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# Moving Forward on Geolocation API

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QuIC
QUALCOMM INNOVATION CENTER, INC.

# Current Status of Geolocation Working Group

- Geolocation API is a W3C Recommendation as of Oct. 24, 2013
  - http://www.w3.org/TR/2013/REC-geolocation-API-20131024/
- The working group's last charter is expired as of July 2012
- DeviceOrientation specification has some level of support (http://caniuse.com/deviceorientation), but has not progressed to Candidate Recommendation status
- Can these specifications be evolved to allow native location-based app developers to have a true alternative to native
  - W3C has recognized the importance of such concerns with the Highlights 2013 initiative "Closing the Gap with Native"

# Re-chartering Proposal

- 3 deliverables
  - DeviceOrientation
    - Revisiting existing specification, modifying, getting it through Last Call
  - Geolocation, the next version
    - Addition of geofencing capability
    - Indoor location enhancements
    - Examining new developer-friendly return mechanisms like Promises
      - http://dom.spec.whatwg.org/#promises
- Charter proposal
  - http://lists.w3.org/Archives/Public/public-geolocation/2013Nov/att-0003/Proposed_Geolocation_Working_Group_Charter.htm

# DeviceOrientation

- Several implementations currently exist
  - http://caniuse.com/#feat=deviceorientation
- Testing by Opera in 2012 confirmed significant variability in browser vendors interpretation of current spec
  - See http://lists.w3.org/Archives/Public/public-geolocation/2012Jun/0000.html
- Can the specification be tightened? Do test suites need to evolve?

# Why Evolve the current Geolocation API?

- Mobile app developers have already had access to much richer location API's when compared to current web counterpart dating back to pre-smartphone days
  - BREW Iposdet and J2ME JSR-179 as examples
- Smartphone API's have improved upon this capability
  - Android Location Manager and Snapdragon SDK enhancements (https://developer.qualcomm.com/mobile-development/mobile-technologies/snapdragon-sdk-android/features/location)
- Incremental changes to the W3C API could allow for some of the richer experiences in native
  - Geofencing
  - Indoor Location
- Current document may be found at: http://gmandyam.github.io/enhanced-geolocation/

# Existing Geolocation API

- The Javascript API is allows for the following capabilities
  - One-shot location
  - Position watcher
    - Process that returns an event when the implementation has detected a change in user position
  - Ability to set desired location accuracy

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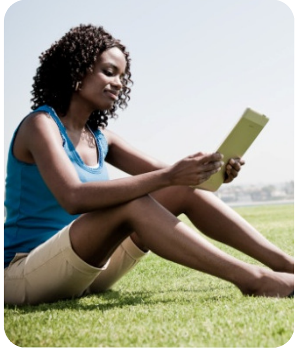
# Geofencing Modifications

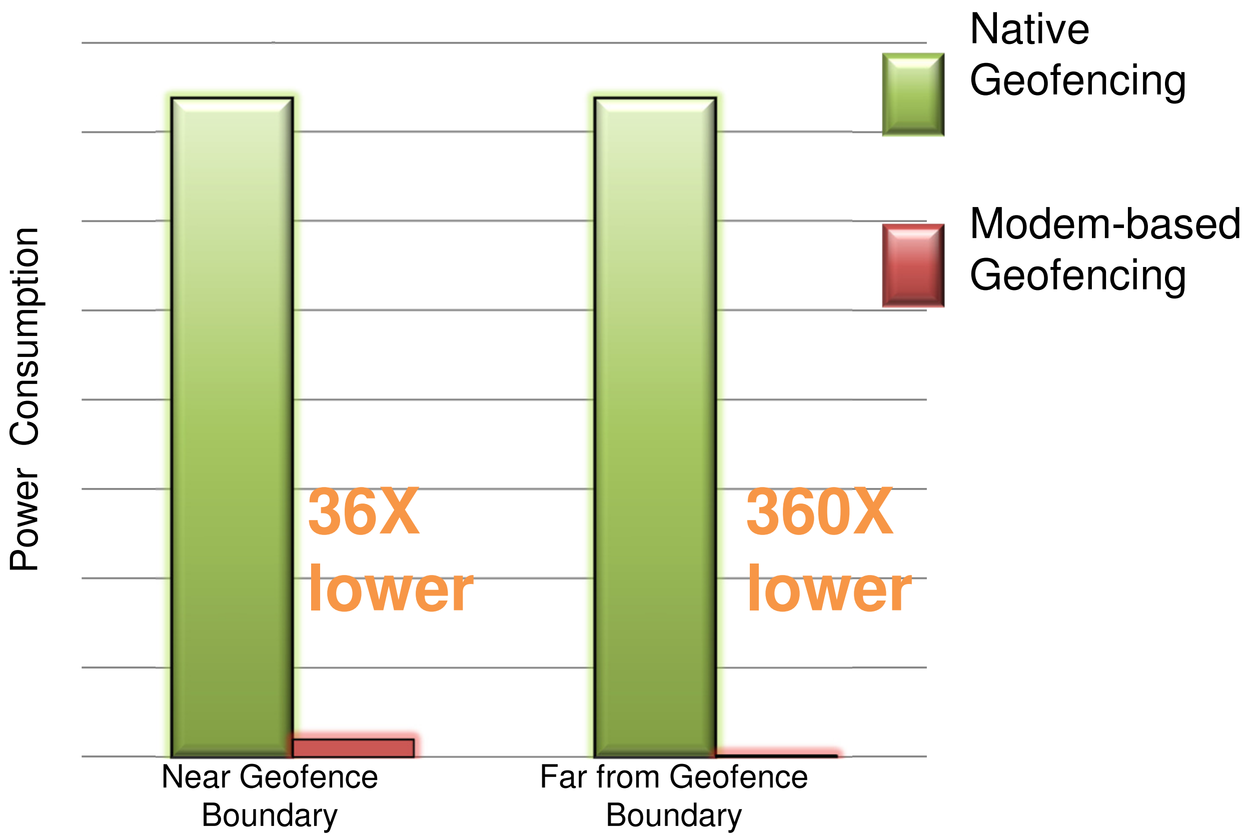


# Introduction

- Current Geolocation API does not have any kind of geofencing ability
  - Typical geofencing capability would include defining a geofence with a centroid (i.e. lat, lon pair) and radius
- Justification is that it is simple to develop a geofencing method in Javascript leveraging the existing API
- For mobile devices, particularly multi-core implementations, this is not only limiting but can be detrimental to performance
  - CPU/GPU/Modem partitioning
  - Running geofencing processes on modem is significantly less power consuming then at the app level (e.g. JS)

# Geofencing on Modem Versus Apps Processor

**Optimizes responsiveness with much lower power**



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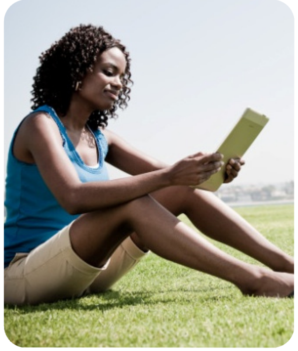
# Indoor Location Enhancements



# Indoor Location Enhancements to API

- Indoor location capability is now nearly ubiquitously-supported in smartphone hardware
- The underlying implementation should make the decision as to which location technology to use given current operating conditions
  - Setting enableHighAccuracy flag should result in indoor location mechanism being invoked if platform has indoor location capability and operating conditions allow for indoor location determination
- Web app should be able to leverage indoor location metadata when indoor location supported by platform and enabled
  - Floor number (first, second, third, etc.)
  - Additional building information (e.g. venue identifiers) that could assist in visualization