# Big Data for Real People

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creating smart homes


4th Annual Smart Grids & Cleanpower 2012 Conference
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www.cir-strategy.com/events/

# Introducing AlertMe


- Platform for the Smart Home / Connected Home
  - In-home devices +
  - Gateway +
  - Cloud services +
  - A variety of UI's
- Complete with out-of-the-box applications:
  - Smart Monitoring
  - Smart Energy
  - Smart Heating
  - **Smart Data**

# Personalised energy efficiency advice

Your quarterly bill explained: 30 December to 29 March 2012

## How much am I spending?

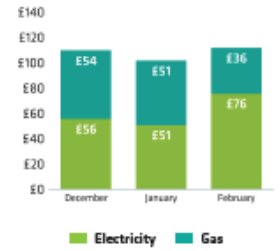
### Total

Gas: £141
Electricity: £183

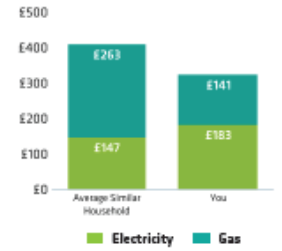
Total combined for the quarter:

£324

### By Month

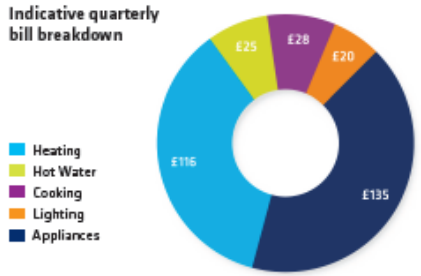



### Similar Households



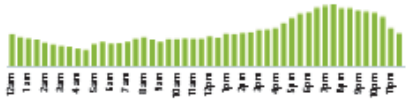

## Where does it go?

**Indicative quarterly bill breakdown**

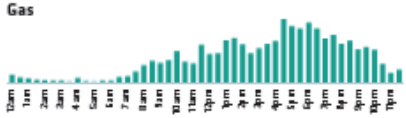



## When am I using it?

**Electricity**



**Gas**



These charts show how your average consumption varied throughout the day.

## Did you know?

Your basic electricity consumption is the electricity you use in your home all the time, even when no-one's in, or at night. For example, this could be your fridge or appliances you leave on stand by. In your house, more than a third of the electricity you use is basic consumption, costing £251 a year. This increased by more than 50% from January to March.

## How do I save more?

You could save up to £111 a year by turning off appliances when they're not being used (such as a TV, set-top-box, stereo, PC or lights).

**Notes**

- Similar households are British Gas customers with houses similar to yours, with 3 bedrooms and 6+ people.
- Broken-down costs are based on your consumption information. Calculation does not consider any pricing tiers.
- Months are aligned with billing periods. January refers to 30 December to 29 January; February refers to 30 January to 28 February; March refers to 29 February to 29 March.

British Gas
Looking after your world

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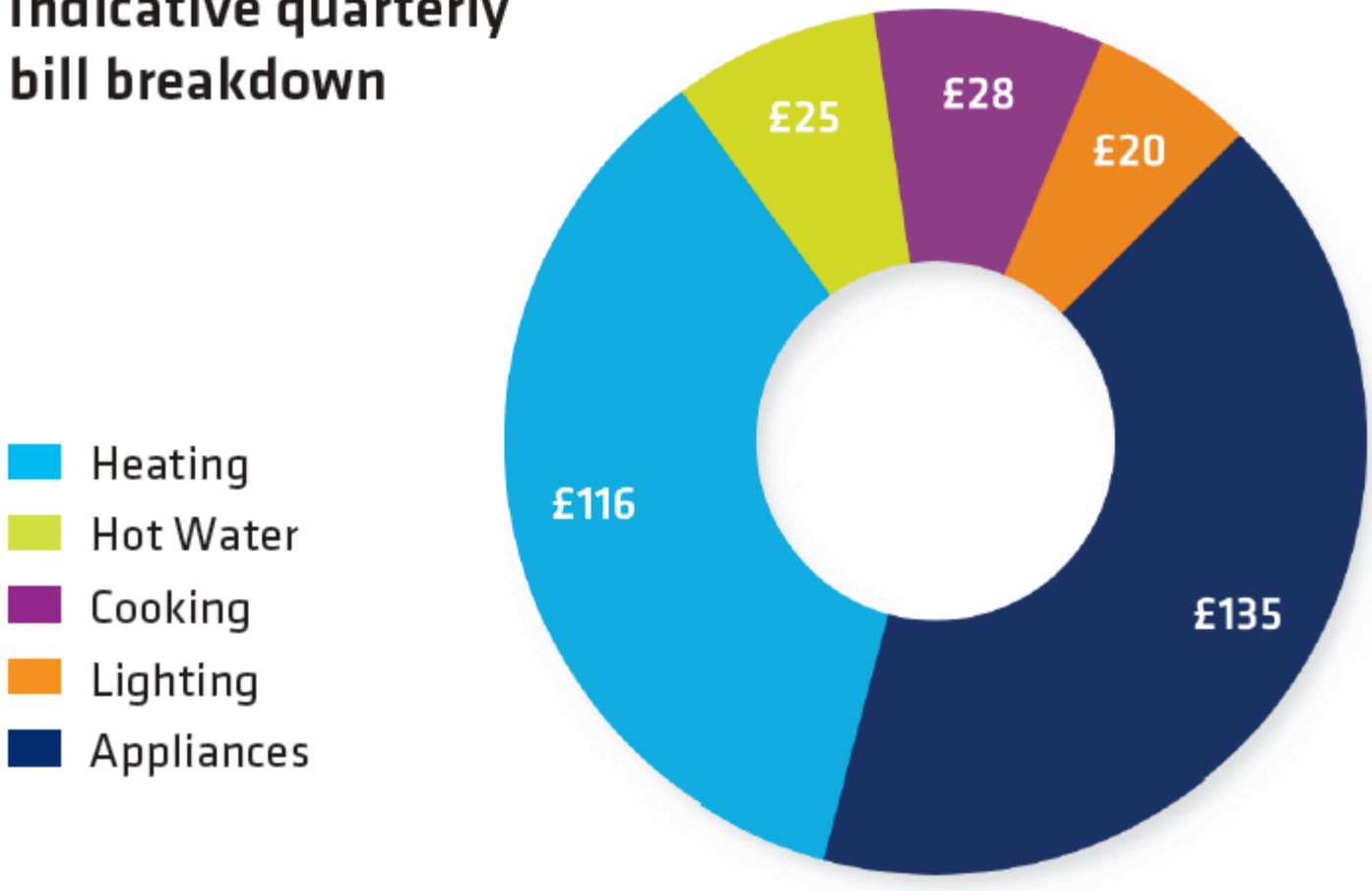
# Where does it go?

## Indicative quarterly bill breakdown

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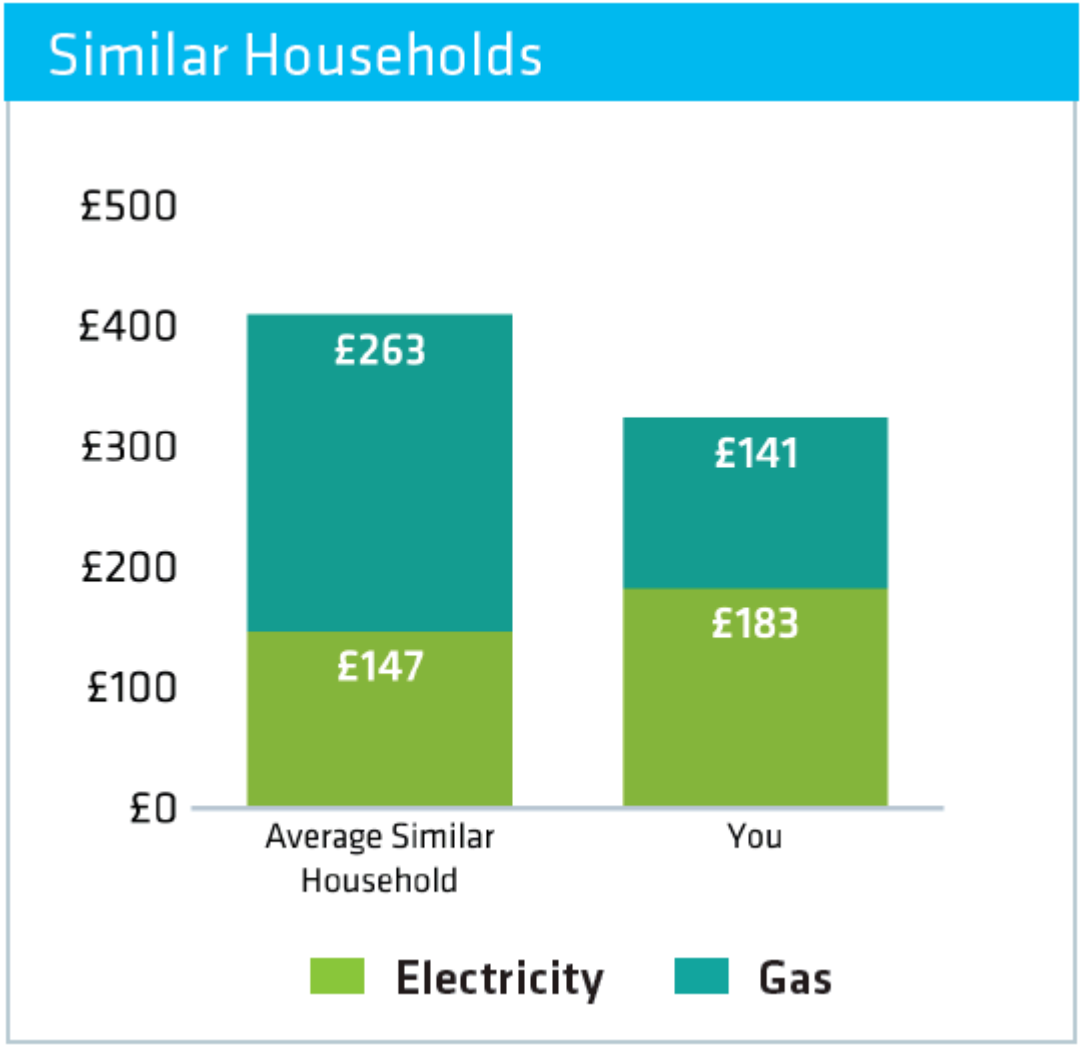


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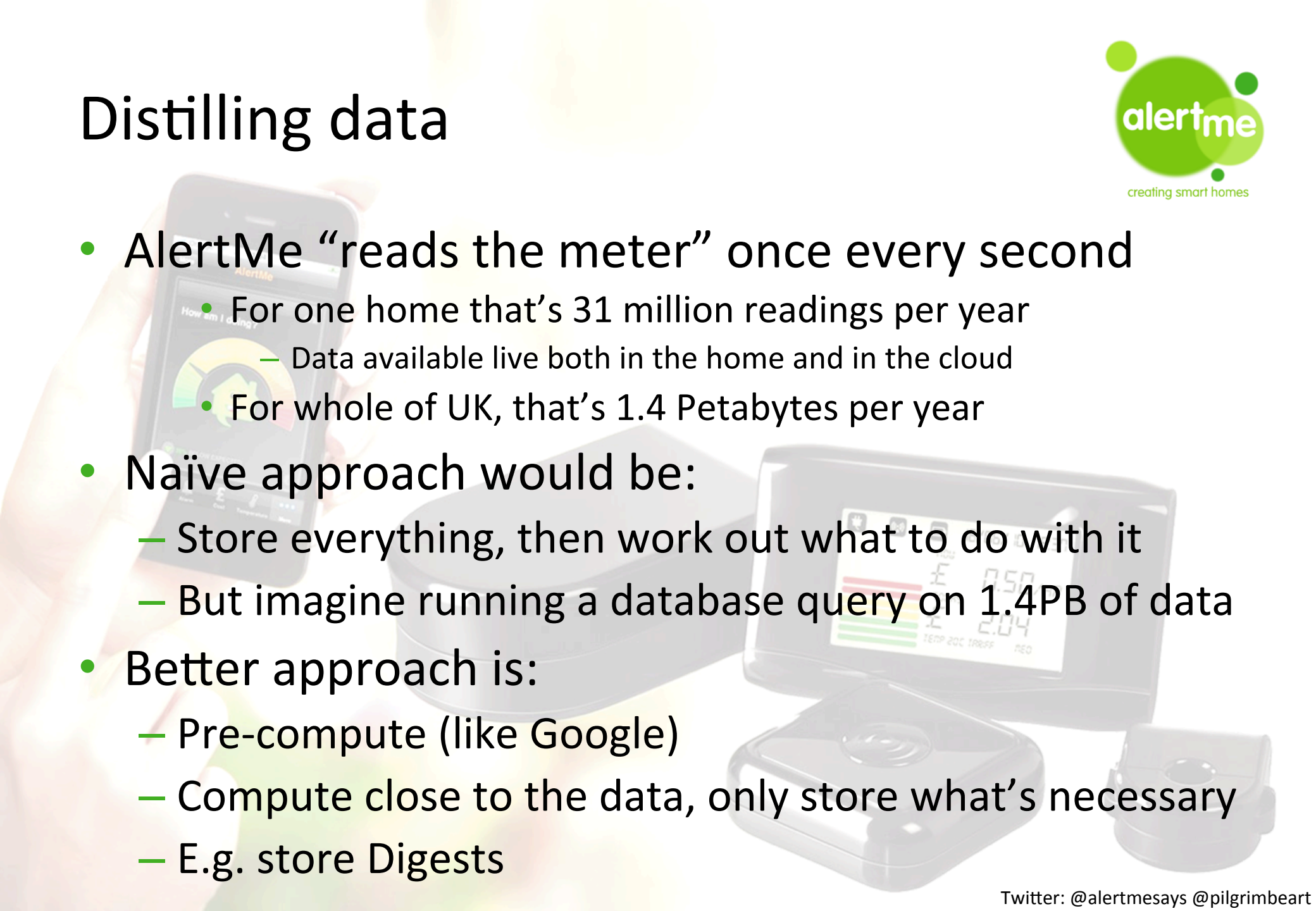
# The Value of Data

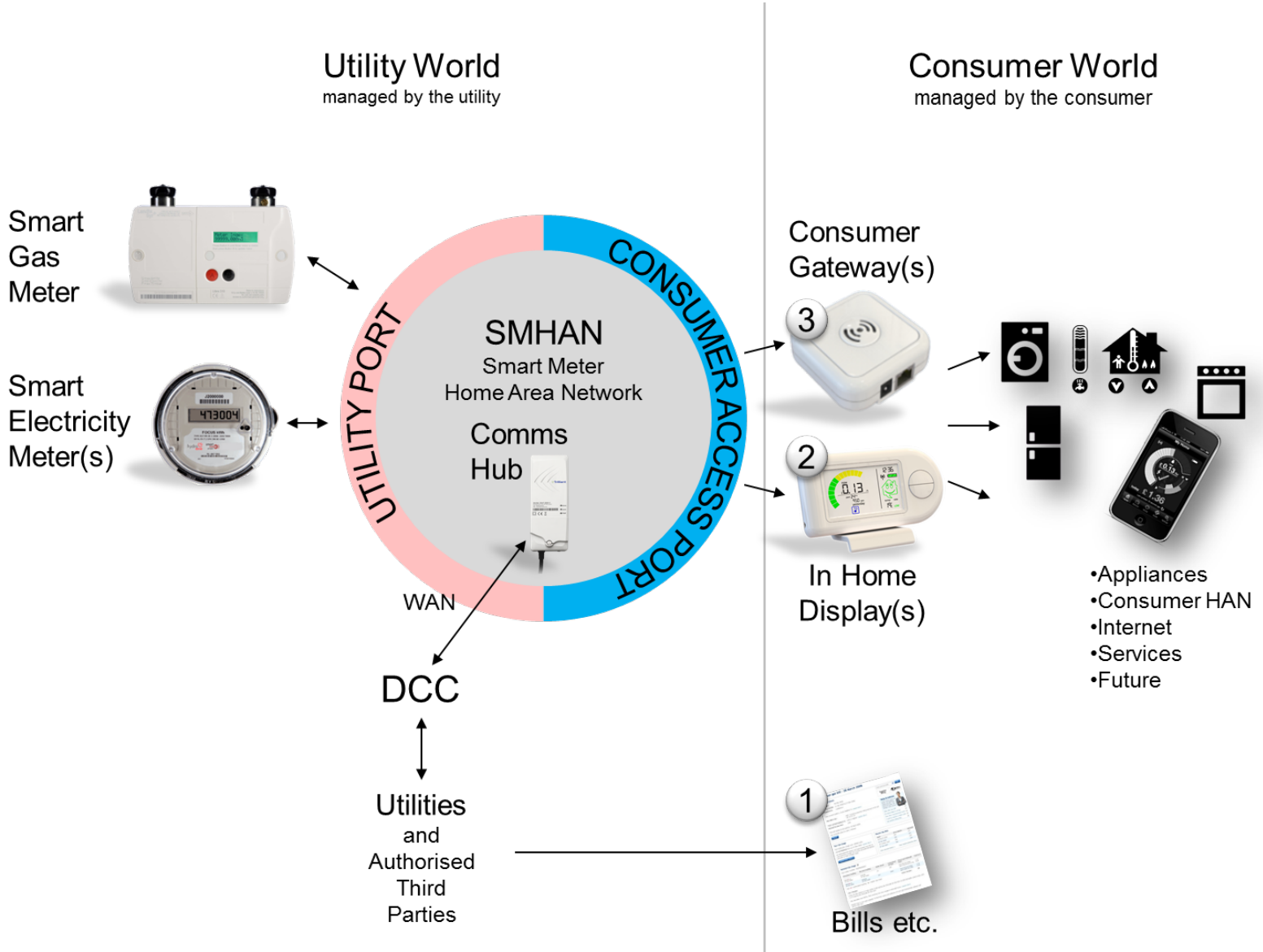

- General market trend from products to services
  - Data is the lifeblood of any service
- "Old economy" companies struggle with:
  - A patchwork of legacy IT systems & processes
  - e.g. Utility companies may read meter only once/year
- "New economy" easily deals with Big Data
  - Millions of customers, millions of hits/day

# Distilling data



- AlertMe "reads the meter" once every second
  - For one home that's 31 million readings per year
    - Data available live both in the home and in the cloud
  - For whole of UK, that's 1.4 Petabytes per year
- Naïve approach would be:
  - Store everything, then work out what to do with it
  - But imagine running a database query on 1.4PB of data
- Better approach is:
  - Pre-compute (like Google)
  - Compute close to the data, only store what's necessary
  - E.g. store Digests

# UK Smart Meters may deserve name



# Data available on UK SMHAN

- Consumption (elec  & gas)
  - Live & cumulative
- HH interval data for 13 months
- Tariff
- Prepay credit
- Extending to include
  - Microgen
  - EV control

  …

# Value

Think of 3 stages:

Data → Information → Value

e.g.

Data = Tariff & consumption so far this month

Information = Predicted bill at end of the month

Value = Household budgeting, Avoiding disconnection

# Value from that Smart Meter Data


- **VIS** - visibility
- **COST** - translated into £
- **$CO_2$** - translated
- **EARN** - microgen
- **PRICESIGNAL** - ToU, CPP
- **COMP** - comparative norms
- **PREDICT** - budgetting
- **SWITCH** - tariff / supplier
- **PREPAY** - and credit/debt
- **DISCONNECT**
- **PRIVACY** - change of owner
- **MESSAGE** - from utility
- **SMSOK** - system working
- **TIME** - reference
- **READINGS** - to check bill

*See: CEDIG data dictionary*

# Value from that SM Data - Analytics


(all enabled by 1-second data)

- **ITEMISE**
- **WARN**
- **MAINT**
- **HEAT**
- **ASSIST**
- **AUDIT**
- **AUTOAPP**
- **OPTIM**

Examples

- "Washing at 30°C would save you £34/year"
- "Boiling only a cupful of water in your kettle would save you £12/year"
- "25% of your bill is spent on 'baseload.' Click for tips on what might be causing this and how to address it"
- "Your fridge is consuming more than last year – perhaps the seals have gone. A new fridge would pay for itself in 3 years"
- "You've left the house but your fridge door is open (or your iron/over/hair curlers are still on)"
- "Mum didn't get up this morning"
- "More of your bill is spent on heating than in similar homes."
- Ensure EV charged by 8am at minimal cost
- Optimising heating patterns around occupancy

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# ADELE Smart Data Engine

**A**lertme **D**omestic **E**nergy **L**oad **E**ngine


A model, able to use whatever data is available:

- Zero data (assume national averages)
- Basic data (demographics or postcodes)
- Low-res Energy data  (quarterly/monthly reads)
- Medium-res Energy data (Smart Meter HH)
- High-res Energy data (live via Consumer Gateway)
- Temperature and per-appliance, if available
- Other sources (e.g. customer-volunteered info)

# Value of Big Data to the Consumer


- Information and Insight (esp. around £££)
  - e.g. predicted bill, personal energy-saving advice
- Control
  - e.g. turn on your heating from the airport
- Automation
  - e.g. optimise your heating around your life patterns
- Simplicity  (esp. interoperability & low friction)
- Peace of Mind

# Value of Big Data to the Channel


- Higher added-value
  - Energy Services are higher margin than Energy Retail
- New Services
  - Brand presence, loyalty
  - Bundling
    - One platform to unify the home
- Cross-sell, up-sell & e-commerce
- A game everyone can play:
  - Might Retailers or Telcos disintermediate Utilities?

# Data – the Ground Rules

- Must be Permissive
  - It's the consumer's data
  - The consumer chooses to grant access
  - If it doesn't benefit them - they won't!
  - It's a trade (like gMail)

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