Testing Your Location-Aware Application

All without leaving your chair

Session 518

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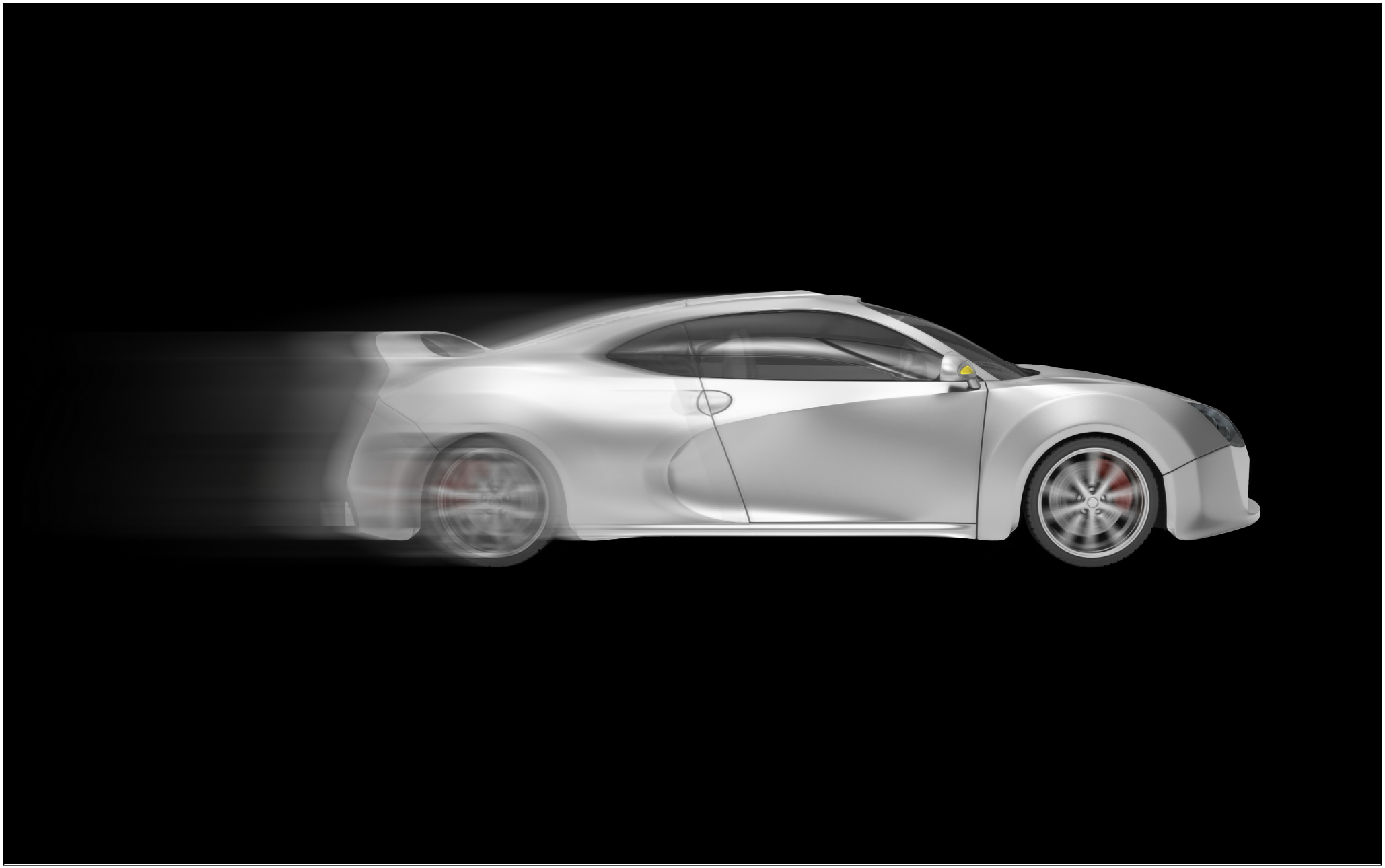
These are confidential sessions—please refrain from streaming, blogging, or taking pictures

Introduction

- We know testing is important
- Why do we not do more of it?
- How can we make it easier?



What You Will Learn

- Where do apps commonly fail?
- How can you make sure yours does not?
- What tools do we have to make it easy?

Why Test Your Location-Aware App?

A cautionary tale

Navigation

Current Location

Restaurants

Reminders

Share with Friends

Fitness Activities

Coffee Shops

Geo-Tagging

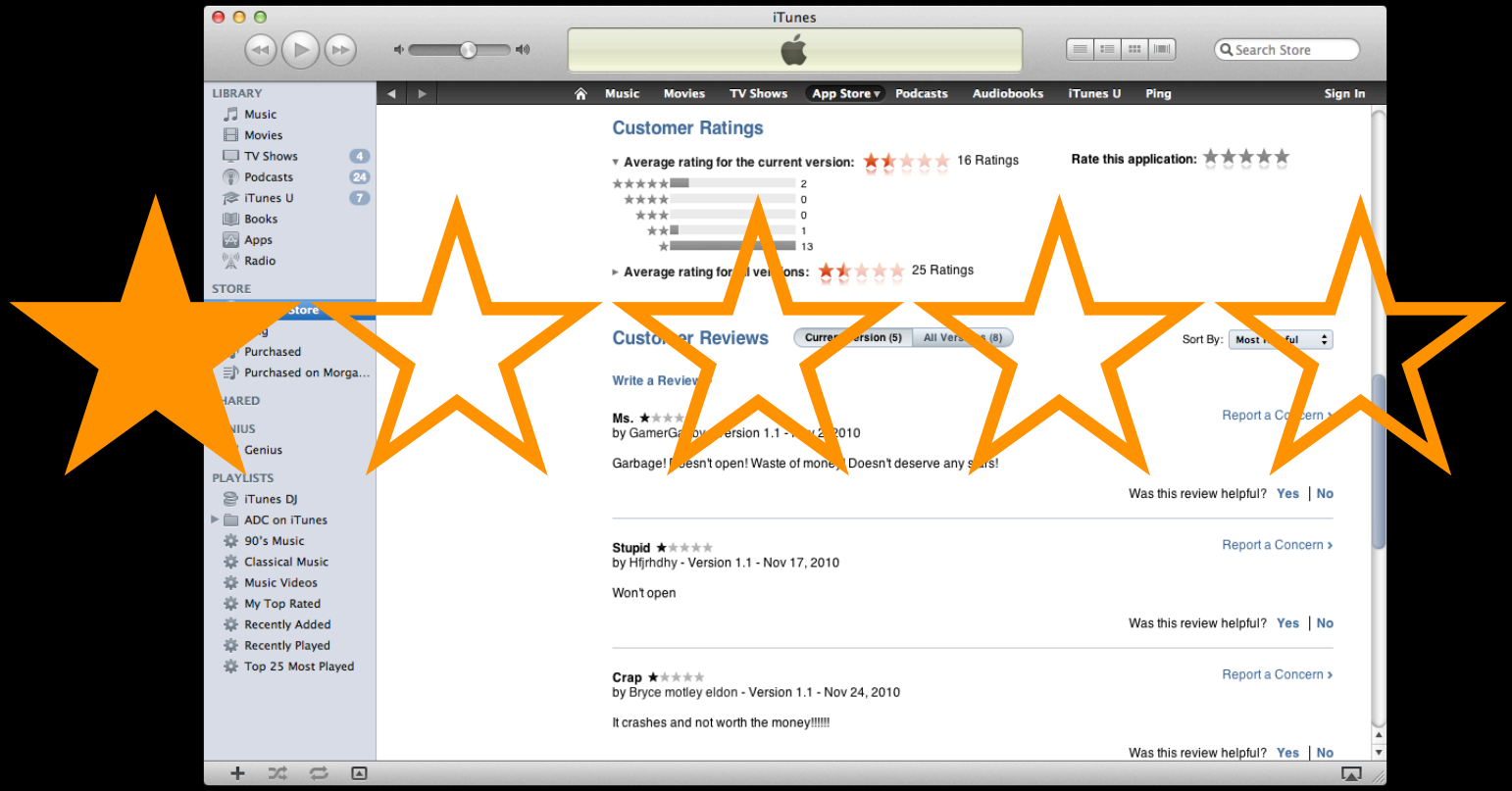
Local Weather

Geocaching

Demo

Crash on iPad
App hang
EXC_BAD_ACCESS
Unrecognized selector
Failed to resume!
Critical Bugs
High Memory Usage
Animation stutters
Scrolling isn't smooth
Confusing UI
Slow launch
Rare Crash
Button hard to press
Annoyances
Better graphics
Teleportation
Integrate with XYZ
More sizzle
Double performance
Enhancements

9,999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Top 25 Most Played
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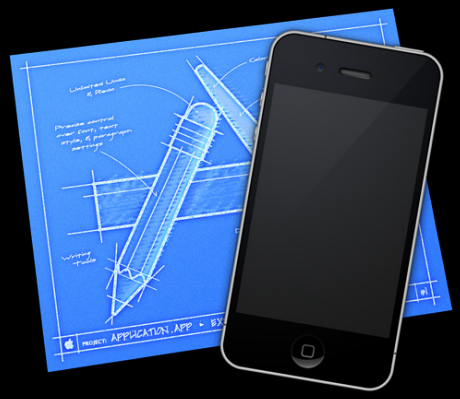
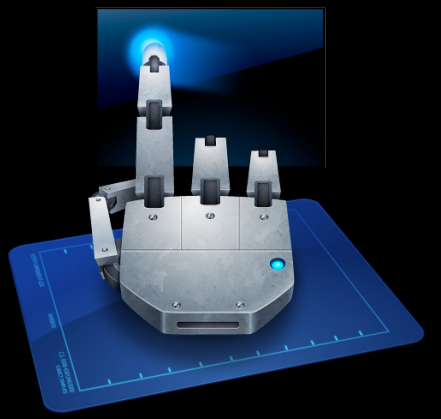
Movies
TV Shows
App Store
Podcasts
Audiobooks
iTunes U
Ping
Sign In
Customer Ratings
Average rating for the current version:
16 Ratings
Rate this application:
2
0
0
1
13
25 Ratings
Write a Review
Sort By:
Report a Concern
Was this review helpful? Yes | No
Stupid
by Hfjrhdhy - Version 1.1 - Nov 17, 2010
Won't open
Crap
by Bryce motley eldon - Version 1.1 - Nov 24, 2010
It crashes and not worth the money!!!!!!

Does not work in Europe
Hangs if user denies Location Services
Critical Bugs
Annoyances
Teleportation
More sizzle
Enhancements

Three Development Tools

Enhanced to help keep you in your chair





iOS Simulator

Xcode

UI Automation

Where Do Apps Commonly Fail?

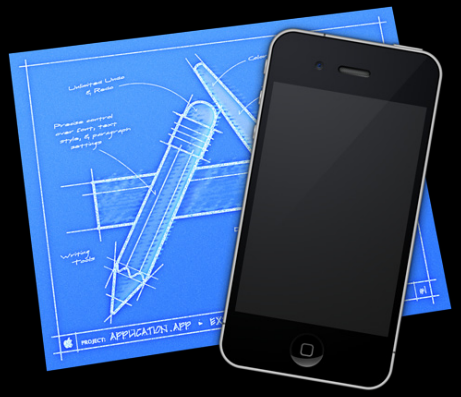
…and how you can make sure yours doesn't

“Your application doesn’t do anything!”

A new user who accidentally hit “Cancel” on the location prompt

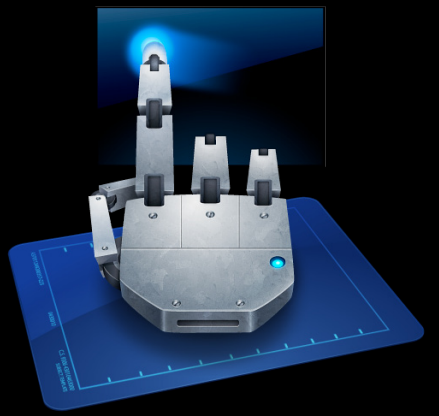
Respecting Users' Privacy Decisions

- Be prepared for all scenarios
- The best apps
  - Continue to function
  - Degrade gracefully
  - Make the user aware of the limitations of their choice



iOS Simulator

Xcode



UI Automation

Location Services and iOS Simulator

- A bona fide simulation of device-location features
  - Location prompt
  - Status-bar icon
  - Location Services menu
  - Authorization states
  - Reset location warnings

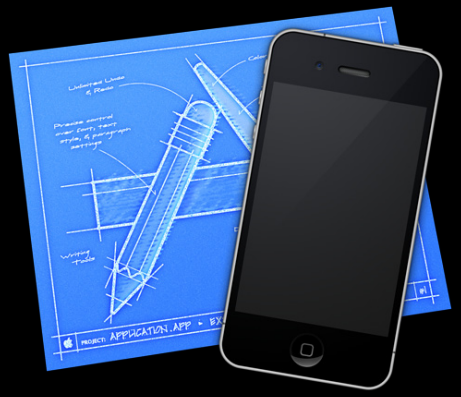
Demo

“Votre application ne fonctionne pas pour moi!”

A user in France, who lives in a city not covered by your data provider

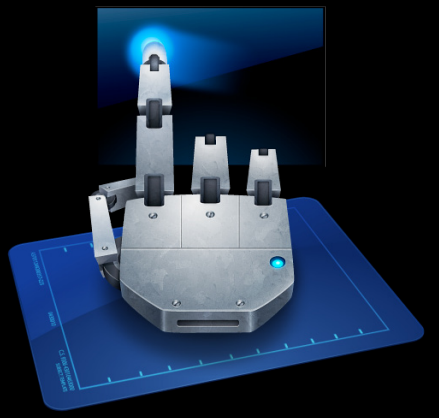
Handling Different Regions of the World

- Identify and verify data-coverage limitations
- Find additional sources if necessary
- Consider appropriate regions for sale



iOS Simulator

Xcode

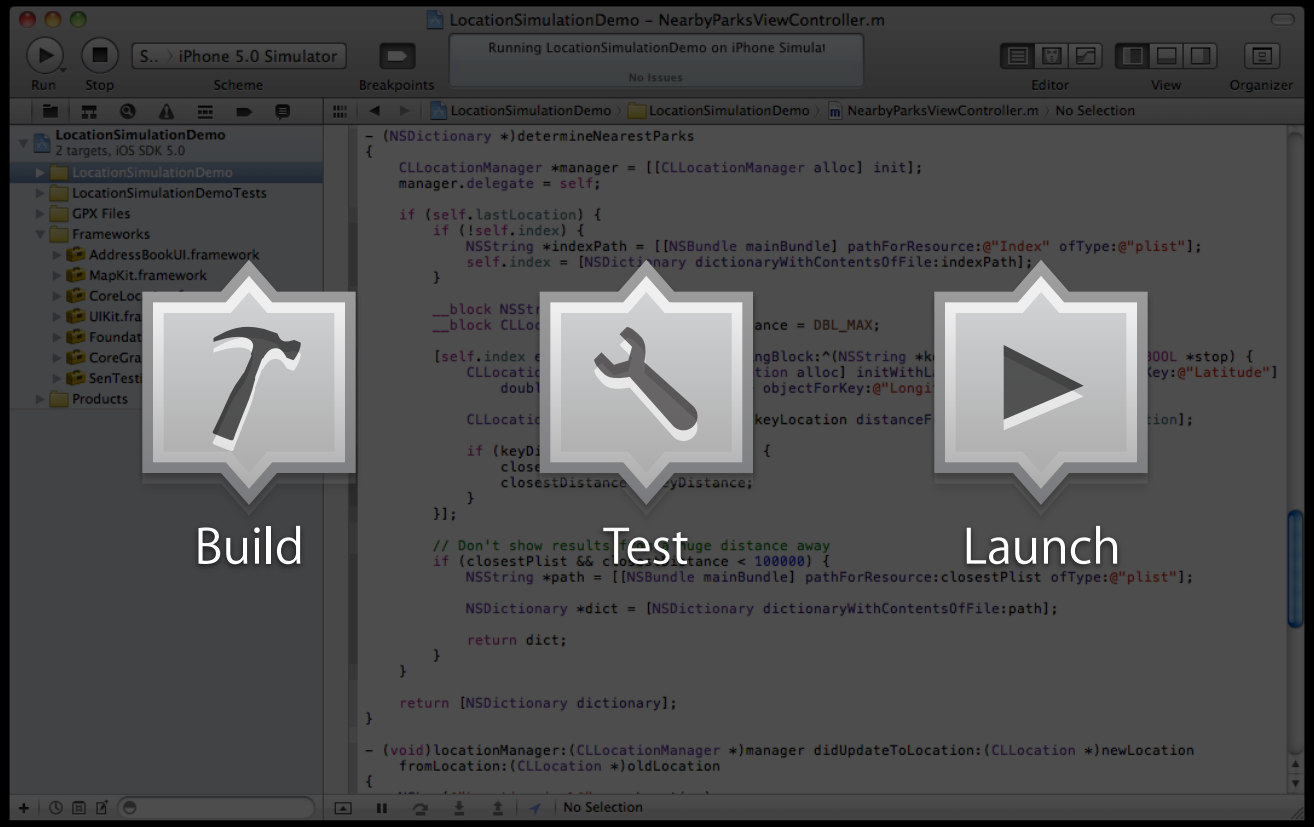


UI Automation

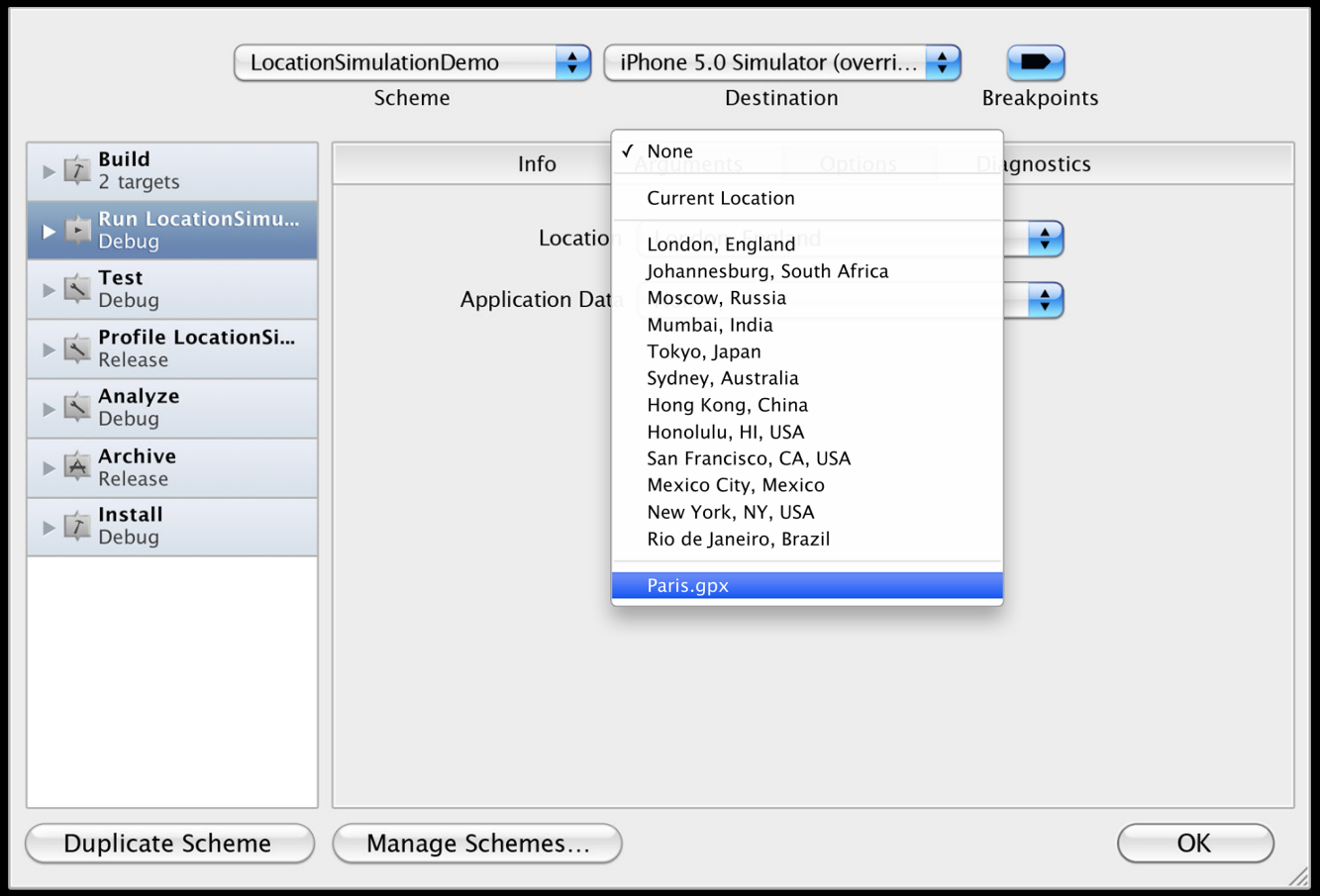
Location Services and Xcode

- Location support in multiple Xcode components
  - Schemes
  - Debugger
  - Unit tests
- Allows simulation of various scenarios
  - Specific location
  - Major cities
  - GPX file
- Device and simulator support

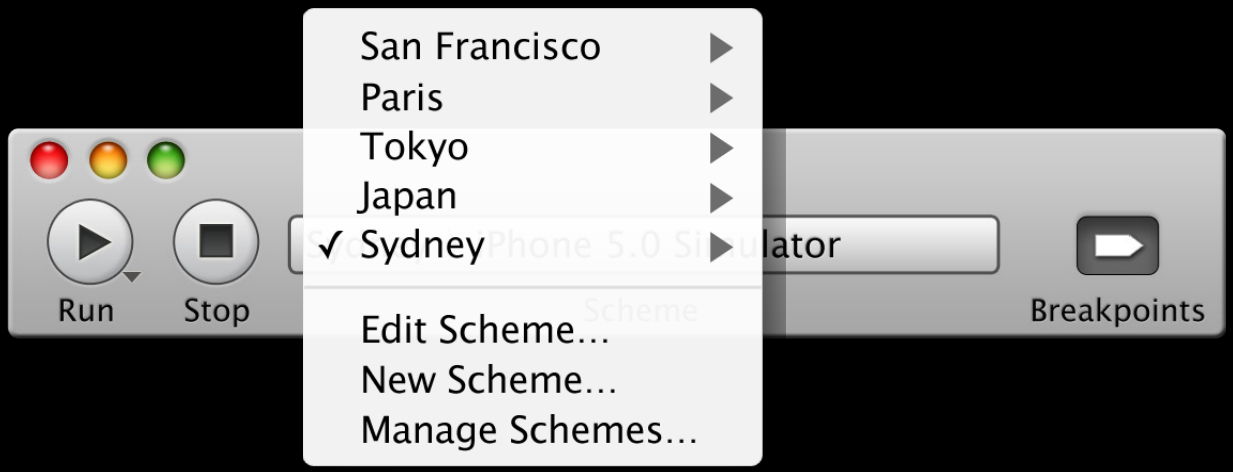
Xcode Schemes



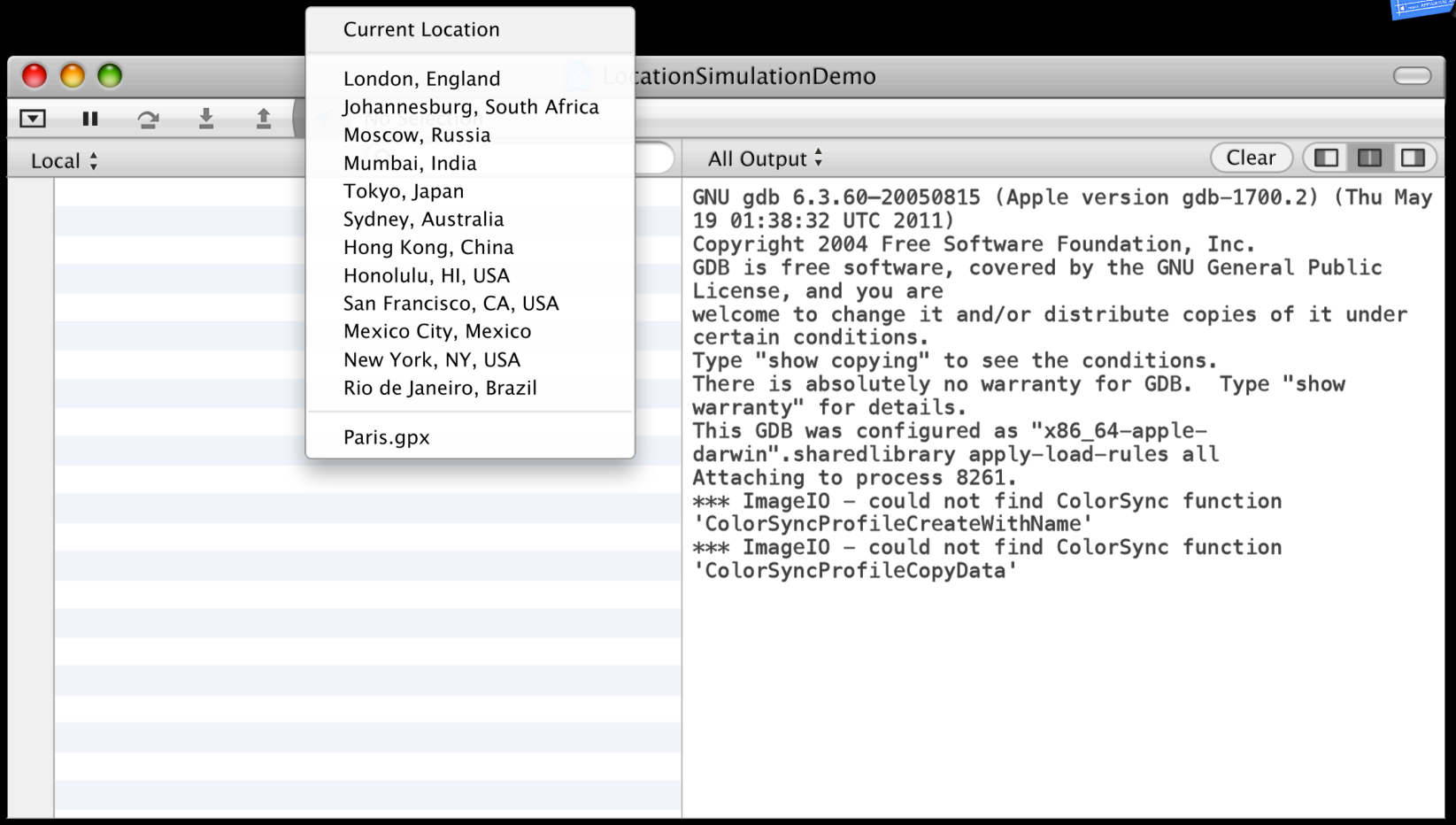
Simulating Locations Using Schemes



Xcode Schemes



Location in the Debugger



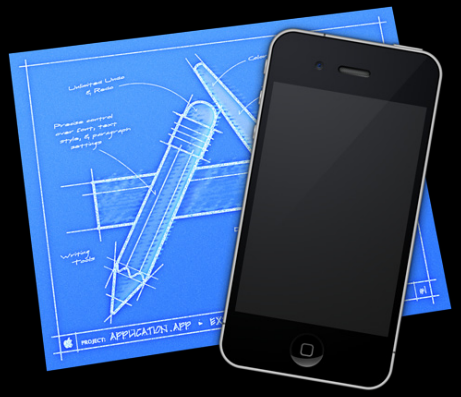
Demo

“Your application can’t find me at all!”

A commuter, who uses your application in the subway

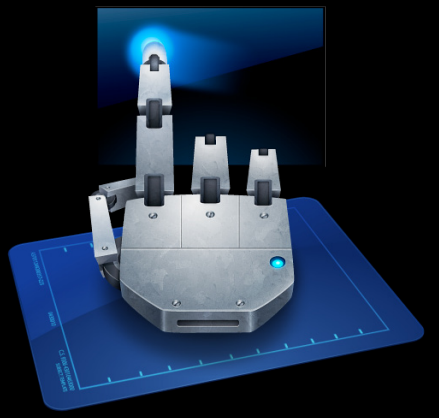
Handling Difficult Environments

- Not all devices have a GPS receiver
- GPS will not always be available
- The best applications
  - Function with less accurate positions
  - Smooth out temporary location outages (where possible)
  - Let the user know about the problem



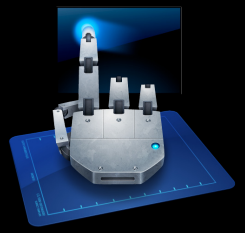
iOS Simulator

Xcode



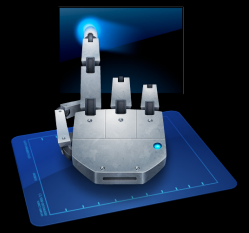
UI Automation

UI Automation



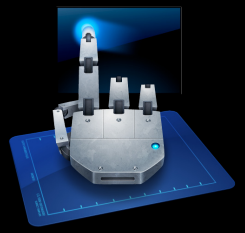
- Accessible from Instruments
- Javascript-based API
- Device and simulator support

Location Services and UI Automation



- With iOS 5, simulate location changes via UI Automation
- Allows control over all aspects of the location
  - Coordinate
  - Horizontal accuracy
  - Speed
  - Course
  - Altitude
  - Vertical accuracy

Location Services and UI Automation



- Test a variety of accuracies your users are likely to see
- The CLLocationAccuracy constants are a good start

  `kCLLocationAccuracyNearestTenMeters`

  `kCLLocationAccuracyHundredMeters`

  `kCLLocationAccuracyKilometer`

  `kCLLocationAccuracyThreeKilometers`

- Test what happens when location is unavailable

Demo

Other Simulator Support

- Background-location services
- Significant location change
- Region monitoring

Demo

More Information

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Evangelist
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Documentation
Core Location Framework Reference
Location Awareness Programming Guide
UI Automation Reference Collection
http://developer.apple.com/ios

Apple Developer Forums
http://devforums.apple.com

Related Sessions

Writing Easy-to-Change Code: Your Second Most Important Goal	Pacific Heights Friday 11:30AM

Summary

- Testing is difficult, but it's worth it!
- Use the tools to make testing easier and improve coverage
  - iOS Simulator
  - Xcode
  - UI Automation
- Always test on a real device
- Sit back and wait for the reviews to come in…

“Cette application est incroyable!”

An overjoyed user, who can’t wait to tell her friends about your application

Q&A

WWDC2011