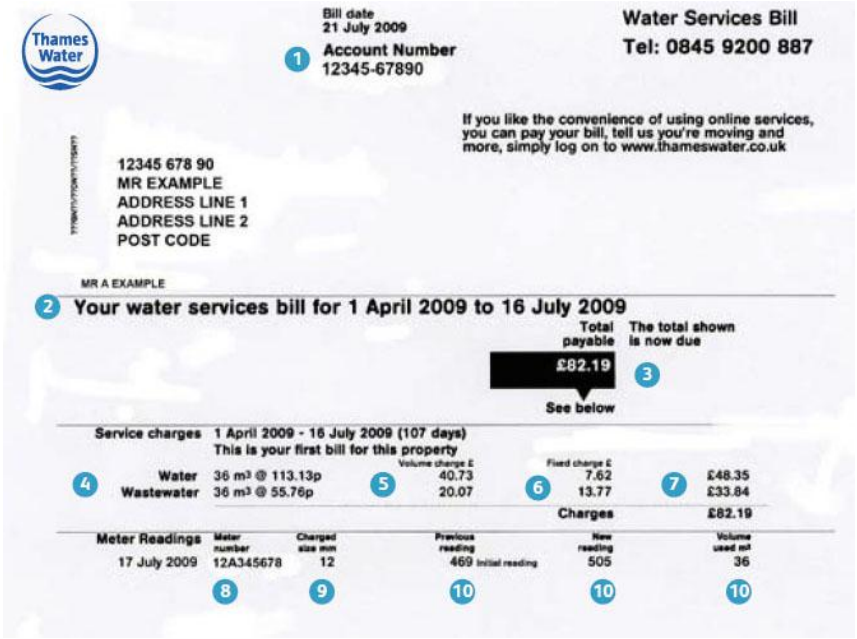
Water conversation

Largely invisible to the end user

One bill - once a year



Thames Water

Bill date
21 July 2009

1 Account Number
12345-67890

Water Services Bill
Tel: 0845 9200 887

If you like the convenience of using online services, you can pay your bill, tell us you're moving and more, simply log on to www.thameswater.co.uk

12345 678 90
MR EXAMPLE
ADDRESS LINE 1
ADDRESS LINE 2
POST CODE

MR A EXAMPLE

2 Your water services bill for 1 April 2009 to 16 July 2009

	Total payable	The total shown is now due
	£82.19 3	
	See below	

Service charges 1 April 2009 - 16 July 2009 (107 days)
This is your first bill for this property

		Volume charge £	Fixed charge £	
4 Water	36 m³ @ 113.13p	5 40.73	6 7.62	7 £48.35
Wastewater	36 m³ @ 55.76p	20.07	13.77	£33.84
			Charges	£82.19

Meter Readings	Meter number	Charged size mm	Previous reading	New reading	Volume used m³
17 July 2009	12A345678	12	469 Initial reading	505	36
	8	9	10	10	10

36m2 - is that good?

How is usage measured?

Mechanical meter on street

How does it work?

- Magnets turn mechanical counter

- Meter rotations can be also be detected by magnetic sensors

Communication

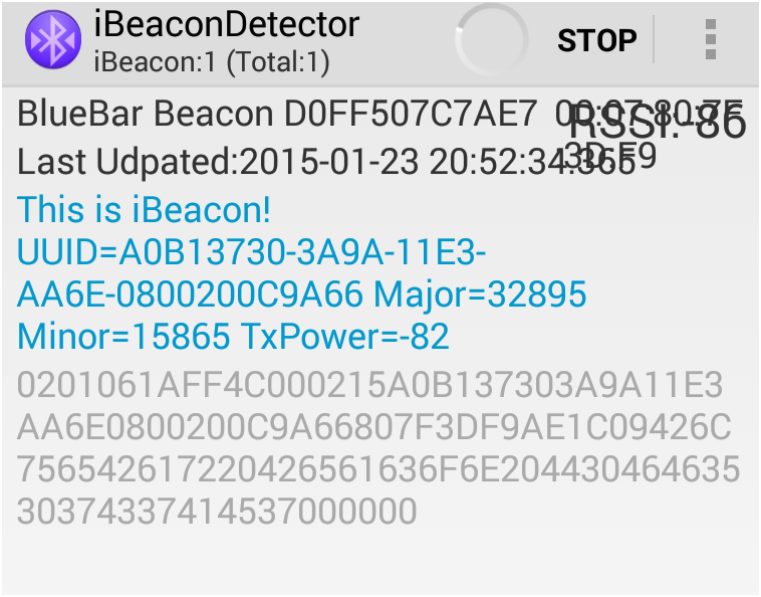
Bad

- Underground
- Outside of the property
- No wires allowed
- No line of sight

Good

- Plastic lid

Can beacons work here?



Yes - good single within 5 meters of cover

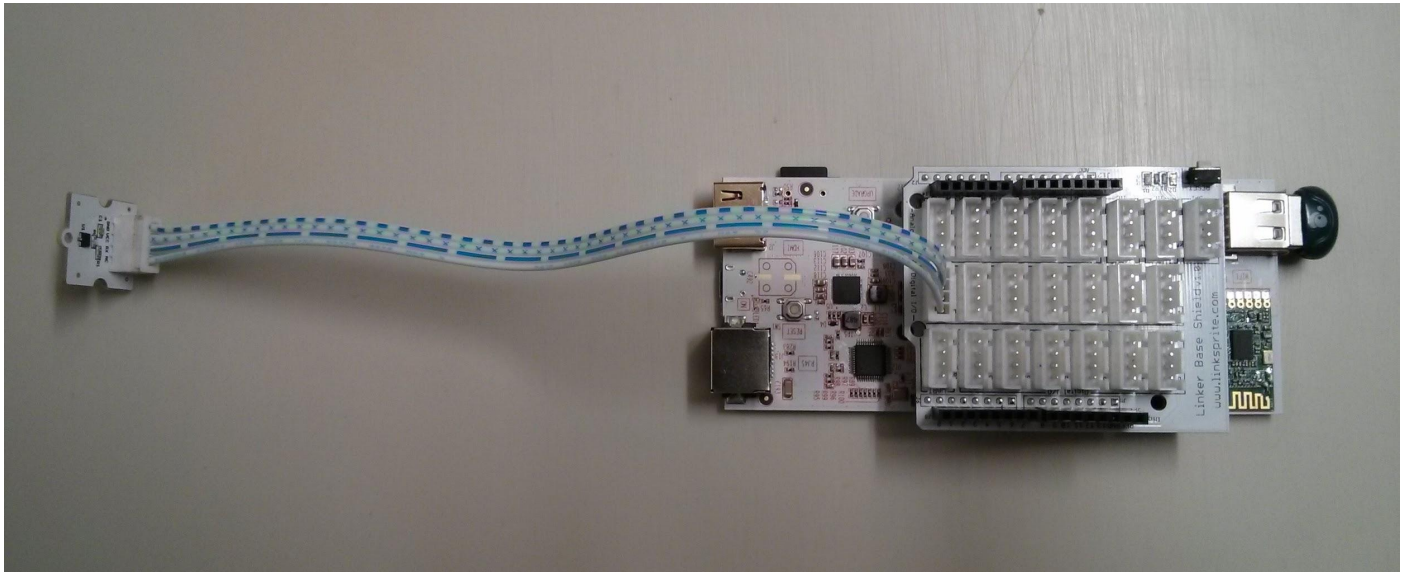
But - needs to be near surface for best range

Needed

Beacon with:

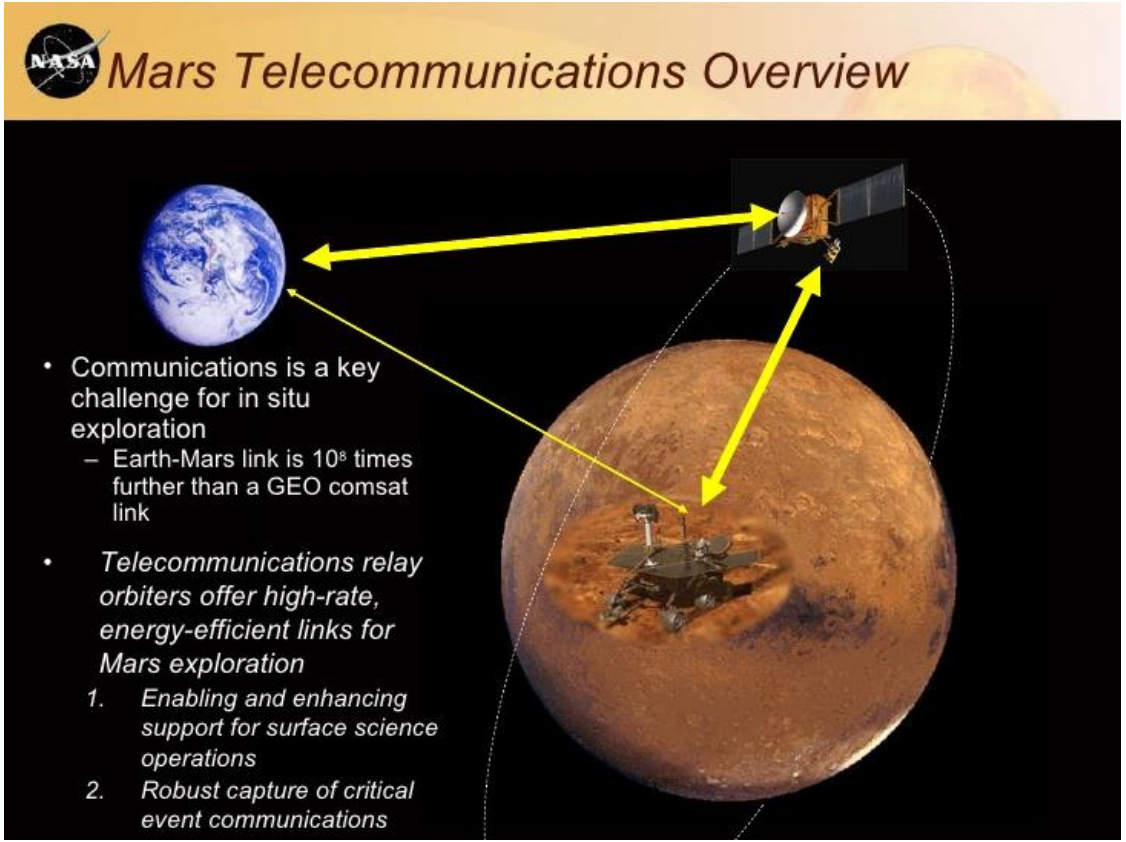
- magnet sensor
- radio

Beacon prototype



Hall effect sensor - Arduino - Bluetooth LE

No direct communication possible

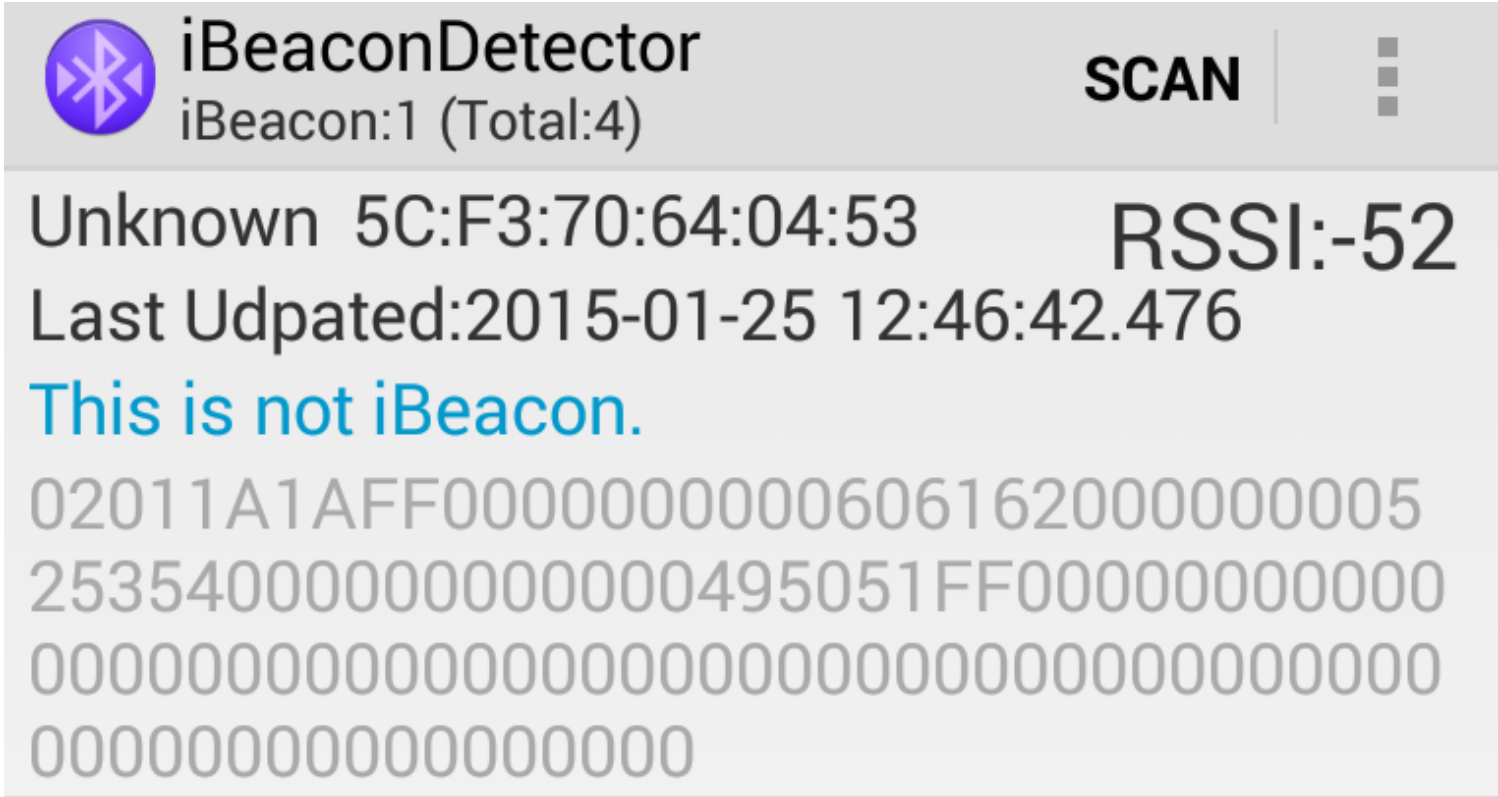


Uplink to mobile phone

- User walks past the meter twice a day
- 2 x 5 seconds per day
- Beacons stores meter counts

- Beacons pings twice per second
- Good chance of passing data to phone
- Phone uploads to cloud

Readings past in Beacon pings



Usage

- User can see results of conversation measures

- Leak alert