Chapter 26

■ **Testing MobileApps**

Slide Set to accompany

Software Engineering: A Practitioner's Approach, 8/e
by Roger S. Pressman

Slides copyright © 1996, 2001, 2005, 2009 by Roger S. Pressman

For non-profit educational use only

Mobile App Testing Strategy Questions

- Do you have to build a fully functional prototype before you test with users?

- Should you test with the user's device or provide a device for testing?
  What devices and user groups should you include in testing?

- When is lab testing versus remote testing appropriate?

Mobile Testing Guidelines

- Understand the network landscape and device landscape.
- Conduct testing in uncontrolled real-world test conditions.
- Select the right automation test tool.
- Identify the most critical hardware/ platform combinations to test.
- Check the end-to-end functional flow in all possible platforms at least once.
- Conduct performance, GUI, and compatibility testing using actual devices.
- Measure MobileApp performance under realistic network load conditions.

Different mobile test infrastructures
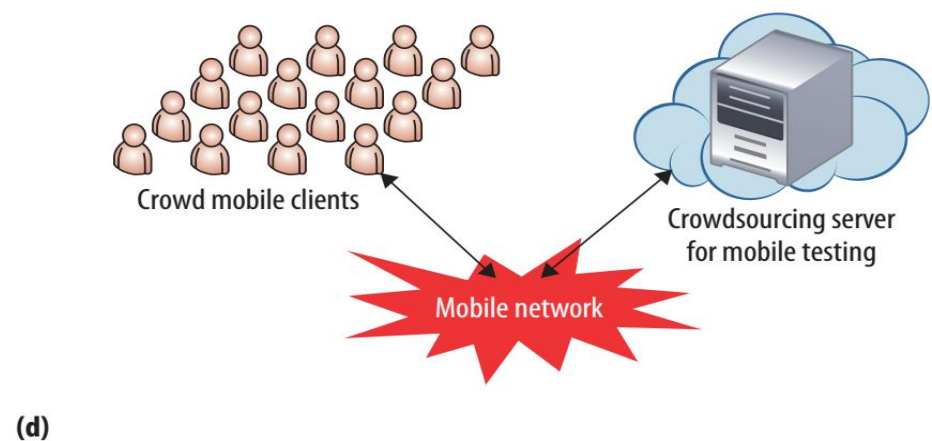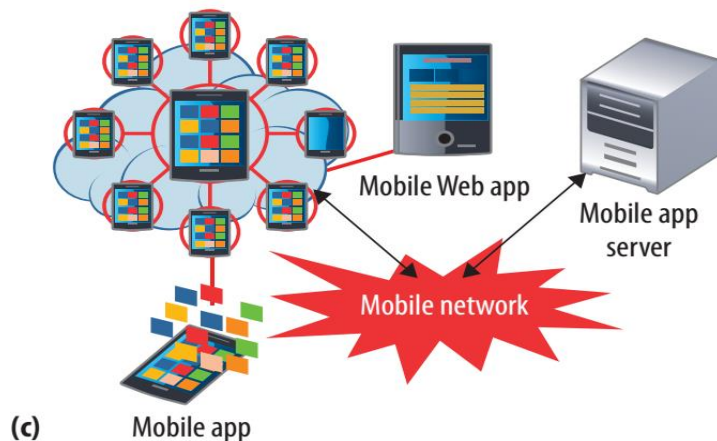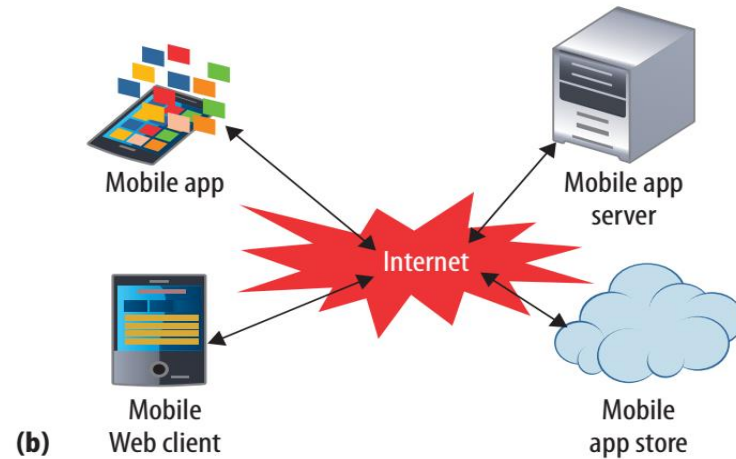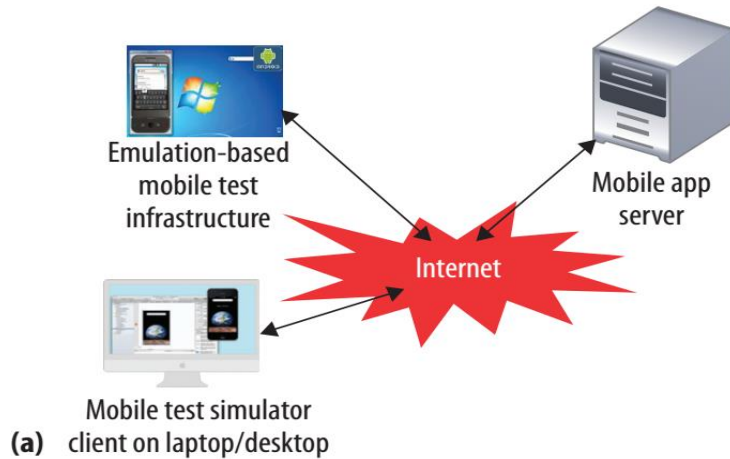
Mobile App Testing

- Conceptual Testing
- Unit and System Testing
- User Experience Testing
- Stability Testing
- Connectivity Testing
- Performance Testing
- Compatibility Testing
- Security Testing
- Certification Testing

Automated Testing

- Feasibility analysis
- Proof of concept
- Best practice test framework
- Customize testing tools
- Test under real world conditions
- Rapid defect resolution
- Reuse of test scripts

Building test Matrix

- Weighted device platform matrix

	Ranking	OS1	OS2	OS3
	Ranking	3	4	7
Device 1	7	NA	28	49
Device 2	3	9	NA	NA
Device 3	4	14	NA	NA
Device 4	9	NA	36	63

Stress Test Cases

- Running several mobile apps on the same device

- Infecting system software with viruses or malware

- Attempting to take over a device and use it to spread spam

- Force the mobile app to process inordinately large numbers of transactions,

- Storing large amounts of data on the device

Mobile Usability Elements

- Functionality
- Information architecture
- Screen Design
- User input mechanisms
- Mobile context taken into account
- Interface usability
- Trustworthiness
- Feedback
- Help facilities

Specialized Usability Tests

- Gestures
- Voice input and recognition
- Virtual keyboard input
- Alerts and errors

Test Across Borders

- **Localization Testing**

- **Best Technique : Crowdsourcing**

Mobile App Testing Tools

- Tool Selection criteria's
    - Object Identification
    - Security
    - Devices
    - Functionality
    - Emulators and plug-ins
    - Connectivity

- **Battery Usage Testing**
  - While testing a mobile app, you need to test battery consumption during use.
  - Approch1 : starting tests in Fully Charged Battery mode
  - Approch2: starting tests in Low Battery mode

- **Installation Testing**
  - Verify that the app can be installed successfully on the local storage or memory card of the device
  - Check that the installation works with different Internet connections such as Wi-Fi or mobile data networks
  - Change the Internet connection (Wi-Fi to 3G, for example) while the app is installing
  - Switch to other apps while the app is installing.
  - Switch the device's Internet connection off, for example, to airplane mode, while the app is installing
  - Try to install the app when there is not enough space left on the local storage

- **Update Testing**
- **Testing the update process includes scenarios such as the following:**
  - Logged-in users should not be logged out from the app after the update is installed.
  - The update will not affect the local database; that is, existing data will not be modified or deleted.
  - The app is in the same state as before the update was installed.
  - Testing the update process will simulate the update process in the app stores.

- **Local Storage Testing**
  - Test the app when the local storage is full
  - Test the app when the local storage is full but the extended storage still has some space left
  - Test the app when the local storage has some space left but the extended storage is full
  - Test the app when both storage areas are full
  - Test the app when the local storage is nearly full.
  - Perform some actions within the app that will write lots of data to the local storage in order to fill it up
  - Remove the device's extended storage and check the behavior of the app.
  - If possible, move the app to the extended storage and check the behavior

Mobile App Testing Tools

- Mobile page compliance checkers
- Mobile browser emulators
- Device emulators
- Key logging and playback
- Network monitors
- Mobile analytics collectors