

Building Automation for Energy Efficiency

TELEFONICA SPAIN

Large Companies and Public Administration

London, June 2008



Telefonica





**Energy
Consumption**

**Comfort and
Commercial needs**

**Respect for the
Environment**



Occupancy



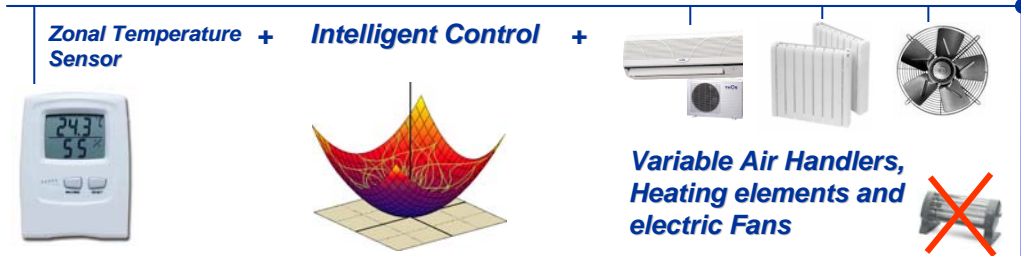
Room occupancy: Unoccupied, Morning Warmup, Occupied, Night-time Setback, etc.
Management based on separate areas of control

Lighting



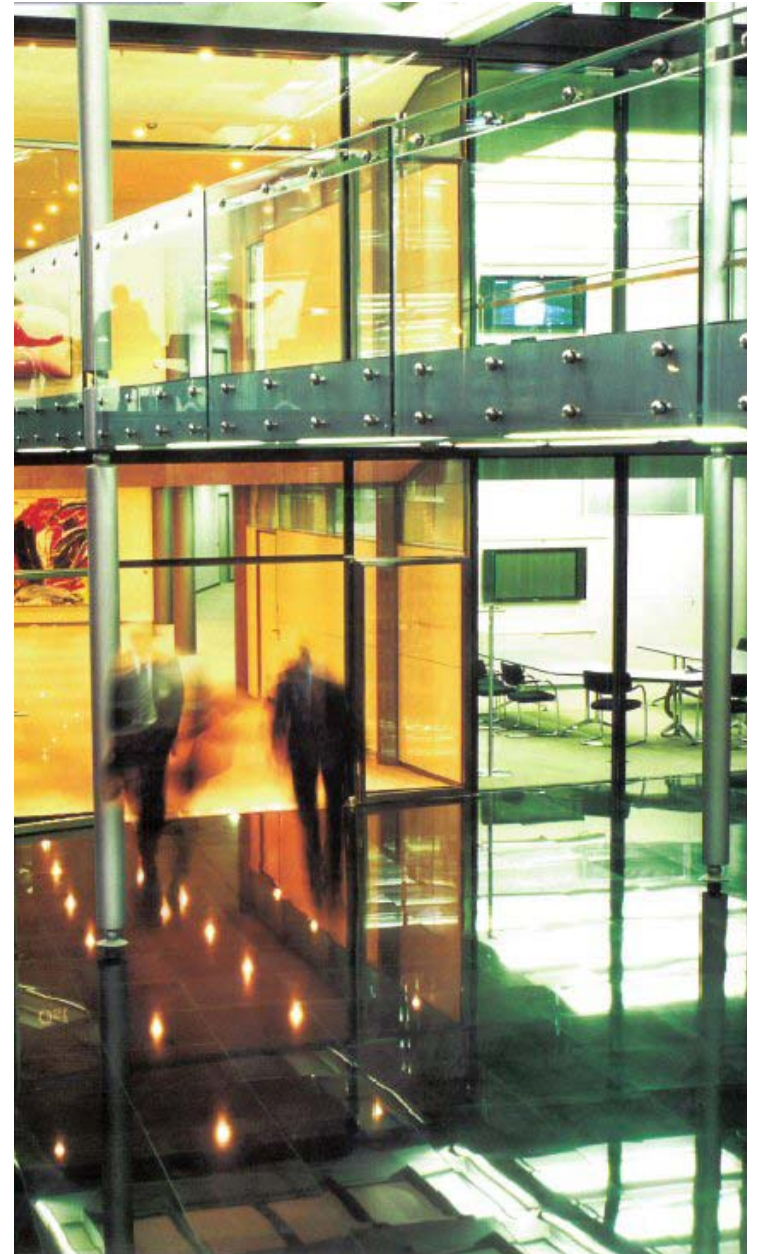
Illumination Thresholds(*): > 450 lx in office > 300 lx in corridors and halls
 > 10 lx for emergency lights (lx: lux = lumen/ m²)

Air Handlers

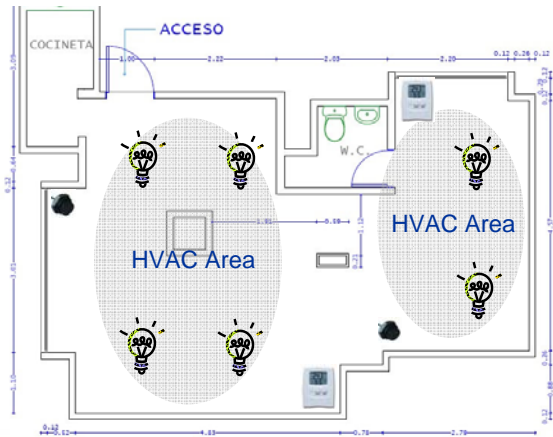



Temperature Thresholds(*): < 24C/75F in summer > 21C/70F in winter

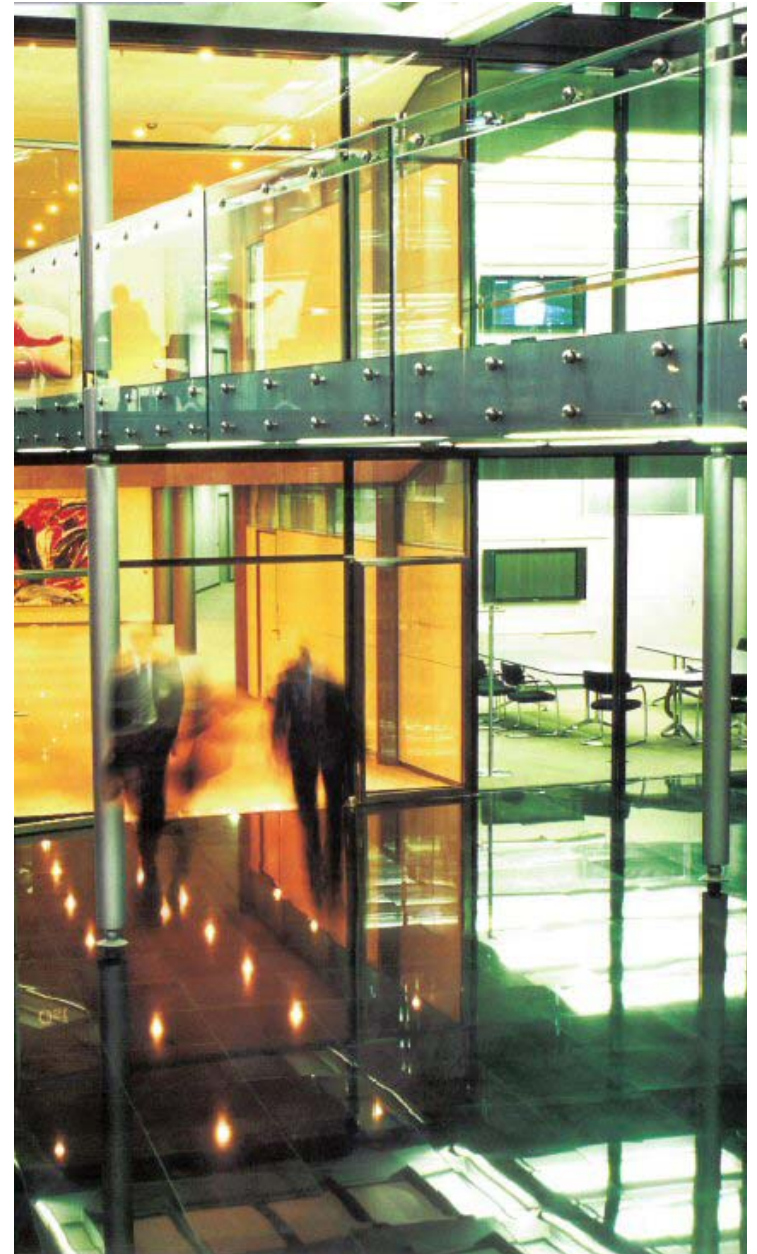
(*) The shown thresholds are defined according to the Spanish official regulation



Standard Branch Office



- 1 Neon Sign
- 6 Separate Illumination areas
- 1 HVAC area (Heating, Ventilating and Air Conditioning)
- 6 Workplaces (PC & Monitor)
- 1 ATM (Automatic Transfer Machine)
- 2 Money Meter
- 2 Printer & Scanner
-  In/out Photocell sensor
-  Temperature sensor

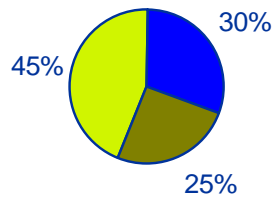


Figures and statistics

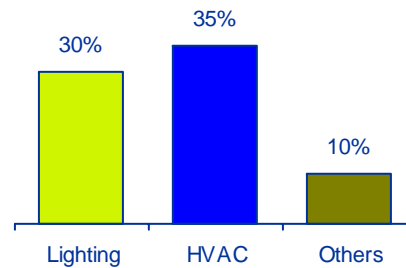
Annual Energy consumption (before): 31.740 KWh

Total Annual Savings (after): 27%

Distribution of Energy Consumption (*)

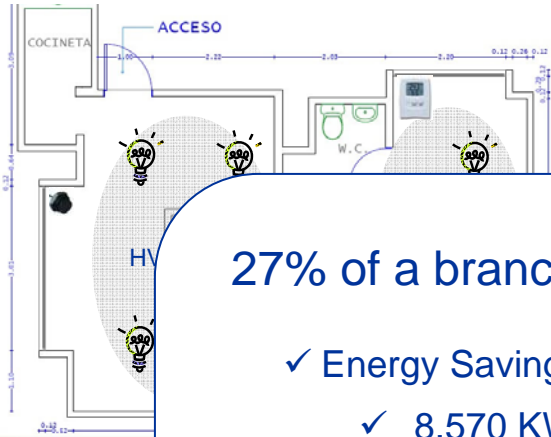


Savings per Nature



(*) Statistics taken in a standard branch office in the south of Spain in a warm winter in 2007

Standard Branch Office



- 1 Neon Sign
- 6 Separate Illumination areas
- 1 HVAC area (Heating, Ventilating and Air Conditioning)
- 6 Workplaces (PC & Monitor)



27% of a branch office energy consumption means...

- ✓ Energy Savings^(*):
 - ✓ 8.570 KWh not consumed
 - ✓ 3,3 Tons of CO₂ not emitted
 - ✓ The Carbon regeneration of three trees a year
- ✓ Longer lifetime of the equipment due to rational use

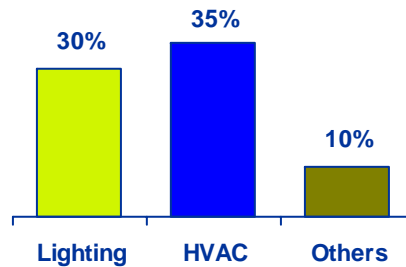
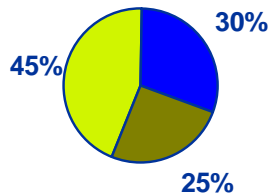


^(*) 1 KWh = 389 gr. of CO₂ (Greenhouse Gas Protocol initiative, 2007)
 1 Ton of CO₂ = 1 tree carbon regeneration per year (Dell, 2007)

Figures

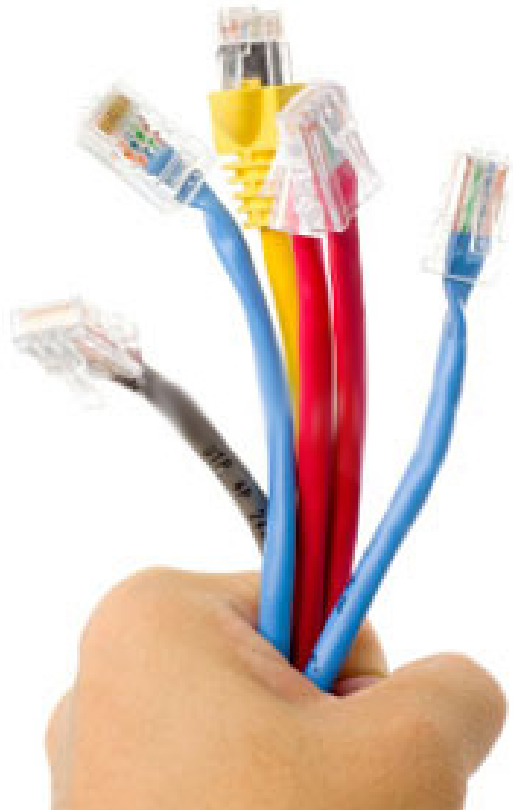
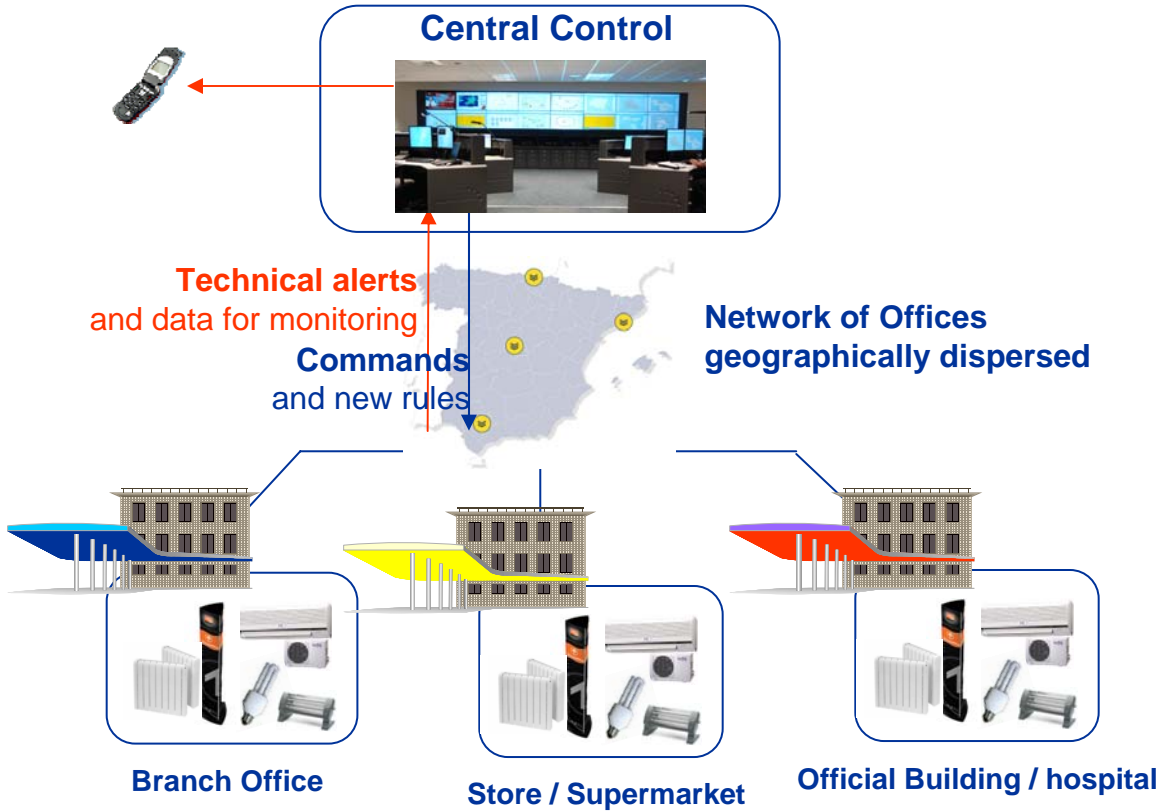
Annual
Total A

Distribution of Consumption



^(*) Statistics taken in a standard branch office in the south of Spain in a warm winter in 2007

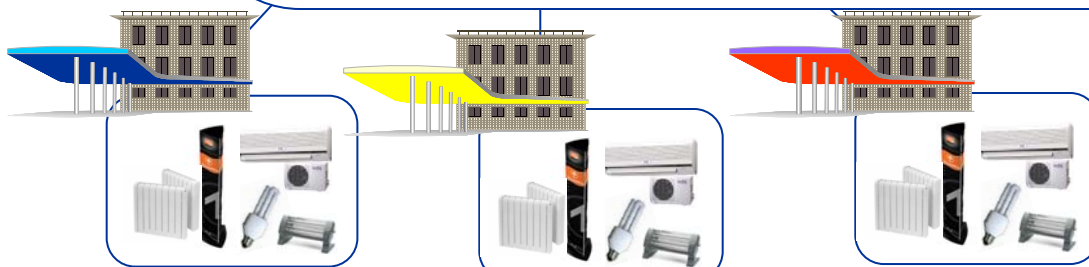




A Centralized Control of a geographically disperse network of buildings means...

- ✓ The possibility of implementing building automation in the network. In our case of study (500 offices) means:
 - 4,285,000 KWh not consumed
 - 1,600 Tons of CO₂ not emitted
 - The carbon regeneration of a little forest with more than 1,600 trees
- ✓ Quick detection of failures, better planning and maintenance savings (evaluation, trips, etc.)

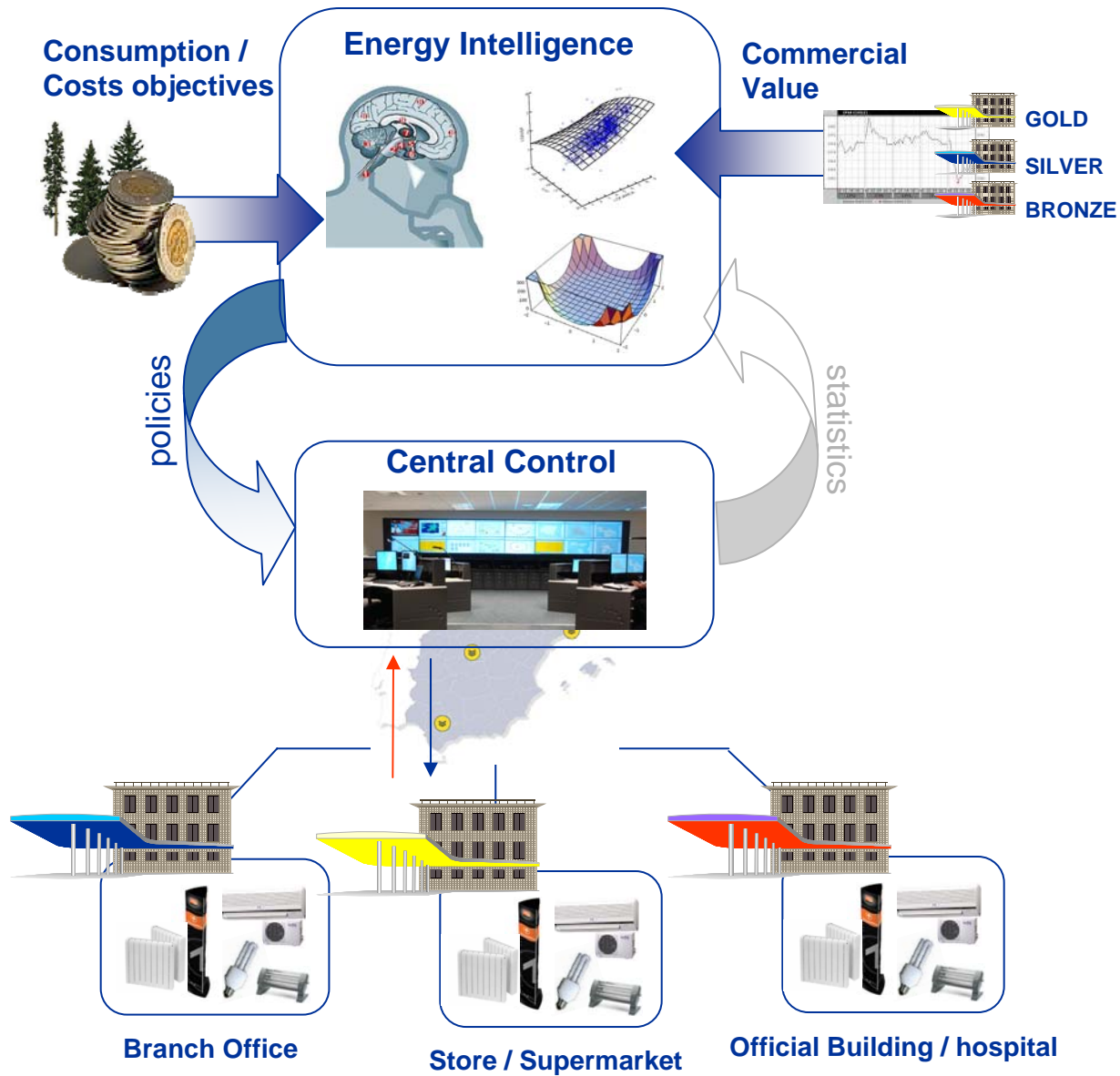
T
and data



Branch Office

Store / Supermarket

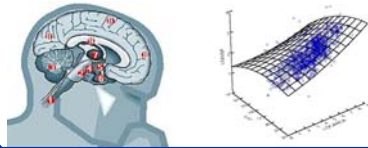
Official Building / Hospital



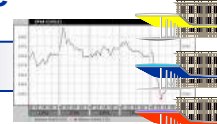
Consumption /
Costs objectives



Energy Intelligence



Commercial
Value

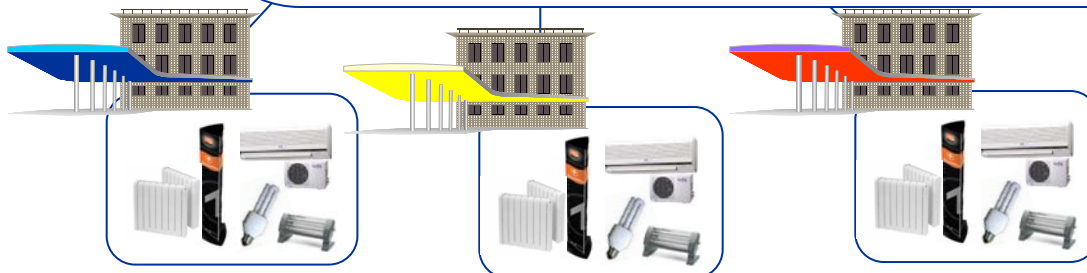


GOLD
SILVER
BRONZE

policies

The Energy Intelligence model enables the commercial manager to...

- ✓ Reach an understanding between costs, comfort and commercial value
- ✓ Transform it in rational, green and economic policies
- ✓ Simulate, monitor and optimize consumption evolution
- ✓ Implement predictive maintenance tasks instead of reactive or preventive ones with more savings



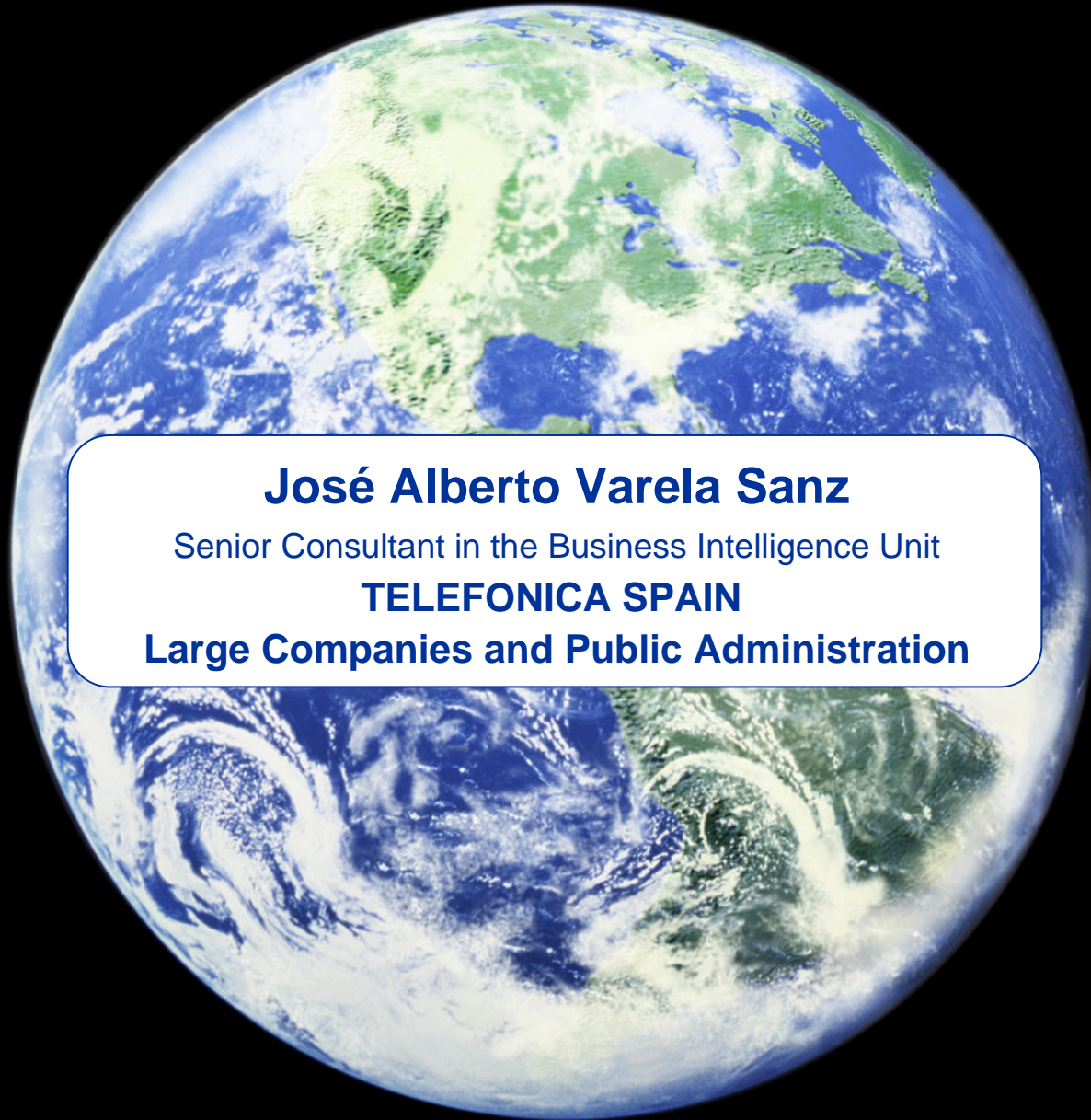
Branch Office

Store / Supermarket

Official Building / hospital



Some first Steps against Climate Change



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