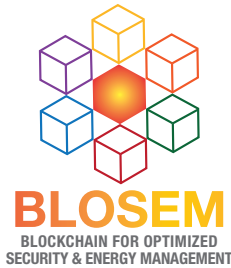


BLOSEM USE CASE 2: DER Coordination and Control



Blockchain as a trust anchor for data integrity and transaction transparency facilitating distributed communications architectures across disparate distributed energy resources (DER) owners and energy entities. Enabling DER aggregator participation in energy markets and addressing tier-bypassing (FERC Order 2222) while enforcing grid constraints.

BLOSEM is an NETL-led project that is sponsored by the U.S. Department of Energy's Grid Modernization Initiative (GMI) and is co-funded by the Office of Fossil Energy and Carbon Management (lead), the Office of Nuclear Energy, and the Office of Electricity. BLOSEM is a multi-lab collaboration, established to develop energy-sector guidance, standardized metrics, and testing environments for technology maturation of novel blockchain-based concepts for device security, secure communications, and grid resilience.

PARTNERS



RESEARCH OBJECTIVES

Support the BLOSEM project goal of de-risking and accelerating blockchain concepts for energy systems:

- Enable the ability to rapidly connect blockchain solutions with grid emulation environments, including hardware-in-the-loop, cyber-physical systems, and co-simulation systems
- Decouple the dependencies of the specific blockchain under test to enable modularity, interoperability, and reusability to more rapidly connect and evaluate diverse blockchain solutions
- Develop core functionality to enable the flow of data and commands in a use case agnostic manner, easily extendible to new grid emulation system configurations

USE CASE OBJECTIVES

- Examine and demonstrate BLOSEM UTP components for blockchain-based grid operations use cases
- Facilitate distributed communications architecture across disparate DER owners and energy entities
- Establish trust anchors with integrity and confidentiality through blockchain in a trustless environment

BENEFITS OF BLOCKCHAIN

- Flexible access controls and addressing grid constraints
- Addresses tier-bypassing (e.g., preventing double counting; distribution factor, etc.)
- Mediation through smart contracts

OTHER BLOSEM ACTIVITIES

- **BLOSEM Unified Testing Platform**
A multi-lab, unified testing platform that has interoperability to support a wide variety of blockchains.
- **Use Case 1: Supply Chain Security, Life Cycle Monitoring, and Real-Time Auditing -**
Asset traceability and records of life cycle events

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