

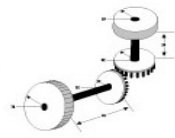
CIRA Labs Secure Home Gateway Project Vision - 2019

May 2019



Who am I?

SANDELMAN
SOFTWARE WORKS



1996-

Michael Richardson.
Internet technologist, doing IP since
1988. “Garage Entrepreneur”



Xelerance Corp 2003-2007, 2014-

SOLIDUM

(1998-2001)



2009-2017



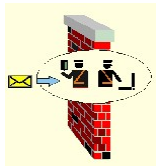
BRSKI

FreeS/WAN (2001-2004)



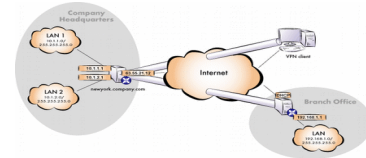
(2007-2009)

ROLL – RFC6550
2012-



#4 at Milkyway Networks (1994-1996)

RFC4322
RFC4025
RFC5386
RFC8415
RFC7416
RFC8366
BRSKI
constrained-BRSKI



IETF standard security: IPsec/VPN

Project Evolution – From Idea in late 2016



In the home
Gateway

Need security
access controls

Has to be
easy to use

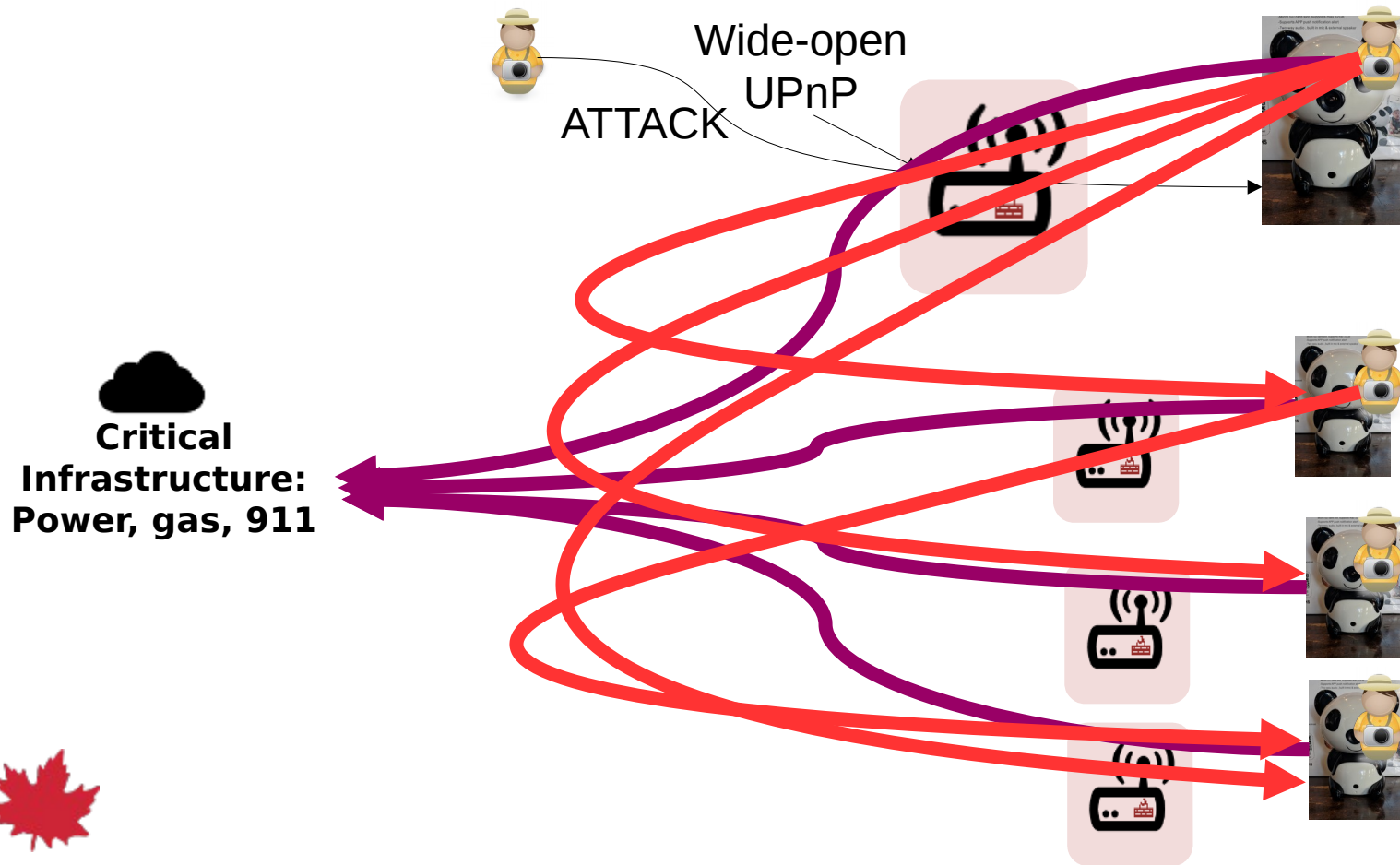
MIRAI Dyn Attack
October 2016



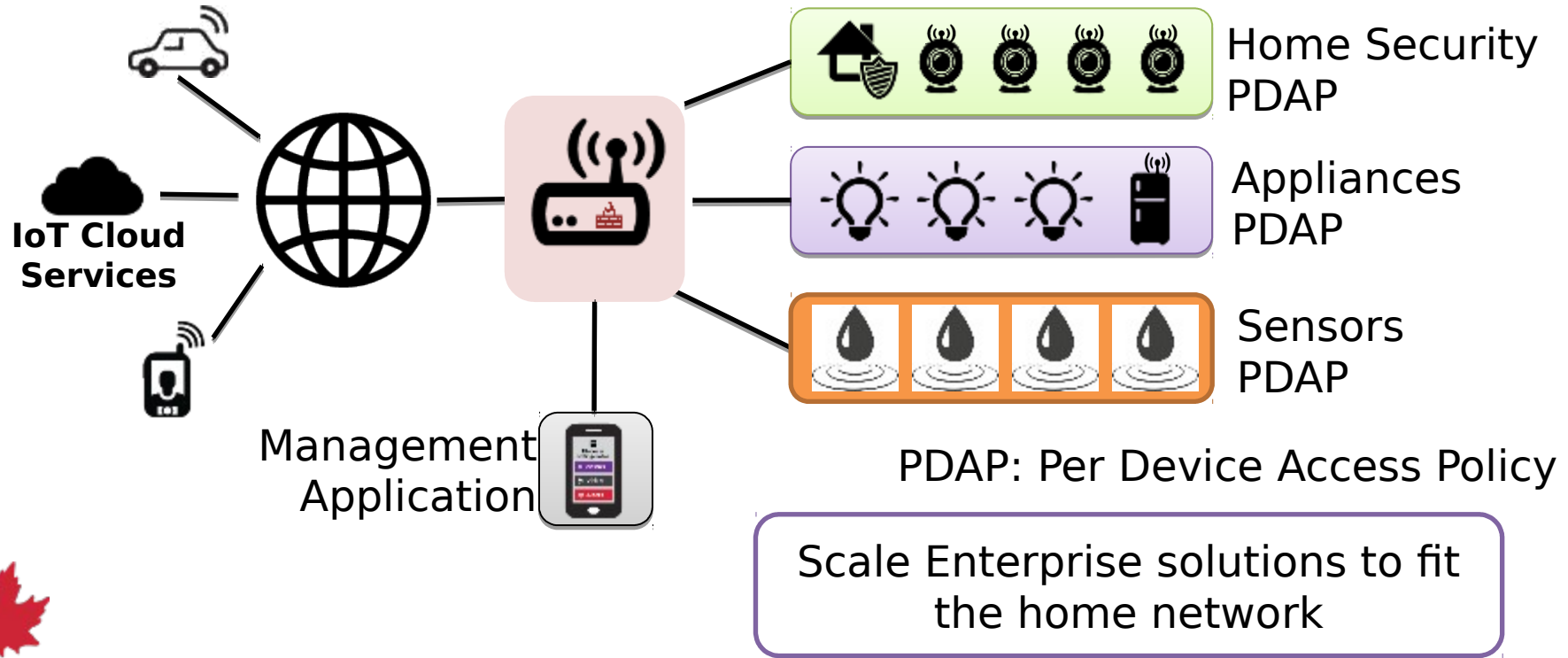
Need a new framework to prevent
lightbulbs from killing the internet!



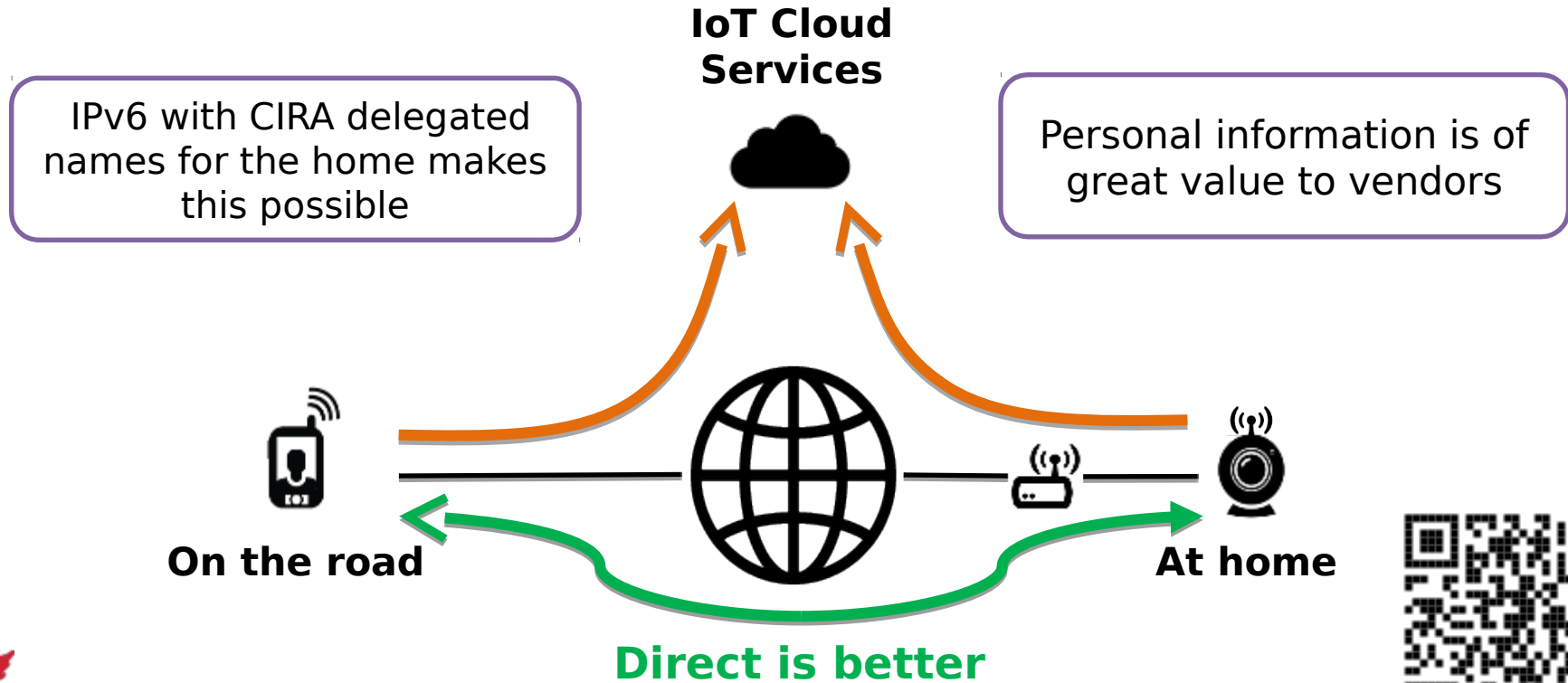
How networks are weaponized



Best practices – Apply enterprise security framework to home networks



IoT vendors are creating dependency on cloud architecture



New standards – MUD - Manufacturer Usage Description – RFC8520



I'm an ACME water sensor

- MUD File at: <https://acme.corp/mud/ws1.0.json>

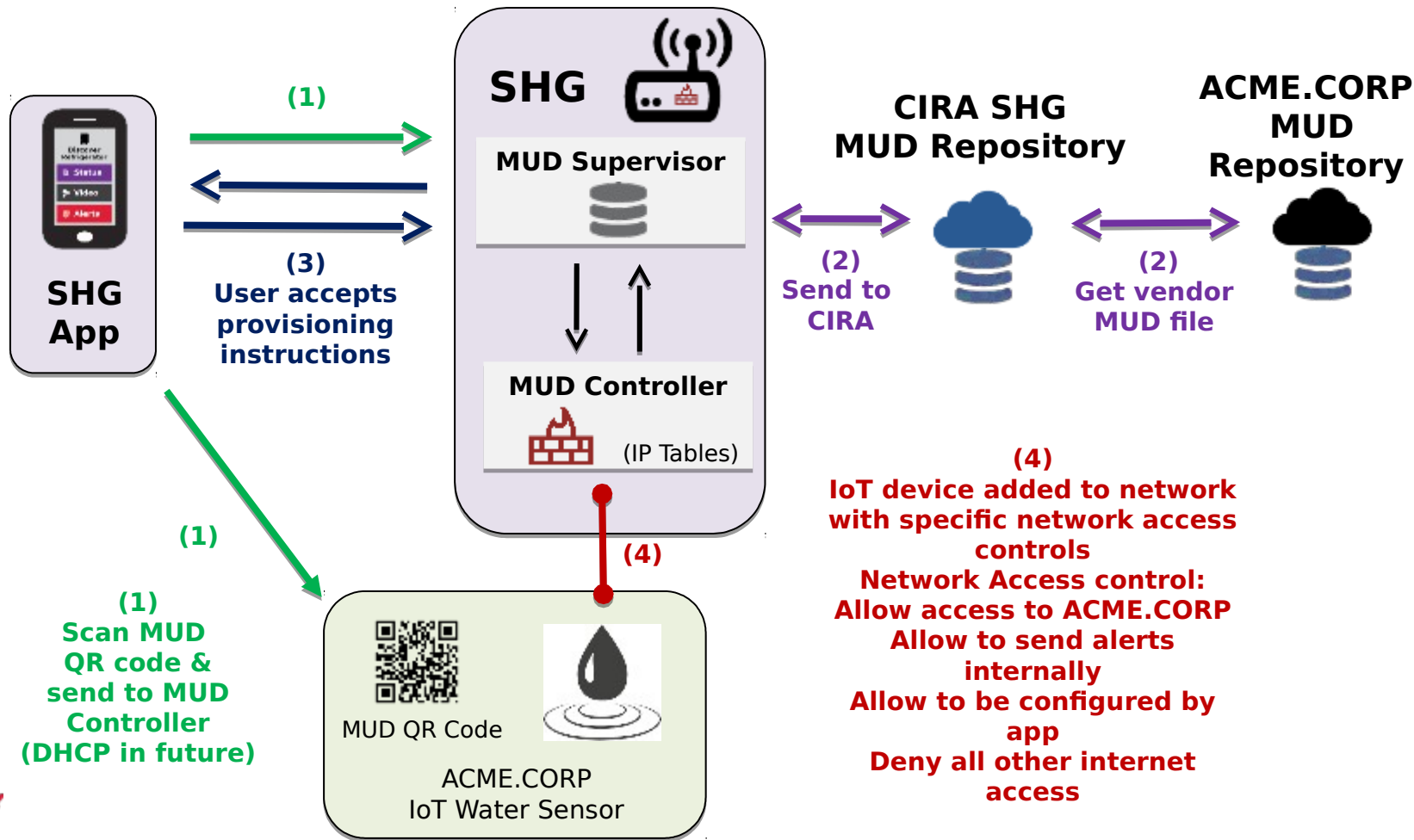
MUD FILE:



- I have WIFI & apply the water sensor access policy
- I need to upgrade my firmware at <https://acme.corp>
- Configure me at <https://myip/setup>
- Alerts available at <https://myip/alerts>

It would be nice if the IoT device could advertise it's current firmware version and/or current MUD file URL via WIFI or network connection (DPP, DHCP, LLDP...) on order to setup correct security profile





Simple user interface is key to this project

Swipe UP, DOWN, LEFT and RIGHT

