



# Agentic Orchestration System

## for AI Compute and Energy Co-optimization



Intelligent co-optimization of AI workloads and energy resources in Distributed Energy  
Generation environments

📅 2025-11-25

🔗 Beckn Protocol

🏠 SARTE-AI

# The AI Energy Challenge

Growing AI compute demands present a critical challenge to our energy infrastructure, threatening both grid stability and environmental sustainability.



## Grid Stability

Escalating AI workloads strain existing energy infrastructures, risking power outages and grid collapse.



## Carbon Footprint

Increasing energy consumption leads to higher carbon emissions, counteracting sustainability goals.

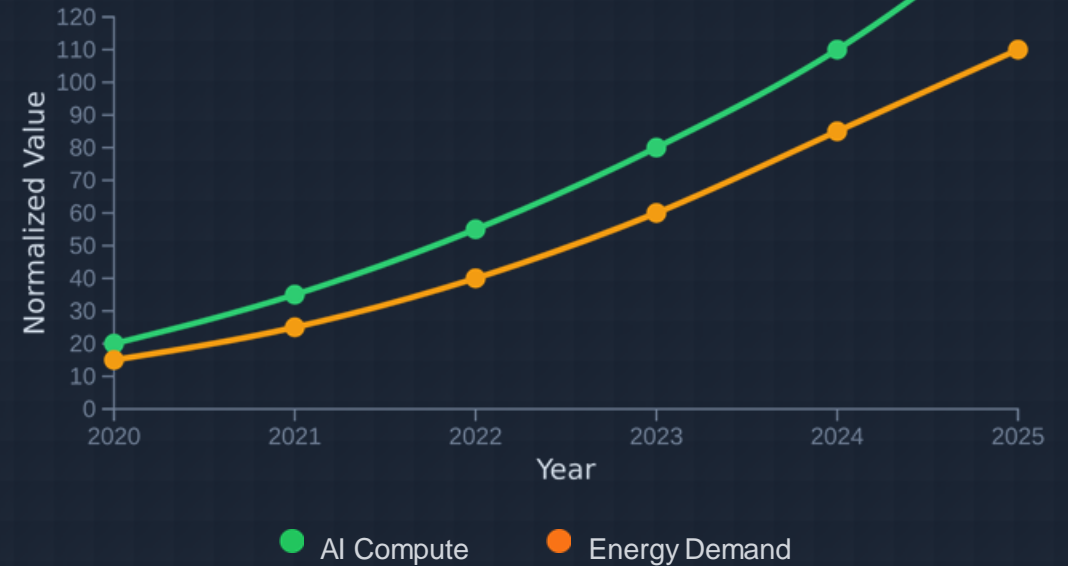


## Resource Management

AI workloads grow in complexity and scale, making intelligent energy management essential.



## AI Compute vs. Energy Demand



**Critical Need:** Intelligent solutions that co-optimize AI workloads with energy resources while maintaining operational efficiency and environmental responsibility.

# Solution Overview

An Agentic Orchestration System that co-optimizes AI workloads and energy resources in Distributed Energy Generation environments.

**Autonomous AI Agents**  
Intelligent agents make real-time decisions about workload execution

**Energy Awareness**  
System manages computational demands with available energy

**Primary Goals**  
Minimizes cost while maintaining compliance with emissions caps



# Technical Architecture



## Decentralized System

Autonomous agents operate independently through Beckn Protocol



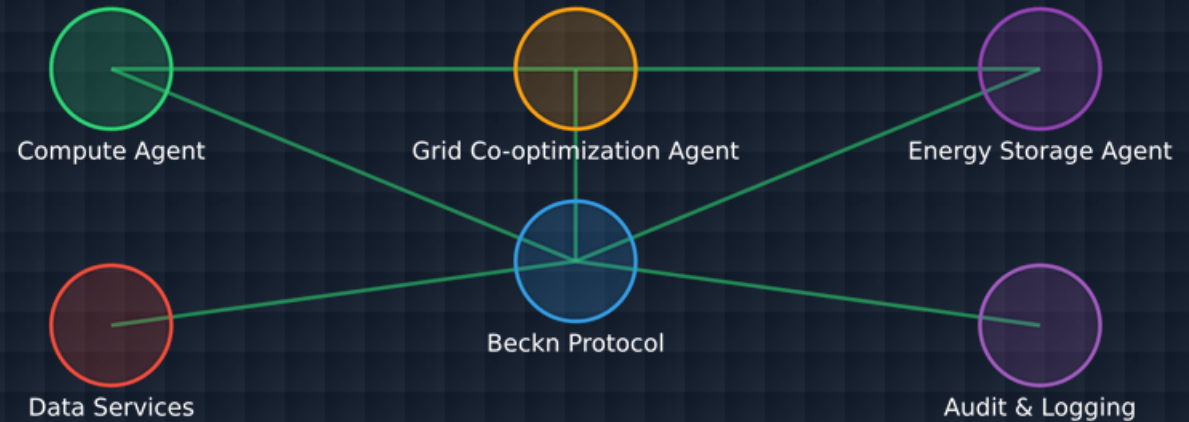
## Microservices Design

Promotes modularity, scalability, and resilience



## Beckn Protocol

Enables secure, interoperable transactions



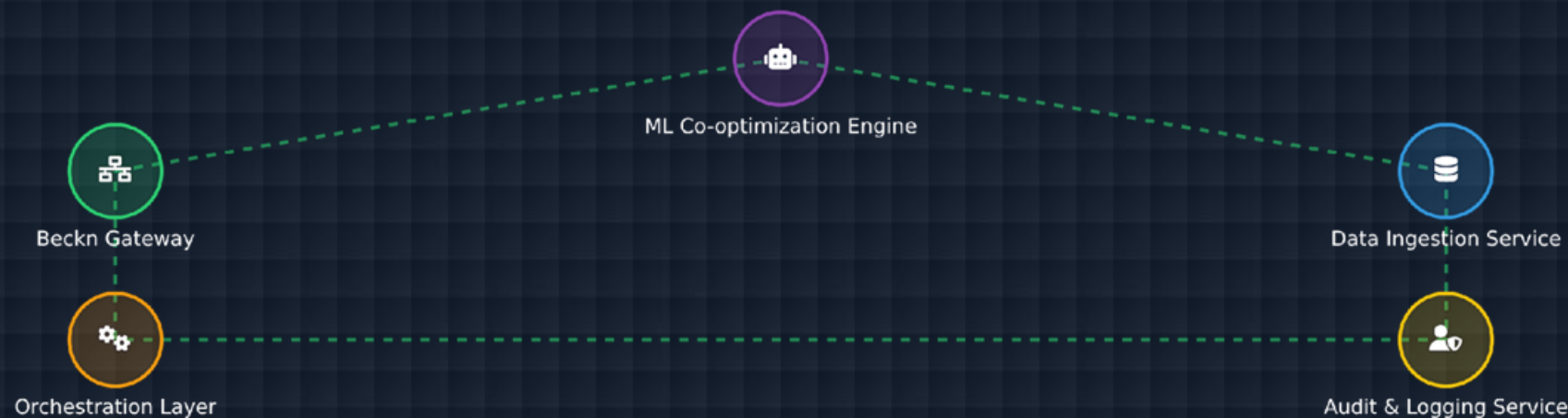
Beckn Protocol ensures all transactions are interoperable, auditable, and traceable




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# System Components

The Agentic Orchestration System comprises five core components for co-optimizing AI compute workloads and energy resources.







**Beckn Gateway**  
Central communication hub for discovery and message validation  
`</>` Beckn Protocol




**ML Co-optimization Engine**  
Uses RL to determine optimal actions  
`</>` Python, TensorFlow



**Data Ingestion Service**  
Processes time-series data from APIs and systems  
`</>` Time Series Databases



**Audit & Logging Service**  
Maintains tamper-proof record of decisions  
`</>` Distributed Ledger Technology



**Orchestration Layer**  
Translates actions into executable commands  
`</>` API Gateway, Command Dispatchers

# Key Agents and Roles

Three primary agents fulfill distinct roles in the Beckn transaction lifecycle



## Compute Agent

Provider

Catalog Publisher

### Primary Role:

Manages AI workload scheduling

- ✓ Publish available compute job slots
- ✓ Receive and process deferral commands
- ✓ Report job completion



## Grid Co-optimization Agent

Buyer

Order Initiator

### Primary Role:

Central decision-maker for energy-aware scheduling

- ✓ Ingest real-time grid data
- ✓ Run ML Co-optimization Model
- ✓ Initiate transactions to other agents



## Energy Storage Agent

Provider

Fulfillment Executor

### Primary Role:

Manages local energy storage

- ✓ Publish State of Charge and capacity
- ✓ Receive and execute discharge commands
- ✓ Report energy flow



# Agent Workflow and Integration

The system operates through a continuous agentic loop, enabling coordination between AI workloads and energy resources.



## Continuous Agentic Loop

Autonomous cycle of monitoring, decision-making, and execution



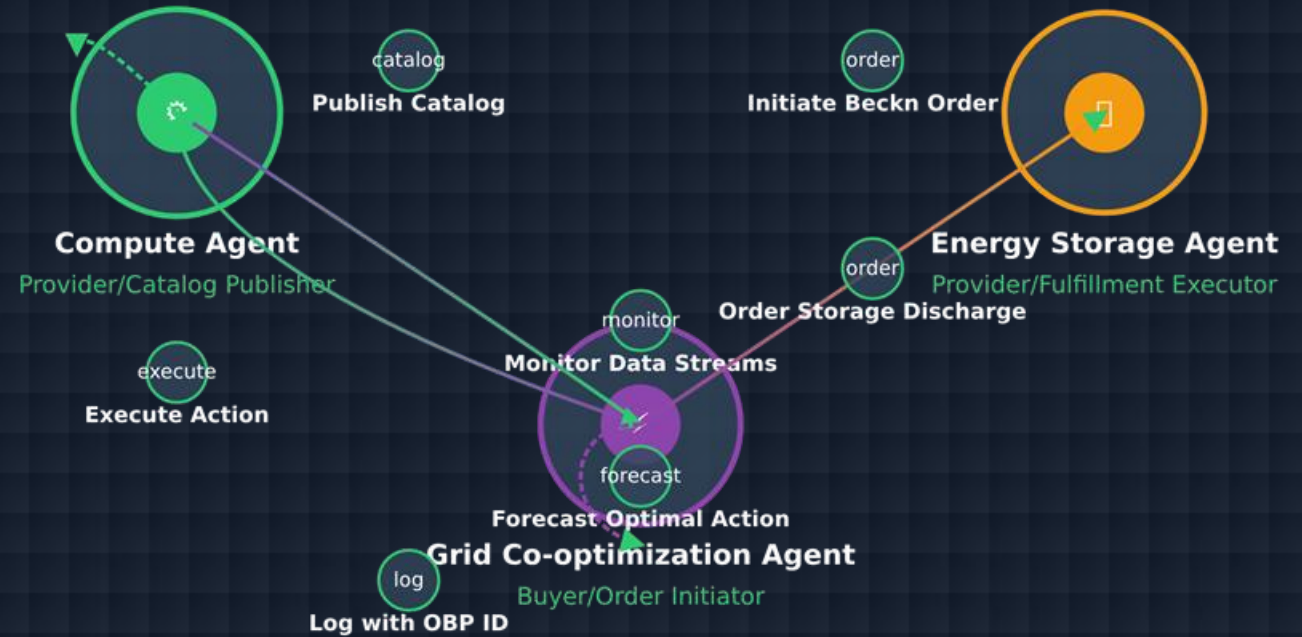
## ML-Driven Decisions

GCA's ML model forecasts grid conditions for cost-minimizing actions



## Beckn Protocol Integration

Standardized communication between agents with OBP IDs for auditability



All transactions are logged with unique OBP IDs for auditability



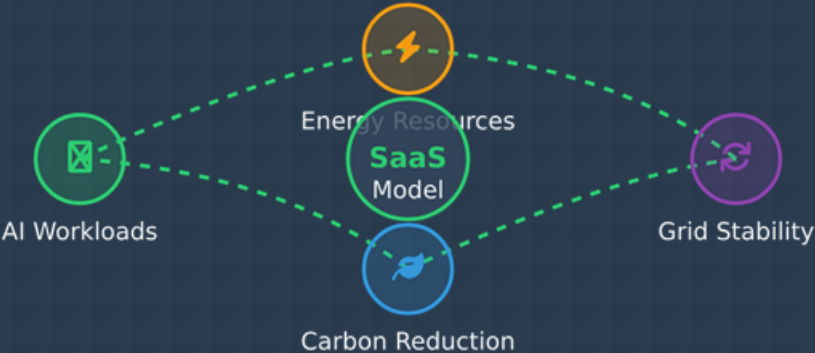
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# Business Model and Impact



## SaaS Revenue Model

- ✓ **Energy cost savings (\$)** from optimized scheduling
- ✓ **Flexibility market revenue** (e.g., P415)
- ✓ Premium tier with advanced carbon-aware scheduling
- ✓ Validation via **verifiable, auditable transaction logs**

### Value Delivery Mechanism



## Strategic Impact

-  **Prevents Grid Destabilization (\$)**  
Autonomous prevention of grid issues from AI compute demand
-  **Reduces Carbon Footprint**  
Prioritization of low-carbon energy for AI workloads
-  **Lowers Operational Costs (\$)**  
Energy optimization for data center resource allocation
-  **Transforms Compute Capacity (\$)**  
Converts flexible compute into grid asset for decentralization



# POTENTIAL CLIENTS



BYD



RIVIAN



# MEET THE TEAM



Hariswar Baburaj



Swapnil Kumar



Ayanfeoluwa  
Oluwasuan



Imran Matin



Mohammad Umer  
Farooq

# Thank You

