

METER

Energy-use.org

Reading

Project update

Highlights

Participant uptake

- Over 400 registered
- Trial booked up until January 2017
- Waiting list of 150



Activity App

- Davide Zilli has been instrumental in developing the app
- We now have a versatile platform using Cordova and a json structure (see p.2)



Diary coding

- Jessica Bernard coded over 50 handwritten diaries using the app
- She advanced the coding process immeasurably



Phones

- Adriano Matousek created flashable files for efficient phone configuration
- Fully rooted functionality
- Battery life up by factor 5



Autumn 2016

One year into the five year project, Meter has started collecting data on household activities and electricity use. Read up here about progress and developments.

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El. readings

1215

Coded activities

Recruiting now

We are seeking a

Data Scientist

to support the processing, visualisation, analysis and interpretation of Meter data.

www.energy.ox.ac.uk/meter

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Meet the App

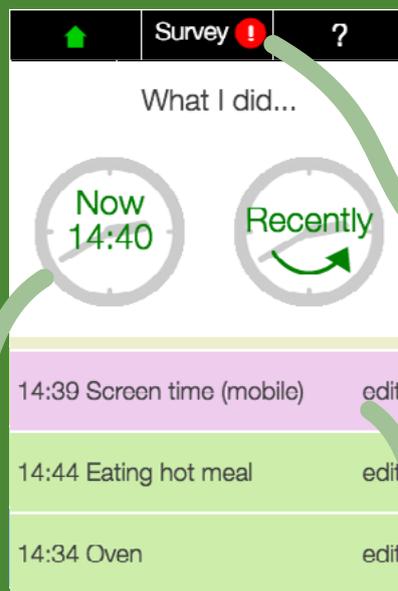
App complements Handwritten Diaries

- This winter we will launch our custom activity app
- The app is preinstalled on devices for each participant
- Data are stored on the device and returned via post
- Selections are coded on the device, avoiding interpretation of hand written entries
- Selected activities can prompt follow ups



Activity selection

- Every screen has 6 selection buttons
- 216 different choices from only 3 taps
- Custom entries can be typed out if needed
- Each entry has asks about location, activity, other people and enjoyment
- Stars are awarded to encourage entries
25 activities = 5 stars



Home Screen

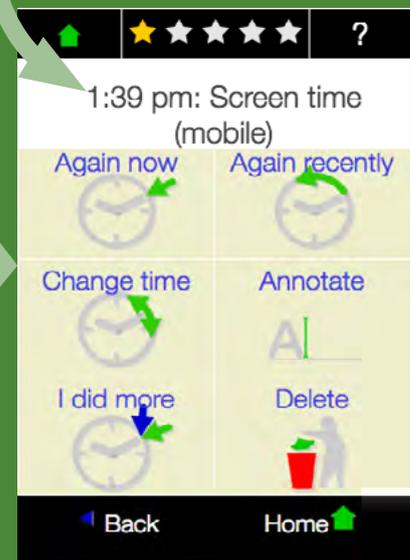
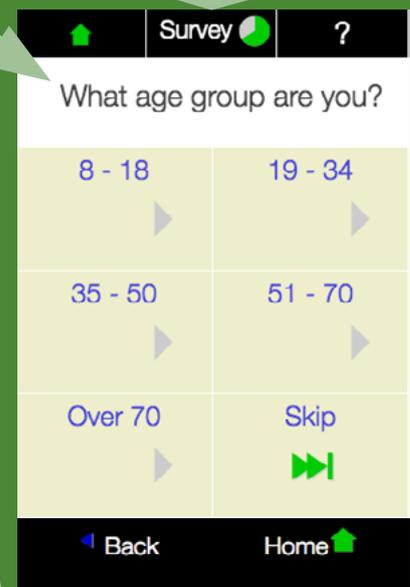
594
options

Edit

- The home screen shows all activities as a scrolling list
- Activities can simply be tapped to repeat them, edit their text, change the time, or deleted

Survey

- Personal information
- Appliance use habits



Outreach Activities

The immediate participant uptake is very encouraging. Still, we need to ensure good representation of the population. It is probably fair to say that participants so far have been disproportionately 'energy literate'.

We will continue to increase our engagement with our affiliated groups and initiatives, such as

- Bioregional - is a great help and fosters engagement in Bicester
- WeSET - We have a collaborative Innovate UK project and consider stronger engagement with schools
- AgileOx - Has helped greatly with local engagement. Sadly funding ended, but we try to continue this effort
- Low Carbon Oxford Week - Oxford City council provides a forum to supports outreach
- ERIC - our partner MOIXA works with the Rose Hill community in Oxford

To ensure we have good diversity in our sample, please help us with any additional contacts you may have. We are especially keen to diversify into the north of the UK and towards Cornwall, which has some immediate grid challenges.



Publications

- Residential Demand Modelling – Time for Flexibility. *Behave Conference.* Coimbra. Sep 2016
- How disruptive could storage be? *BIEE Conference.* Oxford. Sep 2016
- Flexibility in supply and demand. *DEMAND Conference.* Lancaster. Apr 2016
- Measuring the relationship between time-use and electricity consumption. *ECEEE Conference,* Presqu'île de Giens. Jun 2015

Publications are freely available at oxford.academia.edu/PhilippGrünwald

Academic outreach

- Attended and presented at meetings, workshops and conferences including:
 - DECC and BEIS, Sustainability First workshops, London
 - UKERC annual assembly, Leeds
 - Behave conference, Coimbra
 - DEMAND conference, Lancaster
 - BIEE conference, Oxford
 - Oxford Energy Conference, Oxford
- Affiliate Researcher of the Oxford Martin School Programme on Integrating Renewables
- Fellow of the Institution of Civil Engineers (FICE) by presidential appointment

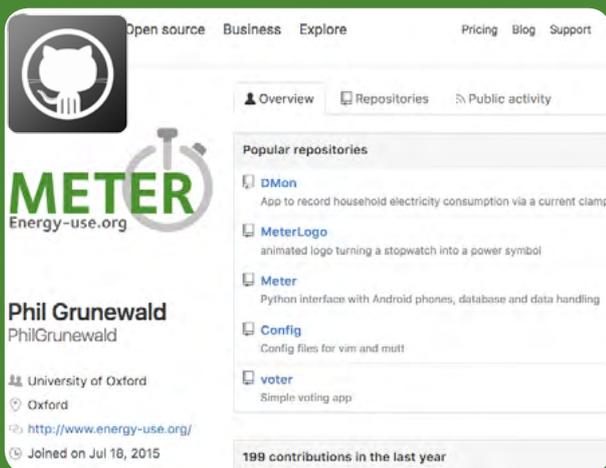
Meter Data

Open Source

All Meter code is accessible at [GitHub/PhilGrunewald](https://github.com/PhilGrunewald)

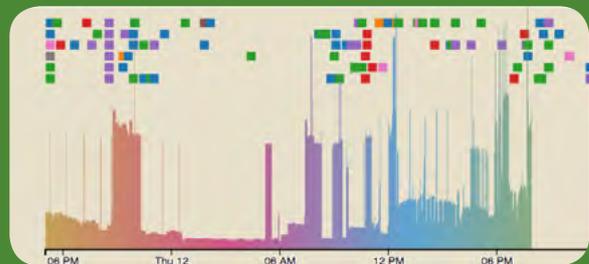
Main repositories

- DMon - Java based Android app to record electricity
- Meter - a Python interface to access the database, manage participants and configure devices
- MeterApp - the diary app developed with Cordova



Data Visualisation

- Meter data is multi-variate and complex
- A MySQL database keeps personal, survey, diary and electricity data securely and in a structured form
- Joe Rosa has started developing D3 visualisation, which will enable participants to review and annotate their own data (see spec)
- We seek a Data Scientist to support the development of processing and analytical tools, which will allow visual and quantitative access to the data



Thank You

The success of Meter is only possible with the help of:

1. EPSRC funding
2. Our partners
3. Our participants

A big Thank You to all of you!

EPSRC

Engineering and Physical Sciences
Research Council

Meter Partners



Department for
Business, Energy
& Industrial Strategy

nationalgrid



UKERC
UK Energy Research Centre



Linköping University

Demand
DYNAMICS OF ENERGY, MOBILITY AND DEMAND

moixa
energy