

## **Eastern American Choral Directors Association, Baltimore 2014**

An Interactive Qualifying Project completed in partial fulfillment  
Of the Bachelor of Science degree at  
Worcester Polytechnic Institute, Worcester, MA

Submitted to:  
Professor John F. Delorey, Advisor

In Cooperation With:  
The American Choral Directors Association Eastern Division  
Professor Robert Duff, President

	By
Mike Calder	Computer Science Class of 2015
Tianhai Chang	Electrical and Computer Engineering Class of 2015
Adam Chaulk	Electrical and Computer Engineering Class of 2015
Mike Derryberry	Electrical and Computer Engineering Class of 2015
Seth Gyebi	Electrical and Computer Engineering Class of 2014
Zhenyan Li	Mathematical Science Class of 2016
Shamiah McDonald	Electrical and Computer Engineering Class of 2015
Nicholas Mollica	Computer Science/IMGD Class of 2015
Martin Phelan	Biomedical Engineering Class of 2015
Christopher Tibbetts	Computer Science Class of 2015
Yiran Zhang	Actuarial Mathematics Class of 2015
Yixuan Tong	Biomedical Engineering Class of 2015

Date:  
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*This report represents work of WPI undergraduate students submitted to the faculty as evidence of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review. For more information about the projects program at WPI, see <http://www.wpi.edu/Academics/Projects>.*

## **Abstract**

The objective of the “Eastern American Choral Directors Association, Baltimore 2014” Interactive Qualifying Project is to integrate music and technology through an application and to provide a technical kiosk at the conference. To assist in the conference members of this project prepared months in advancing researching. This report shows information accumulated through research and feedback about the application, which can serve as a guide for future conferences.

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## **Introduction**

Since 2005, the Eastern Division of the American Choral Directors Association has sponsored a WPI IQP team for research at their division conferences. For each conference session, the IQP teams have in some way been involved in researching how choral musicians interact with technology. Through the use of Technology Kiosks, WPI students have suggested interfaces and designed surveys to poll conference attendees on topics such as the Virtual Choir, Virtual Orchestra, Paperless Reading Sessions, Paperless Choral Classroom and Online Choral Databases.

This year, the conference engaged a professional company to design and implement a mobile app for the conference. WPI was charged with research the application and assist in trouble shooting during the conference. EACDA collected the data from the in-app survey on the success of the application at the National level and will present this data to the WPI students when assembled. In addition, the students designed, implemented and staffed a Technology Hub for the entire conference, February 4 – 8, 2014, which showcased the research being done at WPI in the field of choral music and technology, featuring Dr. Scott Barton and his musical robots.

## **Background & Research**

### **Previous Paper Review**

The first task we had to do to prepare for the Conference was research the previous IQP papers which were uploaded on Dropbox by Professor Delorey. Each person was responsible for individually reading all four of the IQP paper from the previous years. Each of project members was asked to review IQP papers regarding the interface between technology and music and other fields. The goal of reviewing previous project was to get familiar with projects and to figure out where to improve.

The New York City group focuses on the relationship between music and technology. They create maps of the local care and to construct the ACDA schedule. All the information was up on their kiosk.

This project also investigate ability use e-ink technology to alleviate the paper used by choral musicians, the results demonstrated people were enthusiastic about the digital choral folders, but there was an issue of which way the pages should turn and the group recommended the following groups to solve this problem.

There is also a project done about the Virtual Choir. The group used the work Spem in Alium by Thomas Tallis for their example; they programmed the virtual choir to perform the 40-part piece. They were successful in programming the piece of music, but there was still more to be done regarding the development of the program.

The group in Hartford focused on score projection. Music educators were given hardcopies of some music while the rest of the music was screens. When there was a hardcopy of the music, the participants rarely watched the conductor, but with the projected scores participants were more likely to observe the conductor. The delay with the page turning was another problem that arose.

There were also groups focused on the exploration between music and technology with respect to choral directors and education. They also present the continued research that is done by WPI students and faculty.

The project of “towards a paperless choral classroom” was also done by a group of WPI students previously. The goal is to integrate music and technology and to provide a template for a paperless choral conference for EACDA. The group suggested to use routine choral practices and can serve as a guide for future choral conference.

## **Websites**

The ACDA is located several places in the country. It is divided into many sub-groups around the country by area. And there is own website for each sub-groups. Users or members can log in the website that is included as there area. With reviewing and testing each websites, the group members there find it still many places to be improved. But still, the website provides a briefly indication of each states and technological endorsement from the respective boards.

## **Equipment List**

In order to get the best working assistance and improve working efficiency, we need to have proper equipment with us in the conference. Each group did the research and made presentation to show their idea. The draft of equipment list and the cost were is shown in appendix B. Considering about the cost, after we negotiated with LNL and ATC department, we finally modified the equipment list as you can see in appendix B, and all of the equipment was provided by Professor Delorey, EACDA and ATC.

## **Application for Conducting**

During the conference, every audience could use different electronic device to access online to read about the conference. We want to give them the best web experience, so we try to test file in different platforms and see what is going on there. Each group designed and test a PDF with the application for conducting form. We have 10 people fill out the form online on at least two different platforms (Mac and PC) , three different browser and use Tablets and phones as well. The form is shown in appendix B.

## **Curate R and S:**

We classified the recommended music by R and S chairs excel chart into six PDF forms, which

are Advanced SATB, Beginning and Intermediate, Children and Youth, Junior High – Middle School, Male Choir, and Women’s Repertoire. We used the same layout in order to be more convenient and legible.

### **Master Schedule:**

The old master schedule was arranged by time, but it hard to compare day by day and which conferences will hold in the same time and different locations. We want to give audiences a more clear schedule to help them can figure out their own schedule during the conference. We transferred the Master Schedule into Google Spreadsheet, which is a more readable format. People can select specific time to show what activities will help at this time. The online version of mater schedule is more flexible than the old word file. People could clearly see what is going on during the same time and choose what activity they want to participate in these days.

### **YouTube Conversion:**

For the objective and fair consideration, we want to convert each candidate’s application video to a common YouTube account without their names. We uploaded and converted the video onto YouTube. First we Checked out YouTube link was private or not. If it was private, we contacted candidates by email to get permission of the video. Second, we downloaded the video and uploaded to our YouTube account without candidate’s name. Lastly, we copied the video’s link and send out in email to examine.

### **Interview Professor Manzo:**

We interviewed professor Manzo to get more information about music and technology integration. Nowadays, technology makes sharing and learning music easier than before, like how technology can help people are disabled to learn and play music. He is really interested in how technology can help people who are not musically trained. He suggested the conference to have a lot of application open for people to interact with, to help us spark question about technology.



**App critique:**

We did some research and tried the App for the Conference and came out the feedback. The App was very intuitive and easy to use. First, it was not very tablet & iPad friendly. When one opened it on the tablet, the size and layout of the icons did not change according to the size of the screen. But it seemed normal when opening in the smartphones. Second, we had trouble logging in. Third, the map was vague for people to find the location.

## Methodology

A significant portion of our project was based around critique of the app used for the Eastern Division conference for the ACDA. The app was used to provide information about the conference to members, as well as allow them to keep track of events that they wanted to attend. The app used was created by the company GenieConnect, a company based out of the UK. Their app is designed to be used at conferences like the one we attended.

This guidebook app was used pretty extensively by people at the conference, and many of them came to the tech booth with questions or asking for help. The main question we received was how users were supposed to log into the app. This could have been made a lot clearer by allowing people to sign up for the app rather than pre-assigning login information. User logins were determined by combining last names with ACDA member numbers, and all members were assigned logins regardless of whether they were attending the conference. Only people with access to the GenieConnect system were able to make changes to the logins, and very few people had that access, meaning it was difficult to get people from other divisions into the app. Not being able to log in left the user with limited functionality.

The app had a number of features for conference goers. For example, a list of all activities at the conference, with their times and locations, was provided; users could sort by type (such as interest session or honor choir rehearsal), select an activity to view more detailed information, or favorite interesting activities so that they could be easily looked up again later. The app also offered the option of commenting/rating a session they had attended to give feedback.

Another feature the app featured was a detailed map of the local area showing the locations of the hotel and possible restaurants that conference goers might visit in between sessions; similarly, floor plan images for the hotel were included. This helped significantly because the conference was very spread out making it nearly impossible to navigate by oneself.

Another notable issue was the prevalence of updates to the app during the

conference. Since the updates did not download automatically and the update button was not obvious to the average conference-goer, many of the users were frequently navigating the conference based on outdated information.

## **Conclusion**

Overall, the app provided a useful resource for choral directors to get the full conference experience. Manning the tech booth allowed us to provide support for the application as well as solving any other technical problems that arose. This app allowed easy access to all of the different schedules, detailed maps of the hotels and the area nearby, and a flexible system for sending out updates. The two years of planning for this event showed in how smoothly the conference ran throughout the four days. The overall project was deemed a success by the heads of the Eastern American Choral Directors Association.

## **Appendix A**

### **Inventory**

We were able to keep inventory by making a check in and check out list that we signed off our initials for when we loaded one of our group members' car with the equipment and when we unloaded it. This was an easy and simple way to keep track of all the equipment that we had. This also helped us to organize our equipment a lot faster than trying to figure what equipment was ours and what was not.

We divided the sign off list by who provided the equipment to us, thus we came up three different categories. The first was the equipment provided by the ATC, second equipment provided by Prof. Delorey and third equipment provided by LNL. Each department we got equipment from had their stuff labeled so it was easy to keep track of which piece of equipment belonged to whom. This also helped with organizing everything back together and helped us not to get confused with the equipment provided to us by the EACDA.

**Table 1: Equipment Checklist**

<b>Equipment List</b>				
<b>Equipment</b>	<b>Provided By</b>	<b>Number</b>	<b>Check In (Initials)</b>	<b>Check Out (Initials)</b>
Projectors	ATC	2		
Cameras	ATC	4		
Tripods	ATC	4		
Headphones	ATC	4		
HDMI Cable	ATC	7		
Extension Cable	JFD	4		
Sound Board	JFD	1		
Printer	JFD	1		
Paper	JFD	1 Ream		
Booklight	JFD	1		
Printer USB Cable	JFD	1		
Printer Power	JFD	1		
Headphones	JFD	7		
Holiday CD	JFD	3		
WPI Orchestra	JFD	2		
The Singing	JFD	1		
Music @ WPI	JFD	n/a		
XLR Cables	JFD	n/a		
SM57 Mic	LNL	2		
MD 421	LNL	3		
Small Diaphragm Condenser (AKG C100)	LNL	2		
Large Diaphragm Condenser (KSM 27)	LNL	1		
Boom Stands	LNL	5		
Cables	LNL	7		
MK2194	LNL	2		
Xenxy 1204	LNL	1		
Macky Mixer 1202	LNL	1		
Countryman DI	LNL	1		
AMP7	LNL	1		

## Appendix B

### Audio/Visual Equipment List

- 12 iMac      Size: 27 inch      Cost: 1,799 per computer
- 3 Vizio Smart TVs    Size: 50 inch    Cost: 650.00
  - Can connect TV directly to internet, to use different apps such as YouTube
- USB 2.0 A to A Cable              Size: 6ft      Cost: 4.99
- Pyrepro Microphones    cost: 11.00
- Yamaha CM12V Speakers      Size: 12 inch      Cost: 360.00
- LP- 2020A Mini Amplifier      cost: 20.74
- AudioSource AMP-100              cost: 130.25
- HDMI Cables: Would need about 15 in total
  - Apple HDMI Cables              Size: 6ft      cost: 20.00
  - Home Theater 2841 HDMI Cable      Size: 25ft      Cost: 17.00
  - HDMI Adapter for iPad    Cost: 20.99
- Belkin Pivot Plug Surge Protector      cost: 35.00
  - 12 plugs per Surge Protector, would need about 3 surge protectors
- Asus RT-AC66U Dual-Band Wireless- AC1750 Gigabit Router      cost: 184.99 per router
  - 4 ports each router, would need 4 routers
- Panasonic RP-HTF600-S Headphones    cost: 29.90

Figure 1: Draft Equipment List

Table 2: Final Equipment List

Equipment List		
Provided By ATC	Provided By Delorey and Team	Provided By EACDA
7 HDMI Cables	Laptops	Workstations
4 Video Cameras	4 iPads	TV Screens
4 Tripods	4 Wireless Microphones	Speakers
2 Projectors	4 Microphone Stands	Extension Cords
4 Headphones	Extension Cords jfd	Power Strips
	4 Power Strips	Appropriate Cables
	Mixing Board	Internet Connection/ Router
	XLR Cables	Network Switch
	5 HDMI Cables	
	8 Headphones	
	3 HDMI Splitter Cables	

NCCO Conducting Masterclass with Joseph Flummerfelt, NCCO National Conference

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ St/Pr: \_\_\_\_\_ Postal Code/Zip: \_\_\_\_\_  
Preferred Phone: \_\_\_\_\_  
Email: \_\_\_\_\_  
College/University: \_\_\_\_\_ Degree Sought: \_\_\_\_\_  
Current conducting teacher(s) \_\_\_\_\_

Are you a member of NCCO? ☐ Yes ☐ No

Have you participated in previous Masterclasses? If yes, which and when?

\_\_\_\_\_

What are you hoping to gain specifically from participating in the Masterclass?

\_\_\_\_\_

Please include the email and/or telephone numbers of two references:

1. Name: \_\_\_\_\_  
Email: \_\_\_\_\_ Phone: \_\_\_\_\_  
2. Name: \_\_\_\_\_  
Email: \_\_\_\_\_ Phone: \_\_\_\_\_

Figure 2: Application for Conducting PDF Form

## Appendix C

### Presentations

The iTeam:



Introduction





Work Done So Far...





The iTeam  
Yixuan Tong  
Yiran Zhang  
Shamiah McDonald  
Tianhai Chang  
Advisors  
Professor John Delorey  
Professor Scott Barton  
Sponsor  
Professor Robert Duff  
President, ACDA Eastern Division

- Paper Review
- Application for Conducting
- Tech Booth Suggestions
- Meeting Professor Manzo
- EACDA Master Schedule
- YouTube Conversion





Paper Review





- In this PowerPoint presentation we conducted our research by reading the previous years IQP paper
- In doing that we were able to make a presentation of our findings
- In last years IQP the groups wanted to improve the existing choral music library, ensure accuracy of database and bring technology to the conference.
- A lot of the previous year IQP research went into finding the best program to use for video conferencing and live webcasting.
- The paper had a lot of strengths including booth setup and their general research
- The paper also had some weaknesses which included consistency and the Genie Mobile application.





Tech Booth Suggestions





As a team we did a lot of research to find the type of equipment that we would and might need for the EACDA conference in Baltimore. With that Research done we created a list as shown below.

- 12 iMac Size: 27 inch Cost: 1,799 per computer
- 3 Vizio Smart TVSize: 50 inch Cost: 650.00
  - Can connect TV directly to internet, to use different apps such as YouTube
- USB 2.0 A to A Cable Size: 6ft Cost: 4.99
- Pyrepro Microphones cost: 11.00
- Yamaha CM12V Speakers Size: 12 inch Cost: 360.00
- LP- 2020A Mini Amplifier cost: 20.74
- AudioSource AMP-100 cost: 130.25
- HDMI Cables: Would need about 15 in total
  - Apple HDMI Cables Size: 6ft cost: 20.00
  - Home Theater 2841 HDMI Cable Size: 25ft Cost: 17.00
  - HDMI Adapter for iPad Cost: 20.99
- Belkin Pivot Plug Surge Protector cost: 35.00
  - 12 plugs per Surge Protector, would need about 3 surge protectors
- Asus RT-AC66U Dual-Band Wireless AC1750 Gigabit Router cost: 184.99 per router
  - 4 ports each router, would need 4 routers
- Panasonic RP-HTF600-S Headphones cost: 29.90





EACDA Master Schedule





As a group we were assigned to create the master schedule in a more readable format. So we chose to use excel to create somewhat of a spreadsheet that would lay everything out instead of having pages of listed events. The link for the schedule is <https://docs.google.com/spreadsheet/ccc?key=0Agmkj6tuwD0pDfIta3M2aU9JT2tH5IBpcDJGRZTQWQc&usp=sharing#gid=0>







Meeting Professor Manzo





- Prof. Manzo became very interested in music and technology integration when he was a teacher for k-12 and had a range of students at different levels in music
- He is really interested in how technology can help people who are not musically trained.
- Technology makes sharing and learning music easier than before
- Likes how technology can help people are disabled to learn and play music
- Suggestion for conference to have a lot of application open for people to interact with, to help us spark question about technology





## YouTube Conversion



## Conclusion



- Check out YouTube link is private or not. If it is private, we contacted candidate by email to get permission of the video.
- Download the video and upload to our YouTube account without candidate's name
- Copy the video's link and send out in email

- YouTube Conversion link:
- 1: <http://www.youtube.com/watch?v=p8fy4p0DyRI>
- 5: <https://www.youtube.com/watch?v=TJbGHwCHPE>  
<https://www.youtube.com/watch?v=dMYbA0wuYdc>
- 6: <https://www.youtube.com/watch?v=11JmhXKv-JM>
- 8: <http://www.youtube.com/watch?v=mLsgNmJY9Yg>  
<https://www.youtube.com/watch?v=A-dg5U7F3d4>
- 9: <https://www.youtube.com/watch?v=gm-WpgZul4s>  
<https://www.youtube.com/watch?v=QTKmd8mZLDA>

So far, for preparing for the conference in Baltimore, we reviewed and analyzed the previous IQP papers, made PDF for application for conducting, listed the equipments needed for Tech Booth, created master schedule spreadsheet, interviewed Professor Manzo and YouTube conversion.

We are looking forward to take part in and do our best to help make the conference a success in February.

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## Baltimore Superteam:



## Overview: A-term



### Work Summary Report

Zhenyan Li '16 Mathematical Science  
 Nicholas Mollica '15 Computer Science / IMGD  
 Martin Phelan '15 Biomedical Engineering  
 Christopher Tibbetts '15 Computer Science

#### Advisors

Professor John Delorey

Professor Scott Barton

#### Sponsor

Professor Robert Duff

President, American Choral Directors Association

- Researched previous year's IQP paper (Video-conferencing)
- Created a fillable PDF form for Application for Conducting
- Created instructions for participants to submit applications
- Revised form for final PDF

2



## Overview: B-term



## Research



- Discussed booth content based on past IQPs
- Met with LnL to create equipment list for Baltimore
- Created a new Master Schedule for conference
- Uploaded applicant videos to YouTube for privacy, anonymity

- Videoconferencing documentation
- '08, '10, '12, '13 IQPs
- Adobe documentation
- LnL consultation
- Original conference schedule

3

4



- PDF for Application for Conducting
- Equipment List
- New Master Schedule

## Team Purple Cobra:

### ACDA 13 IQP

Mike Calder, '15, CS  
Adam Chaulk, '15, ECE  
Mike Derryberry, '15, ECE  
Seth Gyebi, '14, ECE

Advisors:  
Professor John Delorey  
Professor Scott Barton  
Professor Vincent Manzo  
Sponsor  
Professor Robert Duff  
President, Eastern American Choral Directors Association

- A Term Overview
- B Term Overview
- Research
- Questions?

- Researched previous IQP Papers
- Tech- Booth
- Created a fillable PDF for Conducting Applications
- Created a Youtube guide for creating private channels

- Uploading applicants' videos
- Interview with Professor Barton
- Past IQP Paper Research

- Tech Booth Ideas
- Digital Choral Folder
- Brochures
- Musical Robots

## Agenda & Minutes

### EACDA IQP 1-22-14 Minutes

Wednesday, January 22, 2014 5:38 PM

No video feed for concert hall

One master laptop giving powerpoint feed to other screens

Scheduling application

Create a final equipment list

- 4 projectors from ATC
- 3 tables (2 6ft tables and 1 4 ft table)
- 5 microphones with 5 stands
- 6 extra extension cords
- 4 power strips
- Preferably 3 video cameras

Arriving Wednesday afternoon with robots

Performing Wednesday and Thursday night

Week from this Sunday, we will perform practice run

By Sunday, we need an organized way of viewing PDF's

The iTeam:

### **11/12/13 Meeting Agenda**

ACDA 14

Shamiah McDonald (CH), Yixuan Tong (SEC), Yiran Zhang, Tianhai Chang,  
Prof. Delorey (ADV)

#### **1. Minutes**

Assignments:

- Create a group name
- Make a list of questions for Prof. Manzo
- Arrange the interview with Prof. Manzo

#### **2. Accomplished since last meeting/Old Business**

- Group name created
  - The iTeam
- Secured a meeting time with Prof. Manzo
- Researched information about Prof. Manzo
- Each created a question list

#### **3. Discussion/New Business**

- Finalize question list for Prof. Manzo
- Decide which 2 team members with interview Prof. Manzo

#### **4. To Accomplish by next meeting/Action items**

**Goal Statement:** Meet with Prof. Manzo and see how he could help us with our project.

## Baltimore Superteam:

### 10/16/13 Meeting 5 Agenda

ACDA 14

Nicholas Mollica (CH), Martin Phelan (SEC), Tucker Tibbetts, Prof. Delorey (ADV)

#### 1. Minutes

Assignments:

- Introduce ourselves to Bob Duff and Wayne Abercrombie
- Create a fillable PDF Application for Conducting
- Write instructions on uploading a Youtube video anonymously

#### 2. Accomplished since last meeting/Old Business

- Researched how to anonymously upload a video to Youtube [TT]
- Created a fillable PDF form [NM]
- Wrote instructions on filling it out [MP]
- Wrote an email introduction [MP]

#### 3. Discussion/New Business

- Very difficult to upload a video to Youtube anonymously
- How are the forms being collected

#### 4. To Accomplish by next meeting/Action items

- Discuss best way to upload a Youtube video ANONYMOUSLY

**Goal Statement:** Introduce ourselves to the group, create a fillable PDF Application for Conducting, and write instructions to fill it out and upload a video to Youtube

## Team Purple Cobra:

### 11/06/13 Meeting Agenda

ACDA 14

Mike Calder (CS), Adam Chaulk (ECE), Mike Derryberry (ECE), Seth Gyebi, (ECE), Prof. Delorey (ADV)

#### 1. Minutes

To be completed following the meeting

#### 2. Accomplished since last meeting/Old Business

- Made suggestions for tech equipment

#### 3. Discussion/New Business

- N/A

#### 4. To Accomplish by next meeting/Action items

- To Be Determined

### 9/27/13 Meeting 3

ACDA 13 Group 3

Mike Calder (Pres), Adam Chaulk(SEC), Mike Derryberry

1. **Minutes**  
[One space between SECTIONS. Single-space otherwise.]
2. **Accomplished since last meeting/Old Business**
  - Meeting Time – Thursdays 9-11 AM
  - Made PowerPoint
  - Researched WebEx vs. Wimba
3. **Discussion/New Business**
  - Present Powerpoint
  - Make PDF
4. **To Accomplish by next meeting/Action items**
  - N/A

We will be adding:

**Goal Statement:** N/A

- Page numbers
- References slide
- Conclusion slide(s)

## Appendix D

### Desktop Background



Figure 3: ACDA Conference Logo