

Team 9: Elucid | 3/27/13

QUALITY ASSURANCE PLAN

USE CASES

- × Writing/drawing on table
- × Displaying videos/pictures on table
- × Use personalized widgets (ex: email)

TEST CASES

Name/ Metrics	Why?	How?
Start up/shut down time	We don't want the user to wait too long.	Stopwatch.
Hall effect sensitivity due to distance	So that the user can change colors on the pen easily. Have a variety of magnet strengths.	Hooking it up to a multimeter.
Response time of IR to table	System doesn't lag - user experience.	We can videotape users using product so we can measure delay.
Max resolution of AirPlay streaming	User experience.	Test with different resolutions from different devices.
Accuracy & Precision of IR tracking	Accurate representation of user input.	Putting multiple dots and measuring distances between pen & dots.
Temperature of projector under table	So system doesn't overheat and surpass operating temperature.	Overload system to see how much stress it can take to reach undesired temperatures.
Optimal wavelength & power of infrared	So we can use the optimal infrared to better increase accuracy and precision	Repeat A&P test with different infrareds.
Distance between infrared pen and table	So there is no unwanted behavior.	Measure distance between pen and table when pen is first sensed by the table. Will test at different locations on table.

EXPERIMENTAL EVALUATION: HYPOTHESES

- × Projector will be the bottleneck of image quality.
- × Raspberry Pi will be strong enough to support the IR emitter.
- × A magnet within 1 cm of the hall effect sensor will be sensitive enough to determine distance.
- × Infrared tracking will be accurate to within a centimeter.
- × Will sense the infrared within a few inches of the table.
- × Response time of the infrared tracking will be within 20 ms.

EXPECTED GRAPHS

- × Start up/shut down time (box & whisker)
- × Hall effect sensitivity vs distance (line graph)
- × Response time of IR to table (box & whisker)
- × Accuracy of IR tracking (expected vs. actual)
- × Temperature of projector (time vs temperature)

REPRODUCIBILITY & AUTOMATION

- × In each of the tests, we are isolating one variable and controlling the rest so it will be easy to reproduce
- × There is no automation.