

‘the connected toilet roll’

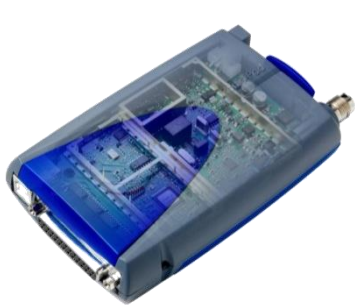
IoT in facilities management

Facilities Show 2016

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The Technology Partnership (TTP) is a technology and product development company. For over 25 years, we have been working in partnership with our clients to bring new products to market & to create new business from advances in technology.



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IoT

Internet of Things

{insert definition here}

Internet of Things

“adding connectivity to otherwise dumb devices”

GEO: home energy management

~100k units sold



Mayflower: Smart Lighting
over 300,000 units installed



Well Cow

rumen pH measurement and monitoring





DisplayData: electronic shelf edge labels
over 10 million units sold

- “Customers don’t buy the Internet of Things. Customers buy a solution to a specific problem where Internet of Things (IoT) components are part of that solution”

“Servitisation”

transitioning a product business into a
service business

GEO: home energy management
adding Internet connectivity
enables additional services



the connected toilet roll



EVANS VANODINE



WASHROOM CLEANING CHECKLIST

Date	CHECK STOCK AS REQUIRED						CLEAN & TIDY HOURLY					MOP AS REQUIRED	Signed by
	Toilet Paper	Paper Towels	Soap	Hand Lotion	Feminine Hygiene	Air Freshener	Wipe Sinks & Floors	Wipe Mirror	Check / Wipe Toilets	Pick Up Litter	Empty Bins	For Clean Floors	
Supervisor Inspection													
9am													
10am													
11am													
Supervisor Inspection													
12pm													
1pm													
2pm													
Supervisor Inspection													
3pm													
4pm													
5pm													
Deep Cleaning													

Tick box only if an item has been restocked or completed

Report any faulty or broken items to your supervisor as soon as possible



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connectivity

how do we get the data from the device to the cloud?

sensing

how do we measure the data that we're collecting?

power

how do we power the device?

cost

what does the device cost to build and cost to run?

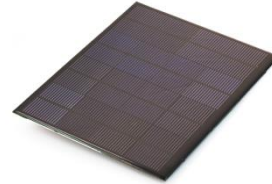
sensing

not the difficult part of this product(s)



power

mains vs battery



connectivity

cellular

coverage (ish)

ease of deployment



cost (unit/capex/opex)

power requirements

physical size

approvals



connectivity

WiFi

cost (ish)

power (ish)

coverage (ish)



corporate network



connectivity

WiFi



connectivity

ZigBee/Zwave/etc.

cost

power

coverage (basestations)



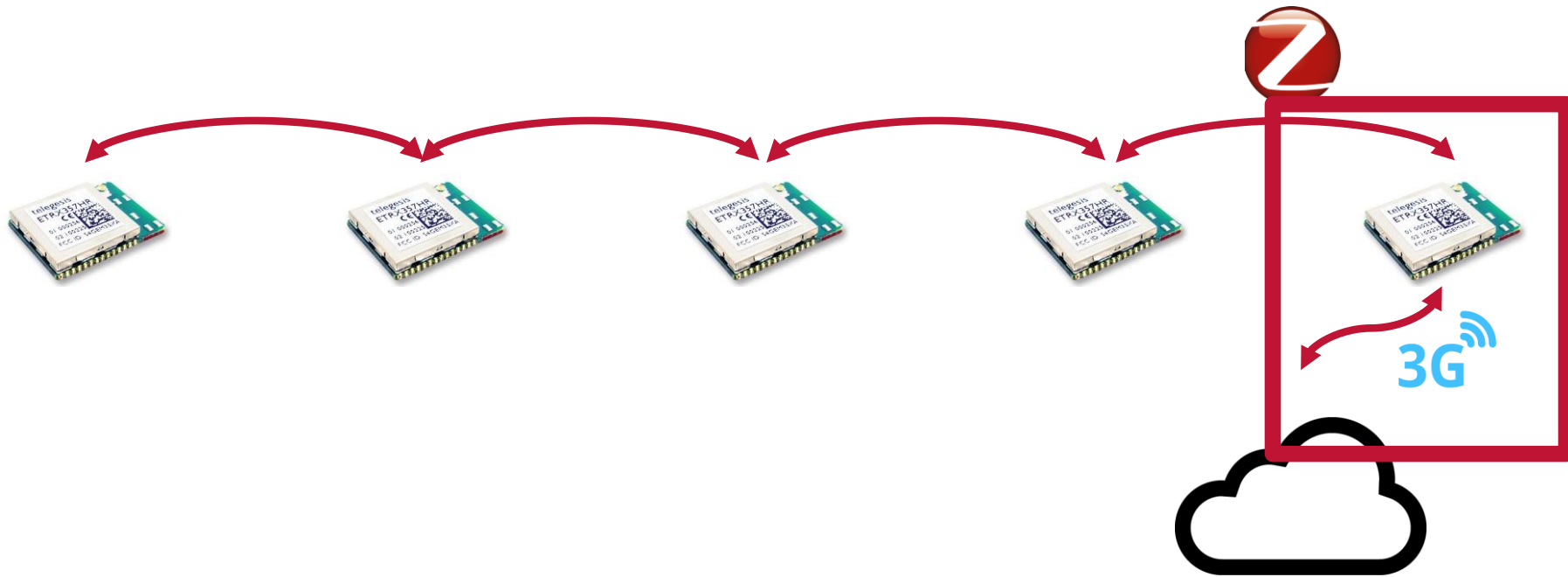
range (ish)

corporate network



connectivity

ZigBee/Zwave/etc.



connectivity

ZigBee/Zwave/etc.



connectivity

LPWAN (SigFix, LoRa(WAN), InGenu)

cost

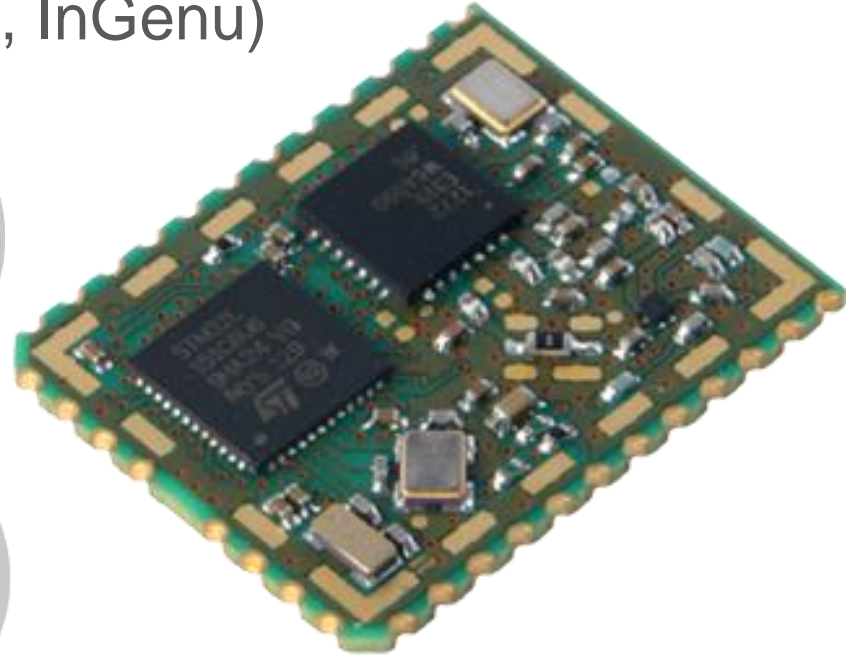
power

coverage

range

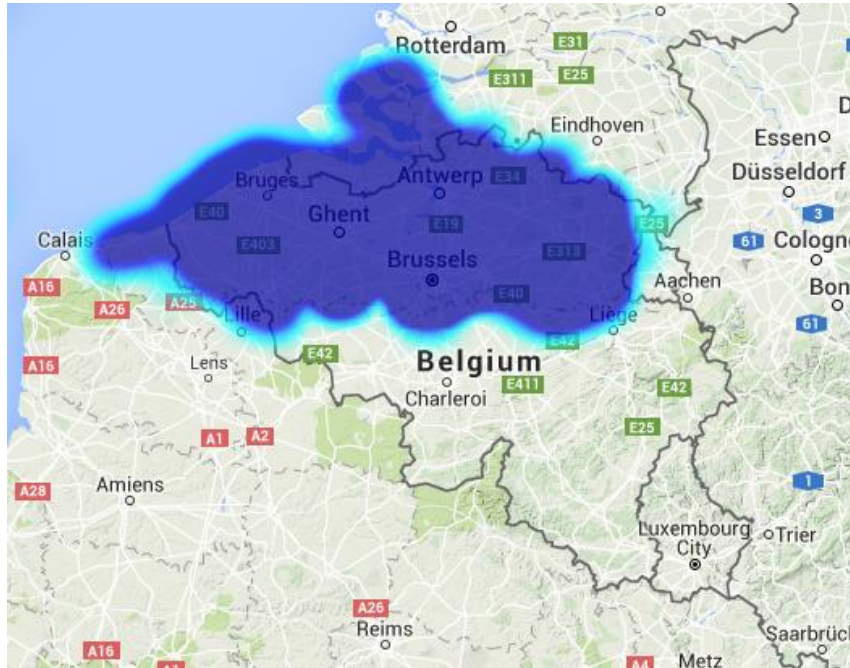


network roll-out



connectivity

LPWAN (SigFix, LoRa(WAN), InGenu)



cost

heavily dependant on connectivity option

unit cost (CapEx)

ZigBee/Zwave SigFox/LoRa(WAN) WiFi Cellular

running costs (OpEx)

ZigBee/Zwave WiFi SigFox/LoRa(WAN) Cellular

installation costs

← SigFox/LoRa(WAN) Cellular WiFi ZigBee/Zwave

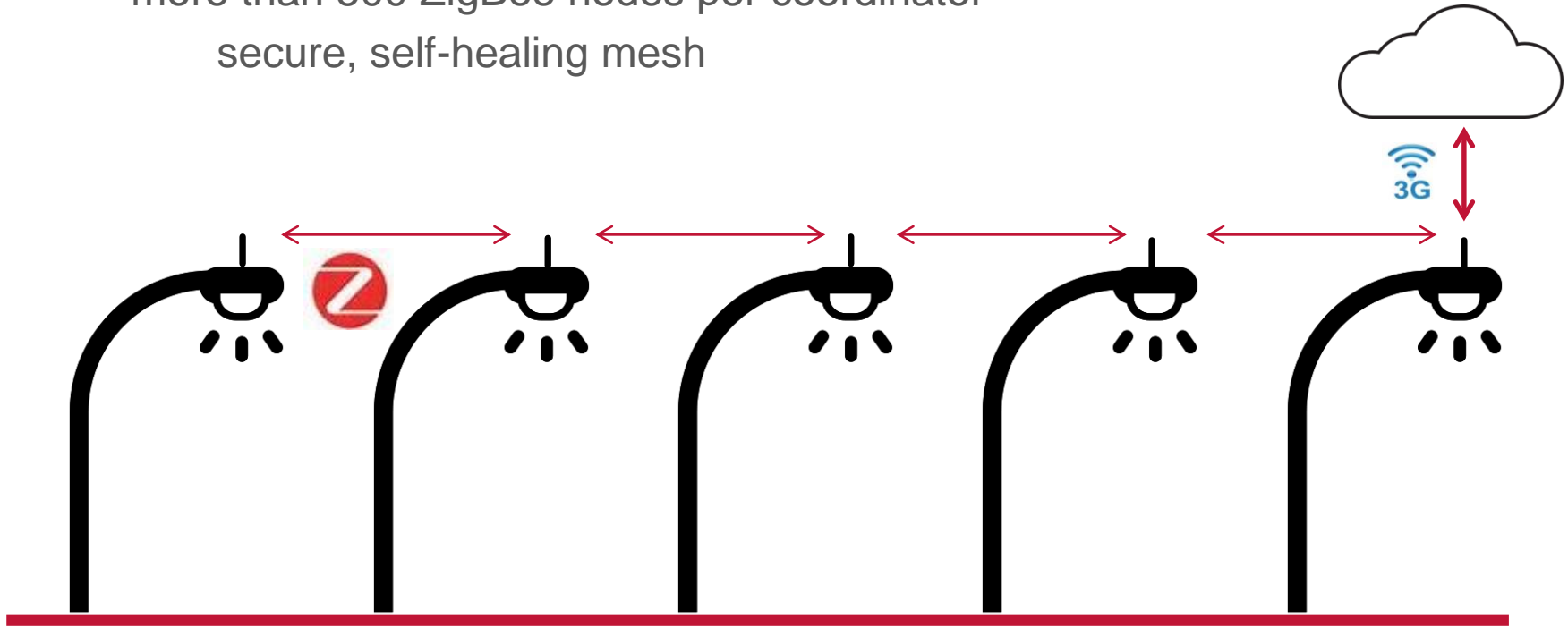
what does this all mean for
facilities management?

2 predictions...

1) BMS radio networks will be deployed around a key business case (lighting?)

radio architecture

3G modem provides connection to the cloud
more than 500 ZigBee nodes per coordinator
secure, self-healing mesh



node

ZigBee node

ballast independent



SubMaster

ZigBee coordinator

3G modem

light sensors



what's the business case?

modelling 50,000 lights replaced over 2 years, with a total lifetime of ownership over 20 years

LED only: payback after 8 years

LED + controls: payback after 6 years

..plus an additional \$10M of savings over the same 20 year period

- <http://www.silverspringnet.com/wp-content/uploads/SilverSpring-Whitepaper-Smart-Street-Light-Bizcase.pdf>



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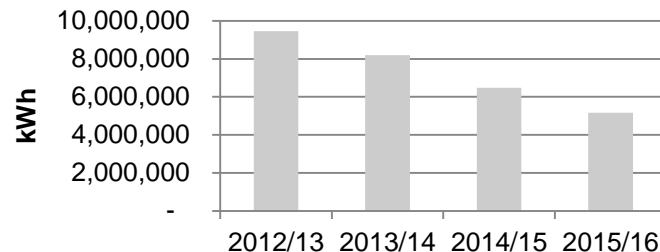


installation

work began in April 2010

25 year, £multi-million PFI contract
replacement of
112,000 street-lights in Hampshire
(22,500 street-lights in Southampton)

Total (Annual) Consumption
(Southampton)



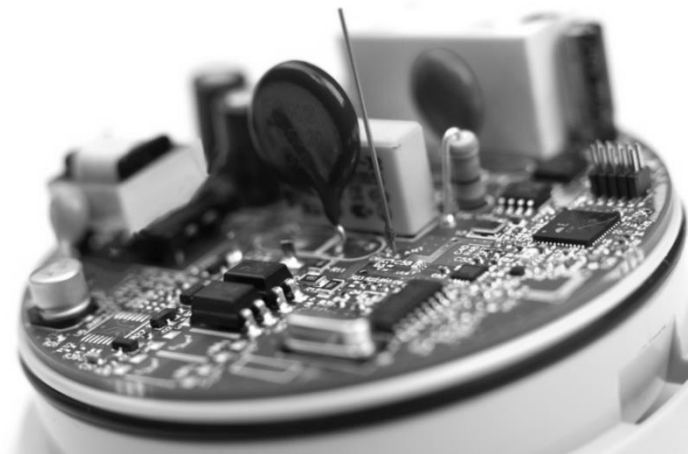
benefits

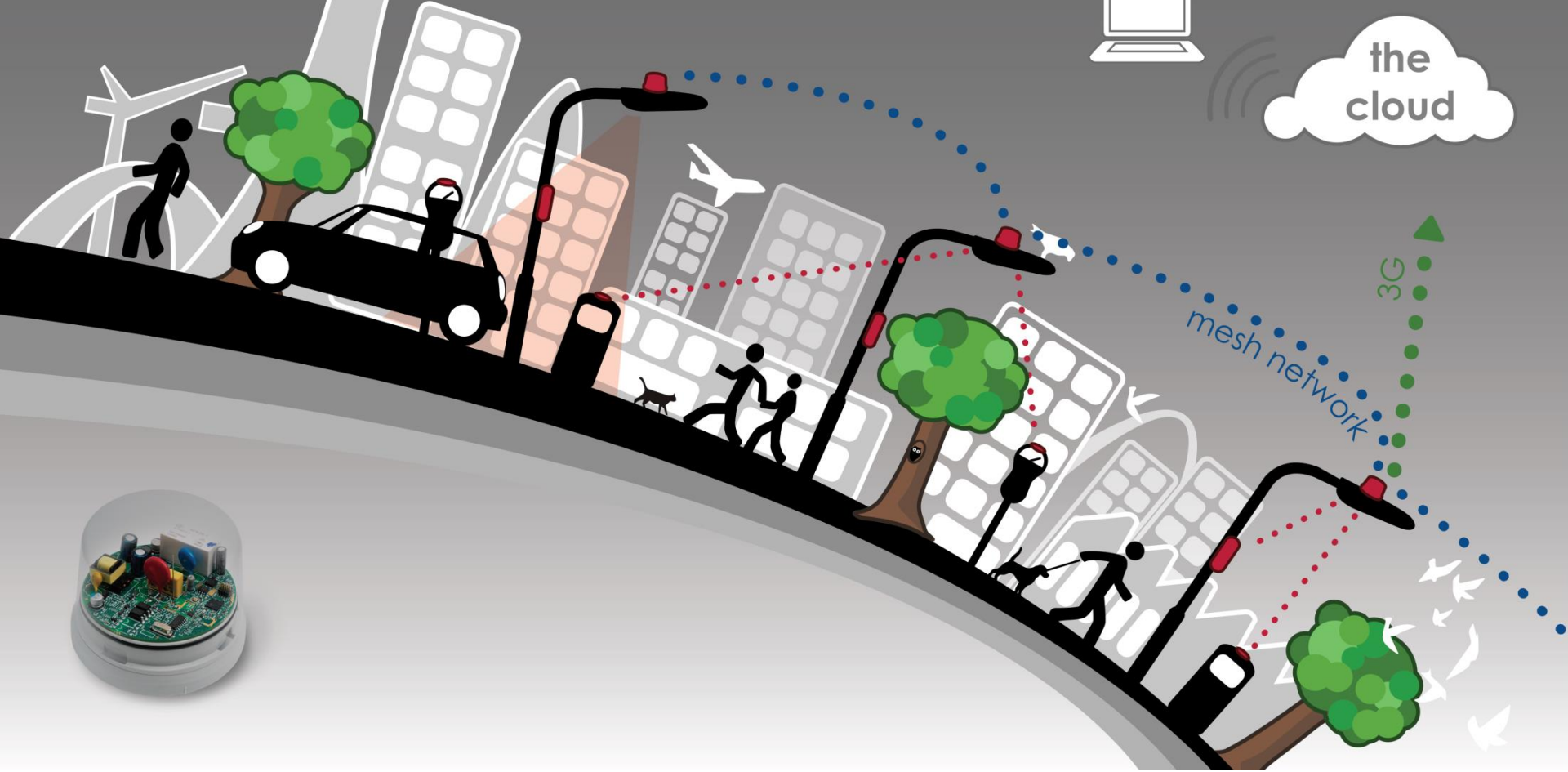
21GW/hours per year saved (**£2.1M/year**)

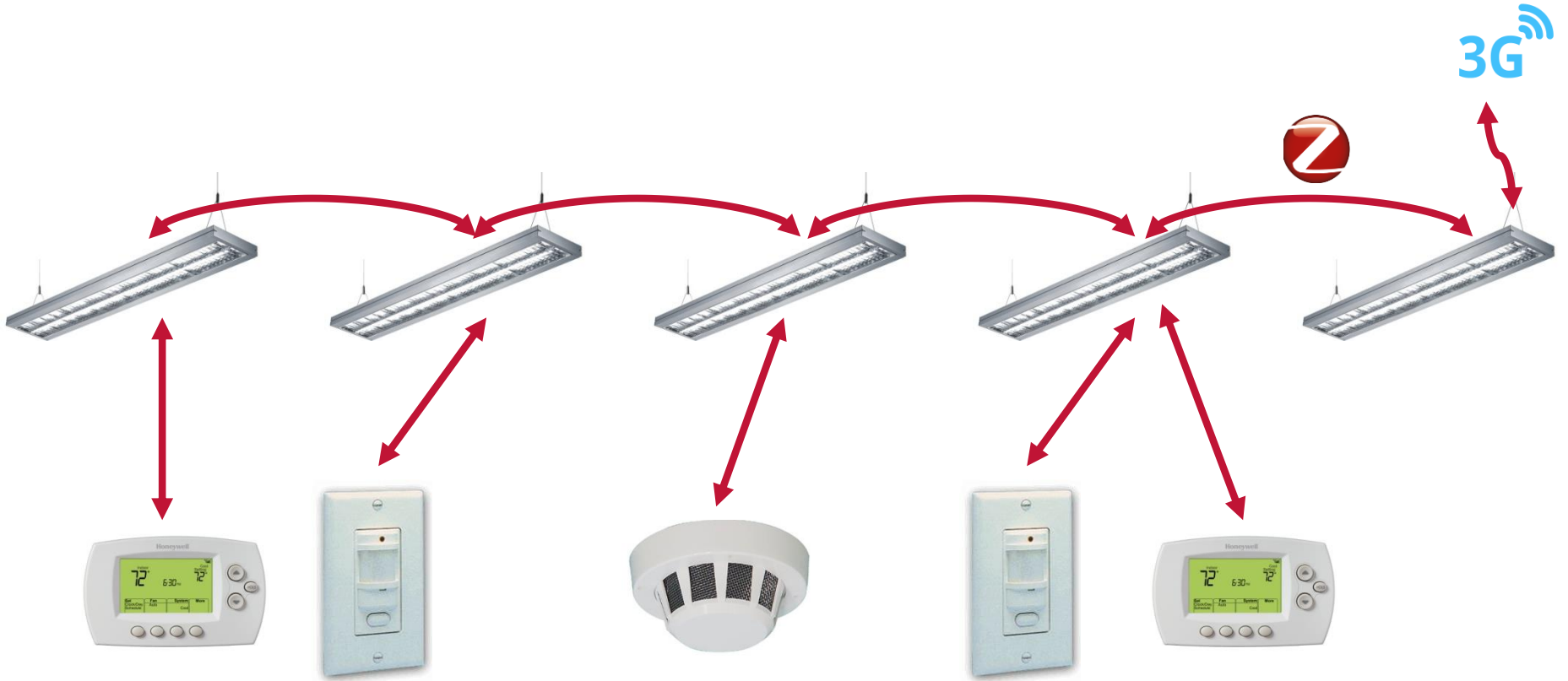
3,500 homes per year

savings of 4000 tonnes of CO2 per year

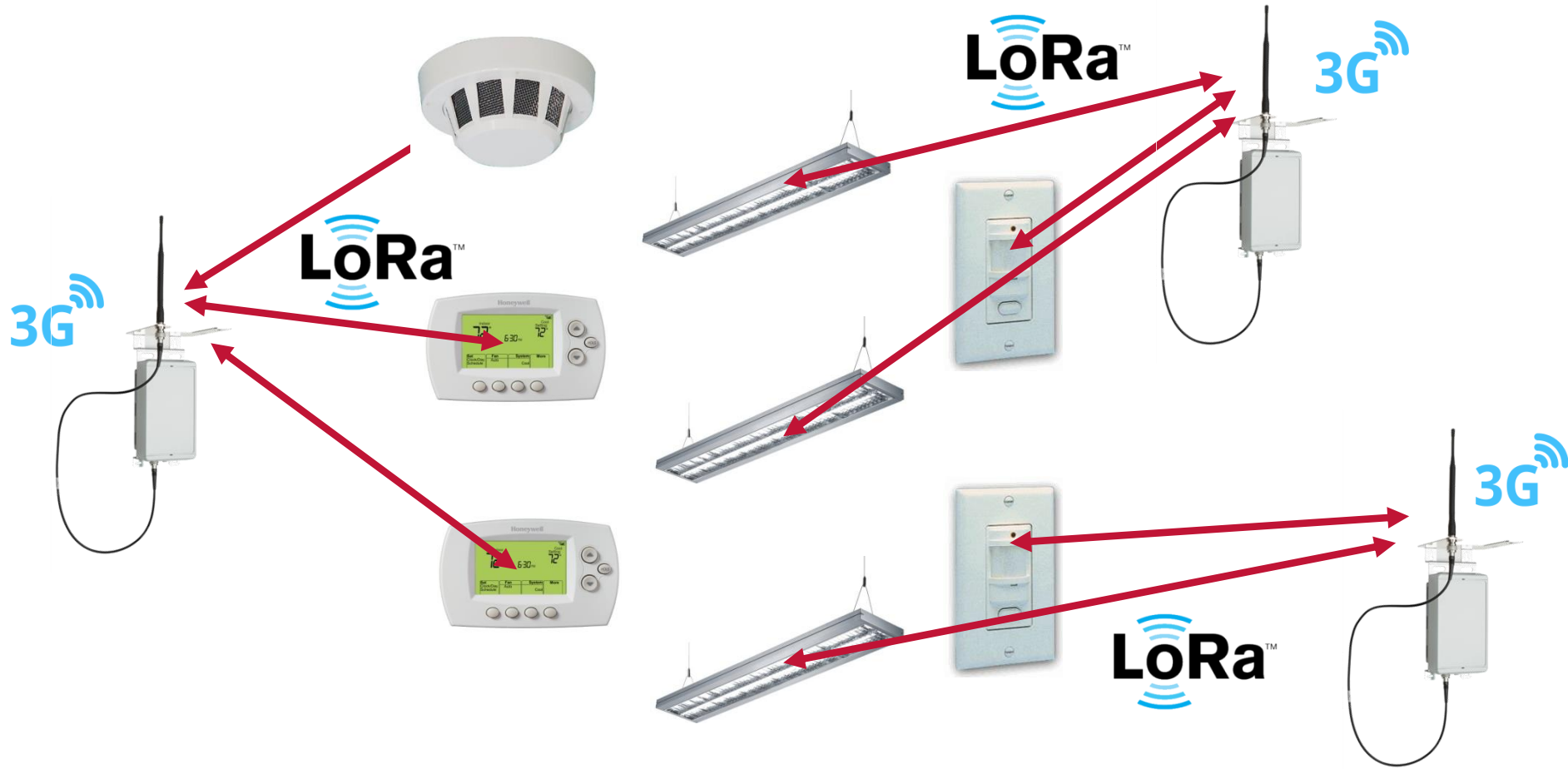
£140,000/annum savings in Carbon Tax reduction







2) ...or companies will offer
solutions based around
SigFox or LoRaWan



the technology isn't the
difficult bit!

drivers behind the IoT



connectivity



security



discovery



analytics

drivers behind the IoT



business model

look for additional value
e.g handwashing compliance



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questions?



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