

DISTRIBUTED ENERGY RESOURCES (DER) INTEGRATION TESTBED INSIGHT

Featured Resource: [Industrial Internet Reference Architecture \(IIRA\)](#)

RESULTS

- Connects an active 100% renewable energy-based microgrid back to the main power grid
- Enables plug-and-play integration of DERs in a dynamically managed power grid

TEAM

- Cisco
- RTI
- Wipro

The Challenge

The history and nature of the traditional power grid is large-scale, bulk power generation centralized at large power plants. The addition of distributed renewable resources (solar, wind and batteries) creates difficult control, integration and safety challenges. Communication and control enabling edge intelligence underpins a new, distributed grid architecture.

The Solution

The DER Integration Testbed provides a simulated smart grid microcosm demonstrating key technologies and protocols: Data Distribution Service (DDS), Open Field Message Bus (OpenFMB), TSN and how they can be combined and deployed in the field.

The solution integrates third party data and supports a variety of business models.

Key Insights

Content sources: The [Testbed first results report](#); [Journal of Innovation article, Sept 2017](#)

- This testbed applied an IIRA pattern (the three-tier architecture) by implementing a variation (a layered databus architecture pattern) resulting in a three-tier architecture that allows for federated, hierarchical databuses. The IIC library of architecture patterns, with advice on when to use which one, accelerates IIoT project development.
- See also [Applying the Industrial Internet Reference Architecture to a Smart Grid Testbed](#)

For additional information contact info@consortium.org

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