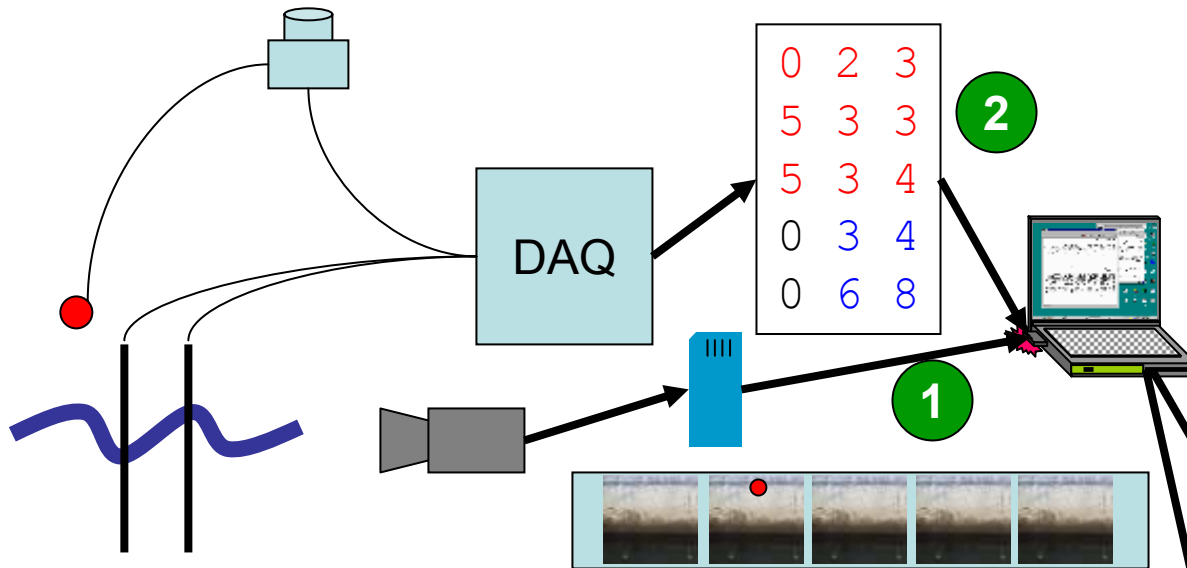# Oregon State Experiment Based Deployment: Synchronized Video

Harry Yeh,
Oregon State University

Charles Severance,
University of Michigan

September 11, 2003

Experiment Setup

- **An LED was added to be visible in the video frame which was connected to a button which would signal the "start of the experiment" (1)**
- **This signal was also patched into the DAQ (channel 15) (2)**
- **A person was stationed at the DAQ and at the video camera to manually start both processes. (3)**
- **Both DAQ and Video capture were manually started about 10 seconds before experiment start.**
- **The experiment was run for about 60 seconds at which time both the video and data acquisition were manually stopped**

Manual processing of the data

0	2	3
5	3	3
5	3	4
0	3	4
0	6	8

DAQ

2

1

NEESpop 2.0 Alpha

Metadata

3   **4**

| Time | ch01 | ch02 |
| 0.00 | 3 | 4 |
| 0.01 | 6 | 8 |

Mpeg video data was moved to a PC using a memory stick and the DAQ data was transferred into Excel.
• (1) The video data was trimmed using Pinnacle Studio to discard the frames before the trailing edge of the LED signal.
• (2) The DAQ data was discarded through the trailing edge of the LED signal
• (3) A time channel (100hz) was added and the data channels were extracted and placed in the NEESpop
• (4) We put meta data into the NEESpop (neesevent.xml) describing the event and channels (this was done before the experiment was started)
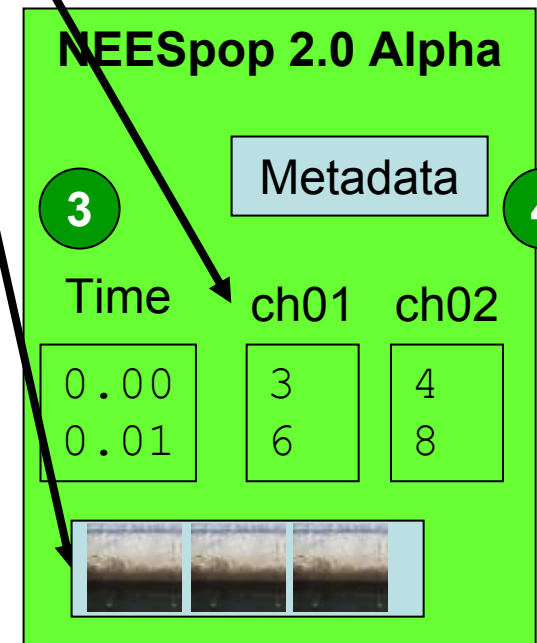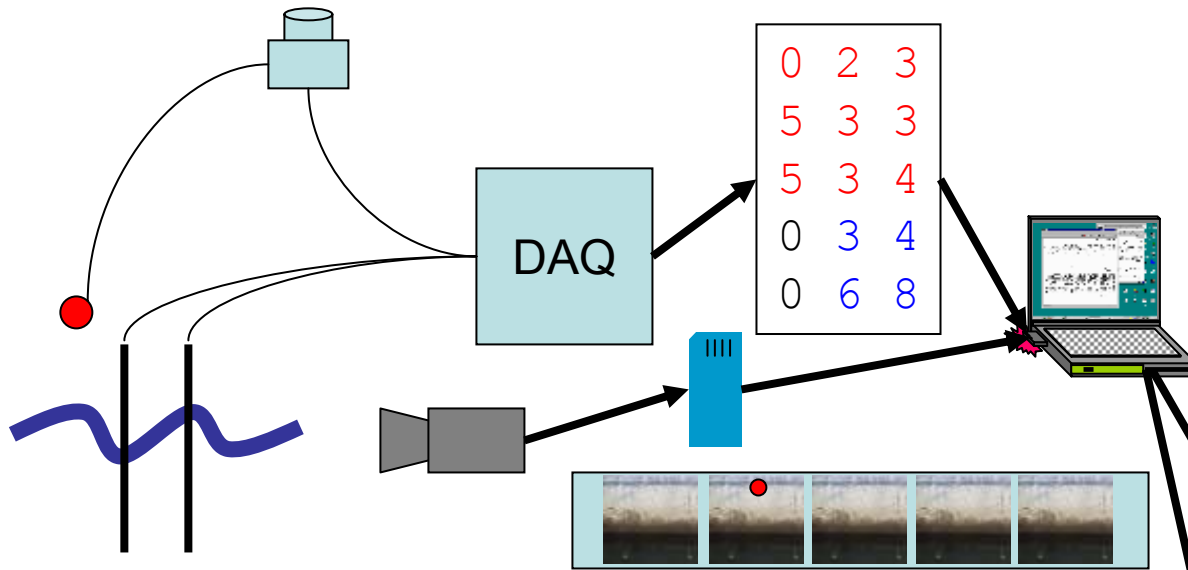
The experiment was viewed using the standard NEES stored viewer with synchronized video and data and the ability to move back and forth
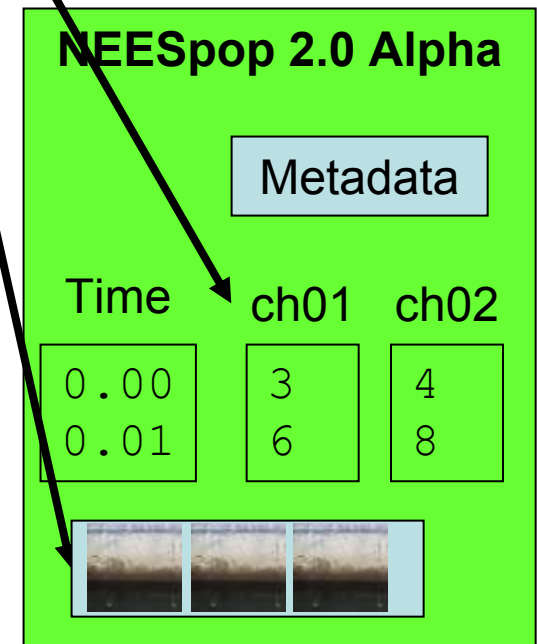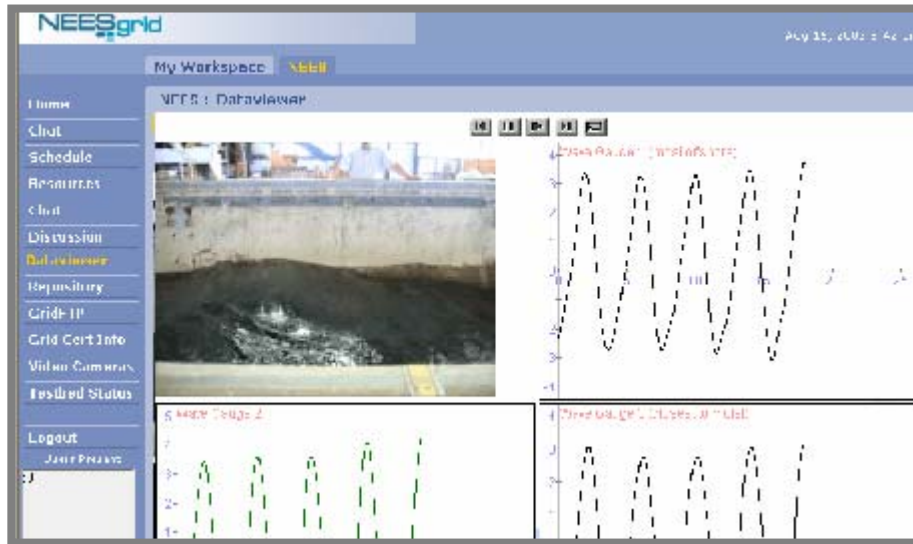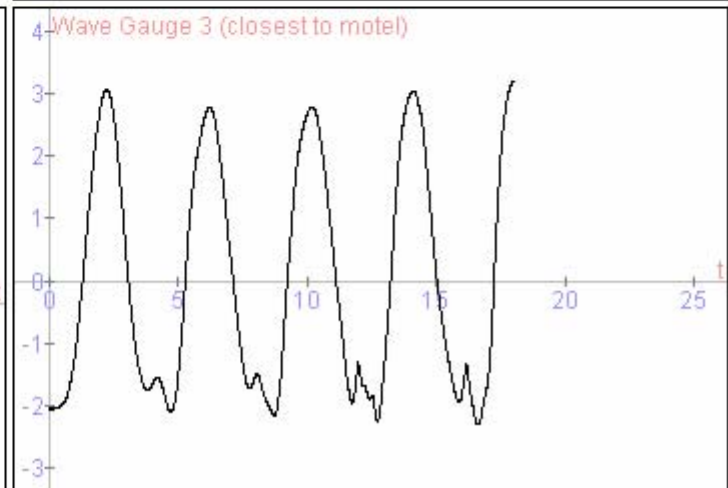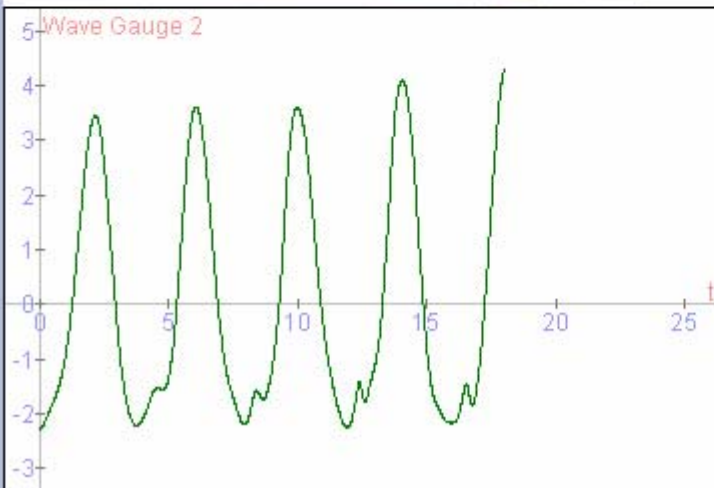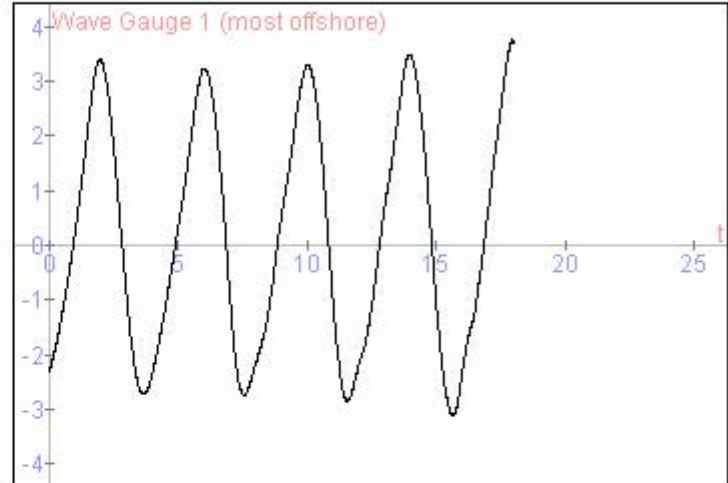
DAQ

0	2	3
5	3	3
5	3	4
0	3	4
0	6	8

NEESpop 2.0 Alpha

Metadata

Time	ch01	ch02
0.00	3	4
0.01	6	8

Observations

- The manual portion of the experiment took about 15 minutes (i.e. the experiment could be viewed 15 minutes after it happened)

- This used the existing SI components available in the NEESpop in a new and different way

- The system used for video editing needs to be a faster computer with plenty of memory (my portable with 256Mb was not enough)

- The manual way of doing this would get very old quickly ☺

Identified Design Needs

- Straightforward things which can be done relatively easily – possibly even by the 2.0 release
  - Add the ability to the NEESgrid data viewer to receive columnar data in a single file rather than separate files.
  - Add the ability to the NEESgrid data viewer to manufacture a timescale for data using meta data (i.e. – this data is 100Mhz data)
  - Automatically upload the DAQ data, video data, and experiment metadata to the NEESpop using the ingestion tool
- Significant development efforts
  - Add the ability to capture the video data using a dedicated computer based on the trailing and rising edge of a signal – this is significant development work – it will require custom developed video capture software as well as simple DAQ capabilities on a dedicated computer system – this would be probably about 2-3 months of full-time effort
  - Add the ability to automatically start and stop data acquisition based on a button (i.e. sample at 100hz starting on the trailing edge of Channel 15 and ending on a rising edge of Channel 15 after at least 2 seconds of data has been captured) – unknown effort level

Summary

- This was an excellent example of the benefits of ED in that we were able to accomplish interesting results quickly and in the process identify needed improvements to the SI software

- What we have done here would apply directly at Minnesota – they have very similar requirements but will need complete automation

- Thanks to …

Go Forward Plan

- Note: This will be revised between now and the awardees meeting as we complete milestones
  - Harry will identify the system administrator of the OSU NEESpop and get Chuck a root account.
  - Chuck will install NEESpop 2.0 on the OSU server and move the experiment information to that location
  - Chuck will configure the OSU NEESpop so that it looks nice and points to the existing Oregon IT efforts and Oregon data efforts once this is done, we will send a note out to the SI and ES sites to take a preview of the work.
  - SI team will implement the "straightforward" changes before the 2.0 release (Chuck will lead this – this will be done by UM and NCSA staff)
  - Chuck will come out at least one day early to the meeting to make sure that we have a "stored" experiment in place for the meeting.
  - SI + OSU + Minnesota will work together on the more complex issues and develop a plan for tool development – we welcome others to be involved (Chuck will get this effort started)

To Play

- http://neespop.si.umich.edu:8084/chef/

  Log in - Join the NEES Group, select Data Viewer, the Oregon Data and add channels. If you have never run the viewer you will have to install the Java Media Framework and Sun JRE.

- This will soon be moved to the OSU server.