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Home Assistant Device Strategy

Selection of smart devices and appliances for local control

Documento Prodotto da:

ColivingLiguria

(Ditta Individuale Testino Simone)

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Strategic Premise

This document defines the appliance purchasing strategy for Coliving Liguria properties, serving approximately 20 residents across multiple units (Sub 5, Sub 6, Sub 7).

Current State

Currently, the electrical and appliance management is **entirely manual**. There are no existing automation systems, smart sensors, or network infrastructure.

Fiscal timing: All purchases postponed until SRL formation (January 2026) to recover 22% VAT.

Selection criteria:

1. Native local control (priority) – no cloud dependency

2. Maximum sensor exposure for rich automations

3. Industrial capacity for 20+ residents

4. Durability and reliability

Protocol Strategy: Hybrid Approach

To ensure maximum reliability and network stability, we adopt a mixed topology:

Zigbee (Local Mesh Network)	WiFi (High Bandwidth/Power)
Low power, high reliability mesh	*Direct connection, high data rate*
Devices:	**Devices**:
- Sensors (Temp, Door, Motion)	- Cameras (CCTV)
- Lights (Bulbs, LED Strips)	- Smart Speakers (Sonos)
- Smart Plugs (Mesh Repeaters)	- Major Appliances (Washer, Oven)
- TRVs (Heating Valves)	- Energy Meters (Shelly/Tongou)
Why: Creates a robust mesh network independent of the WiFi router load.	**Why**: Requires high bandwidth or stable mains power connection.

Heating

Thermostatic Radiator Valves (TRVs)

Automated radiator control for room-by-room heating management.

Sensors (passive)	Commands (active)
Temperature reading	Set target temperature
Battery level	Open/close valve
Scheduling	

Compatible systems: Zigbee2MQTT (Aqara, Sonoff TRVs)

Selected: Aqara or Sonoff Zigbee TRVs
Price: € 20–30
HA Integration: Zigbee2MQTT – **100% local**
Connects directly to the Zigbee Coordinator. Essential for efficient heating control.

Electric Heater

Portable heating for immediate warmth in specific zones.

Sensors (passive)	Commands (active)
Current temperature	
Power consumption	On/Off
Set temperature	
Running status	Set timer
Oscillation toggle	

Compatible systems: Xiaomi Miot (local), Tuya (local via HACS)

Selected: Xiaomi Smart Tower Heater Lite
Price: € 82   2000W PTC ceramic
HA Integration: Xiaomi Miot Auto (HACS) – local control possible
Amazon: `https://amzn.eu/d/5B131Be`
Features: Tower design, portable, 70° oscillation, timer up to 8h (no forced 24h timeout).

Kitchen

Induction Hob

Main cooking appliance.

Sensors (passive)	Commands (active)
(Not required for current use)	(Not required for current use)

Compatible systems: Xiaomi Miot (TOKIT), Generic smart plug monitoring

Selected: Standard non-smart induction hob
Price: € 40–60   SEVERIN, Tefal, Aobosi
HA Integration: None (Manual)
Budget-friendly choice for now.

Future Option: TOKIT (Xiaomi ecosystem)
Amazon: `https://amzn.eu/d/cSNAYOO`
Price: € 100–130
Why not now: Current models too small for communal kitchen.

Microwave

Smart microwave for quick cooking and notifications.

Sensors (passive)	Commands (active)
Running status	Monitor completion
Cooking time remaining	(No remote start for safety)

Compatible systems: Samsung SmartThings (cloud), LG ThinQ (cloud)

Selected: Samsung Bespoke MC32DB7746KDE1
Price: € 250   32L Capacity
HA Integration: SmartThings (cloud-based)
Links:

- Amazon: `https://amzn.eu/d/63h1PDk`

- Samsung: `https://www.samsung.com/it/microwave-ovens/convection/mw7300b-mc32db7746ke-convect`

- Idealo: `https://www.idealo.it/confronta-prezzi/204377510/samsung-mc32dg7646kke1.html`

Dishwasher

High-capacity dishwashing for communal kitchen.

Sensors (passive)	Commands (active)
Cycle status	
Time remaining	Start/Stop
Select program	
Error codes	Delayed start

Compatible systems: Midea LAN (**local**), Bosch Home Connect (cloud)

Selected: Midea Dishwasher (supported model)
Price: € 350–500
HA Integration: Midea LAN (Local) – **Preferred**
Check supported devices: `https://github.com/georgezhao2010/midea_lan/tree/main/doc`. Fallback: Bosch/Siemens with smart plug.

Refrigerator

Food storage for 20 residents.

Sensors (passive)	Commands (active)
Power consumption Door-open detection	No active commands required

Compatible systems: Shelly (Smart plug monitoring)

Selected: Large non-smart fridge (600L+)
Price: € 600–1000
HA Integration: Shelly Plus 1PM (Power monitoring)
No open-source local control exists for fridges. Use smart plug to detect door-open events via power drops/spikes.

Laundry

Washing Machine

Heavy-duty washing for linens and personal clothes.

Sensors (passive)	Commands (active)
Cycle status	
Time remaining	Start/Pause
Select program	
Spin speed	
Temperature	

Compatible systems: LG ThinQ (cloud), Samsung SmartThings (cloud), Midea LAN (local)

Selected: LG AI DD F0P3020TSWC
Price: € 935   20kg Capacity
HA Integration: LG ThinQ (HACS) – cloud-based, very stable
Amazon: `https://www.amazon.it/dp/B0D2Y7ZQXN`
Alternative: Samsung AI Control WF20DG8650BWIU3 (€ 900).

Robot Vacuums

Automated floor cleaning for common areas.

Sensors (passive)	Commands (active)
Battery level	
Cleaning status	Start/Stop/Dock
Zone cleaning	
Map data	Go to location

Compatible systems: Valetudo (**100% local**, cloud-free)

Selected: Valetudo-supported Robot
Price: € 200–400   New or Used
HA Integration: Valetudo (100% Local)
Must be on supported list: `https://valetudo.cloud/pages/general/supported-robots.html`
Installation guide: `https://youtu.be/aSuKMdOdQpE`

Audio

Smart Speakers

Multi-room audio and voice announcements.

Sensors (passive)	Commands (active)
Playing status	
Volume level	Play/Pause/Stop
Volume control	
Current media	Next/Previous
TTS announcements	

Compatible systems: Sonos (**local API**), Google Cast

Selected: IKEA SYMFONISK (by Sonos)
Price: € 99–150   Bookshelf/Lamp
HA Integration: Sonos (Official) – **100% Local**
IKEA: `https://www.ikea.com/it/it/new/symfonisk-pubaafe6500/`
Note: Purchase at IKEA (order >€ 500 ex VAT) – plan for 3-4 units.
Setup Guide: `https://smarthomejunkie.net/sonos-home-assistant-setup-guide/`

Lighting

LED Bulbs

Smart lighting for all rooms.

Sensors (passive)	Commands (active)
On/Off status	
Brightness level	On/Off
Set brightness	
Color temperature	Set color temperature

Compatible systems: Zigbee (Aqara, IKEA, Hue), WiFi Tuya

Selected: Aqara LED Bulb T2 E27
Price: € 16.39 (ex VAT)   75W Equivalent, CCT
HA Integration: Zigbee / Matter – **100% Local**
Protocol: Zigbee + Thread + Matter support.
Advantages: No relay needed, builds Zigbee mesh, excellent price/performance.
Purchase: Buy 20 unit pack for € 14.75/each = € 295 ex VAT total.
Requires Zigbee Coordinator (see Connectivity).

Connectivity

WiFi Access Point

Reliable internet coverage for all users.

Sensors (passive)	Commands (active)
Connected clients	
Bandwidth usage	Block/unblock client
Signal strength	
Presence detection	PoE port control

Compatible systems: UniFi Network (HACS), OpenWrt

Selected: UniFi U6 In-Wall or U6 Lite
Price: € 100–150   WiFi 6
HA Integration: UniFi Network (HACS)
Professional-grade, mounts in wall box or ceiling. Provides reliable device tracking for HA.

WiFi Indoor Repeater

Extending coverage to dead zones (thick walls).

Sensors (passive)	Commands (active)
Connection quality	
Clients count	Restart device
Signal strength (Uplink)	LED control

Compatible systems: UniFi Network (Mesh)

Selected: UniFi U6 Extender
Price: € 150-180   Plug & Play
HA Integration: UniFi Network (HACS)
Fits standard wall outlet. Extends WiFi 6 coverage seamlessly without running new cables.

WiFi Outdoor Repeater

Garden and Terrace coverage.

Sensors (passive)	Commands (active)
Weather resistance (IP65+)	Outdoor mode
Clients count	Restart

Compatible systems: UniFi Network

Selected: UniFi U6 Mesh
Price: € 180-200   Indoor/Outdoor
HA Integration: UniFi Network (HACS)
IP54 rated, mountable on poles/walls. Essential for outdoor sensors (irrigation, gates) and guest areas.

Zigbee Coordinator

Heart of the local mesh network.

Sensors (passive)	Commands (active)
Device pairing status	Permit join
Signal strength	Firmware update

Compatible systems: Zigbee2MQTT

Selected: Sonoff Zigbee 3.0 USB Dongle Plus ("P" Version)
Price: € 25–30   Model ZBDongle-P
HA Integration: Zigbee2MQTT – **100% Local**
The Best Choice: Look for the **SQUARE, BLACK** stick (Chip CC2652P).
Why: It is the rock-solid standard for Zigbee2MQTT. Avoid the "E" (Rounded/Grey) version if you want pure Zigbee stability.
Antenna: Includes external +3dBi antenna for covering multiple floors.

Infrastructure & Hardware

Home Server

The brain of the smart home.

Sensors (passive)	Commands (active)
CPU Load	
Memory Usage	Restart Service
Backup	
Disk Space	Remote Access

Compatible systems: Home Assistant OS (Generic x86-64 or RPi)

Selected: Raspberry Pi 4 (4GB/8GB) or Intel NUC
Price: € 80–200   SSD Boot Recommended
HA Integration: Home Assistant OS
Recommended: Raspberry Pi 4 Model B (4GB RAM) booting from SSD (not MicroSD). **Alternative**: Refurbished Intel Mini PC (Lenovo Tiny/Dell Micro) for more power. **UPS**: Must be connected to a small UPS (e.g. APC BE850G2) to prevent corruption during power cuts.

Network Cabinet

Physical organization of the network.

Sensors (passive)	Commands (active)
Temperature	Fan Control
Door Status	Power Monitoring

Compatible systems: Passive or Active Cooling

Selected: 10-inch or 19-inch Mini Rack
Price: € 50–100   Wall mount
HA Integration: None
Location: Technical room or dedicated dry area. **Contents**:

- Modem/Router (Starlink/4G)

- Zigbee Coordinator (on USB extension cable outside cabinet)

- Home Assistant Server

- PoE Switch for APs and Cameras

- UPS Unit

Safety

Smart Locks

Keyless entry and access control.

Sensors (passive)	Commands (active)
Lock/unlock status	
Battery level	Lock/Unlock
Generate temp codes	
Access log	
Tamper detection	Delete codes

Compatible systems: Nuki (WiFi), Yale (Zigbee), Aqara

Selected: Nuki Smart Lock 3.0/4.0 Pro
Price: € 270
HA Integration: Nuki Integration (Local/Cloud)
Best compatibility for European cylinder doors. Easy retrofitting without changing the lock cylinder.

Electrical Monitoring & Safety

Smart Electrical Architecture

Hybrid Safe/Smart topology for 3-Phase 10kW.

Sensors (passive)	Commands (active)
Total Consumption (L1+L2+L3)	Monitor partial loads
Phases Balance	Remote cut-off (Sub-circuits)

Compatible systems: TONGOU (Smart) + Bticino (Safety)

Selected: Hybrid Configuration
Price: € 150–200 Total   DIN Rail
HA Integration: Tuya (WiFi) – Local control
Recommended Topology (Certified Safety + Full Smart):

1. **HEAD (Smart Metering)**: 1x **TONGOU 4P 63A** (AliExpress 25€).

   Monitors total consumption and phase balance immediately after counter.

   AliExpress Link

2. **SAFETY (Protection)**: 3x **Bticino Pure RCDs** (Salvavita).

   1x Type F (Induction Phase) + 2x Type A/AC (Laundry/Lights Phases).

   Ensures legal compliance and personal safety (not smart, purely effective).

3. **SUB-CIRCUITS (Smart Control)**: TONGOU 1P+N (16A/25A).

   1x 25A for Induction, 1x 25A for Laundry, 5x 16A for Rooms/Lights.

   Allows granular remote control/automations per appliance group.

Zigbee Coordinator

Heart of the local mesh network.

Sensors (passive)	Commands (active)
Device pairing status	Permit join
Signal strength	Firmware update

Compatible systems: Zigbee2MQTT

Selected: Sonoff Zigbee 3.0 USB Dongle Plus
Price: € 25–30   Model "P" or "E"
HA Integration: Zigbee2MQTT – **100% Local**
Chip: TI CC2652P (P-version recommended) or EFR32MG21 (E-version).
Antenna: External +3dBi gain for maximum range.
Function: Connects to Raspberry Pi/Server to manage all Zigbee bulbs and sensors.

Resources

Riferimenti bibliografici

[1] Midea LAN – Local control for Midea appliances.
    https://github.com/georgezhao2010/midea_lan

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    https://valetudo.cloud/

[3] Sonos Home Assistant Setup Guide.
    https://smarthomejunkie.net/sonos-home-assistant-setup-guide/

[4] Zigbee2MQTT – Bridge Zigbee devices to MQTT.
    https://www.zigbee2mqtt.io/

[5] HACS – Home Assistant Community Store.
    https://hacs.xyz/