Connecting Global Energy Markets

Design a unified solution for cross-regional interoperability of energy & flexibility markets.

SIEMENS

The global increase in carbon emissions is contributing significantly to climate change and its adverse effects. Addressing the problem of climate change/carbon emissions is crucial for mitigating environmental challenges, preserving ecosystems, safeguarding public health and securing a sustainable future for current and future generations.

In the evolving energy landscape, there is a clear need to increase the grids resilience to drive decarbonization of the global economy. For this we envision a one-stop-shop for startups, utilities, commercial & industrial sites to participate in Energy and Flexibility Markets globally .

What are we looking for?

Access to flexibility and energy markets is highly heterogenic, with specific aspects at regional and county level. Hence, innovators that want to bring the latest AI-driven optimization and forecasting capabilities to energy markets to reduce carbon footprint, face steep entry barriers. We see the clear need for a global standardized API for cross-regional interoperability in energy markets.

In this challenge, you will work closely with Siemens product managers to identify key partners across the globe to access flexibility and energy markets, design a common API that incorporates multiple partners, prototype the global connector and verify your design with Siemens customers.

We're looking forward to proposals to use latest AI/ML technology to tackle the challenge of combining multiple APIs into a single common API.

What is your impact?

To fulfill our aim, we essentially need to act as an aggregator of aggregators. To achieve this, we need to gather and consolidate data and content from various existing aggregators, ultimately creating a unified solution.
The topics we aim to address are as follows:

- Research and Analysis: Conduct in-depth analysis to identify startups and companies that already provide access in various regions to their different local markets. These companies most likely conducted customer research and confirmed what offerings align with the needs of local businesses or players. Understand the commonalities, differences and regulatory frameworks.

- Design: Find out possibilities (concepts, processes, tooling) on: How can we unite local startups and companies on a shared platform or API? Is AI necessary and helpful for this task, or are there straightforward methods for translating between APIs? Which companies across markets can collaborate to create a global solution?

- Technical Prototype or Showcase: Turning an idea into a workable prototype by developing a unique solution where potentially, one standardized API is used to interact with various regional APIs, with the first API serving as a translator between them.

How to start?

1. Type of markets to focus on:

   - Energy Markets: Spot market, Futures markets
   - Flexibility Markets: FCR (Primary reserve), aFRR (secondary reserve), mFRR (Tertiary reserve)
   - Utility programs

2. Contribution to Markets:

   - Aggregation: Process of grouping or bundling together various sites or devices before they are made available or presented to the markets as a single, unified offering.

   - Trade-Execution (northbound): Active engagement with grid operators or market regulators' systems to submit bids, execute trades, and finalize settlements within the market.
   - Trade-Execution (southbound): Refers to the practical implementation of providing energy, such as charging batteries, shutting down photovoltaic (PV) systems, or orienting wind turbines into the wind. This process often involves specific equipment or technologies like MGC, X300, etc., to facilitate energy exchange or management.
   - Trade-Planning: Involves using optimization algorithms, such as LEMS IQ and BEOS, to calculate and determine what energy or resources to offer to the market. It's the process of strategizing and making decisions about what to trade within the energy market.

   - Market information/feeds: Refers to the provision of up-to-date data and information related to market conditions, including current market prices, bid backlogs, recent trades etc.

   - Legend/Reference:

     - Role of external partners in sharing responsibilities, contribution to the goal or acting as a collaborator.
     - Focus of Siemens to provide value in emphasizing its efforts and strategies to deliver added value or benefits to its stakeholders, customers, or the market.

Where could it lead to?

We believe, this challenge of developing a standardized API for cross-regional interoperability in energy markets brings efficiency, cost savings and sustainability benefits to energy and flexibility markets. It promotes innovation, market access and a smoother transition to cleaner energy sources, ultimately contributing to a more resilient and environmentally responsible energy infrastructure. This initiative would then include a diverse user group, which for example could be - Energy Consumers, Energy Markets Operators, Grid Operators, Technology Providers, Startups & Innovators, Consulting firms, Research & Academia.

Who are we?

Siemens Smart Infrastructure (SI) combines the real and digital worlds across energy systems, buildings and industries, enhancing the way people live and work and significantly improving efficiency and sustainability. We work together with customers and partners to create an ecosystem that both intuitively responds to the needs of people and helps customers achieve their business goals. It helps our customers to thrive, communities to progress and supports sustainable development to protect our planet for the next generation.

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Join the campaign and create impact on real problems together with go-getters and solution seekers of the world by submitting your ideas.
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