Smart DC Energy in the Home

Simon Daniel, CEO

Heat & Shift 2010 - http://bit.ly/heat10

Who are we

A New Green Deal

Save up to a 1/3rd off home energy bills

Renewables into 1/3rd of UK homes by 2020

Reduce peak load

Plug & Play Renewables

Low cost - not £10k PV

Anywhere - e.g. flats

Anytime – add storage

Easy & Effective

Home Working

UK - 700k work at home

C02 – extra 0.5+ tonne

Electronics & lighting

ICT/gadgets increasing

Enable LED/CFL use

Base load 24 x 7

Smart control that works

Persistent

Intelligent

Peak balance

Revenue creating

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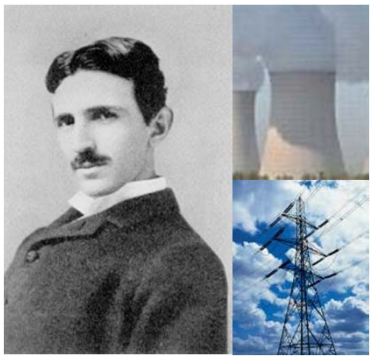
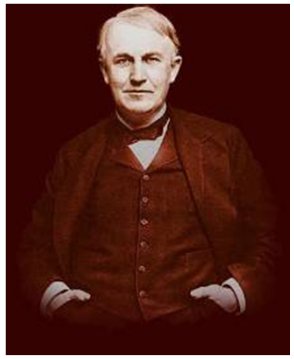
Common theme – DC shift

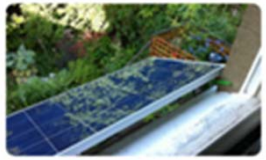


Increasing Shift to Direct Current (DC) devices in homes



Renewables

Local (roof/wall)



PV / Fuel cells - DC

Batteries / EV Cars

Inverter losses / cost

ICT, Electronics & lighting

Often low power DC

AC / DC losses, waste

LED embedded cost

Exponential increase

Good fit to renewables

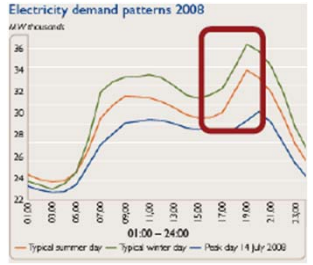
Smart control

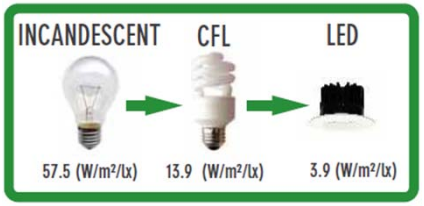
Electronic & comms

30% of peak DC related

Storage

Smart Meters





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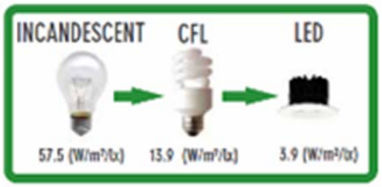
Our Approach

Help homes manage and reduce energy use
Shift DC electronics and lighting offgrid or offpeak

1. Monitor and control high loads

2. Power DC loads smartly

No AC/DC adaptors



Longtail of energy consumption

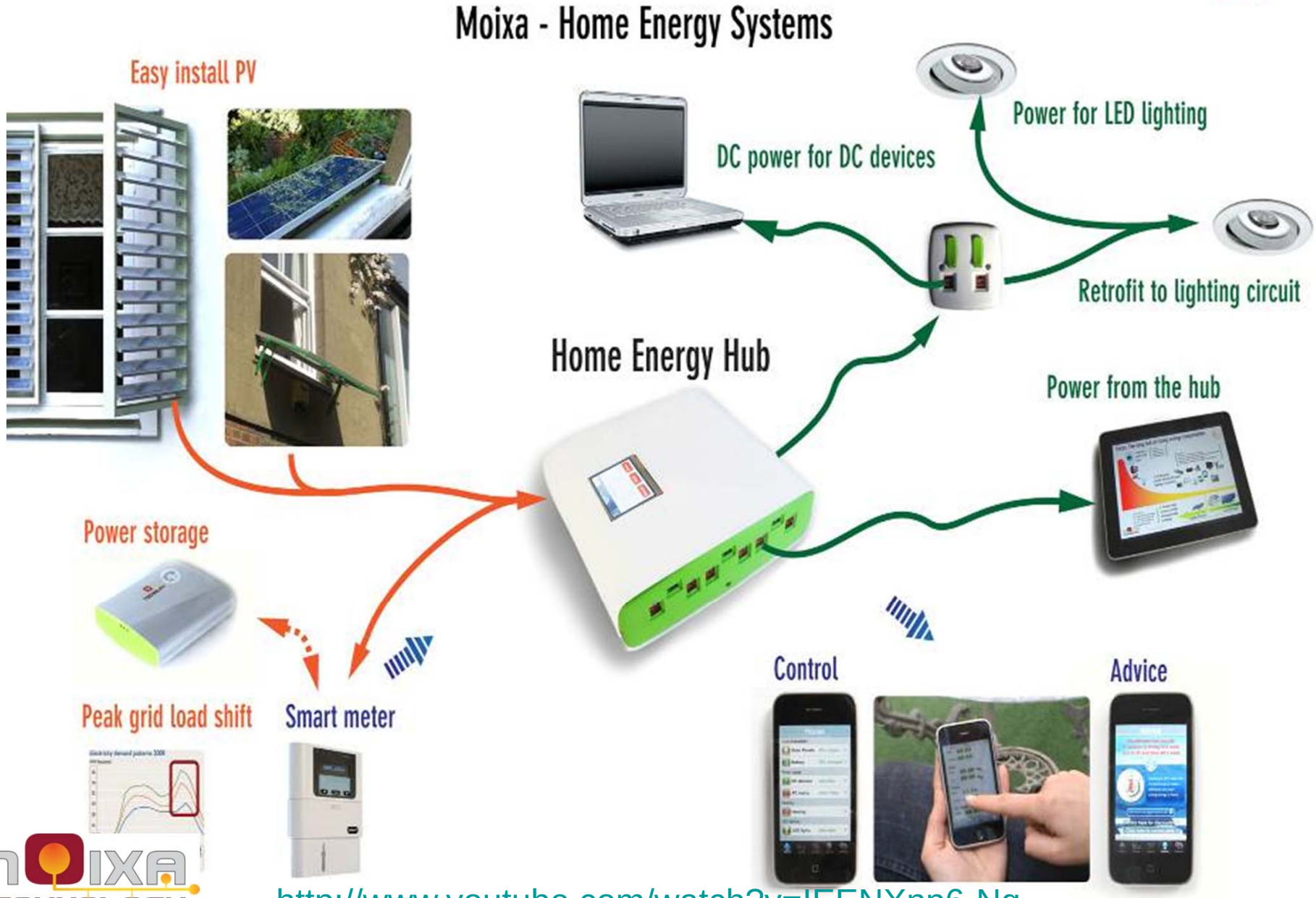
No Inverters

3. Enable Shift to Microgeneration & storage

Falling PV prices

Local Microgen

Technology: Smart DC Micronet

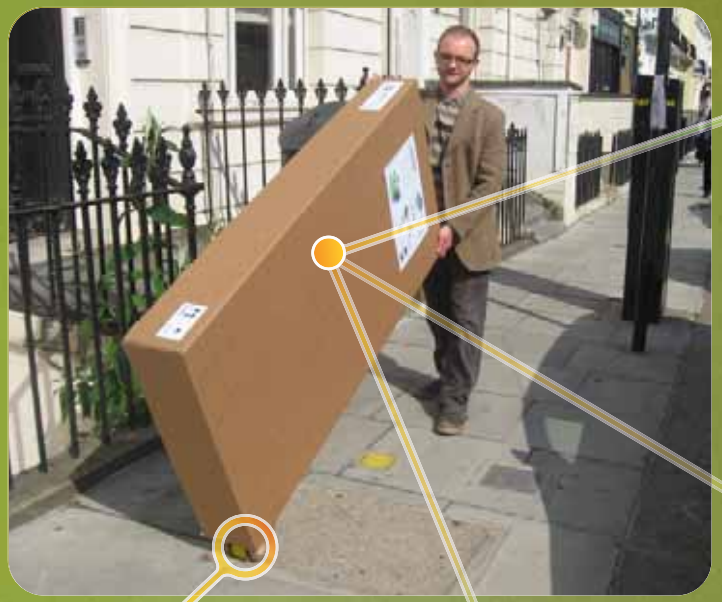


http://www.youtube.com/watch?v=IEENXnp6-Ng

Flat pack system - Starter Kit

Simple delivery, simple install, instant savings

Home Energy Systems moixa



Easy Solar kit

Home Energy Server Hub unit

Easy to transport

Back-up battery

Lighting

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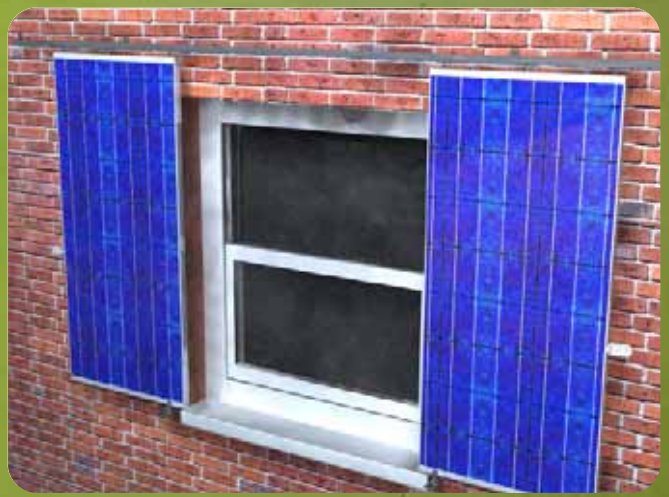
Easy-to-install small PV options

PV panel mounted under window
Low cost, simple to install from inside house

Solar shading
Solar shading PV panels, easy to fit

Solar sliding shutters
Low cost, simple to install, standard PV



Barn door PV panel
Building integrated PV

Advanced PV shutters

Commercial in confidence.

Easy Solar - 15-minute PV install

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1 - drill

2 - hammer

3 - screw

4 - support

Complete

5 - assemble frame

6 - place frame

7 - fit panel

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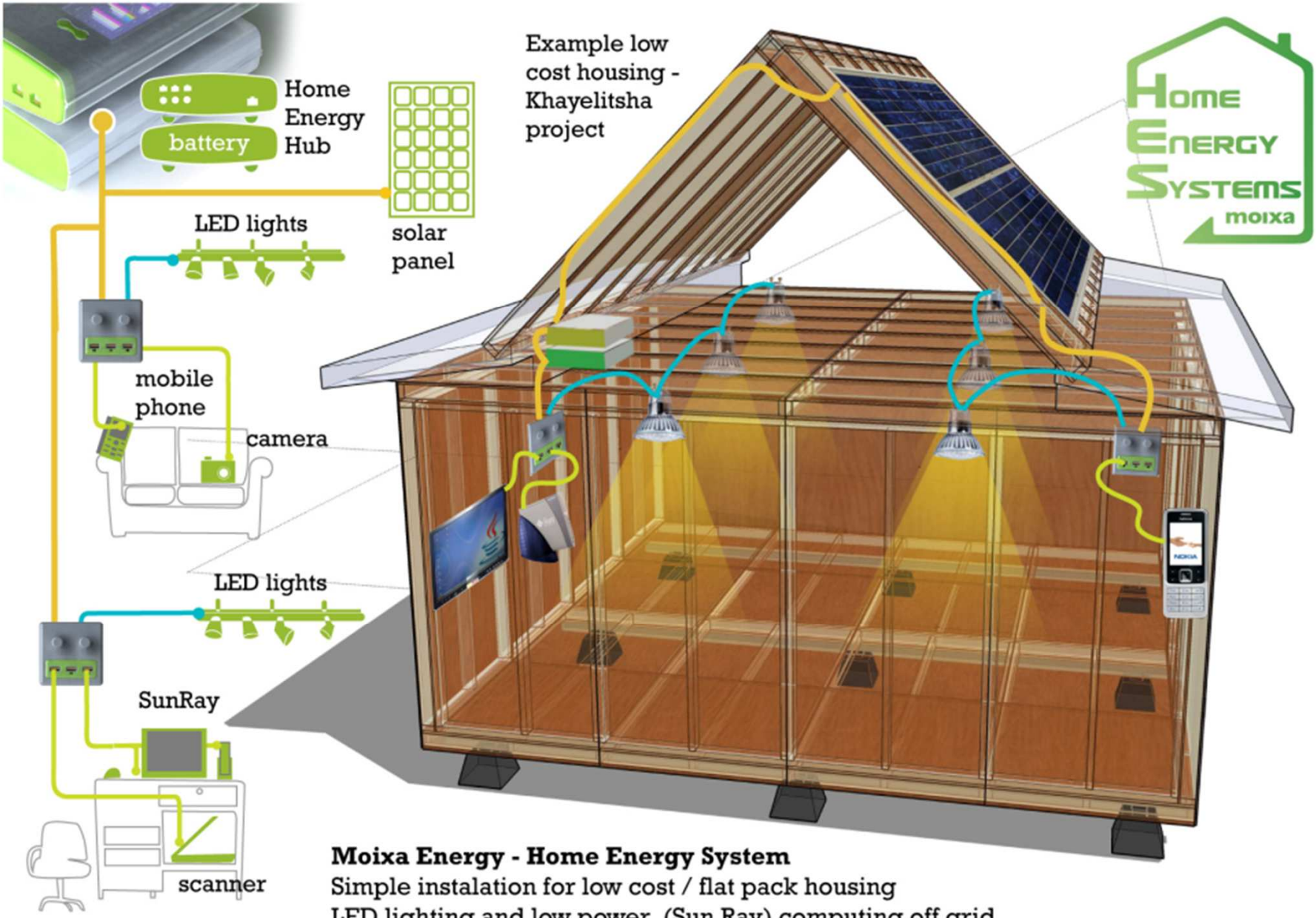
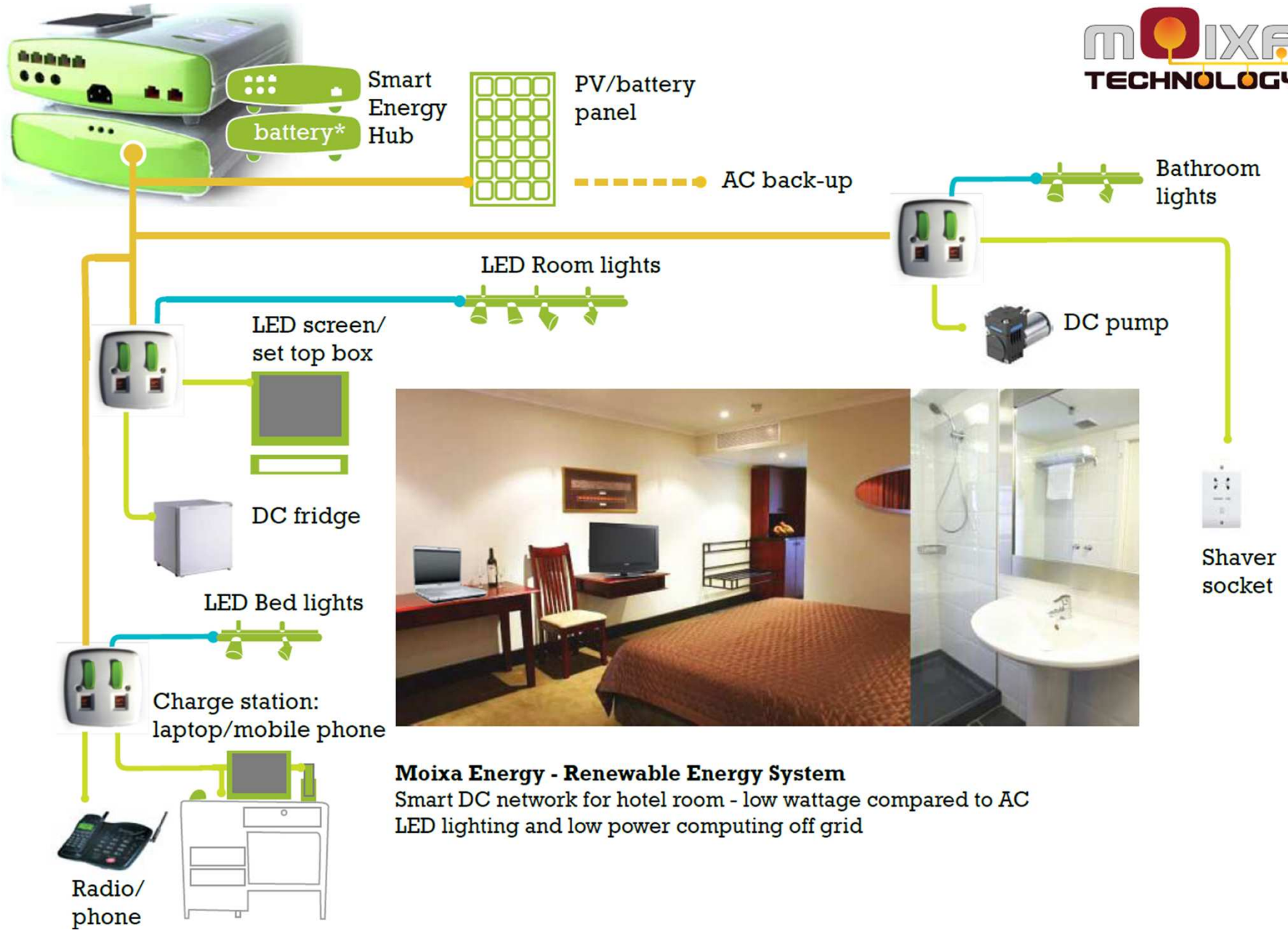
Smart DC Homes - Asia/Dev



Moixa Energy - Home Energy System
Simple instalation for low cost / flat pack housing
LED lighting and low power (Sun Ray) computing off grid

Smart DC Hotel Network



Moixa Energy - Renewable Energy System
Smart DC network for hotel room - low wattage compared to AC
LED lighting and low power computing off grid

New market Category

Moixa – Smart DC Energy in the home

- **Hybrid:** Best of solar, storage, efficiency & monitoring
- **Better Saving 24x7x365:** All day, All year round
- **Urban:** Suitable for mass market, cities, flats, houses
- **Low cost and rapid:** To Install, upgrade in stages
- **Smarter & Future proof:** Controls & DC Future
- **Retrofit:** via lighting circuit
- **IPR:** broad base & R&D

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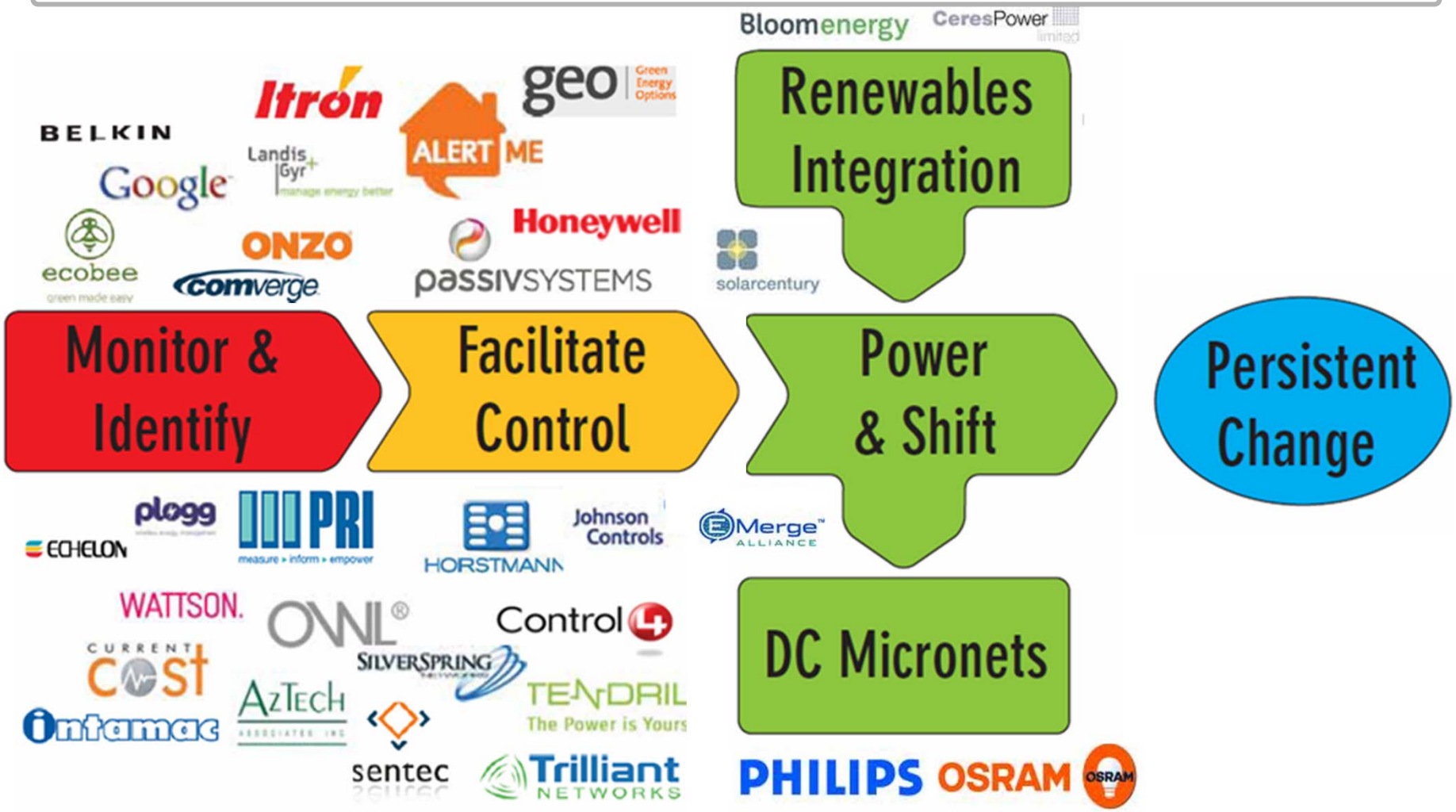
Where we sit

Collaborate with best in breed, but enable clearer paths to action that achieve persistent energy savings



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Better market position

We have many advantages compared to traditional large scale PV and monitoring companies.

Large scale PV

- Provides energy
- Expensive £10K+
- large FIT benefit but not in green bank
- Low uptake (roof need)
- expensive homes
- C02 saving: 1 tonne
- daylight only
- No storage
- No peak bill reduction
- losses: Inverter, AC/DC
- slow/difficult to install
- solar not best in UK

Moixa Smart DC Energy

- Provides energy
- Low Cost (e.g. £0.5-3k)
- some FIT,CRC, CERT - green bank benefit
- Mass market / URBAN
- 24x7: reduced peak bill
- 365: annualized saving
- C02 saving: 0.5-1.5 tn
- Storage – resilience
- Smarter control / DSM
- Reduced losses
- fast to install

Monitoring

Real time displays/apps
- Very low cost / free
- CERT benefit
- informative
- not persistent
- no energy provided
- low C02 saving <0.25

Control
- Attention intensive

Smart Meters
- informative
- increase peak bill

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Variable DC networks - Patent Pending

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(12) **Patent Application Publication**

Daniel et al.

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(43) **Pub. Date: Mar. 25, 2010**

(54) **SYSTEMS, DEVICES AND METHODS FOR ELECTRICITY PROVISION, USAGE MONITORING, ANALYSIS, AND ENABLING IMPROVEMENTS IN EFFICIENCY**

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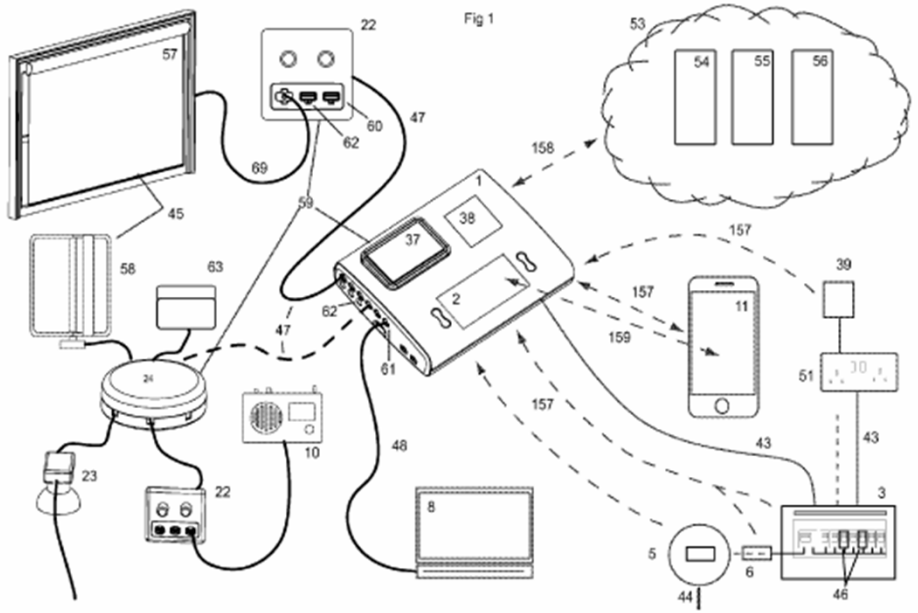
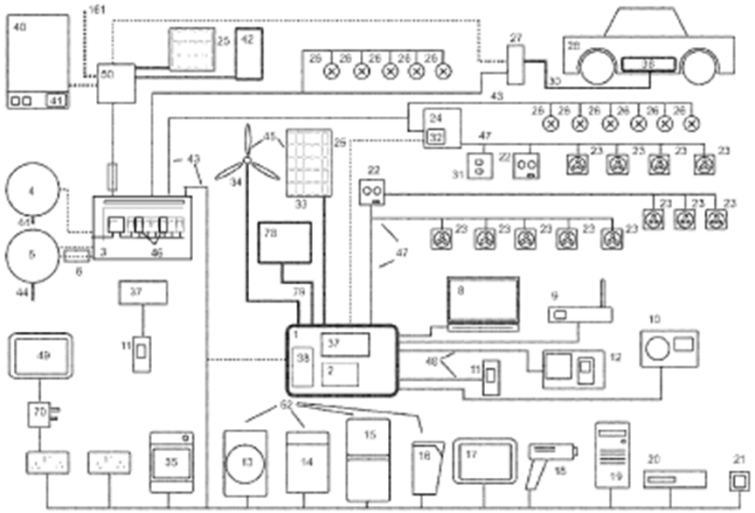
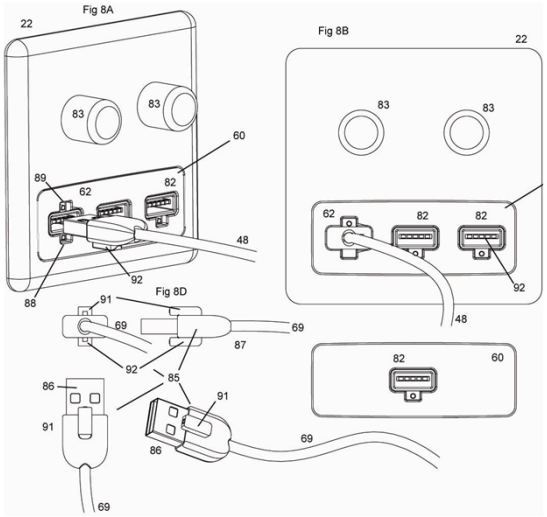
(52) **U.S. Cl.** **700/293**; 700/298; 700/296; 307/28; 706/20; 703/2

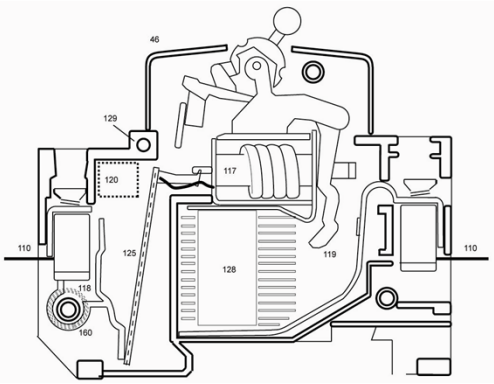
(57) **ABSTRACT**

The invention relates generally to systems, devices and methods for the efficient use of utilities, more particularly to the distribution and provision of electricity supply at appropriate voltages, monitoring and usage by end devices, and to facilitating consumers in changing their energy usage behaviour, and to adopt and easily install appropriate sustainable, energy efficient or renewable technologies. Said end devices typically including traditional electric, electronic and lighting appliances requiring AC or DC power provision or low voltage DC power via AC/DC converters.









Channels to market - indicative

Energy Retailers

B2C & Big Box Retail

Installer Network

Attractions and benefits to consumers, retailer, supplier, government, global

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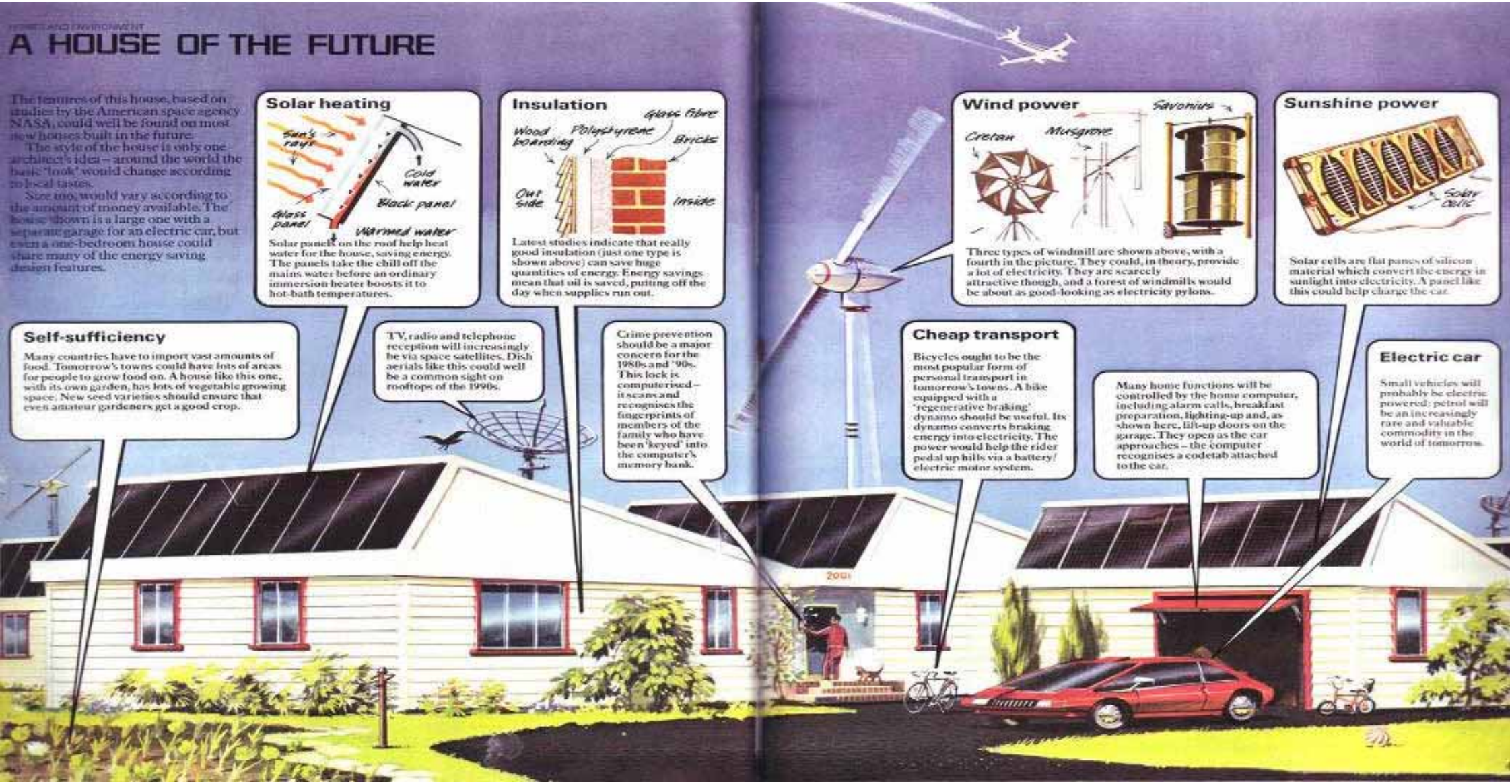
The house of the future, 1979 style



The vision hasn't changed but the technology is still not being built into houses

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