Deep Dive into the ArcGIS **Geotrigger Service**

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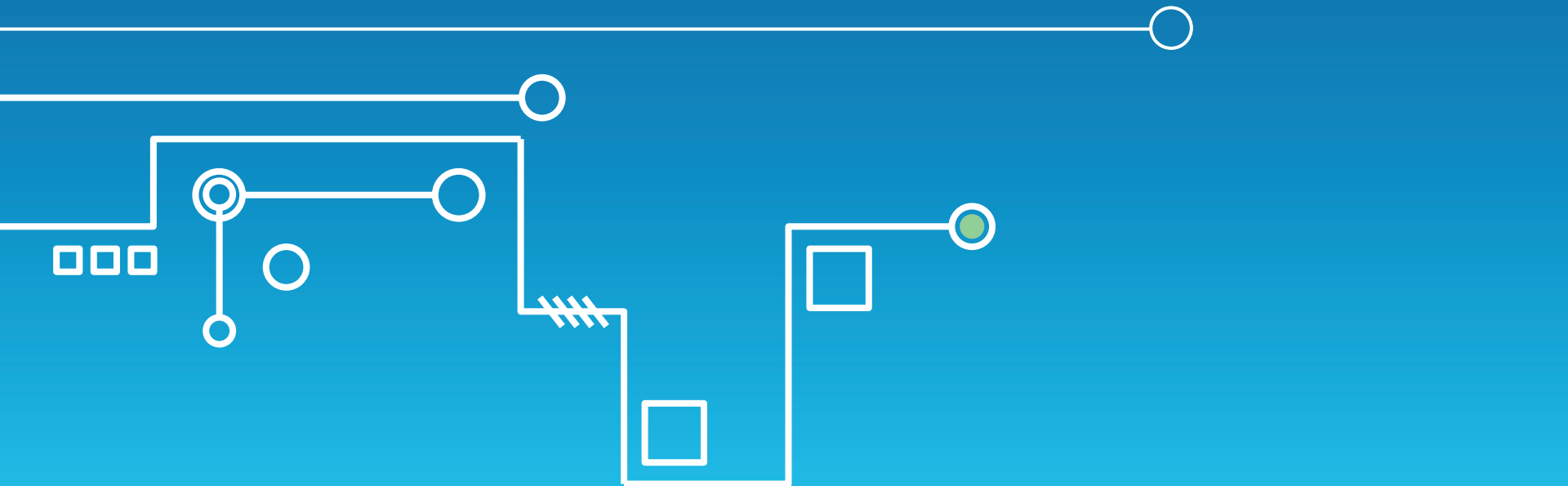
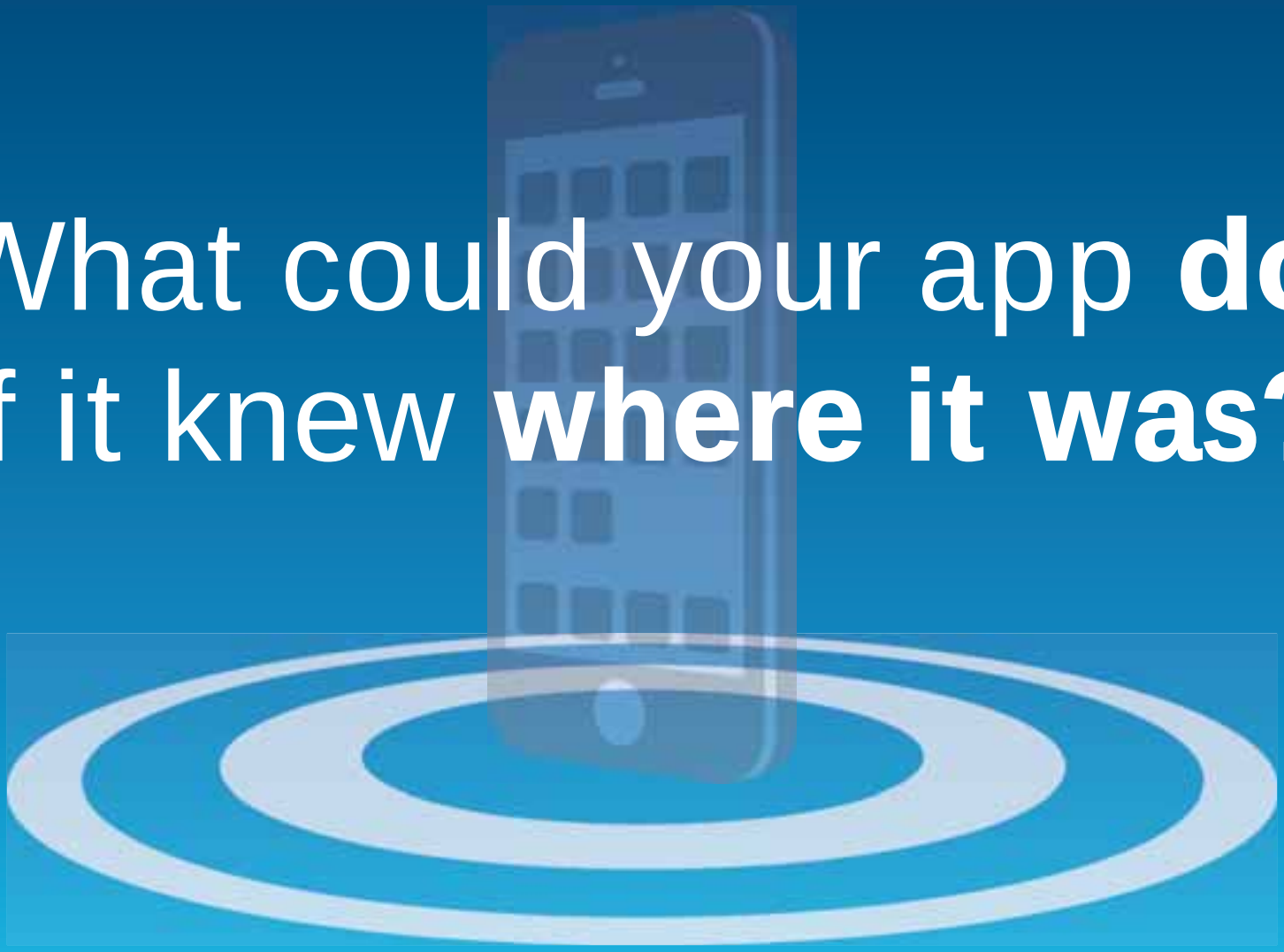
Geotrigger SDKs and API Just Launched!

developers.arcgis.com



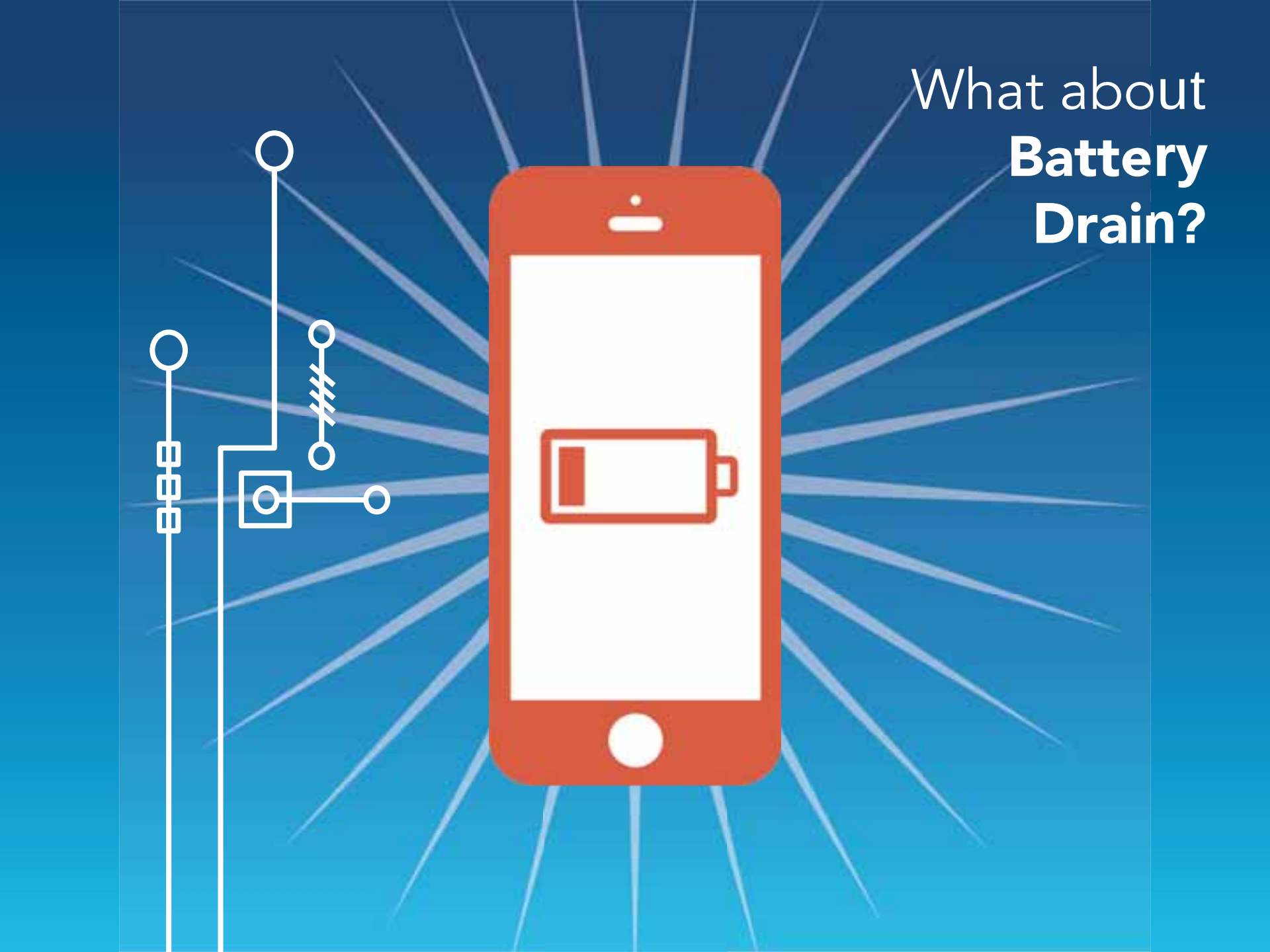
What could your app **do** if it knew **where it was?**

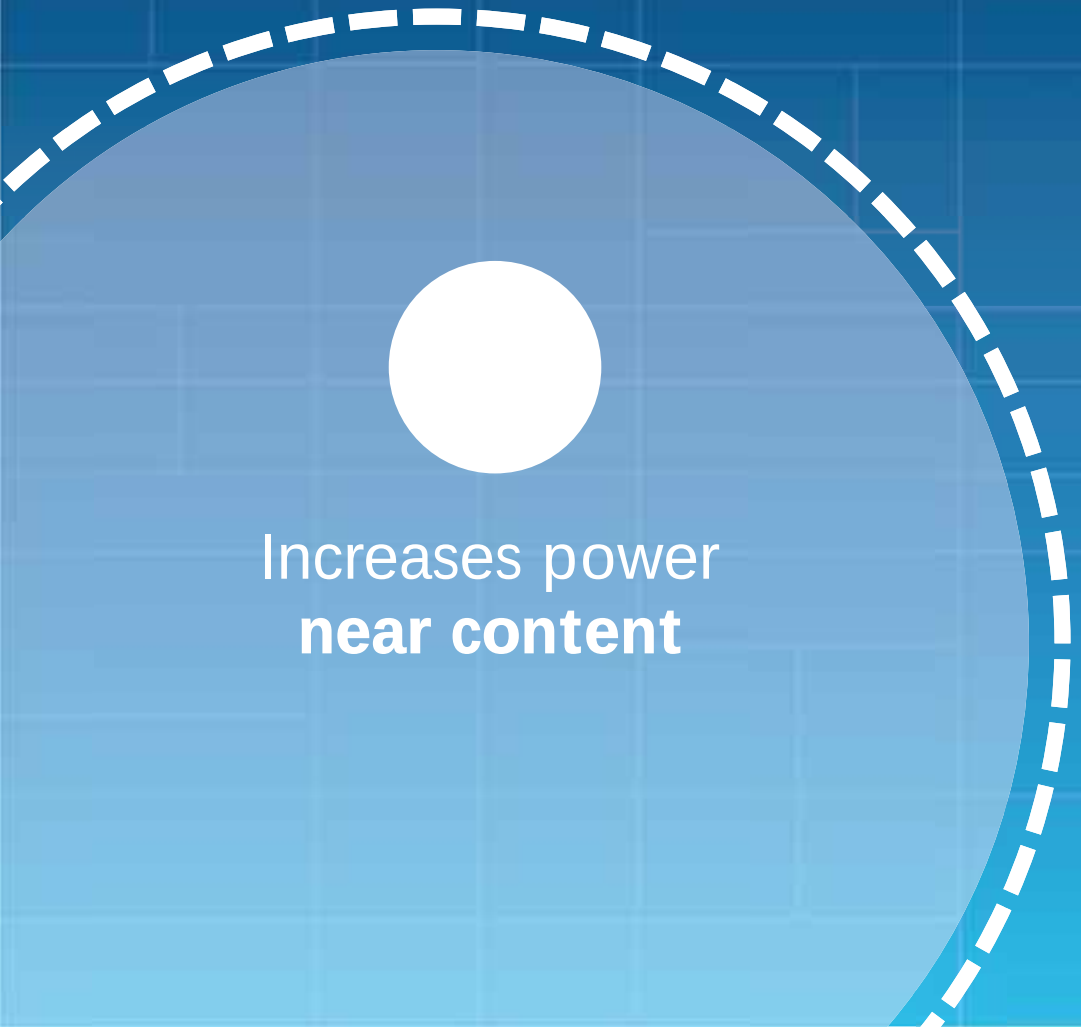


Geotrigger:
An Invisible Button


message

What about **Battery Drain?**





Increases power
near content

Reduces power use **away from content**

Differences between **iPhone** and **Android**

iOS Location Services

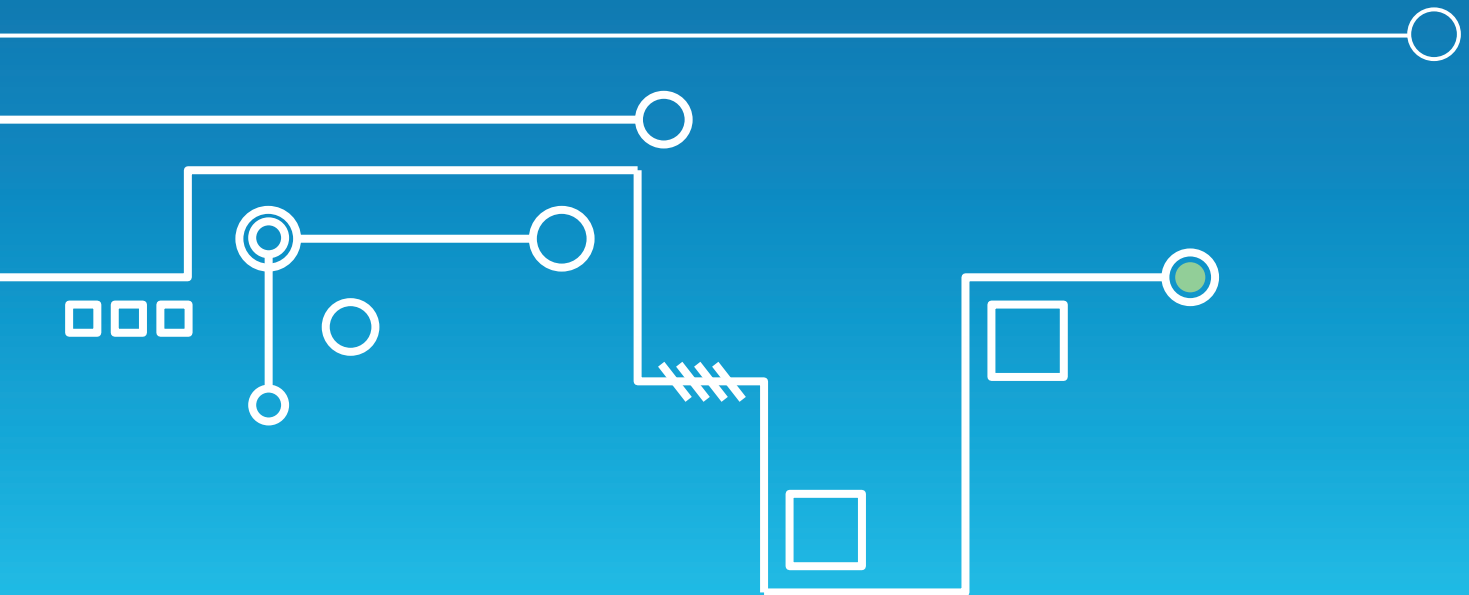
- App registers for location updates from the operating system
- iOS delivers location events to a delegate object in the app when it's running
- iOS may terminate your app due to high memory conditions, etc.
- If terminated, iOS will re-launch the app in the background when a location event is received
- Less control over when the data is received, but less code to manage

Android Location Services

- App creates a background service which runs persistently
- The app's service requests location data from the OS
- The OS delivers location data to the service
- More control available on Android,
  but also requires more code to manage

Geotrigger Technology

- Mobile SDKs
- Web APIs
- Battery Management
- Tracking Profiles



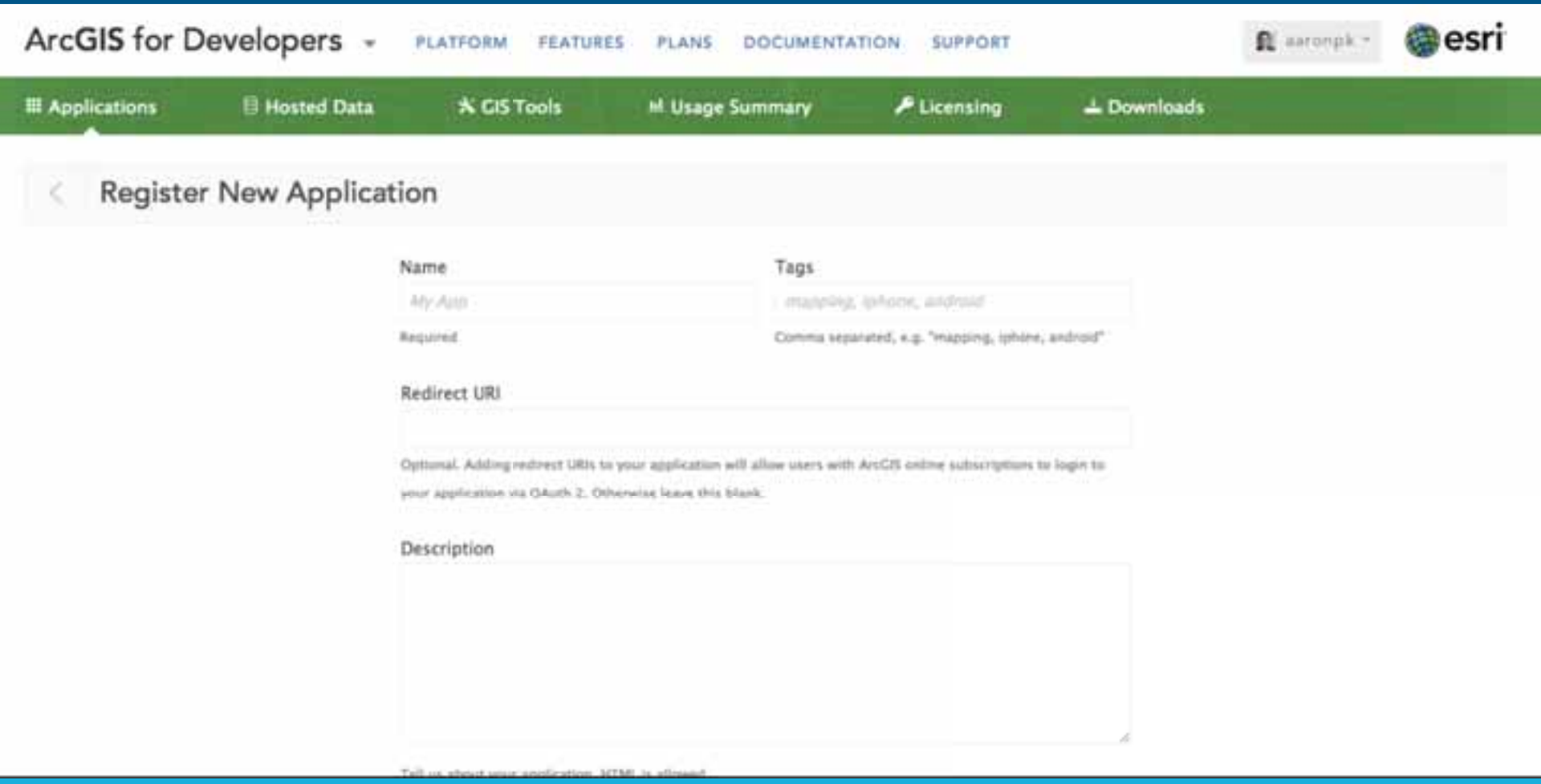
Getting Started

Getting Started

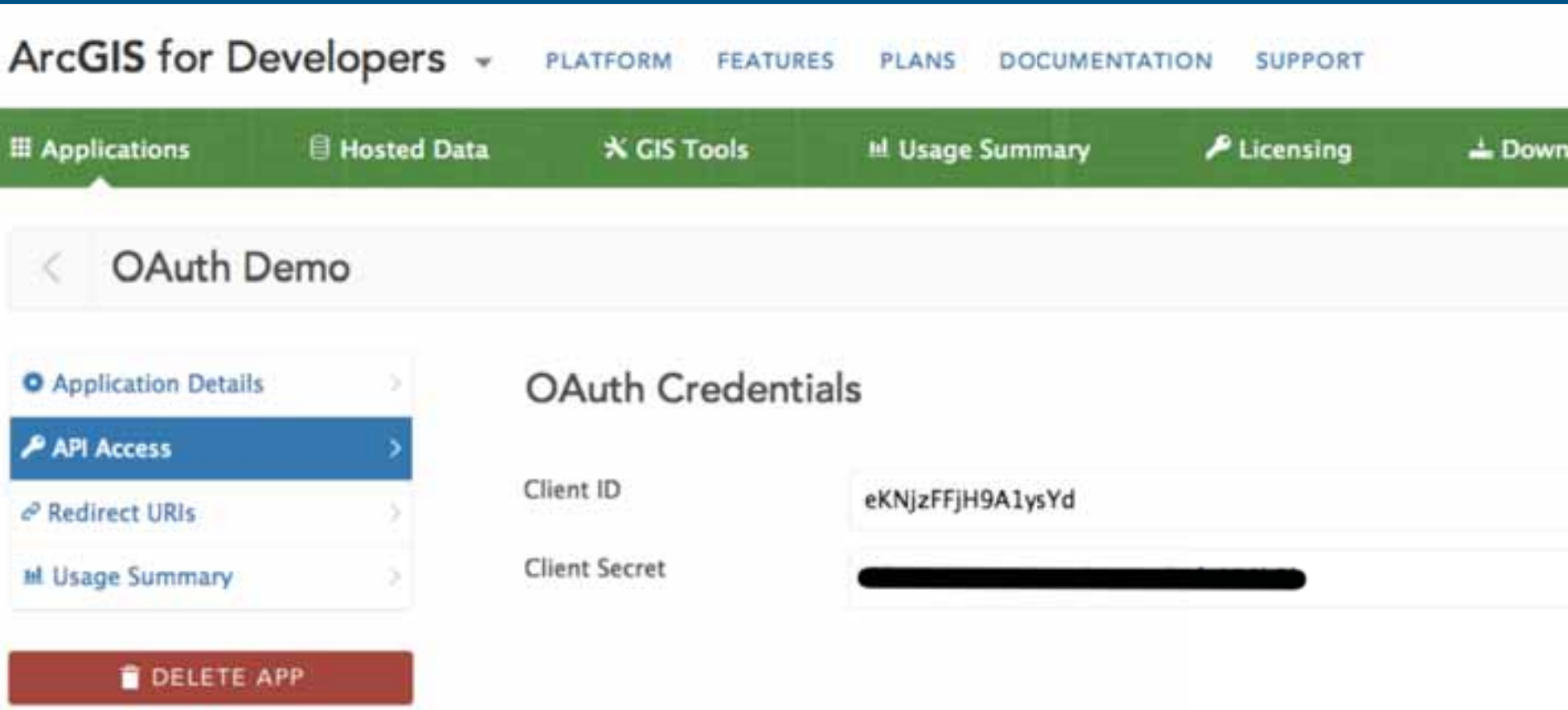
1. Create an **account** at **developers.arcgis.com** or sign in if you already have an ArcGIS account

2. Create an **application** **developers.arcgis.com/en/applications/**

Register a new application



Get your app's client_id



Authentication

The Geotrigger API uses **OAuth 2.0**

- All requests to the **Geotrigger API** are made with an **access token**.
- To get an access token for your application, make a request with the **client_id** and **client_secret** to the **"oauth2/token"** endpoint of **ArcGIS Online**.

2. Register for Push Notifications

Apple

- Go to your Apple Developer account to get a Push Certificate (iOS).
- Make sure the push cert has been set on your app and that your application is registered to handle push notifications.

https://developer.apple.com/notifications/

2. Register for Push Notifications

Android

- Get a GCM key (Google).
- Make sure you've GCM key in the push notification settings for your app and make sure you set your GCM sender ID when you initialize the Geotrigger service.

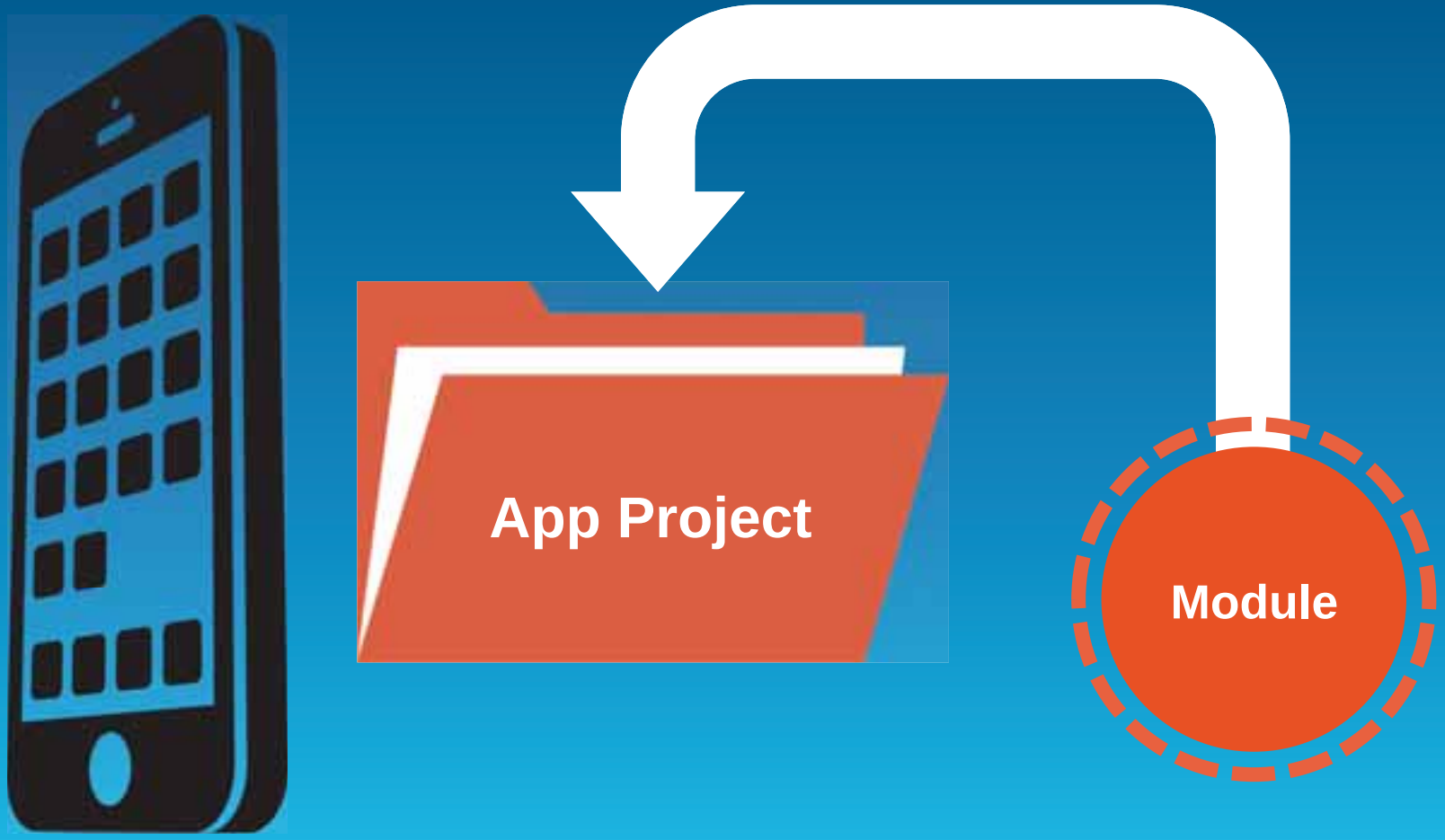
http://developer.android.com/google/gcm/

3. Download the Sample App

- Download the **sample app** for your platform (iOS or Android).

- github.com/Esri/geotrigger-sdk-android
- github.com/Esri/geotrigger-sdk-ios

Have an app already? Add the Geotrigger SDK to your native app



Android

Eclipse

- Add the arcgis-geotriggers.jar as a dependency in Eclipse, find the library in the Project Explorer, right click on it, and select Add to Build Path.

IntelliJ IDEA

- Add arcgis-geotriggers.jar as a module dependency in your module settings.
- In your IDE, make the call to start the tracker using your client ID.

**Due to the use of native location services in Gingerbread, the ArcGIS Geotrigger SDK for Android requires that your project is compiled with Android 2.3.3 (API level 10) or newer.*

iOS

Xcode

Add the following frameworks to your application: **CoreLocation, Security, SystemConfiguration, and MobileCoreServices.**

- Drag and drop the **GeotriggerSDK.framework** file from Finder into the Frameworks folder in **XCode**.

**The Geotrigger Service works only with native apps on iPhone and Android. GPS can only be accessed in the background by native applications. Do not try to add the Geotrigger SDK to a web app.*

Important

Test your push notifications!

- Send a sample push notification to your iPhone or Android app.
- Once you've determined that push notifications are working, then you can test the Geotrigger service.

**You need to test your push notifications before you can test that the Geotrigger Service works.*

Geotrigger Overview

- Triggers define the logic you want to happen
- Triggers can be set when devices **enter** or **leave** a place
- **Date and time** ranges can be applied to the triggers, i.e. only between 9am-5pm

Geotrigger Components

- **Condition**
  - **Geometry** (polygon or circle)
  - **Direction** (enter or leave)
- **Action** (message, callback URL, or change tracking profile)
- **Tags** (to group content)
  - Example: Wikipedia article data
    - Tags for Buildings, History
    - Can allow users to subscribe to a subset of the data

4. Create your first Geotrigger

Create your first Geotrigger geographically close to your current location so you can test it out.

- Use the Geotrigger API developers.arcgis.com/en/geotrigger-service/api-reference/trigger-create/
- **Use the visual trigger editor**
  - Will allow you and your team to quickly set up triggers without writing code

Create a trigger using the visual editor

Create a trigger using the API

```
POST https://geotrigger.arcgis.com/trigger/create

{
  "condition": {
    "direction": "enter",
    "geo": {
      "latitude": 45.5165,
      "longitude": -122.6764,
      "distance": 100
    }
  },
  "action": {
    "notification": {
      "text": "Hello"
    }
  },
  "setTags": "buildings",
  "properties": {
    "foo": "bar"
  }
}
```

Trigger Types

- Trigger action can be either
  - **Messages**
  - **Callback URL**
  - **Change tracking profile**

- Use “message” triggers when you want to simply send a push notification to users

- Use “callback” triggers when you want to receive the trigger notification on your own server

Trigger **Callback Data**

- The trigger callback sends information about:
  - The trigger ID that ran
  - The user ID that encountered the trigger
  - The tags and any custom properties of the trigger
  - The confidence that the device is actually in the trigger area
  - The location of the device when the trigger ran

Tags: a way to organize your data

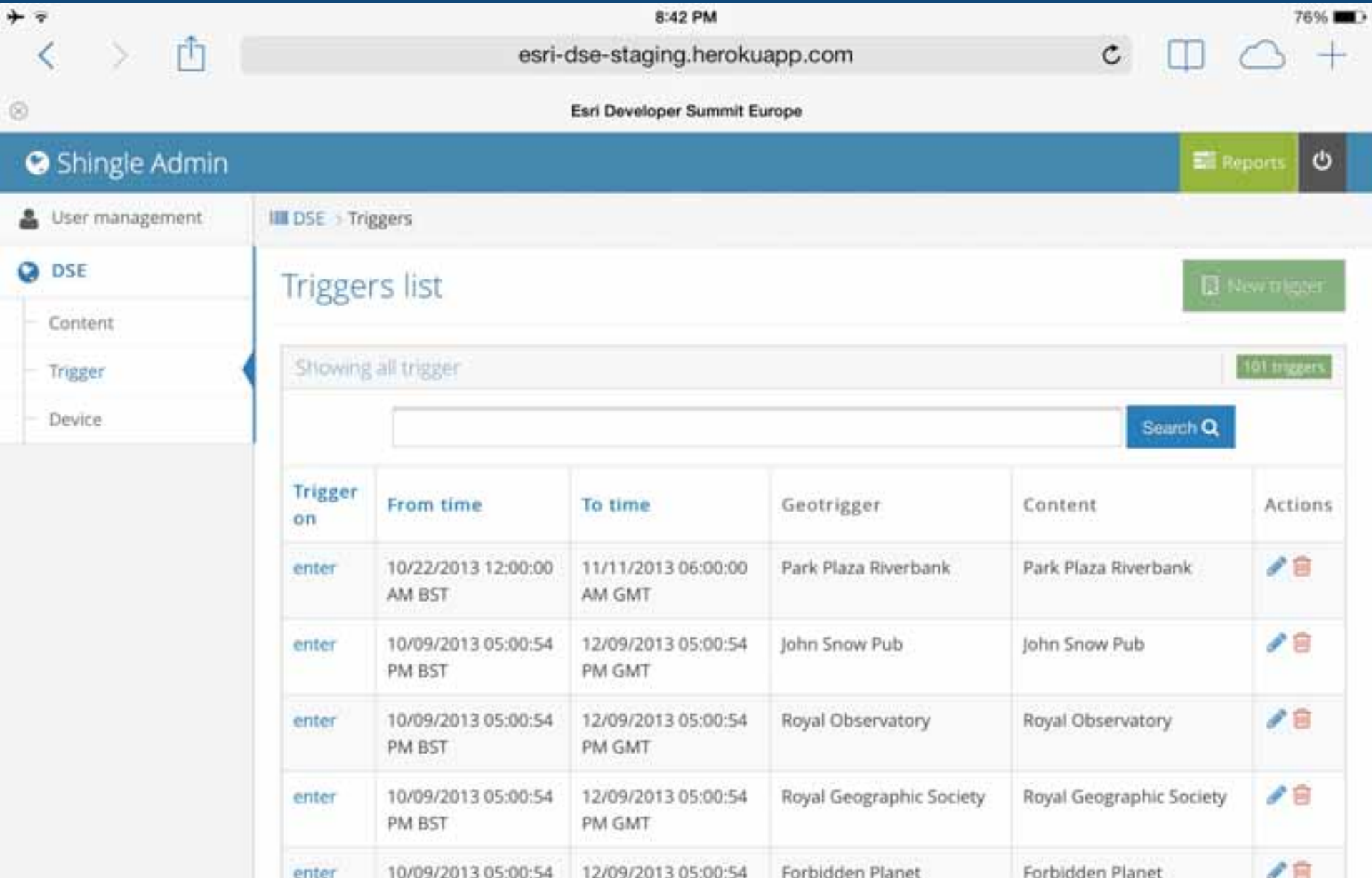
Tags can be used to

- **Group your content** into categories
  - Eg: parks, restaurants, public places
- **Segment users** based on campaigns
  - "All users who registered during the Thanksgiving promotion"

Trigger **History**

- Retrieve logs of all the triggers run for your application
- Trigger history includes
  - Place information
  - Device information
  - Location where the trigger was run

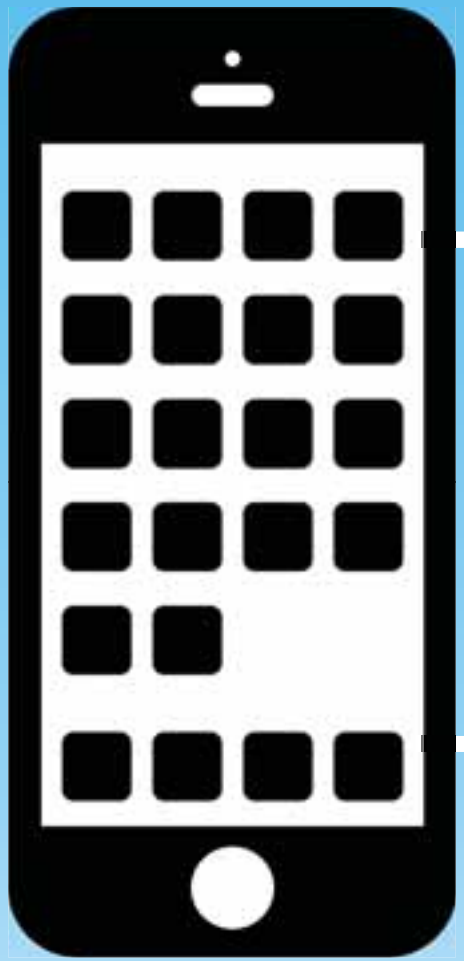
Dashboard Statistics (by Taqtile)



Tracking Profiles

Battery Management built on top of Apple’s and Google’s core location services

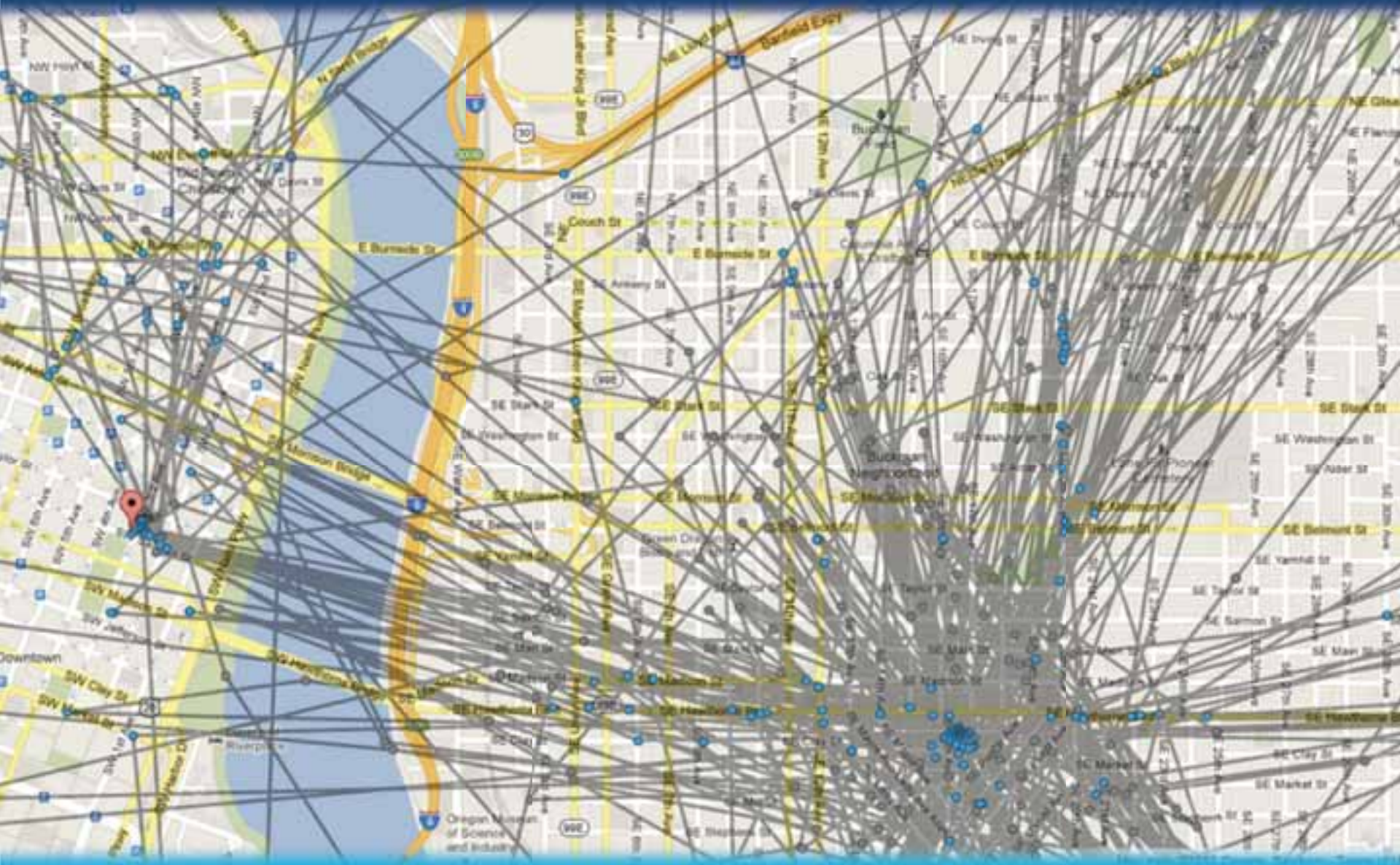
Rough
Mode



Delayed Messaging

Least Battery Drain

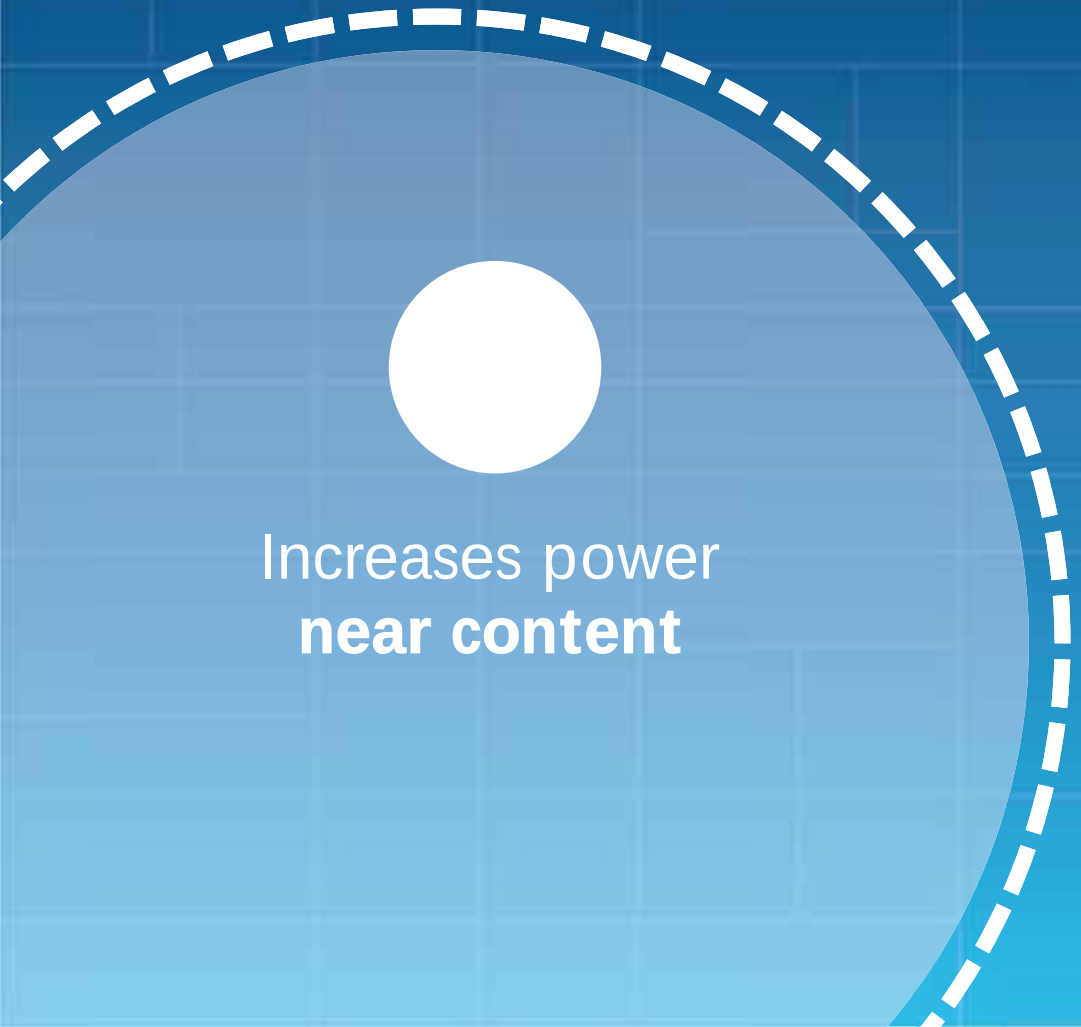
Data collected by one device in **rough mode**



Adaptive
Mode

Fast Messaging

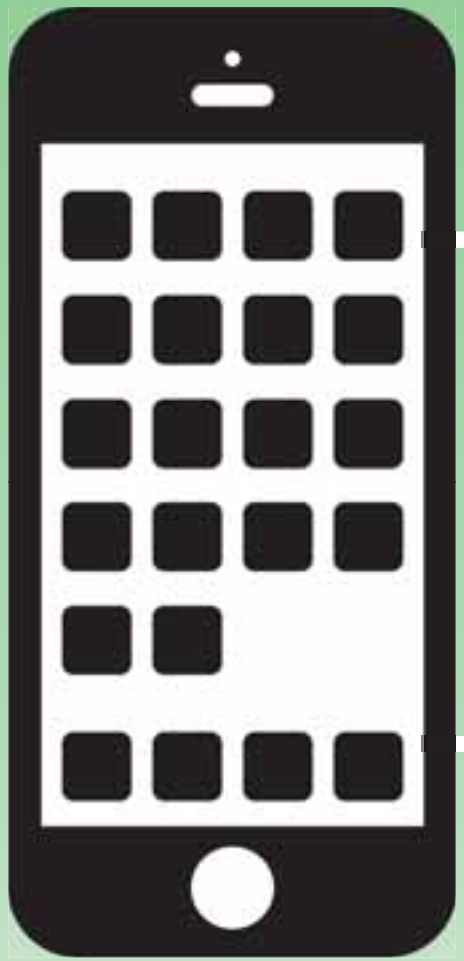
Minimal Drain



Increases power
near content

Reduces power use **away from content**

Fine
Mode



Fastest Messaging

Most Battery Drain


Location data
collected by one device in fine mode
2.5 million points since 2008
powered by
geoloqi

Change tracking profile via a trigger

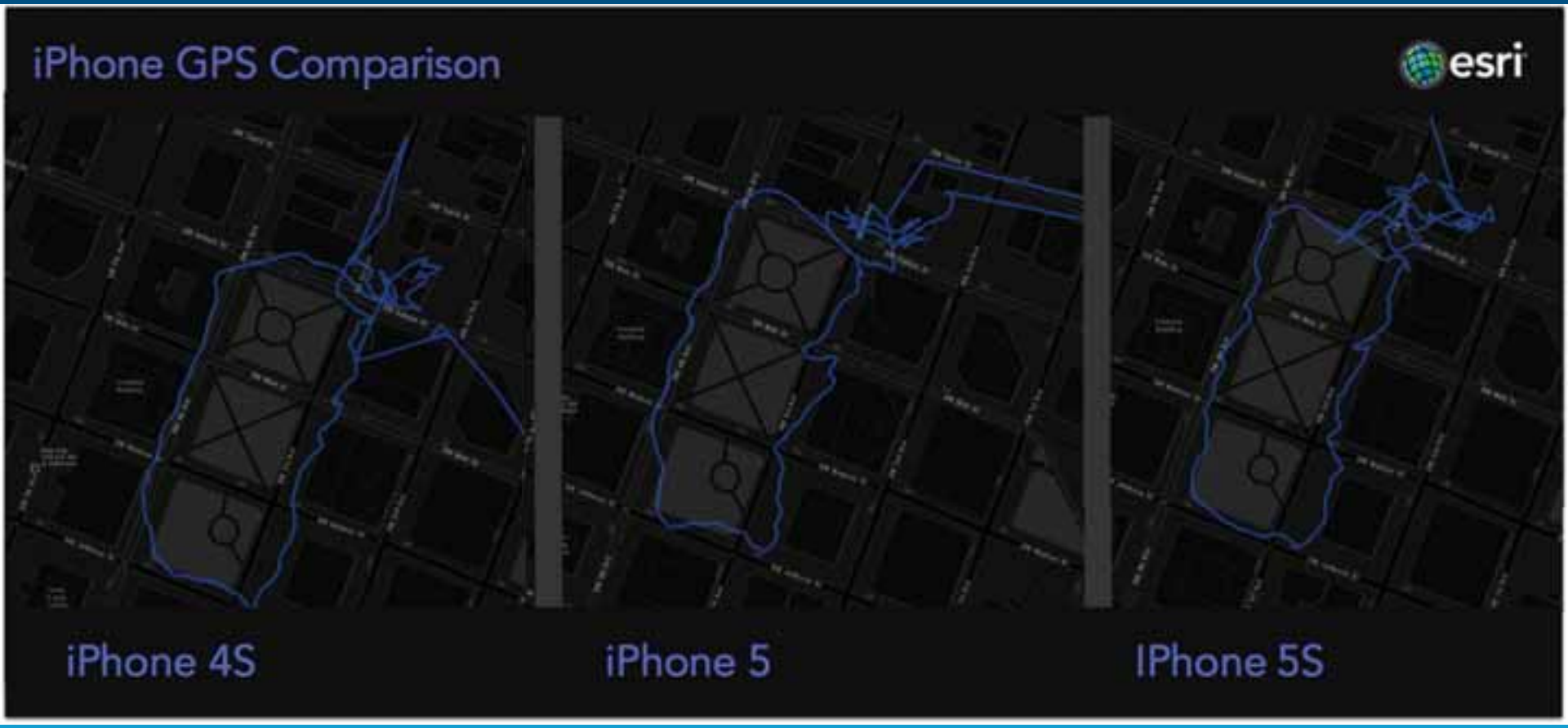
```
POST https://geotrigger.arcgis.com/trigger/create

{
  "condition": {
    "direction": "enter",
    "geo": {
      "latitude": 45.5165,
      "longitude": -122.6764,
      "distance": 100
    }
  },
  "action": {
    "trackingProfile": "fine"
  },
  "setTags": "buildings",
  "properties": {
    "foo": "bar"
  }
}
```

GPS Differences
across devices

March 2011: iPhone 3GS, 4

Nov 2013: iPhone 4s, 5, 5S



II. The **User Experience** of Location

Have **fun** building your **apps!**

How do I use the Geotrigger Service with the ArcGIS Runtime SDKs?

(we need docs for this)

How large should I make my triggers?

Depends on your use case and devices that will be using your app. Around 50m for best results.

If you're running modern hardware in a wifi-rich environment using the adaptive or fine profile, you can expect to fire triggers, but don't expect this every time.

Edge Cases

Don’t expect every trigger to fire. Some of the older hardware may be better in some cases, and some of the newer hardware may be better in some cases. Make sure to test your apps in the real world (outside).

We will publish a list of battery benchmarks and device-specific issues to help you with this.

Sometimes Apple Push notifcations don’t get sent. Developers have no control over this and neither does our service.

How to get a Feature Service to turn into triggers?

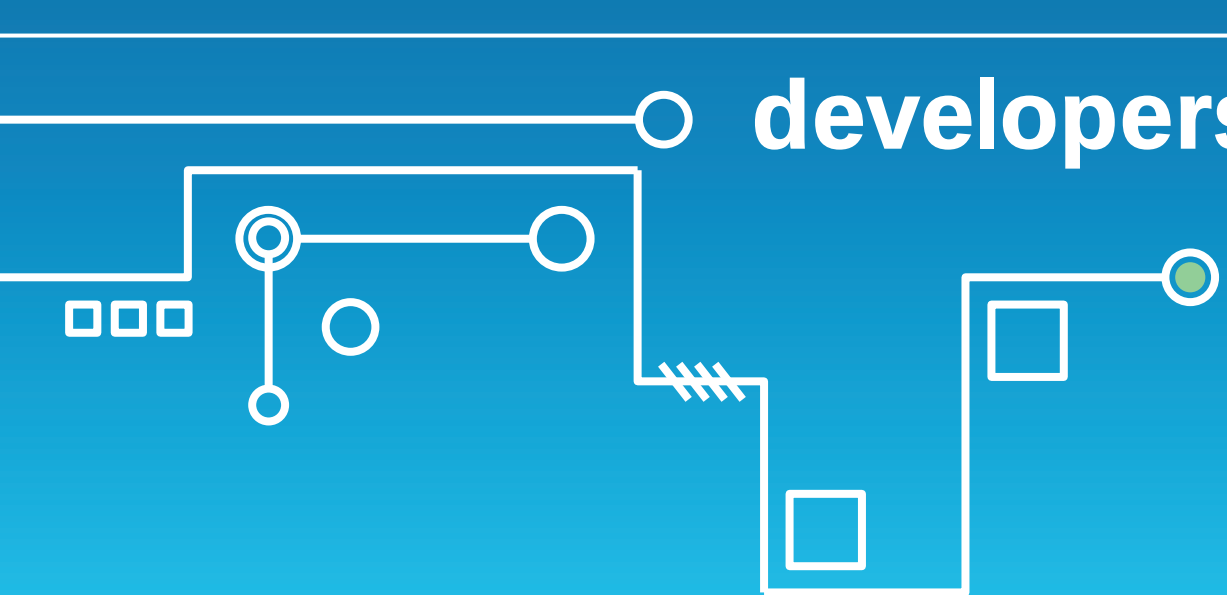
For now, use the Geotrigger API to migrate data from a Feature Service to the Geotrigger Service.

Coming soon: pre-written import scripts to help move data.

Geotrigger SDKs and API!

Nov 19, 2013

developers.arcgis.com



Thank you!

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