Smart, smarter, smartest – Zigbee preparing for the next wave of home innovation

// words prof. ray wills, sea chief executive and adjunct professor with the university of western australia

Early last year I wrote about the coming smart grid, and since then smart meters are getting lots of coverage in the popular press – meters that have a computer chip, some memory and a clock that tell you when you use electricity and can allow a better understanding of when you use electricity.

But this information is, for the most part, much more useful to the power utilities than it is to you. Then from smart meters, we keep hearing about the smart grid – an advanced electricity network that aids those generating, distributing and using electricity to better manage and improve the efficiency of how electricity is produced, delivered and consumed.

However, a smart meter and being connected to a smart grid, does not make a 'smart building' or a 'smart home' – more is needed for that. The most important part of all these smarts is that a 'smarter home' is just around the next corner. The thing that will be of most interest to most of us will be ways to manage electricity consumption in a home, and to do this you really need the appliances you buy working to help you and to save you money at the same time, not behaving like an unwanted house guest demanding to be fed.

A smart house includes systems within the home that can be managed on an individual appliance or device basis. Smart appliances will interact with the smart meter and negotiate time of operation agreements – making sure your house or building uses energy when it is cheapest or, in times of high cost, only when it has to be used.

The increasing number of web-enabled home appliances and devices, combined with the widespread availability of faster, broadband communications, are starting to enable new intelligent products and services that reach far beyond traditional dumb appliances.

The internet of people will soon be dominated by an internet of things.

By 2013, 1.2 billion connected consumer electronics devices are expected in the more than 800 million homes with broadband connections.

A few years on from there, we can expect more than one trillion connected devices talking across the blog space – a blog for appliances to talk and share information and collaborate on the cheapest or most efficient time to draw power from the network, or from the solar panel on the roof, or from the wind farm in Merredin. (Yes, for The Terminator fans, SkyNet is not too far away!)

Pike Research forecasts that a total of 118 million smart appliances will be sold worldwide during the years from 2010 to 2019, creating a market worth a $26.1 billion. The current state of the smart appliance market wouldn't seem to indicate this kind of growth, but the market's slow start will begin to heat up sometime in 2013 in order to reach the 2019 projection.

A natural turnover and retirement of appliances – that is when they stop working and must be replaced – can bring a minimum penetration of new smart appliances into Australia by 2021.

Faster rates of replacement occur generally because of consumer sentiment (I want it now), pricing advantage (I want to save money), or policy measures and laws in the case of health or environmental factors (regulations from government, designed to stop stuff that's killing you or the planet). (see BOX).

Compared with previous attempts to enable the smart home, where the intelligence was centrally controlled through a clunky home server, the smarts and with it the complexity in the new smarter home has moved out of the house and into the cloud – that new internet buzz that has been around for a while but has now been eyed-up by Apple Computers in their new iCloud.

So what does the future of the inside of the home look like? It looks pretty certain that the simple answer is the splendiferous ZigBee RF4CE specification.

Yes, well, no I didn't find that simple either, but drill down it may well prove splendiferous.

ZigBee is the catch word and RF4CE means radio frequency for consumer electronics. Still not clear? Zigbee describes itself as a "standards-based wireless technology designed to address the unique needs of low-cost, low-power wireless sensor and control networks in just about any market, product interoperability, vendor independence, thriving and competitive ecosystem and accessibility to broader markets."

These guys really have a bunch of words working for them, but still keep drilling and look at this:

ZigBee Smart Energy products allow for greener homes, businesses and utilities – inter-operable products that monitor, control, inform and automate the delivery and use of energy and water. It helps create greener homes by giving consumers the information and automation needed to easily reduce their consumption and save money

ZigBee Home Automation products create smarter, more energy-efficient and secure homes by controlling appliances, lighting, environment, energy management, and security as well as expand to connect with other ZigBee networks

ZigBee Remote Control products provide advanced remote control features that deliver the best control of CE devices - remotes that remove line-of-sight restrictions and free consumers from pointing their remote at devices. It also offers two-way communication, longer range of use and extended battery life

ZigBee is well suited for a wide range of control uses in just about any market. The Alliance has focused its standards development efforts around the commercial, residential, energy, consumer and industrial sectors. It has developed global standards for energy management and efficiency, home and building automation, health care and fitness, telecom and consumer electronics. ►

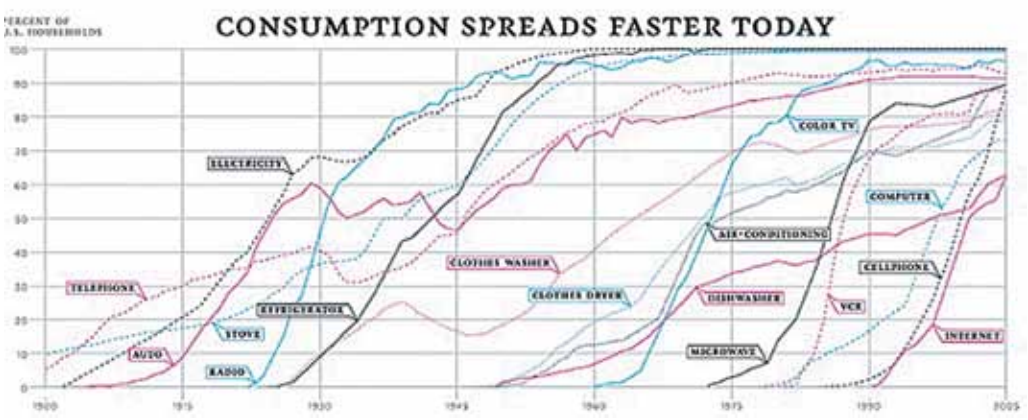
No tariff – no problem for Solar Naturally

There are still great opportunities available for people who want to install solar. If you consider rising electricity prices, solar installation can be an investment and even add value to properties. There may not be a 40-cent feed-in tariff any more but there are still generous government rebates available, which make our systems really affordable.

Along with adding value to your home with solar, it is worthwhile to install a smaller system just to reduce your bill. There are a number of energy-efficient options that will also reduce your bill, such as LED lighting. Do your part in the help to fight climate change and reduce carbon emissions.

For the month of December, we have a fantastic Christmas special. Sign up for any of our PV solar panel systems and we will give you a free electrical assessment of your home and offer you 20 per cent off all our high quality LED lighting.

We can also offer green packages which combine solar, air conditioning and LED lighting. Our air conditioning and electrical division can also supply and install various air conditioning systems including Daikin, LG and Mitsubishi. A FREE no-obligation quote can be provided for all our services.



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Here are just a few examples of what our standards control:

- Demand response
- Advanced metering infrastructure
- Automatic meter reading
- Lighting controls
- HVAC control
- Heating control
- Wireless smoke and CO detectors
- Home security
- Blind, drapery and shade controls
- Medical sensing and monitoring
- Remote control of home entertainment systems
- Indoor location sensing
- Advertising on mobile devices

Technology transitions always happen faster than the conventional market predicts (ask IBM). ZigBee products will appear in Q4 this year. From there, watch out. (And you can watch out by visiting the website at www.zigbee.org).

Renewable generation of all forms continue to get cheaper while the price of fossil fuel rises and governments may finally move to also eliminate global fossil fuel subsidies. (Sound like dreamtime, greenie tree-hugger stuff? Well, as it turns out, the Asia-Pacific Economic Cooperation (APEC) Economic Leaders' Meeting in Honolulu, Hawaii on 14 November 2011 adopted a declaration to phase out inefficient fossil fuel subsidies and reduce tariffs on green goods. **BC**

SEA: www.seaaus.com.au

[Professor Ray Wills has had a wide-ranging career at different times as researcher, academic, planner, consultant, adviser, manager and executive. Ray has substantial expertise in ecology, sustainability, climate change science and the effects of expected future climates on Australia and the world, and is recognised as an authoritative commentator on policy and functional responses to mitigate and adapt to global warming. Ray is Chief Executive of the Sustainable Energy Association of Australia (SEA), a business peak body actively supporting action on sustainable energy in all sectors of Australia's economy in all regions of Australia, and Adjunct Professor with the School of Earth and Environment at the University of Western Australia, and contributing to the academic program and lecturing on the science, economics and politics of environmental change.]

TECHNOLOGY TRANSITIONS

How quickly can things change? Depends on normal lifecycle replacement of the device which is generally determined by affordability, but sometimes overwhelmed by desirability. A natural turnover and retirement of appliances – that is when they stop working and must be replaced – can bring a minimum penetration of new smart appliances into Australia by 2021.

Faster rates of replacement occur generally because of consumer sentiment (I want it now), pricing advantage (I want to save money), or policy measures and laws in the case of health or environmental factors (regulations from government designed to stop stuff that's killing you, or the planet).

However even when having the devices is driven by health and safety, there are still maximum rates of replacement

Low rates of take-up of new devices occurs under the nice to have but will live without for a while – for example dishwashers (believe it or not) have been slow to be adopted at less than 2 per cent per year for the past 50 years.

Strong rates of take-up in the order of 10 per cent per year will mean that most of the population will have adopted a technology within 10 years – that was what happened with VCRs and mobile phones.

Aggressive rates of replacement of 20 per cent per year can pretty much complete deployment of the whole market in around five years. We have seen it in car safety with airbags, and we'll probably see it with the transition from incandescent lights to compact fluorescent lights.

The first point of market development that all products entering a market must achieve is when the early innovators have bought them in and warmly accepted them as a part of what they do each day. In the normal path of market evolution, the innovators are then followed by early adopters and that leads to the rapid commoditisation and desirability of owning the new tech gadget that will ultimately contribute to its runaway success and move to market dominance over the course of the next period of time.