Supporting Climate Change Related Data

Stephen Lord

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Overview

What exactly is "data relating to Climate Change?" Naively this is smart meter data relating to electricity use and perhaps an other energy source in the home. However, this only addresses a significant but not complete portion of an individual's impact. By exposing data from many other sources, in a style now known as open data one can include industrial systems, government and personal data collection. This could give a better indication of an individuals complete impact and how this fits in with their community. But where and how is this data aggregated? How is it then best displayed?

Background

We often have the collection frameworks in place in existing industrial control systems. The challenge now is exposing this data safely to the wider world. For example the electricity mix in the grid could enable innovations in end-use.

In terms of personal data collection the vision of Weiser [2] in mobile and ubiquitous systems and their ability to augment decision making is perhaps now upon us. Perhaps the power of citizens as data collectors can be harvested and as more people get involved the societal benefits compounded.

The myriad data sources may help uncover what aspects of our current practices are responsible for the most CO_2 externalities.

By having data available on use and electricity generation we can focus timely prompts or even "nudges" for cutting, trimming, switching, upgrading or shifting consumption (following [1]).

Privacy concerns and secure storage are likely to be issues. Does one take a centralising approach or focus on common interchange formats? An Individuals personal data may be able to identify a lot about that individual's lifestyle and habits but when aggregated may not cause concern for a user.

Future Work

Each practitioner will want to offer a different treatment on various data dimensions. A software system that can expose the underlying variables (e.g. smart power meter demand) and operate on large, distributed data sets could lead to many experiments being tried out in different sub-populations.

Some of the software engineering principals behind these are column orientated data processing and plug-in components for processing different sources of data.

The Climate Change concern above all others calls for a multidisciplinary approach. Software that enables non-Computer Scientists to harness the power of "big data" could be a facilitator for further collaboration.

References

[1] James Pierce, Diane J. Schiano, and Eric Paulos. Home, habits, and energy: Examining domestic interactions and energy consumption. In *Proceedings of CHI 2010: 28th ACM Conference on Human Factors in Computing Systems*, 2010.

[2] Mark Weiser. The computer for the 21st century. *Scientific American*, 265(3):66–75, September 1991.