

Security and the Internet of Things

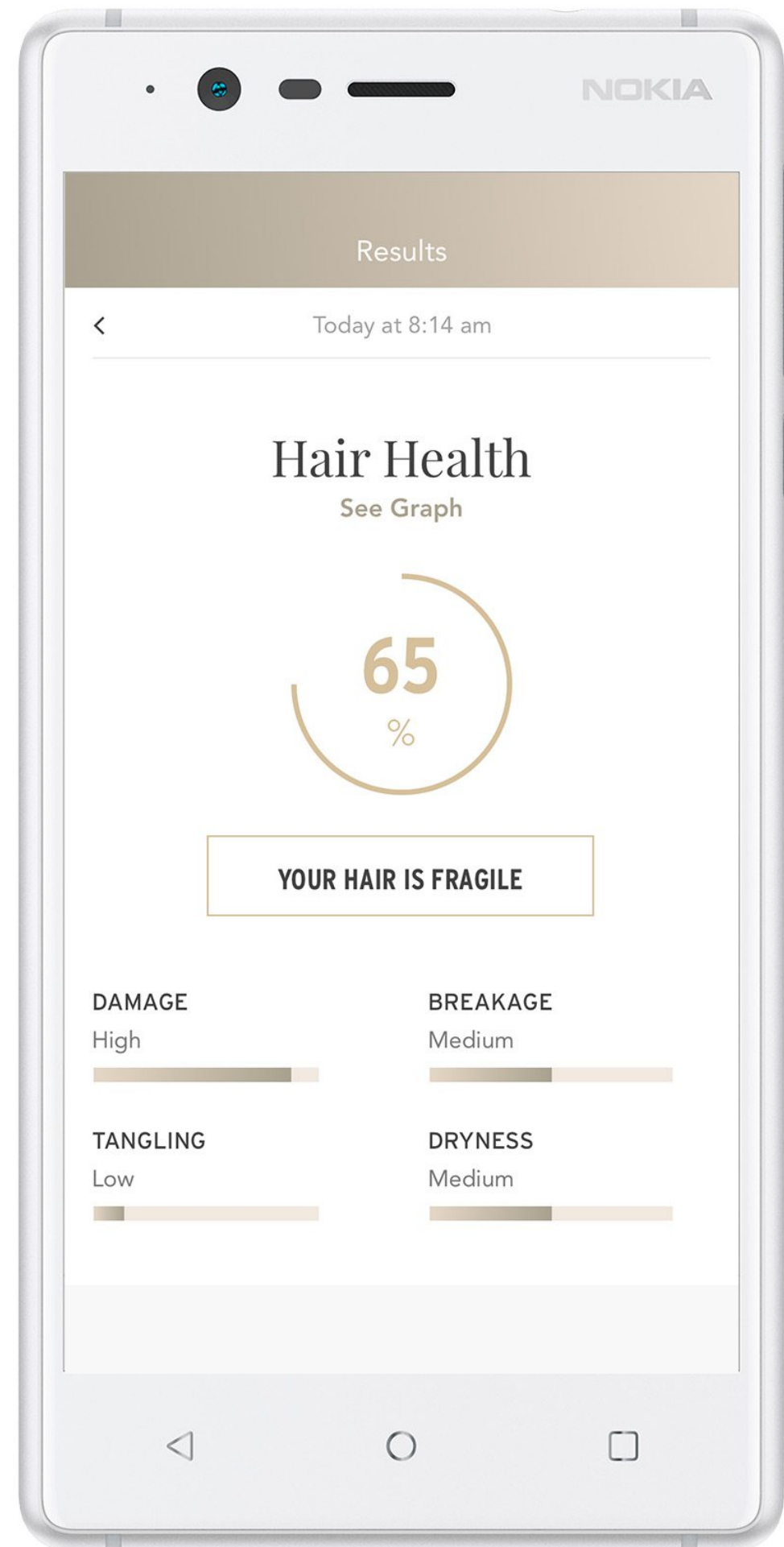
Elmer Lastdrager
7 June 2018



Smart Devices

“A smart device is an electronic device, [snip], that can operate to some extent interactively and autonomously.”

Source: Wikipedia







Como Huggies TweetPee funciona

Design ergonômico

O design busca o conforto e segurança do bebê. Fácil de instalar e retirar para utilizar na próxima fralda.



O sensor da fralda monitora a umidade e envia um sinal quando o bebê faz xixi



Todos que têm a permissão para acompanhar a atividade do bebê são notificados



Através do APP mães e papais conseguem comprar fraldas sem sair de casa.

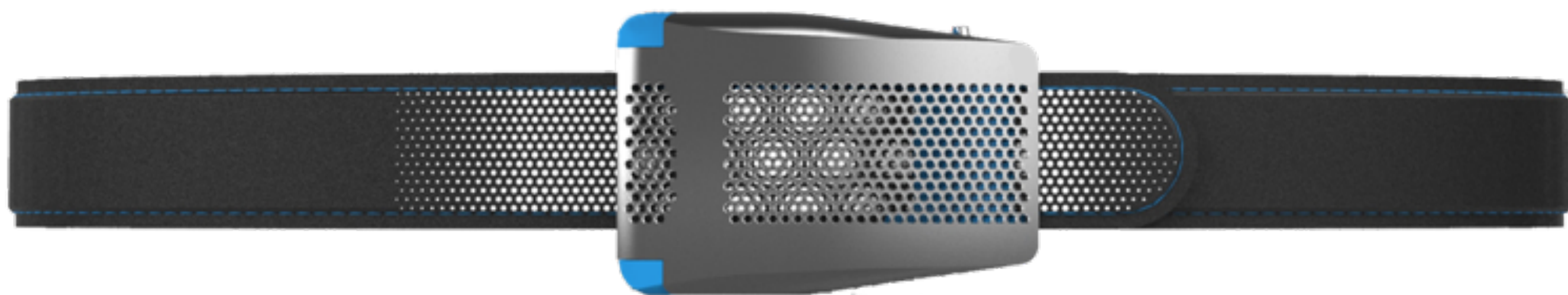


Conheça TweetPee

Como funciona

Pelo histórico de troca de fraldas do bebê, você acompanha a quantidade usada por dia



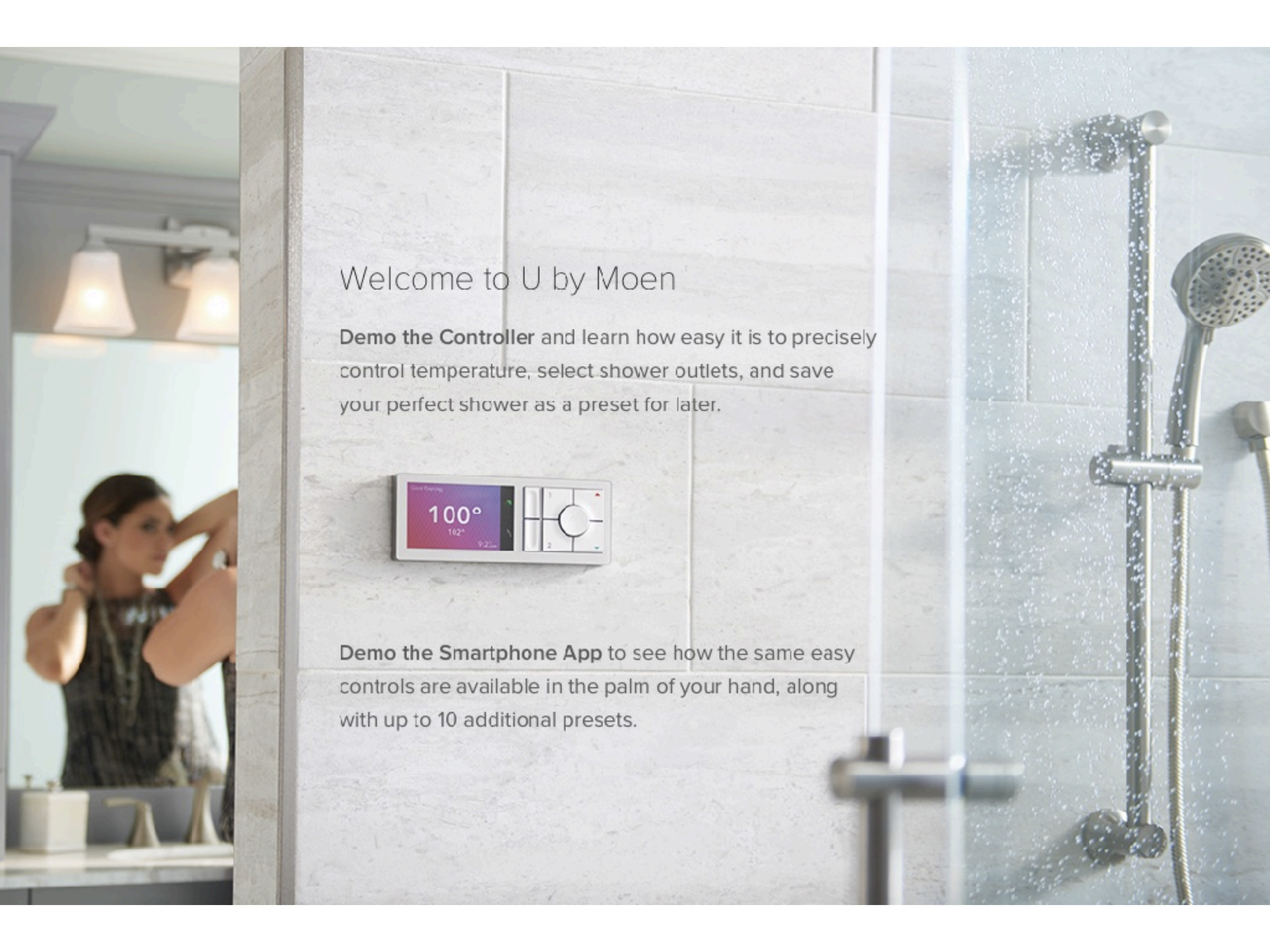




What does i.Con do with its data? Can I use it anonymously?

“Absolutely! All data will be kept anonymous but users will have the option to share their recent data with friends, or, indeed the world. You will be able to anonymously access stats that you can compare with i.Con users worldwide.”



A woman is seen in the background, looking into a mirror and adjusting her hair. The scene is set in a modern bathroom with light-colored stone tiles. A Moen U by Moen shower controller is mounted on the wall, displaying a temperature of 100°F. To the right, a glass shower door is visible, with a showerhead and a vertical bar. The overall atmosphere is clean and contemporary.

Welcome to U by Moen

Demo the Controller and learn how easy it is to precisely control temperature, select shower outlets, and save your perfect shower as a preset for later.

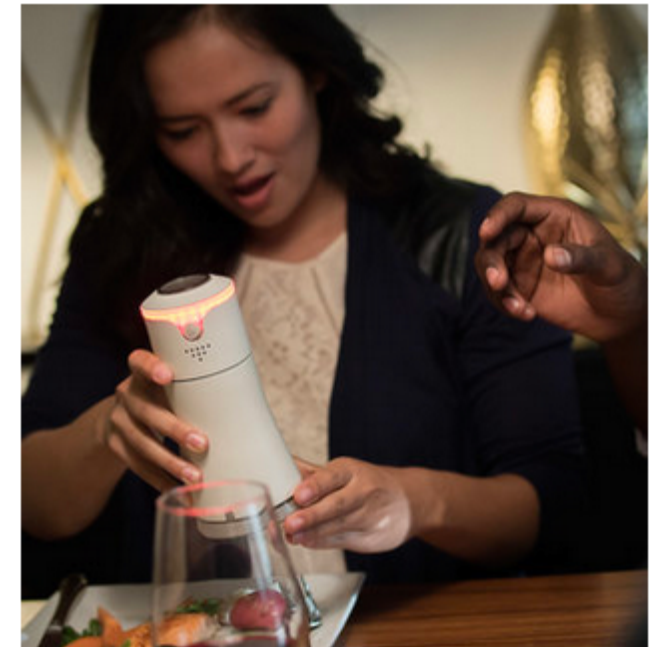


Demo the Smartphone App to see how the same easy controls are available in the palm of your hand, along with up to 10 additional presets.



SMALT with voice

Connect SMALT with Amazon Echo and simply say "Alexa, dispense half a teaspoon of salt".



Bring the flavor

SMALT dispenses salt with a shake/pinch of your smartphone screen or simply turning the dial manually.

YOU GET CONNECTED!

AND YOU GET CONNECTED!

EVERYTHING GETS CONNECTED!



What is the IoT?

Wikipedia definition:

“The Internet of things (IoT) is the inter-networking of physical devices, vehicles (also referred to as "connected devices" and "smart devices"), buildings, and other items embedded with electronics, software, sensors, actuators, and network connectivity which enable these objects to collect and exchange data.”

Global Standards Initiative definition:

“a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies”[3] and for these purposes a "thing" is "an object of the physical world (physical things) or the information world (virtual things), which is capable of being identified and integrated into communication networks".”



Towards a definition of the Internet of Things (IoT)

Revision 1 – Published 27 MAY 2015

A simpler definition:

“Stuff that did not use to be networked”

An even simpler definition:

“One big mess”



[Home](#) > [Data Protection](#) > [Internet of Things](#)

SLIDESHOW

The internet of insecure things: Thousands of internet-connected devices are a security disaster in the making



By [Josh Fruhlinger](#), CSO | Oct 12, 2016 4:00 AM PT



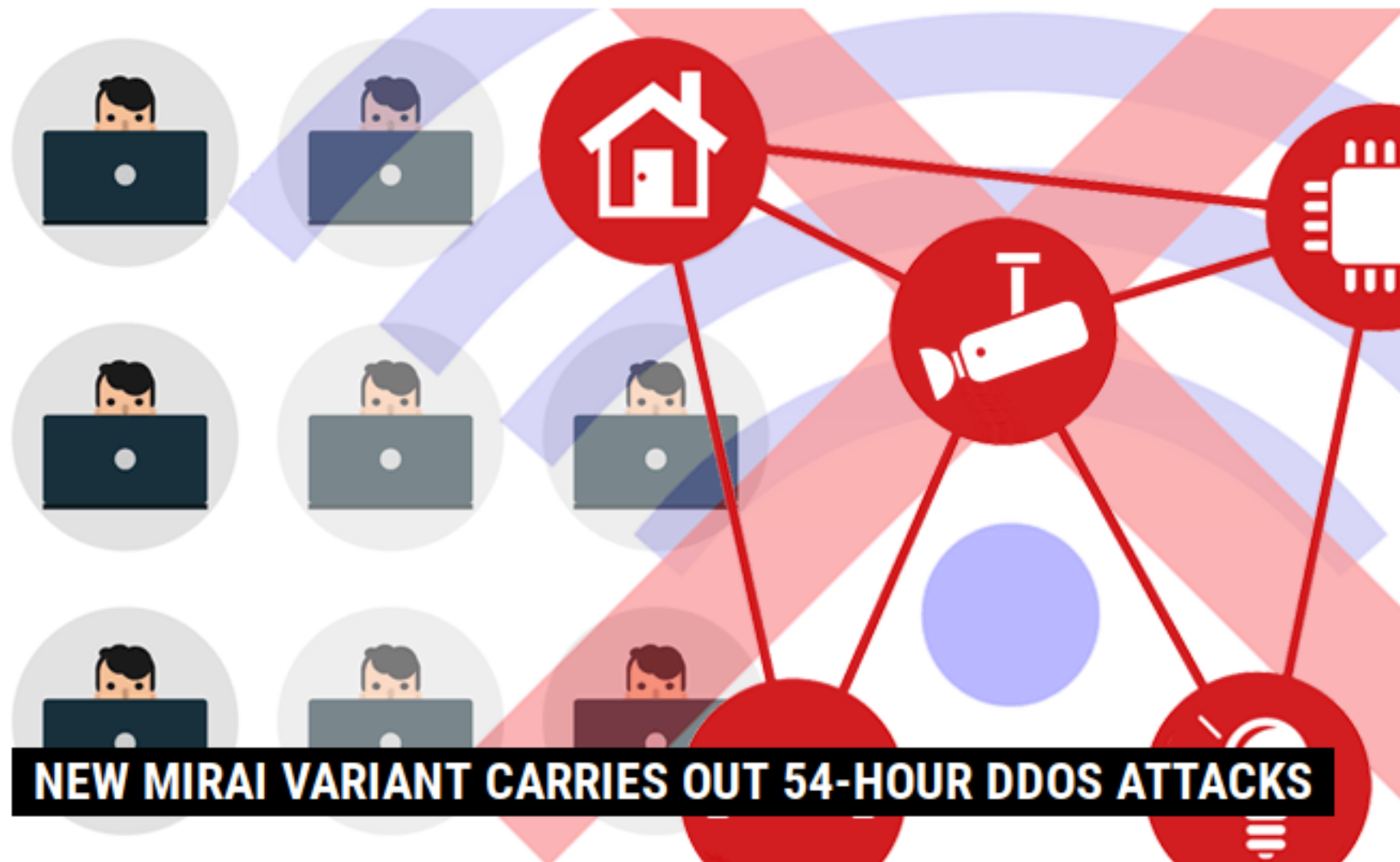
The "S" in IoT
stands for
SECURITY



Why?

- ▶ Security is hard
- ▶ Security is expensive
- ▶ In some cases: security is not ‘user-friendly’
- ▶ Security is not a feature that sells devices
 - ▶ But time to market and price are
- ▶ Security is invisible

[Welcome](#) >
 [Blog Home](#) >
 [Hacks](#) >
 New Mirai Variant Carries Out 54-Hour DDoS Attacks



NEW MIRAI VARIANT CARRIES OUT 54-HOUR DDOS ATTACKS

by [Tom Spring](#)

March 30, 2017 , 2:50 pm

A variant of the Mirai malware pummeled a U.S. college last month with a marathon 54-hour long attack. Researchers say this latest Mirai variant is a more potent version of the notorious Mirai malware that made headlines in [October](#), targeting DNS provider [Dyn](#) and the [Krebs on Security](#) website.

Mirai vs DynSM

1.2 Tbps

From 'only' 100.000 devices

**The
Economist**

APRIL 18TH–24TH 2017

The Pearl river delta: a special report

Hospitals of the future

Jacob Zuma must go

Parking, wrong on so many levels

Why computers will never be safe



Computers will never be secure. To manage the risks, look to economics rather than technology

“The market can't fix this because neither the buyer nor the seller cares.

The owners of the webcams and DVRs used in the denial-of-service attacks don't care. Their devices were cheap to buy, they still work, and they don't know any of the victims of the attacks.

The sellers of those devices don't care: They're now selling newer and better models, and the original buyers only cared about price and features.

There is no market solution, because the insecurity is what economists call an externality: It's an effect of the purchasing decision that affects other people. Think of it kind of like invisible pollution.”

https://www.schneier.com/blog/archives/2017/02/security_and_th.html

This guy's light bulb performed a DoS attack on his entire smart house



Kashmir Hill

3/03/15 9:41am · Filed to: REAL FUTURE ▾



182



RISK ASSESSMENT —

BrickerBot, the permanent denial-of-service botnet, is back with a vengeance

New botnet squadrons wage fiercer, more intense attacks on unsecured IoT devices.

DAN GOODIN - 4/24/2017, 10:43 PM



Home > Security > Cybercrime & Hacking



SECURITY IS SEXY

By **Darlene Storm**, Computerworld | FEB 2, 2015 12:09 PM PT

About

Most security news is about insecurity, hacking and cyber threats, bordering on scary. But when security is done right, it's a beautiful thing...sexy even. Security IS sexy.

NEWS ANALYSIS

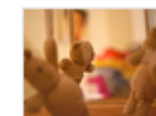
Hacker hijacks wireless Foscam baby monitor, talks and freaks out nanny

This is the third time news has circulated about some jerk hijacking a wireless Foscam camera/baby monitor and made his virtual intrusion known by talking. Please change the default password!



MORE LIKE THIS

Hacker strikes again: Creep hijacks baby monitor to scream at infant and...



2 more wireless baby monitors hacked: Hackers remotely spied on babies and...



Eerie music coming from wireless baby cam; is it a

What to do?

- ▶ Better practices for manufacturers?
- ▶ Free **secure** software stacks?
- ▶ International policy, regulation, certification?
- ▶ Clear up accountability issues?
- ▶ Generate market demand for secure products?
- ▶ Quarantine bad actors (e.g. at ISP)?
- ▶ Educate users?
- ▶ Empower users?

“Yes”

We need to do it all

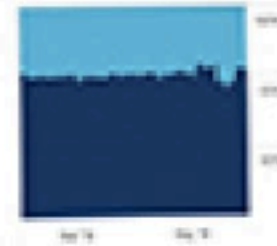
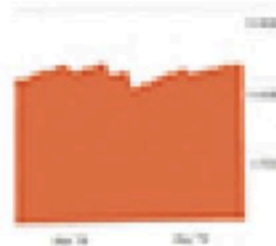


Registration 100% 100% 100% 100% 100% 100%

.nl stats and data

This site provides current statistics and data about the use of the .nl domain, which is maintained by NICP. With over 1.8 million registered domain names, it is the 4th largest TLD in the world.

Learn more



Stichting Internet Domeinregistratie Nederland (SIDN)

Critical Internet services

- ▶ Lookup IP address of a domain name (almost every interaction)
- ▶ Domain name registration
- ▶ Manage fault-tolerant and distributed infrastructure

“Catalyst” of the Internet in the Netherlands

- ▶ Enable safe and novel use of the Internet
- ▶ Improve the security and resilience of the Internet itself



.nl = the Netherlands
17M inhabitants
5.8M domain names
2.8M DNSSEC-signed
1.3B DNS queries/day

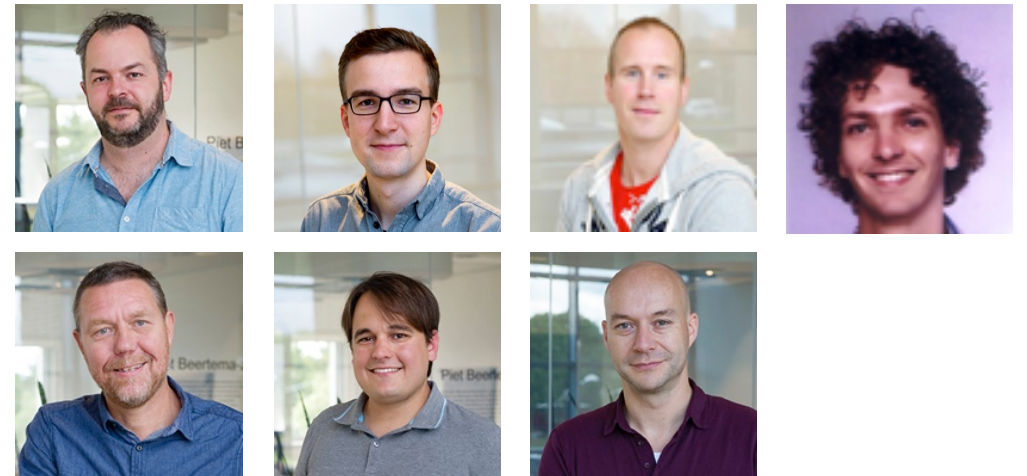
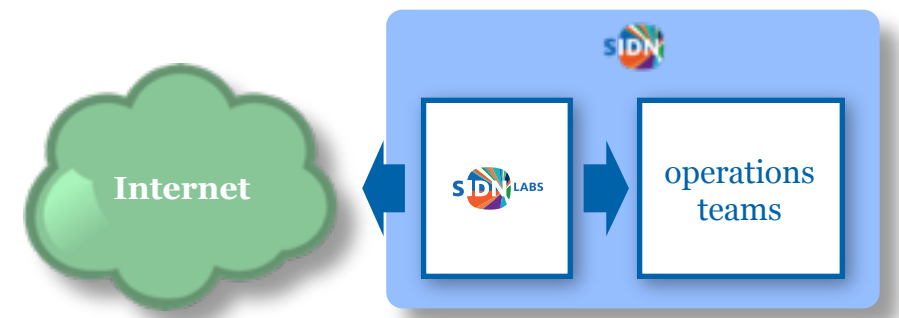


SIDN Labs

Goal: thrust operational security and resilience of the Internet through world-class measurement-based research and technology development

Challenges: secure and resilient DNS, Internet evolution, collaborative security, AAA infrastructures

Daily work: help operational teams, write open source software, analyze vast amounts of data, run experiments, write academic papers, work with universities





**DETECT SMOKE
AND CO**

**CONTROL
SWITCHES AND
OUTLETS**



**CONTROL
LIGHTING**

**CONTROL
SHADES AND
BLINDS**



**ADJUST
CLIMATE**

**UNLOCK AND
LOCK DOORS**

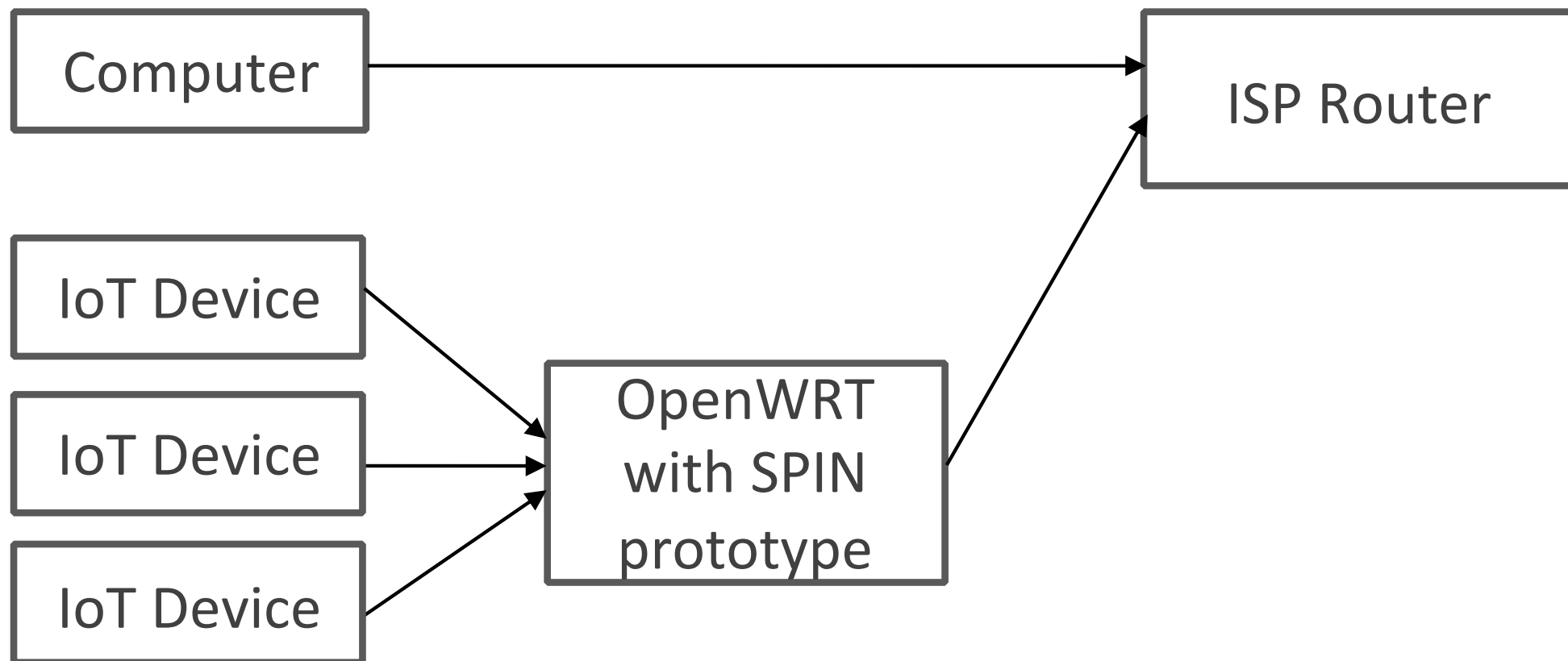


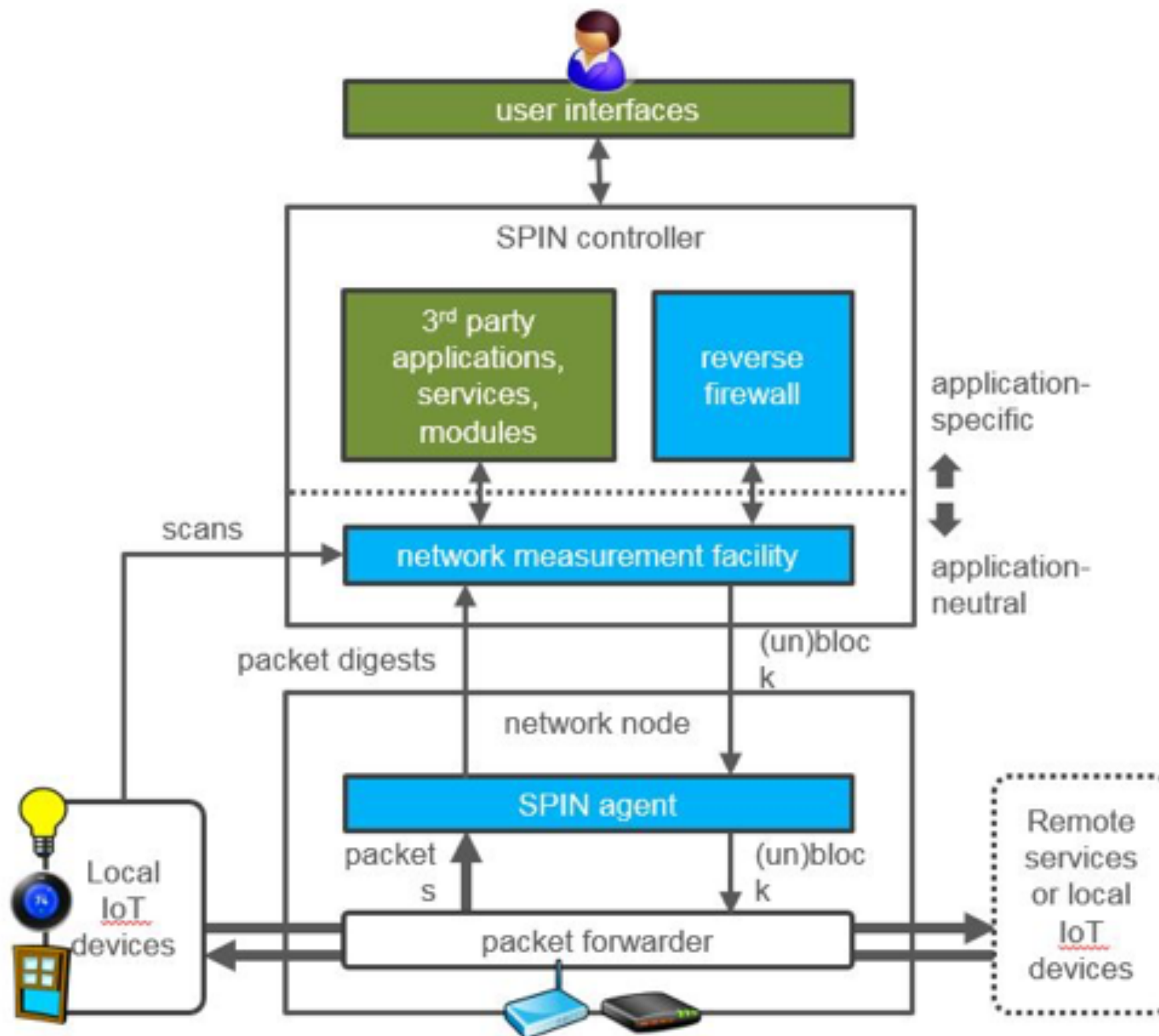
**OPEN AND CLOSE
GARAGE DOORS**

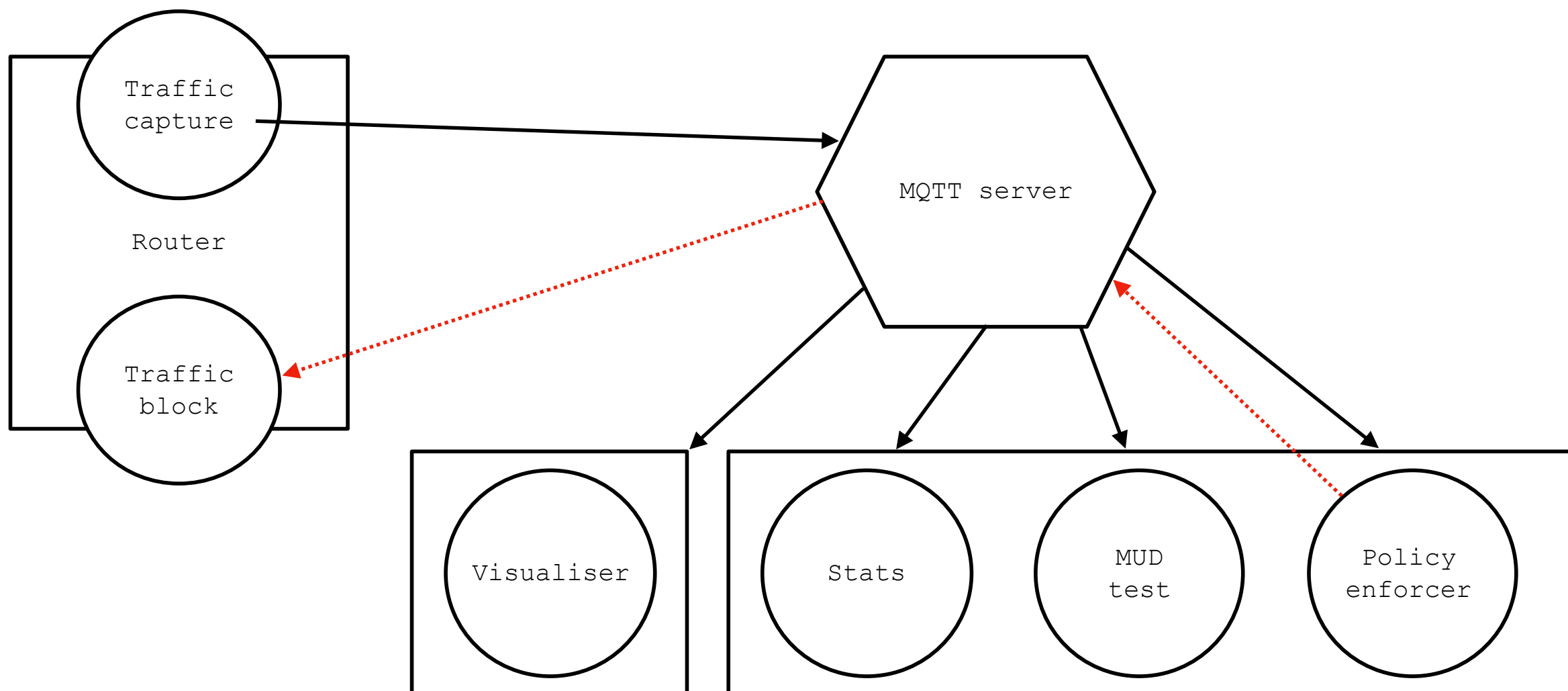


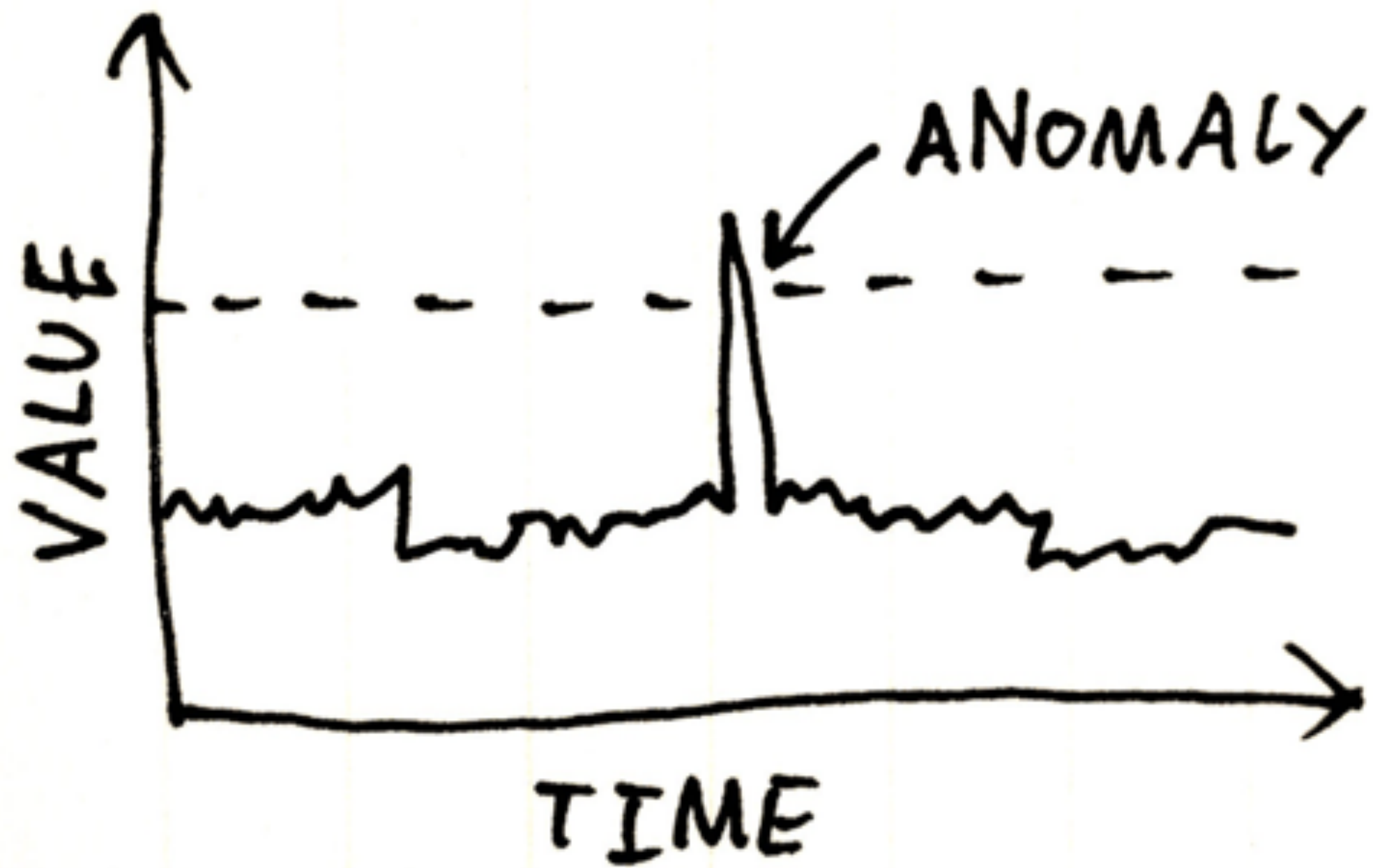
**MONITOR
YOUR HOME**







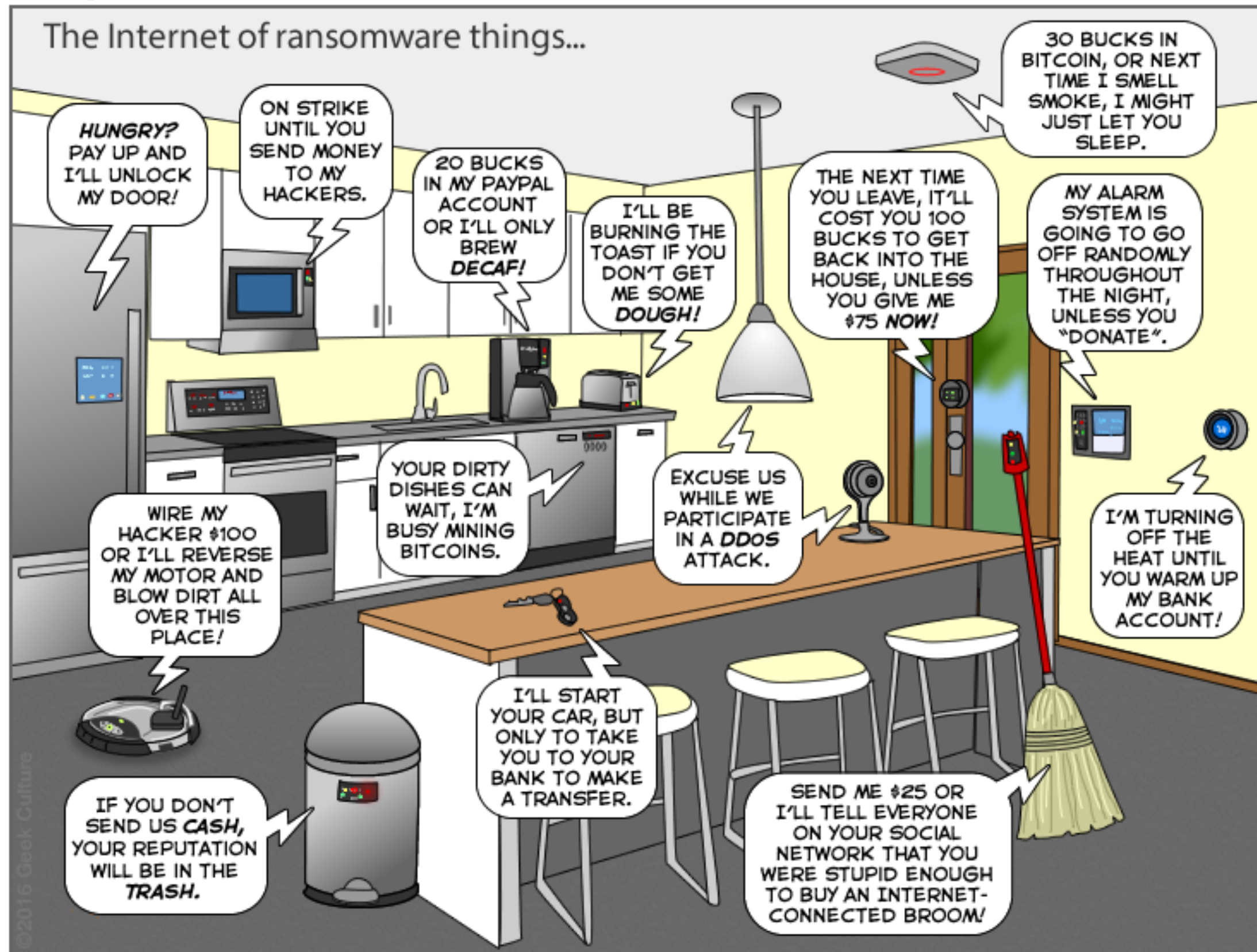




Demo







elmer.lastdrager@sidn.nl
<https://spin.sidnlabs.nl>