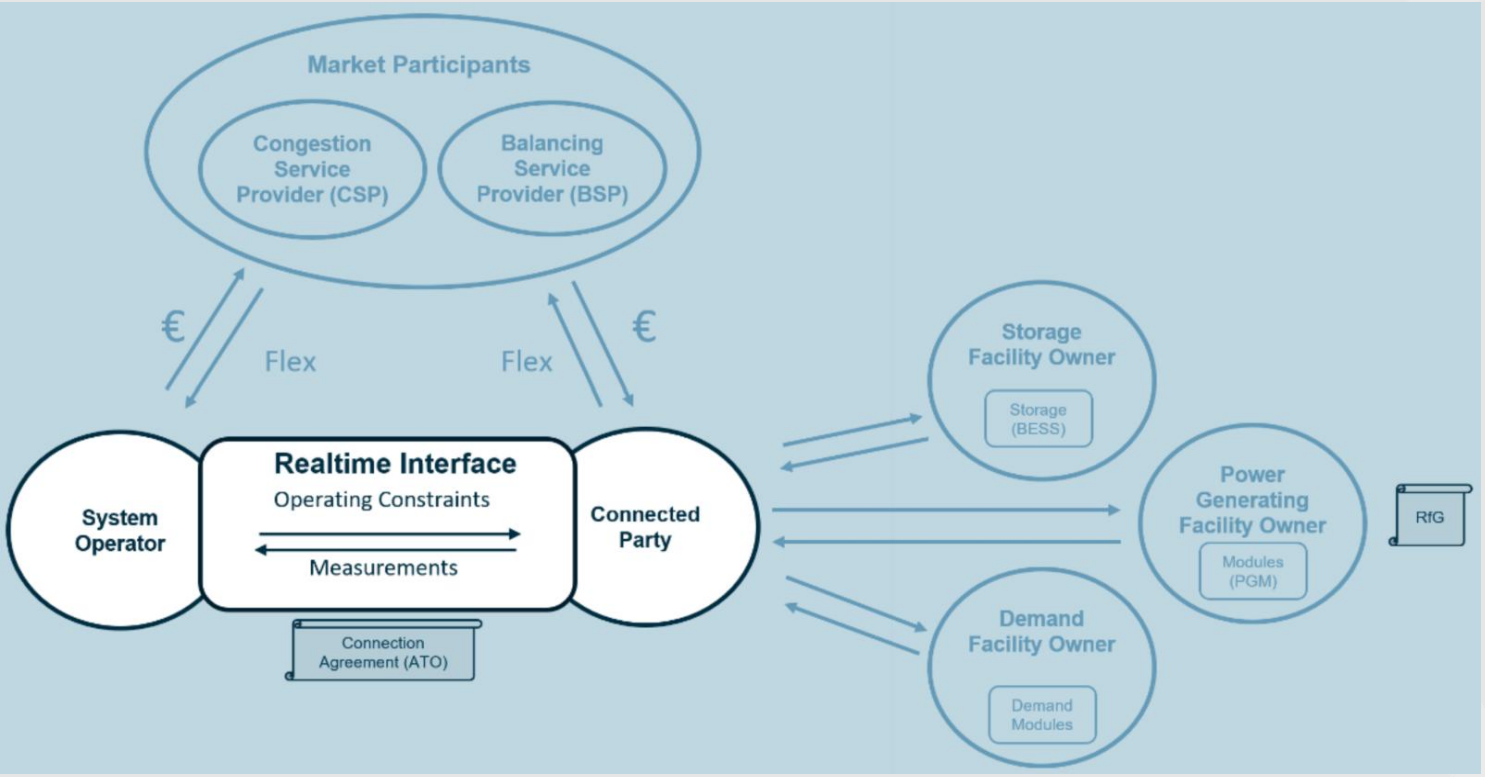
RTI Version 1 – Key Features

- SOs can send **real-time operating constraints** to individual DERs > 1MW.
- Acts as a **last-resort control** mechanism when other congestion measures fail.
- **Operational since Feb 2024** (specification version 1.0 released). **(paper 188).**

Opportunities leading to version 2

- Less dependencies on **local hardware and ethernet connection** at DER site.
- Enables scalability due to:
  - No need for **on-site technical staff**, both during initial installation and later maintenance.
  - Significantly increase customer implementation flexibility.
- NBNL is working on a **version 2** to address these limitations and support broader adoption.

RTI's Position in the Energy Ecosystem



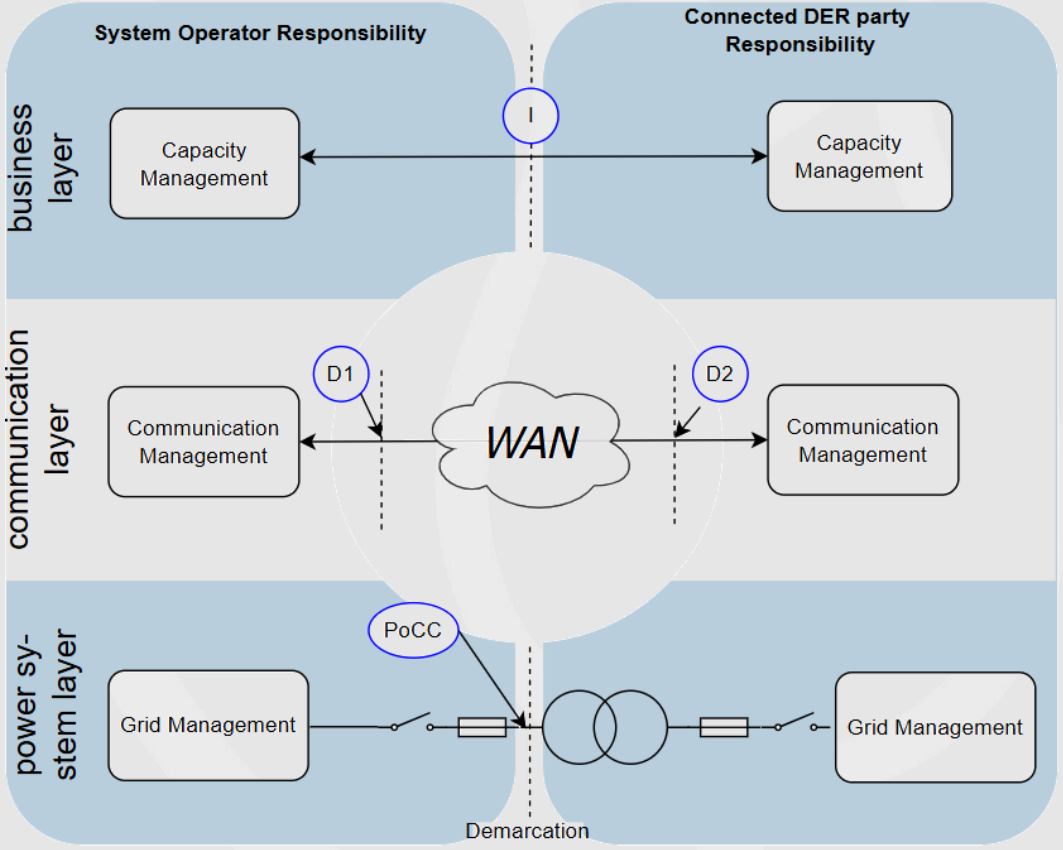
- RTI **only covers the interface** between System Operator and Connected Party.
- RTI does **not involve** market roles like BRP, BSP, or CSP and their interactions.
- No interaction with systems **behind the Point of Common Coupling (PoCC)**.
- RTI enables sending **real-time operating constraints** from SO to CP
- RTI enables receiving **measurement data** to verify compliance

Information and Communication Layer

- **RTI uses IEC 61850** to ensure standardized, interoperable, and real-time data exchange for DER signals.
- **For communication, WebSocket** was chosen over HTTP REST, MMS, and XMPP.
- WebSocket have **low latency, full-duplex design, and secure performance as characteristics.**
- **WebSocket is** therefore **ideal** for **real-time DER control over WAN.**

Identified Challenges

- **RTI shifts from XML to JSON** for better maintainability and integration and to align with international developments
- RTIv2 introduces a **WAN between System Operator and DER,** unlike RTIv1.
- Middle layer **ownership** in RTIv2 is unclear, causing **new challenges**, among which availability.



Future outlook and conclusions

- NBNL group is updating RTI **using IEC 61850** data model with **WebSocket** communication.
- **Proof-of-Concept starting Q2 2025** to validate use in emergency curtailment and identify key requirements.
- **Results** will drive **iterative improvements** via pilots and tests.
- Focus on delivering a **robust, scalable, and secure solution.**
- **Aligns on international IEC standards** to include WebSocket in the IEC 61850 standard