Subjects to Discuss

• What’s QA and what’s testing - are they the same?
• System testing (vs. hardware, firmware or software testing)
• OLPC-related specifics of organizing test efforts - adopting open source development practice
• Test and release process and how to achieve test coverage - Requirements Traceability Matrix
• Test areas
• Test labs
• Test automation and test tool development
• Building test team
• Test procedures - template
• Testing XOs running other than Linux operating systems
• Today and tomorrow - short plans, long plans
What’s QA and What's Testing - Are They the Same?

• Quality assurance - covers possible improvements to the project, *including* testing
  • Example: Improving design - are all necessary (for product use) features have been included in the design?

• Testing - verifies that designed features exist and have been executed according to project specs
System Testing (vs. Hardware, Firmware or Software Testing)

• We do system test - we see hardware, firmware and software bugs through software behavior

• Why not *pure* software test? - Because same software can behave differently while running on different configurations of hardware and firmware
OLPC-Related Specifics of Organizing Test Efforts - Adopting Open Source Development Practice

• Commercial company practice
  • Own (or outsourced under strict control) test team and test facilities
  • Test plan/procedures created by core QA team
  • Fully controlled test/development process
  • “Closed to prying eyes” bug reporting system
  • “Secret” development/release schedules

• OLPC-specific (proposed) practice - OLPC QA team + community testers + “far away” beta-testers
  • Main features (and some compatibility features) of every release should be tested internally as well as (maybe) verified by “community testers” †
  • Test plan/procedures for main features should be designed by OLPC QA team
  • Additional features (compatibility with external wired and wireless devices, activities created by community participants) can be tested by community testers as well as actual dedicated end-users †
  • Test plan/procedures for additional features may be designed by community testers or end-users with consultation provided by OLPC QA team

† Due to limited resources, some features will be ad-hoc (exploratory) tested (with no formal test procedures designed)
Test and Release Process

• Requirements traceability matrix - a KEY to achieve test coverage
• Schedule estimates
• Release engineering
  • Internal releases
  • Major (external) releases
  • Release notes - for internal (for test) and external (for field distribution) releases
• Release criteria
• Defect tracking system - how do we use Trac, how should we use Trac?
Test Areas

• Hardware (robust behavior, ability to operate with user-oriented (touch-pad, keyboard, etc.) and external devices (mouse, etc.)
• Installation of Software (operating system, Sugar, activities) and firmware. Field upgrades
  
• Sugar GUI
• Datastore
• Activities
• Power management
• Collaboration/Connectivity
  • Between XOs
  • With access points
  • With school server
  • In mixed environment
• Security
• Performance/scalability

• To continue…
Test Areas

- Localization
- Keyboard layout / software correctness
- Correctness of language-specific icon-related text
- User documentation - inside XO and online (wiki) available
- Interoperability with non-XO machines (at file-compatibility and other (?) levels)
Test Automation and Test Tool Development

- Test automation
  - Regression testing (smoke tests?) - applied to every “build in test” - may not be possible to automate - Tinderbox?
  - Running multiple XOs from single “control center” (?)
- Test tool development/use
  - GUI-driven tests - appropriate tools exist for Windows environment - Winrunner, Silk, etc. What about Linux environment? Thoughts to consider
  - GUI-driven tests - appropriate tools exist for Windows environment - Winrunner, Silk, etc. What about Linux environment? Thoughts to consider?
  - Testing in radio-noise-quiet environment
  - Alpha-test (simulation of customer-premises environments - “typical school”, “out of school”, etc.)
- Testing “far away” - beta-testing (in real “first-customer” environment)
- Test case and test results management
Test Labs

- Testing at 1CC
  - Testing non-radio-noise dependent features
- Testing at Davis Square facility
  - Testing in radio-noise-quiet environment
  - Alpha-test (simulation of customer-premises environments - “typical school”, “out of school”, etc.)
- Testing “far away” - beta-testing (in real “first-customer” environment)
Building Test Team

• Hiring - Who to Hire? How many? Budget?
• How to Get Team to Speed (Acquiring Technological Knowledge)
• How to use community testers and beta-testers
Test Procedures - Template

• **Number/Title:** #1. Making secured XO unsecured.

• **Objective:** Verify that secured XO can be made unsecured by obtaining developer key online.

• **Feature:** User can obtain developer key online and perform a procedure to switch a secured XO into an unsecured one according to XO’s provided instructions.

• **Source:** [http://wiki.laptop.org/go/Activation_and_Developer_Keys](http://wiki.laptop.org/go/Activation_and_Developer_Keys)

• **Approach:** Act as an end-user following the instructions provided by XO.

• **Test Tools:** No test tools required.

• **Test Setup:** One secured XO laptop.

• To continue…
Test Procedures - Template

- **Test Procedure:**
  1. Follow the XO’s provided instructions to obtain and install developer key.
  2. Reboot XO and check out whether it’s now in the unsecured mode.

- **Expected Results & Pass Criteria:** Following the XO’s instructed process, developer key can be obtained online and XO can be switched into an unsecured mode.

- **Comments:** None.
Testing XO running other than Linux operating systems

• TBD
Today and Tomorrow - Short Plans, Long Plans

• Today...
  • Testing Build 708 as a back-up release candidate (8.1.1) for September G1G1 release

• Tomorrow...
  • Testing builds towards 8.2.0 - if successful, will be release candidate for September G1G1 release
  • When Davis Square facility is ready - building the “radio-quiet” test lab

• After tomorrow...
  • Testing, testing, testing...