

# Telecare and Assisted Living using Smart Meters

PROJECT+HYDRA

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# Project Hydra is moving health data through the smart meter communications network.

A collaborative R&D project part funded by the UK Technology Strategy Board. Partners are:

The logo for ONZO, featuring the word "ONZO" in a bold, orange, sans-serif font with a registered trademark symbol.The logo for ATMEL, featuring the word "ATMEL" in a blue, stylized, sans-serif font with a registered trademark symbol.The logo for Brunel University West London, featuring the word "Brunel" in a large, blue, serif font, with "UNIVERSITY" and "WEST LONDON" in a smaller, blue, sans-serif font below it.The logo for Chorleywood Health Centre, featuring the text "Chorleywood Health Centre" in a white, sans-serif font inside a green rectangular box.The logo for ECHELON, featuring a stylized, multi-colored icon to the left of the word "ECHELON" in a blue, sans-serif font.The logo for Innova Partnerships, featuring the text "Innova Partnerships" in a blue, sans-serif font.The logo for PHILIPS, featuring the word "PHILIPS" in a bold, blue, sans-serif font.The logo for SSE, featuring a stylized, green and blue icon to the left of the letters "SSE" in a blue, sans-serif font.The logo for SILVERSPRING NETWORKS, featuring the text "SILVERSPRING NETWORKS" in a blue, sans-serif font, with a stylized, blue and white icon to the right.

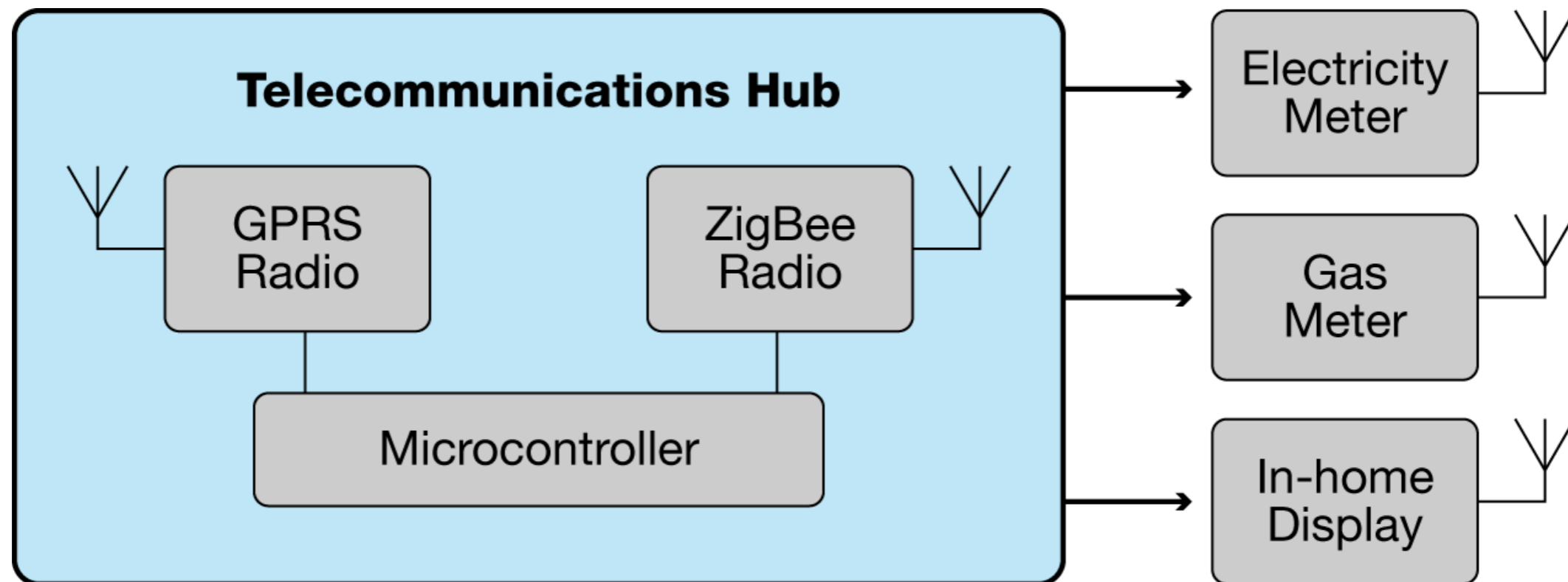
- Being deployed in UK homes now.
- Daily weight and blood pressure measurements.
- Standard Echelon smart meters and NES server.
- Standards-based, ZigBee and health data protocols.

# Why assisted living services on smart meters?

- Reusing ubiquitous, always-on smart meter comms avoids new investment by householder.
- Many telecare/assisted-living applications have similar data and comms characteristics as smart meters.
- Potential for new services to be dynamically deployed to householder.
- Non-core services improve the ROI of smart meter rollout.
- Many energy and non-energy services are possible, e.g:
- Onzo and SSE's next project is HAWCS: Heating and Hot Water Control over Smart Meter Infrastructure.

# Conventional view of the UK smart meter arrangement:

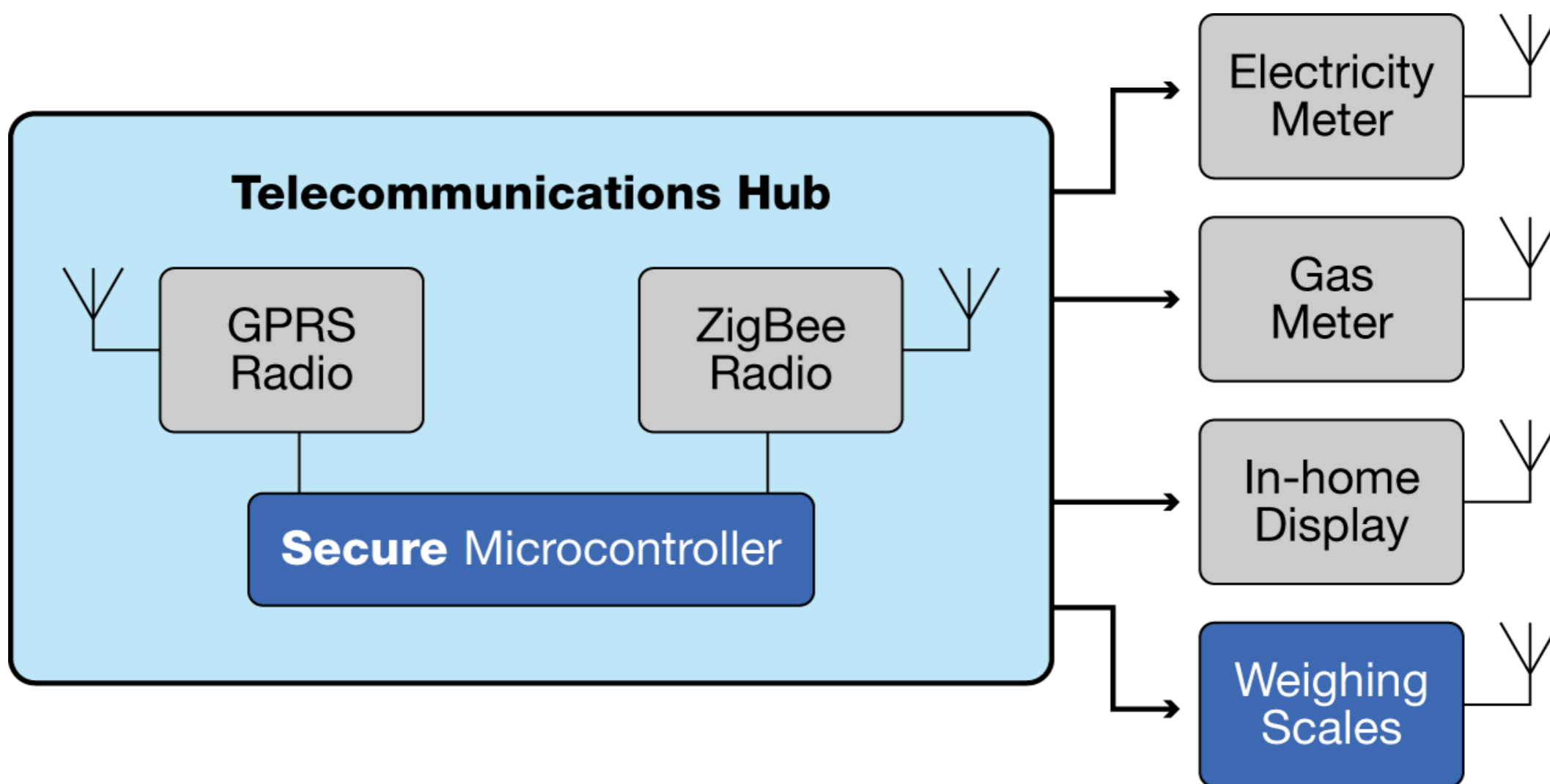
Home area network links meters, display, comms module.



**Typical Smart Meter Setup**

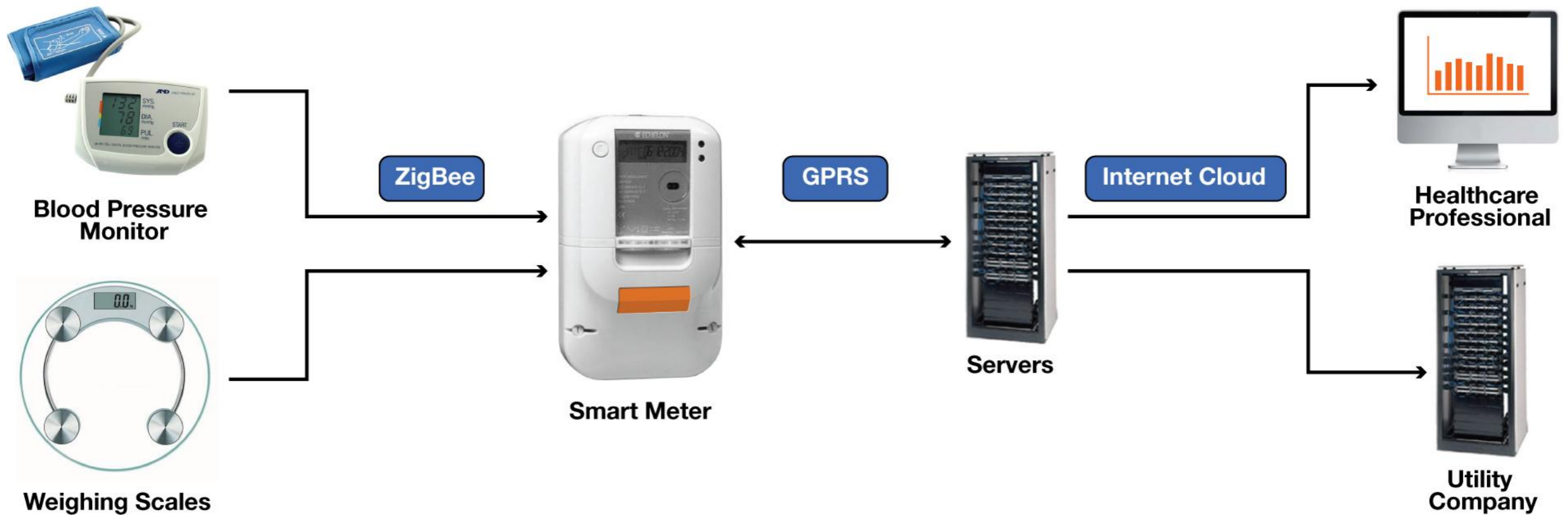
# Project Hydra view supports value-added services:

Other devices can be supported at almost no extra cost.



**Smart Meter Setup Supporting Value-Added Services**

# Project Hydra proof of concept demonstration



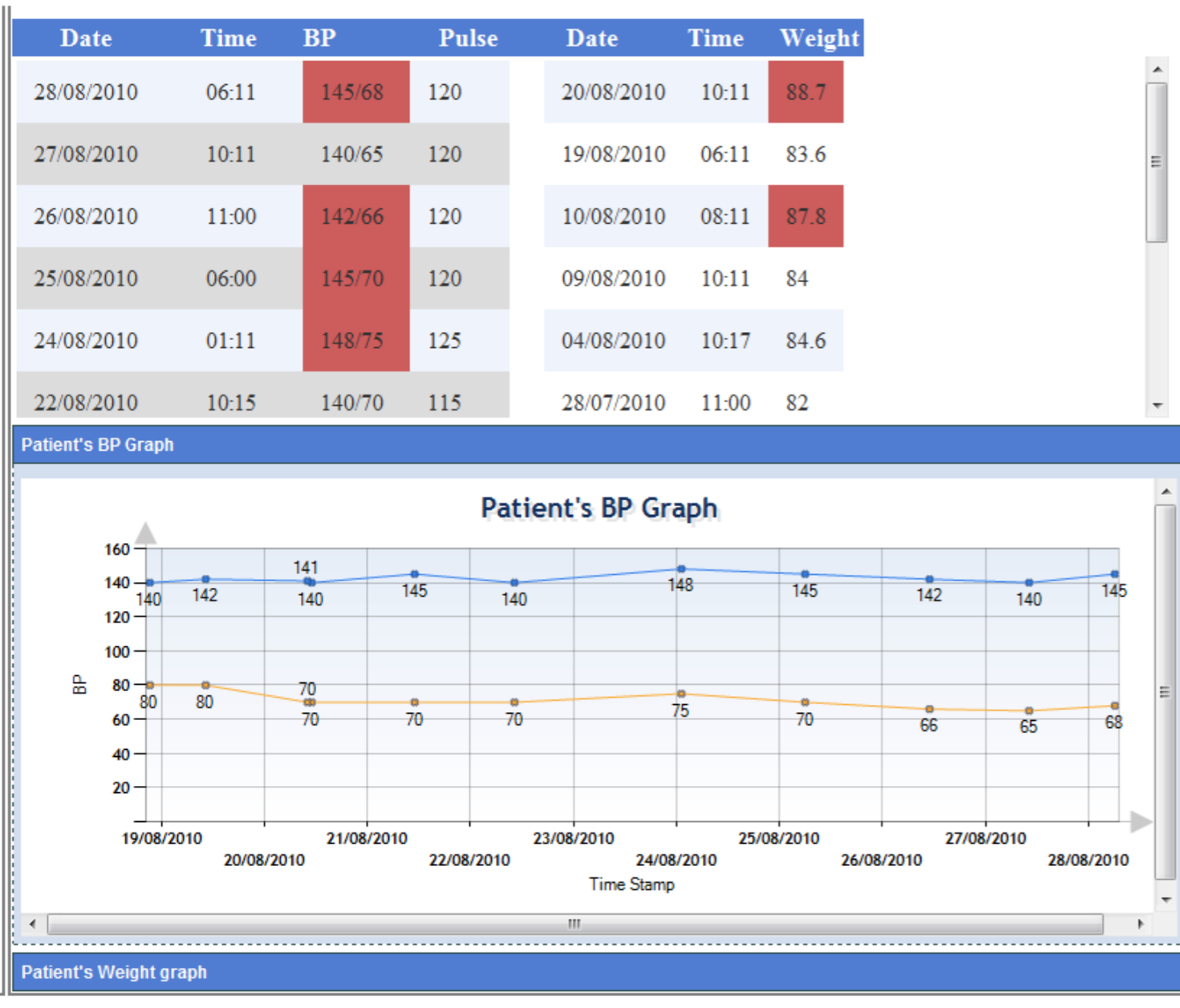
- Health data is transmitted to smart meter by ZigBee ZHC.
- IEEE 11073 to IHE-PCD01 transformation in meter.
- Meter transmits data to server by GPRS.
- Health data and energy data delivered separately.

# Weight and blood pressure sent to GP's surgery.

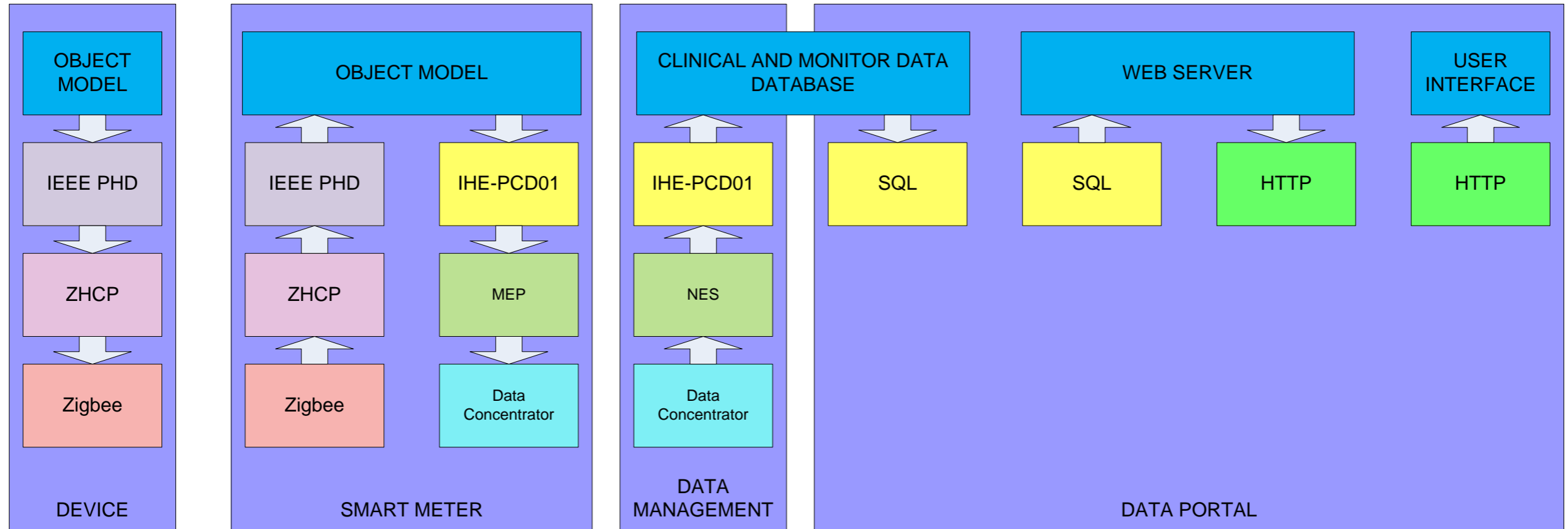
Data is viewed by nurse, who spots trends that need investigation.

Patients send data from home – no travel.

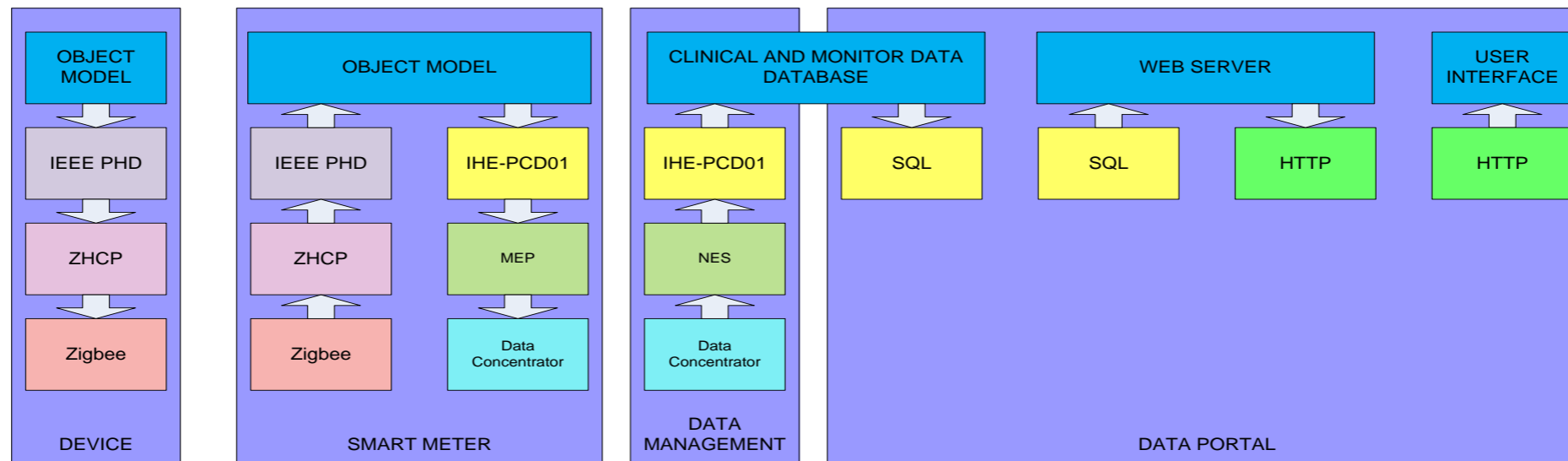
Only worrying data needs following up, saving resources.



# Full Architecture



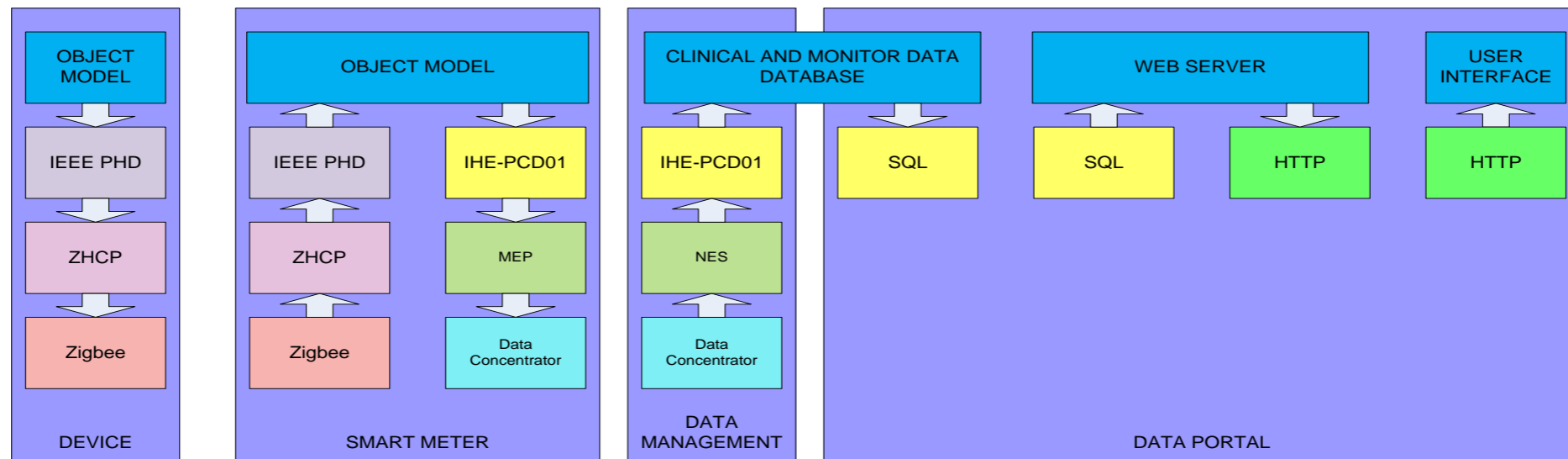
# Implementation 1/2



DEVICE	
IEEE PHD	Agent s/w
ZHCP	Zigbee health care profile
Zigbee	BitCloud

SMART METER	
IEEE PHD	Manager s/w
ZHCP	Zigbee health care profile
Zigbee	BitCloud
Object model	Data
IHE-PCD01	Data message
MEP	Present messages
Data concentrator	GPRS modem

# Implementation 2/2



## DATA MANAGEMENT

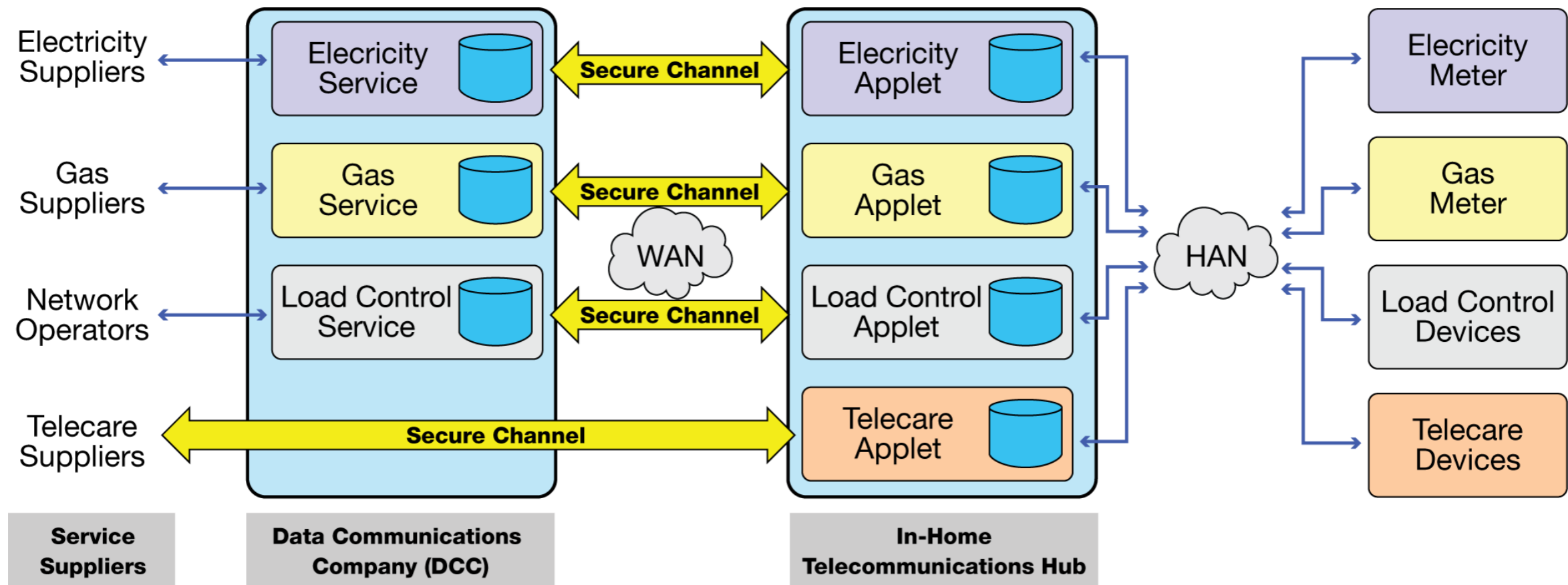
IHE-PCD01	Parse message
NES	Retrieve messages
SQL	Simple demo database

## DATA PORTAL

SQL	Simple demo database
HTTP	Simple interface

IHE-PCD01 standard messages allows straight-forward substitution of other backend processing and presentation systems; and other front-end data collection systems.

# Reusing smart card technologies for software management, privacy and security



- Java Card “applets” in smart meter.
- Java Card provides firewalls between applets.
- GlobalPlatform dynamically manages applet lifecycle.
- Provides secure communications channels between applets and “off-card” entities.

# Thank you.

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