The 7 (Unhealthy) Habits of Highly Effective IoT Marketing

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Agenda

- The 7 (Unhealthy) Habits
- Mozilla WebThings Demo
Smart home concerns

Security
I don’t want hackers accessing my home network nor launching attacks.

Privacy
My data in the wrong hands would reveal when to break in. Analysts viewing my home habits feels creepy. I don’t want any of those listening devices!

Interoperability
I can’t figure out how pushing the doorbell can trigger turning on the outside light.

Overall Value
I worry that my investment in time, money, and effort will not provide sufficient value.
Smart Home Survey Results

- Firefox and WebThings Gateway users (~260 each)
End-to-end Device-to-Cloud Security

Secure links bring data to different data centers

- Inhibits user-defined rules and business logic (local if-then style)
- Data silos into disparate clouds drives down interoperability
- More time consuming to manage individual devices
- Device diversity drives up number and complexity of remote access methods
Works with ... Smart Assistant Style

Amazon Alexa, Google Assistant, Apple Siri, ...  

Negative consequences

- Globally, smart home device data still in silos, then aggregated into the hands of the few top voice assistant service providers
- Still need device apps to set up automations, and access details
- Dependent on skills upgrades for multi-device interoperability

Image sources: https://gizmodo.com/how-to-choose-the-right-platform-to-run-your-smart-home-1834808865 and Amazon, Apple, Google
Standards-based IoT Alliances

Zigbee, Z-Wave, …

Negative consequences

- Device “schemas” tied to messaging and radio protocols that need interop hubs
- Device OEMs don’t highlight interoperability marks (want customer lock-in to their brand)
- Added product cost of licensed trademarks, logos, certs
- Need bridge one level higher: web
Works With ... Interoperability Style

Works with ... Apple HomeKit, Samsung SmartThings, Nest, ...

Negative consequences

- Similar to smart assistants, user IoT data aggregated and controlled by only a few top brands
- Lowest common denominator for interoperability schema means rich device data, groupings, and automation rules still stuck in silos

“Note: SmartThings’ Philips Hue integration requires use of the Philips Hue Ethernet Bridge.”

Image Sources: Samsung, IKEA, Philips, Wink
IoT-as-a-Service Clouds, Apps

AWS, Azure, GCP, IBM …

Negative consequences

- In-depth data analytics tools limited to cloud platform offering
- Business operations secrets “in the cloud” not so secret?
- Can be discontinued (e.g., ARTIK)
- Ongoing fees
- NRE development often platform specific (hard to switch)

Images source: https://www.devteam.space/blog/10-best-internet-of-things-iot-cloud-platforms/
Easily Send Data to the Cloud

Tuya, Thingspeak, myDevices, Atmosphere, ...

Negative consequences

- "Your" data in their cloud. (Will they stay in business? Get acquired? Is data portable or locked-in?)
- Custom APIs per platform
- Often proprietary elements
- Non-web transports (e.g., MQTT) not as flexible for web devs
- Yet another cloud silo paradigm

Image Sources: Tuya, myDevices, Atmosphere, ThingSpeak
Tailored and Customized IoT Solutions

Kore, Breadware, IoT Consultants, ...

Negative consequences

- Non-standard niches
- Speed-to-market focus
- Behind OEM may be multiple software maintenance dependencies
- Still more cloud data silos

Image Sources: Kore, Breadware
## 7 (Unhealthy) Habits vs Mozilla WebThings

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Decentralized Web of Things Approach

**WebThings Gateway**
A software distribution for smart home gateways focused on privacy, security and interoperability

**WebThings Framework**
A collection of re-usable software components to help developers build their own web things

Learn More
Mozilla Smart Home
(data local)

Typical Vendor
(data in cloud)

No data

just web

https tunnel

“Your” data

apps galore

Your devices
Your Own Private Smart Home

Hub or Router + Smart Devices = Consumer Privacy

WebThings Gateway

moz://a
Welcome

Choose a secure web address for your gateway:

subdomain .mozilla-iot.org

Email

Please keep me updated about new features and contribution opportunities. Privacy Policy

Create

Skip
Web of Things Interoperability

W3C Web of Things
HTTP & WebSockets

IP Connected Devices (Wi-Fi, Ethernet, ...)

Linking together different smart home systems using the Web of Things.
Open Source Community Development

All of our source code is on GitHub and you can find us in #iot on irc.mozilla.org or ask questions on Discourse.

github.com/mozilla-iot (post issues to gateway repo)
Directly monitor and control your home over the web, without a middleman

- Affordable one-off purchase, no monthly subscription
- Private data stays in your home by default
- Expand with devices from multiple manufacturers
Live Demo

- WebThings Gateway

or see:
https://youtu.be/hwQF_ELcVMs
https://youtu.be/KF2T58_c4dM
Thank You!

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Backup Slides
WebThings Gateway UI
Useful Reference Links

- [iot.mozilla.org](http://iot.mozilla.org)
- [github.com/mozilla-iot](http://github.com/mozilla-iot)
Connected Smart Home Use Cases

10 Example Use Cases

Main Categories of Uses

Credit: The Hartford and MIT AgeLab
Mozilla’s Decentralized and Privatized Approach to IoT

Enabling IoT devices to be discoverable “on the web” ≠ Connecting to IoT device data “in the cloud”
Home Security and Home Automation

Sensors / Actuators

Support for door sensors, motion sensors, pushbuttons, bulbs, plugs, and more..
More Intuitive View Based on Thing Locations

**Interactive Floorplan**

View status of devices and control them directly inside the floorplan.
Wireless Pushbuttons:
Like “TV Remote Controls” for Your Whole Home

Push Buttons

Trigger anything with the push of a button.
Say YES to “Allow Notifications” Dialog Box (Because Only You Can Create Them)

Push Notifications

Create rules which trigger a push notification with a custom message.
Go Crazy With Your Own Rules Logic

Advanced Rules Engine

Multiple inputs, multiple outputs.

If, while, and, or and equals operators.
Talk or Type

Control your home using speech and text via a chat style interface.
Secure Framework for 3rd Party Services

Developer Settings

Enable/disable SSH, view logs, and create OAuth tokens for secure web service interaction.
Open **webthing-*** Library Options

https://iot.mozilla.org/framework/

Node
Python
Java
Rust
Arduino
Moddable (javascript)
MicroPython
MicroBlocks
C/C++
etc.
WoT Spec (Schemas) & Example

[https://iot.mozilla.org/schemas/](https://iot.mozilla.org/schemas/)

**Capabilities**
- properties
- actions
- events

**Example**

```json
{
    "@context": "https://iot.mozilla.org/schemas/",
    "@type": ["Light", "OnOffSwitch"],
    "name": "My Lamp",
    "description": "A web connected lamp",
    "properties": {
        "on": {
            "@type": "OnOffProperty",
            "type": "boolean",
            "description": "Whether the lamp is turned on",
            "href": "/things/lamp/properties/on"
        },
        "brightness": {
            "@type": "BrightnessProperty",
            "type": "integer",
            "description": "The level of light from 0-100"
        }
    }
}
```
Add-ons: Bridge to JSON Web Thing API

ActivityPub  
Broadlink  
Chromecast  
DateTime Adapter  
Email Sender  
Eufy  
Flic Button  
Generic Sensors  
GPIO  
HomeKit  
Lifx  
Logitech Harmony  
MicroBlocks  
Nanoleaf  
Netatmo Wx  
Philips Hue  

Pimoroni Blinkt!  
Pulse  
Serial  
Sonos  
TP-Link  
Twilio  
Virtual Things  
Voice Control  
Wake-on-LAN  
Web Thing  
Wemo  
X-10  
Yeelight  
Z-Wave  
Zigbee  
and more...

ActivityPub
Send notice to Mastodon SocialWeb. See: 
https://github.com/rzr/mastodon-lite
by Philippe Coval

BroadLink
Support IR devices with BroadLink. See: 
https://github.com/sogaani/broadlink-adapter
by sogaani

Chromecast
Chromecast support
by Martin Giger