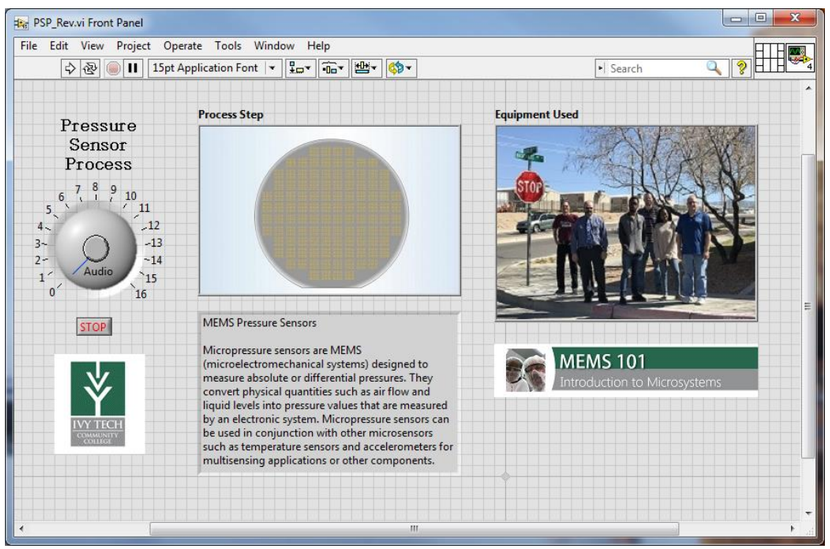
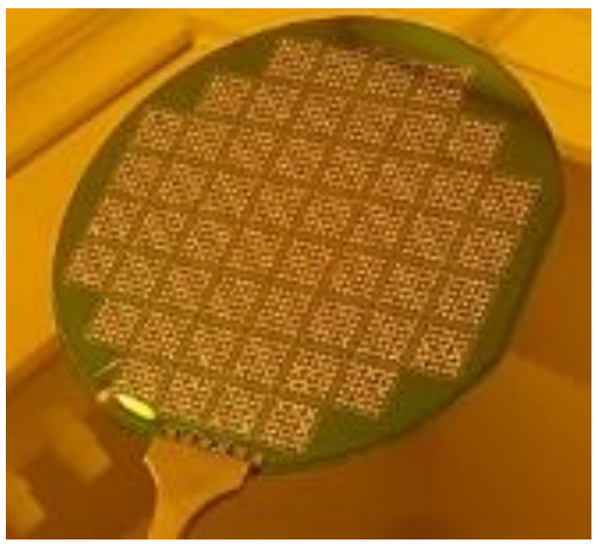
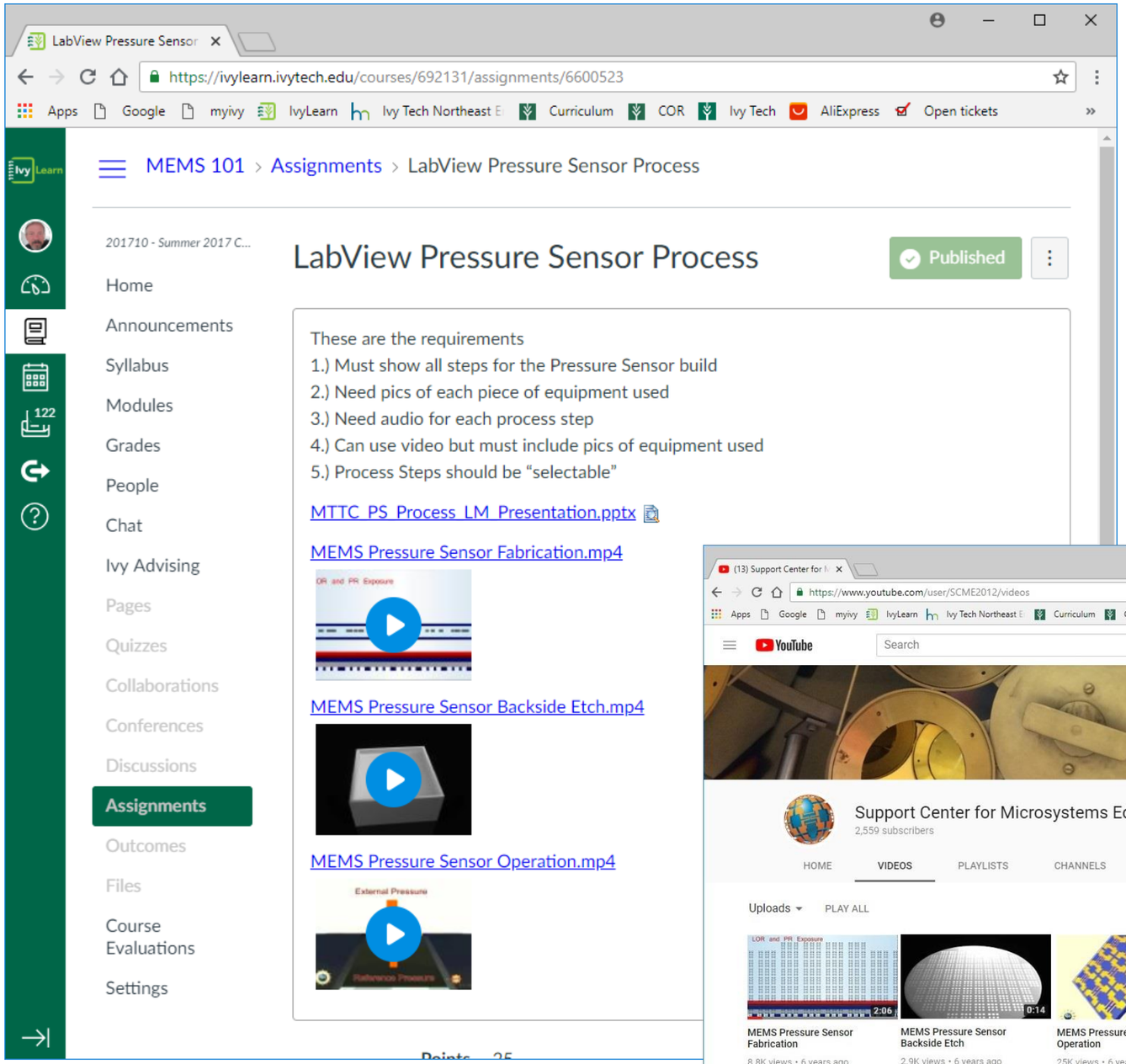
Using LabView to Teach MEMS Fabrication Process
(DUE 1400470) Ivy Tech, Northeast – Engineering, Andrew Bell

Abstract – This poster will discuss the development of a teaching aid using LabView. The MEMS fabrication process for the Pressure Sensor Process is created with the help of SCME and contains audio, process step and equipment pictures. The LabView program was developed based on student work in the MEMS 101 – Introduction to Microsystems course developed at Ivy Tech Community College, This course introduces students to MEMS fabrication and LabView programming. The program can be downloaded for free as an executable program @ http://www.ivytech-mems.org/files/PSP Install.zip





MEMS 101
Introduction to Microsystems

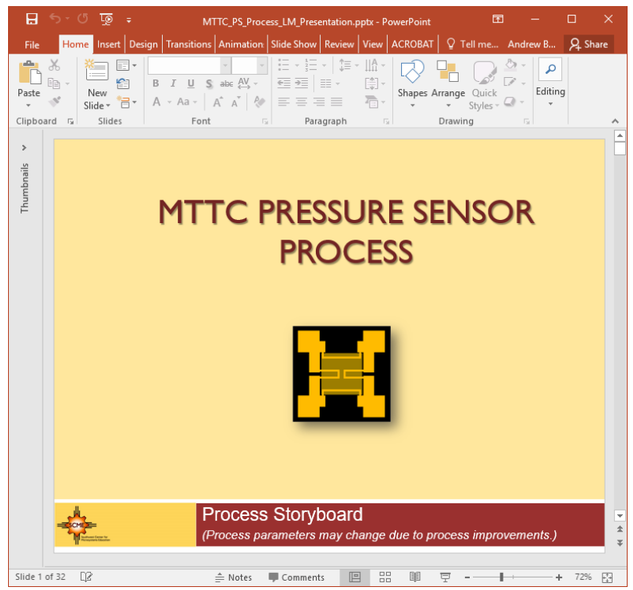


Assignment – develop a LabView program that captures the Pressure Sensor (Fabrication) Process

It should include

1.) pictures of the process steps
2.) words that describe the process steps
3.) pictures of the equipment used for each step
4.) audio for each step
5.) process steps should be "selectable"

Video would also be nice.

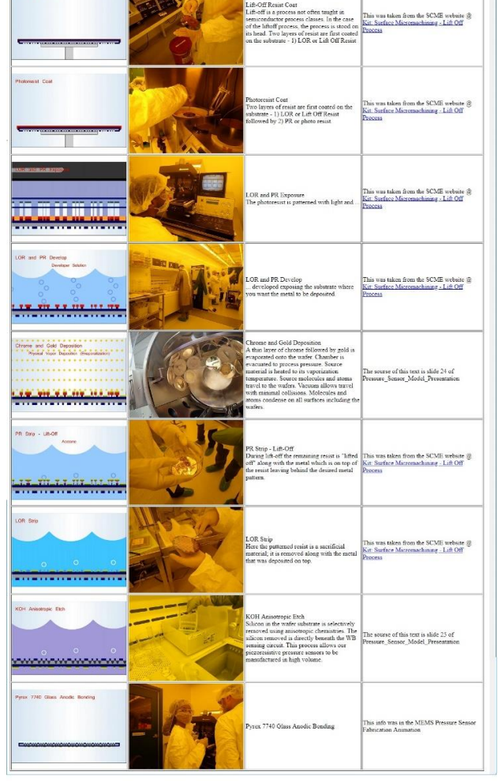


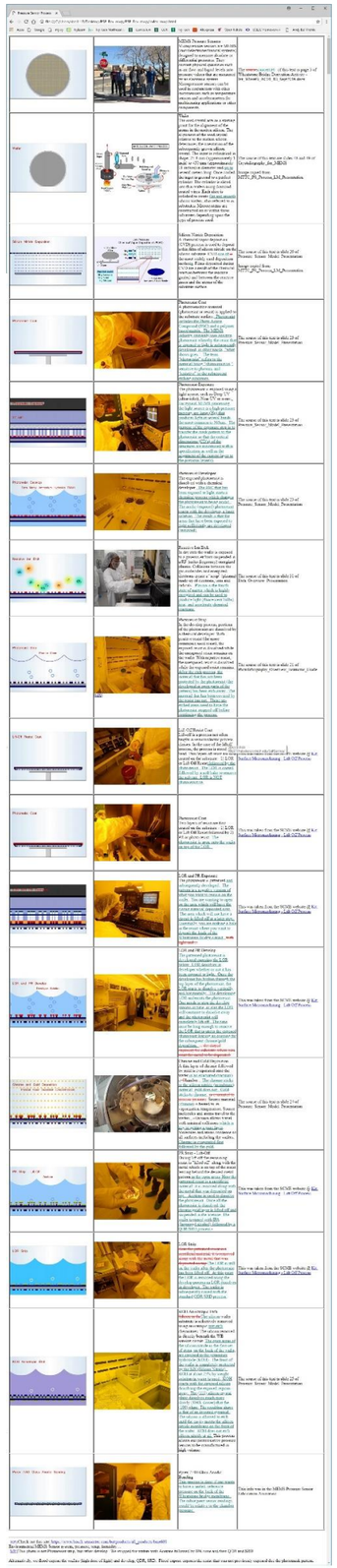
https://www.youtube.com/user/SCME2012/videos
http://scme-support.org/index.php/category-02/mttc-pressure-sensor-process/mttc-pressure-sensor-process-presentations

Pictures of the process were captured from the MEMS Pressure Sensor Fabrication YouTube video using Camtasia Studio

Picture of the equipment were taken from photos taken at SCME in the spring of 2016.

Text was collected from multiple sources from SCME and a free online Text to Speech program was used to create audio files using the English Daisy voice. Audacity was also used to edit the sound files as needed.





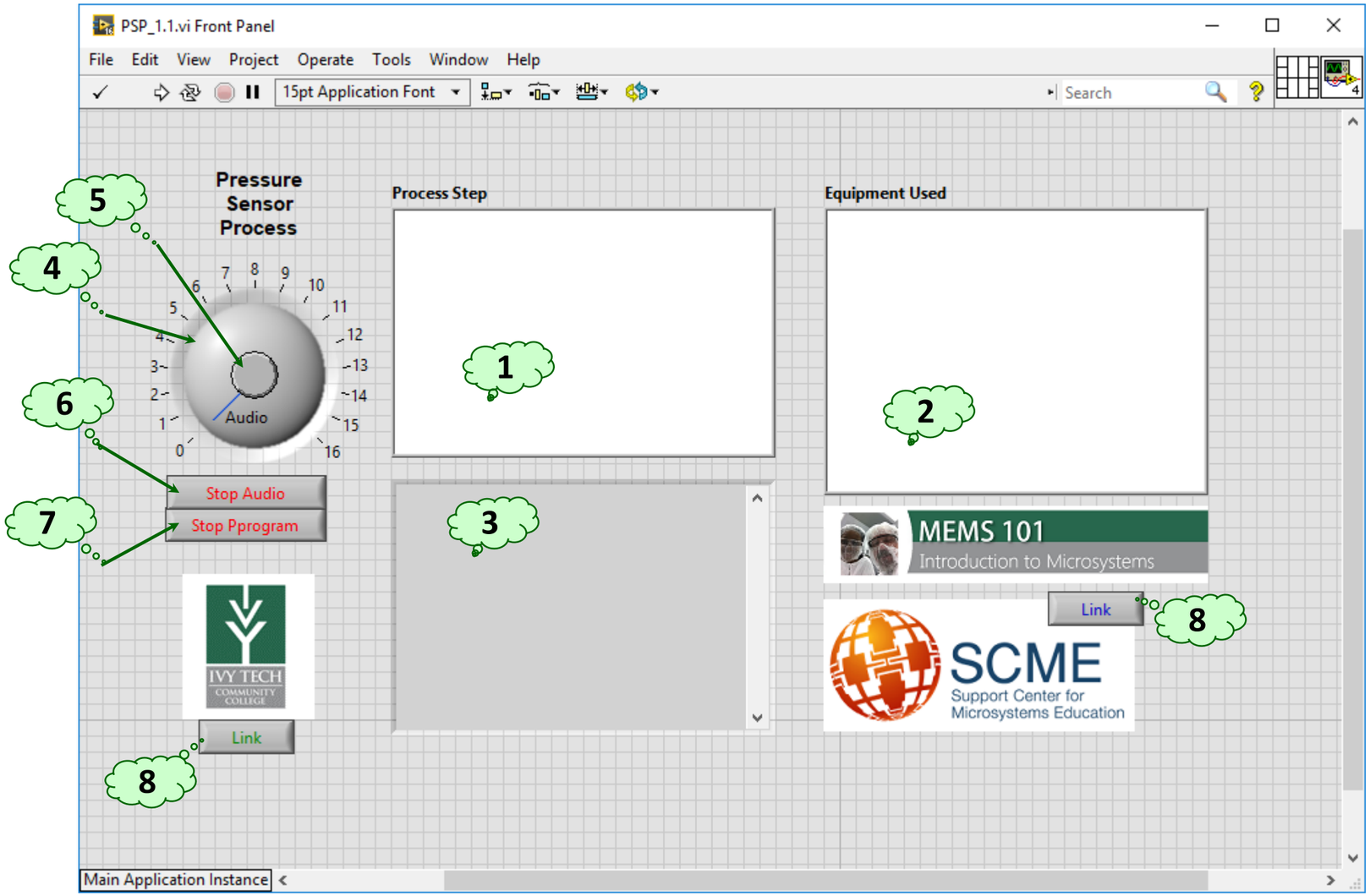
SCME was asked to review the information and they (Matt Pleil) provided additional information and corrections.

Information was shared via email and a html file with links to photos was provided.

Once all the process information was collected a LabView GUI was created that showed

1.) The photo of the process step
2.) The photo of the equipment (with students)
3.) A Text Box of the Process Step information
4.) A Process Step Selector knob was added
5.) An audio enable button was added to play wav files
6.) An audio stop button was added to stop the audio output
7.) A stop button was added to terminate the program
8.) Several cool link buttons
for more info

LabView GUI



SCME

LabVIEW

LabView Program

1.) Uses 17 Case Structures to access 17 sets of data

2.) Application Directory VI

3.) Build Path Function

4.) Read JPEG File VI

5.) Draw Flattened Pixmap VI

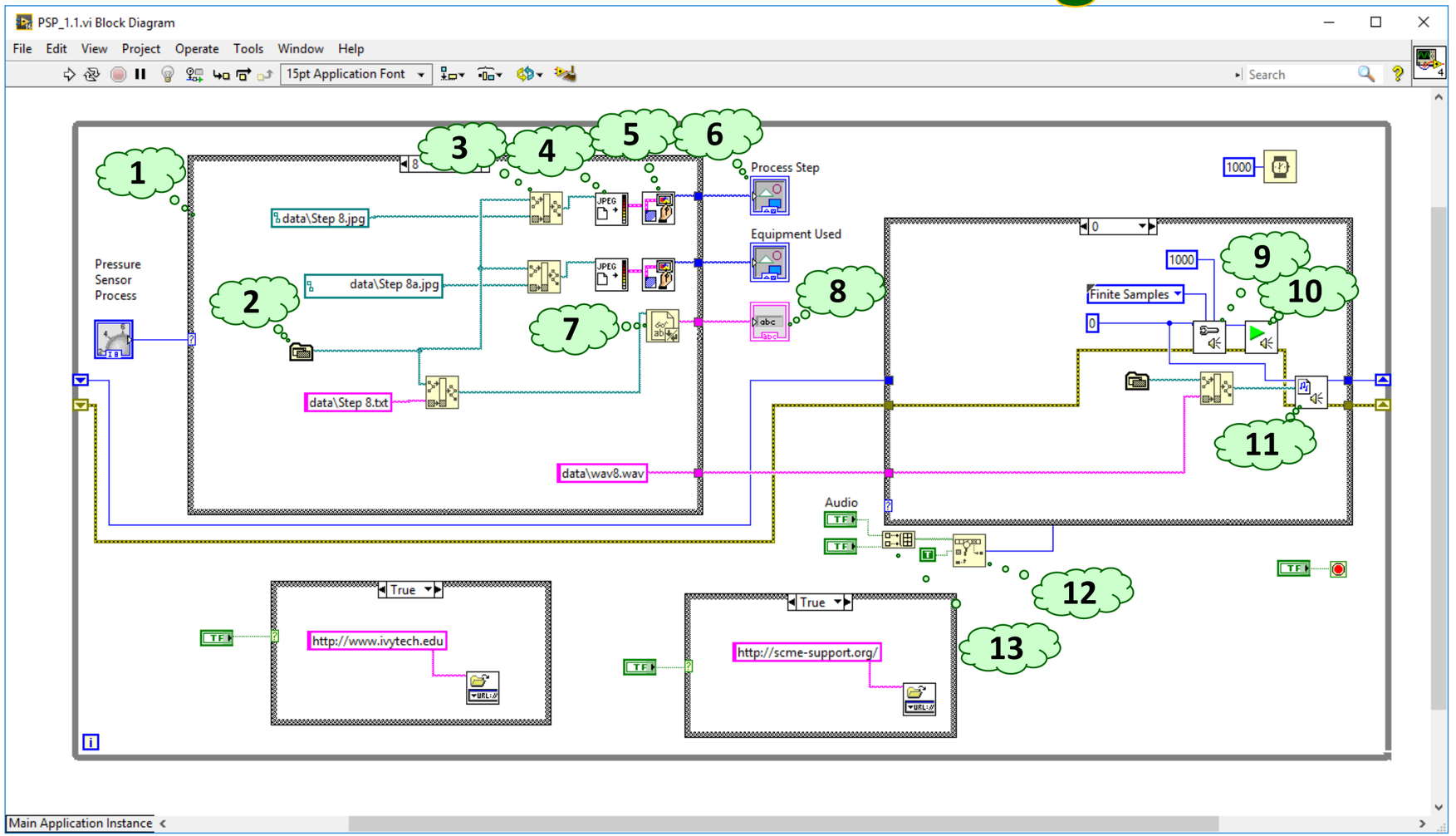
6.) 2D Picture Control

7.) Read from Text File Function

8.) String Indicator

9.) Sound Output Configure VI

10.) Sound Output Start VI



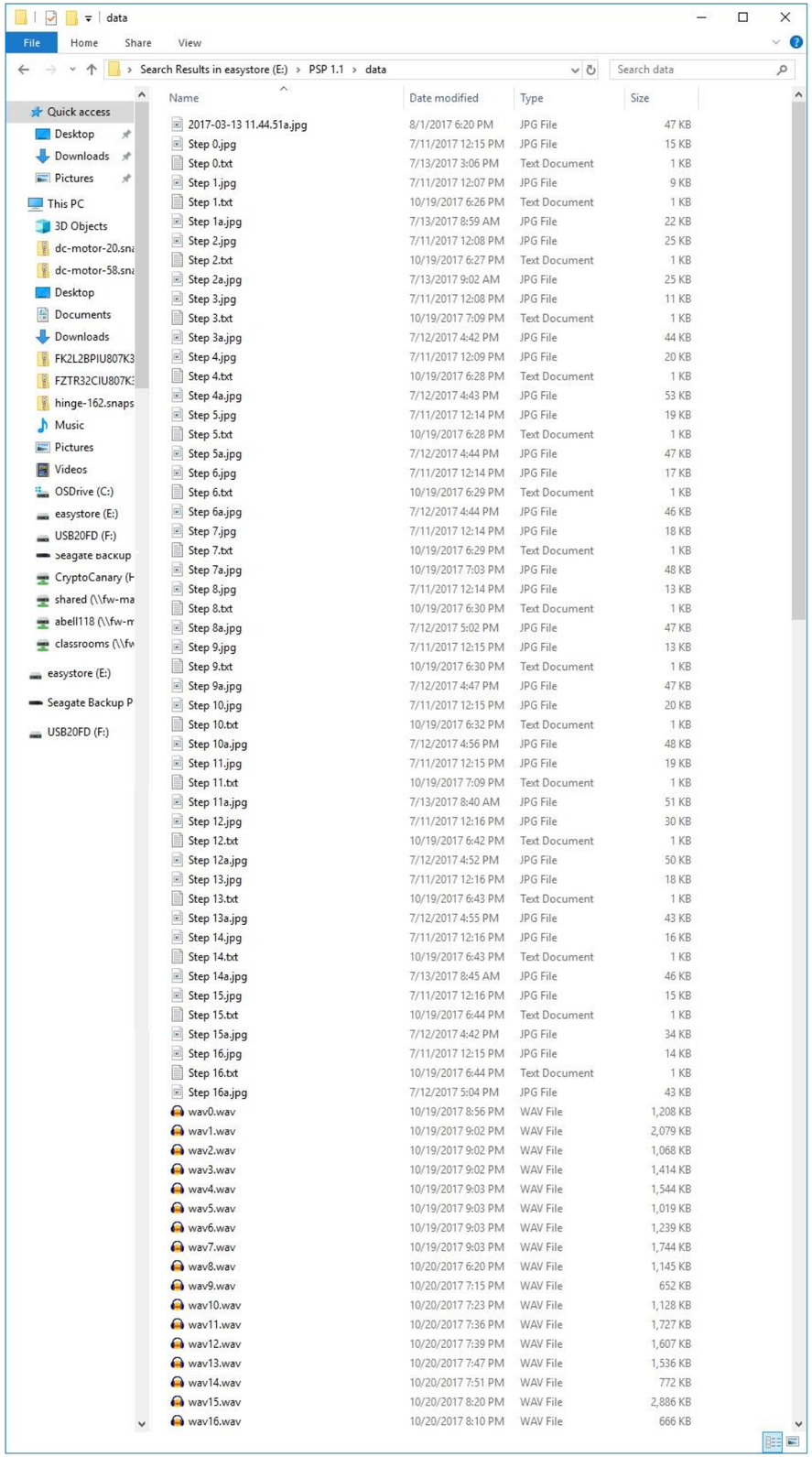
11.) Play Sound File VI

12.) Search 1D Array Function

13.) Build Array Function

An install file is created that contains an executable program with all the support files to include all the data files and runtime file so you DON'T need LabView to run

These are all the data files included used in the program. The are 68 files used to create the content of this learning module program …



An install file is created that contains an executable program with all the support files to include all the data files and runtime file so you DON'T need LabView to run. Install program is 220MB and runs on a Windows platform.

Current version will install on your computer and create an Icon that will launch the Pressure Sensor Process Program (PSP_1.1.exe).

http://www.scme-nm.org/
http://scme-support.org/
http://www.ivytech-mems.org/
http://faculty.ivytech.edu/~abell118/

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