

4-noks

The ZigBee experts

It comes a time when
we cannot escape from innovation



... so do we really have to use
these many cables forever?

The Standard



ZigBee Alliance

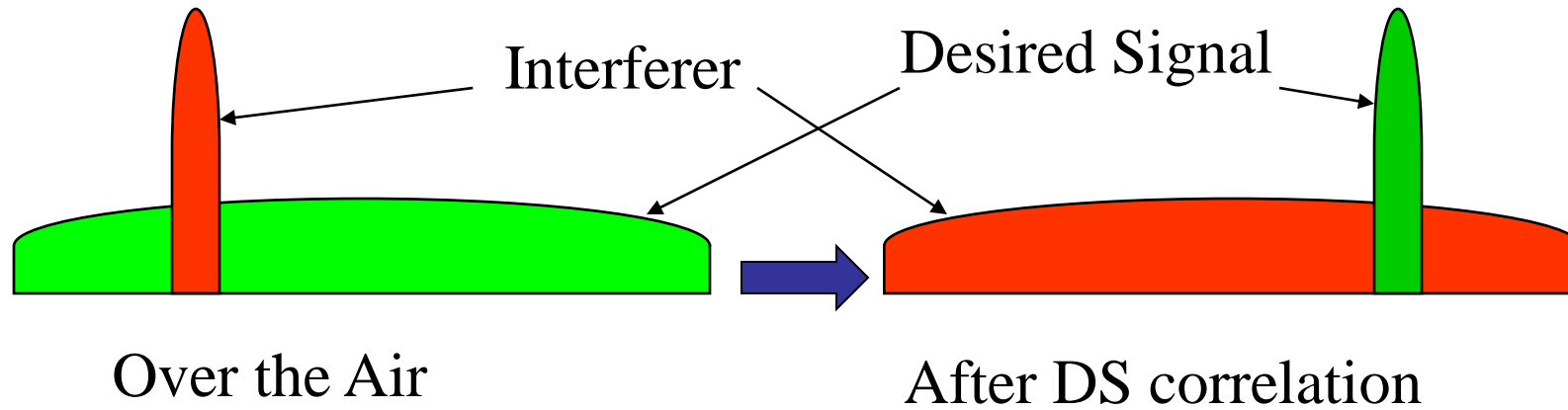
The Solution

Digital Spread Spectrum Modulation

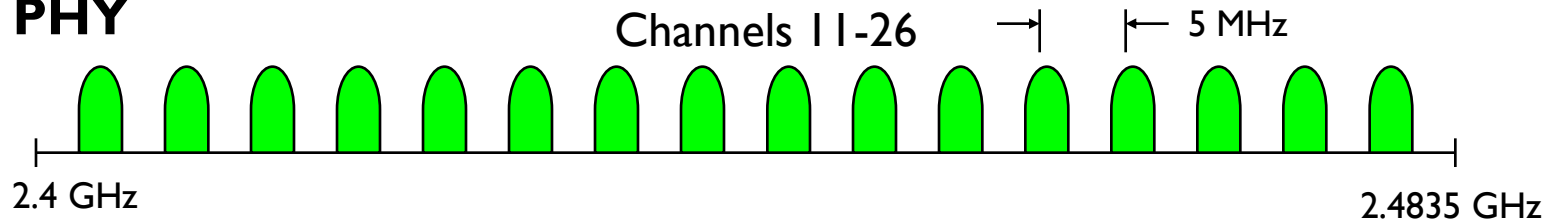
+

Mesh Networking

DS and FA

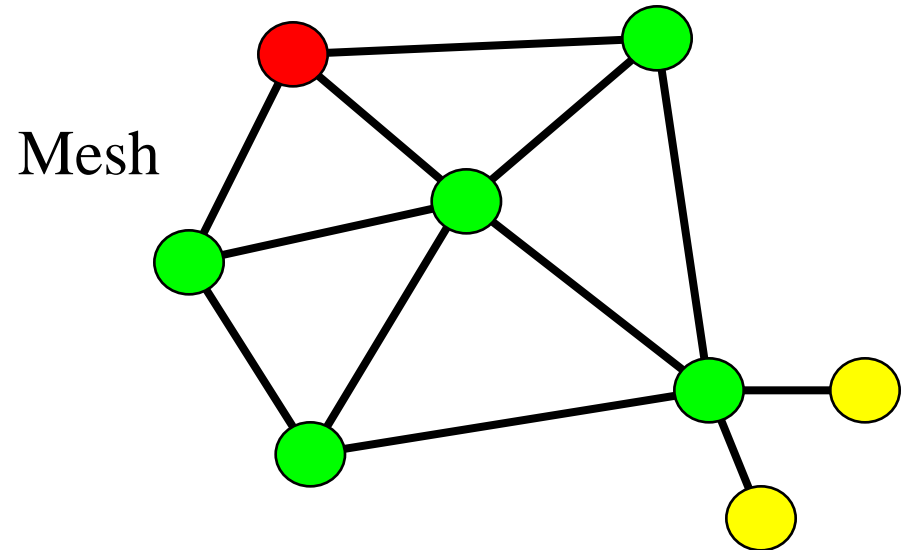


**2.4 GHz
PHY**

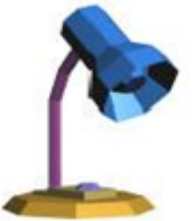
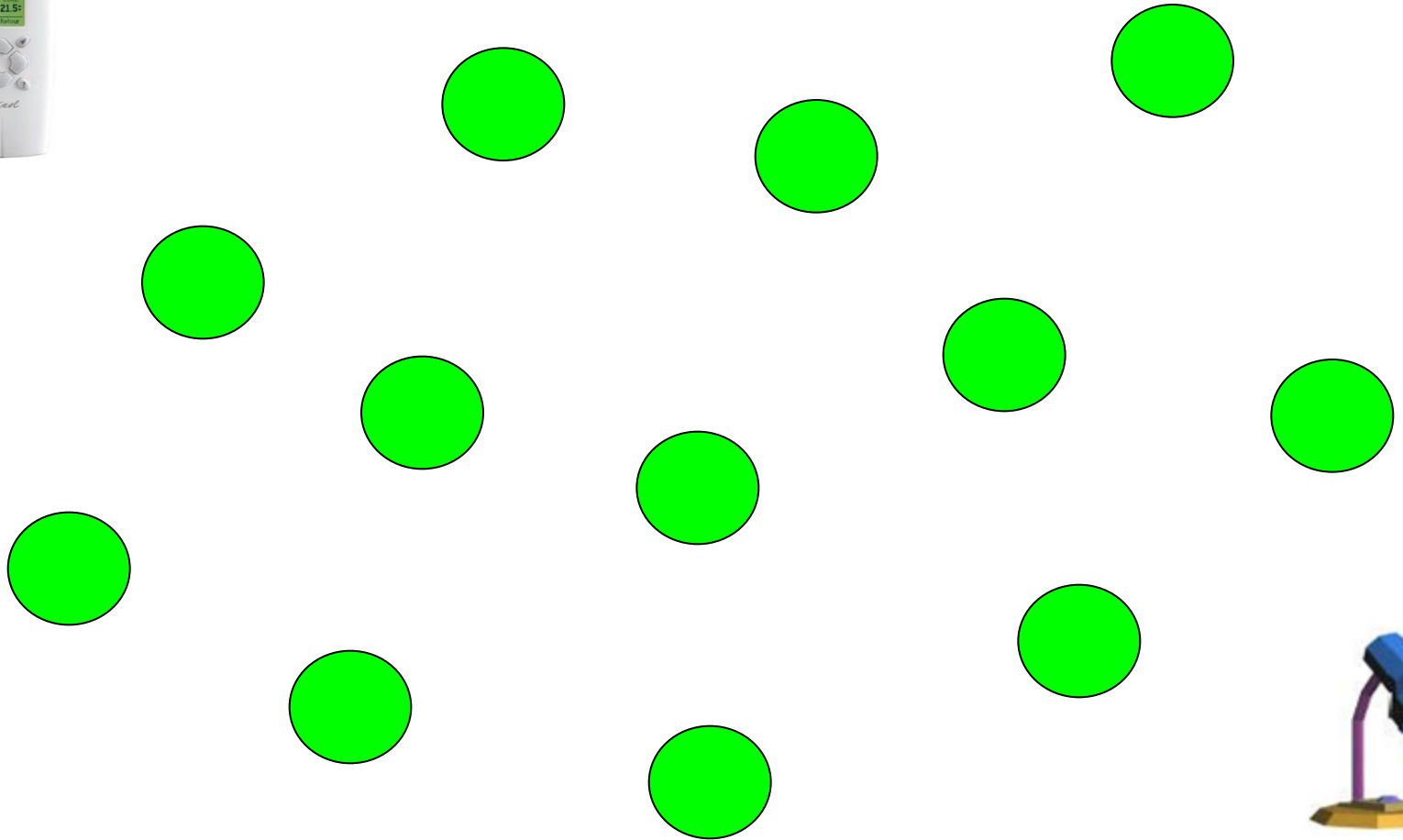


MESH Network

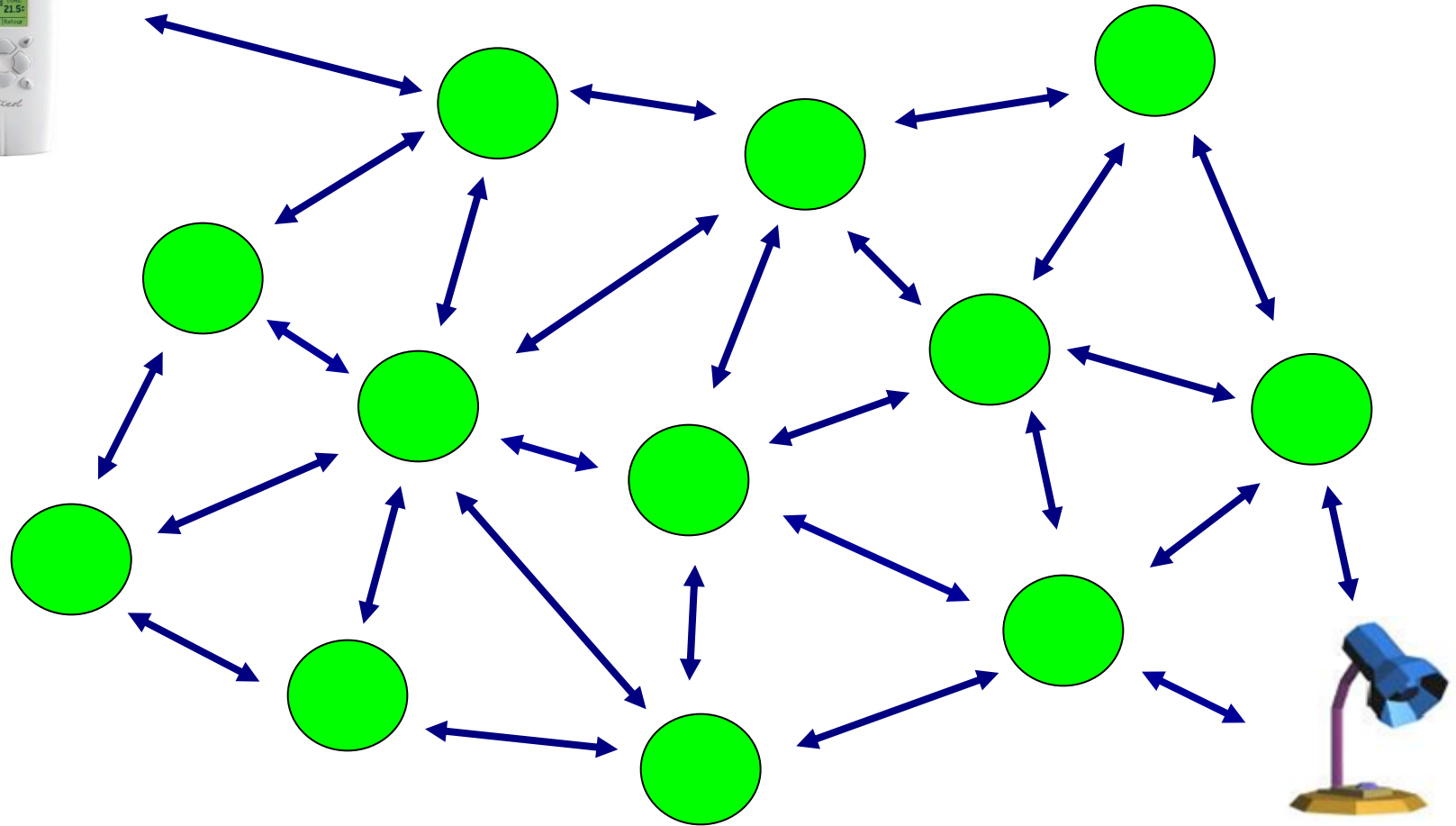
- **Routing Complexity**
- **Redundancy and reliability**
- **Extended Range**
- **NO Single Point of Failure**



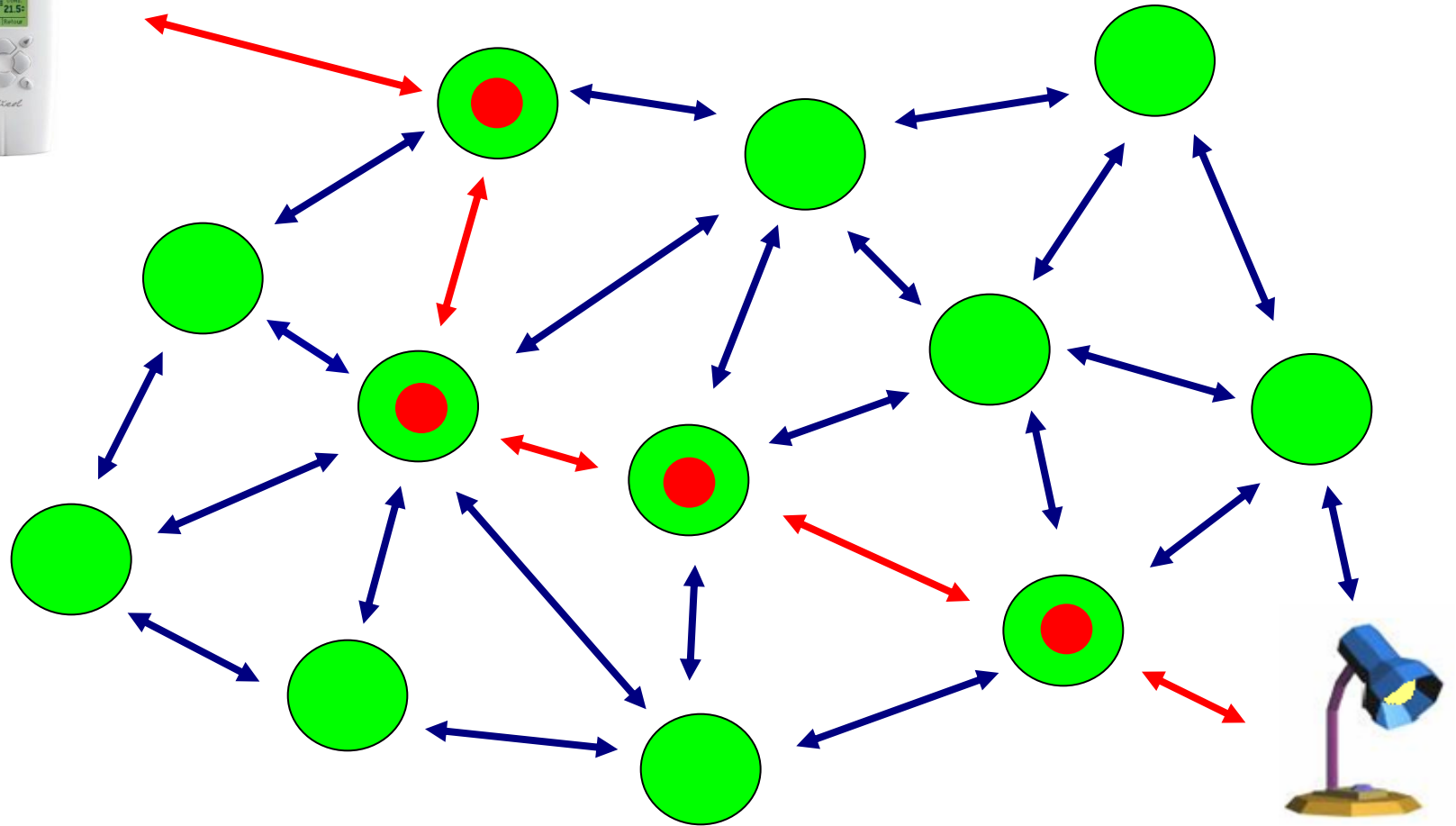
MESH Network



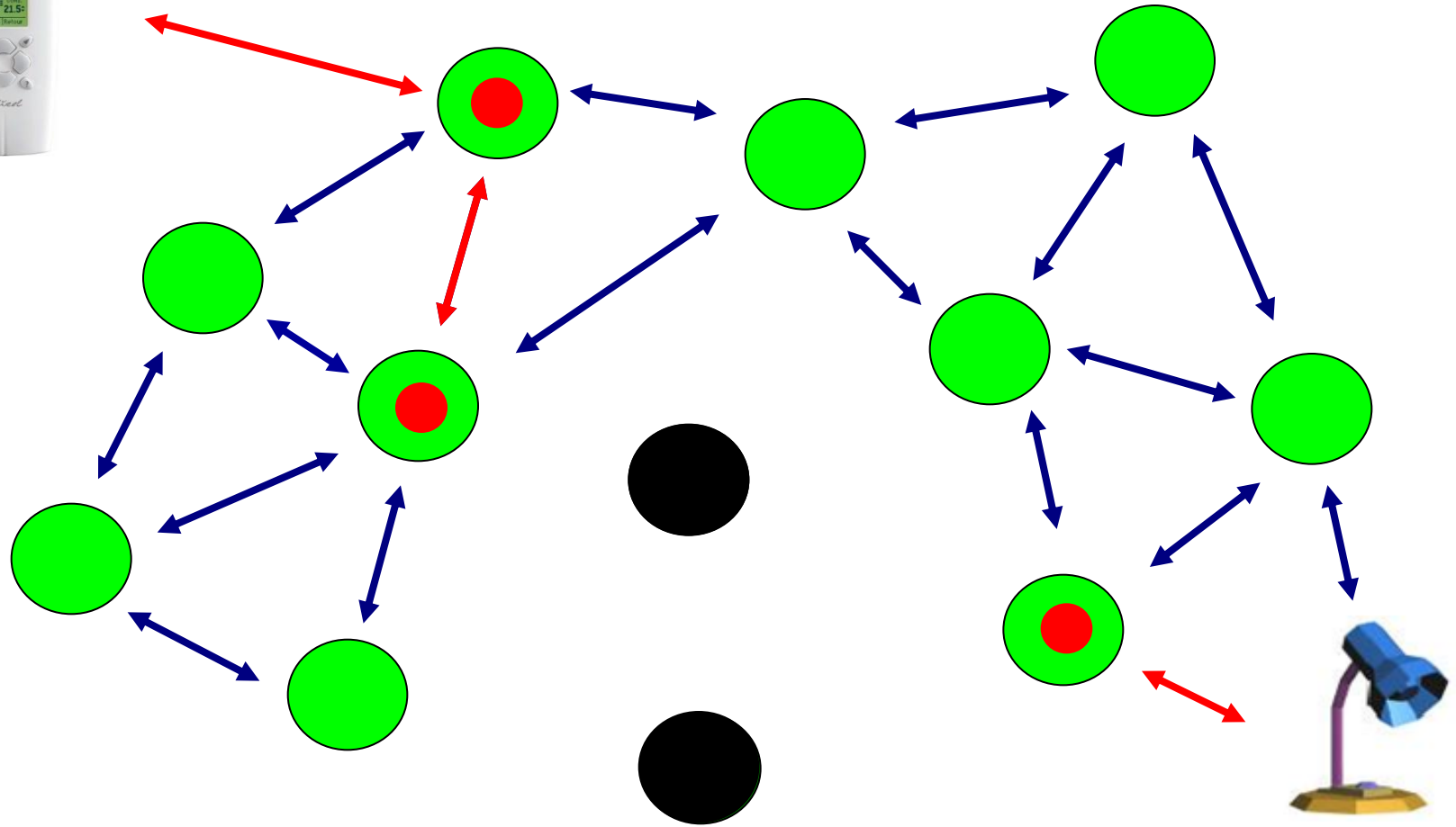
MESH Network



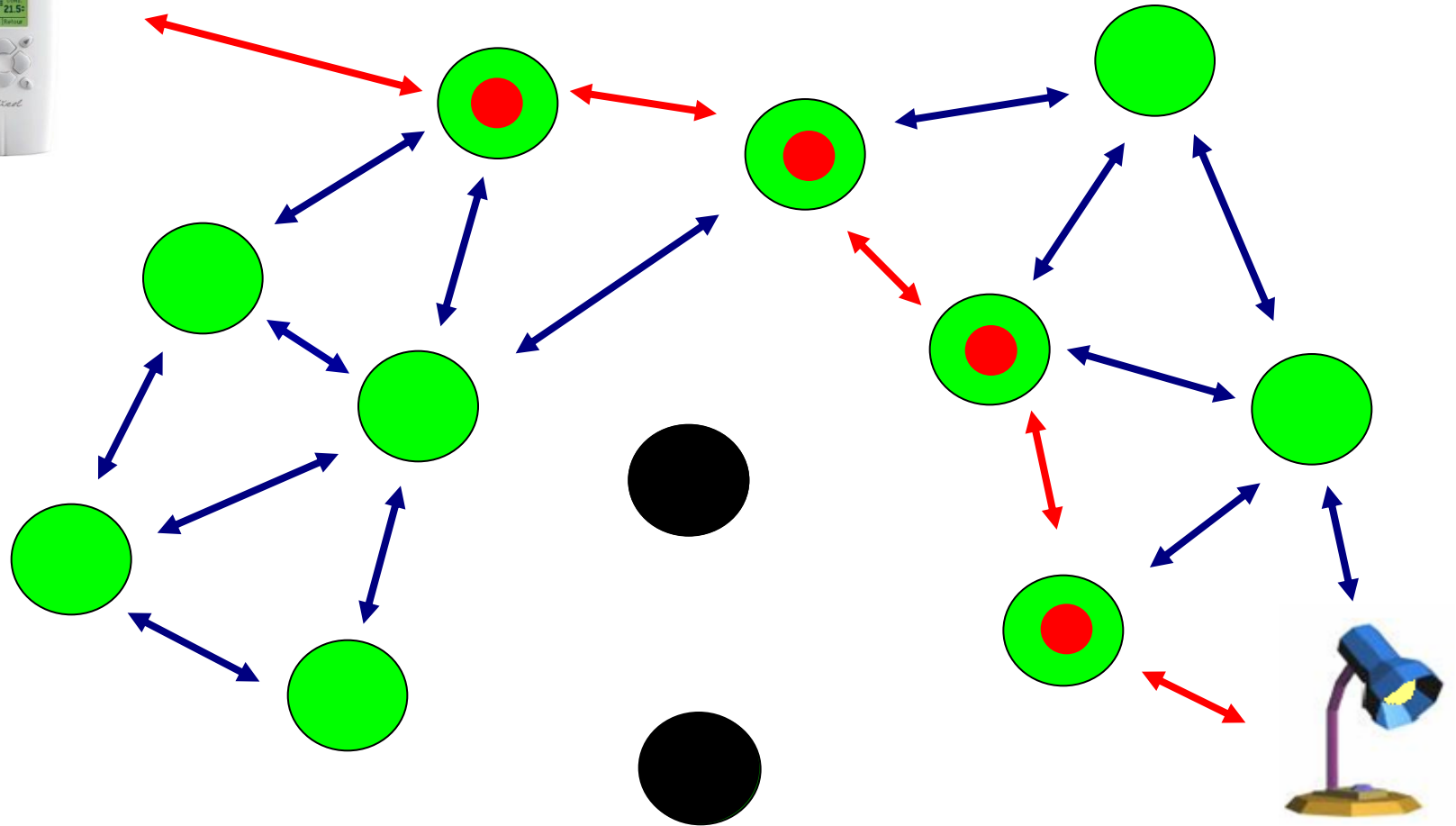
MESH Network



MESH Network



MESH Network



The Wireless World

Market Name	ZigBee™	GPRS/GSM	Wi-Fi™	Bluetooth™
Standard	802.15.4	1xRTT/CDMA	802.11b	802.15.1
Application Focus	Monitoring & Control	Wide Area Voice & Data	Web, Email, Video	Cable Replacement
System Resources	4KB - 32KB	16MB+	1MB+	250KB+
Battery Life (days)	100 - 1,000+	1-7	.5 - 5	1 - 7
Network Size	Unlimited (2 ⁶⁴)	1	32	7
Bandwidth (KB/s)	20 - 250	64 - 128+	11,000+	720
Transmission Range (meters)	1 - 100+	1,000+	1 - 100	1 - 10+
Success Metrics	Reliability, Power, Cost	Reach, Quality	Speed, Flexibility	Cost, Convenience

Design and production of **ZigBee devices** for wirelessly Monitoring, Metering, Controlling in order to Save Energy

Saving your Energy... wirelessly



Industrial Applications



Home Applications



Photovoltaic Products

1. **ZB-Connection**

Sensors and Actuators ZigBee Wireless Network for general purpose monitoring and controlling

2. **IntellyGreen**

ZigBee Wireless Systems for Energy Efficiency in building and house applications

3. **IntellyGreen-PV**

ZigBee Wireless Systems for PV systems monitoring

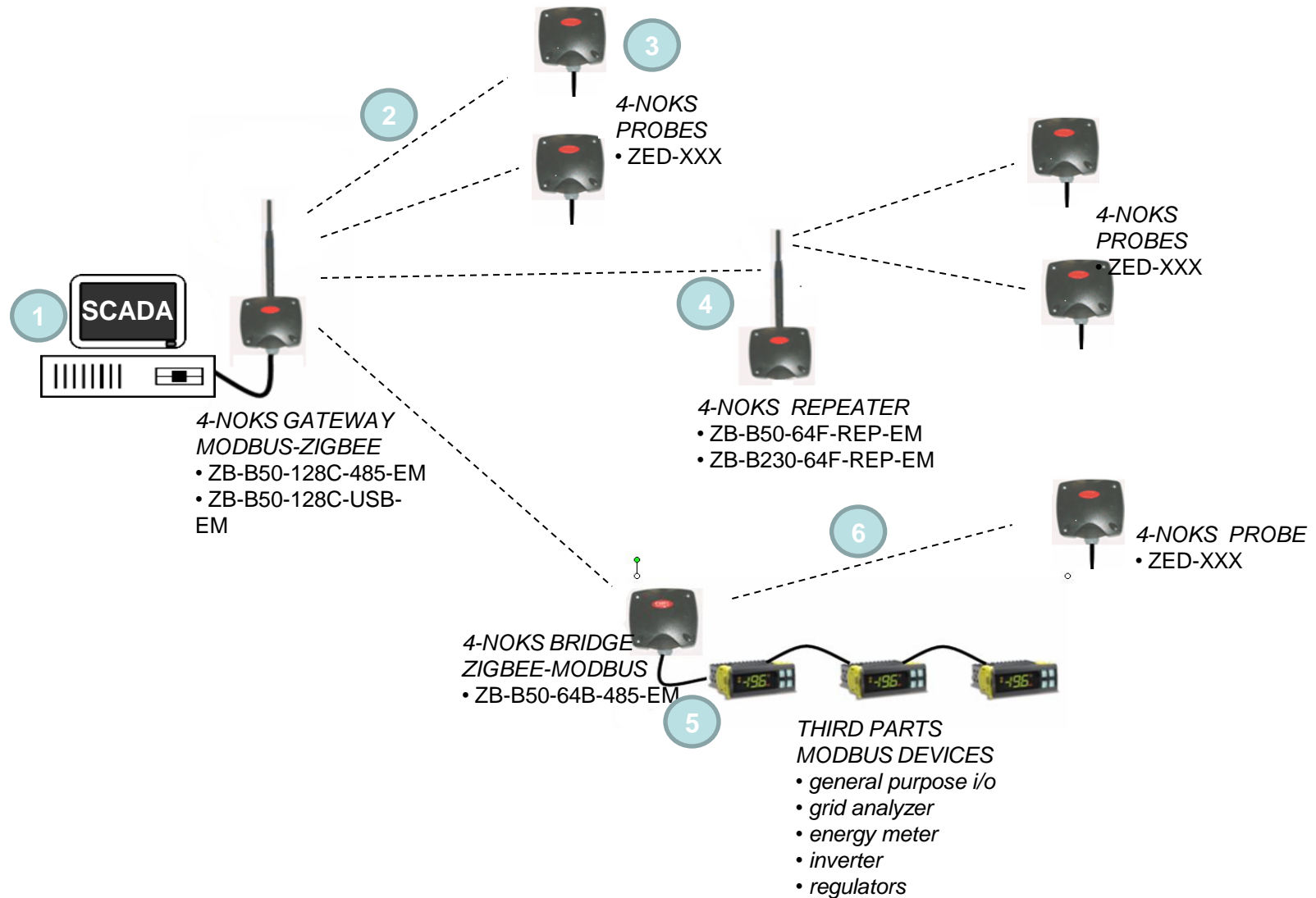
4. **ZigBee design and production for custom projects**

The logo features the letters 'ZB' in a bold, blue, sans-serif font. To the right of 'ZB' is a hyphen followed by the word 'Connection' in a lighter blue, sans-serif font. The 'ZB' is partially enclosed by three overlapping, concentric, blue, hand-drawn style circles that are tilted slightly counter-clockwise.

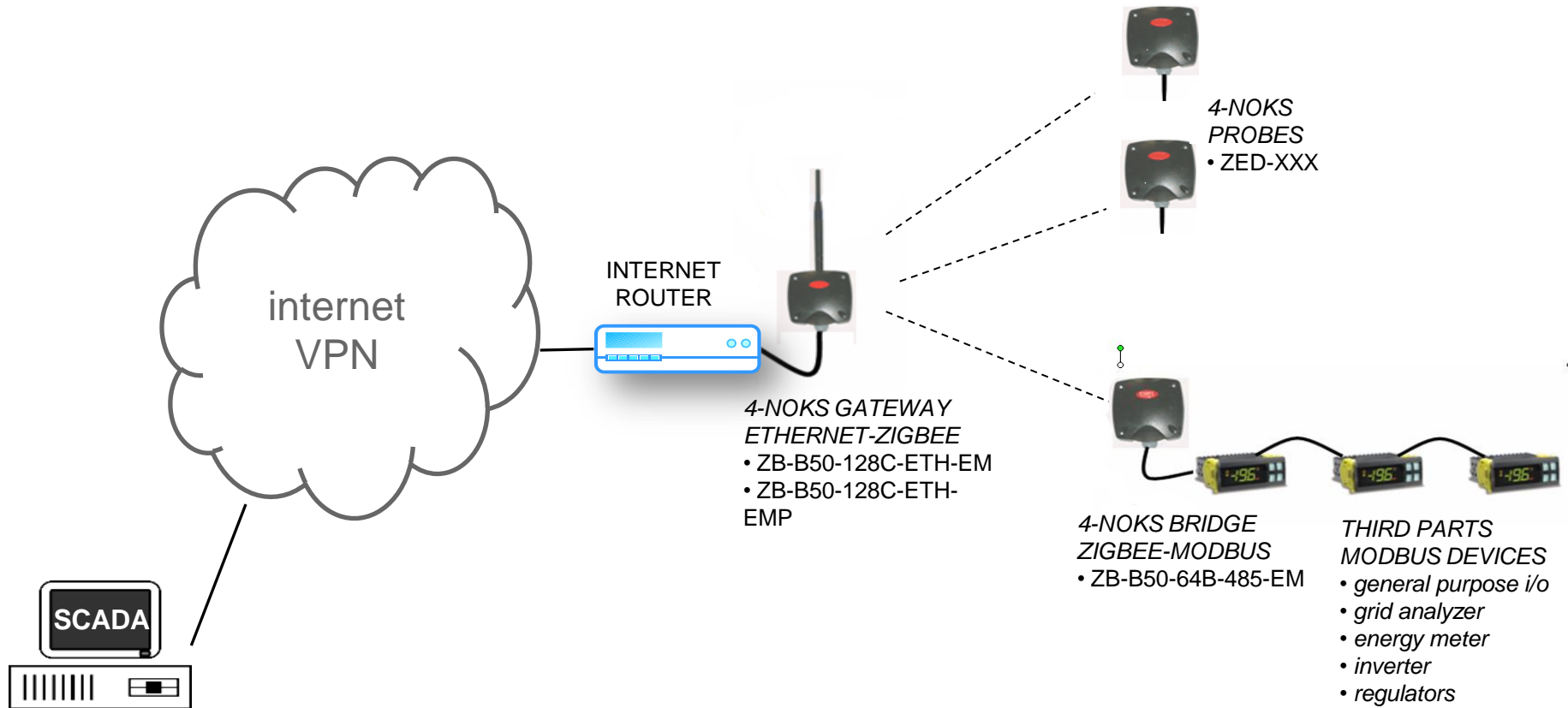
ZB-Connection

- In its short life 4-NOKS has developed a full family of ZigBee sensors and actuators for monitoring and controlling industrial applications in particular energy monitoring.
- With those devices we have done important projects as energy monitor system for the Telecom Italia fixed telephone switchboard plants and mini-BMS for American C-Stores.
- Those devices could be used by technicians without any skill in radiofrequency or in ZigBee platform. The communication protocol with the ZigBee network is ModBus i.e a very well known and easy-to-use communication protocol. 4-NOKS provides also a simple tool for the network configuration.

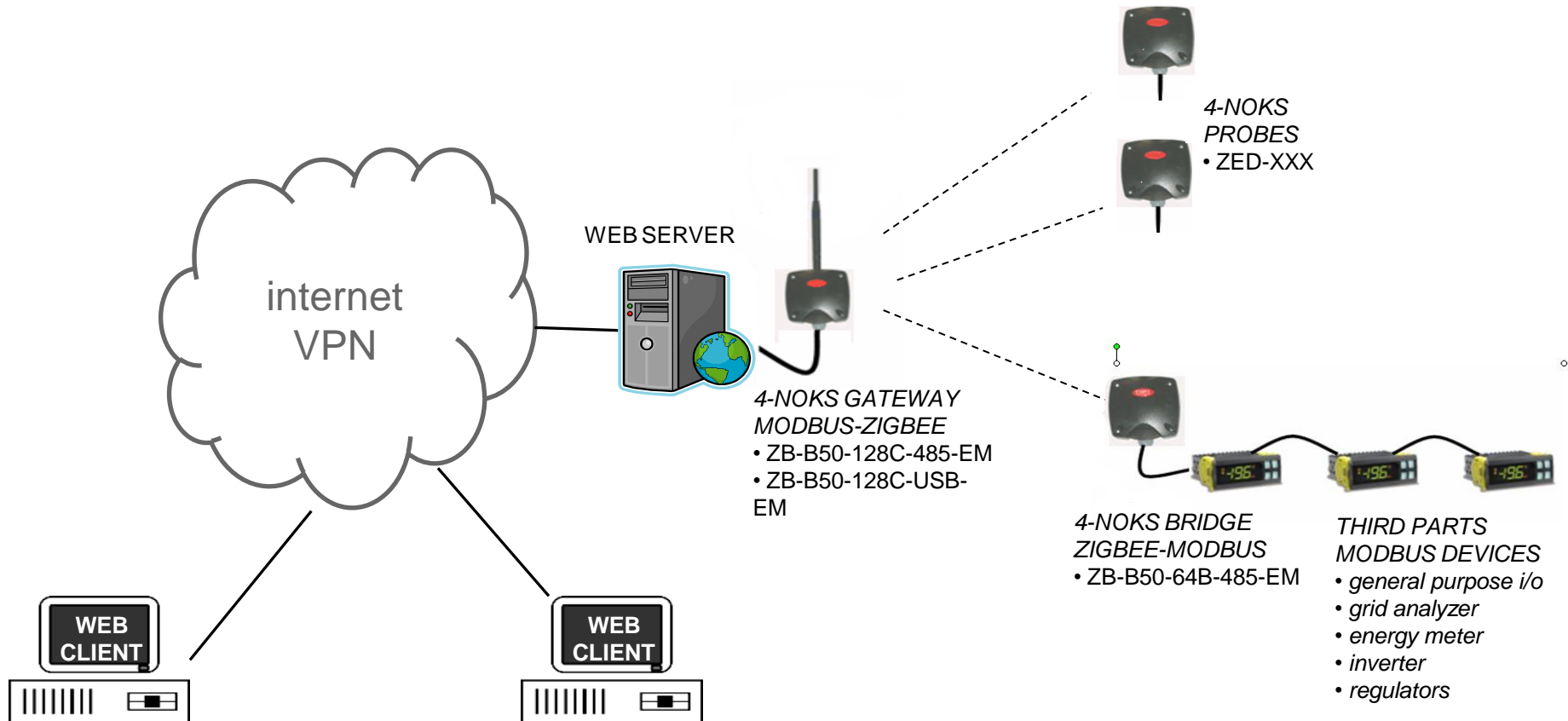
Monitoring



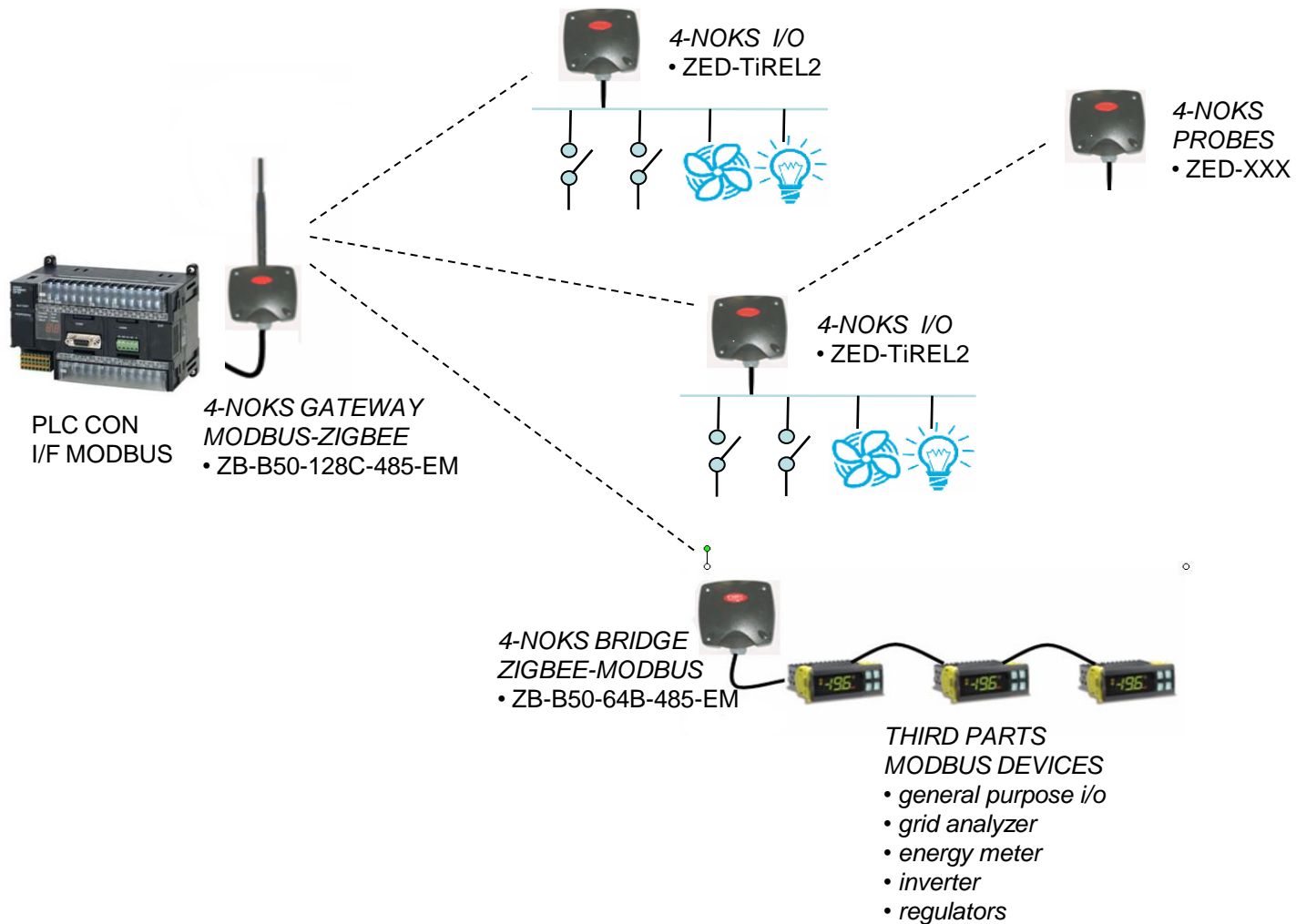
Remote Monitoring



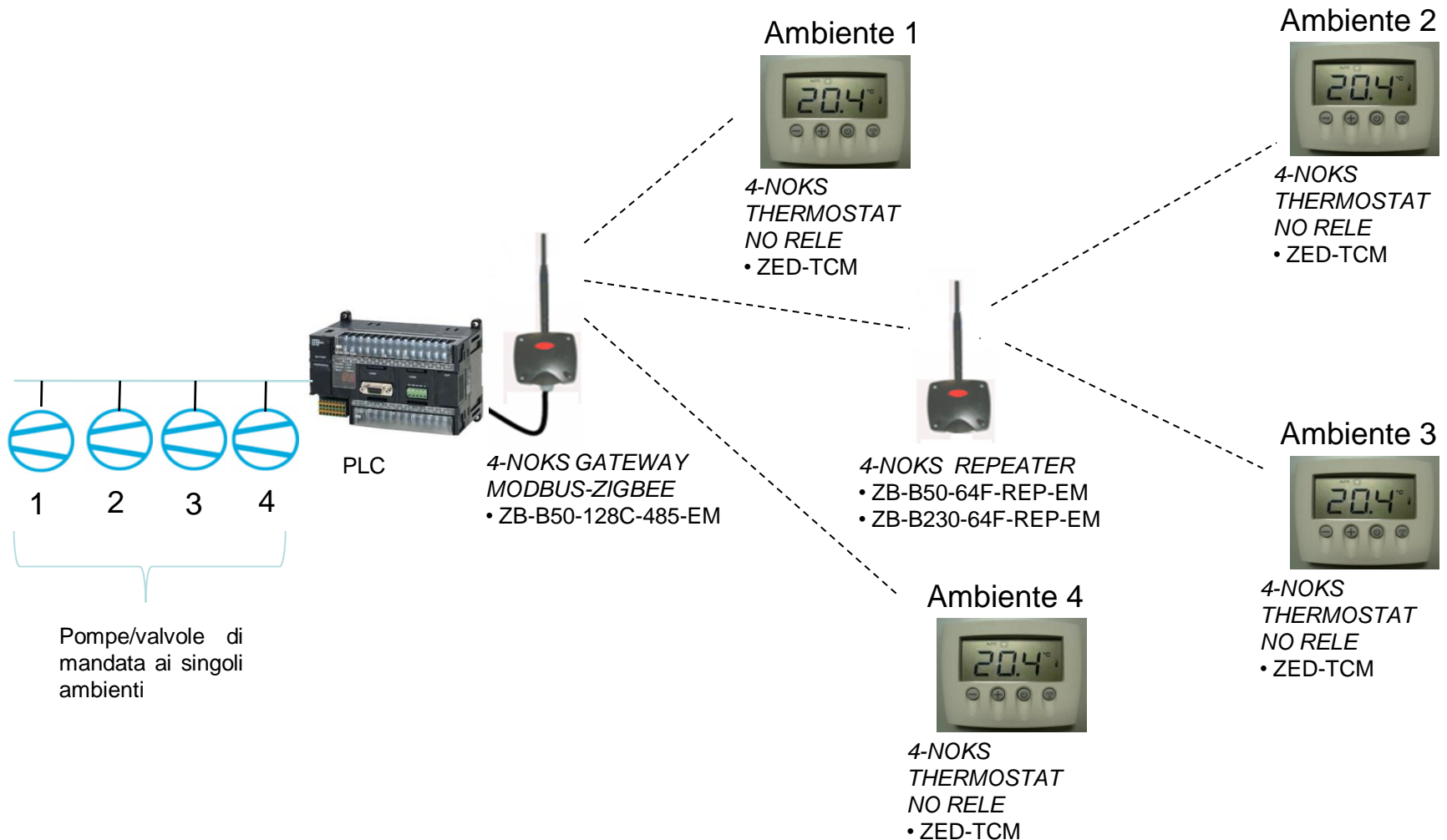
Remote Monitoring



General ModBus Application



Temperature Monitoring



Intelly  reen

- For buildings (offices, hotels...) and houses applications.
- 2 levels:
 - Basic: monitoring local and remote
 - Advanced: with appliances and electrical radiators control (IntellyGreen project)
- The IntellyGreen projects include the development of OEM thermostats for electrical radiators as well an interface for Fil Pilote third parties thermostats
- 5 patents pending

Basic monitoring

Radio ZigBee
Transmitter



Electricity Meter

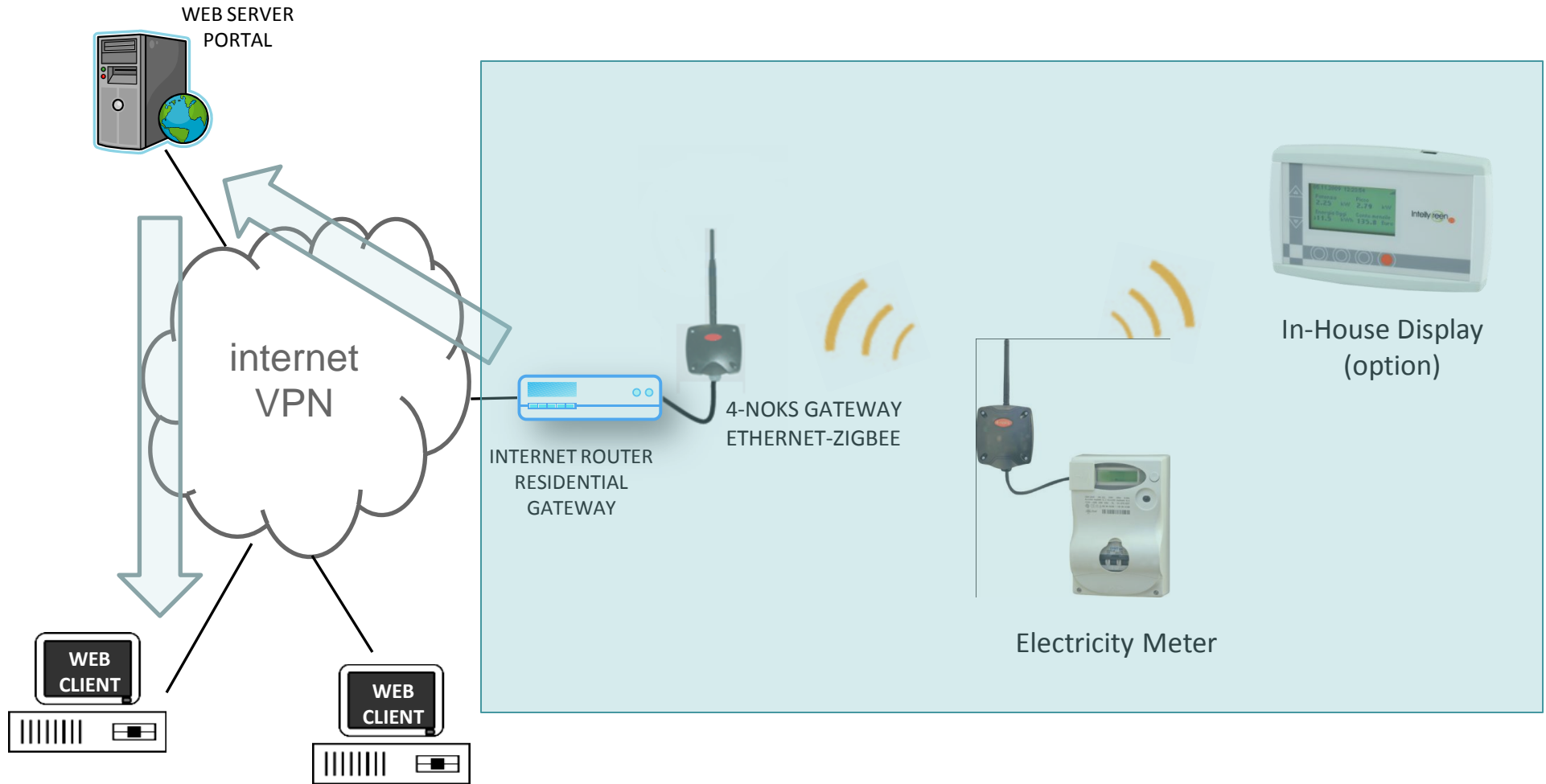


In-House Low-Cost Display

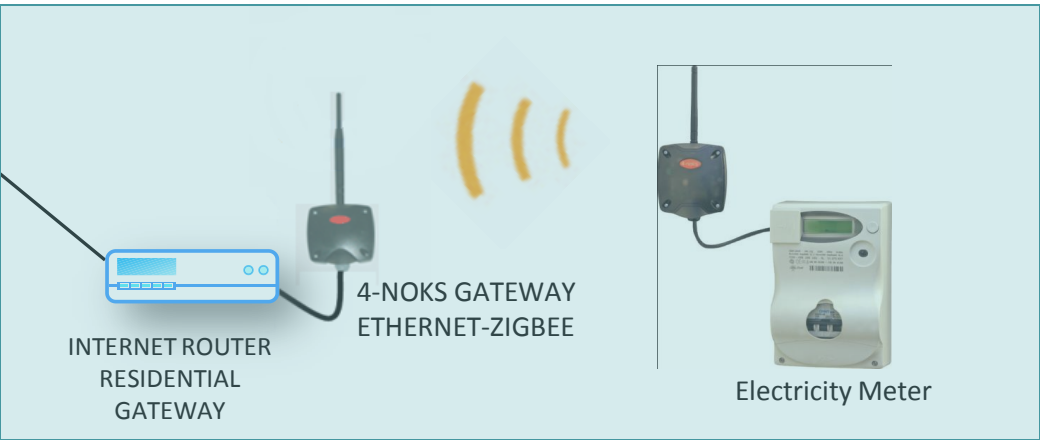
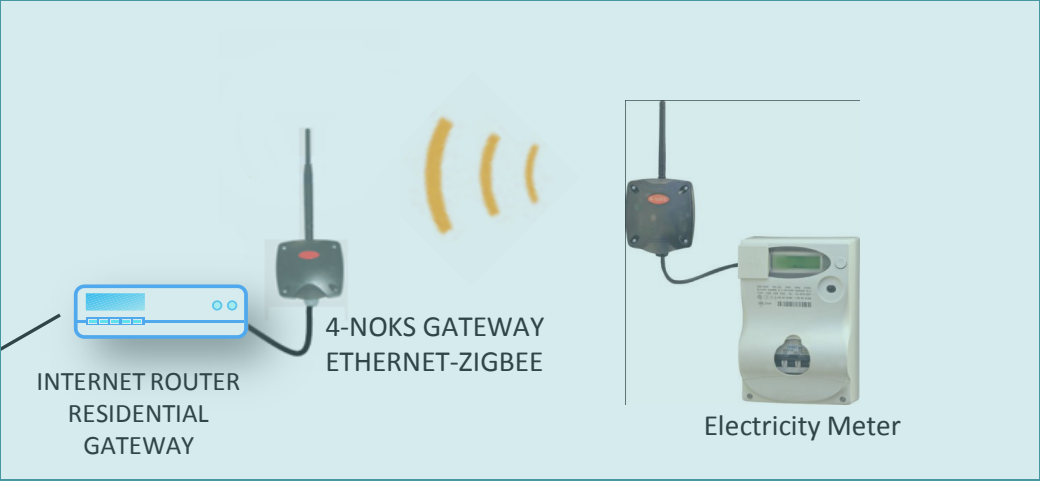
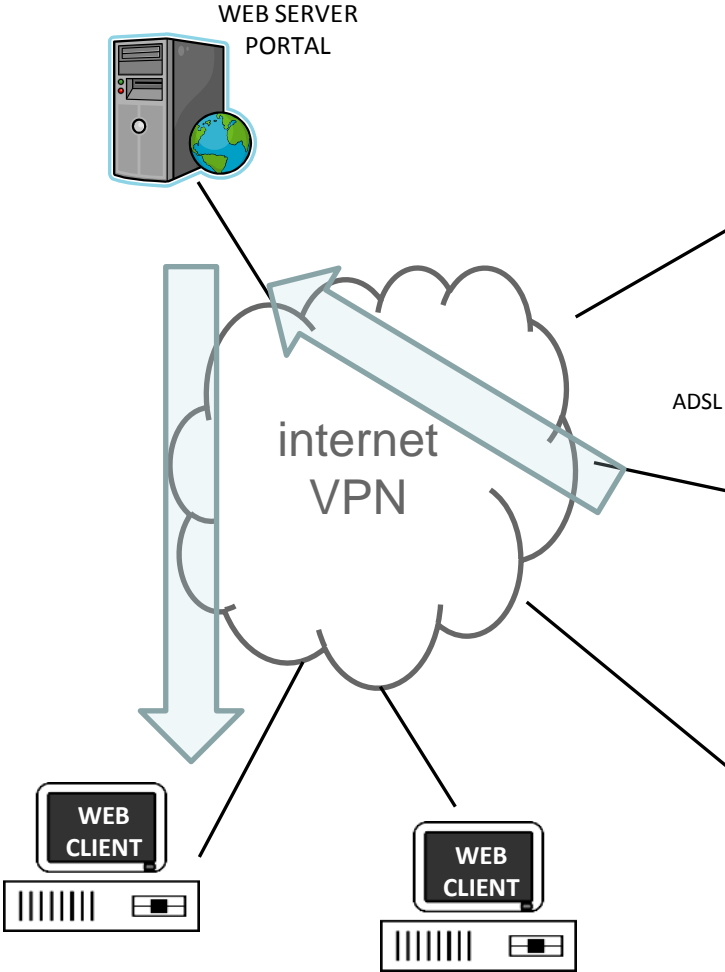
- Real-time power and cost
- Energy consumption and cost (in a day, a week, a month....)
- Current tariff
- Alarms

- Italy: Enel smart meter (patented)
- France: old and new EDF meter
- more to come: Spain (Endesa)....

Remote monitoring



Multi-sites monitoring

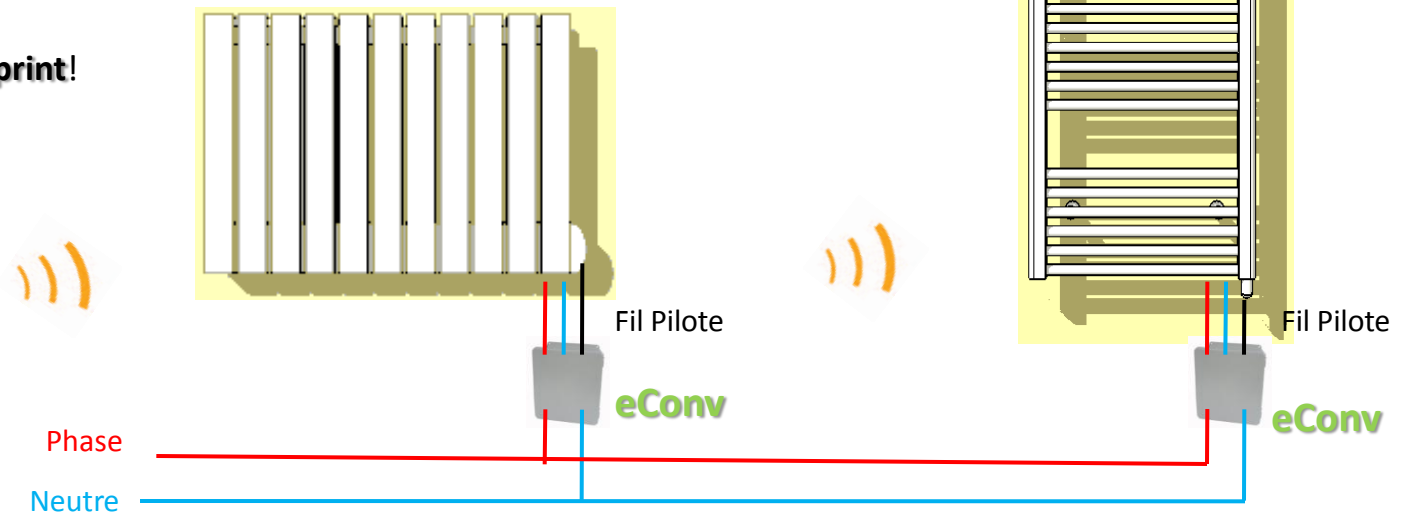


Intellyreen Wippy + eConv = Electricity Heating Management System

all electric RADIATORS on a Wippy !!!

Bind wirelessly the **Wippy** with ANY standard Pilote Wire Radiators through the **eConv** and :

- you remotely control all your radiators PILOTE WIRE **without installing any new wire!**
- you have the second information on exactly **how much electricity** your whole house is using, radiator by radiator
- you can measure your **CO2 footprint!**



Intellyreen Wippy + eConv + eSwitch + ePlug = Electricity Management Control System

all electric APPLIANCES on a Wippy !!!

Bind wirelessly the **Wippy** with ANY Appliances through **eSwitch** or **ePlug** and :

- you remotely control all your appliances **without installing any new wire**
- you have the second information on exactly **how much electricity** your whole house is using, appliances by appliances
- you **save cost** with the on/off programming and the stand-by killer function
- you can measure **your CO2 footprint!**



Washer



ePlug



Refrigerator



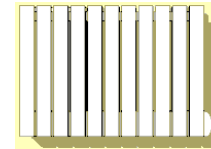
ePlug



Electrical Oven



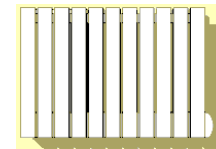
eSwitch



Radiator Fil
Pilote



eConv



Radiator Fil
Pilote



eConv

Intellyreen Wireless Programmer and Remote Controller Wippy

1 User friendly

Designed as a mobile phone, easy to programme, control & pilot.

2 Secured transmission and feedback

Thanks to the ZigBee communication protocol.

3 Power Optimazer

You can optimize and your heating power (Kw) supply and save money from your electricity Bills.

4 Energy Monitoring

You can easily check your electricity consumption (Kw/h and €) in each room!

5 CO2 Footprint

You can measure your CO2 Footprint

15 radiators or appliances

can be piloted individually within 4 different zones with one Wippy - Wireless Programmer and Remote Controller



Wippy Screens

Room/Name

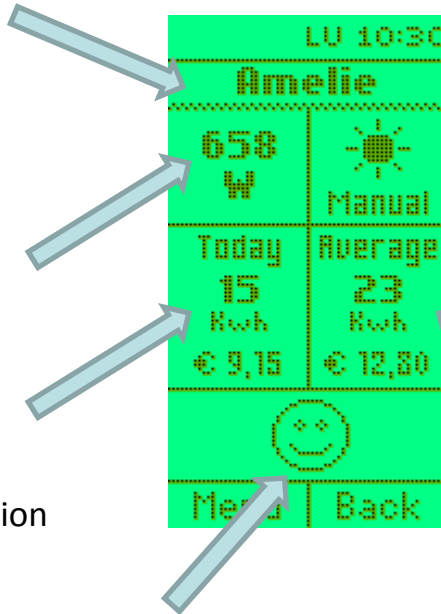
RealTime Power

Estimated Energy Consumption Today

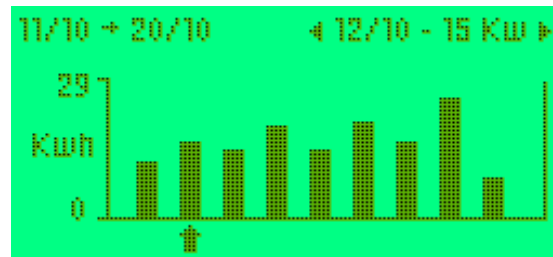
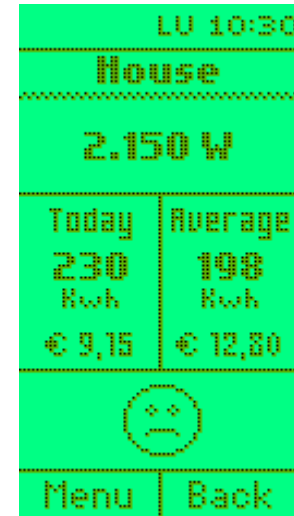
Wire Pilot/ Fil Pilote Status

Mode

Last Week Daily Average Energy Consumption

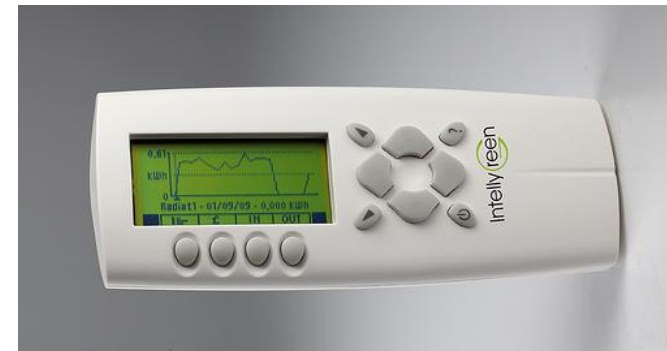
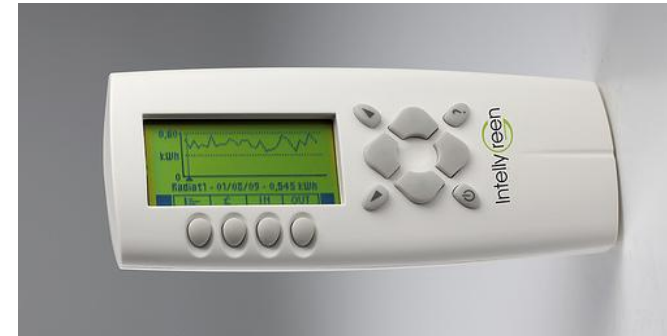


Smile if Estimated < Daily Average



Daily Energy Consumption Graphic in KWh from 11/October to 20/October

Intellyreen Wippy





Intellygreen at HOME

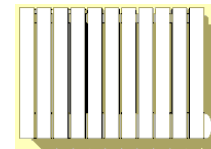


Intelly reen in OFFICE

Intellyreen Wippy + meter interface = Advanced Electricity Management Control System

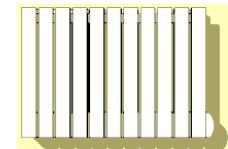
Key features:

- Interfacing the home Electricity Meter (France, Italy, UK, Spain)
- **Real-time power limit**
- **Dynamic tariff manager**

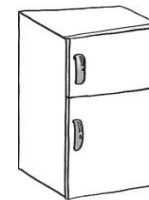


Washer

ePlug



eConv



Refrigerator

ePlug



Electrical Oven

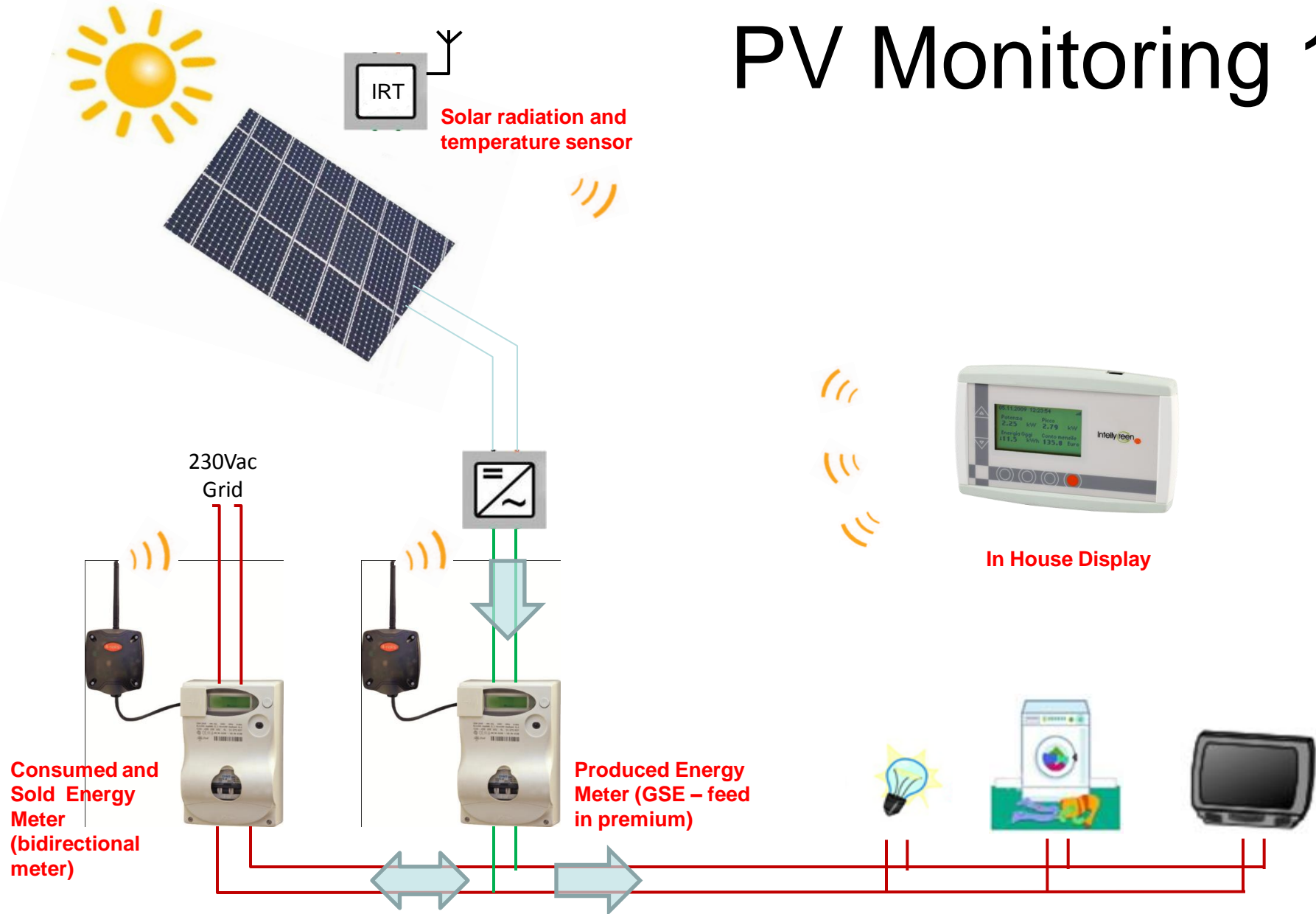
eSwitch

Intelly  reen **PV**

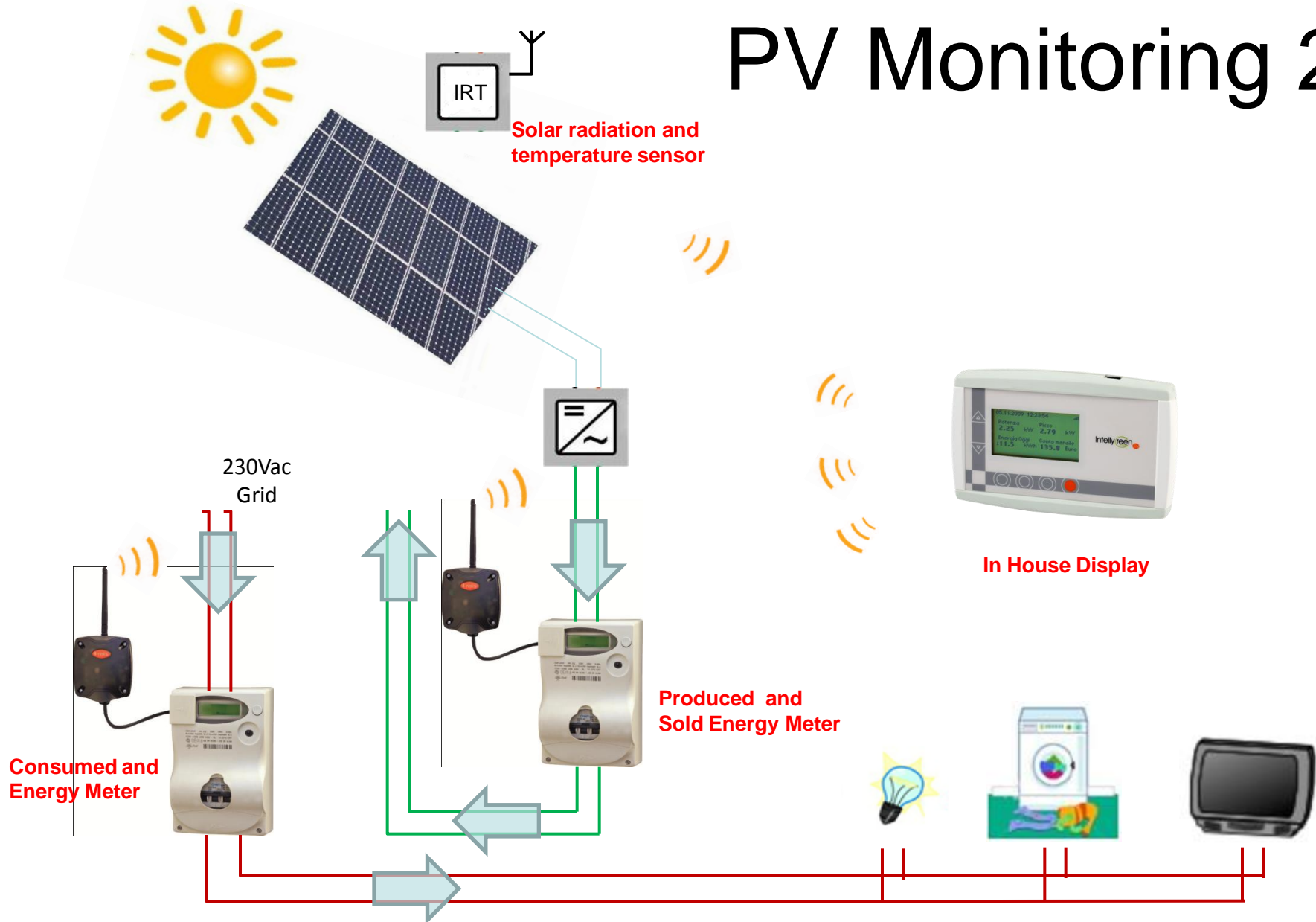
Wireless system in order to monitor the PV systems efficiency from only one and comfortable point: in particular:

- Real-time monitoring of solar panels efficiency
- Real-time monitoring of inverter efficiency
- Real-time metering of produced energy and gained money
- Real-time monitoring of consumed energy
- It's possible to optimize the use of the produced energy using our devices for the EE.

PV Monitoring 1



PV Monitoring 2



- 4-noks is available to use its ZigBee skill and know-how to develop custom projects.
- Many devices are already developed for customers and current in production.
- Those devices are not included in the above products lines

4-noks

Partners



SIEMENS

France



W.A.Y.
Where Are You?



4-noks partnership for:


- wireless efficiency energy systems
- wireless PV monitoring

Schneider Electric France and 4-noks have signed a LOI in order to make SFE the exclusive distributors in France of 4-noks products

Revenue expected in 2011: 2M€



Schneider
Electric



You can achieve a **30%** savings
in energy with today's technologies

4-noks partnership for:

- energy monitoring systems for fixed telephone switchboard plants (10.000 in Italy – 1.000 to be monitored)
- energy monitoring systems for mobile telephone switchboard plants (20.000 in Italy – 500 to be monitored)

- 3 energy monitoring systems 1 year running
- 90 energy monitoring systems delivering in September

4-noks has been validated as T.I. official supplier



The First Italian
fixed and mobile
telephone provider

4-noks partnership for:

- wireless HVAC systems
- wireless monitor systems for supermarkets



CAREL
offers innovative
humidification and control systems
in the HVAC/R market
continually striving to anticipate
the needs of customers
allowing them to achieve superior results
through tailor made solutions

this means
improving our expertise in applications
being technologically advanced
acting with a global mindset
in order to be the recognized leader.

CAREL wants to have a quality approach at every level:
relationships, job commitments, product results...

C
customer first
care of the needs
understanding of the wishes
guaranteed quality

A
achievement
of personal commitment
of results
of targets

R
respect
of people and each other
as trust in relationship with partners
of the environment

E
evolution
as innovation
as technology
as ergonomics

L
learning
as personal growth
as professional improvement
as company enhancement

4-noks partnership for:

- design and production ZigBee Energy Monitoring Systems for U.S. C-Stores (> 100.000)

SOURCE request to sell on an exclusive basis in the US Market (estimated market 2G€/year)



*Source Refrigeration & HVAC, Inc
Specializing in Commercial Refrigeration
Service and Construction, HVAC Service and Construction and EMS Controls*

Source Refrigeration & HVAC is a company built around the strengths of its employees and customers. In any corporate environment people and values make the difference and at Source Refrigeration & HVAC we are proud of our history, our associates and our core principles. Our organization's goal is to provide "Quality, Integrity, and Honesty to our new and existing customers as well as an Enjoyable Work Environment" for the over 600 dedicated employees of our company. When it comes to our customers, we aspire to deliver a diversified range of products and services custom tailored to meet their ever-changing requirements. Represented on this website you will find a cross section of the people and the services offered by our company. We would like the opportunity to show you first hand why Source Refrigeration & HVAC should be your preferred choice.