

The Daily Gleaner

Green Matters for the Daily Gleaner, July 25, 2011

By Brian McCain

The Internet of Things: Connected devices to save resources

Energy and resource conservation is one of the key areas we have the ability to impact in order to reduce global carbon emissions. While we have many sources of clean power generation technologies available to us, the cheapest and the cleanest Megawatt is the one that is never generated.

People have spent years educating consumers about reducing energy and resource demand, from energy saving light bulbs to programmable thermostats to low flow toilets – but it is now time to move on. These things are becoming standard – the energy saving light bulb section is twice the size of the conventional light bulb section at any hardware store, and toilets that aren't 'low flow' (6 LPF) are virtually impossible to buy now.

Moving on means finding new ways to reduce energy consumption. The idea of owning efficient devices is continuing to take hold, but we haven't really started to look at the way we operate and interconnect these devices. This is where the 'Internet of Things' comes in.

The Internet of Things refers to uniquely identifiable objects having an internet presence. We're not just talking about your computer, laptop, cell phone or even your TV here – we're talking about everything. This includes your light switches, your fridge, even your toilet.

With an internet presence, all of your devices can start talking to each other and reacting to each other.

Imagine a house that detects that a toilet hasn't been flushed for 2 days. It uses this to assume that the owners must be on vacation, but notices they left their heat cranked up to 22°C, their TV running and all their lights on. Automatically, it adjusts all of these to an appropriate state (that might have pre-defined for being on vacation), and sends a text message, tweet or e-mail to let the owners know. A text from the owners in return, or a tweet with #LightsOn, and the house will respond.

Currently automated irrigation systems (based on time alone) can now check the weather forecast from your favourite weather website and decide to forego a scheduled watering because of the rain that is about to start falling.

It's all being made possible by the ever declining cost of wireless communications. Proprietary home automation systems have existed for a number of years – but I'm talking about something that goes a whole lot farther.

This is still an idea that is in the early days of being developed. A lot of what is being done right now is by interested DIY (do-it-yourself) programmers and hobbyists through sites like

The Daily Gleaner

ThingSpeak.com and Pachube.com. It's a world of experimentation, twittering toilets, and home energy monitoring.

In time, these devices will be perfected, become interoperable, and commercially available. Some of these devices will even start to be controlled by third parties, such as utilities who may need to reduce demand temporarily by turning everyone's thermostat down by 1°C in order to avoid having to bring an oil fired power plant online.

The early stages of residential energy and resource conservation are focused on equipment – the next phase is going to focus on operation. Being energy-wise on this completely new high-tech level could be something completely revolutionary – the ability to correct for fallible human behaviour and habits.

Brian McCain is Executive Director of The Gaia Project, a New Brunswick based charity focusing on sustainable engineering education. If you'd like to support these efforts, please visit www.thegaiaproject.ca or call 1-877-442-4136.