



Network-Enabled Platforms (NEP-2) Program Semi-Annual Progress Report

Project Information

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|------------------|-------------------|------------|--------------------|
| Lead Contractor: | McGill University | | |
| Project Name: | Open Orchestra | Project #: | NEP-54 |
| Date: | March 30, 2011. | | |
| Claim Period: | September 1, 2010 | To: | February 28, 2011. |

PROGRESS REPORT CHECKLIST – Please ensure the following sections are completed:

| Project Progress | Completed |
|-------------------------------------|-----------|
| 1. Technological Progress | Yes |
| 2. Project Development & Activities | Yes |
| 3. Project Plan | Yes |
| 4. Updated Claim Forecast | Yes |
| 5. Intellectual Property | Yes |
| 6. Communications | Yes |
| 7. Web Site Information | Yes |

CLAIM CHECKLIST - Please ensure the following sections are completed and attached to this document:

| | Completed and Attached |
|--|------------------------|
| 8. Financial Claim Schedule | Yes |
| 9. Invoices for Eligible Costs over \$1000 incurred and paid | Yes |
| 10. Employee Timesheets (signed by employees and supervisor) | Yes |

APPENDIX CHECKLIST – Please include any relevant materials:

| | Attached |
|-----------------------------|-----------------|
| 11. Communication Materials | No |

1. Technological Progress

1. Software technology

Several options for playback of media streamed through the Wowza server have been investigated. We began with a triple-width "stitched" video stream, coupled with audio supplied through gstreamer. This exhibited occasional glitches at a bitrate of 15 Mbps and more serious ones at 25 Mbps. We subsequently separated the video streams into independent channels, served by Wowza and synchronized at the client end upon reception. We are also working in parallel toward a similar option based entirely on gstreamer as a server. Although the first of these options permitted an increase of total bandwidth to three parallel video streams of 15 Mbps each, apparently stable, glitches still occur at 25 Mbps per stream, at which point, synchronization errors also became evident. Since there does not appear to be either a CPU or network limit reached in this case, we have been investigating possible causes, including the question of a bottleneck in the Wowza server, and have also contacted Adobe for help in tracking down other potential factors, such as limitations of the GPU for H.264 video decoding of parallel streams at that bandwidth.

2. Hardware technology used in the Opera Recording

- For recording the opera singers standing in a fixed position with music stands, the camera rig was used as described in the last progress report.
- For the experimental recording of the opera singers moving around on stage, the camera rig was moved as the singer it was replacing would move. Where that singer was part of a couple moving together, it was important to keep the other member of the couple on camera at all times and at the correct distance to remain in focus. As shown below, a handle was attached to the camera rig so that this person could hold it and remain in the correct position while the camera rig moved.



3. Hardware technology used in the Student Workstation

Touchscreen monitor

- Delivery of the Bluecube 17" touchscreens was delayed and regular monitors with a mouse were used on an interim basis.

Monitor mount and lift mechanism

- The final design delivered by Melnik Resources Ltd. is shown below.



2. Project Development & Activities

1. Record function operational

Status: Complete

2. Comments indexed to score and both retrievable from database (not ability to write comments, but to index a comment to a location in the score)

Status: Complete

3. Video and audio editing complete (Jazz)

Status: Complete

4. All video and audio recordings in database (Jazz)

Status: Complete

5. Audio editor complete

Status: Abandoned

This was abandoned due to user group input that it is not required.

6. Database tested under load

Status: Delayed to April 2011.

Delayed since it requires workstations at partner institutions to be fully operational which was just accomplished at end of February.

7. Expert system complete to display differences between user and expert performance

Status: Delayed to August 2011.

As one can imagine, this is a very complex system that requires additional development time.

8. Evaluation documents complete for video, audio and score playback, audio record and audio mixing console

Status: Delayed to April 2011.

Delayed since it requires workstations at partner institutions to be fully operational which was just accomplished at end of February.

9. Recorder and audio mixing console demonstrated for CANARIE staff

Status: Complete

New Deliverable Added:

10. Opera recording using moving camera

Status: Complete

3. Project Plan

The project has followed the plan outlined in the SOW and the last progress report with the following exceptions:

1. Touchscreen

As mentioned above, delivery of the Bluecube 17" touchscreens was delayed. This is a new product that is not yet available on the market, but we were to receive five pre-production touchscreens. There was an initial delay of two months due to late delivery to the manufacturer of parts from Taiwan. Then the manufacturer discovered that the touchscreen did not meet its performance specifications. This was presented as a problem which would be solved within a couple of weeks, but after a month, it was decided to use regular monitors with a mouse on an interim basis. If the Bluecube monitors are not delivered by April, another touchscreen solution must be found.

2. User workstations

Delivery of the user workstations was delayed due to the touchscreen problem described above. The workstations were finally delivered in February and were operational by the end of that month at McGill, the National Arts Centre and Humber College. Unidentified software or network problems were causing video playback problems at UBC and the Banff Centre.

3. Recording and testing schedule

The opera voice recording sessions took place at UBC on January 8, 9 and 10. It is anticipated that the classical orchestral recording will take place at McGill in the early fall.

The testing was delayed due to the touchscreen problem described above which in turn delayed delivery of the workstations. Testing at McGill, the National Arts Centre and Humber College began in March. There is some concern that the lack of a touchscreen and the resulting use of a mouse to turn the pages of the score while playing will negatively impact the results of the testing.

Deliverables – August 31, 2011.

The deliverables on August 31, 2011 are:

1. Database tested under load
2. Expert system complete to display differences between user and expert performance
3. Evaluation documents complete for video, audio and score playback, audio record and audio mixing console
4. Workspaces for user and instructor implemented
5. System demonstrated at Canada 3.0 and BCnet conferences
6. Audio comments and written comments on score implemented if suitable touchscreen available

Deliverables – December 31, 2011.

The deliverables on December 31, 2011 are:

7. Video and audio tracks converted for simplified mode
8. Evaluation documents complete for expert system, comments and workspaces
9. Simplified mode player complete
10. Final system complete
11. System documentation and user instructions complete
12. Evaluation documents complete for simplified mode and final system
13. Final system demonstrated for CANARIE staff, Press, RISQ and international conferences

4. Updated Claim Forecast

The actual cash flow summary, with actuals and forecasts for the remaining claim periods, is attached as Appendix 1.

5. Intellectual Property

There was no Intellectual Property developed during the reporting period.

6. Communications

There were no communications related to the project that took place during the reporting period.

7. Web Site Information

The project web site address where documentation is being maintained is:

http://canarie.mcgill.ca/project_nep2_index.html