NuCore AI

Finally, *Smart* Technology That Literally Understands You and Your *Home*.

No device types. No classifications. No standards battles. Just natural understanding. Free and open source.

Agenda

1. Introductions
2. NuCore[AI] Platform Quick Background
3. Demo, AI, Plugins, GitHub & Other Geeky Stuff
4. The NuCore[AI] Foundation
5. Q&A

Everything is a Plugin

In NuCore, Everything Uses the Same Pattern

Device Plugins

EV and PV
Storage and even a building
WiFi, Zigbee, Z-Wave devices (plugs, tstats, etc.)

Service Plugins

Peak Event optimizer
Health and Safety monitor
Robot assistant manager

UI Plugins

Dashboard widgets
Custom controls
Visualization tools

NO Types. NO Categories. NO Standards.

Plugins are analogous to apps on smart phones
Every plugin, whether device, service, or UI, describes itself using the same ***Patterns***: Properties, Accepts Commands, Sends Commands, with Editors defining constraints. All in English!

Universal Pattern

Same structure for everything means AI understands all capabilities uniformly

Orchestration

Platform can orchestrate automations across devices, services, and UI

Type-less Yet Strongly Typed!

Device Structure Example

Properties:

Temperature

editors: (F), precision 1, min 60, max 114

Mode id

editors: (Enum), values: Off, Heat, Cool

Accepts Commands:

Set Cool Setpoint (param: temp)

AI Understanding

Understands English description of capabilities/constraints

Type Safety

Platform enforces constraints, rejects invalid values

Natural Language

"Set cool temp to 72" maps to valid command

The Innovation

Devices describe their ***native*** capabilities in English. AI reads this at runtime and uses it to respond to user. No predefined types or classifications.

Example: Peak Event Plugin

Peak Event Plugin Describes Itself

Properties: Current Price, Grid Status, GHG

Accepts Commands: Set Threshold, Comfort Level, Opt Out

Sends Commands: Optimization Started, Complete

What It Does

Listens for utility signals. Discovers devices via platform. Reads their capabilities. Optimizes based on customer preferences.

Devices Don't Know

Devices have no idea about utility DR, just describe capabilities

Plugin Translates

Reads capabilities, optimizes for utility goals given customer preferences

Platform treats this like any other plugin. No special status.

Natural Language Is Key

Customers Talk Naturally

"If price is less than $0.50 and my range is below 50 miles, start charging and set limit to 90%"

AI reads all plugin descriptions, understands what's possible, creates an orchestration plan and sends it to the platform

Platform Orchestrates Across ALL Plugins

AI generated orchestration plan may span all or a subset of plugins such as Tesla, OpenADR, notifications and hands it off to the platform for execution

Example 1: Peak Event Optimization Plugin

AI may choose this plugin for orchestration depending on its advertised capabilities and customer preferences. The plugin is then in charge of optimization

Example 2: Peak Event Orchestration

If no suitable optimization plugin is available, and since AI already knows about all device capabilities, it generates a full orchestration plan for each device and condition

Platform sees all capabilities uniformly. AI can reason about and coordinate any combination of plugins.

AI's Role: Interpret, Plan, Validate

AI Does NOT Run Things

AI interprets natural language and creates orchestration plans. The NuCore platform validates and executes the plan.

How It Works

1. Customer: "If price is under $0.50, charge my EV to 90%"
2. AI reads all plugin descriptions, interprets the request
3. AI creates orchestration plan: what needs to be done and when
4. Platform validates plan against constraints
5. Platform executes validated plan, sends commands to plugins

Safety
AI cannot execute anything, platform enforces constraints

Reliability
Invalid plans rejected before execution

Deterministic
Platform execution is predictable, traceable

AI is the interpreter, not the executor. Platform maintains complete control.

Hours, Not Months

Manufacturer Benefits

Use Existing Infrastructure

Same backend, APIs, and cloud services you use for mobile apps

Describe Naturally

Define capabilities in plain English, not rigid type hierarchies

Rapid Development

Hours instead of months to create a working plugin

Platform Provides

Plugin Store Documentation Developer Tools Monetization

No Standards Battles

Use whatever protocol you want, plugin abstracts it

No Type Constraints

Describe what your device does natively, not what category it fits

Instant Integration

Works with all other plugins immediately through platform

Open source (MIT), managed by non-profit foundation. No vendor lock-in, no membership fees.

NuCore[AI] In Pictures

Manufacturer or Developer

Develops

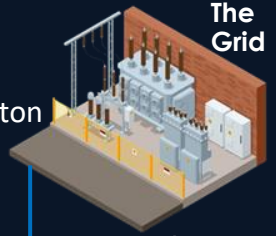
Plugins

Publishes to the Plugin Store

Get Plugins from the Plugin Store

Install & Manage Plugins
Optimize & Automate
Monitor Everything

Grid Signals:
OpenADR
MIDAS
Tx Energy
Green Button
Etc.



Deployment Options

1. Edge Hardware (Local)

Mini PC + Budget GPU

RTX 3060 (cheapest)
40 tokens/second (demo)

Benefits

Privacy, no cloud dependency
Low ongoing cost

2. Cloud with Frontier LLMs

Models

Claude, OpenAI, Grok
Use codes and prompts

Benefits

Latest AI capabilities
Cost varies by usage

3. Cloud with Custom/Finetuned Models

Platforms

AWS, RunPod, Azure, Google
Finetuned for NuCore

Benefits

Optimized for task
Cost varies by provider

Edge for privacy, cloud for latest AI or custom models. Platform works the same.

Open Source + Non-Profit Foundation

Why Open Source Matters

Trust & Transparency
Code is auditable. No hidden behaviors in your smart home.

No Vendor Lock-In
Platform can't be discontinued. Community can maintain it.

Innovation
Anyone can contribute. Accelerates development.

The NuCore Foundation

Structure
Independent 501(c)(3) non-profit
No membership fees
MIT License (permissive)

Governance
Board of Directors: Strategic oversight
Technical Steering Committee: Platform direction
Advisory Board: Industry guidance

Advisory Board Roles

Utility & Grid Advisors
Guide DR, demand flexibility, grid integration

Manufacturer Advisors
Ensure plugin dev tools meet real needs

Academic Advisors
Research partnerships, standards alignment

Policy Advisors
Navigate regulatory landscape, compliance

Neutral governance ensures platform serves all stakeholders: utilities, manufacturers, developers, and end users.

Demo and Geek-Out