

Location, location, location...

Don McAllister

Host/Producer of ScreenCasts**ONLINE**

MacMania 15 - November 2012

Session Contents

- ✦ What do we mean by “Location Based Services”
- ✦ How Location Based Services Work
- ✦ Mac & iOS Core Applications
- ✦ Third Party Apps Using Location
- ✦ Privacy Issues

Location Based Services

What do we mean?



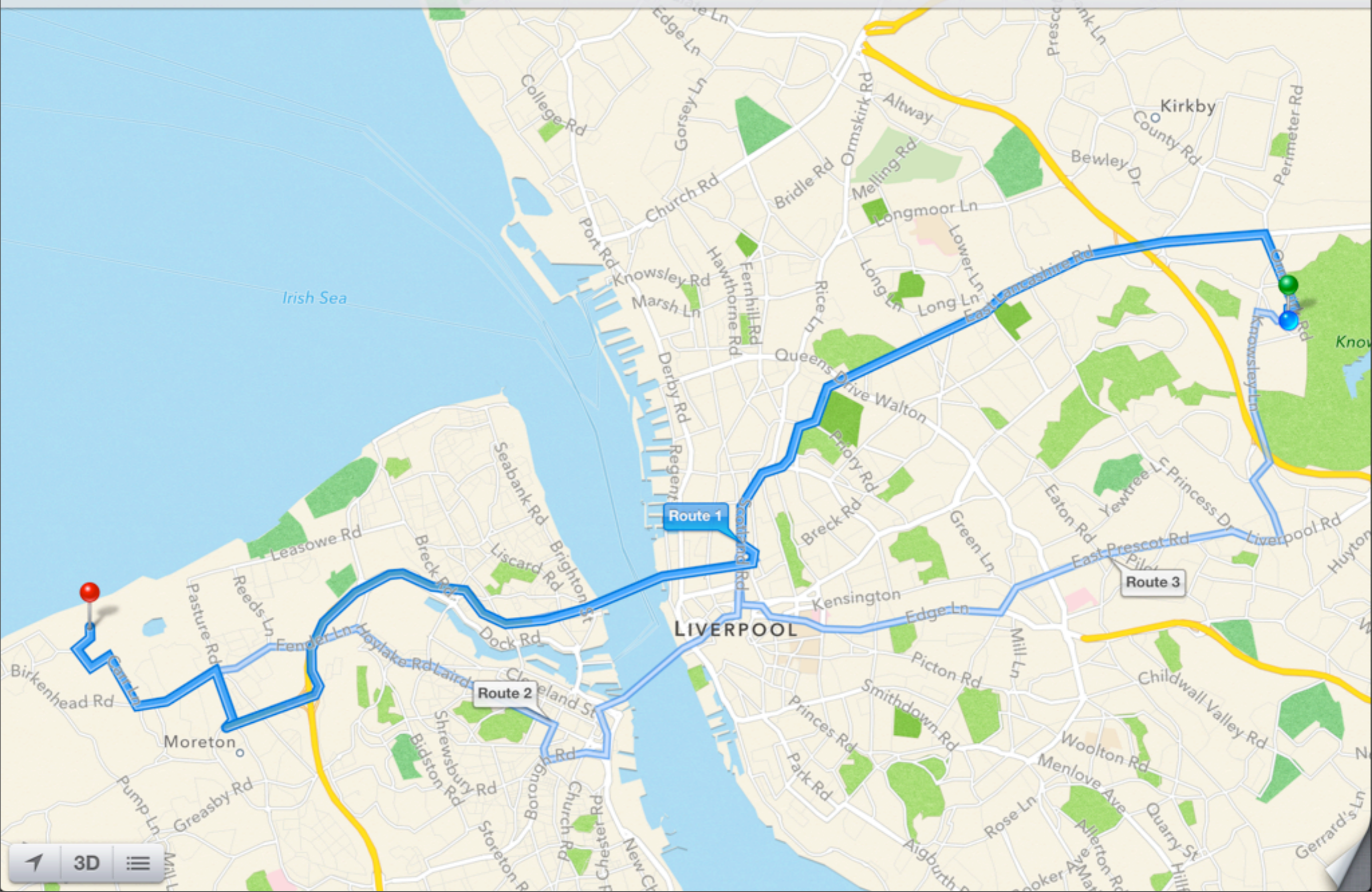


Clear

1st of 3 Suggested Routes 46 minutes - 17.7 miles - Kingsway

Start

This route requires tolls.



3D



Don McAllister

Profile

Activities

Routes

Friends

FitnessReports

Races

Training Plans

Post New Activity

Activity History

Oct 2012

19 Walking 2.31 mi.

18 Walking 1.54 mi.

16 Walking 2.34 mi.

15 Walking 2.51 mi.

14 Walking 0.67 mi.

7 Walking 2.89 mi.

6 Walking 2.68 mi.

4 Walking 3.12 mi.

3 Walking 0.58 mi.

1 Walking 3.08 mi.

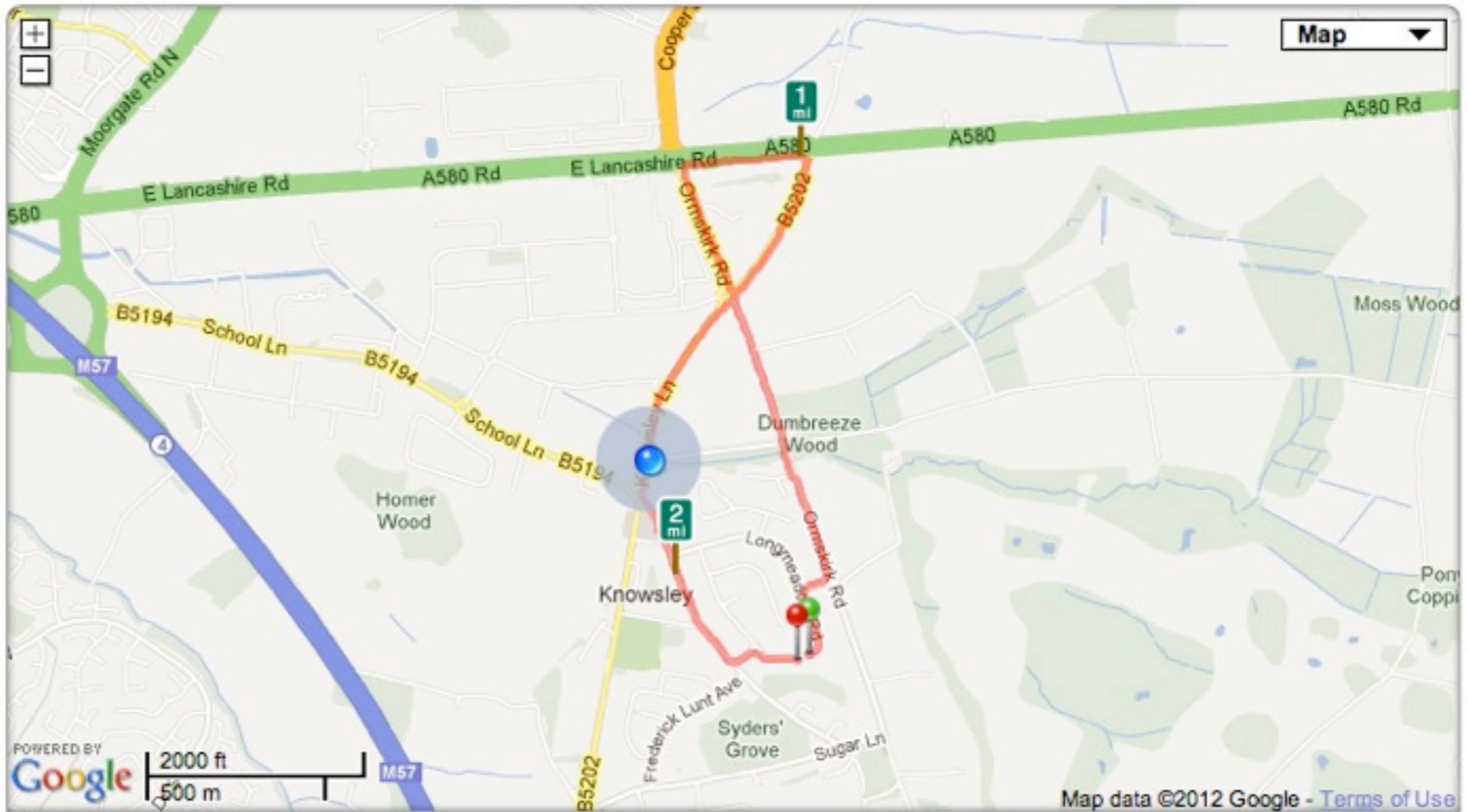
Sep 2012 14

Aug 2012 13

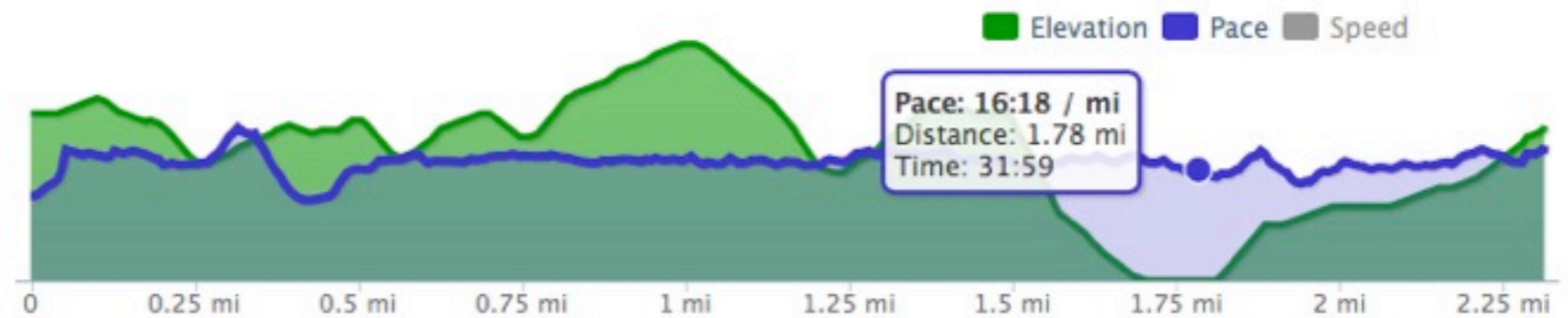
Walking | Oct 19, 2012 :: 5:49 PM - 6:30 PM

Delete | Edit

Distance	Duration	Avg. Pace	Avg. Speed	Burned	Climb
2.31 mi	0:41:09 h : m : s	17:48 min/mi	3.37 mph	226 calories	74 ft



Route: None (add to your routes) Map Viewable By: [User Icon]

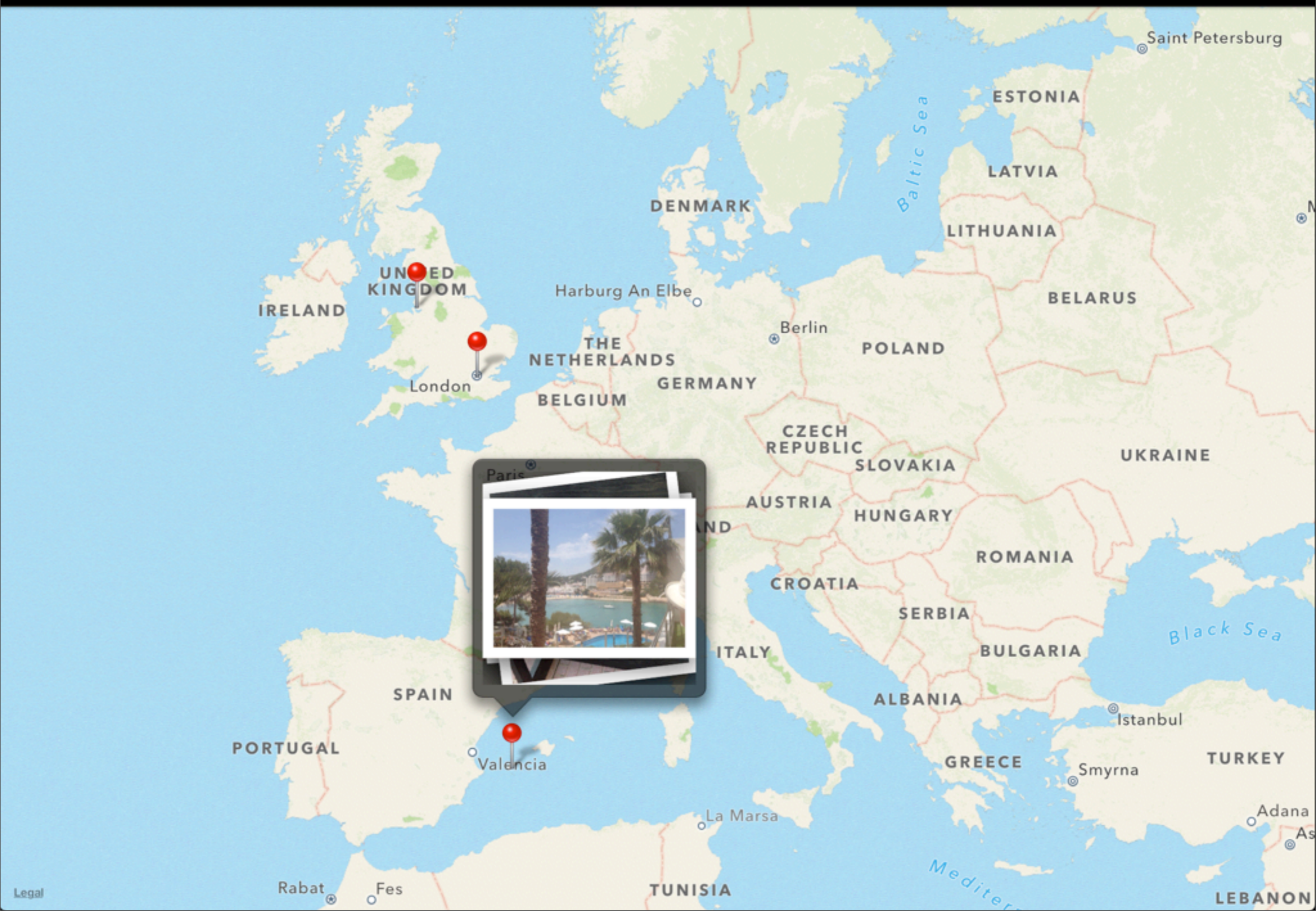


Photos

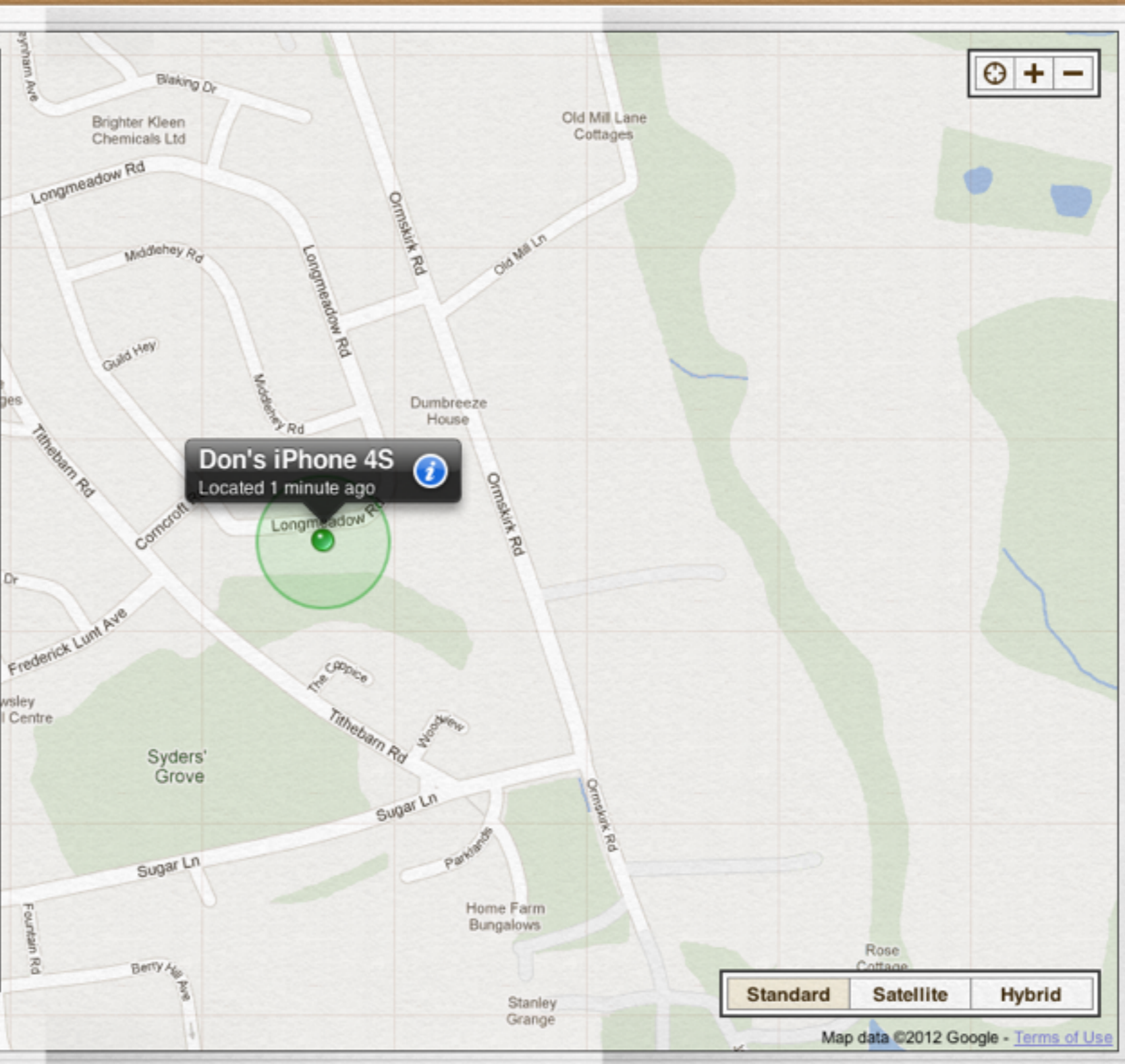
Photo Stream

Albums

Places



- ### My Devices
- Don's iPhone 4S**
Located 1 minute ago
 - IPad 3**
Located 1 minute ago
 - rMacBook Pro**
Located 1 minute ago
 - Don's 3G iPad**
Offline
 - Don's iPhone 4**
Offline
 - Don's Mac mini**
Offline
 - Ewen's Mac Pro**
Offline
 - IPad 2**
Offline



POWERED BY Google

Map data ©2012 Google - Terms of Use

Get Milk when in Tesco

remind me On a Day

At a Location

Tesco's Home ▾

1-21 Station Road Prescot England
L34 5 United Kingdom

Leaving Arriving

priority None ↕

note None

Done

Reminders

Shopping

Get Milk when in Tesco
↖ Arriving: Tesco's Home

Cancel **Tweet** Send

From: @donmcallister

Knowsley ✕ 120

amazon.co.uk Prime

Shop All Departments Search

Kindle Store Buy A Kindle

Kindle Fire Apps, games, mc books, web and r

Kindle Fire HD £159

Kindle Fire £129

Kindle £69

Kindle Touch £109

Kindle Keyboard 3G £149



Status

Photo

Check In

Search



Randal L. Schwartz

30 minutes ago via Triplt · 🌐



Randal is returning from a trip to Atlanta, GA
Aug - Sep 2012 for 12 days
Triplt - Free online trip planner and free travel insurance for vacations, group trips or business travel

Like · Comment



Maria Langer

36 minutes ago · 🌐

I've said it before and I'll say it again: some people really

Like · Comment



Cindy Compton

40 minutes ago via Selective Tweets · ⚙️

Swimming with my bestest bud <http://t.co/BqUUaHX4>

Like · Comment

Where Are You?

Cancel

Search near Knowsley

- Knowsley Village**
Local Business · 1,529 were here
- Chill Out Spa**
Local Business · 445 were here
- Acewaste Ltd.**
Small Business
- Millbrook Manor**
Local Business · 534 were here

Stewart Manley

Paul Williams

Katie Floyd

Ed Dale

Terry Austin

Mal Young

Alan Williams

Wally Cherwinski

Peter Cohen

Jane Bluestein

Ruth McDe

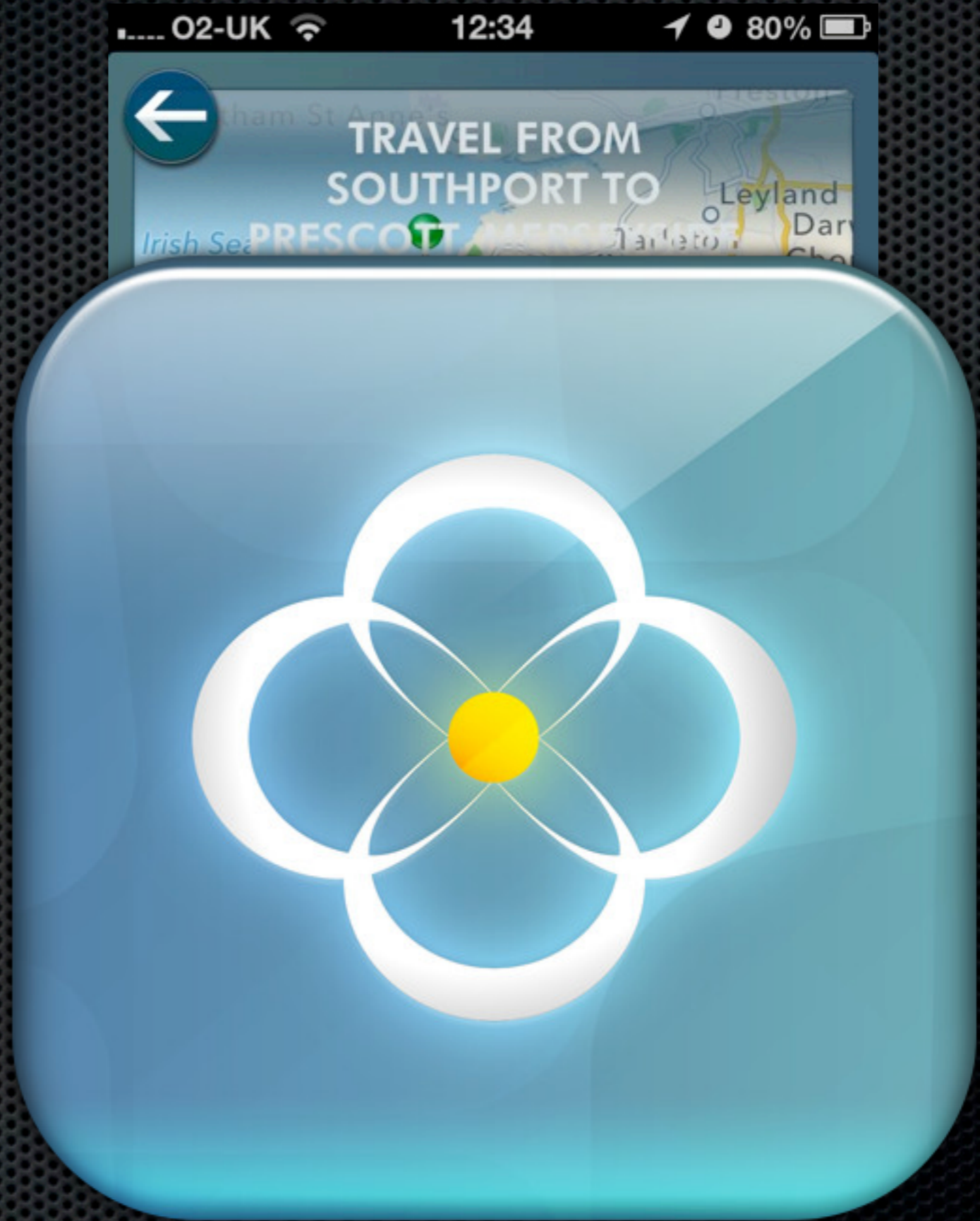
Dave Thackeray

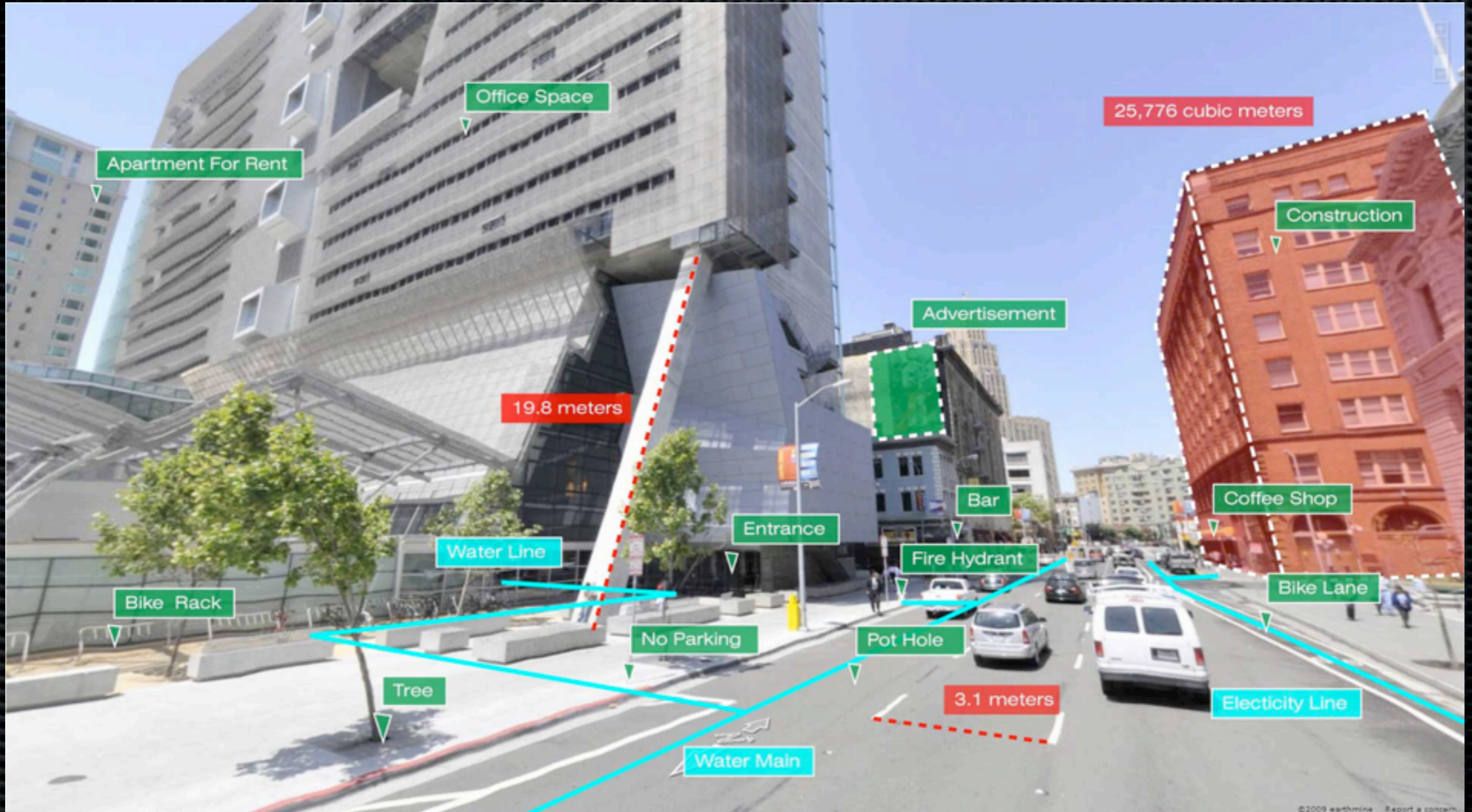
William Volk

MORE ONLINE FRIENDS (26)

Background Tracking

Saga
Application





©2009 earthmine Report a concern

How Location Based Services Work

GPS - Global Positioning System

- 24 Satellites (NAVSTAR)
- US Dept of Defence
- Each orbits twice a day locked in a precise orbit
- 12,000 miles high, 7,000 miles per hour
- Lasts for 10 years



How Location Based Services Work

GPS - Global Positioning System

- ✦ Receiver needs to lock onto 3 satellites for 2D position - (latitude & longitude) and tracking
- ✦ Needs 4 or more to determine 3D position - altitude



Sources of GPS errors

- ✦ Numbers of visible signals
- ✦ Atmospheric delays
- ✦ Reflections off buildings
- ✦ Timing errors

So what if I can't lock on?



Assisted GPS or A-GPS

- ✦ Requires data connection
 - ✦ Supply orbital data or precise time
 - ✦ Other data to calculate more precise GPS position
- ✦ WiFi Positioning - triangulation based on WiFi base stations
 - ✦ Google, Navizon & Skyhook Wireless
- ✦ Cell Site Triangulation or other hybrid means

Any sufficiently advanced technology is indistinguishable from magic.

Arthur C. Clarke, "Profiles of The Future", 1961 (Clarke's third law)

Assisted GPS or A-GPS

How your phone knows where it is

A primer on GPS and Assisted GPS

GPS satellites
Thirty of these birds—24 operational plus some spares—are spinning around the earth all the time, and your phone needs a direct line-of-sight connection to at least four of them to get a proper 3D location fix. Without any assistance from cellular or Wi-Fi networks, this process takes about 30 seconds, in which time your phone must learn the positions and orbits of all the satellites, then find the right four of them and measure the time it takes to receive signals from them. The length of those time intervals is what helps your phone determine its place on the globe.

Carrier GPS server
Your cellular network can assist in locating your phone by providing the device with the satellites' location and orbit data. Your provider constantly collects the satellites' orbital data using its own GPS receiver (located where it can always see the satellites above), and stores the data in a GPS server located near the receiver. Having already obtained the orbital data, your phone now needs far less than 30 seconds to get a location fix.

Cell network
When your phone's line-of-sight view of the satellites is obstructed, your cellular provider can help out by giving the device its rough location based on its distance from the cell towers in the area. Armed with this data (and the satellite orbital data), your phone now needs only about a second of contact with the nearby satellites to derive its exact location.

Your phone
The GPS receiver in your phone normally scrolls through the frequencies of all the satellites when searching for a connection with four of them. But when your phone has already learned its rough location from the available cellular and Wi-Fi networks, it can quickly zero in on the small set of satellites it has the best chance of connecting with.

Wi-Fi network
Since the orbital data of the satellites is also Web-enabled, your phone can access it over a Wi-Fi network in places where the cellular signal is weak or unavailable. Like cellular networks, Wi-Fi networks can find your phone's rough location by detecting its distance to the Wi-Fi access points in the area.

TechHive
Illustration: Flying Chili
Sources: TechHive research; GPS Review, "Assisted GPS, A-GPS"

Mac & iOS Core Applications



Find My Mac



iCloud

Apple Inc. www.icloud.com

My Dashboa...rendWeight GeoRiot Das...nt Summary MagCast Setup Logins Primary SCOtutor Send To Misc Interest Cheaters: cu...ett Terpstra

Find My... gps erro... ALL CRE... iCloud smart-p... Garmin... ClouDro... How to... Garmin... Apple -...

iCloud Don Mcallister | Sign Out

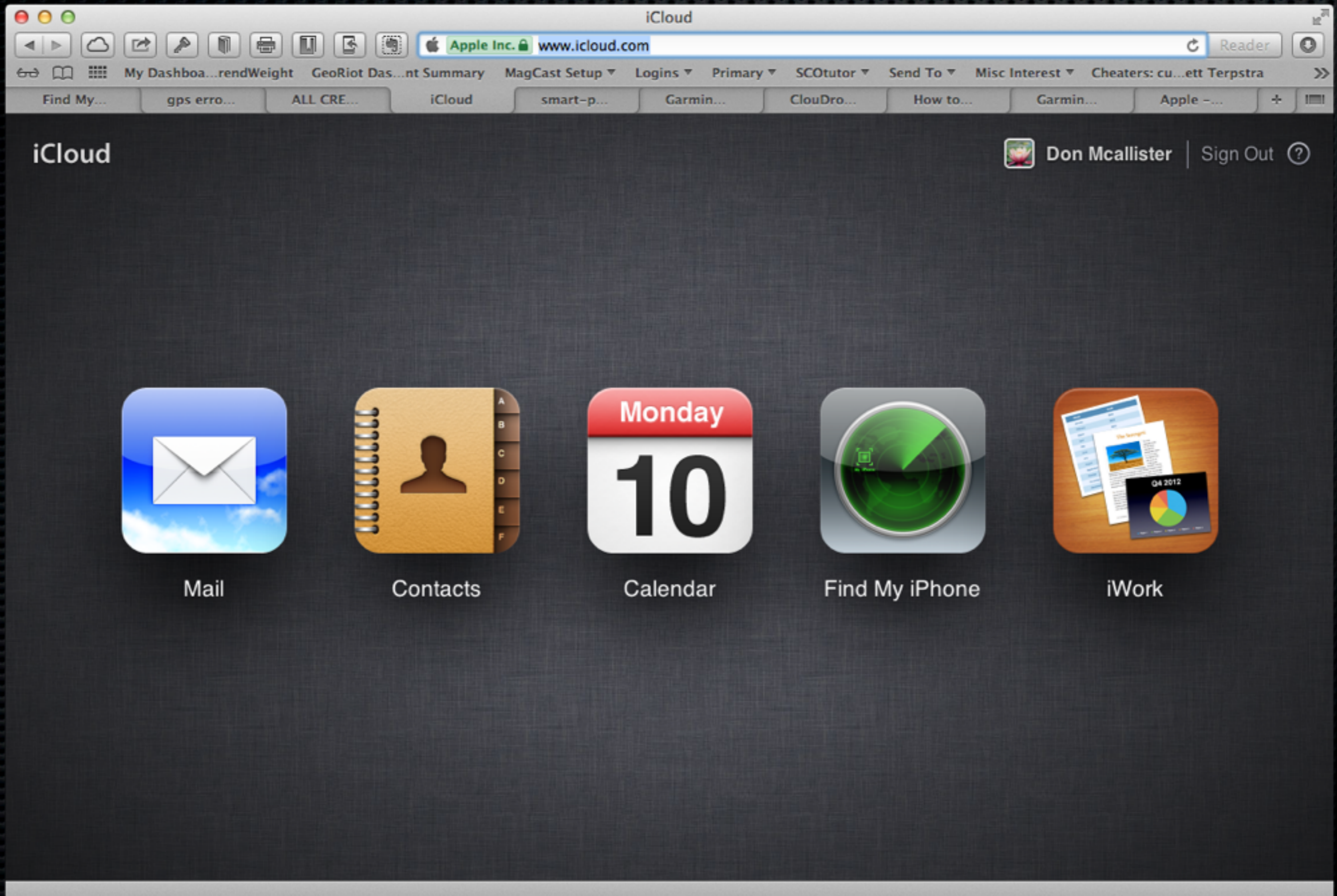
Mail

Contacts

Monday
10
Calendar

Find My iPhone

iWork



My Devices

- Don's iPhone 4S**
Located 1 minute ago
- rMacBook Pro**
Located 1 minute ago
- iPad 3**
Locating...
- Don's 3G iPad**
Locating...
- Don's iPhone 4**
Locating...
- Don's Mac mini**
Locating...
- Ewen's Mac Pro**
Locating...

rMacBook Pro
Located 1 minute ago

Standard Satellite Hybrid

Map data ©2012 Google - [Terms of Use](#)

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iCloud - Find My iPhone

Apple Inc. www.icloud.com/#find

My Dashboa...rendWeight GeoRiot Das...nt Summary MagCast Setup Logins Primary SCOtutor Send To Misc Interest Cheaters: cu...ett Terpstra

iCloud -... gps erro... ALL CRE... iCloud -... smart-p... Garmin... ClouDro... How to... Garmin... Apple -... +

My Devices

- Don's iPhone 4S**
Located 1 minute ago
- iPad 3**
Located 1 minute ago
- rMacBook Pro**
Located 1 minute ago
- Don's 3G iPad**
Offline
- Don's iPhone 4**
Offline
- Don's Mac mini**
Offline
- Ewen's Mac Pro**
Offline

Info

rMacBook Pro
Located 1 minute ago

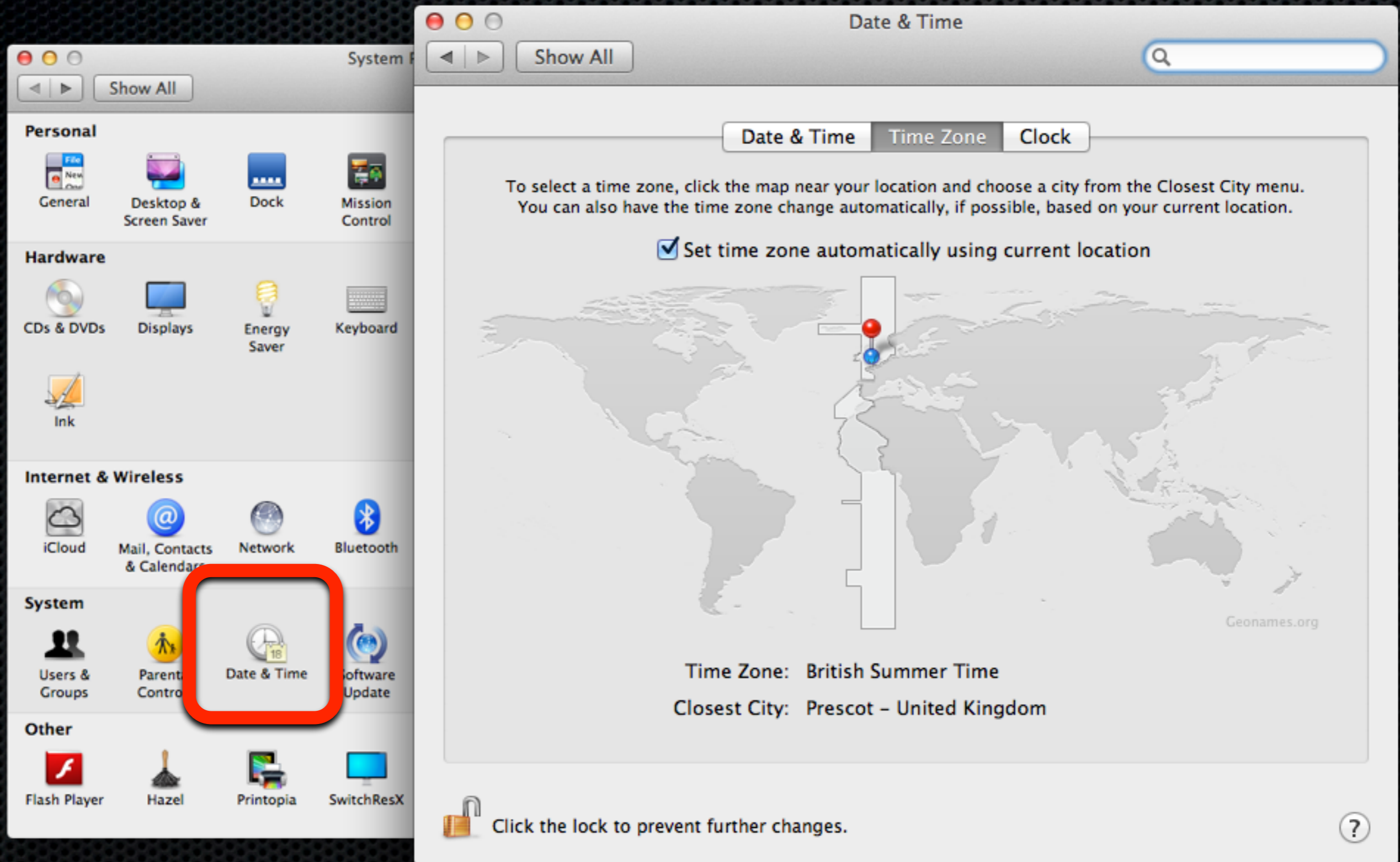
[Play Sound or Send Message](#)

[Remote Lock](#) [Remote Wipe](#)

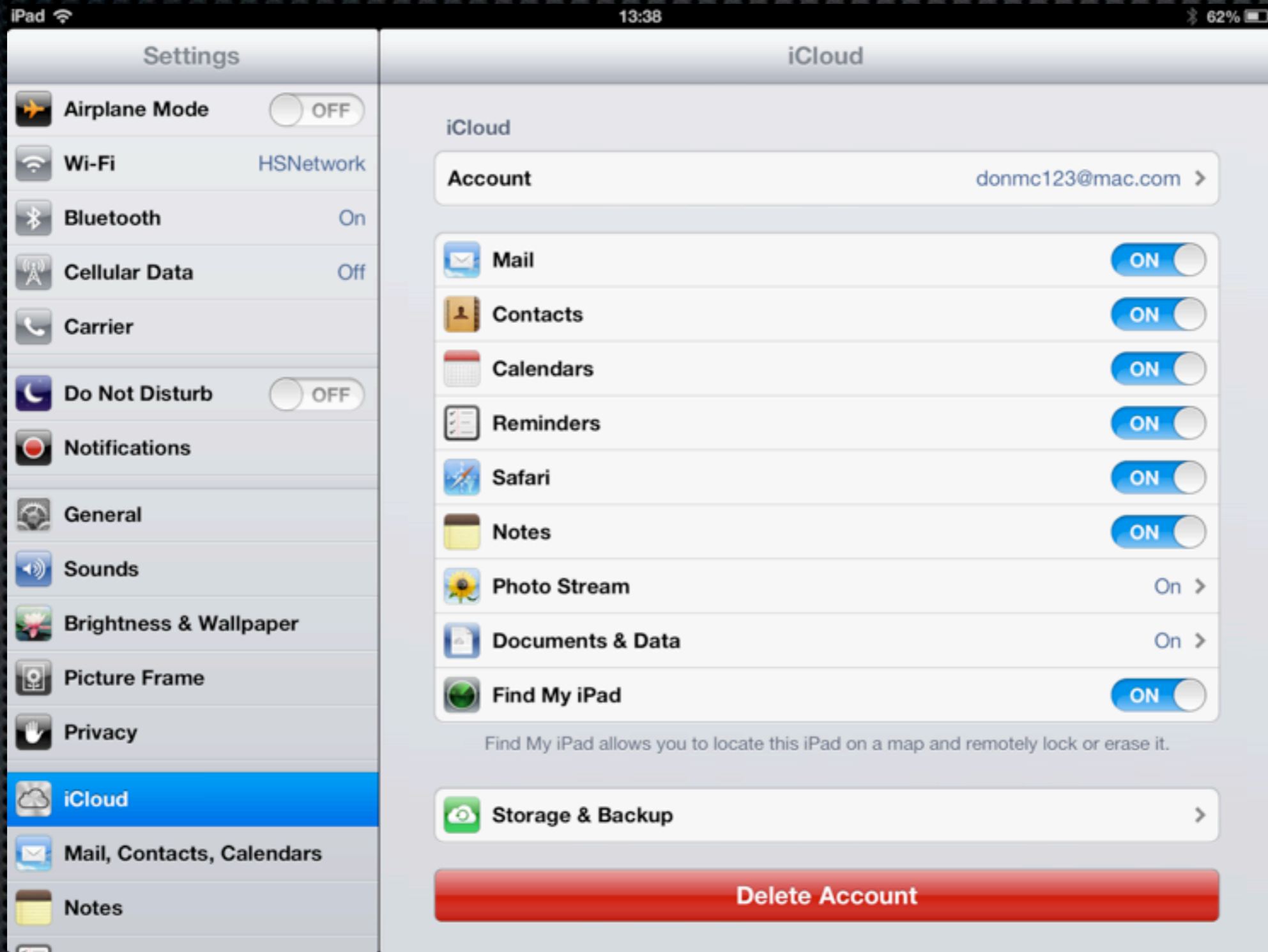
Standard **Satellite** Hybrid

Map data ©2012 Google - [Terms of Use](#)

Setting Time Zone WiFi Triangulation



Find My iPad or iPhone



Find My iPad or iPhone



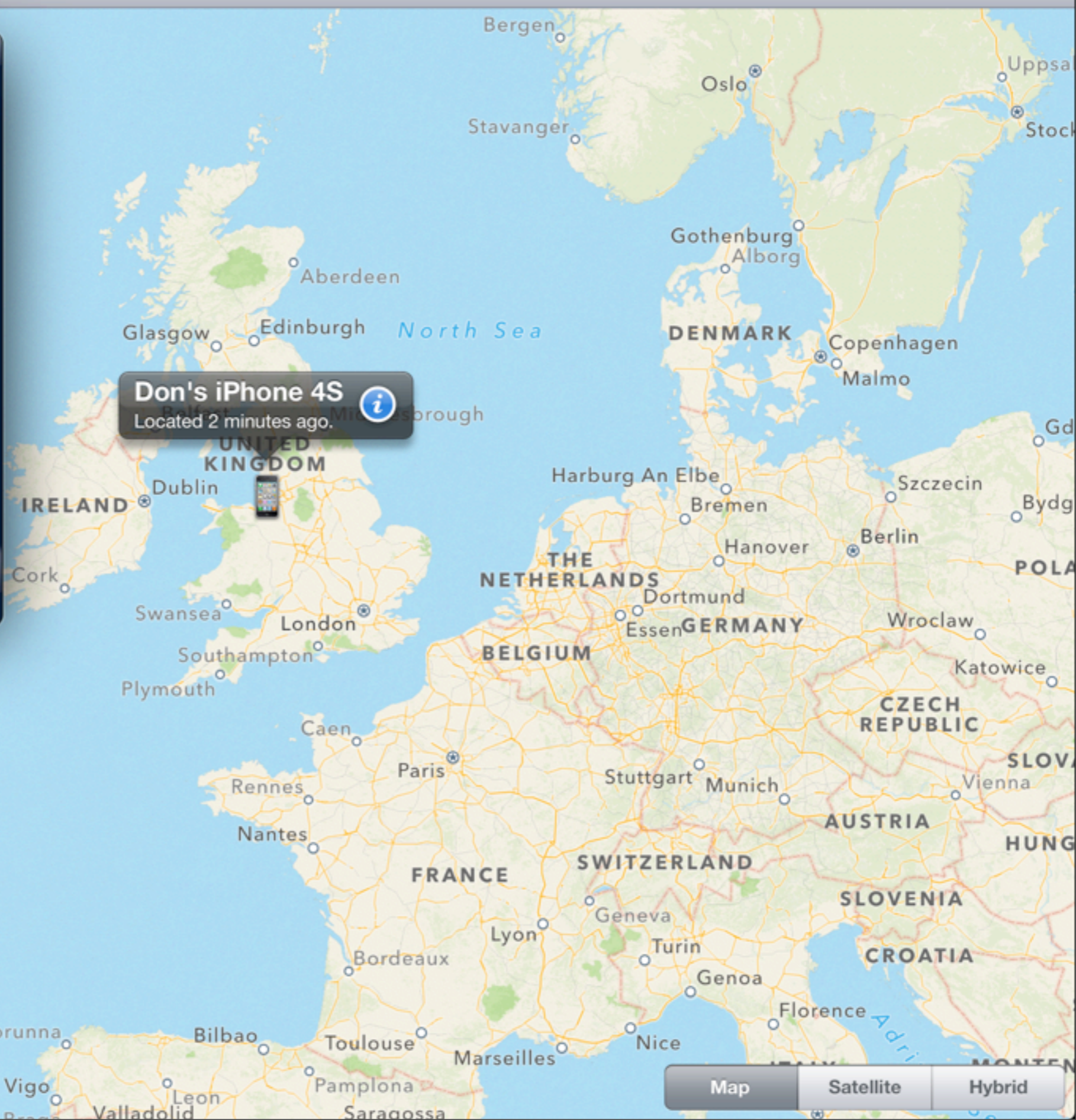
Find My iPad or iPhone



**Separate
iPhone or iPad
Application**

Help **Devices**

- Don's 3G iPad**
No location available
- Don's iPhone 4**
No location available
- Don's iPhone 4S**
Located 2 minutes ago.
- Don's Mac mini**
No location available
- Ewen's Mac Pro**
No location available
- iPad 2**





Info



Don's iPhone 4S

iPhone 4S

Located 2 minutes ago.

Play Sound or Send Message

Remote Lock

Remote Wipe

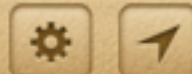
Using remote wipe will prevent you from locating your iPhone.

Find My Friends



**Separate iPhone
or iPad
Application**

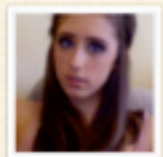
Find My Friends



Edit All +



All Friends



Home

Nicola McAllister

0 mi

13:58



Edinburgh, Scotland

Matt Gemmell

99+ mi

13:57



Location Not Available

Chuck Joiner



Location Not Available

Barbara McAllister



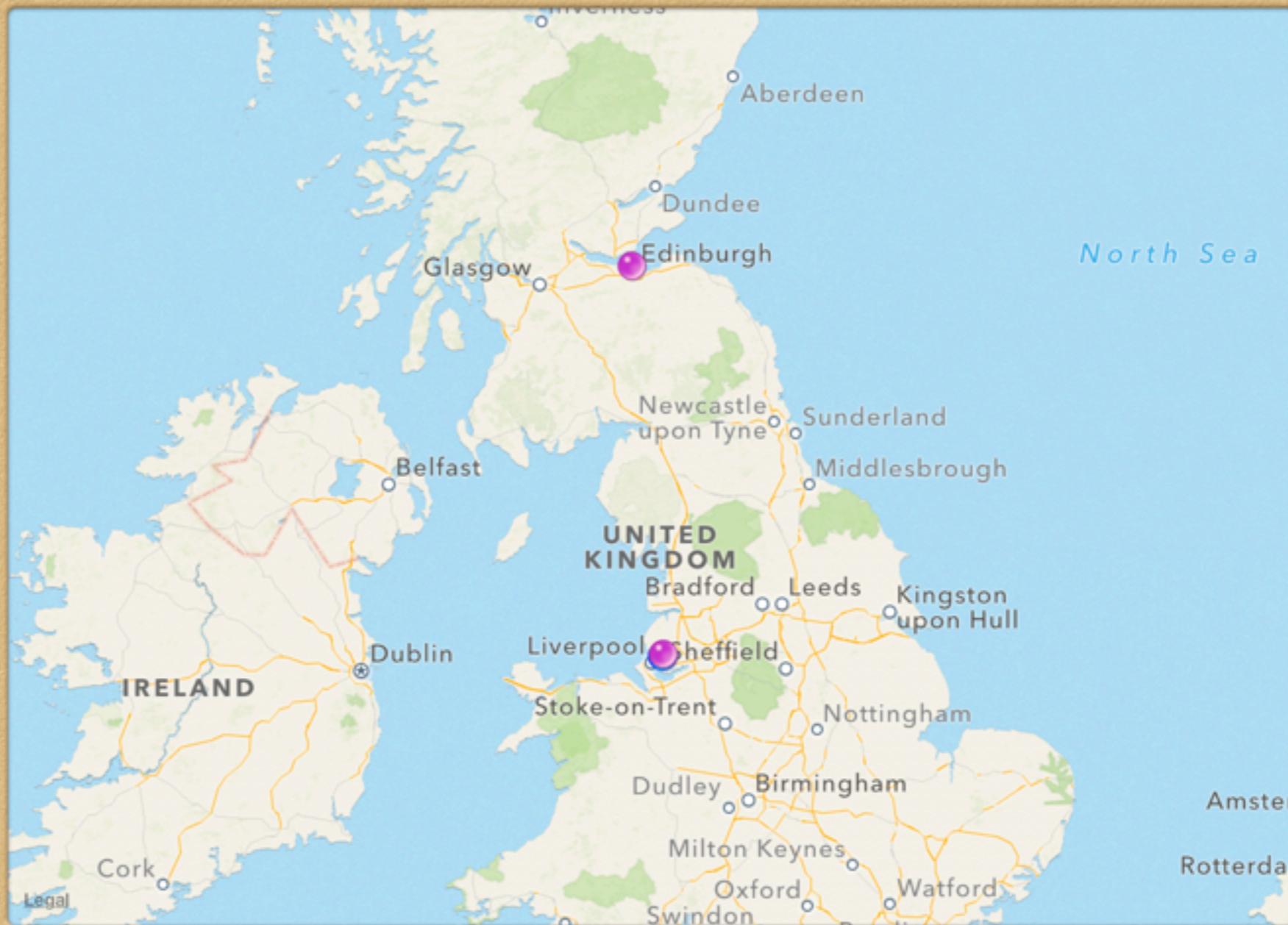
Location Not Available

Ian McAllister



Location Not Available

Allison Sheridan



6 Friends
Select a friend to see more details.



Find My Friends



Temporary



MacMania test

Ends Tue 11 Sep at 14:00



Locating...

tracy@rotton...

99+ mi

14:17



Locating...

chrissoresen...

99+ mi

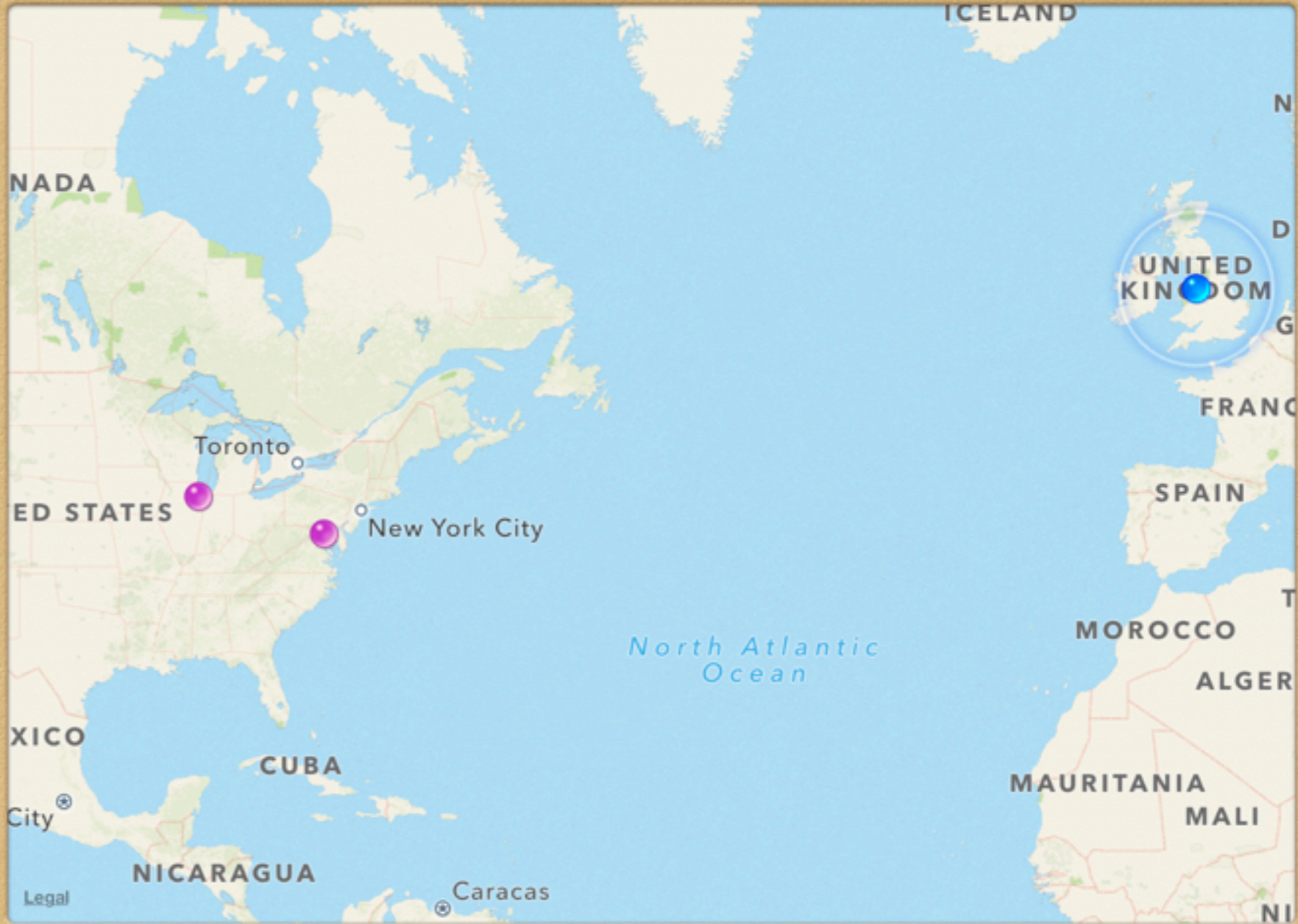
14:17



Location Not Available

patmahon@me.com

Send iMessage



Name **MacMania test**

Details

Ends **Tue 11 Sep at 14:00**

Send iMessage



All



Temporary



Me



Requests

Find My Friends

Temporary



MacMania test

Ends Tue 11 Sep at 14:00



Work

tracy@rotton...

99+ mi

14:17



Work

chrisrsorensen...

99+ mi

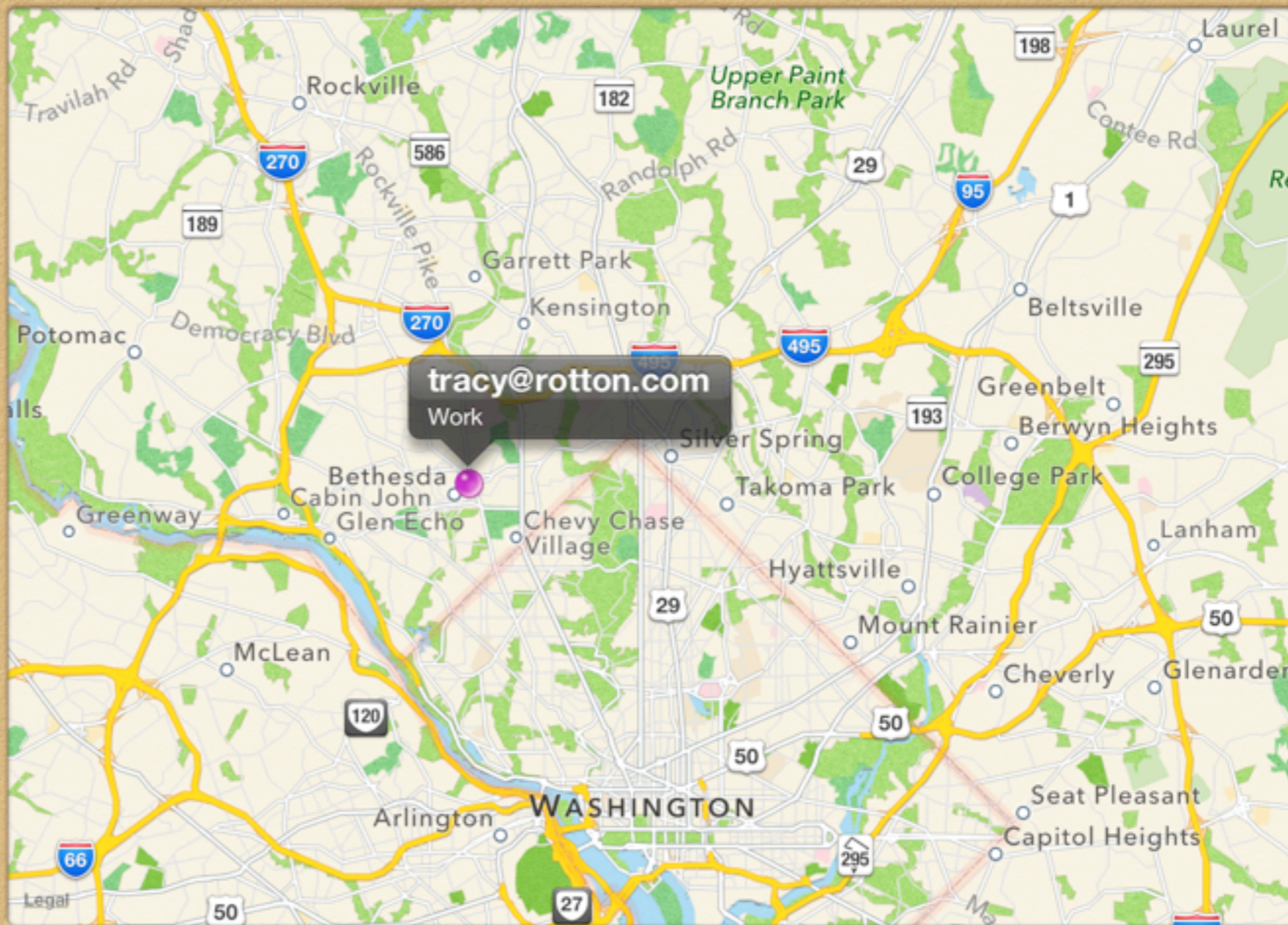
14:17



Location Not Available

patmahon@me.com

Send iMessage



label **Work**

near

Contact Info

Get Directions



All



Temporary

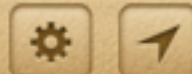


Me



Requests

Find My Friends



Temporary



MacMania test

Ends Tue 11 Sep at 14:00



Work

tracy@rotton...

99+ mi

14:23



Work

chrissorensen...

99+ mi

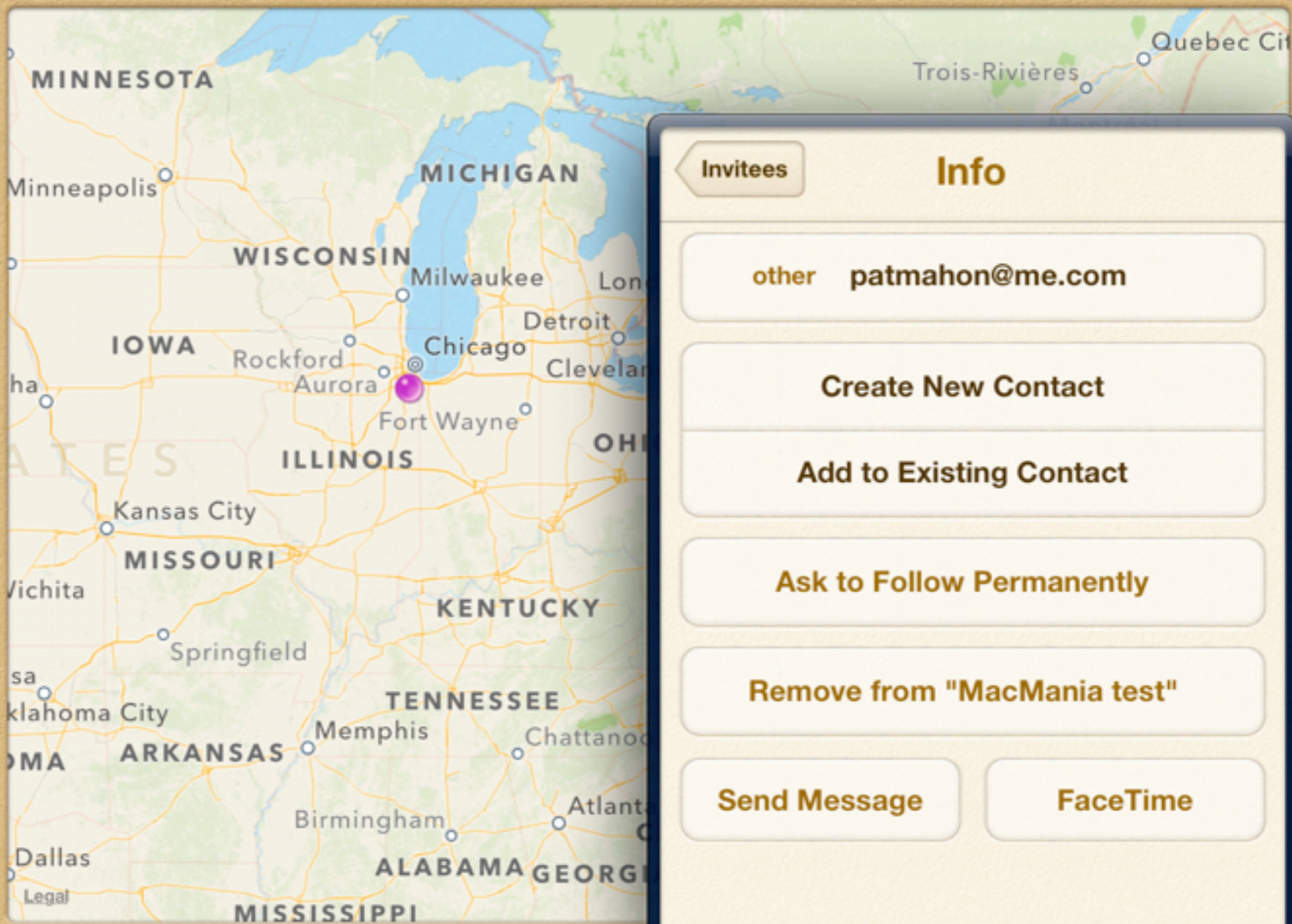
14:22



Location Not Available

patmahon@me.com

Send iMessage



Invitees

Info

other patmahon@me.com

Create New Contact

Add to Existing Contact

Ask to Follow Permanently

Remove from "MacMania test"

Send Message

FaceTime

Name MacMania test

Ends Tue 11 Sep at 14:00

Details

Send iMessage



All



Temporary



Me



Requests

Maps & Navigation - iOS

- ✦ Brand new Mapping and TBT Navigation in iOS
- ✦ Acquired C3 Technology - 2011 & Poly 9 in 2010
- ✦ Google Maps (and StreetView) now gone
- ✦ New 3D Flyover view
- ✦ Needs good network connection - so screencast



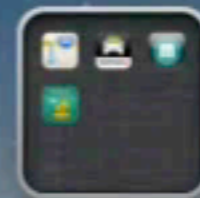
Apple



Games

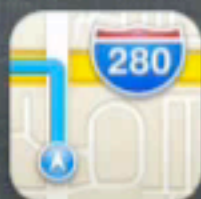


iWork 09



Messages

Location



Maps



UK - Ireland



Metro



Travel



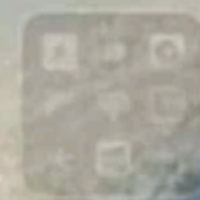
Music Creation



Music



Newsstand



Photography



Productivity



Reading



Social



Sketching



Storage



Travel



Utilities



Video



Writing



Web Reference

Location Based Siri - iOS6

- ✦ Big update in iOS6
- ✦ Siri Command
 - ✦ Find things based on proximity
 - ✦ Instruct to initiate driving instructions
- ✦ Not all devices
- ✦ Screencast



Apple



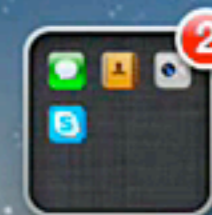
Games



iWork 09



Location



Messages



Music Creation



Music



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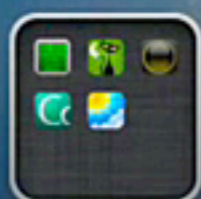
Sketching



Storage



Travel



Utilities



Video



Writing



Web Reference



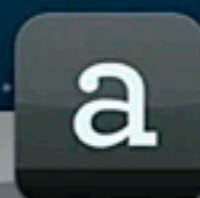
Mail



Settings



Goto Apps



Adian



Tweetbot



Mr. Reader

Location Information in Photos

- ✦ Aperture & iPhoto
 - ✦ Full support for GPS location
 - ✦ Places
 - ✦ Read location information in EXIF metadata
 - ✦ Requires Internet Connection to display on Map



iPhoto File Edit Photos Events Share View Window Help

0.1KB/s 0.0KB/s 11:06 Don Mcallister

iPhoto

LIBRARY

- Events
- Photos
- Faces
- Places

RECENT

- 2012-10 Wayne & Stephanie
- Last 12 Months
- Last Import
- Flagged
- Trash

WEB

- Photo Stream

SHARED

- Cindy Mazzetta's Library

DEVICES

- iPhone 5 - Personal Build

EVENTS

- 2012-02 San Francisco
- 2012-02 Hawaii
- 2012-03 Martin 21st
- 2012-04 Nicola 19th
- 2012-04 Liverpool Giants
- 2012-05 Ibiza
- 2012-05 Ibiza
- 2012-06 Martins Mates
- 2012-07 LTS Graduation
- Nicola LTS Graduation
- 2012-07 New Studio
- 2012-07 BTN Bash
- 2012-09 Nik Kershaw
- 2012-09 Vulcan

Countries States Cities Places

Terrain Satellite Hybrid

Map data ©2012 MapLink, Tele Atlas - Terms of Use

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Search Zoom Smart Album Show Photos

Location Information in Photos

- ✦ Some cameras will assign location data to photos
 - ✦ iPhone and iPad
 - ✦ Some newer cameras have GPS built in
- ✦ DSLR and not GPS aware
 - ✦ 3rd Party Dongles or iPhone “tracker” apps
 - ✦ Aperture supports import of GPS data
 - ✦ Transfer via iPhoto or Aperture

DEMO

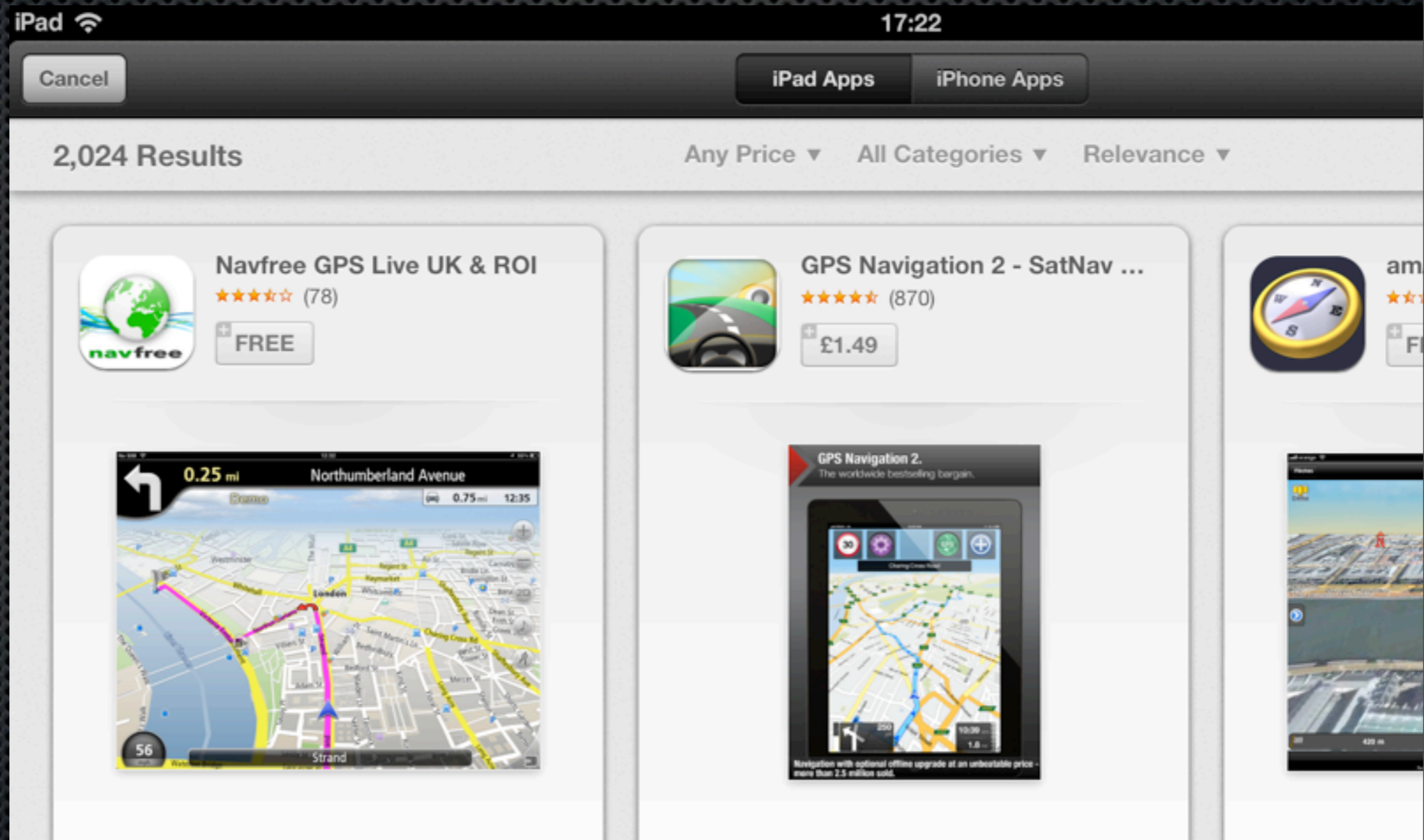
Location Information in Photos

- ✦ Some cameras will assign location data to photos
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- ✦ DSLR and not GPS aware
 - ✦ 3rd Party Dongles or iPhone “tracker” apps
 - ✦ Aperture supports import of GPS data
 - ✦ Transfer via iPhoto or Aperture

DEMO

Third Party Apps Using Location

Mapping and Navigation Applications
2,024 results in App Store!



Location Aware Applications

Geofencing Actions

Instapaper
Sync when leaving



Instapaper

Sync when leaving



Location Aware Applications

Geofencing Actions

Downcast

Sync when leaving



Downcast

Sync when leaving



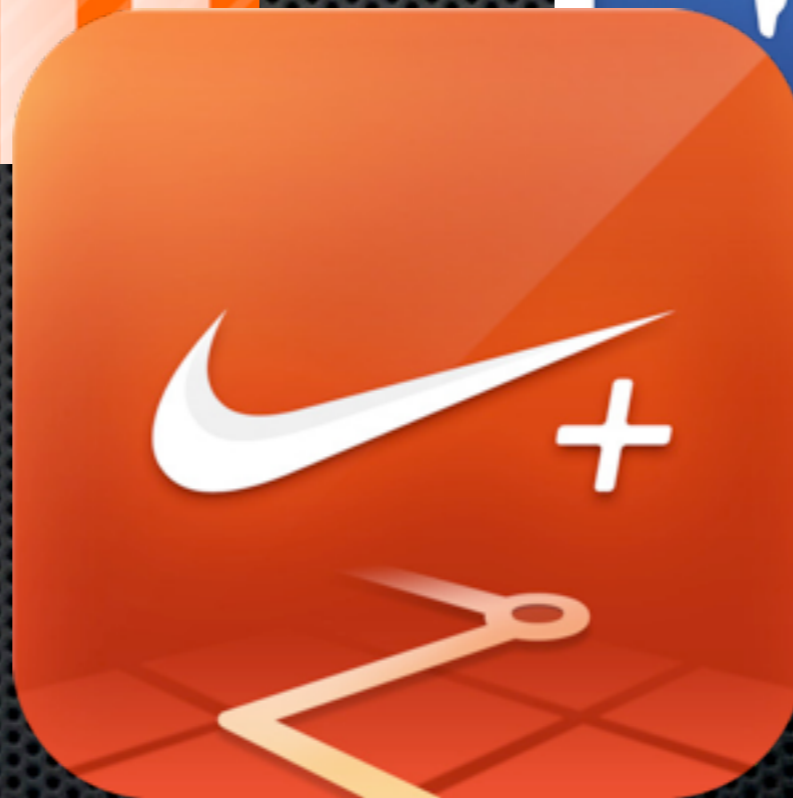
Location Aware Applications

Check In Applications



Location Aware Applications

Fitness Tracking Applications



Privacy Issues

- ✦ All location tracking should be entirely optional (?)
- ✦ Apple fell foul of background location tracking and now removed
- ✦ Two levels of protection
 - ✦ iOS Settings
 - ✦ Application level

IOS Settings



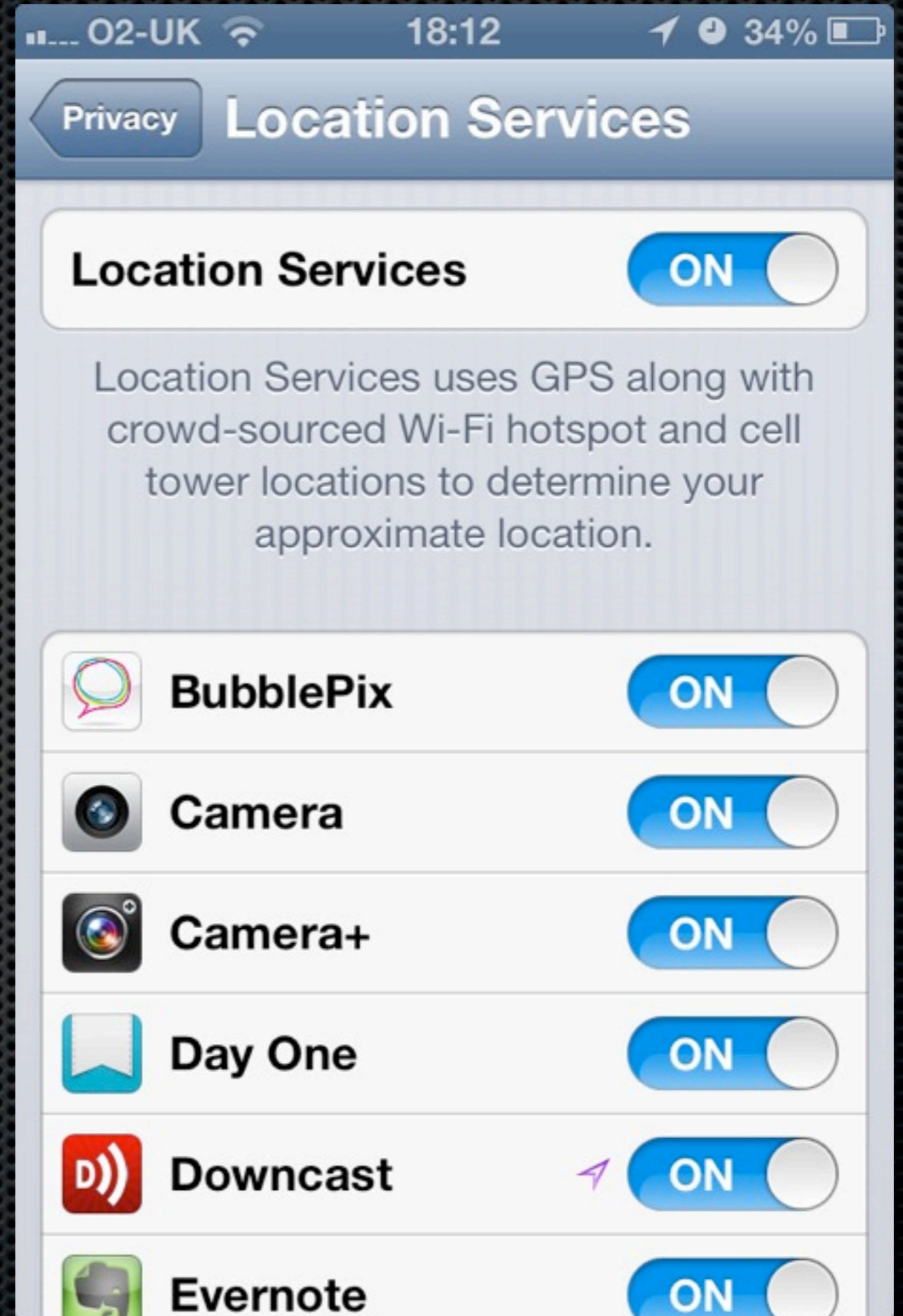
IOS Settings



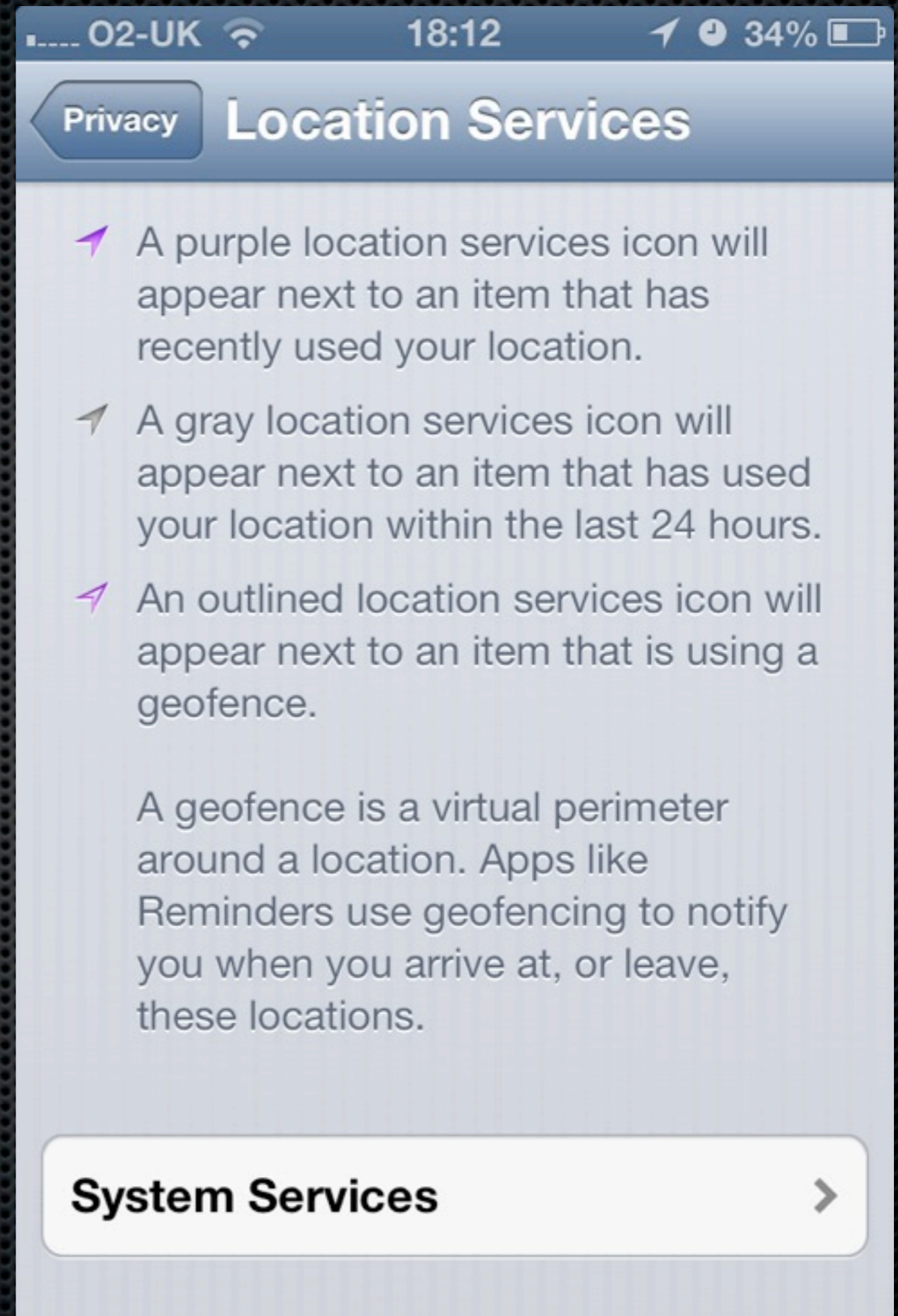
IOS Settings



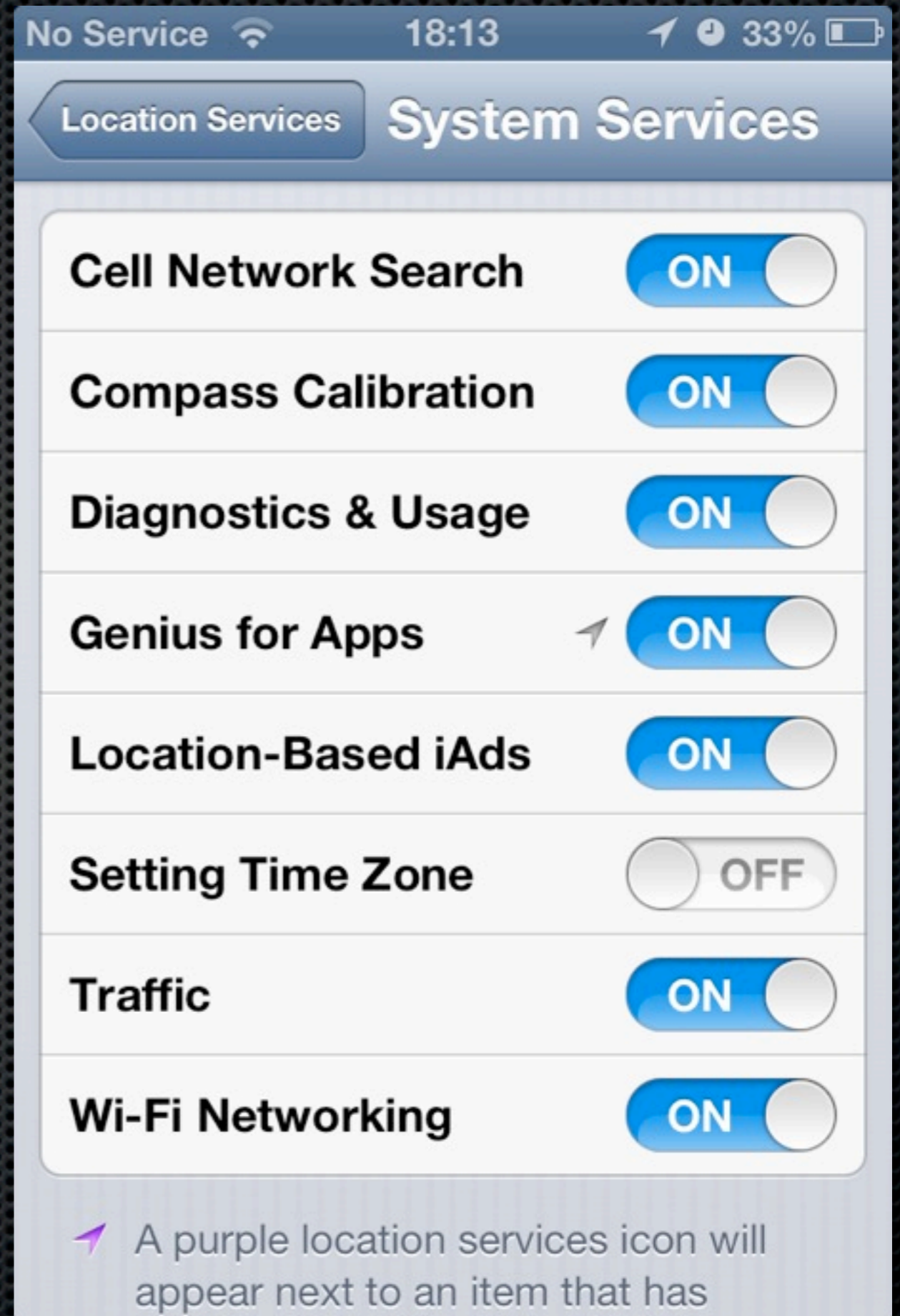
App Settings



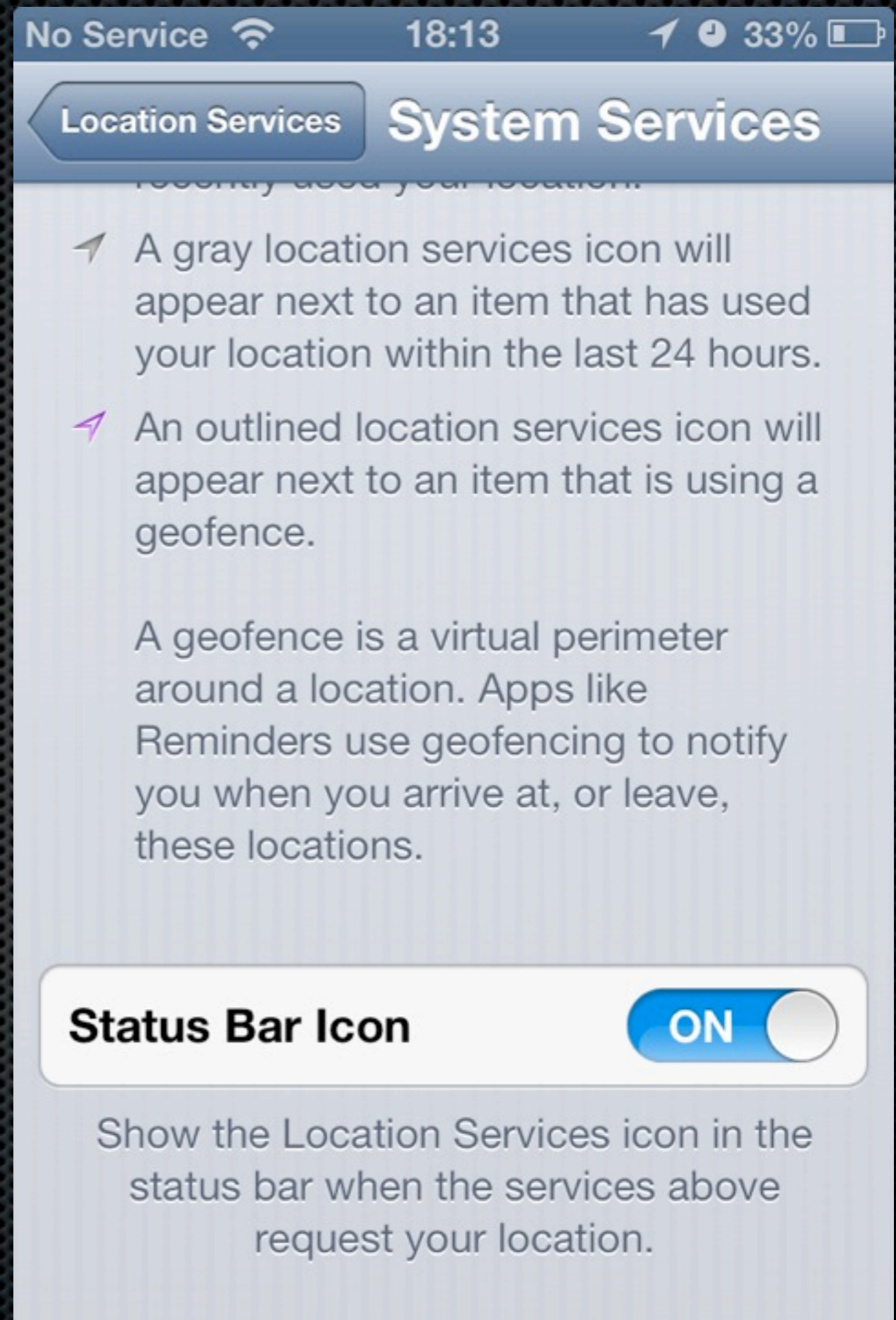
IOS Settings



IOS Settings



IOS Settings



Any Questions?

Contact Details

Don McAllister

screencastsonline@gmail.com

www.screencastsonline.com