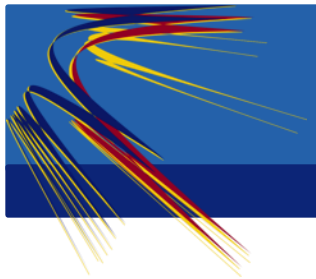


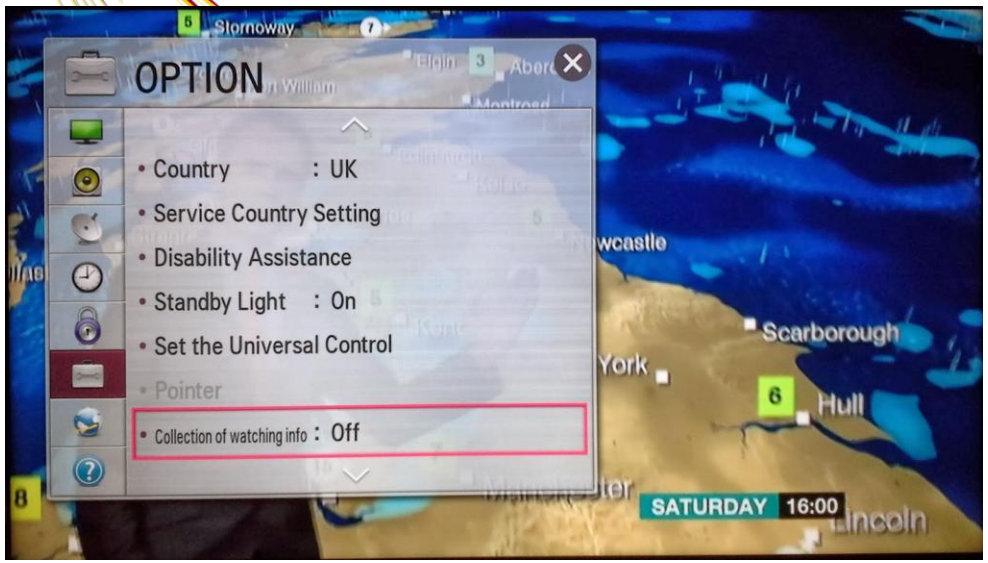
horizon
DIGITAL ECONOMY RESEARCH

IoT and CyberSecurity

Derek McAuley

19th September 2014

Not a day goes by



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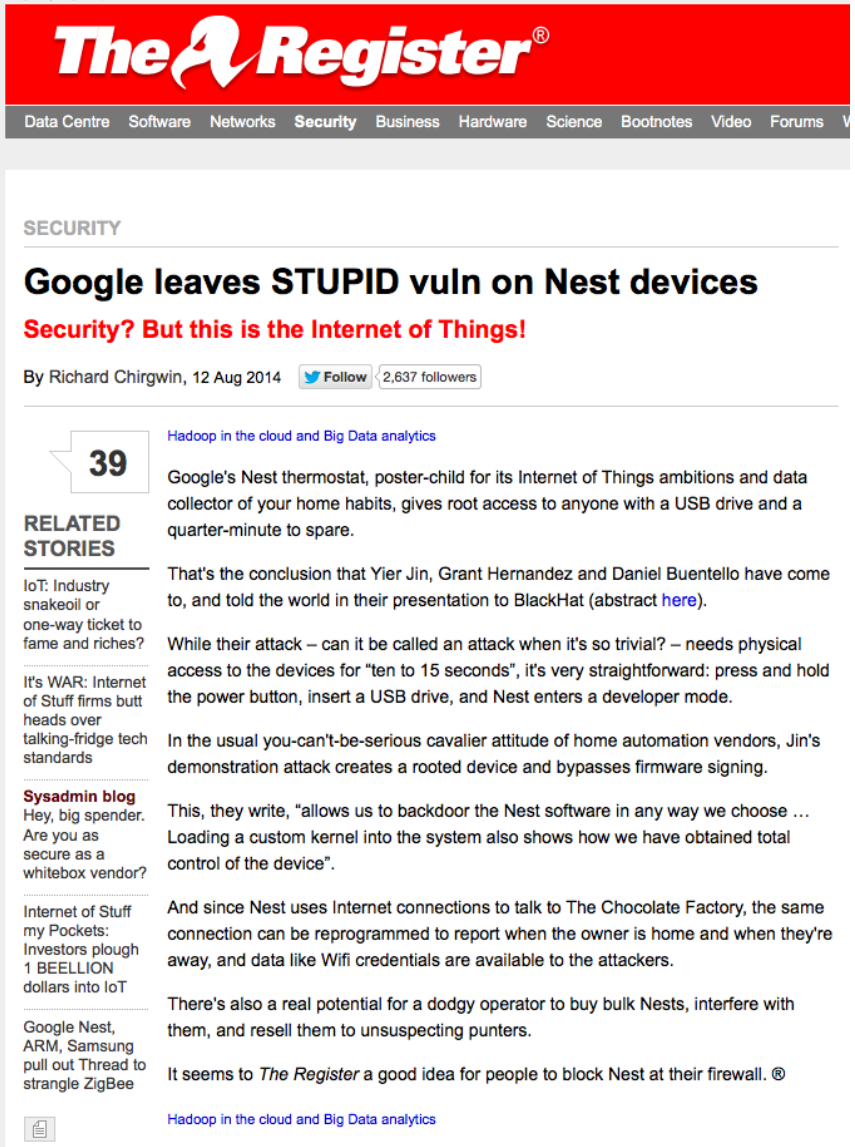

A new threat?

Oxford, August 2014

Short Paper: Extrapolation and Prediction of User Behaviour from Wireless Home Automation Communication

Frederik Möllers*, Sebastian Seitz, Andreas Hellmann† and Christoph Sorge*
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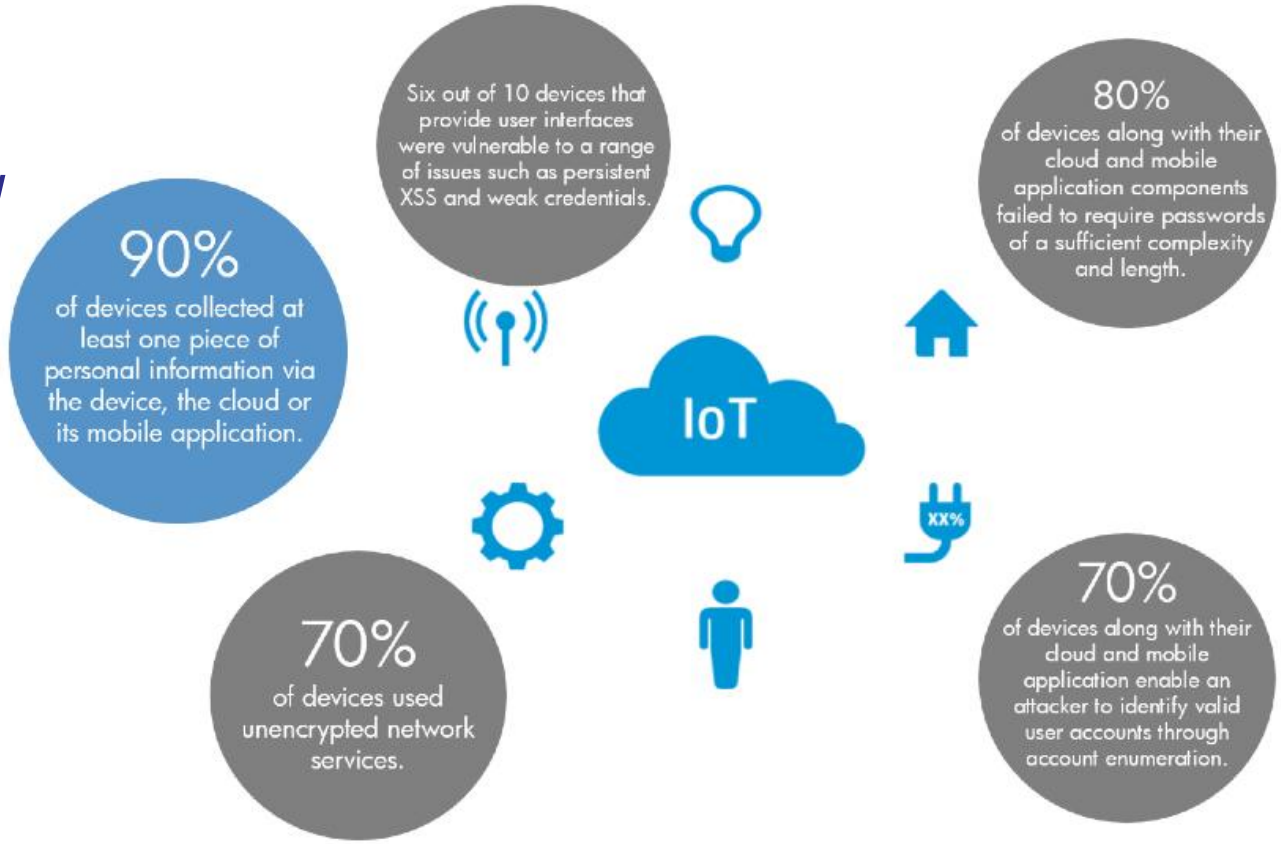
North Sea, August 1914

"I always knew there was some sort of crisis going on in the West Wing after hours when I saw the arrival of pizzas,"

CNN's Wolf Blitzer 1990

State of play

"80% of devices raised privacy concerns"



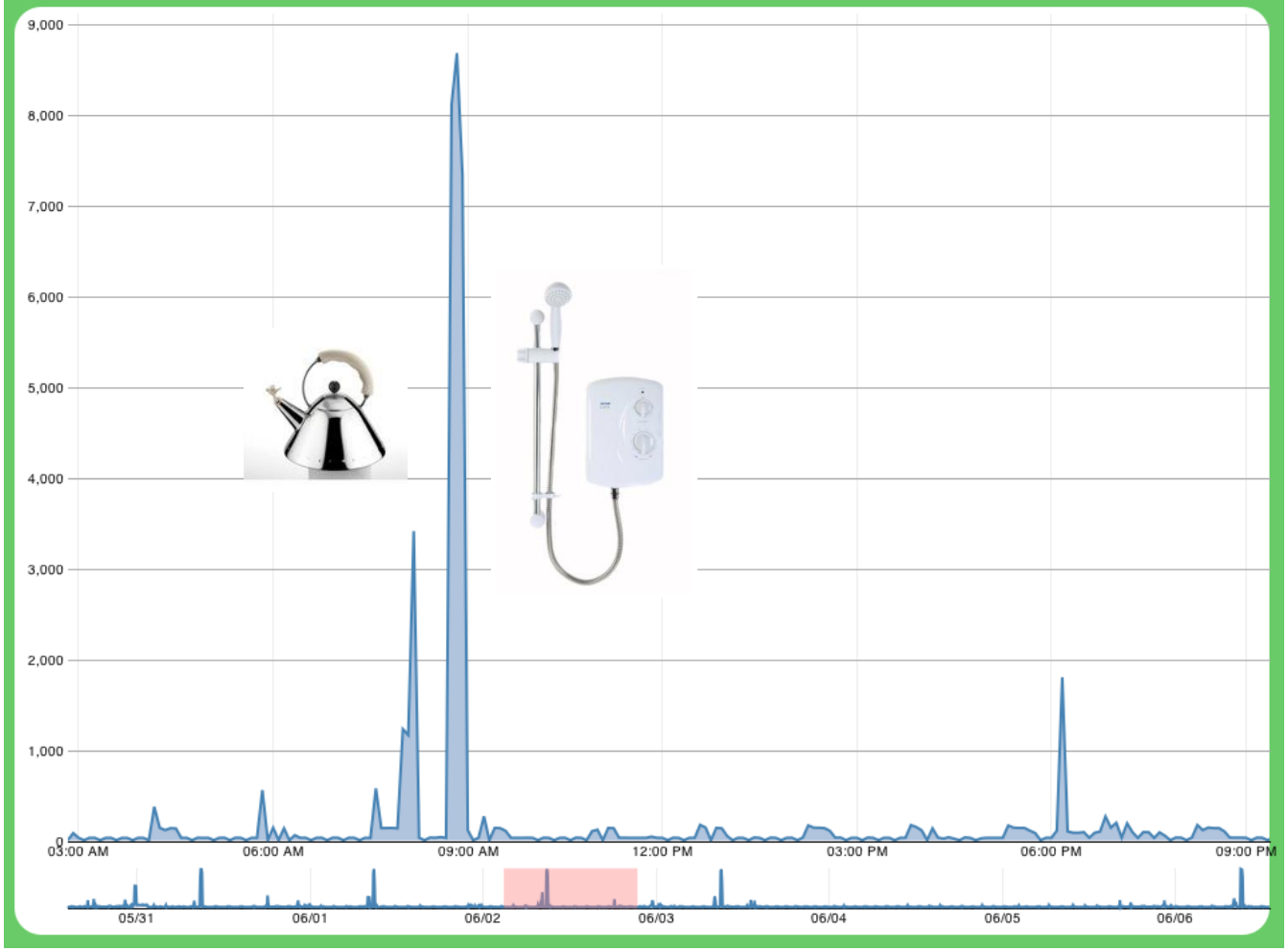
HP "Internet of Things Security Study", July 2014

Privacy and smart meters

Detailed data

These graphs show detailed data for your chosen hub/sensor. The **upper larger graph** gives a detailed view of energy use in a particular time window; the **lower smaller graph** gives a less detailed view of *all* energy use since the hub/sensor was commissioned. Drag the pink shaded area in the lower smaller graph to shift the time window, or click and drag elsewhere within the lower graph to create a new time window. View stacked data View live data

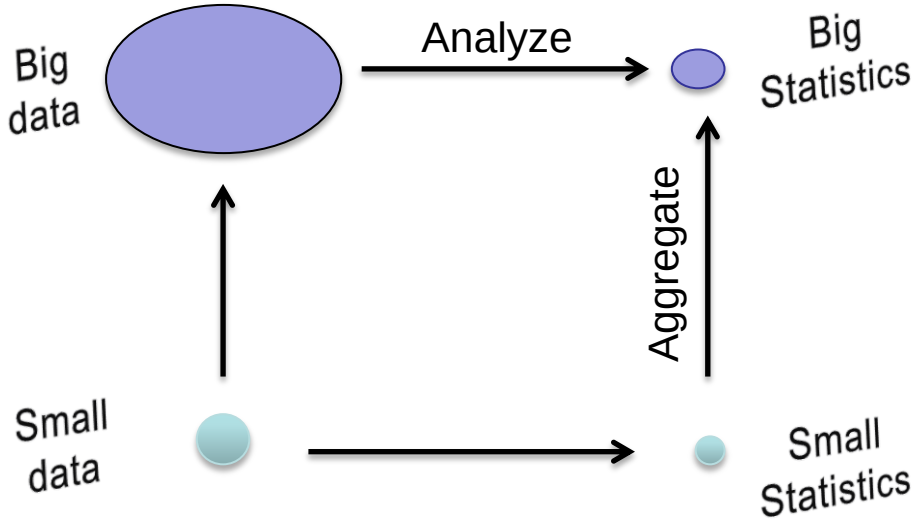
Back to the energy monitor network



Rollout across UK by 2020

Cyber-security in the ”small”

- Do you need all your data in one place at one time?
  - may be costly
  - may be difficult
  - may be a risk…



In the large

Synchronized attacks

Systematic compromise

BUSINESS REPORTER

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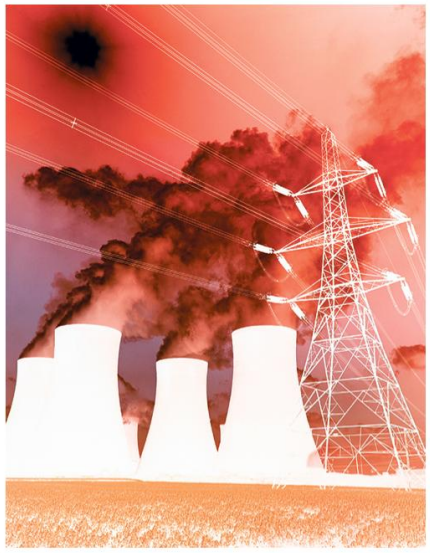
Turning off the power: Smart grids and smart cyber attacks

21 February 2014 • By Dave Baxter

With smart systems comes the risk of smart cyber-attacks. Dave Baxter reports.

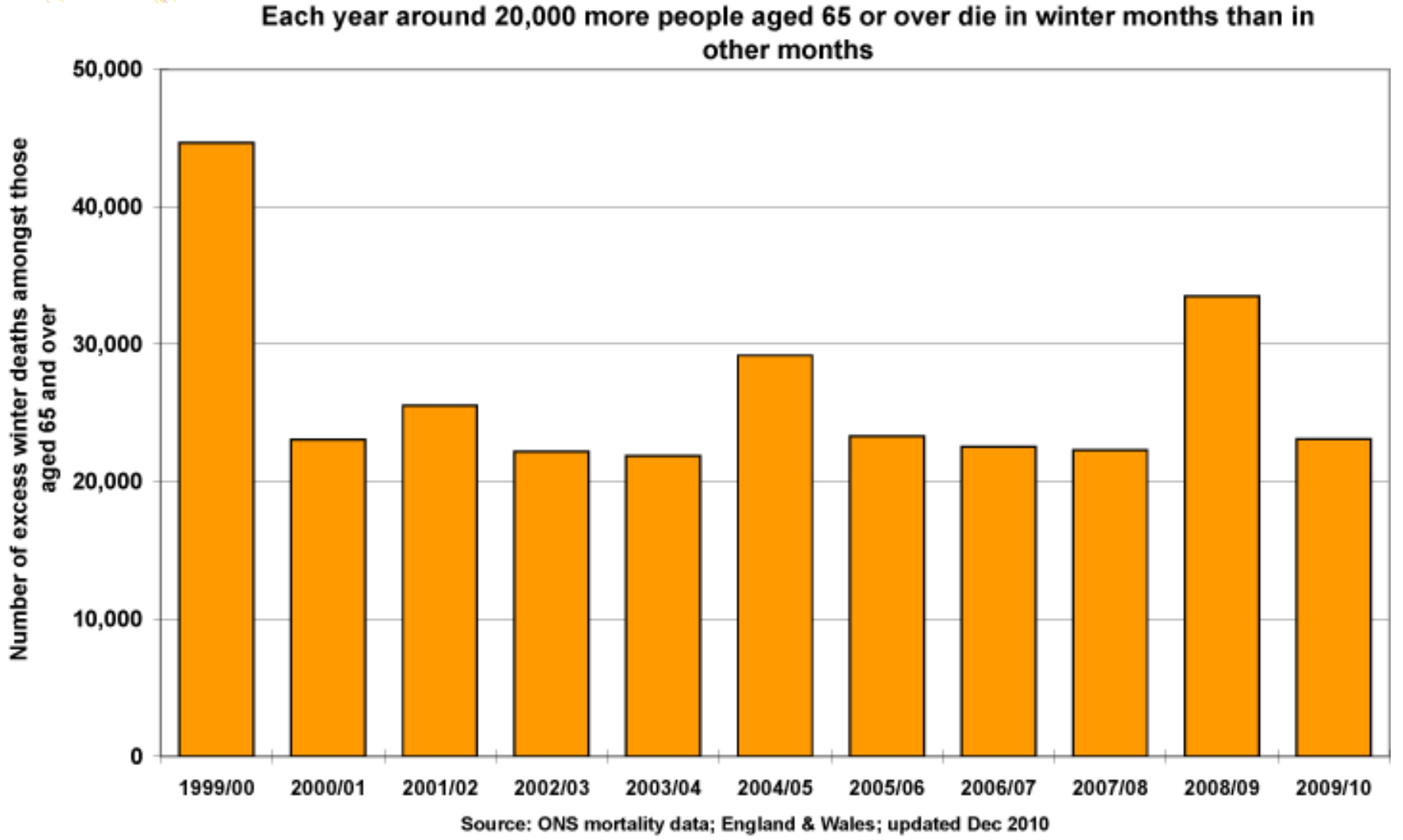


Britain risks "anarchy and chaos" if it fails to defend its smart systems from cyber attacks, according to a security specialist.

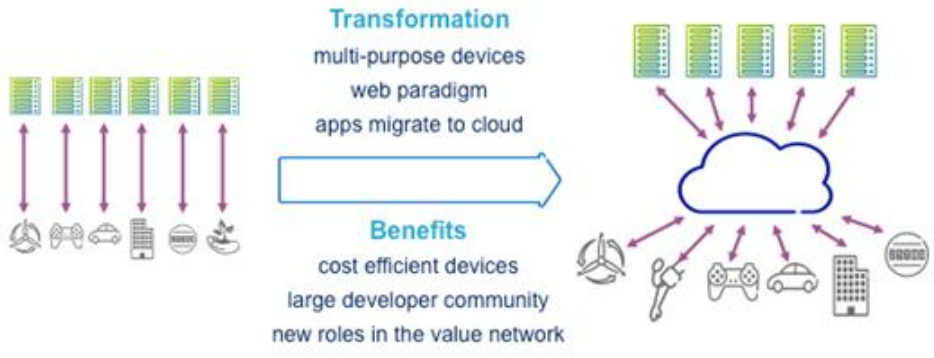
Chris McIntosh, CEO at ViaSat UK, says that without high-grade defences to protect them, devices such as smart meters remain prone to hacking from remote locations. To combat fraud or abuse, energy companies could use smart meters to remotely shut off customers from the energy grid. But this function could also be put to more malicious use by hackers.

McIntosh warns that with an interconnected smart grid system, an attack could quickly spread across an entire network of devices, playing havoc with power stations and other critical infrastructure.

Vulnerable populations



Little fluffy clouds



"apps migrate to cloud"

- Massive attack surface
- No auditability
- No consumer perspective
- Lack of any rational compartmentalization

… no thought to overall IoT security architecture.


It's an integrated computer network, and I will not have it aboard this ship.

DSM acceptability

1. Appliances automatically turning off when left on standby

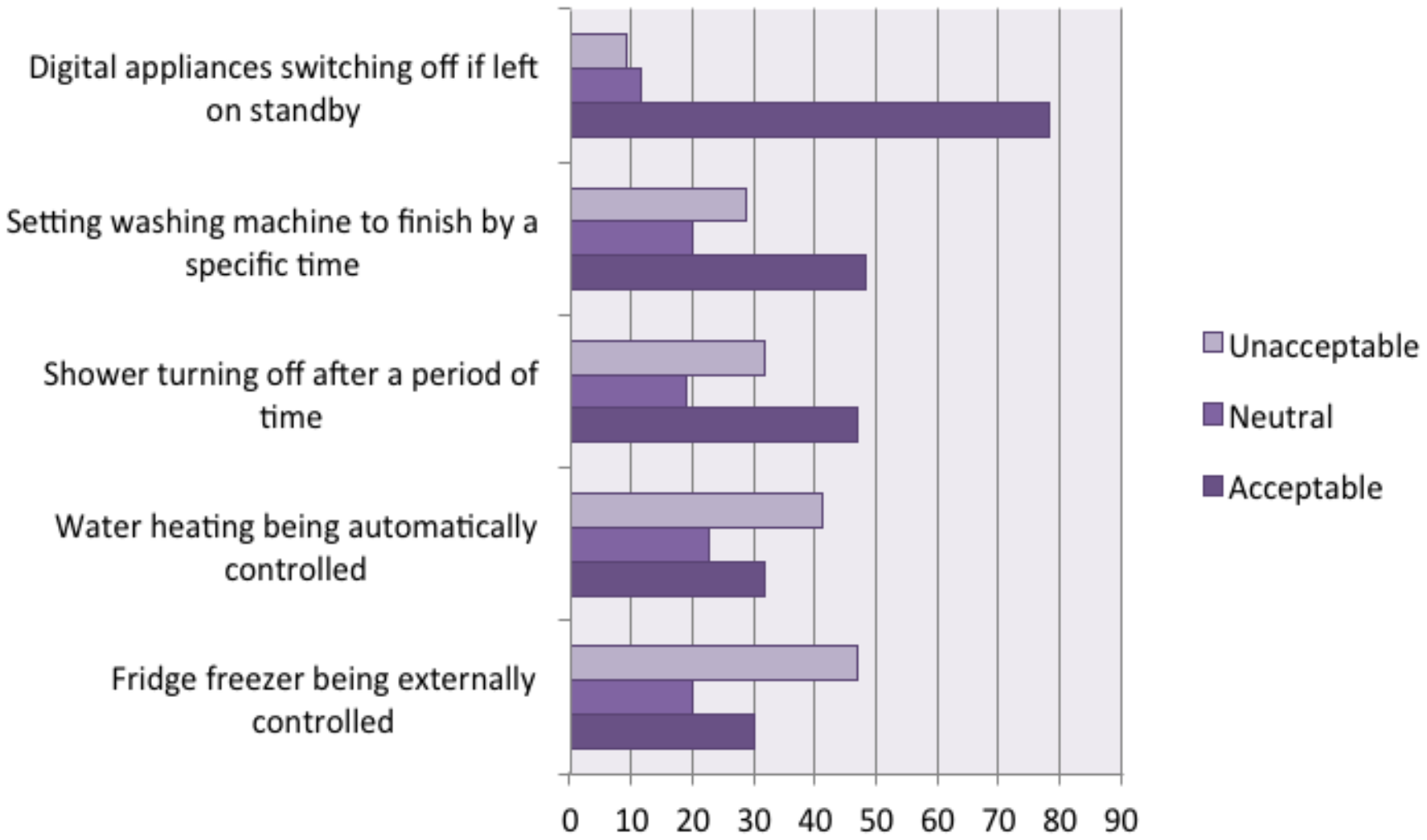
2. Shower turning off after a set period of time, manual override possible

3. Setting washing machine to wash clothes before a certain time

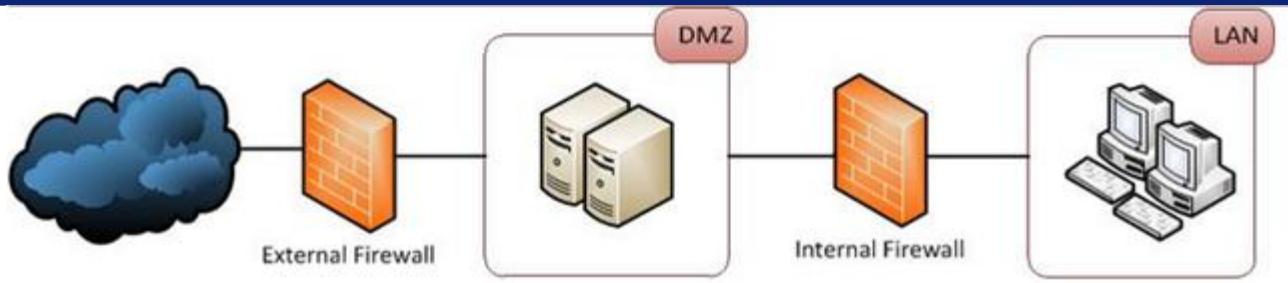
4. Allowing fridge-freezers to be switched off for short periods

5. Having optimum time to heat water determined by network operator

DSM Acceptance



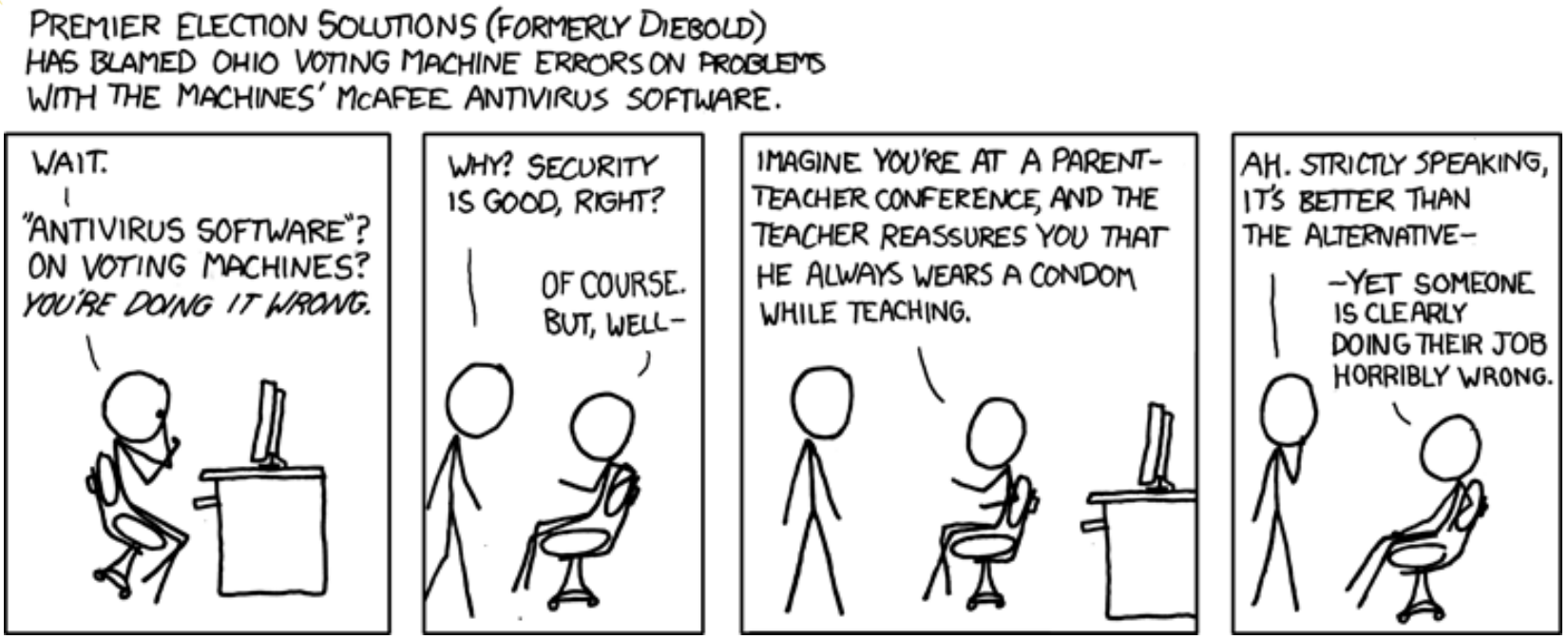
More old ideas…



What is shared or accessible outside the home it limited, logged and on a need to know basis

Sensitive data is used within the home and shared with personal devices only using secure channels

http://www.horizon.ac.uk



Questions?

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The University of Nottingham

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