

welcome

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# Energy Demand research project

Home area network experiences

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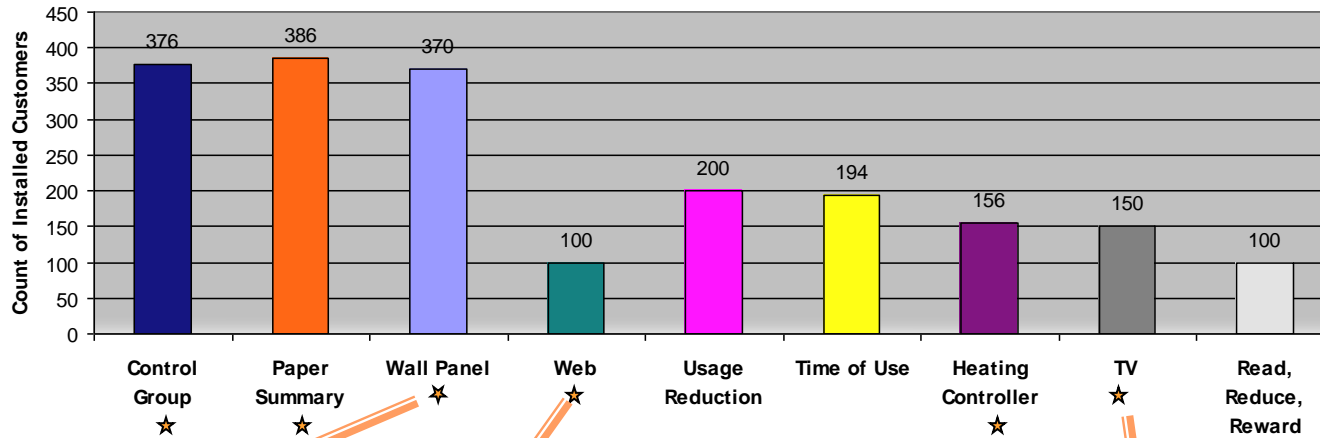
# EDRP - Project overview

- Reason for the project
  - Primarily to explore effects on consumption when different energy information interfaces are supplied to customers
  - Need to explore affects on different groups within the customer demographic segmentations such as fuel poor and high consumption groups
  - Secondary benefit was to provide practical lessons learnt for from reasonable sized 'Smart' metering rollout

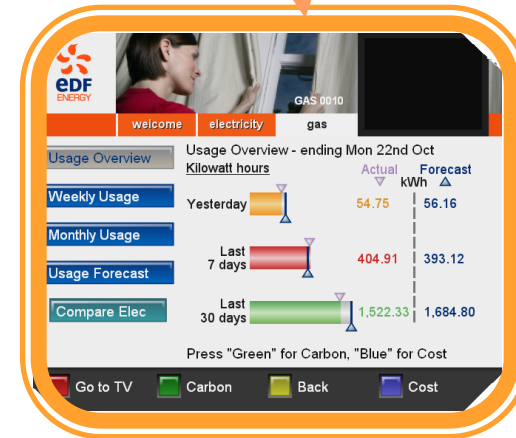
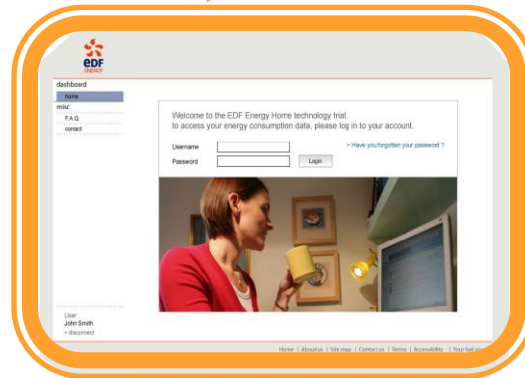


# EDF Energy project scale – Nine Interventions

Customers Installed - all within the domestic sector



Interventions include gas

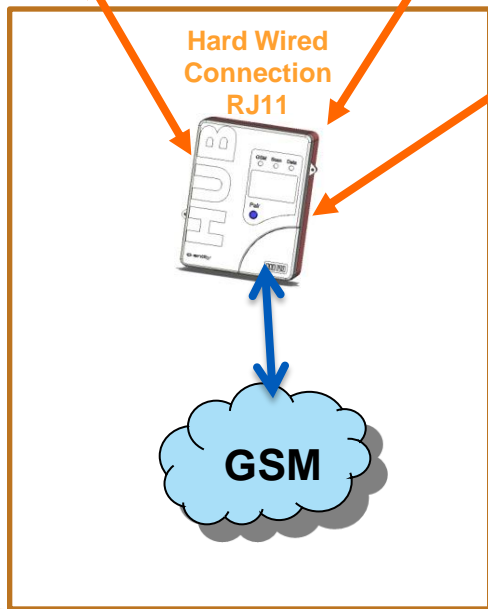


# Communications – HAN

- Han architecture over various interventions included
  - Local hub with hard wire connections to meters and in home display.
  - Local Power line carrier technology for the T. V intervention only.
  - Zigbee wireless communications back to a local hub with GSM installed for WAN communications.



# Basic wired communications overview

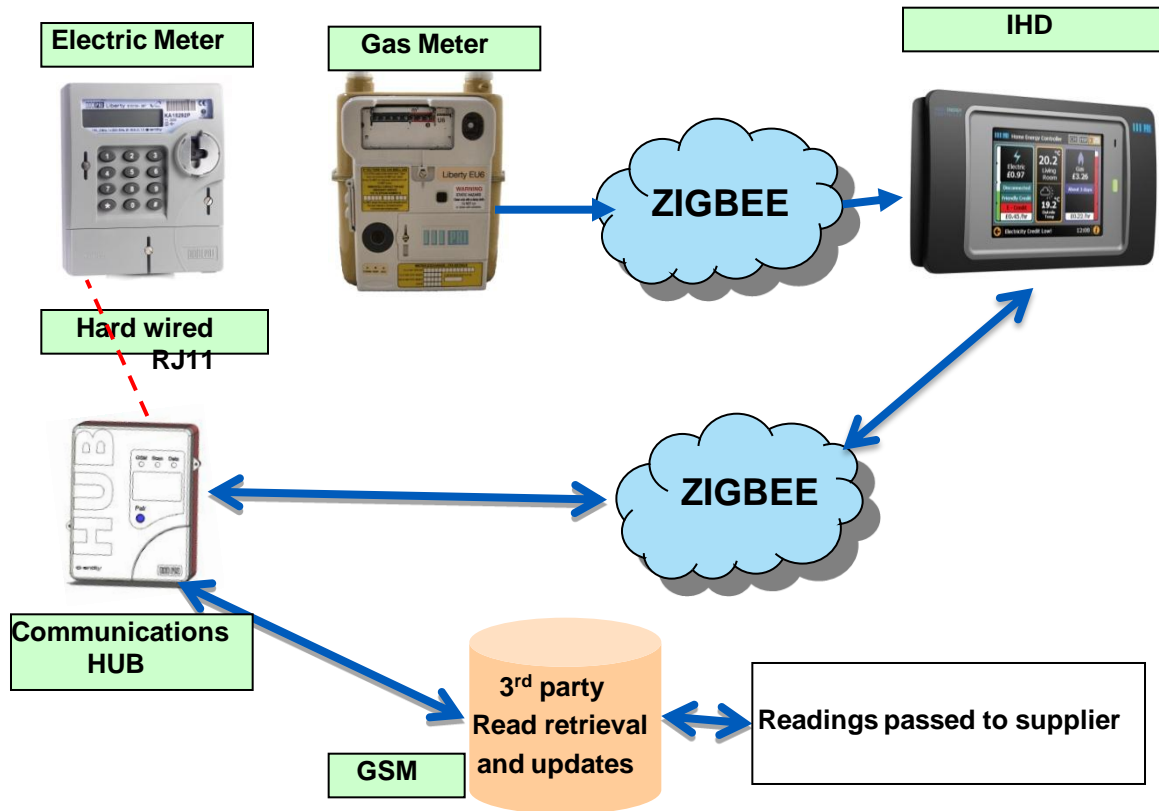


**Major issue for all installations is internal locations**

- Metal meter boxes
- Garages with metal doors
- Basements
- 1930s semi is best stock to install in Tower blocks with basement intake rooms and houses converted to flats are worse.

Basic points or issues
IHD must be installed within 5m of hub due to cable length
Unsightly cables tacked to walls and skirting boards
Gas meter must be within 5m of Hub for RJ11 cable connection
Issues with drilling through walls and meter cupboards, especially if outside to bring cables through
Gas meter under stairs often gets the cable unplugged as people throw shoes in cupboard hence losing reading comms.
In earlier trials GSM module was built into the IHD. Meant unsightly rubber duck antenna on IHD
IHD must be in a fixed location due to power being supplied via the RJ11 as well as comms.
IHD has internal 1.5v batteries. However not rechargeable hence high spec lithium batteries needed in case of loss of mains incoming supply, conversely must ensure no charge circuit in these cases.
Separate Power supply to hub run from incoming mains splitter block from the mains fuse as no local power supply under stairs to plug into. Issues such as safety secondary fuses and potential for fraud from unmetered supply.

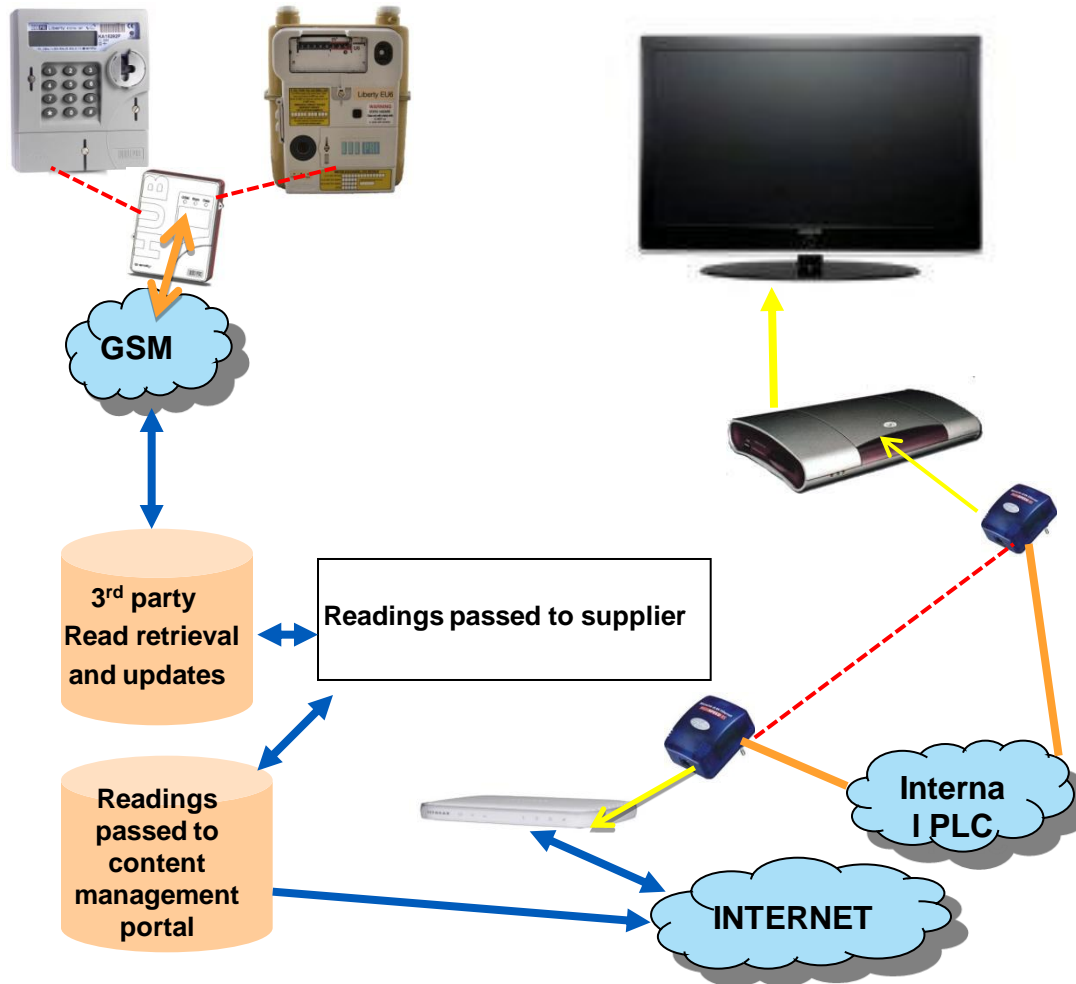
# Basic Wireless Home Energy controller HAN overview



Basic points or issues
Software on IHD had several versions, could not load or update remotely.
IHD acted as Gas meter communicator to GSM hub, hence turn off the IHD no readings obtained
Hub has ability to store between 28 and 33 days worth of HH read data. Gets overwritten with new data
IHD stores twelve months of data for graphical presentation then overwrites
Electric meter set to GSM time only hence all equipment relying on a time driver (TOU and Heating controller) had issues.
Range of wireless comms is 300m in a clear field, less than 20m in most homes due to walls
Space on meter board for Hub
Outside meter boxes affect wireless abilities
Practical customer issues such as drilling holes to fit IHD



# T.V intervention incorporating Powerline carrier technology overview



Basic points or issues
Internal PLC affected by items such as fish tank pumps
Internal PLC affected by anti - surge sockets
Internet traffic affected by time of day use e.g. when kids come home from school and log on to facebook
Other PLC providers can interfere with our PLC comms e.g. BT Home hub or virgin media
Security issues as incoming supply header split to other properties. Similar to baby monitors conversations being picked up in other properties.
HAN equipment separate from metrology hence Wan factors can affect customer experience
Practical issues such as interfering with customers current T.V to DVD configuration.
Individual issues when connecting existing customer routers e.g. some routers left on have a restart procedure when switched back on.
Costs of running the equipment such as PLC's plugged into customers power supply
Material quality of products e.g. PLC's have plastic earth pins



thank you