

ADVANTECH

Enabling an Intelligent Planet

Edge-EMS Builder

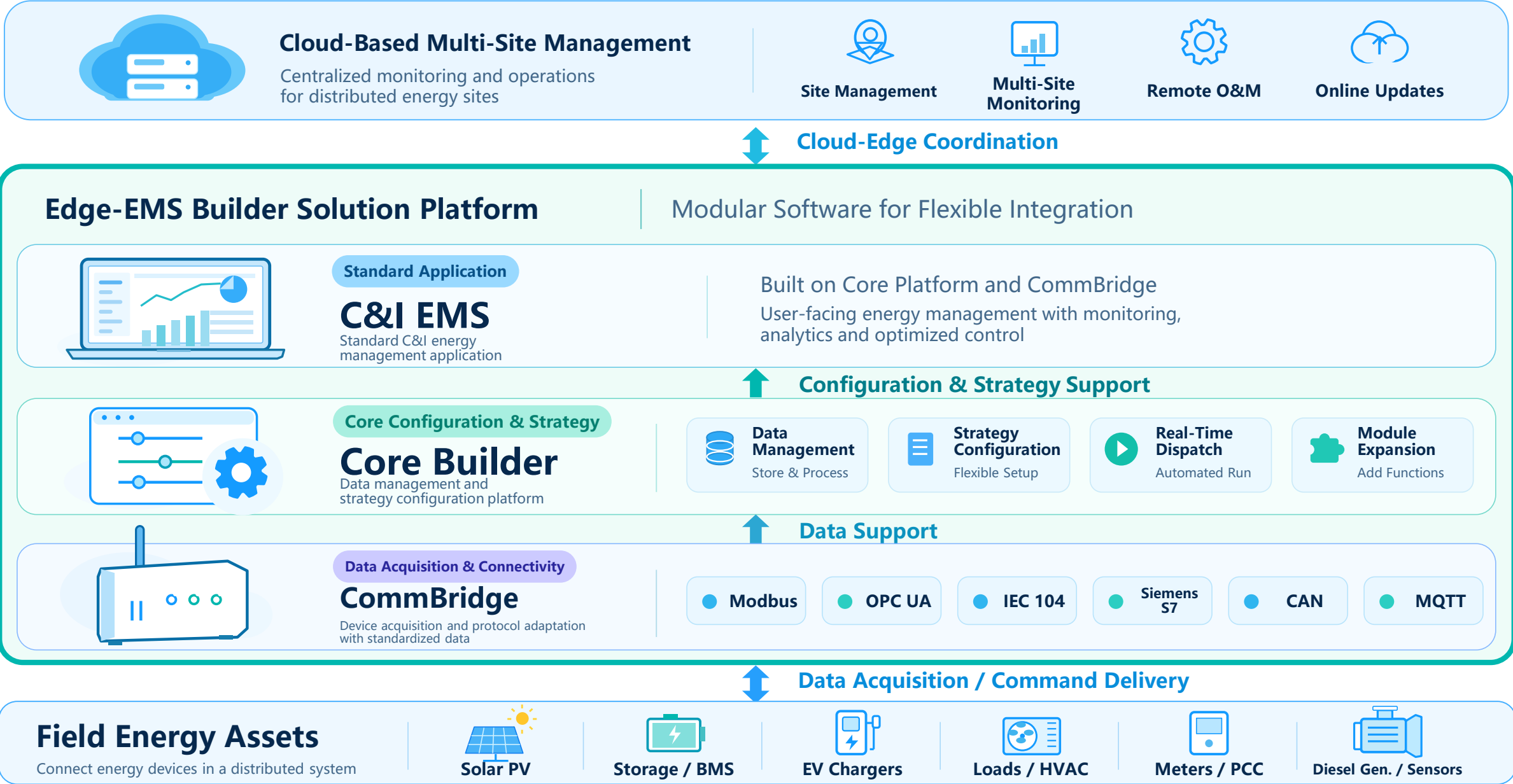
**An Open Configurable Energy Platform
to accelerate EMS Deployment**

Edge Computing &
AI-Powered WISE Solutions



Edge-EMS Builder: Flexible Solutions for Distributed Energy Management

Standard applications, core configuration and device connectivity for an integrated EMS



LINK: Device Connectivity and a Unified Data Foundation

Stabilize field data first, so future capabilities can be replicated.

LINK

Configurable

EVOLVE

Connect Energy Assets and Build a Reusable Data Foundation

Connect field devices, protocols, and data points through CommBridge, enabling monitoring, strategy control, and development on unified data.

Multi-Device Connection

PCS / BMS / Meter / PV / Diesel
Generator / Charger



Multi-Protocol Compatibility

Modbus / CAN / IEC104 /
MQTT / OCPP / OPCUA...

Data Standardization & Reuse

Convert data points: status,
alarms, power, and energy data
into standard models for EMS,
strategy control, and API calls.

Customer Value

Keep Existing Devices

Reduce Repeated
Adaptation Work

Unify Standard
Data Sources

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Configurable:Strategy Configuration and Open Integration

Turn connected data into a configurable, controllable, and extensible energy management system.



Configure Energy Strategies and Open System Orchestration

Based on data connected through Link, users can configure control strategies in Core Builder, integrate third-party EMS, and extend applications through APIs.

Strategy Orchestration

Configure charging/discharging, demand control, peak shaving, and other rules to control energy devices.

Third-Party Cloud Integration

Configure publish/subscribe data formats for two-way interaction with third-party EMS.

API & Front-End Extension

Open APIs for custom pages, business systems, and secondary development applications.



EVOLVE:Service Reuse and Rapid Expansion

Not rebuilding the system, but growing continuously on existing services.

LINK

Configurable

EVOLVE

Reuse Existing Services for Fast Expansion and Deployment

Build new capabilities on existing Edge-EMS Builder services and quickly deploy EMS services to new hardware platforms.

Service Capability Reuse

Reuse existing services for device access, strategies, alarms, data, and O&M.

Secondary Development

Extend new pages, strategies, reports, and scenarios on top of existing services.

One-Click Deployment

Quickly deploy EMS services to new edge hardware or project platforms.

Customer Value

Lower New Function
Development Cost

Shorten Hardware
Adaptation Cycle

Support Continuous
Expansion

Edge-EMS Builder Software Components

Real software products behind the Xenova Energy Orchestrator

The screenshot shows the 'Core Builder' interface with a top navigation bar including 'Edge-EMS Builder', 'Triggers', 'Data Mgmt.', 'Alarms', 'Cloud-Edge', 'Device Collab.', 'Auto Expand', 'Data Views', 'Logs', 'System Config.', 'Maintenance Freeze', and user 'root'. The main content area is divided into three sections: 'Data Maintenance' with a 'Maintenance Freeze' status table, 'Storage Policy and Data Management' with retention settings for various data types, and 'Storage Capacity and Sustainability Assessment' with operational status and disk usage information.

Status	Maintenance Editing	ACTIVE	Owner	data-restore	Update Time	2026-10-30T11:34:29.318+08:00	Generation	24
Mutation Leases	0		Normal Execution Leases	0	Migration Execution Leases	0		

Platform tool for secondary development and capability accumulation

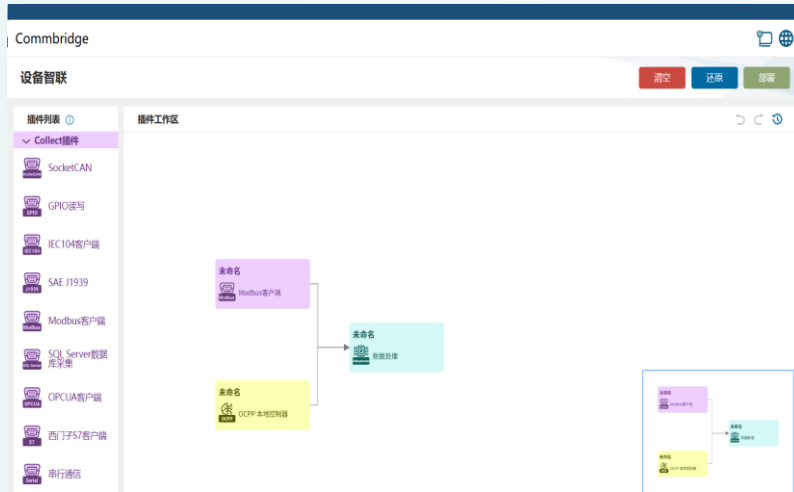
The screenshot shows the 'CommBridge' interface, which acts as a connectivity entry point. It features a top bar with cloud providers (aws, 腾讯云, Azure, 阿里云, 华为云) and a 'WISE-DeviceOn' section. The main area displays a complex flowchart of data paths between various components like 'MySQL数据库上传', 'OPCUA客户端', 'Modbus客户端', and 'DeviceOn上传'.

Connectivity entry point for field devices into Core Builder

The screenshot shows the 'Standard C&I EMS' application interface. It includes a top navigation bar with 'XENOVA管理系统' and user 'XingYin.Wu@advantech.com.cn'. The main area displays a dashboard with various metrics: '电站概况' (Station Overview) showing SOC at 86%, '电池状态' (Battery Status) showing SOH at 100%, and a '主接线图' (Main Connection Diagram) showing the power system architecture. A bar chart at the bottom shows '累计放电功率' (Cumulative Discharge Power) over time.

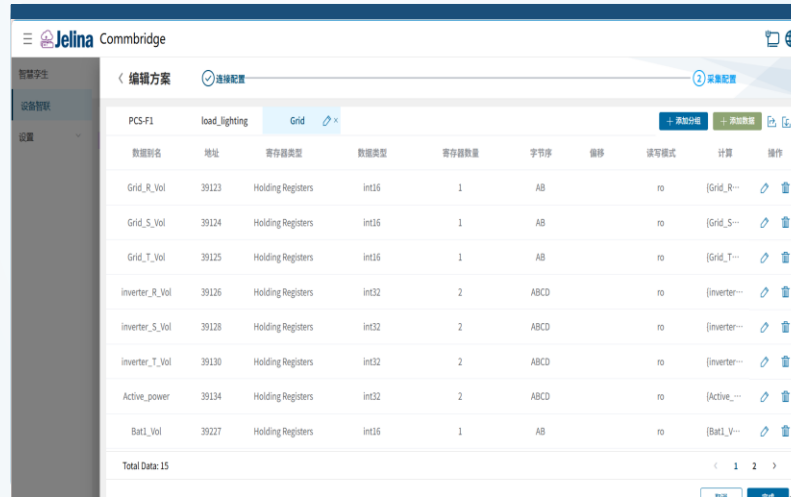
Standard EMS application interface visible to end users

CommBridge: Device Connectivity & Data Collection



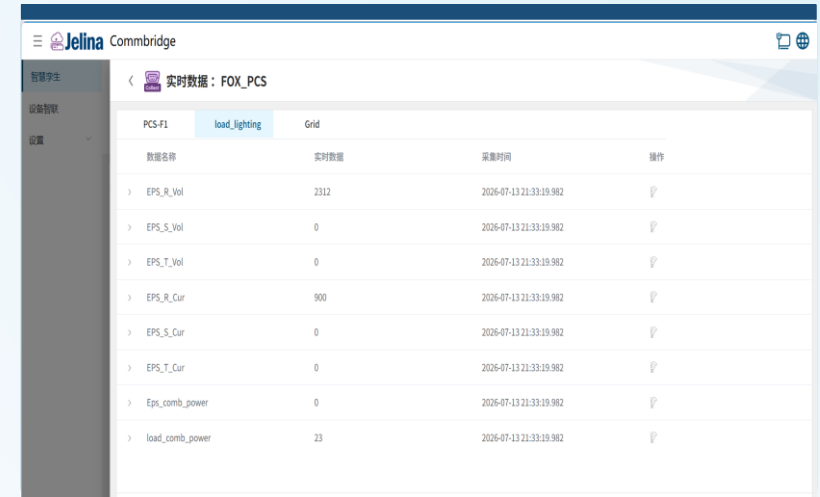
1. Protocol Plugin Matching

Select the right protocol plugin based on field device communication requirements.



2. Data Point Table Configuration

Configure device points, data types, and collection fields.



3. Data Collection and Upload

Collect real-time device data and upload it to Core Platform.

Connect devices, collect data, and take the first step toward energy digitalization.

AEMS		航发管理	数据管理	告警管理	云端协同	协作管理	板级管理	系统配置	yingjin	
数据名称 <input type="text" value="请输入数据名称"/>		Data Key <input type="text" value="请输入Data Key"/>		分组Code <input type="text" value="请输入分组Code"/>		<input type="button" value="搜索"/> <input type="button" value="刷新"/> <input type="button" value="重置"/>				
采集方案 <input type="text" value="Fox"/>		采集分组 <input type="text" value="请输入采集分组"/>		<input type="button" value="批量删除"/>						
数据名称	单位	采集ID	采集方案	采集分组	最新数据	关联聚合数据	所属分组	上次采集时间	备注	操作
Grid_R_Vol		FLnLx5630213	FOX_PCS	Grid	229.100000	0	0	2026-07-13T22:50:59.321+...		编辑 删除
load_comb_power		XC0x6V3G17153	FOX_PCS	load_lighting	0.02300	0	0	2026-07-13T22:50:59.701+...		编辑 删除
EPS_comb_power		v3Mk852X19891	FOX_PCS	load_lighting	0	0	0	2026-07-13T22:50:59.701+...		编辑 删除
EPS_T_Cur		oMhLuRgP15593	FOX_PCS	load_lighting	0	0	0	2026-07-13T22:50:59.701+...		编辑 删除
EPS_S_Cur		BioLx6jP19532	FOX_PCS	load_lighting	0	0	0	2026-07-13T22:50:59.701+...		编辑 删除
EPS_R_Cur		c8cXa6Km333490	FOX_PCS	load_lighting	0.900000	0	0	2026-07-13T22:50:59.701+...		编辑 删除
EPS_T_Vol		gLx18BfWfm15900	FOX_PCS	load_lighting	0	0	0	2026-07-13T22:50:59.701+...		编辑 删除
EPS_S_Vol		E5FMWVLf21078	FOX_PCS	load_lighting	0	0	0	2026-07-13T22:50:59.701+...		编辑 删除
EPS_R_Vol		84C6abm628206	FOX_PCS	load_lighting	230.200000	0	0	2026-07-13T22:50:59.701+...		编辑 删除
PV_total_power_today		LwqU5C3289553	FOX_PCS	PCS-F1	0	0	0	2026-07-13T22:50:59.565+...		编辑 删除
PV_total_power		0u8M60C13810	FOX_PCS	PCS-F1	0	0	0	2026-07-13T22:50:59.565+...		编辑 删除
PV2_cur		evqJ7Da*18714	FOX_PCS	PCS-F1	0	0	0	2026-07-13T22:50:59.565+...		编辑 删除
Total Data: 38					<div> 1 2 3 4 ... </div>					<div> 2 3 ... </div>

Manage collected data, aggregated data, time-based data, and historical data.

The screenshot displays the 'Edit Fault Action' (编辑故障动作) window. On the left, there is a 'Fault Detection' (故障检测) sidebar with a 'Fault Action List' (故障列表) tab. The table below shows the fault action configuration:

故障源ID	故障器名称	条件逻辑	备注
100000	故障检测	AND	

The main area contains a 'Fault Action List' (故障动作列表) table and a code editor. The code editor shows the following logic for the fault action:

```

1  -- 本体故障标识表
2  local body_fault_map = {
3      ["输出过流故障"] = $[输出过流故障],
4      ["交流过压故障"] = $[交流过压故障],
5      ["交流欠压故障"] = $[交流欠压故障],
6      ["输出过流故障"] = $[输出过流故障],
7      ["柜内过流故障"] = $[柜内过流故障],
8      ["输出过流故障"] = $[输出过流故障],
9      ["开闭锁电路卡故障"] = $[开闭锁电路卡故障],
10     ["开闭锁电路卡故障"] = $[开闭锁电路卡故障],
11     ["变压器内部故障"] = $[变压器内部故障],
12     ["柜内风机电源"] = $[柜内风机电源],
13     ["柜外风机电源"] = $[柜外风机电源],
14     ["新设备过流故障"] = $[新设备过流故障],
15     ["交流过流故障"] = $[交流过流故障]
16 }
17
18 -- 外部故障标识表
19 local external_fault_map = {
20     ["柜内风机电源"] = $[柜内风机电源],
21     ["柜外风机电源"] = $[柜外风机电源],
22     ["柜内过流故障"] = $[柜内过流故障],
23     ["柜内过流故障"] = $[柜内过流故障],
24     ["柜内过流故障"] = $[柜内过流故障],
25     ["柜内过流故障"] = $[柜内过流故障],
26     ["柜内过流故障"] = $[柜内过流故障],
27     ["柜内过流故障"] = $[柜内过流故障],
28     ["柜内过流故障"] = $[柜内过流故障]
29 }

```

Configure energy operation strategies for charging/discharging, peak shaving, and plan curves.

The screenshot displays the AEMS (Advanced Energy Management System) interface. The top navigation bar includes '触发电理' (Trigger Management) and '数据管理' (Data Management). The main content area is divided into two panels.

Left Panel: 订阅配置列表 (Subscription Configuration List)

订阅配置ID	订阅配置名称	状态	Topic	QOS	动作
100000	Subscription...	Valid	return "sub..."	0	local
100002	订阅测试	Valid	return "sub..."	0	local

Right Panel: 编辑发布信息 (Edit Release Information)

At the top, there are radio buttons for '0' (selected), '1', and '2'. Below them, the '发布策略' (Release Strategy) is set to 'crash生成策略' (Crash Generation Strategy).

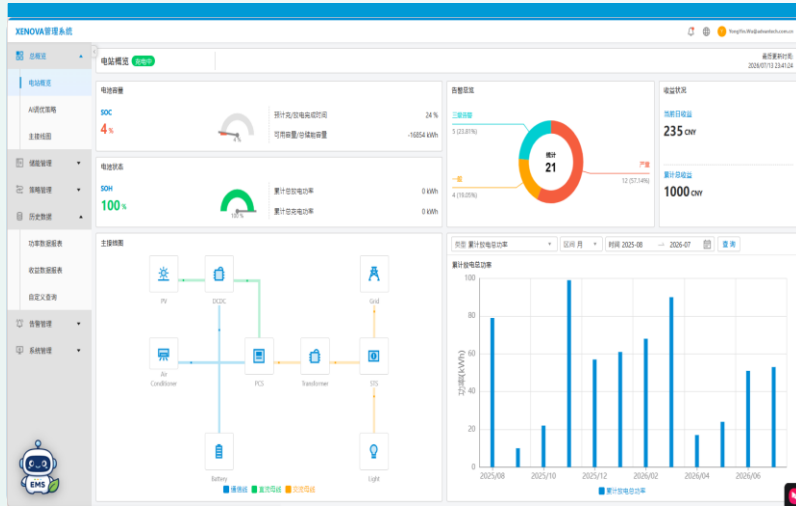
The '发布策略' (Release Strategy) section contains a text input field with the value '710*****9*'. Below this, the '发布内容' (Release Content) section contains a code editor with the following JavaScript code:

```

1 local offsetTime = require("offsetTime")
2
3 local function n(v)
4     if v == "_null_" then return nil end
5     return v
6 end
7
8 return {
9     status = n({PC3运行状态}),
10    activePower = n({p(activePower)}),
11    reactivePower = n({p(reactivePower)}),
12    devVoltage = n({p(totalalmVoltage)}),
13    dcCurrent = n({p(totalalmCurrent)}),
14    todayCharge = n({p(dailyCumulativeCharge)}),
15    todayDischarge = n({p(dailyCumulativeDischarge)}),
16    timeStamp = offsetTime.time.now():toBate1mString()
17 }
18
  
```

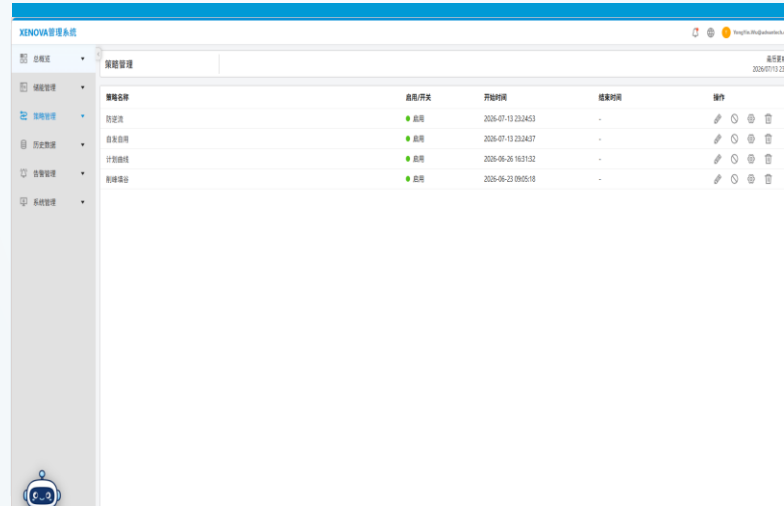
Connect with third-party cloud platforms and EMS through open interfaces or MQTT.

C&I EMS: Standard Commercial & Industrial EMS



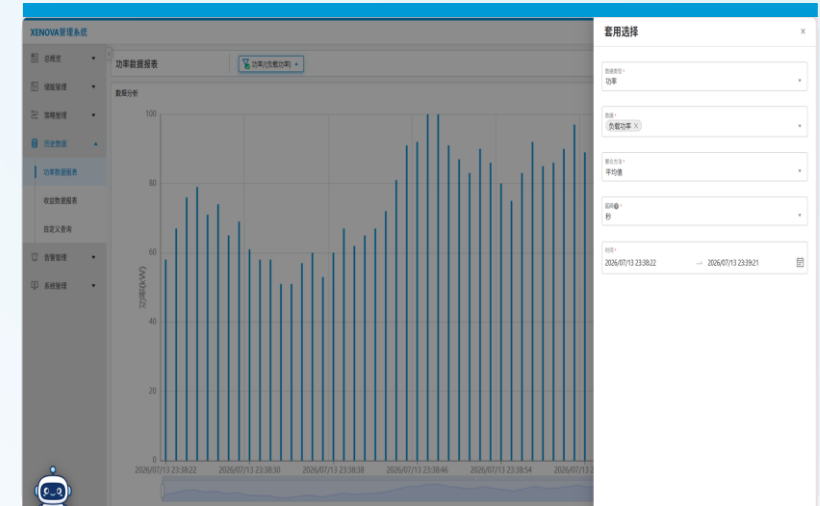
1. Business Data Monitoring

Monitor site operation status, key business data, and energy system performance.



2. Basic Strategy Applications

Support plan curves, peak shaving, and reverse power prevention.



3. Historical Data Analysis

Query and analyze historical data for revenue review, issue tracking, and O&M decisions.

Make energy storage systems visible, manageable, and effective.

C&I EMS Solution: Strategy Packages for Different Goals

Strategy add-on packages for standard operation, revenue optimization and advanced orchestration

Strategy Value Ladder

From standard configuration, to revenue tuning, to multi-device orchestration

Standard Operation Pack

For standard C&I ESS operation, mainly based on parameter configuration and reusable rule templates.

Self-consumption

Backup power

Schedule Curve

Revenue Optimization Pack

For economic operation, requiring project-specific tuning based on load, tariff, SOC and operation limits.

Peak shaving

Demand control

PV consumption

Advanced Orchestration Pack

For multi-energy, multi-device and multi-mode coordination, usually requiring scenario validation.

PV-ESS-Diesel coordination

PV-ESS-EV coordination

Microgrid master-slave control

1 package = 1 deliverable configuration package for 1 clear strategy objective

Edge-EMS Builder Hardware & Software Product Matrix

A shared software foundation for cabinet, site and other edge deployments across different hardware platforms

<div><div><div><div><div></div><div>AFE-E620</div><div>Cabinet Edge Controller (EMU)</div></div><div></div><div><ul style="list-style-type: none">• PCS, BMS and auxiliary device connectivity• Cabinet-level data standardization and safety interlocks• Local caching and standard northbound interfaces</div><div>Unified Cabinet Connectivity, Lower Integration Costs</div></div></div><div><div><div><div><div></div><div>AFE-E630</div><div>Standard Site Controller (EMS)</div></div><div></div><div><ul style="list-style-type: none">• Data aggregation across cabinets and site devices• Site-level strategy execution and local autonomy• Cloud-based remote operations and maintenance</div><div>Unified Site Management, Cloud-Edge Collaboration</div></div></div><div><div><div><div><div></div><div>AFE-R770</div><div>High-Performance x86 Site Controller</div></div><div></div><div><ul style="list-style-type: none">• x86 platform for complex strategies and local data processing• Industrial interfaces for device and peripheral expansion• Large sites, complex projects and deep customization</div><div>High-Performance Expansion, Complex Application Integration</div></div></div></div></div></div>

Shared Software & Service Foundation

WEDA-Ready Linux

Edge-EMS Builder

Typical Site Configuration



Edge-EMS Builder in Real-World Energy Projects

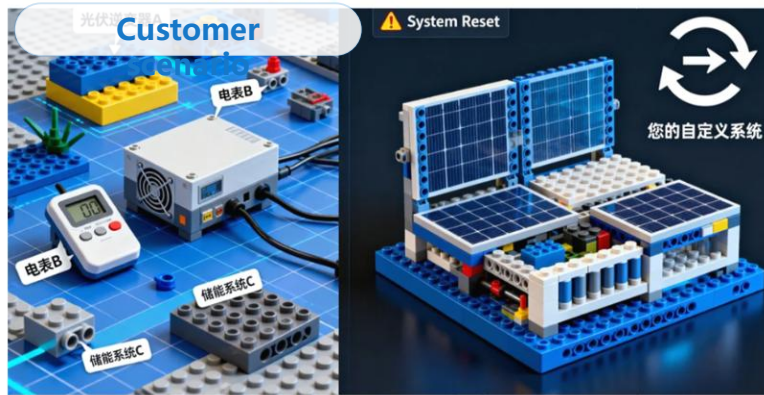
From platform capability to repeatable customer value

FEATURED CASE

ESS System Integrator

From Device Integration to Energy Orchestration

Platform delivery proof in a complex C&I energy storage project



Problem

Limited self-extension capability

New devices or energy strategies often required vendor-side redevelopment, slowing replication and increasing engineering cost.

E-EB Capability

Platform Configuration + Replicable Delivery

Configurable data, strategy and operation capabilities turn one-off delivery into reusable platform assets.

Value Delivered

Extend, evolve and replicate

Customers can expand strategies, add devices without rebuilding the system, and improve delivery efficiency across follow-on projects.

Additional Proven Scenarios

Mobile ESS Charging Vehicle



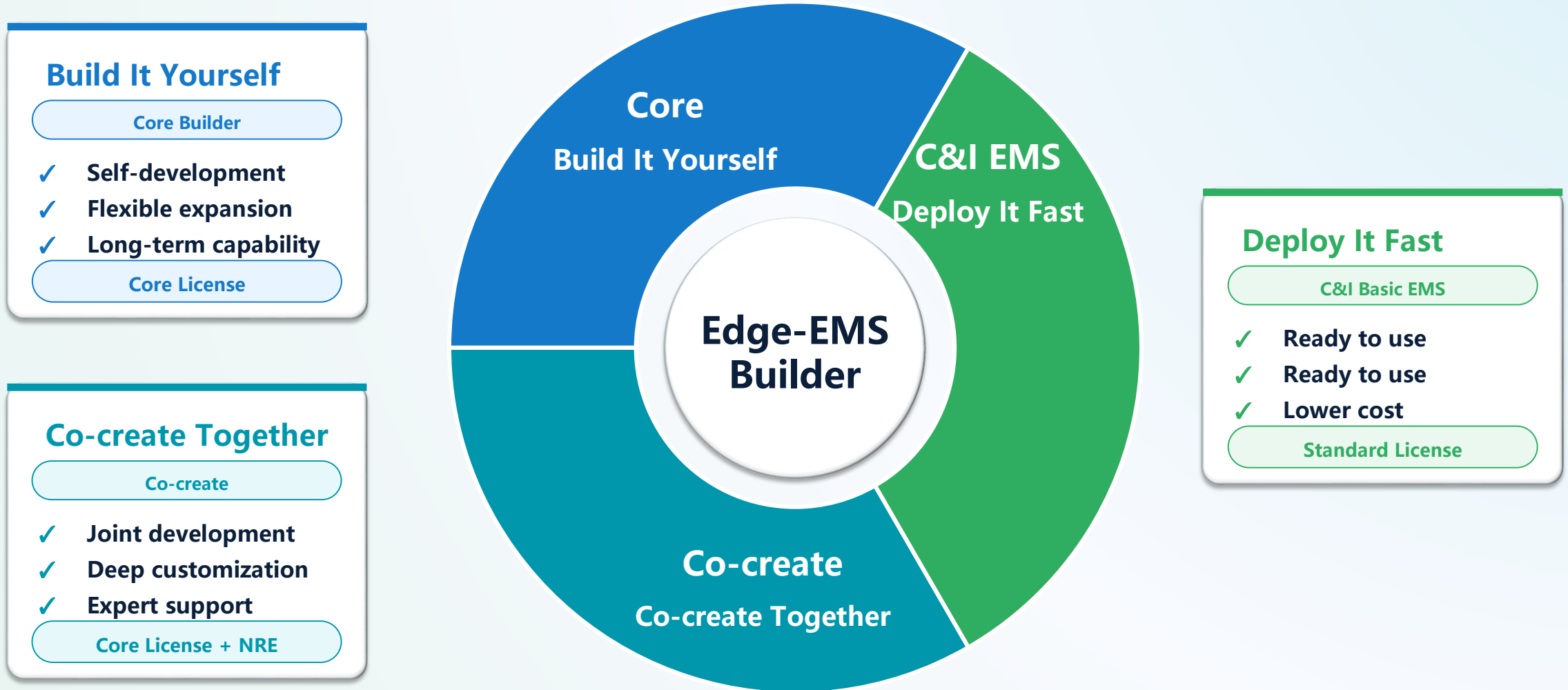
Plug-and-deploy for emergency charging, temporary backup and flexible mobile deployment

Campus Energy Operation



Improve multi-energy coordination and support unified campus energy dispatch.

Choose Your Way to Success



Build your own → Core | Launch fast → C&I | Complex projects → Co-create

Edge-EMS Builder Service Models

Match service models by customer capability and project requests

Platform

Build

Core Builder

Target Customers

Customers with software capability, system integrators, device manufacturers, and in-house EMS teams

Positioning

An open energy platform foundation for partners to build their own EMS capabilities

Service Scope

- Platform configuration & open interfaces
- Protocol integration & data services
- Strategy configuration & secondary development
- Developer docs & remote technical support

Customer Value

Reduce EMS development barriers and help partners build platform-based energy management capabilities.

Solution

Deploy

C&I EMS

Target Customers

C&I ESS projects, EPCs, system integrators, and standardized project customers

Positioning

A standard EMS solution package for commercial and industrial energy storage scenarios

Service Scope

- Standard EMS functions & project configuration
- Device monitoring, alarms & data acquisition
- Basic operation strategy templates
- Remote commissioning & delivery support

Customer Value

Shorten C&I ESS project delivery cycles and reduce engineering costs.

Co-create

Scale

Co-Creation Model

Target Customers

Special scenarios, platform customers, strategic accounts, and complex energy system projects

Positioning

A joint customization and co-development model for complex energy scenarios

Service Scope

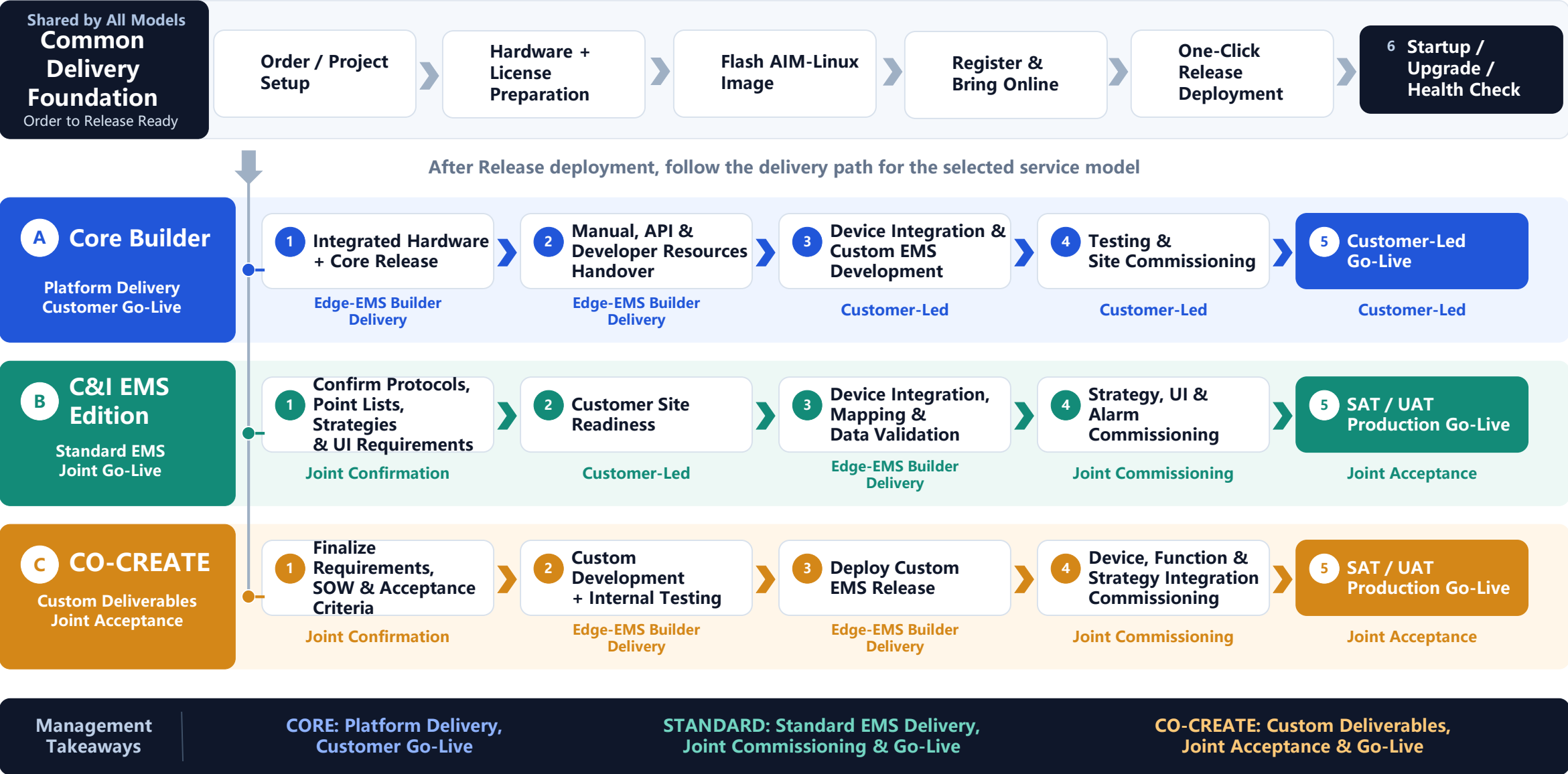
- Special protocol & device adaptation
- Customized strategy & business logic development
- End-to-end third-party system integration
- End-to-end testing, validation & delivery support

Customer Value

Support differentiated needs and convert customization experience into reusable platform capabilities.

From Order to Go-Live: Three Service Delivery Paths

Shared hardware and software delivery. Development, commissioning and go-live responsibilities vary after Release deployment.



ADVANTECH

Enabling an Intelligent Planet

Edge Computing & AI-Powered WISE Solutions



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