Unleash Power of Mobile Location in Your Apps

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Remember the Milk
Contextual Notification Systems

Virtual Post-It Notes with Image Processing
1995
The location

Problem

Battery

Drain
Location services for consumer devices at scale

All-day use without the battery drain
Geotrigger
An Invisible Button
Geotrigger Use Cases
Calm Technology
What is an ambient application?
What is an ambient application?

• Processes occur in the background
• Data is pushed to the user
• User input can come in many forms, not just through keyboard input
Information should be pushed to you

• A robot working for you behind the scenes.
• The more it knows about you the more it can do for you.
Real-world Examples

Water-main Break
- Time critical turnaround
- Geonotes with contextual information for teams
Geotrigger Technology

SDKs APIs
Geotriggers
Sample Code
For Mobile Phones and Web
Use ArcGIS iPhone and Android SDKs

```
[[AGSGeotriggerManager alloc] initWithClientID:@"clientID"
    andProfile:AGSTrackingProfileAdaptive];
```

```
GeotriggerService.init(this, "{{client_id}}", "{{gcm_sender_id}}",
    GeotriggerService.TRACKING_PROFILE_ADAPTIVE)
```
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 Components

- **Condition** (area) Polygon
- **Action** (can be a message or a callback URL)
- **Tags** (to group content)
  - Example: Wikipedia article data
  - Tags for Buildings, History
  - Can allow users to subscribe to a subset of the data
Creating a Geotrigger Rule

```json
// POST https://geotriggers.arcgis.com/trigger/create
{
   "condition": {
      "direction": "enter",
      "geo": {
         "type": "Feature",
         "geometry": {
            "type": "Polygon",
            "coordinates": [
               [ [-122.65, 45.55], [-122.65, 45.50], [-122.62, 45.50],
                [-122.62, 45.55], [-122.65, 45.55] ]
         }
      }
   },
   "action": {
      "message": "Welcome to Portland",
      "callbackUrl": "http://example.com/welcome"
   },
   "tags": [ "city" ]
}
```
Setting a Geotrigger rule for a date range

```json
{
  "condition": {
    "direction": "enter",
    "geo": {
      "latitude": 45.5165,
      "longitude": -122.6764,
      "distance": 500
    },
    "dateFrom": "2013-03-21T11:00:00-0700",
    "dateTo": "2013-03-21T15:00:00-0700"
  },
  "action": {
    "message": "Welcome to Esri Portland"
  },
  "tags": ["office"]
}
```
500 Meters from a Point

Message
About 500 meters from the hotel.
Distance from a Point

POST /trigger/create
{
  "app_id": "XXXXX",
  "app_secret": "XXXXX",
  "condition": {
    "direction": "enter",
    "geo": {
      "point": {
        "latitude": 52.5107,
        "longitude": 13.3757,
        "distance": 500
      }
    }
  },
  "action": {
    "message": "About 500 meters from the hotel."
  }
}
Polygon Geotriggers

When a user enters the Lincoln Memorial send them a link to en.wikipedia.org/wiki/Lincoln_Memorial
Geocoding

- Find Places, Look-up Address locations, Reverse look-up from coordinates, and bulk requests

- Make unlimited requests when performing look-ups or leverage credits when storing results for future use

http://geocode.arcgis.com
Geocoding

Battery Conservation for Persistent Location
Geotrigger Tracking Profiles

Adaptive mode

• Optimized for Geotrigger™ events
• Will use less power when farther away from triggers and content

Rough mode

• Only gathers approximate location data
• Good for determining if a device is in a given city or neighborhood
• The most battery efficient
Data collected by one person in rough mode.
Geotrigger Tracking Profiles

Real-time mode
• Sends accurate location as fast as possible
• Least battery efficient

Logging
• Tracks location data in areas of low connectivity
• Sends to the server later, or when a connection re-occurs
Data collected by one person in real-time mode
2.5 million points since 2008
Using Tracking Profiles

```json
{
  "condition": {
    "direction": "enter",
    "geo": {
      "type": "Feature",
      "geometry": {
        "type": "Polygon",
        "coordinates": [
          [ [-122.65, 45.55], [-122.65, 45.50], [-122.62, 45.50],
            [-122.62, 45.55], [-122.65, 45.55] ]
      }
    }
  },
  "dateFrom": "2013-03-14T00:00:00-0700",
  "dateTo": "2013-03-21T00:00:00-0700"
},
"action": {
  "trackingProfile": "realtime"
},
"tags": [
  "city"
]
}
Home Automation

When you get home, your lights turn on!

When you leave the house, your lights turn off!
Bringing Wikipedia to Life

Geoloqi: Buckman is a neighborhood in the Southeast section (and tiny portion of the Northeast section) of Portland, Oregon...
Geoloqi: The Weatherly Building in Portland, Oregon is a 12-story commercial office building...
Geoloqi: Oregon Ballet Theatre (OBT) is a ballet company in Portland, Oregon.
Real-time location-based gaming
Geotrigger ArcGIS Integration

Available through
• developers.arcgis.com
• ArcGIS Online
Mobile Privacy:
8 Practices for
App Developers
Part 1:
General Recommendations
1. Get a privacy policy

- Privacy policies are regret-management tools.
- Only 30% of mobile app developers have one.
- Legislation coming down the pipeline will require it.
2. Simplify and consolidate

Privacy policies should be easy to understand.

• Separate disclosures into two sections – Plain English and Legalese

• Share new data use policies before implementing them.

• Show revisions to the privacy policy and track changes so that users can the differences in the privacy policies.
3. Allow users to access their own data

- Users will be able to migrate if your service closes.

- Bonus: If you give people data they’ll do interesting things with it.

- If you have an API, people will make better versions of your site for your users (*Twitter*).
4. Practice privacy by design vs. privacy by disaster

- Act now or be forced to act later.

- Privacy consideration should be incorporated into every aspect of an app’s lifecycle.

- Web, legal, user experience, messaging, marketing and development.
Part 2: The User Experience of Privacy
5. Consolidate and simplify settings and permissions

- Give users empowerment.
- On/off switches, simple settings.
- Make controls easy to access.
6. Present privacy controls at the point of content creation.

- Instagram, Facebook, Foursquare do this well.
- Expose privacy controls with every piece of content that can be created or shared in a given system.
7. No one is perfect

- Hosting user data is a **privilege**, not a right.

- Apologize **immediately** when you screw up, and fix the problem immediately.

- Always give users **something in return** for giving up their data.
8. Transparency builds trust

• Let users know what they’re opting into when they use your software.

• Notify users of proposed changes to privacy policies.

• Keep abreast of the current industry and it’s regulations. Fight for your users and they will fight for you.
Geotrigger ArcGIS Integration

Available through
• developers.arcgis.com
• ArcGIS Online
Please fill out your surveys!

Offering ID: 222

http://esriurl.com/survey

Thank you!

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