Helena School District Speech and Debate Judge Assignment Optimization

System Analysis & Design

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Fall 2024

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EXECUTIVE SUMMARY

The goal of this project is to propose a more efficient and reliable system for managing Montana Speech and Debate tournaments, addressing usability challenges and reducing delays that exist within the current system. To address this, this analysis and design will outline the benefits and changes of potential third-party applications, as well as offering a mock-up for an ideal new system.

Tabroom, the existing system, is complex, unreliable during large events, and requires extensive manual effort for scheduling and judging assignments. With data pulled from user interviews and an analysis of Tabroom and its use cases, needs and areas of improvement have been identified.

The outcome of this system analysis and design project is the proposed implementation of a streamlined platform that automates judge assignments, centralizes event information, and provides real-time updates for organizers, coaches, judges, and students. To this end, two third-party solutions have been identified:

- **SpeechWire:** A platform offering tournament management tools but with limited offline capabilities.
- **ArbiterSports Scheduling:** A comprehensive scheduling system with mobile access and real-time updates.

For an alternative option to third-party software, a mock-up system has been designed to cater towards the needs addressed within this document. A user-friendly, automated solution tailored to Montana's unique needs, ensuring seamless tournament management and improved efficiency.

PROJECT PURPOSE AND SCOPE

The purpose of this project is to create a more efficient, user-friendly, and reliable system for managing speech and debate tournaments in Montana. The current platform, Tabroom, while offering comprehensive features, has significant limitations, particularly regarding usability, scalability for large events, and real-time scheduling and logistics management. By designing or adopting a solution tailored to Montana's specific needs, the new system aims to minimize administrative overhead, reduce delays, and improve the experience for organizers, coaches, judges, and students alike.

This project focuses on identifying and implementing a robust, scalable platform that enhances the scheduling, registration, judge assignment, and event management processes. The system will streamline operations by automating rule enforcement (e.g., ensuring judges do not evaluate the same competitor twice) and providing integrated tools for real-time updates and communication. The proposed solution must accommodate the unique challenges of Montana's speech and debate events, including limited budgets, manual workflows, and varied state-specific rules. It will also address the needs of

multiple user groups, including students, coaches, judges, and event organizers, by offering centralized access to tournament data, schedules, and results. The goal is to provide a seamless and reliable experience for all participants while maintaining compliance with state and national guidelines.

Section 1: Current System Overview

1a) Background

Currently, the Montana Speech and Debate program uses a third-party program called Tabroom. The software includes many features that make managing speech and debate tournaments possible. Tabroom is a free, open-source online tournament management system that hosts tools specifically catered towards speech and debate competitions. Per the about section on the Tabroom website, their goal is to provide a feature-complete tournament system worldwide with support for as many formats as possible. Tabroom is a part of the National Speech & Debate Association.

1b) Features

The Features that Tabroom provides is an infrastructure that relates to assigning judges and students to Speech and Debate events. They are as follows:

1. **Pairing:** Tabroom allows for the connection between differing formats of Speech and Debate events. Many supported formats are available via an internal database.

2. **Judging:** Judges must sign up for an event online and then are added manually to Tabroom by event staff as they arrive in person at the event.

3. **Registration:** Tabroom keeps a list of registered students, and event staff updates registration manually for students and judges that are in each tournament.

4. **Calendar:** A calendar on Tabroom's website displays all upcoming and past events.

5. **Competition Records:** Tabroom keeps track of a student's competition records throughout the year.

1c) Current System Users

Tabroom is a system that students who are participating in the tournaments do not interface with. Users of the Tabroom system include:

1. **Coaches**

   - Keep tabs of students and judges.

   - Work closely with organizers to set up events.

2. **Organizers**

   - Keep a list of assigned tournaments.

   - Run tournaments both online and offline.

   - Deal with the most time sensitive tasks.

SECTION 2: USER EXPERIENCE & NEEDS

2a) System Concerns

To find a suitable replacement for Tabroom, it is important to first establish what could be improved. Some of these are more important than others. For example: following each state's rules is very important, while the students being able to review their judges is more of a nice to have.

- Tools are not intuitive.

- Nationwide scope with differing rules in each state.

- The system becomes unreliable during large events.

- Organizers want to be able to see judge selection.

    - Time slots.

    - Preference for event.

    - Availability.

    - Feedback.

    - Judge Check-in.

- Inability to see students participating in the events.

- Unable to see available "rooms."

- Timelines are very skewed and commonly inaccurate.

- Tournament staff manually does all scheduling.

2b) Interviews

Hannah Muskiewicz, an active debate prep coach and one of the primary points of contact for this analysis was provided with several interview questions in our pre-meeting.

1. **What rules are required for determining a judge?**

    a. There are no specific requirements for being a judge other than being a year out of high school.

2. **What is the current system for determining a judge?**

    a.   A selected judge cannot see the same competitor twice, which from our understanding Tabroom does not actively track and manage.

3. **What factors would make your life easier in a new system?**

    a. Having all the information in one location. If judges could sign up for a time slot and a preference for event. Judges were able to see the assignments online. Students could also see their tournament schedule. For setting up a tournament, I would like to see the judges that signed up, their preferences, their availability, their feedback/ballots, all the students that are entered in a tournament, the rooms that are available in the event location, whether judges have checked in, if they are available for more events.

4. **What are the benefits of the current system?**

    a. You can see past tournaments and the results, show you the rank of students in the event, shows you other tournaments that are across the country. It allows you to see the roster per school and how they are doing across various events.

5. **What existing hardware on site is being utilized?**

   a. Tabroom, Spreadsheets.

6. **How many different groups would use the system?**

   a. Students, Coaches, Judges, Organizers.

7. **(For students) How has the current system impacted you?**

   a. Tournaments were behind/late all the time. Tabroom regularly makes a mistake for judges seeing students twice, Tabroom occasionally messes up the rankings causing them to lose a spot.

8. **In a perfect world, what would a tournament look like?**

   a. In a perfect world, everything from selecting judges, to scheduling timing and rooms would all just be in one place. Like an app where you can sign in as a student, coach, or judge, that tells you what to do, where to be, and when to be there.

9. **If upgrades are necessary, how will it be paid for?**

   a. Speech and Debate is already a low budget item for most schools. In Montana they are not part of the National Speech and Debate Circuit which causes funding challenges. This system would most likely have to be proposed nationally and funded through them.

Jon Moore, a speech and debate coach at East Helena High School, gave two pieces of information about the current system.

a. The system is the best it has been, and the complexity of Tabroom is due to accommodating the debate rules of all fifty states.

a. The main issue with the system is the reliability of it during large events, as it can sometimes cause hour-long delays when the system is stressed.

2c) Needs

To find a suitable replacement or upgrade for Tabroom, the first step is to identify and define what features would exist within the ideal product. The needs identified by this system analysis and design project are as follows:

1. The ability to schedule and run speech and debate events:

   - Allowing an organizer to schedule an event, allowing students to be added to each event.

   - Allowing judges to sign up and ensure the event runs in a state mandated way.

   - The ability for students to report their experiences.

2. An organizer must be able to set up and tweak the components of the event. This includes:

   - The date, time, and location.

   - Number of events.

   - Students who are participating in each event.

   - The number of judges needed to accommodate those students.

   - The ability for things to be changed if necessary.

3. Organizers need to be able to determine which students can participate:

    - Allowing an organizer to invite students to a tournament directly.

    - Allowing the organizer to invite a coach who can add all the students to the

      tournament.

4. Assigning students to the individual events at the tournament is also important.

    Since there can be many events and students may wish to do many or few events,

    allowing the students to view and select their events is key:

    - The student's coach would need the ability to review the student's event

      selection.

    - Make any necessary changes to their selections.

    - Approve the selections for the organizer.

    - Ensuring that the students' selections are the best that they can be.

5. Judges need to be able to view upcoming events and sign up for them ahead of time:

    - The ability to find and schedule them.

    - An organizer must be able to reach out to judges they have worked with in the

      past to fill any gaps on tournament day.

6. The ability to determine which judges should be assigned to each event: Since the

    rules on how judges are assigned vary by state, these points will apply locally in

    Helena Montana:

    - The ability for the system to analyze judges and the students they have already

      judged to prevent repeats.

- An organizer should be able to move judges around to accommodate the judge's preferences for the events, but the system needs to adhere to the rules during and after those changes.

7. Students are given the ability to review their scores and rate their judges:

- Alert the event organizer to any judgement that may not be fair for one reason or another.

- Review system which allows the organizer to learn more about what should be done to improve the next event.

SECTION 3: ARBITERSPORTS EVENT SCHEDULING

3a) Proposed Solution

Arbiter Scheduling is a comprehensive platform designed to streamline the management of sports and academic events. It offers a suite of features that facilitate efficient coordination of games, practices, staff, and venues. It is designed to be user-friendly, offering a centralized platform for all scheduling needs. The mobile app provides real-time access to schedules, rosters, and scores, ensuring that administrators, staff, and participants stay informed and connected.

3b) System Requirements

This proposed system would be a plug and play addition to Tabroom. It would be used to create the scheduling for each event. The system requirements are as follows:

1. **Device Requirements**

    - Computer or Laptop: Preferred for managing events and accessing advanced features.

    - Tablet or Smartphone: Fully functional on mobile devices for on-the-go access, especially for officials Judges using the ArbiterSports Mobile app.

2. **Browser Compatibility**

    - Google Chrome (latest version, recommended for optimal performance).

    - Mozilla Firefox (latest version).

    - Microsoft Edge (latest version).

    - Safari (for macOS/iOS users).

    - Ensure cookies and JavaScript are enabled.

3. **Arbiter Mobile App Requirements**

    - iOS Devices: Requires iOS 12.0 or later.

    - Android Devices: Requires Android 6.0 (Marshmallow) or later.

    - App features include viewing schedules, assignments, and notifications in real time.

4. **Internet Connection**

- A stable internet connection is required for accessing schedules, uploading data, or synchronizing updates between the web platform and the mobile app.

5. **Screen Resolution**

   - The minimum recommended screen resolution is 1024x768 for the best user experience on desktops or laptops.

6. **Integration**

   - ArbiterSports integrates with other platforms (like GoFan, NFHS Network, and MaxPreps), which may require users to have accounts on those services for full functionality.

   - ArbiterSports is best known for sporting events like Football, Lacrosse, Soccer, but can be adapted to work with Speech and Debate requirements through the ArbiterSports representative working on this case.

7. **Additional Software**

   - No special software is needed, as ArbiterSports is web-based. However, Adobe Acrobat Reader may be helpful for viewing PDF reports or schedules.

3c) Features

The key features if ArbiterSports are as follows:

- **Event Management**: Schedule and oversee various events, including games, practices, and academic activities, ensuring all details are organized in one place.

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- **Staff Coordination**: Assign officials, event workers, and volunteers to specific events, with visibility into their availability and qualifications.

- **Real-Time Updates**: Utilize the Arbiter mobile app to access and manage scheduling information on the go, with features like event details, team rosters, calendar integration, and real-time score updates.

- **Integration Capabilities**: Seamlessly integrate with platforms such as GoFan, NFHS Network, Brightly, and MaxPreps to enhance functionality and reach.

- **Comprehensive Coverage**: Beyond sports, manage academic events, club activities, and transportation logistics, adapting to changing needs, including emergency venue shifts.

3d) Benefits of Proposed System

ArbiterSports' comprehensive suite of tools provides a way to streamline the management process. It offers efficient coordination and user-friendly designs. It also serves as a centralized platform, so all needs could be met through it. Further, its feature to integrate other platforms could make it ideal if any specific needs are not directly met through the app in its default state.

3e) Cost Estimates

Implementing ArbiterSports for event scheduling costs vary, but most sports league management software products on the market are priced on a "per month" basis, with

entry-level pricing plans ranging from $24 to $240. ArbiterSports offers all-in-one event

management solutions, including secure online and mobile-friendly registration and

payment processing, centralized data and reporting, built-in emails and participant

communications, and dedicated customer support.

SECTION 4: SPEECHWIRE

4a) Proposed Solution

SpeechWire is a comprehensive tournament management platform designed for

speech, debate, and congress events at various levels, including high school, college,

middle school, and even elementary levels.

4b) System Requirements

1. **Device Requirements**

- Computer or Laptop: Commonly used for managing tournaments and accessing

  the platform's features.

- Tablet or Smartphone: Compatible for mobile use, especially for judges and

  participants using electronic ballots or live updates.

2. **Browser Compatibility**

- Google Chrome (latest version).

- Mozilla Firefox (latest version).

- Microsoft Edge (latest version).

- Safari (for macOS/iOS users).

- Ensure JavaScript is enabled for full functionality.

3. **Internet Connection**

- A stable broadband connection is recommended for uploading/downloading

  data, real-time updates, and accessing live results.

4. **Judge-Specific Requirements**

- Judges using electronic ballots need:

   - A laptop or tablet (preferred over smartphones for usability).

   - Internet connectivity during rounds.

   - Familiarity with the platform, as training videos are available to guide new

     users.

5. **Additional Software**

- No specific additional software is required, as SpeechWire operates entirely

  through a web browser.

4c) Features

The features that SpeechWire provides are:

1. **Core Functionality:**

- Registration and Scheduling: Facilitates online registration, event scheduling, and tabulation of results.

- Results Management: Offers live updates and a centralized results database for students and coaches to track performance throughout the season.

- Event Versatility: Supports a variety of formats, including debate (Policy, Lincoln-Douglas, Public Forum, etc.) and speech events (Oratory, Interpretation, Extemporaneous Speaking, etc.).

2. **Ease of Use:**

- Web-based interface accessible via any browser, with no software installation required.

- Intuitive design with user-friendly navigation for tournament managers, judges, and participants.

3. **Support and Accessibility:**

- Provides free technical support via phone or email.

- Offers a judge training feature, including electronic ballot support to streamline evaluations.

4. **Affordability:**

- Pricing scales based on the tournament size, with most events costing between $200 and $250. Discounts are available for early adopters in specific regions.

5. **Customization and Growth:**

- Organizers can request new features to meet unique tournament needs, often added at no extra charge.

4d) Benefits of Proposed System

The web interface of SpeechWire makes accessibility easy for all users, as no software download would be required. An intuitive UI/UX design allows users to navigate easily between all the aspects of the app. SpeechWire is affordable, meaning it could be a good alternative to Tabroom that wouldn't be a risky change from a cost standpoint. The ability to request new features to meet specific needs could be useful if SpeechWire's default state does not exactly match the needs of the Helena School District Speech and Debate team.

4e) Cost Estimates

Pricing scales based on the tournament size, with most events costing between $200 and $250. Discounts are available for early adopters in specific regions

SECTION 5: MOCK-UP SOLUTION

5a) Proposed Solution

This proposal's objective is to offer a more streamlined solution that would allow organizers to minimize delays and reduce administrative errors during or after events.

The current system, Tabroom, still requires logistics tracking by organizers to ensure judges are not violating established rules for the specific competition, some of which are national rules, others being state or competition specific.

The new system's goal would be to automate as much as possible, allowing coaches to focus more on the competition and less on doing administrative tasks during tournaments. This system would be one of a kind for Speech and Debate and built specifically to follow all guidelines involved with the competition.

5b) System Requirements

This solution would be plug-and-play and wouldn't require much more than a phone or a personal computer. The requirements would be as follows.

1. **Device Requirements:**

   - Computer or Laptop.

   - Tablet or Smartphone.

2. **Browser Compatibility:**

   - Google Chrome (latest version).

   - Mozilla Firefox (latest version).

   - Microsoft Edge (latest version).

   - Safari (for macOS/iOS users).

3. **Internet Connection:**

   - A stable broadband connection is recommended.

5c) Features

Features of this mock-up solution would include the following:

1. **User Management:**

   - The ability to manage student, organizer, coach, and judge accounts.

2. **Event Management:**

   - Event Creation.

   - Managing tournament rounds.

   - Managing matches.

3. **Scoring and Judging:**

   - Score Entry.

   - Score Calculations.

   - Accurate Results.

4. **Scheduling:**

   - Timetable handling.

   - Conflict management.

5. **Notifications:**

   - Alerts and reminders.

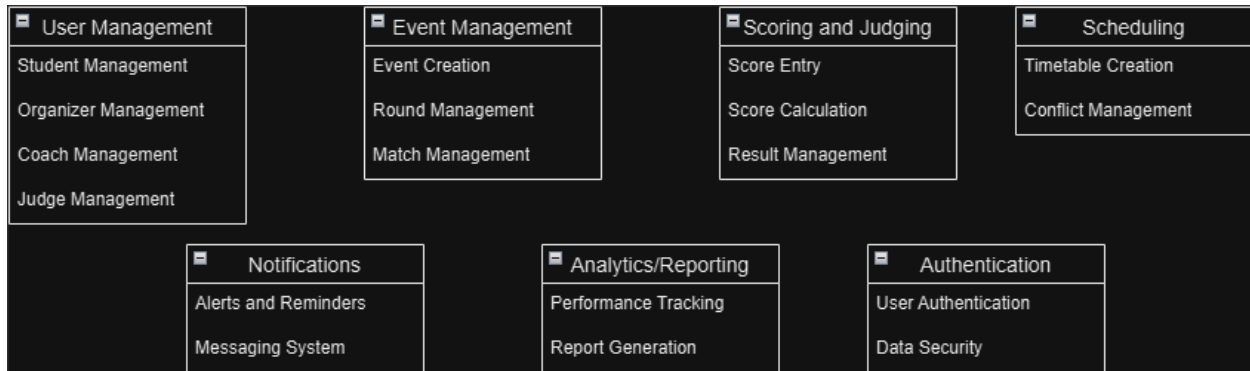   - Built-in messaging system.

6. **Analytics:**

   - Performance Tracking.

   - Auto-generate reports.

7. **Authentication:**

- User authentication.

- Data security.

An Entity Relationship Diagram is available to visualize these features:

User Management	Event Management	Scoring and Judging	Scheduling
Student Management	Event Creation	Score Entry	Timetable Creation
Organizer Management	Round Management	Score Calculation	Conflict Management
Coach Management	Match Management	Result Management	
Judge Management			

Notifications	Analytics/Reporting	Authentication
Alerts and Reminders	Performance Tracking	User Authentication
Messaging System	Report Generation	Data Security

5d) Proposed System Users

The system users of this mock-up solution would encompass everyone involved with the tournament, as the scope of this solution would ideally be all-encompassing.

1. **Students:**

- Sign up for tournaments.

- Holding a record of completed tournaments.

- Receiving notifications about tournaments.

- Most numerous and therefore most affected by delays.

2. **Coaches:**

- Keep tabs of students and judges.

- Work closely with organizers to set up events.

3. **Judges:**

- Sign up for tournaments to judge.

- Post their rulings to Tabroom.

4. **Organizers:**

- Keep a list of assigned tournaments.

- Run tournaments both online and offline.

- Deals with the most time sensitive tasks.

5e) Benefits of Proposed System

The benefits of a custom solution can outweigh any shortcomings, burdens, or extra unnecessary features that more rigid third-party solutions may come with. While third party solutions sold as services may provide all the tools required, a custom solution will ensure that all needs are met, including highly specific needs that may arise and that may not be solvable with other solutions. This mock-up design identifies and finds specific solutions for each of the areas of improvement that were identified during interviews and research into Tabroom and the Helena School District Speech and Debate team's setup.

Section 6: Overview

6a) Recommended Solution

After analyzing and researching several solutions for replacing Tabroom, we believe the optimal solution is the implementation of ArbiterSports. Although both ArbiterSports and Speechwire both offer similar services and features, ArbiterSports offers integration with other software and modules. Further, the cost of ArbiterSports can potentially outweigh the cost of SpeechWire. When it comes to comparing costs, the most expensive solution would be the mock-up design. This is because it relies on a contract with a developer, which could vary massively in price. On the other hand, the mock-up would provide the most feature complete solution as it would be able to cater specifically to any needs. ArbiterSports provides a good suite of tools and features that would cater to Helena Speech and Debate's needs, while remaining cost effective and flexible.

6b) Recap

Currently, the Montana School District speech and debate system would benefit from improvements. The current system, Tabroom, can be slow, ineffective, and provide incorrect data. This proposal has provided three comprehensive solutions to this problem. The Proposed solutions aim to improve the efficiency and effectiveness of the Montana speech and debate system. Key challenges have been identified such as judge assignment, scheduling, real-time updates, and overall user experience, which were made

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clear through interviews and research. Two third party solutions have been proposed for tournament management, SpeechWire and ArbiterSports Scheduling. SpeechWire provides robust tools tailored specifically for speech and debate, while ArbiterSports offers a versatile scheduling system with mobile integration. Both options provide excellent ways to improve the efficiency of the speech and debate program, however, ArbiterSports is the optimal solution. The final solution proposed is a custom mockup. The mockup has been specifically designed to address the shortcomings of the current system. This solution focuses on centralization, automation, and accessibility to ensure smoother tournament operations.

SOURCES

"Tabroom.com." *Tabroom.com*, 2020, www.Tabroom.com/index/about.mhtml. Accessed

    12 Dec. 2024.

"SpeechWire Tournament Services - Forensics Tournament Software - Speech, Debate,

    Congress." *SpeechWire.com*, 2024, www.SpeechWire.com/p-features.php.

    Accessed 12 Dec. 2024.

"Sports Event Management Tool | School Event Management Tool | ArbiterSports."

    Arbitersports.com, 2024, www.arbitersports.com. Accessed 12 Dec. 2024.

Muskiewicz, Hannah. *Helena School District Speech and Debate System Interview 1*. 1

    Dec. 2024. Accessed 12 Dec. 2024.

Moore, John. *Helena School District Speech and Debate System Interview 2*. 4 Dec. 2024.

    Accessed 12 Dec. 2024.