GEAR. STUDIO

Smart buildings & energy monitoring

Platform introduction

CLOUD. STUDIO

IoT for Enterprise Applications

Introduction

GEAR.STUDIO is an energy management platform offered as a service (PaaS) that offers:

- Real-time energy monitoring:
  - ✓ Accumulated power consumption
  - ✓ Active, reactive, voltage, power, cos(Ø), etc.
- Ambient variable monitoring
  - ✓ Temperature
  - ✓ Humidity
  - ✓ Occupation,
  - ✓ Illumination level, etc.
- Control
  - ✓ HVAC
  - ✓ Lighting

Power saving pillars

METERING

Real time metering to establish a baseline, check progress, and adjust power-saving strategies.

SENSORS

Monitoring of occupation, temperature, illumination levels, etc.

INTELLIGENCE

Rule & strategy-based engine to minimize power consumption.

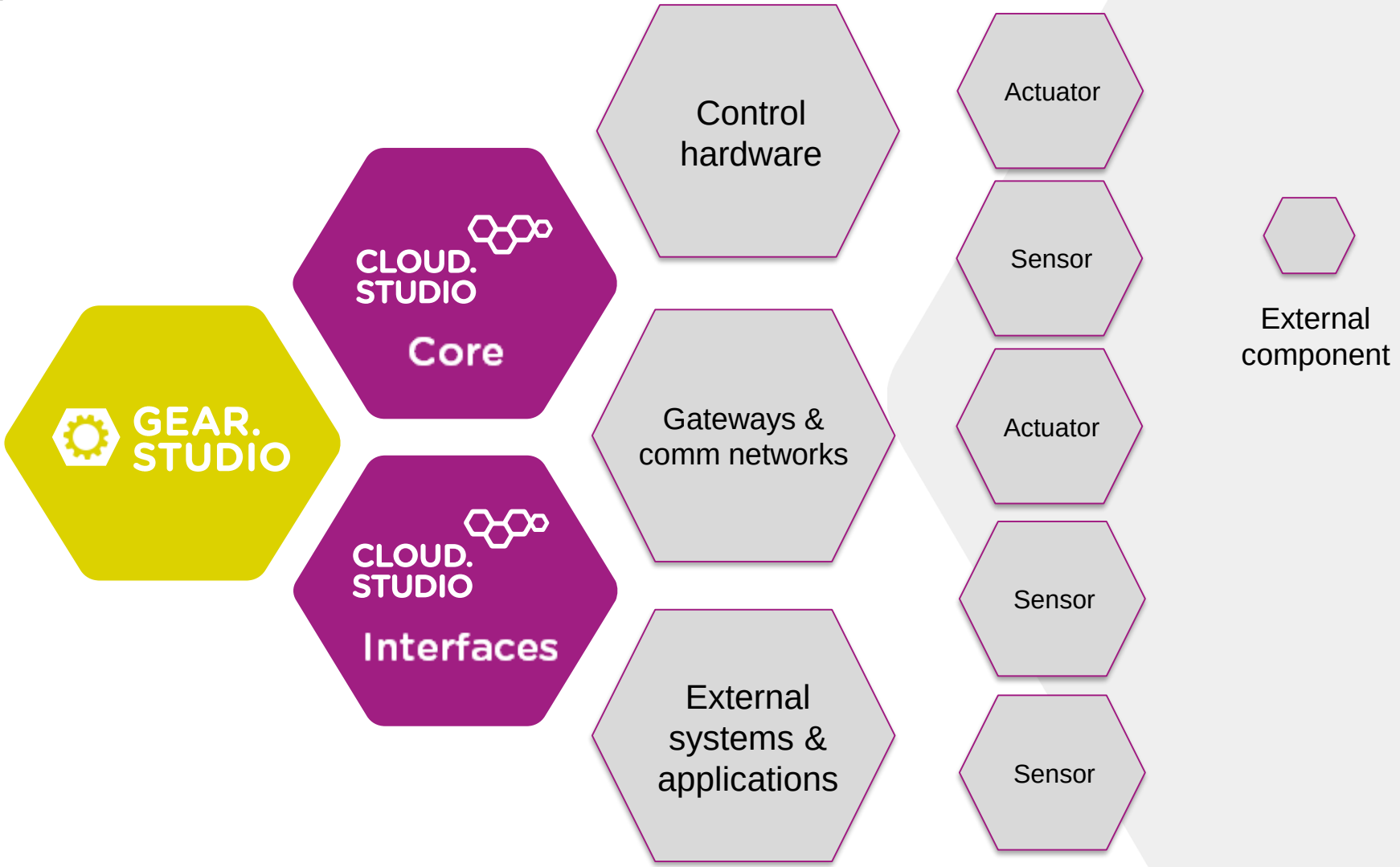
LIGHTING

Dynamic lighting control, complemented with natural illumination.

HVAC

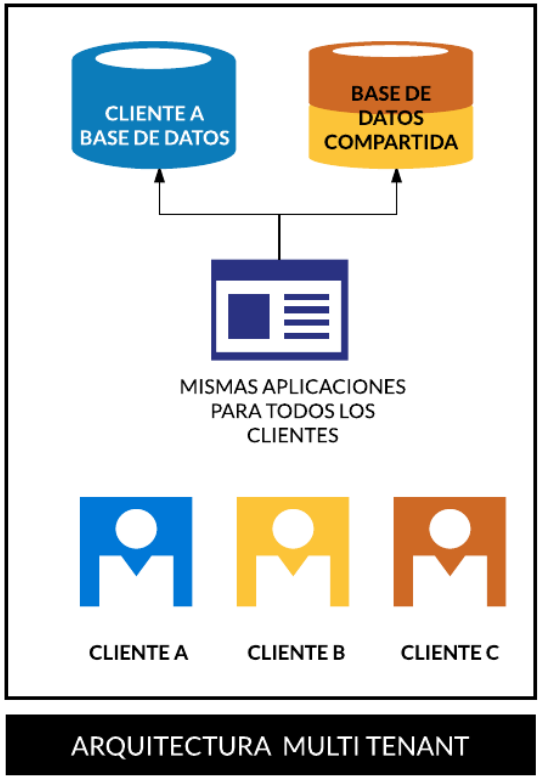
Dynamic heating & cooling, complemented with natural temperature control.

Typical architecture



Multi-tenancy

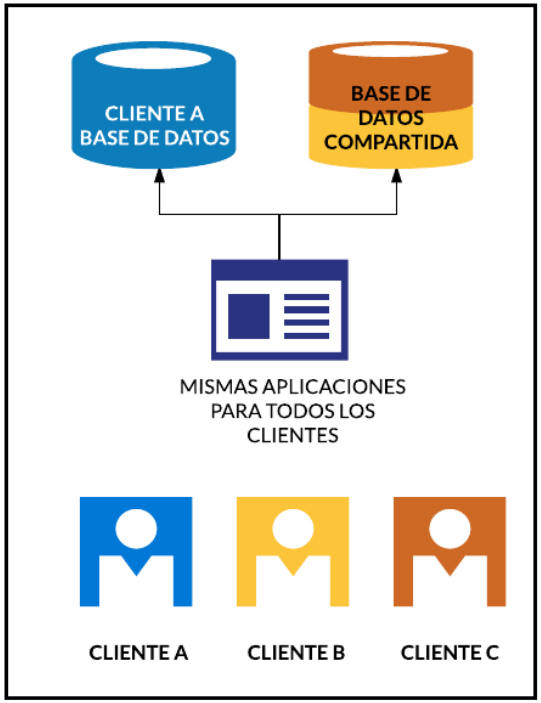
- **GEAR.STUDIO** is designed for multi-tenancy.
- One main operator.
- Multiple clients.
- Multiple facilities per client (branches, offices, factories, etc.)
- Multiple sites per facility (for facilities with multiple buildings in the same premises).
- Multiple areas / rooms per site.



ARQUITECTURA MULTI TENANT

Multi-tenancy (cont.)

- Unified maintenance and support.
- Multiple access levels for each operator user and tenant.
- Granular permissions, reaching individual device-level when necessary.
- Interfaces for invoicing to each tenant.
- Interfaces to manage tenants from external solutions (enrolment of new tenants, suspension in case of payment issues, etc.)



ARQUITECTURA MULTI TENANT

Device compatibility

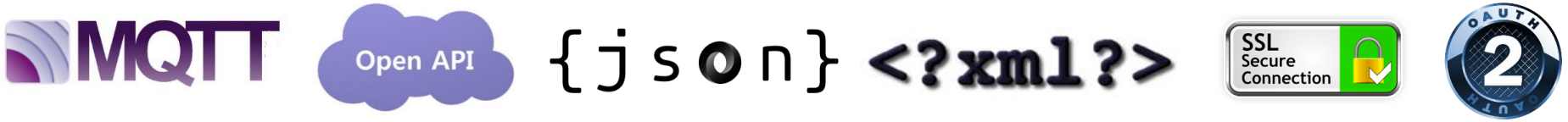
Compatibility with a wide range of devices and technologies.

- Local and global hardware.
- Manufacturer-independent.
- Technology / comm protocol independent.
- More transparency and options when selecting sensors and actuators.
- Multiple technologies can be combined without limitations.
- Existing hardware can be reused.
- Maximum flexibility to keep the platform updated and compatible with the latest standards and technologies.

External system integration

Extensions for a wide range of external solutions:

- Open, free-to-use API
- Based on established standards.
- Web Services and MQTT queues.
- SSL security and OAUTH v2 authentication.
- Real-time data extraction interfaces.
- Simple integration with proprietary external solutions.
- 100% in-house intellectual property.
- Local costs with a proven, world-class platform.



Intelligence

Rules based on occupation, objectives, and thresholds.

- Modes
  - ✓ Active.
  - ✓ Low savings.
  - ✓ Moderate savings.
  - ✓ Highest savings.
- Modes are changed depending on:
  - ✓ Occupation.
  - ✓ Scheduling.
  - ✓ Accomplishment of goals / objectives

- Support for events coming from external systems.
- Support for special ad-hoc rules.

Monitoring

The main monitoring tool in **GEAR.STUDIO** es the **monitor**.

- Web app that allows real-time monitoring of all assets.
- Customizable dashboards that display the most relevant variables and KPI's.
- Geographical representation of all assets, displaying details as necessary.
- Current and historical reports, including maintenance, statistics, and data exports.
- All reports can be scheduled for automated delivery.

GEAR. STUDIO

Energy metering and monitoring

GEAR.STUDIO supports a variety of meters from all over the world

- One and three phase.
- With or without power-factor reporting.
- IP-enabled or connected through gateways.
- All of the technologies mentioned in the previous slides.

Sensors

GEAR.STUDIO allows sensors of practically every type, over various technologies

- Movement, occupation, illumination, temperature, etc.
- IP-enabled or through a gateway (Ethernet / Wi-Fi, 3G/4G, LoRaWAN, etc.)
- Wired or wireless
- Permanent or battery powered.
- Any of the standards mentioned in the previous slides.



Lighting control

GEAR.STUDIO supports actuators of different types

- Installed in power panels or junction boxes.
- ZigBee, Wi-Fi, ModBus, and proprietary.

- On-off
- Dimmers
- RGB Dimmers
- Conventional, fluorescent, or LED

HVAC

GEAR.STUDIO supports climate control with different technologies

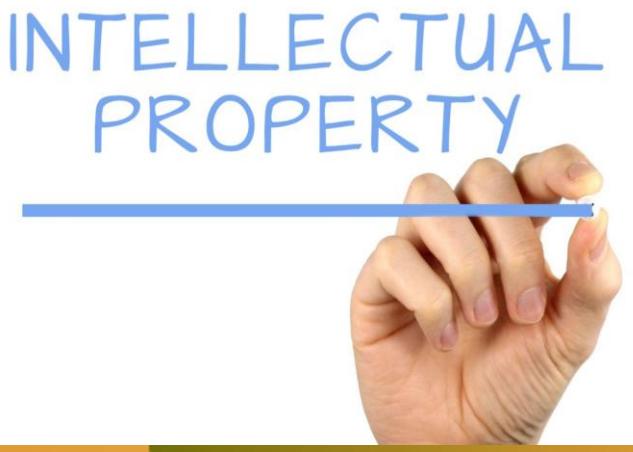
- Standard off-the-shelf split-type air conditioners (with smart adapters)
- Smart HVAC systems.
- Central cooling and heating.

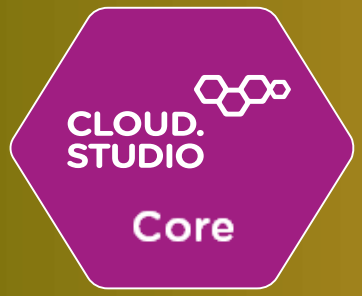
- On/off.
- Mode change.
- Setpoint.
- Ambient temperature monitoring.

Extensibility

GEAR.STUDIO, as in all other verticals of the **CLOUD.STUDIO** platform:

- Is developed entirely in-house.
- 100% owned intellectual property.
- Dedicated development team to customize when necessary.
- Very frequent introduction of new sensors, actuators, and complete technologies.
- May be installed alongside all other **CLOUD STUDIO** verticals.





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