alertme

creating smart homes

Smart Homes at Scale

CIR Smart Homes & Cleanpower 2013 www.hvm-uk.com
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A talk in 3 parts

- Smart Energy Report
- Standards and Openness
- Home Energy Update

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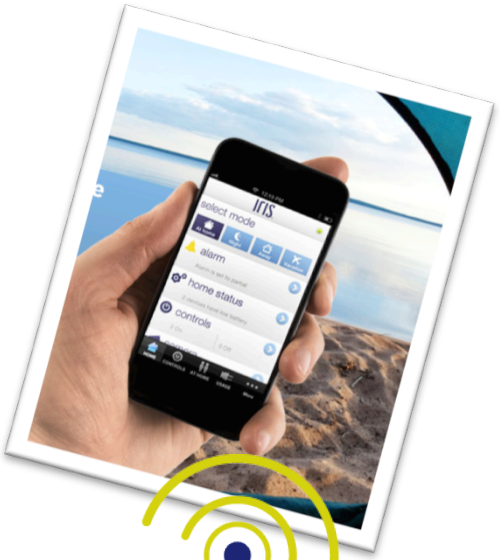
2013: Quick update



...

hive By British Gas

iris™

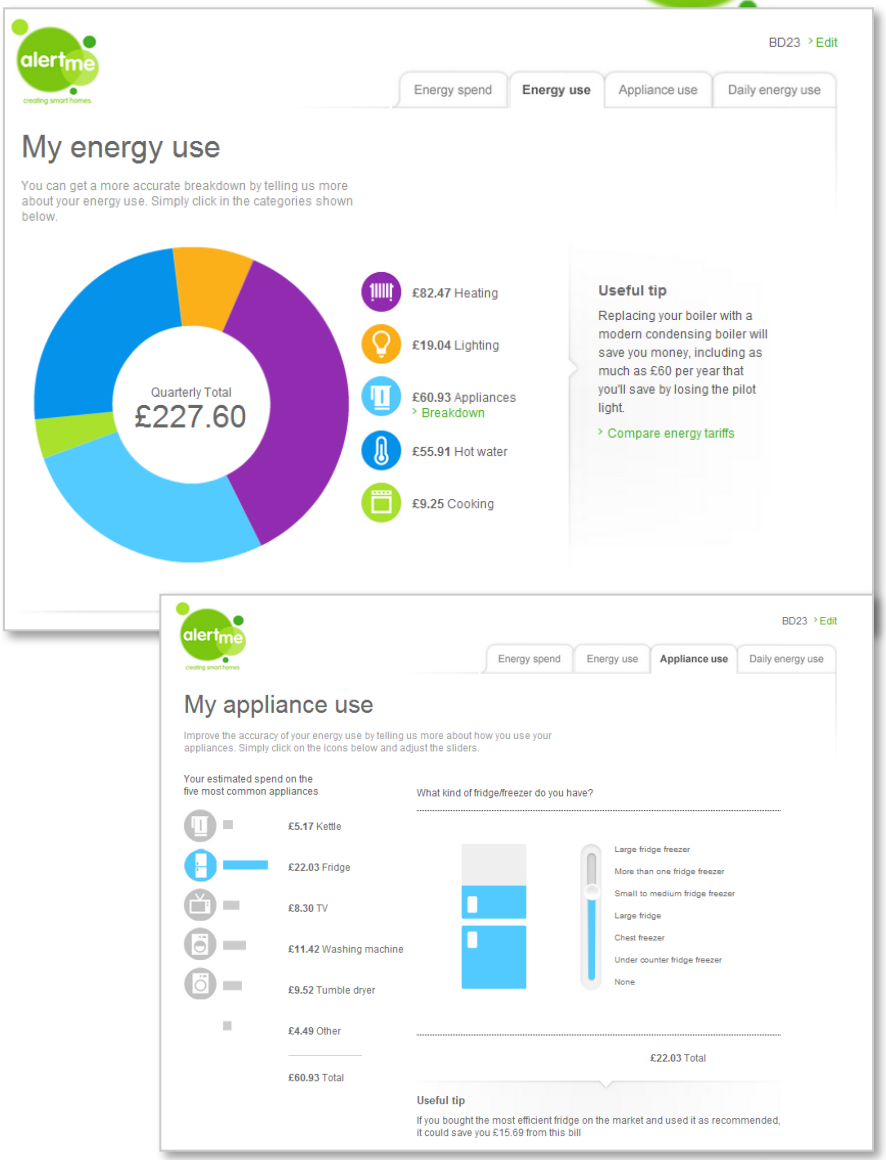
essent

LOWE'S NEVER STOP IMPROVING

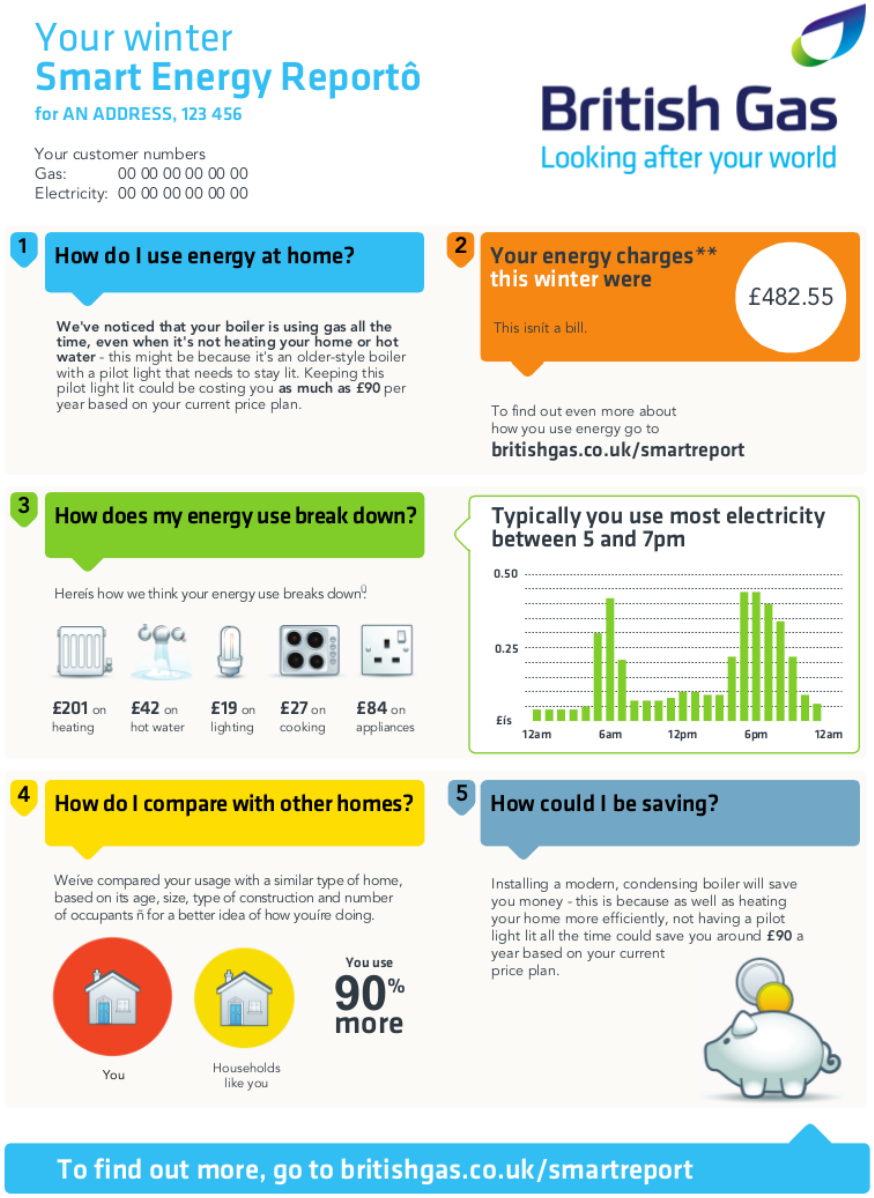
1. Smart Energy Report

Data analytics engine

- An engine that gives insight into household usage patterns for energy consumption
  - Built upon several models
- Models informed by many inputs:
  - Temperature, Location, Type of appliances and usage
  - and others …
- Models include:
  - Space Heating, Hot water, Cooking, Lighting, Appliances, Occupancy
  - and others …
- Output improves with more data
  - Supply more information,
    - Get greater insights
  - Supply less information
    - Still has good insight, but based on national/local averages



Multi Channel Communication: Reports



- Goes out with the bill
- Email and paper versions
- Longer term trends and analysis over the term of the bill
- Monthly digests

Personal Energy Insight & Efficiency Advice

2. Standards and Openness

Standards and Openness

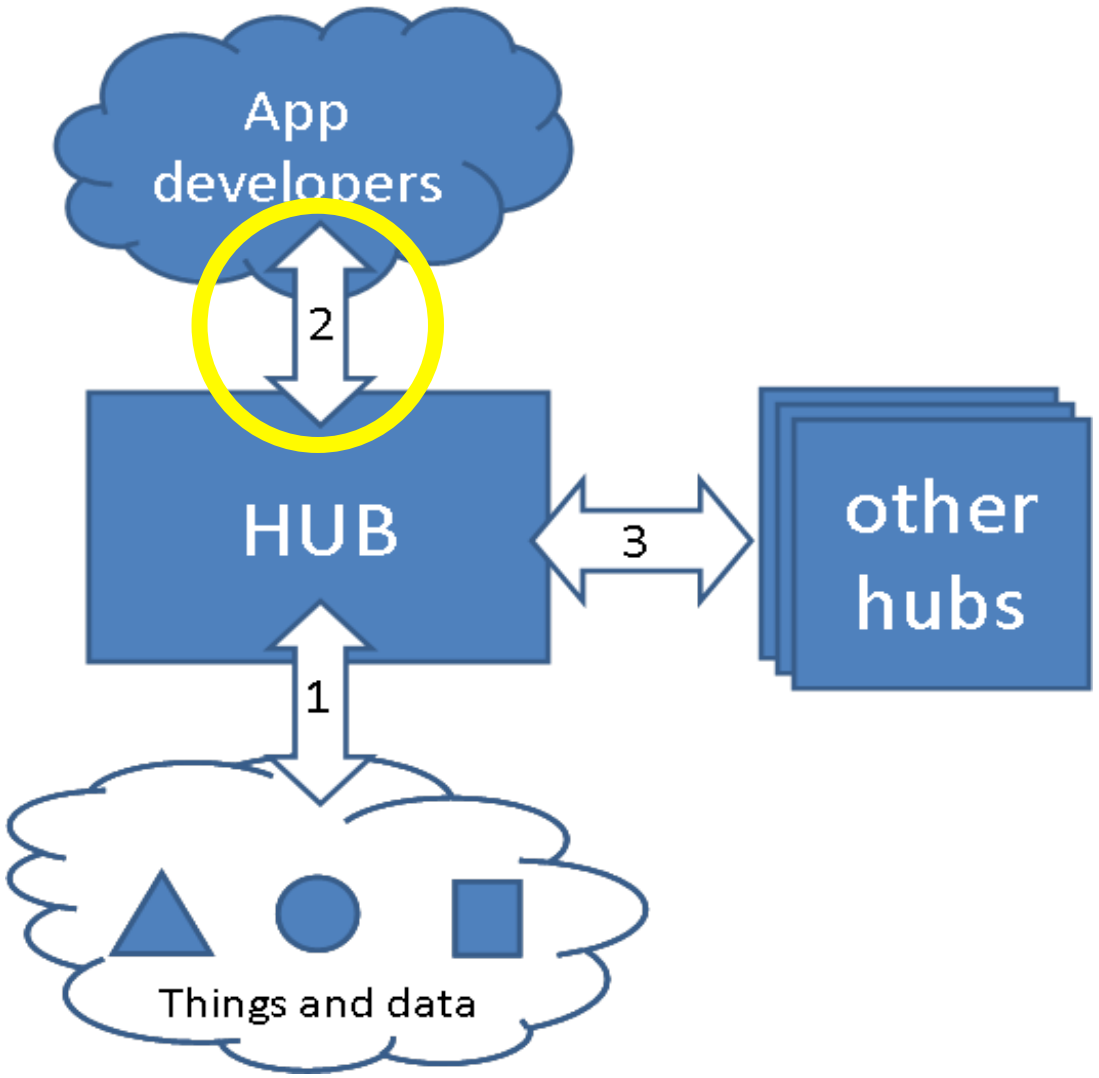
- As a market matures, there is a sudden “flip”
  - From “no-one to be open to”
  - To “openness is essential”
- Can’t do it all, need ecosystem partners
- Customers want to have choices

TSB IoT Interoperability Demonstrator

- £6m project, 1 year
- Goal: Break down the vertical M2M silos!
- ~40 entities, most already with vertical end-to-end platforms

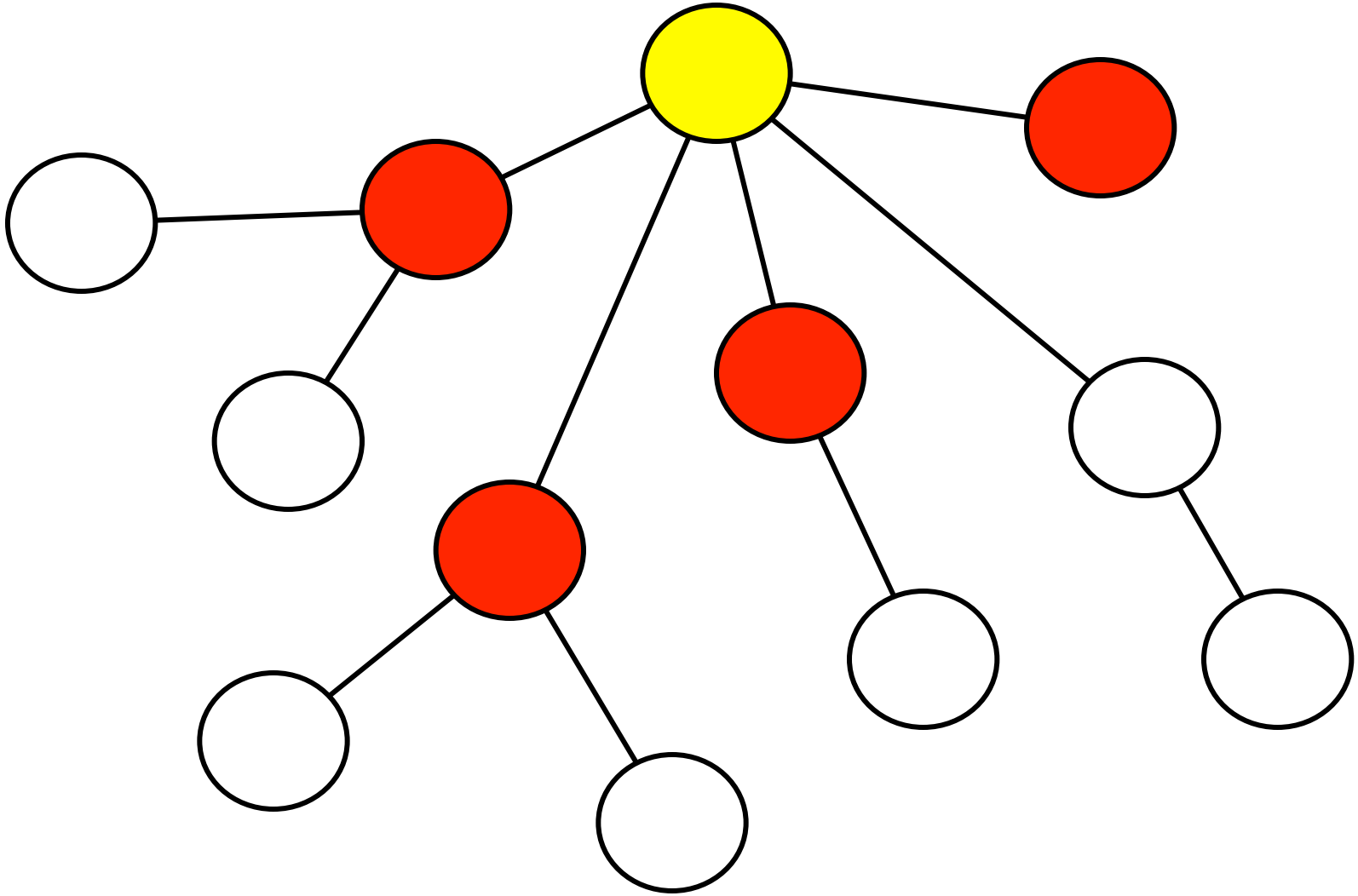
  1248.io, Aimes Grid Services, **AlertMe**, Amey, ARM, Avanti, BalfourBeatty, BRE, British Telecom, Carillion, Critical Software, Ctrl-Shift, EDF, Enlight, ExplorerHQ, Flexeye, Guildford Borough Council, IBM, Intel, Intellisense.io, Intouch, LivingPlanIT, London City Airport, Merseyside Transport, Milligan Retail, Neul, Open Data Institute, Placr, SH&BA, Stakeholder Design, Traak, UK Highways Agency, Westminster City Council, Xively and the Universities of Birmingham, Cambridge, Lancaster, Surrey, UCL & Open University
- 8 clusters with diverse use-cases:
  - Airports
  - Transport logistics
  - Schools and Campuses
  - Streets
  - Homes

Everyone's system architecture

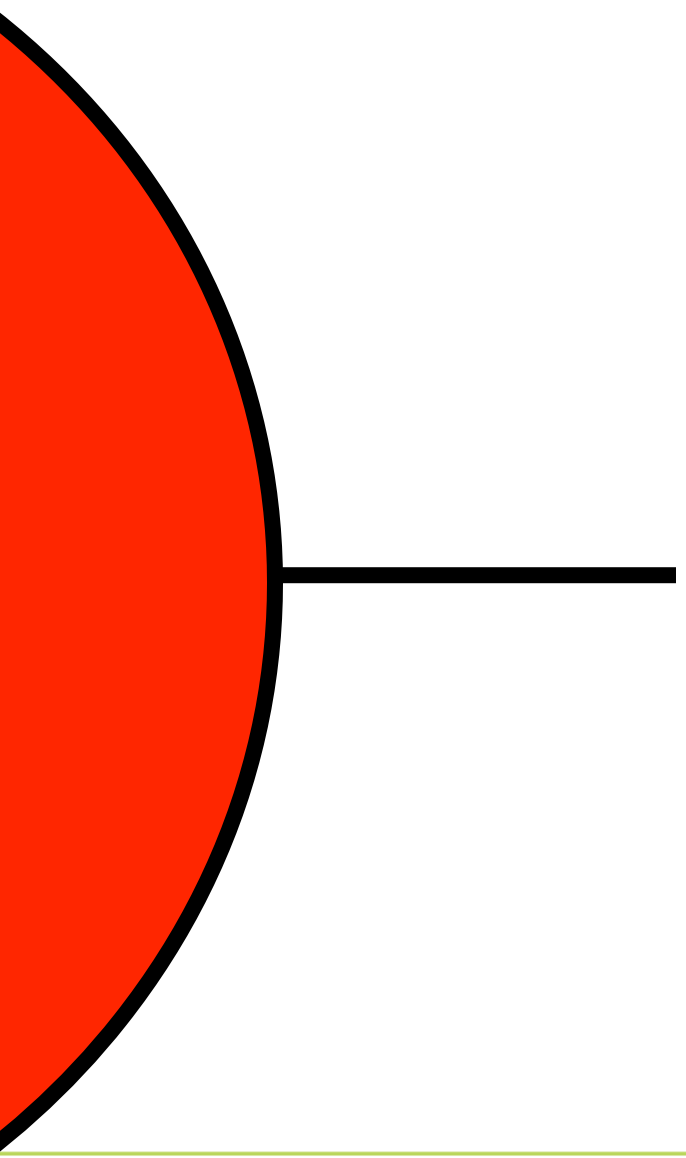



HYPER/CAT

You need data from several services



All services use open standards



JSON

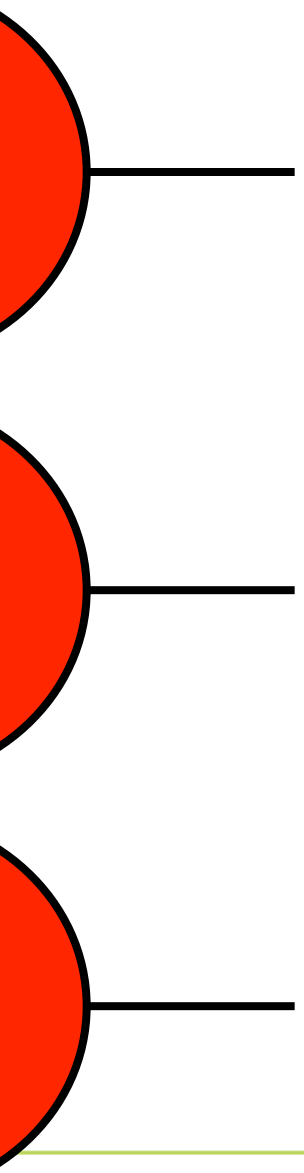
JavaScript Object Notation

RESTful API

GET PUT POST DELETE

https:

But each is organised differently



/customers/building/room/temperature

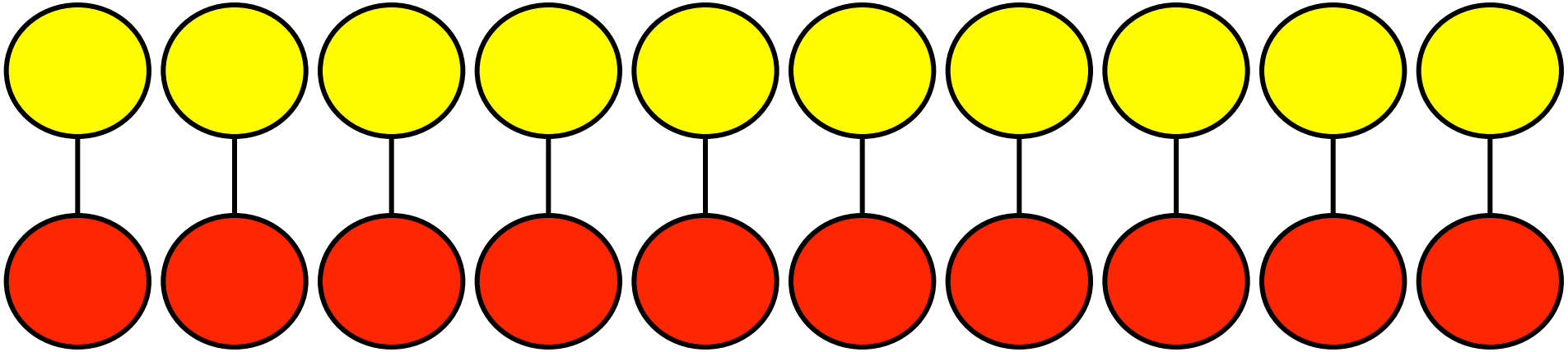
/users/hubs/devices/

/localauthority/street/post

So for each service you have to…

- Read the documentation
- Write code specific to that service

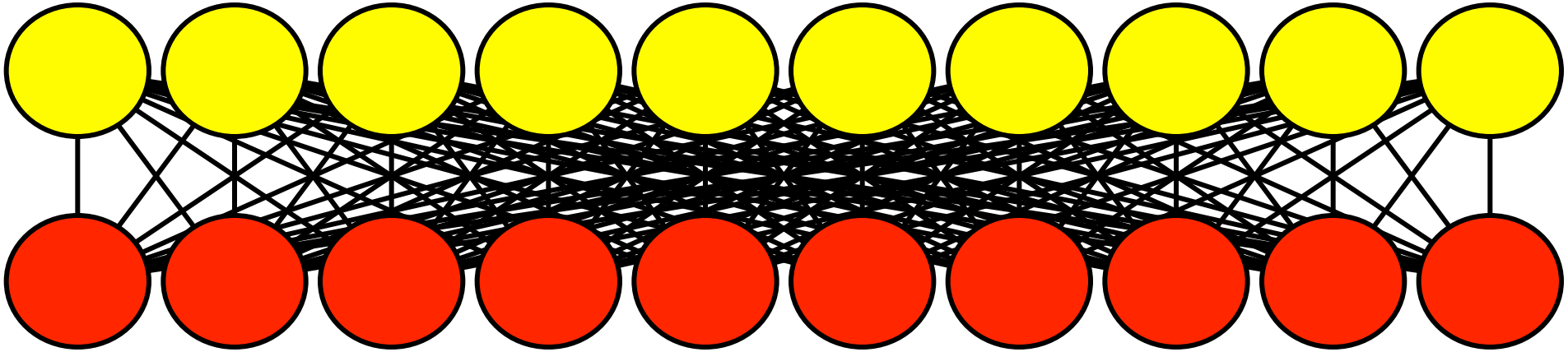
Everyone wants an ecosystem



If each application is specific to each service
we call it “vertical-integration”.

To grow, we need to go “horizontal”
and build an ecosystem where
all applications work with all services

…but Humans Don't Scale



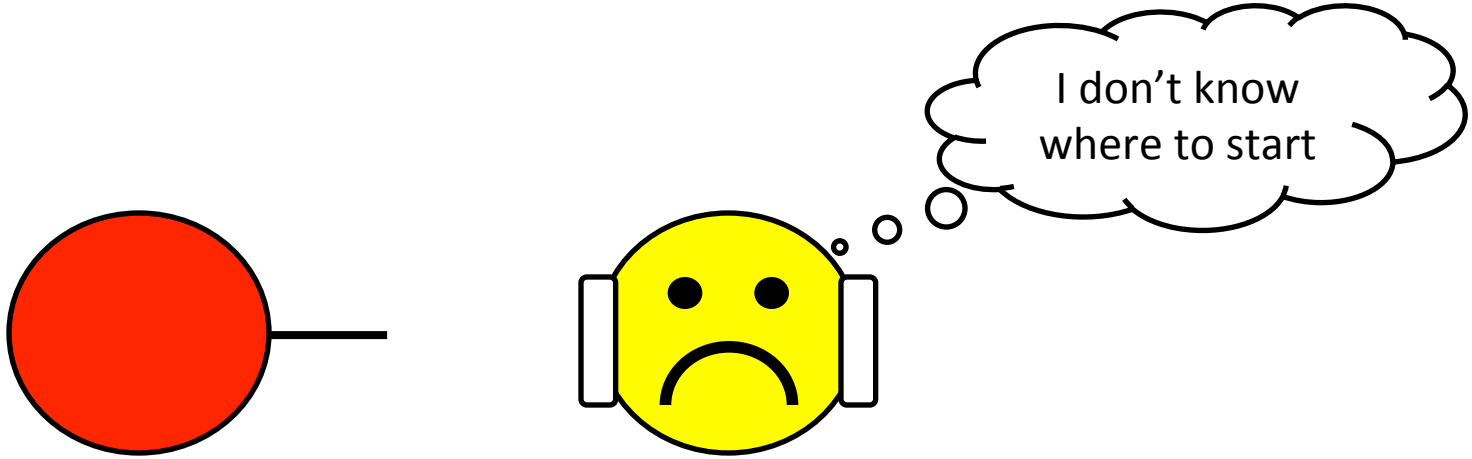
But adapting 10 Applications x 10 services
= 100 pieces of code to write

(and imagine 1,000,000 Applications…)

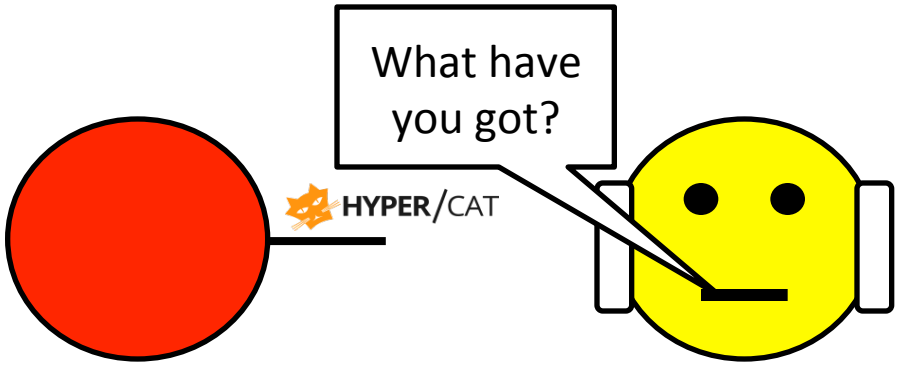
Problem:

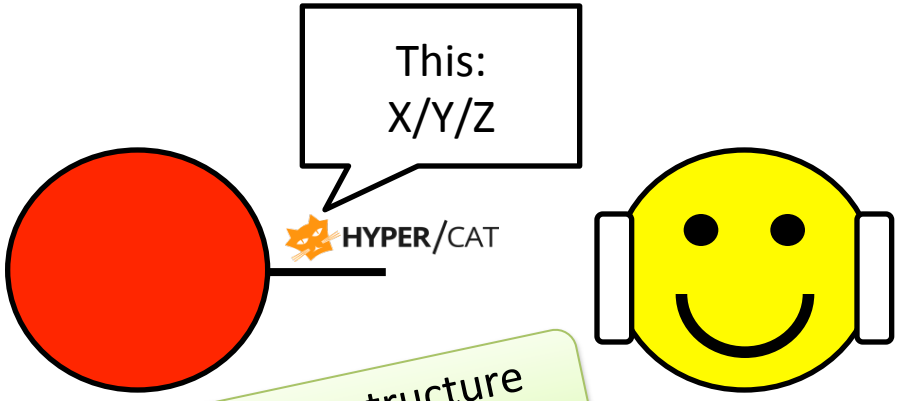
Services not machine-browsable

An application cannot automatically discover a new service's resources … so a human has to write code every time to enable it to do that.



HyperCat:
Makes services machine-browsable





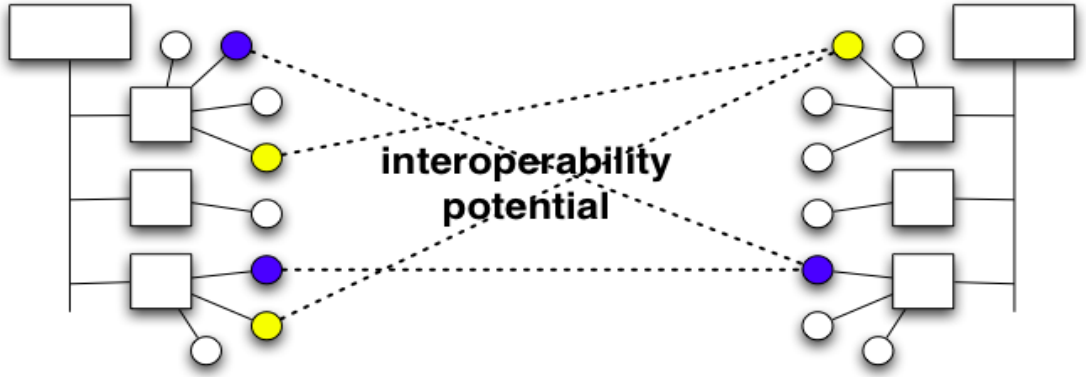
browse by structure
search by metadata

HyperCat: Easier life for everyone

- Developers
  - More data, quicker
- Service and Data providers
  - More customers
- End-customers
  - More choice
- Ecosystems and markets
  - Removes barriers

HyperCat is not a panacea

- Applications and Services still have to agree on high level semantics
  - i.e. if a service provides temperatures in °C then the application needs to understand °C
- What HyperCat does is enable an application to find those things that it does understand, in any service
  - e.g. “show me all the resources which are in °C”

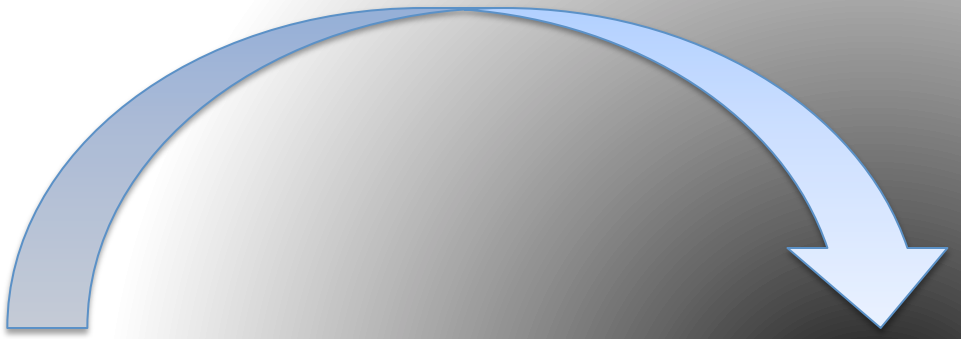


Work in progress…

All the things we kicked out of scope!

- Data formats (SenML)
- Ontologies (general, and more & more specific)
- Registration
- Standard Licenses
- Key management
- Monetisation models

From edge to centre



IoT

They're the same thing. One day, almost all Open Data will come from IoT.

Open Data

Billions of tiny sensors

Very large databases

“Open”

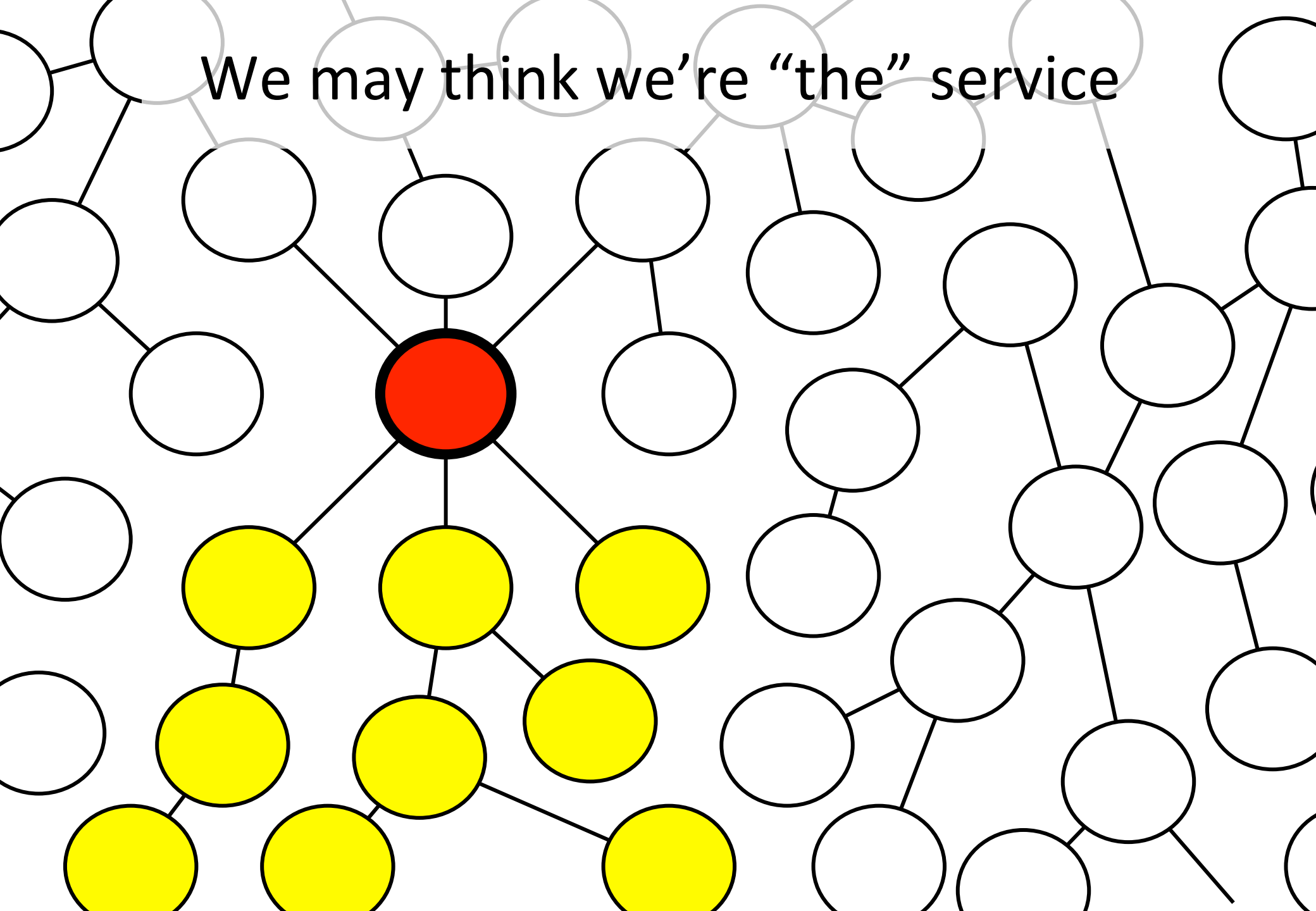
Not (necessarily):

- Free
- Public

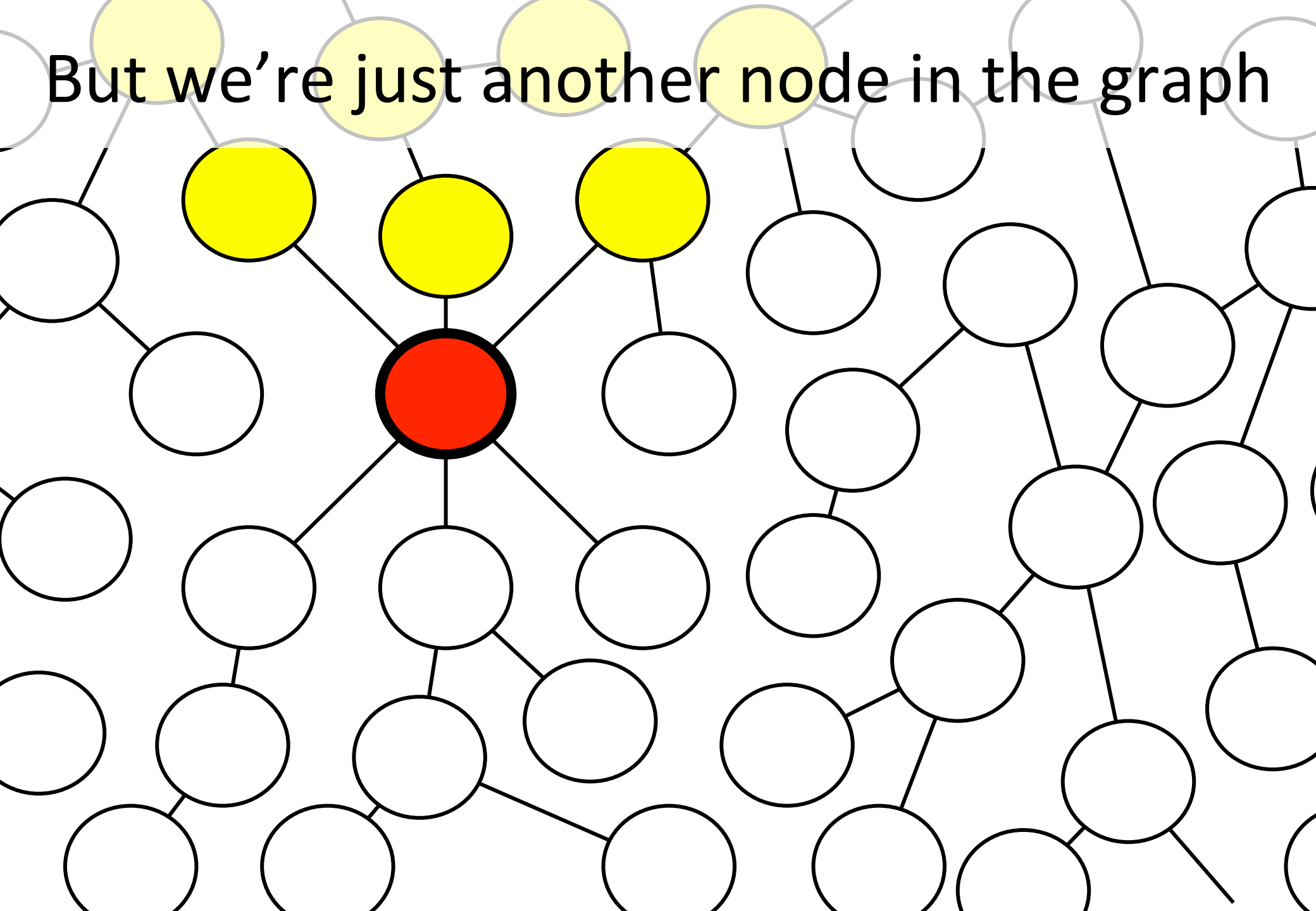
Means:

- My service works with your service
- We can swap providers without a lot of effort
- Requires less trust

We may think we're "the" service



But we're just another node in the graph



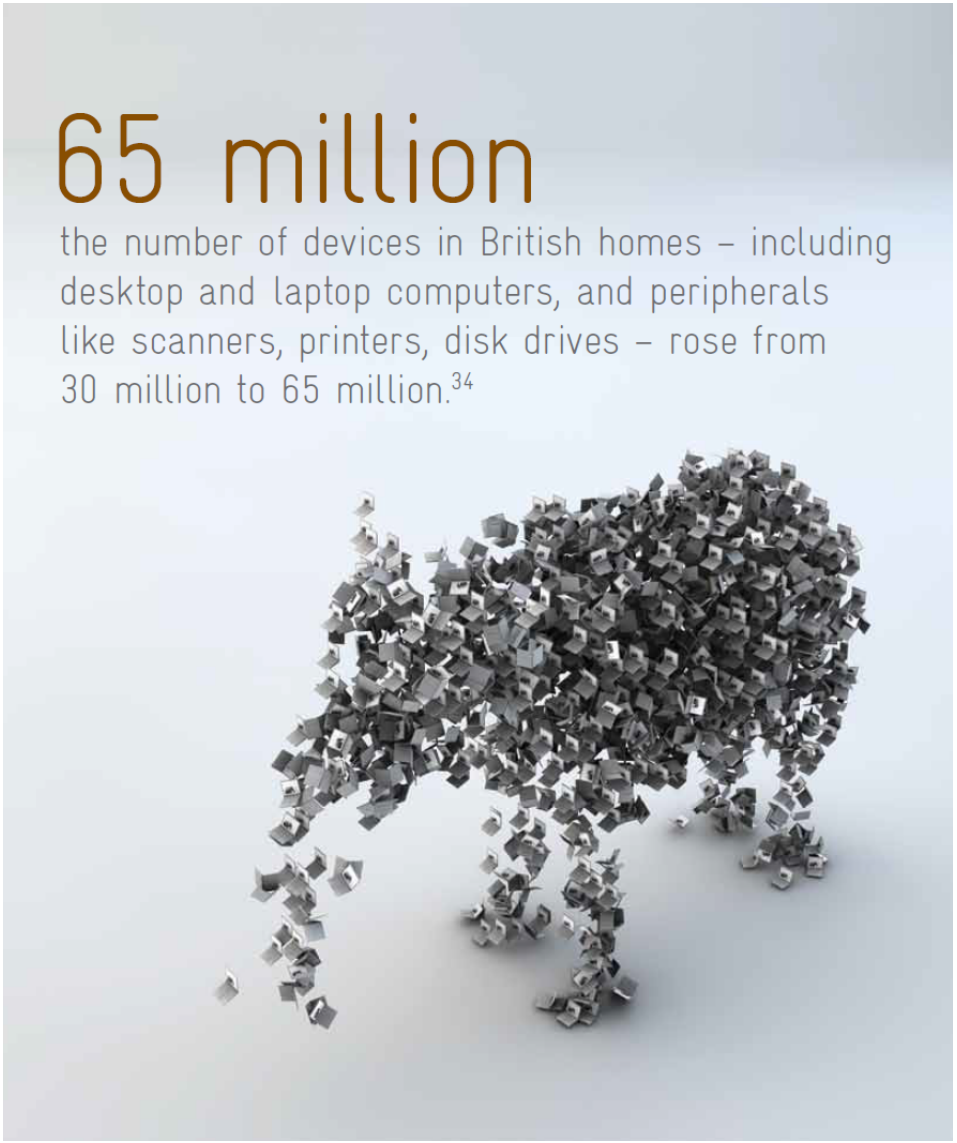
Smart Meters: T-2 years & counting

Here come:

- Consumer Access Devices
- Authorised Third Parties

3. Home Energy Use Update

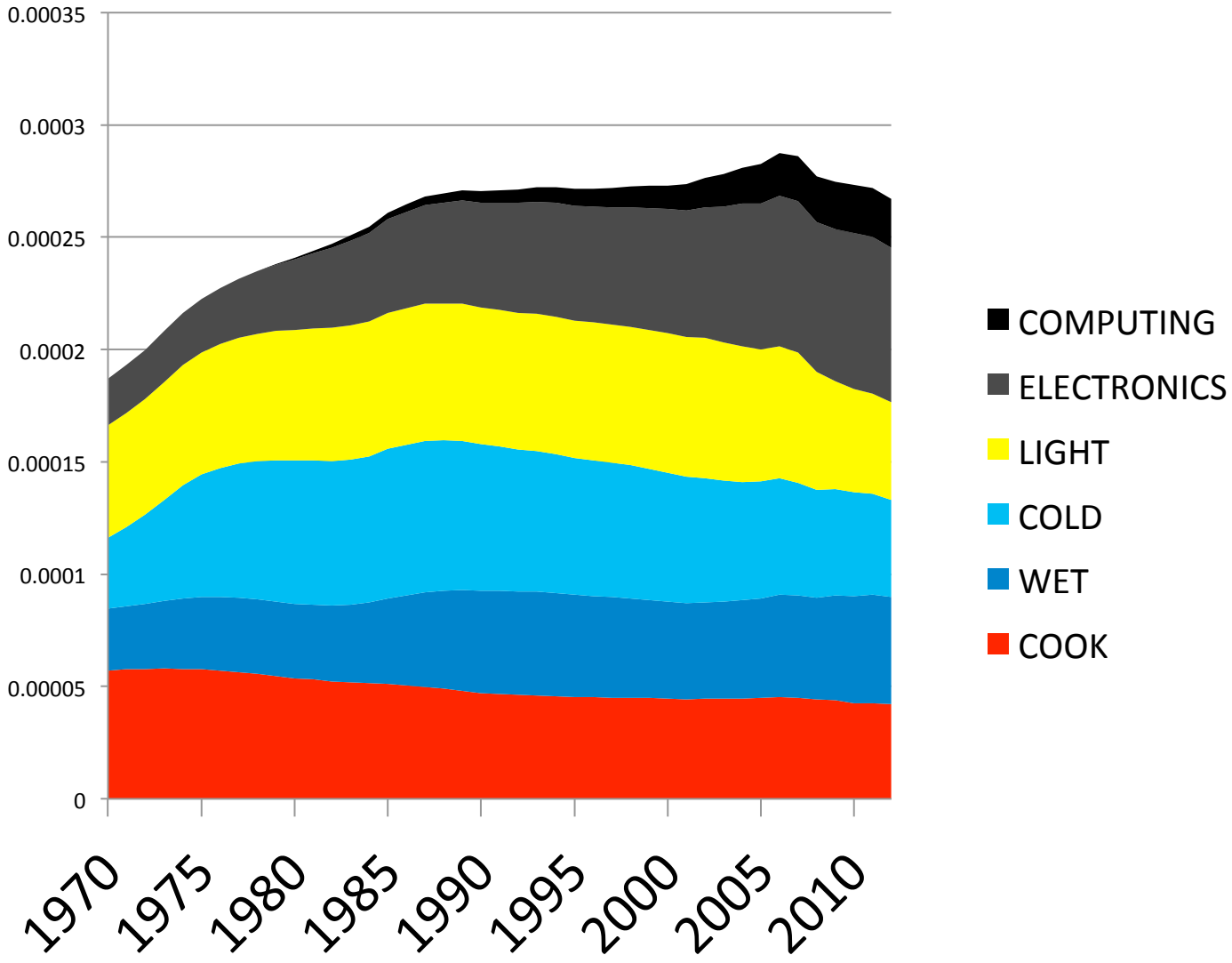
Home appliances & devices



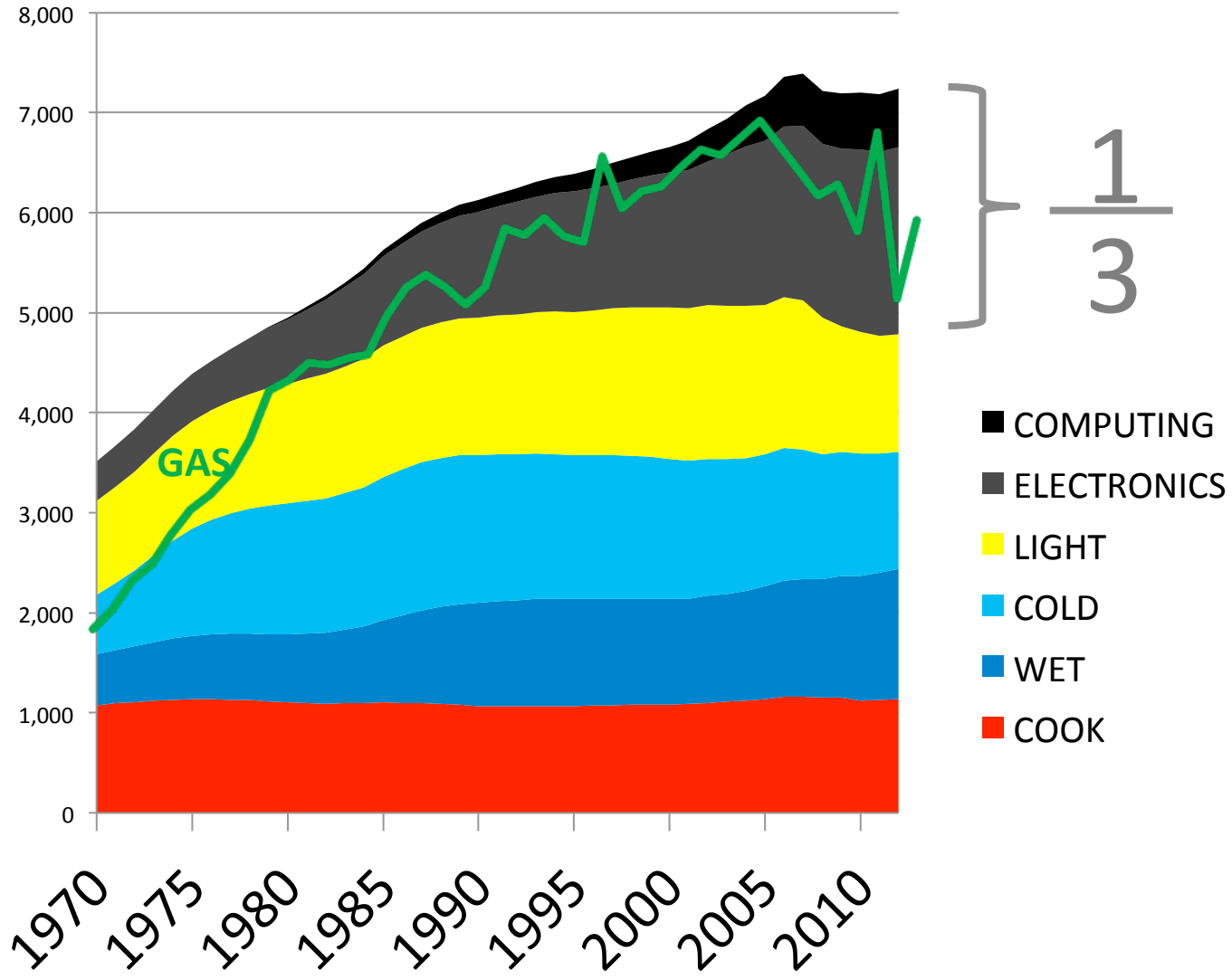
In 2009 the average household owned 11 times more consumer electronics items than they had in 1970, and three and a half times more than in 1990

[Av home has 41 appliances today]

Electricity- per Home



Electricity – all homes



(bubbles-internet)
(bubbles-this mac)

Bill = Price x Usage

- Energy **prices** are rising
- Household **bills** are rising
  - But slower, and not hugely above inflation
- Because per-house **usage** is falling

- Still a long way to go (up & therefore down!)
- Political talk of banishing green taxes…
- The real issues remain:
  - Insulation
  - Gadgets

creating smart homes

@pilgrimbeart