■■ Solar DePIN Hub — AI-Powered Decentralized Energy Node

■ Overview

Solar DePIN Hub is a real-world energy data infrastructure combining a **30 kW solar power station**, **Huawei FusionSolar**, and **WeatherXM** sensors into one autonomous system. It bridges **physical renewable energy** with **AI-driven analytics and decentralized computation**.

From sunlight to smart data — turning real energy into digital value.

■■ System Architecture

Layer	Component	Description
■■ Data Layer	Huawei FusionSolar, WeatherXM	Collects real-time solar production and weather data
■ AI / Analytics Layer	Allora Network (planned), local AI models	Forecasts energy production and optimizes power distribution
■ Decentralized Compute Layer	Akash, Peaq, io.net	Runs distributed data processing and model inference
■ Application Layer	Solar API / Dashboard	Provides open JSON API, live charts, and data export for Web3 in

■ Technical Highlights

- Automated **FusionSolar Bridge** with token-based authentication
- **Systemd services** for 24/7 uptime
- **Data normalization** into unified JSON schema (*solar_data.json*)
- **Open Flask API** for local or decentralized access
- **Modular AI pipeline** for prediction & incentive optimization

■ Potential AI Use Cases

- ■ **Energy Forecasting:** Predict solar yield and optimize storage
- ■■ **Weather-Adaptive Models:** Train AI on local energy-weather correlations
- ■ **Smart Grid Simulation:** Feed decentralized grid optimization algorithms
- ■ **DePIN Monetization:** Convert data into tokens via Allora / Peaq incentives

■ Vision

Solar DePIN Hub aims to become the first **open-source DePIN node** connecting real renewable energy data to decentralized AI networks. The goal is to enable a global network of autonomous, data-driven, revenue-generating energy nodes.

“Every kilowatt-hour tells a story — Solar DePIN Hub lets AI listen.”