# Sprint Report V

## Team Overview

### Name
Silver Redux

### Members
Dean Laganiere, Trevor Mahoney, Teresa Worner

### Project Title
APMAX Test Suite and Set-Top Box Regression Testing Framework

### Company
Innovative Systems, LLC

# Sprint Report

## Goal:

Our goal for this sprint was to complete all of the core components of the single set-top box regression testing project before spring break; this would give us time for testing and cleanup in Sprint 6.

We did manage to implement the desired features during the sprint, although not all before spring break. The test analysis/reporting page is complete, though testing has not yet begun for it. The creation and running of test scripts was made fully functional and feature complete, with testing already started on those pages.

## Work for this sprint included:

The number in parenthesis indicates the amount of *story points* that our team assigned to each task.

- **(2) STB Software Version Commands**

  The primary purpose of this project is to be able to test software updates on the set-top boxes for any regressions. By implementing this command, the user is now able to pull the software version from a given set-top box and is able to have the version attached to baseline screen captures and test runs.

- **(3) Switch to Reactive Extensions for TCP/UDP responses**

  In the first iteration of the networking classes for the Emulator Client, a wait was used to retrieve messages from the receiver classes. The sender class now listens to an observable stream of responses to retrieve message responses.

- **(3) Make screenshot resolution matrix**

  Due to the 120 different options available to the user for screen resolution settings, a matrix of images based on different screen resolutions was made. It was found that only 6 resolutions actually differed during the screen capture.

- **(8) UI STBRT: Support for Multiple Resolutions**

  After the analysis done through the screen resolution matrix, the Emulator Client was updated to support differentiating between these resolutions.

- **(2) UI STBRT:  Add ability to explore a script's reference tree**

  Due to the tree-like nature of the test commands, a page was created to allow a user to view which scripts referenced the selected script and which scripts the selected script references.

- **(3) UI STBRT: Implement "Script Finalization"**

When a user determines a script is in its final version, they can finalize the script. Once it has been finalized, a script cannot be edited. It must be understood that any tests run using an script which has not been finalized may have inconsistent results because a user could alter the script.

- **(8) Create/Edit Scripts - Functional and UI Review**

After finishing implementing the Create/Edit Scripts page, the page was reviewed by Brian, leading to the following changes:

- o General:
  - Made dialog boxes centered on the main window.
  - Fixed labels of items across all pages.

- o Bugs:
  - Fixed the lack of user interaction during the running of a test script, which made the UI seem frozen.
  - Fixed a bug causing the UI to freeze after selecting a Dependency Type.
  - Fixed the length of the script name fields, which caused the app to crash if the name was too long.

- o Script Creation/Deletion:
  - After a script is created, it is automatically selected as the current script.
  - A prompt was added seeking confirmation for deleting a script.

- o Edit STBs page:
  - Allowed docking of the page when using the tabbed MDI interface.

- **(8) UI STBRT: Run Wizard Features**

After finishing the base page for running tests, some features still needed to be implemented:

- o Implemented "Continue On Failure" (Stop tests early when this flag is false)
- o Checked "Continue on Failure" by default
- o Display STB Version Information
- o Quitting a test run deletes any associated TestRunFailures
- o Comments are disabled after quitting a test run
- o Ability to view a script's dependency's during test run setup

- **(2) Optimization of DB calls for test creation/editing**

When deleting a command from the top of a script, the process was found to be very slow. This was due to a poorly implemented method to update the ordinals of the commands after the command being deleted.

- **(3) Drag and drop functionality for command script editing**

Because commands are only added to the bottom of the script, it was found to be difficult to edit scripts. With the ability to drag and drop commands, scripts are able to be edited quickly and easily.

- **(3) UI STBRT: Screenshot Comparison**

A simple algorithm was implemented for comparing screenshots to their baselines during a test run. It uses simple pixel comparison with a tolerance to compare images and makes a mask highlighting the regions of the screenshots that are not the same.

- **(20) Test Result Analysis/Reporting**

This page allows the user to select a script and displays a grid containing the script's commands (including expandable rows for nested scripts) and another grid with test runs.  For ease of analysis, the first column of the test run grid displays an icon indicating if the run was successful or, if it failed, whether or not the failed screenshots have been analyzed.  A test run row of the grid can be expanded to list the STBs used in the run.  These STBs also make use of the icon system to quickly tell the user if that box needs to be analyzed.  A STB row of the grid can also be expanded to list the screenshot failures for that box.

If a screenshot failure is double clicked, a new window opens.  The new window displays the screenshot, a comment box, and some viewing options.  From here, the screenshot can be commented upon and marked as analyzed or unanalyzed.

Because the screenshot viewing window needed many of the same features as the portion of the test run wizard which displays the screenshot, that code was extracted into a separate user control which was then embedded in the necessary locations.

Overall, this task was more complex than anticipated and took well over 20 hours.

**Work that is carried over into sprint 6 is as follows:**

Tasks related to Phase 2 (Single STBRT):

- Updating documentation to reflect work done in this sprint
- Screenshot Comparison Research and Consulting
- (5) UI STBRT: Ability to delete screenshot mask groups
- (5) UI STBRT: Test Preconditions
- Integration testing

Tasks related to Phase 1:

- Emulator Client Bug – when using the search panel on any GridControl, the data (bound from a ListCollectionView) gets unfiltered!  (One solution is to simply disable the search panel)
- Emulator Client Bug – when a new test is created, the client must be closed once before running this test or else no instances of the emulator controller or smartphone launcher get spawned during the test run.
- Emulator Controller Bug – when the APMAX Test Suite Starter Service is configured to use local system, the Client can't connect to the Controller