



New Forest Cicada Project

Smartphone-based Biodiversity Monitoring

Citizens' hunt for the New Forest cicada

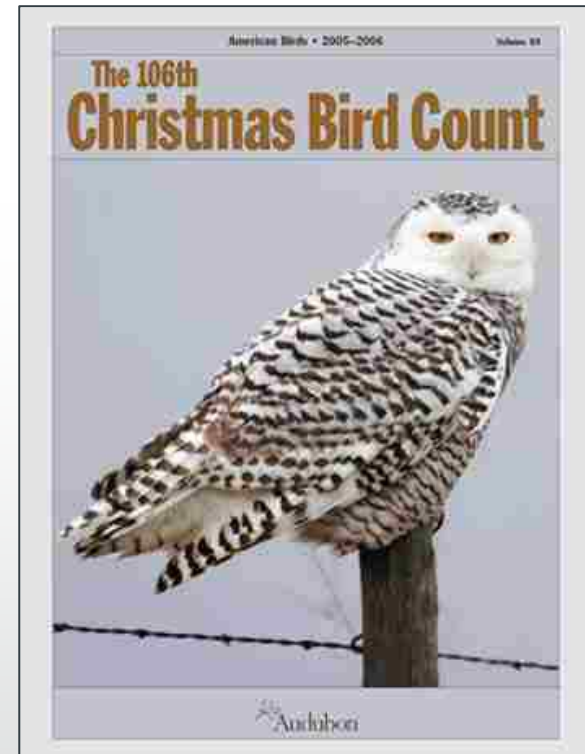
Davide Zilli <dz2v07@ecs.soton.ac.uk>

Alex Rogers <acr@ecs.soton.ac.uk>

Geoff Merrett <gvm@ecs.soton.ac.uk>

NOCS,
Southampton University
Apr 17th, 2013

Citizen Science



Internet and Smartphones

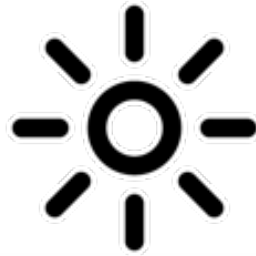
- Easy
 - Communication
 - Data gathering
 - Communities



Internet and Smartphones



GPS



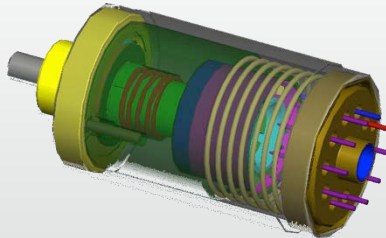
Light



Camera



Proximity



Accelerometer



Microphone



Biodiversity Monitoring

- Experts
- Enthusiasts
- Traditional methods
 - Manual
 - Require expertise



The New Forest

Image source from <http://en.wikipedia.org>

Bioacoustics

- Animals can be elusive
 - In particular birds, bats, insects
- Better detected by their sound
- Better classified by their sound (speciation)

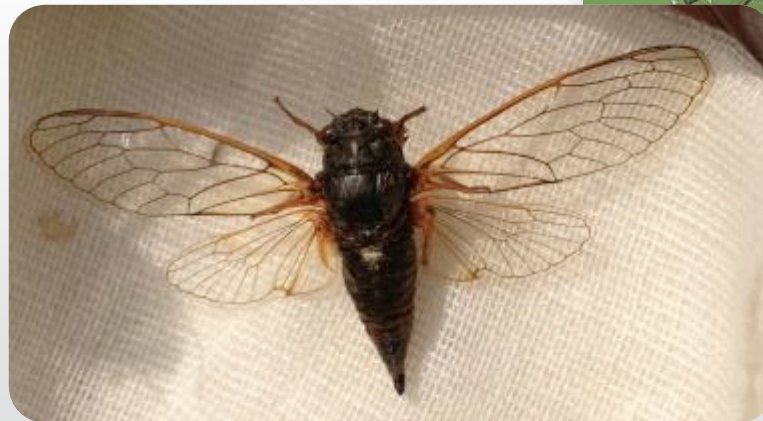
Example

- iBats – Bat mobile



The New Forest Cicada

- Native to the UK
- Only in the New Forest
- Call at ~13.5 kHz
- Most people >40 can't hear it
- Those who can, hear it even 60m away

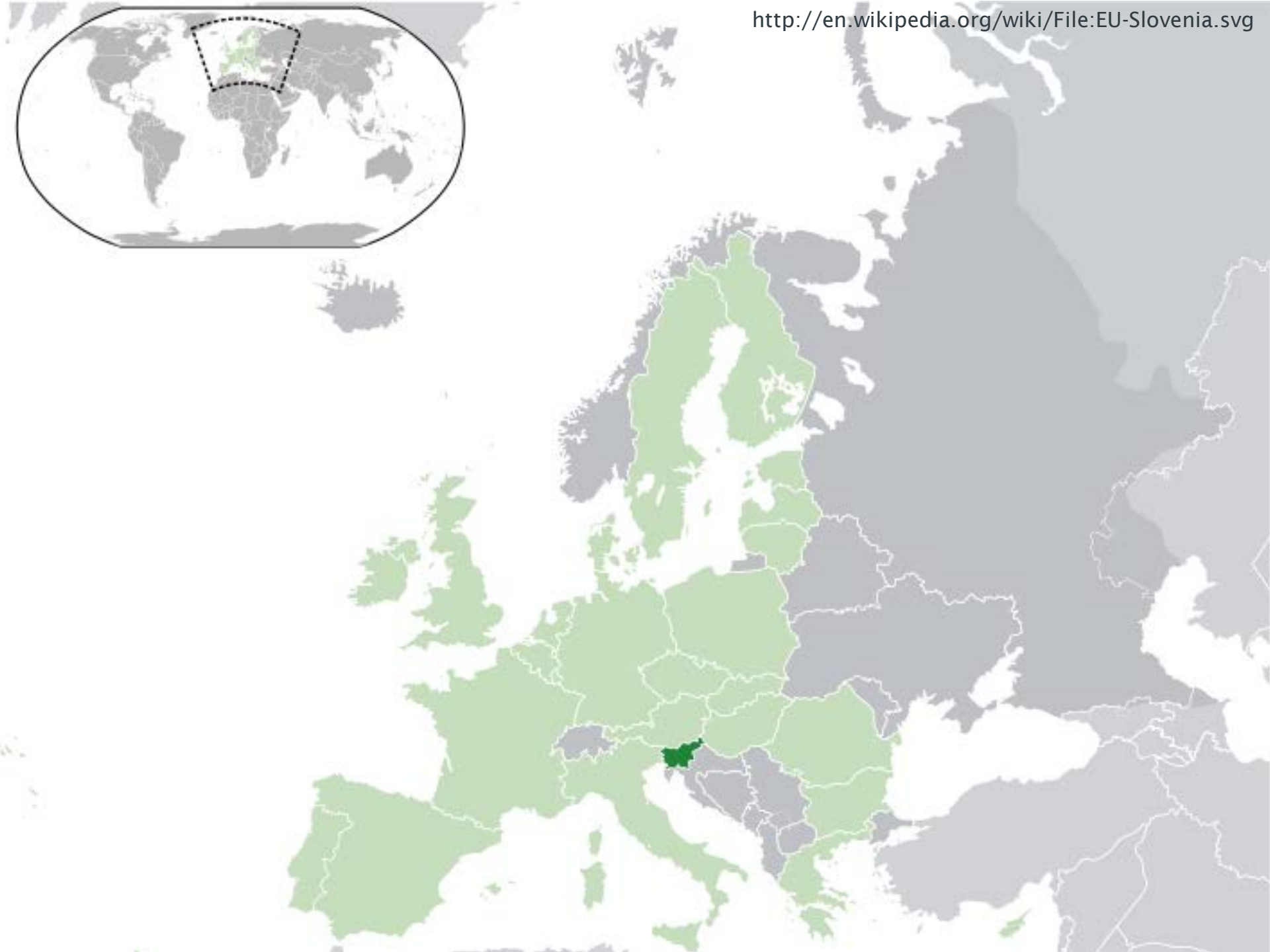


© Klaas van Haeringen 2007

Image above sourced from
<http://www.pbase.com/image/83110353>

Equipment

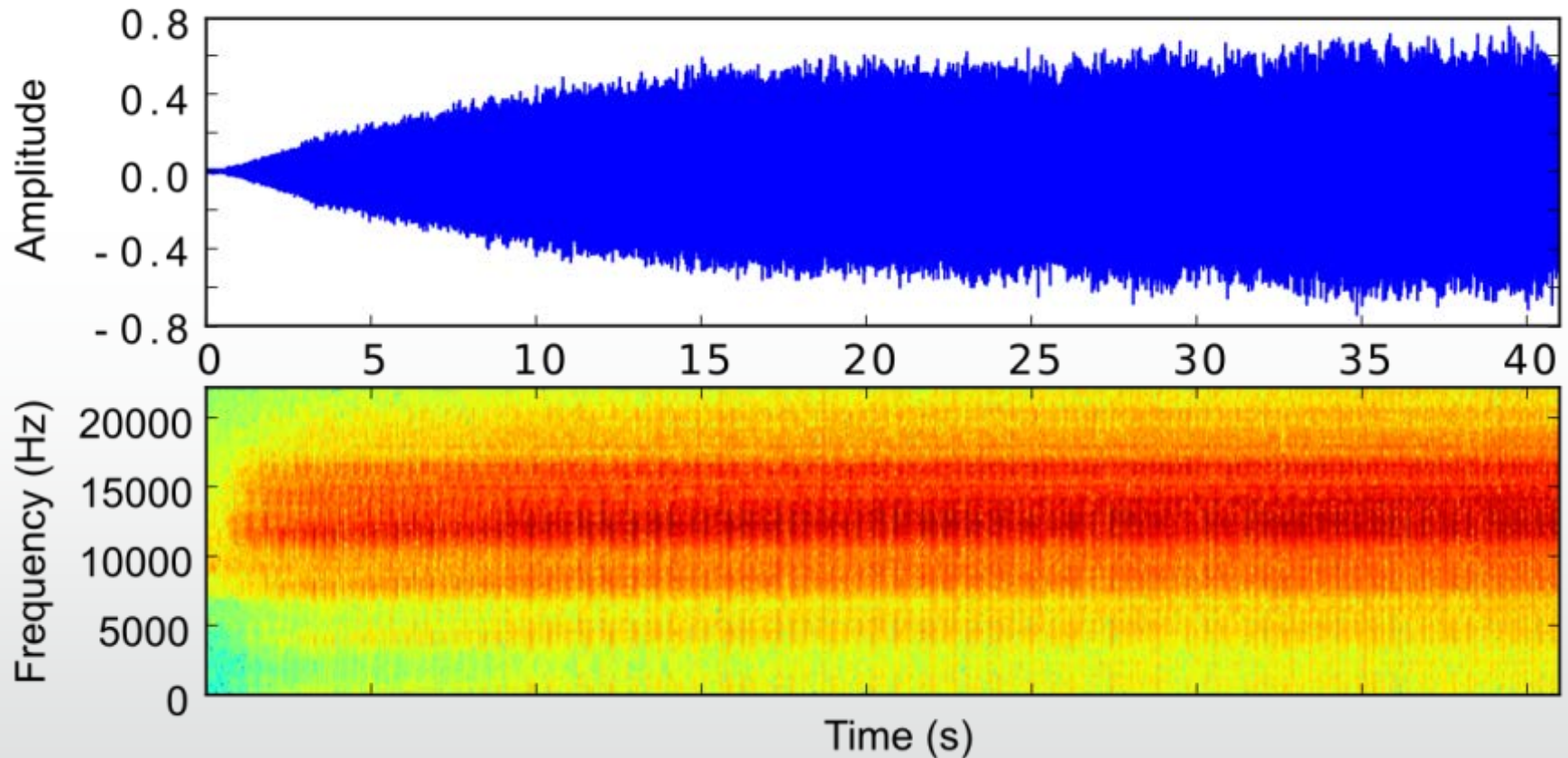






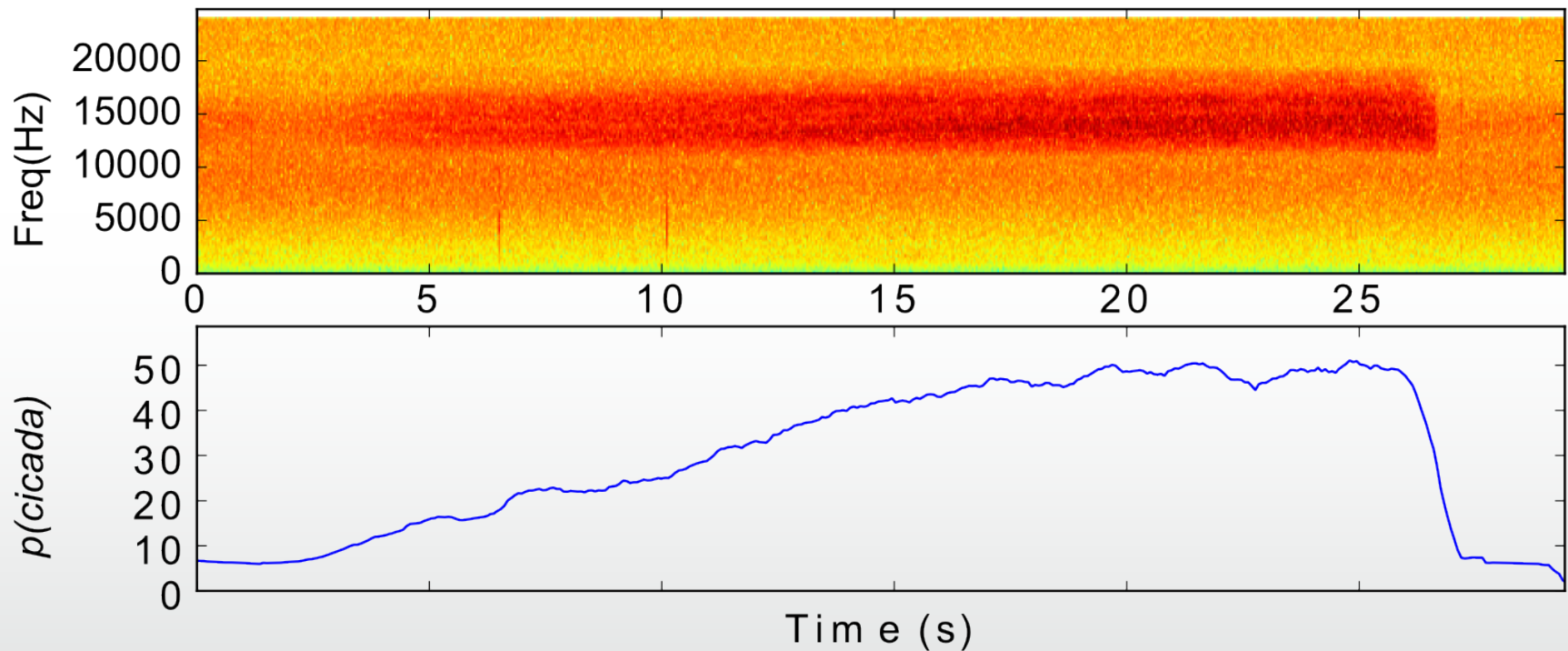


Waveform and spectrogram



Sound sample by Jim Grant, obtained from the wildlife sounds collection of the British Library.

Classifier



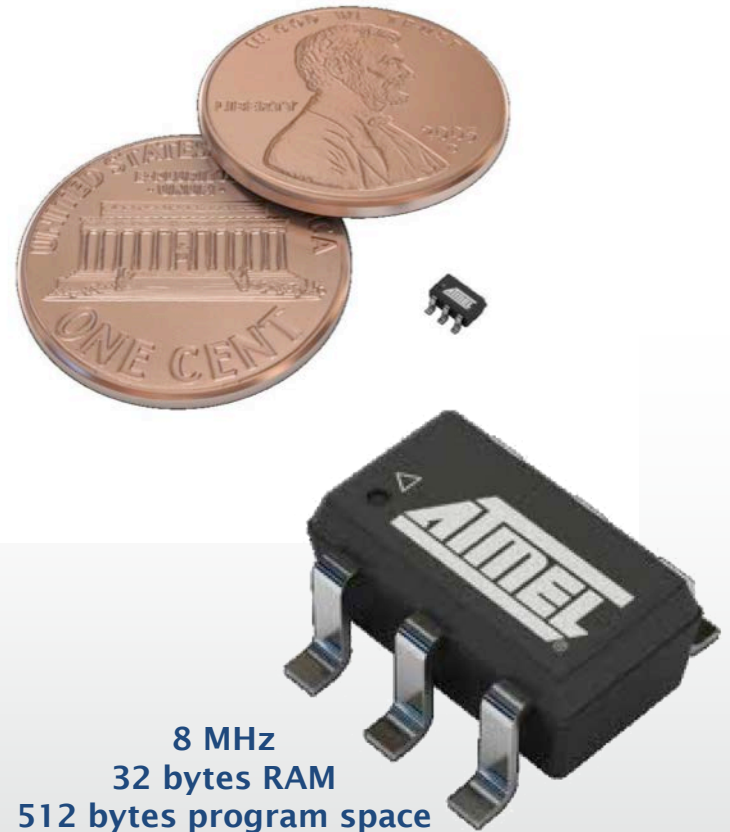


- Goertzel algorithm performing DFT in real time
 - 8.5 ± 0.5 kHz
 - 14.0 ± 3.0 kHz
- Threshold on detection level



Low cost hardware

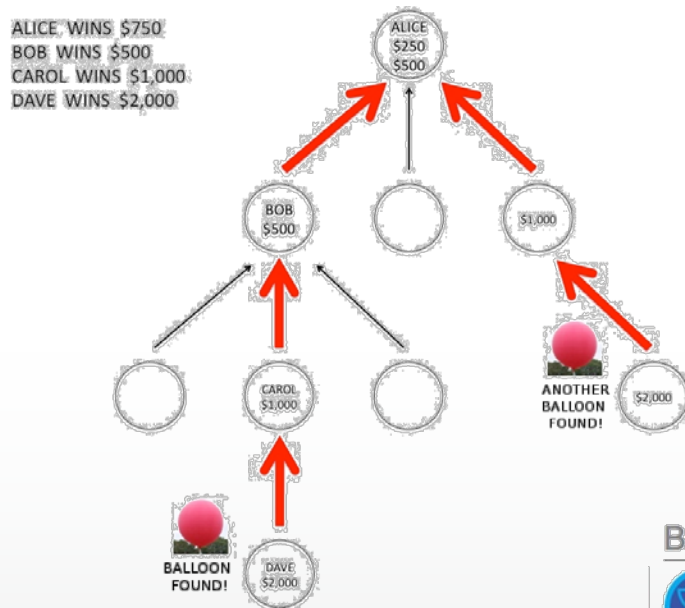
- less than £0.50 component cost



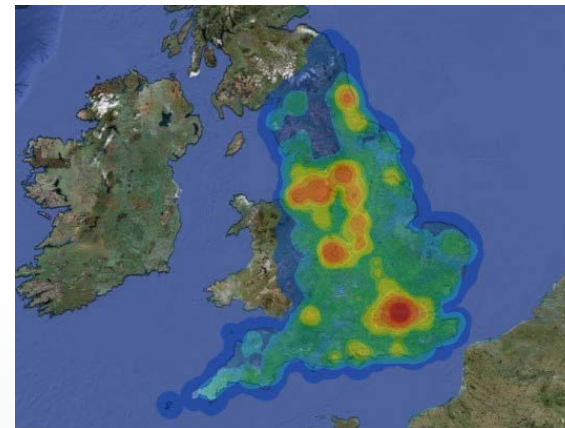
Atmel ATtiny5

Motivate and steer the crowd

Steering the crowd



DARPA Red Balloon



Weather
The Cicada is out only on warm still sunny days. Check out when you are more likely to see it next!

Today		16°C 12mph SW
Saturday 29th		15°C 8mph WNW
Sunday 30th		15°C 10mph SW
Monday 1st		16°C 8mph SW
Tuesday 2nd		16°C 12mph SW

Weather supplied by The Met Office

BADGES



We changed the way our badges work. Learn more [here](#).

MAYORSHIP

You are currently the mayor of 22 places! [huh?](#)

- + [Arundel Square](#) (London, UK)
- + [Carluccio's, St Pancras](#) (London, UK)
- + [Chelsea Football Club](#) (London, UK)
- + [Coburns, Bow](#) (London)

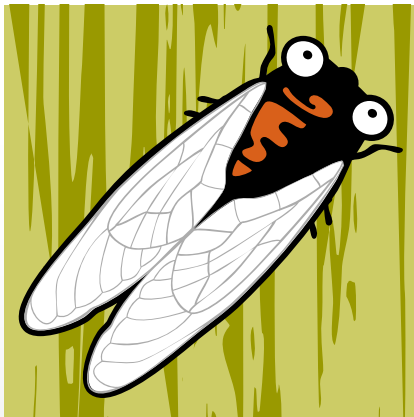
FourSquare Badges

New Forest Maps



We launch in May 2013

www.newforestcicada.info



New Forest Cicada

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*New Forest Cicada at
University of Southampton*



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