Green Gown Awards 2012

Winner's case study

Dissemination supported by: HIGHER EDUCATION hefce FUNDING COUNCIL FOR ENGLAND

De Montfort University

Green ICT

Greenview

DE MONTFORT UNIVERSITY LEICESTER

Profile

- HEI
- 27,000 students (includes full and part time students)
- 2700 staff
- Urban

Future-Tech DATA CENTRE DESIGN AND CONSTRUCTION

Category sponsored by

Section 1 About the project

Summary

Greenview is a new approach to energy visualisation - an iPhone app allowing DMU staff and students to see the live electrical consumption of their buildings in a creative and innovative way. It has contributed to the management of energy and staff and student engagement in DMU, it has resulted in the creation of an accurate methodology for quantifying actual comparative savings based on sound building science and analysis; increased understanding on the impact of energy dashboards and the methodology and approach of Greenview is now part of the Smartspaces project: an EU CiP project (EU/297273) enabling public authorities across Europe to improve the management of energy in their buildings by exploiting ICT.

Project partners

The project was the result of an innovative partnership between three different groups within De Montfort University – The Institute of Energy and Sustainable Development and the Institute of Creative Technologies along with the university's Estates department.

Section 2 The results

The problem

Energy in buildings is a significant issue for Universities. For example, research into energy wasted through lights left on in unoccupied buildings at night and at weekends has been found to be as high as 30% of total unoccupied use. Increasing research is being done into re-connecting people to energy in their homes through the use of novel display screens and smart-meter systems that may show the price, unit-cost or CO_2 of the electricity used through either a live feed or half-hourly metering. Whilst these have demonstrated potential in reducing consumption by 10-15% these interventions are based on an 'information-deficit' model – if 'they' have the right information 'they' will change behaviour, as well as centering on numerical representations of data to induce behaviour change. We wanted to design a visualization tool for staff and students that would be more fun and engaging.

The approach

Greenview aimed to develop a sophisticated smart phone application that would connect staff and students in DMU to the energy consumption of their buildings. We succeeded in developing an iPhone 'app' which was launched in March 2012. The app visualises energy use in buildings on the DMU campus through creating a narrative of buildings as habitats for endangered species, with a view to moving away from numerical ways of data presentation and testing a fun and engaging way to look at how we can look after

our environment. The app provided real-time data through meter readings provided on a half-hourly basis, and with the inclusion of graphical data options, appeals to the range of preferences individuals have for viewing and interpreting data.

Our goals

Our aim was to design a leading edge smart phone and web based application enabling building users to understand the energy consumption of the buildings across DMU.

Obstacles and solutions

Obstacle	Solution
The first challenge was to ensure the data was presented in a meaningful and accurate way providing the user with useful and timely feedback. The key question to resolve was how to quantify the energy performance of each building and present meaningful data to the building users (for example all of DMU's buildings have half-hourly metering for gas, electricity and water.)	For this, a simple energy consumption model was developed whereby each building has its own dynamic definition of 'normal' – that is, comparing each building with its own previous consumption. This is preferable because it provides positive feedback if improvement is made and negative feedback when performance deteriorates.
The second challenge was to create a fun and engaging way of communicating energy efficiency as a layer above the commonly seen quantitative approaches attributing numeric values to energy consumption as money, carbon or kilowatt hour – although these were available.	Our team designed three animations each for five DMU buildings from the 15 on campus, each 'inhabited' by an endangered species to give the building a sense of personality, and to hint at a connection between energy use and its impact on the natural world. The final five were chosen because they were viewed as dominant and easily recognizable campus buildings (time and financial constraints also limited the number of animations).

Performance and results

- Increased awareness of energy efficiency across the whole campus: the app has been downloaded by staff and students across the campus and a web version of the app was used during the university's Green Week to communicate the savings to all staff and students resulting in a 13% reduction in savings based on the same week the previous year,
- The establishment of an accurate methodology for quantifying actual comparative savings based on sound building science and analysis. This ensures that the figures and animations people see are based on real comparative figures and are influenced by the actions of the individuals in the buildings.
- The methodology and approach of Greenview is now part of the Smartspaces project: an EU CiP project (EU/297273) enabling public authorities across Europe to improve the management of energy in their buildings by exploiting ICT.

Section 3 The future

Lessons learned

Increased understanding of the benefits and limits of energy dashboards. Through analysis of the project by Arup – who ran a focus group for us on the usability and impact of the Greenview, along with our own

evaluation of Greenview we know that energy dashboards have limited potential for behaviour change when divorced from wider institutional engagement and commitment to sustainable development.

Sharing your project

Greenview has shown both the opportunities and limits to using smartphones and more creative visualisation tools. It has an enormous impact beyond DMU, both through the current dissemination activities at the RCUK digital economy conference and JISC sponsored events such West Midlands RSA. Our website and presentations on Slideshare have reached over 1000 views. Findings from our work can be viewed and downloaded from our website:
http://greenview.dmu.ac.uk/projects/greenview/resources/documents

What has it meant to your institution to win a Green Gown Award?

DMU aims to make a significant contribution to society's efforts to achieve sustainability – this award would be a great reward and encouragement for 3 years of 'real world research' exploring new and creative ways of engaging staff and students in sustainability initiatives.

Further information

See http://greenview.dmu.ac.uk/ for further details or please contact:

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