

5 THINGS I LEARNED WHEN WE PIVOTED TO CONNECTED DEVICES



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OSCAL, May 2016

1. WE HAVE TO COMMUNICATE BETTER

29 March 2012

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Booting to the Web

Mozilla believes that the web can displace proprietary, single-vendor stacks for application development. To make open web technologies a better basis for future applications on mobile and desktop alike, we need to keep pushing the envelope of the web to include --- and in places exceed --- the capabilities of the competing stacks in question.

We also need a hill to take, in order to scope and focus our efforts. Recently we saw the [pdf.js](#) project expose small gaps that needed filling in order for "HTML5" to be a superset of PDF. We want to take a bigger step now, and find the gaps that keep web developers from being able to build apps that are --- in every way --- the equals of native apps built for the iPhone, Android, and WP7.

To that end, we started a project we're calling Firefox OS, formerly [Boot to Gecko](#) (B2G), to pursue the goal of building a complete, standalone operating system for the open web. It requires work in a number of areas.

- **New web APIs:** build prototype APIs for exposing device and OS capabilities to content (Telephony, SMS, Camera, USB, Bluetooth, NFC, etc.)
- **Privilege model:** making sure that these new capabilities are safely exposed to pages and applications
- **Booting:** prototype a low-level substrate for mobile devices (phones and tablets)
- **Applications:** choose and port or build apps to prove out and prioritize the power of the system.

We will do this work in the open, we will release the [source](#). In real-time, we will take all successful additions to an appropriate standards group, and we will track changes that come out of that process. We aren't trying to have these native-grade apps just run on Firefox, we're trying to have them run on the web.

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https://wiki.mozilla.org/Booting_to_the_Web

Some Facts

- 18 smartphones
- 16 operators
- 32 countries
- TV



9 December 2015



Firefox OS Pivot to Connected Devices



Ari Jaaksi

♥ Share This

Everything is connected around us. This revolution has already started and it will be bigger than previous technology revolutions, including the mobile smartphone revolution. Internet of Things, as many call it today, will fundamentally affect all of us.

We will prototype this future starting right now using technologies developed as part of the Firefox OS project to give us a kick start.

We will make space for this exploration by stopping our work to build and ship smartphones through carrier partners.

2. WE HAVE TO KEEP SOMETHING OF FIREFOX
OS IN ORDER TO CALL IT A “PIVOT”

Going Mobile

A photograph of five young women standing outdoors, all looking down at their mobile phones. The woman in the foreground, wearing a teal tank top and denim shorts, is the most prominent. Behind her, from left to right, are a woman in a blue t-shirt, a woman in a striped shirt, a woman in a grey top and white shorts, and a woman in a red strapless top and denim shorts. They are all dressed in casual summer attire. The background is slightly blurred, showing what appears to be a beach or coastal area with colorful umbrellas.

Building for Mobile



NO SDK?



Firefox WebIDE: Readability

Readability

Firefox OS 2.0

Readable

css/ connect.css index.css share.css icons/ 128.png 256.png js/ connect.js index.js oauth.js

```
1 body {  
2     background-color: #990000;  
3     color: #FDFDFD;  
4     text-align: center;  
5     font-family: "Sentinel SSm A";  
6 }  
7  
8 h1 {  
9     margin: 60px 0 100px;  
10 }  
11  
12 h1 > * {  
13     display: block;  
14 }  
15  
16 h1 > small {  
17     font-size: 2rem;  
18     font-weight: normal;  
19 }
```

Inspector Console Debugger Style Editor Profiler Network Scratchpad

html > body > button#loginButton

```
<!DOCTYPE html>  
<html>  
<head></head>  
<body>  
<h1></h1>  
<button id="loginButton">  
    Log In  
</button>  
</body>  
</html>
```

Rules Computed Box Model

123x59 static

0 1 14 93x32 14 1 0

11 14 1







Store

Mac

iPod

iPhone

iPad

iTunes

Support

Search





HOME

NEW

POPULAR

CATEGORIES ▾

Halloween Games

Zombies everywhere.

Children's Apps

Games, education, creative expression, and more—these apps are ideal for kids.

Getting Around

NearMap

zMaps

MapLink

The Guardian

The Guardian

★★★★★

Free

Get Creative

PhotoFunia

Paint

Guitar Effects

FireSketch

Canvas

Instant Butt...

Dailymotion

Great Games

Hextris

Monkeyfast

White Tilez

Nappa adve...

Quadz

Box It

Free

Free

Free

[View all apps](#)

Dailymotion

Dailymotion

★★★★★

Free



India

- Intex Cloud FX
 - 2 MP Rear camera
 - Spd 6821 1.0GHz
 - RAM-128MB
 - ROM-256MB
 - Display—3.5" HVGA
 - Dual SIM
 - 1250mAh (Li-ion)
 - Bluetooth/Wi-Fi
- Price?



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 - Bluetooth/Wi-Fi
- Price 20£



HOW FIREFOX OS CONNECTS HTML5 TO HARDWARE



Web APIs

API	Description	Standardization	Availability	See also
WebTelephony	Allow placing and answering phone calls as well as build in-call UI.	W3C ED (SysApps)	D A B	bug 674726, Security
Vibration API	Control device vibration for things like haptic feedback in games. Not intended to solve things like vibration for notification.	W3C CR (Device APIs)	D A B	bug 679966, Security
WebSMS	Send/receive SMS messages as well as manage messages stored on device.	W3C ED (SysApps)	D A B	bug 674725, Security
Idle API	Get notifications when user is idle.	Needs plan	D A B	bug 715041, Security
Screen Orientation	Get notification when screen orientation changes as well as control which screen orientation a page/app wants.	W3C WD (WebApps)	D A B	bug 720794 bug 740188 bug 673922, Security
	Set system-wide configurations		D A B	bug

<https://wiki.mozilla.org/WebAPI>

Web APIs

- Vibration API
- Screen Orientation
- Geolocation API
- Mouse Lock API
- Open WebApps
- Network Information API
- Battery Status API
- Alarm API
- Push Notifications API
- WebFM API / FMRadio
- WebPayment
- IndexedDB
- Ambient light sensor
- Proximity sensor
- Notification

Battery API

```
1 var battery = navigator.battery || navigator.mozBattery || navigator.webkitBattery;  
2  
3 function updateBatteryStatus() {  
4     console.log("Battery status: " + battery.level * 100 + " %");  
5  
6     if (battery.charging) {  
7         console.log("Battery is charging");  
8     }  
9 }  
10  
11 battery.addEventListener("chargingchange", updateBatteryStatus);  
12 battery.addEventListener("levelchange", updateBatteryStatus);  
13 updateBatteryStatus();
```

Web APIs (privileged apps)

- Device Storage API
- Browser API
- TCP Socket API
- Contacts API
- systemXHR

Web APIs (certified apps)

- WebTelephony
- WebSMS
- Idle API
- Settings API
- Power Management API
- Mobile Connection API
- WiFi Information API
- WebBluetooth
- Permissions API
- Network Stats API
- Camera API
- Time/Clock API
- Attention screen
- Voicemail

3. WE HAVE TO HAVE A TRANSITION PLAN

Smartphone Transition

- Firefox OS for Smartphone Code Base Transition
- Volunteer Contributor Community Engagement
- Smartphone Commercial Ramp-Down

SmartPhone Code Transition

- Firefox OS for Smartphone Code Base Transition
 - Modernize the B2G platform (replace legacy mozApps-only APIs with new web standards)
 - Move towards an architecture closer to that of the Firefox browser (just chrome and web content)
 - Transition smartphone modules to new owners and peers in the community

B2G/Transition Project

- **Volunteer Contributor Community Engagement**
 - Modernise the B2G platform (replace legacy mozApps-only APIs with new web standards)
 - Create a leaner platform on which to build Smart TV and other connected devices products (reduced complexity and maintenance cost)
 - Move towards an architecture closer to that of the Firefox browser (just chrome and web content)
 - Transition smartphone modules to new owners and peers in the community
 - Build a more active open source community around the project

B2G/Transition Project

- Gonk Changes
 - APIs needed for TV will be maintained by staff on the TV team
 - Smartphone-specific APIs will need to be maintained by the wider community
 - Merge the B2G process model with the Firefox process model

B2G/Transition Project

- Gecko Changes
 - Replace mozApps with standard web apps (Service Workers, Manifest and Push)
 - Remove themes and langpacks and add support for Web Extensions
 - Find an alternative solution to legacy mozApps-only APIs
 - IAC
 - DataStore
 - System Messages
 - Web Activities

B2G/Transition Project

- Gaia Changes
 - No longer built as mozApps (app://)
 - Turn system UI into (chrome://) (reason?)
 - System app
 - Home screen
 - Search
 - Keyboard
 - Settings?
 - Turn everything else into web content where possible (http://)
 - Hosted on localhost
 - Hosted on the web

Smartphone Commercial Transition

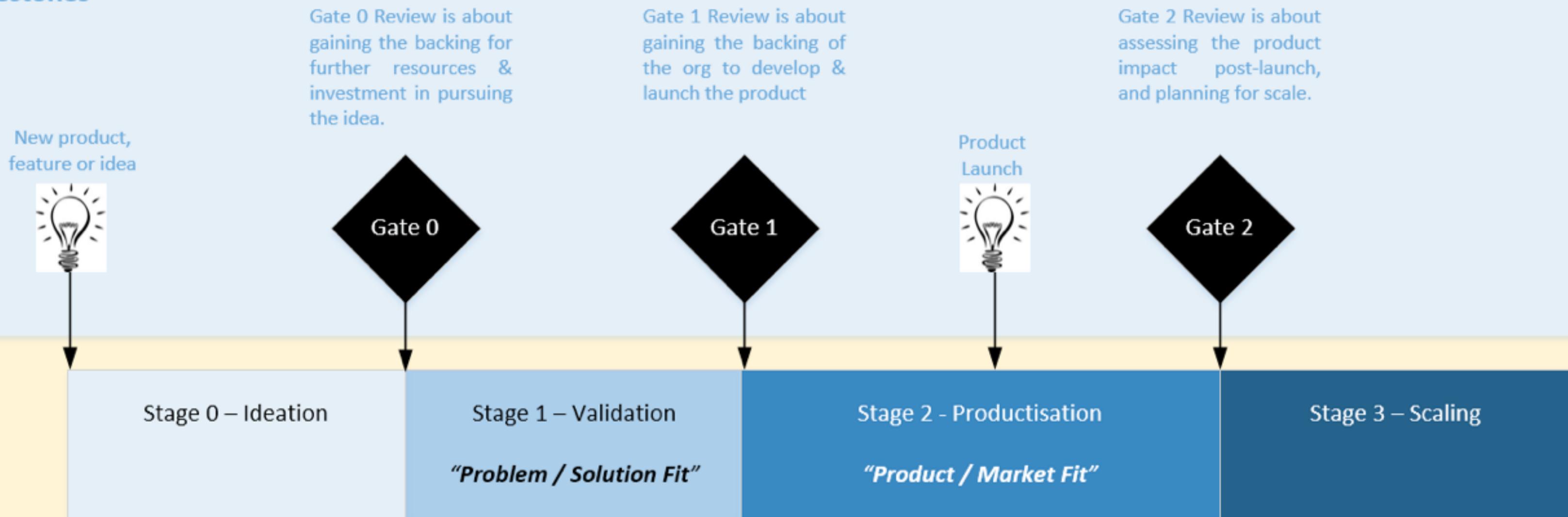
- Smartphone Commercial Ramp-Down

Section	Summary	Status
Marketplace & Content	Plan already approved to maintain support to current users	DONE
Payments	Agreed to disable Mozilla Payments	DONE
Push	Push service will be maintained	ON TARGET
Support for emergency fixes	Critical and major security issues will be covered	ON TARGET
SUMO	Our team will maintain basic support to Firefox OS users	ON TARGET

4. WE NEED A NEW PROCESS

Product Innovation Process

Milestones



Very small team to start brainstorming the product idea

Additional resources with defined objectives. Key questions for Stage 1:

- Does it fit Mozilla mission?
- Is there a problem worth solving?
- What is the MVP?
- Is it something customers want?
- Can it be solved?

Requested resources are approved with which to develop & then launch product. Key questions for Stage 2:

- Pre-launch: What are the key success metrics (qualitative & quantitative)?
- Post-Launch: How well does the solution actually address the user problem?
- Post-Launch: Has product achieved its success metrics?

This stage is about growing the product user base

Stages

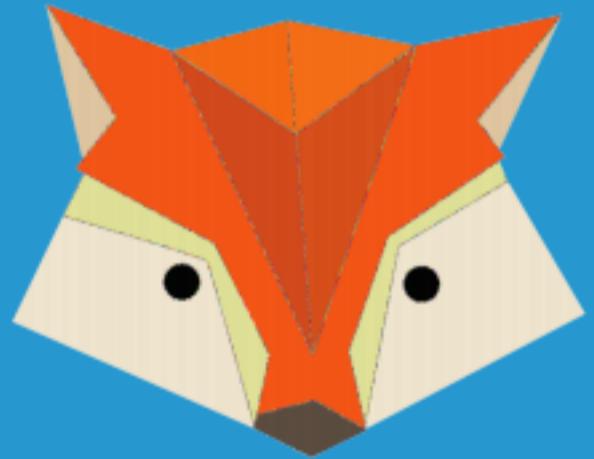
Horizontal Projects

- Metrics
- Foxfooding
- Research & Validation

5. WE NEED CHOICES

CD Projects

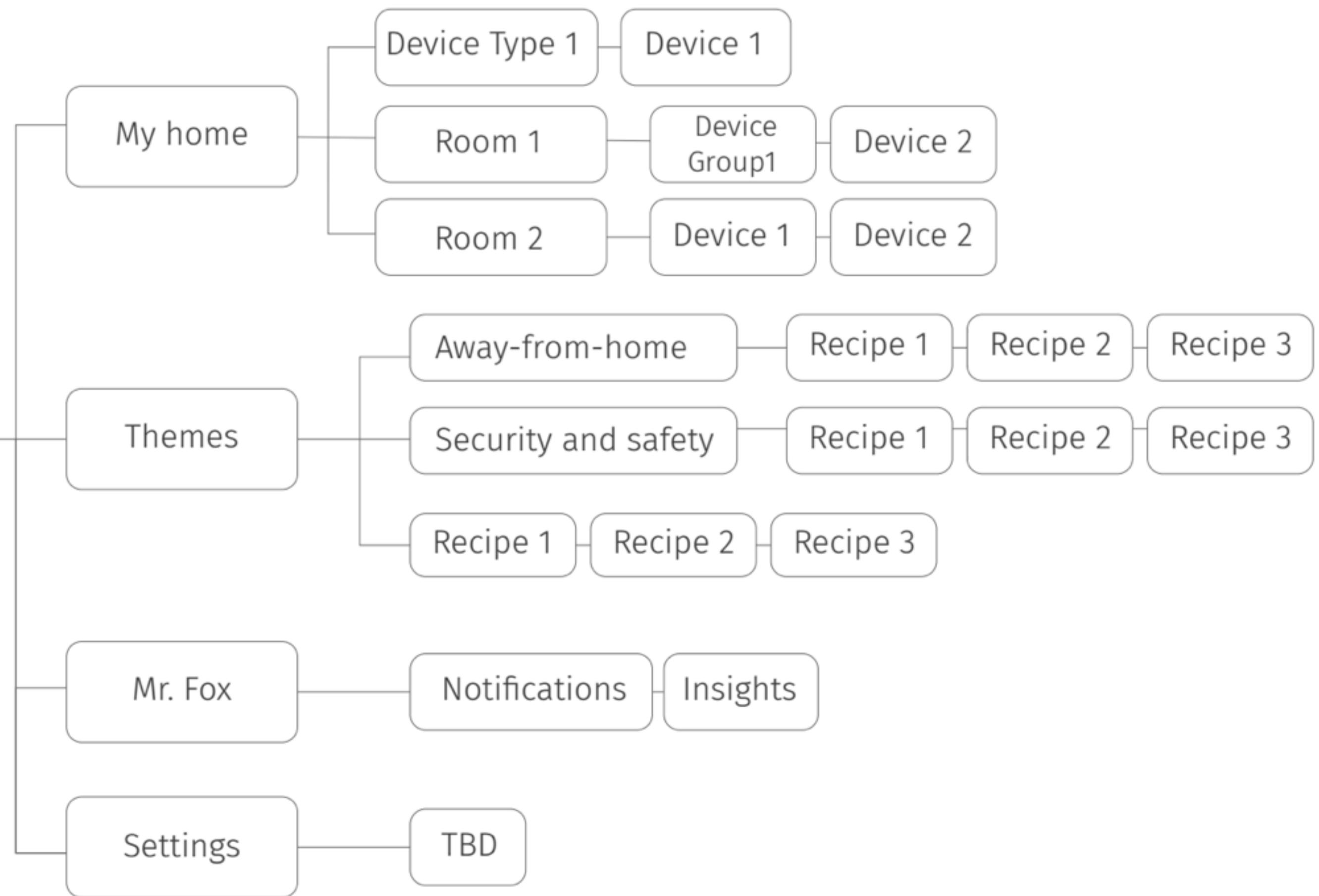
Project Link



FoxApp Home view v1.0
(For Demo only)

Project Link

Information Architecture



Project Link

- Setup "Link"
- Have their devices that use Z-wave/WiFi protocols be discovered by Link
- Interact & control their devices whether they are home or remote via a web-app.
- Configure rules around how these devices should automatically interact with each other for specific scenarios
- Receive notifications

Project Link

Devices Supported in Phase 1

Device	Standard
D-Link Pan & Tilt Wi-Fi Camera DCS-5020L	WiFi
Fibaro Motion Sensor	Z-Wave
Philips Hue Lights	Zigbee (via Phillips Hue Bridge)
Kwikset Door Lock SmartCode 910	Z-Wave
Schlage Door Lock BE469NXCAM619	Z-Wave

Project Sensor Web

Project Sensor Web

Our Vision



Contributors collaboratively set up sensors to collect data from the environment

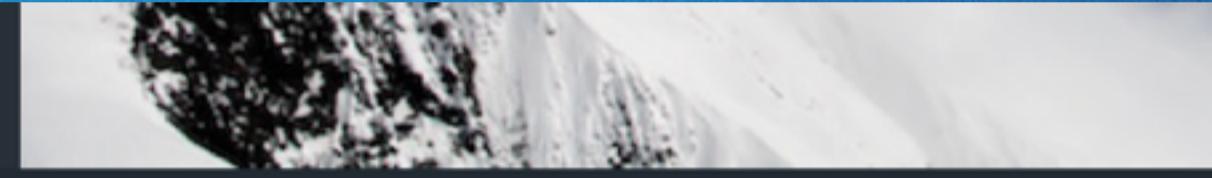
Web processes data and publishes insightful contents

Users benefit from consuming the contents

Project Smart Home

Project Vaani

Project Vaani



VAANI BRINGS A VOICE

With Vaani you will be able to control IoT
the power of voice.

Project SmartTV



Project Flyweb

<https://youtu.be/j3E4dKNaQRM>

Project Magnet

magnet

What do all these projects have in common?

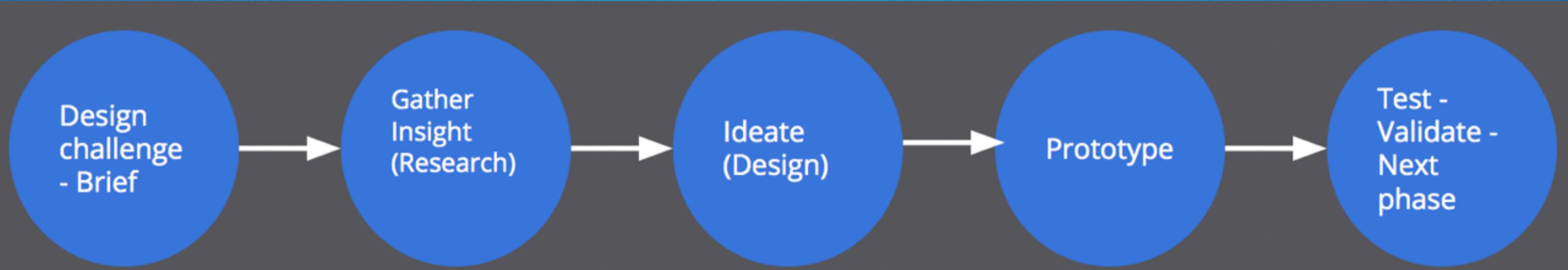
They need help!

HELP WANTED!

**IF YOU'RE AWESOME,
PLEASE APPLY INSIDE!**

IF YOU'RE NOT, MAYBE TRY DOWN THE STREET...

Community Experimentation Launchpad (CEL) - Beta



THANKS

Alex Lakatos

Mozilla Reps
Mentor

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