

Test Automation for Mobile Phone Applications

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What are we facing?

- Today's web applications are being used on smartphones
- Mobile connectivity ain't ideal and can be problematic
- Manual testing is inefficient and doesn't scale
- 100,000's of native applications:
 - Who tests them? And how?

Testability: the biggest single solution

- Software development practices include:
 - Unit test frameworks e.g. JUnit
 - Test Driven Development
 - Mocks
- Mobile application development should do likewise
 - But tools and platforms are limited
 - Old justifications [of why good practices don't apply to *our project*] are harder to accept

Separate generic from specific

Many mobile applications include algorithms, etc unrelated to the mobile platform or technology

- These should be separated from platform / technology specific code
- Use 'desktop' test automation to test generic code
- Consider platform-specific test automation once the generic code has good automated tests

Simple improvements

- Use SMS to send URLs
- Learn how to use emulators, take screenshots, etc.
- Find effective ways to gather and collate data e.g. capturing user-agent strings from the web browser

Desktop automation

- Web applications can be tested with WebDriver
<http://code.google.com/p/selenium/>
- WebDriver + Firefox allows phones to be spoofed
<http://googletesting.blogspot.com/2009/05/survival-techniques-for-web-app.html>
- WebDriver can use iPhone, Android, + more soon...
- Fast and useful test automation
- However, layout & performance bugs are hard to find

Headless automation

- Headless applications don't include a pretty UI
- Should be a thin wrapper around core code
- Helps test carrier, and some device & platform bugs e.g. the network communications

Remote Control

- Several manufacturers now provide free / inexpensive remote connectivity to their range of phones e.g. Nokia
- Commercial services also available internationally e.g. DeviceAnywhere
- These can help extend your breadth of device and carrier testing
- Beware privacy and confidentiality, your software running on shared devices

Probes

(exploratory test clients)

- Rough and Ready applications that explore the capabilities (and limitations) of devices, platforms, etc.
- Design them to report information back faithfully
- Take advantage of network connectivity to report results to a central server

GUI test automation

- Many have tried, few have succeeded...
- Technically complex
- Ongoing topic, actively pursued by many
- Key issues:
 - Providing the many inputs: key, touch, GPS, sensors
 - Identifying elements on screen reliably & accurately
 - Permissions and Security models cause problems
 - May need to add intrusive hooks into the application

Beware of specifics

- Platform, Device, Network are all specific
- Any could cause problems for your applications
- Test these manually first, provided you have the budget to get fast and effective early feedback

Next steps?

- Read on

<http://sites.google.com/site/mobilewirelesstestautomation/>

- Experiment with setting the user-agent in desktop browsers
- Understand the test automation frameworks & capabilities for your platforms

Q & A

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