Indiana Soccer Referees Association Software Project

Team 12

Today's Agenda

01 Current ISRA Situation

02 Business Outcomes

03 Scope, Timeline, and Resources

04 Software Demo

05 Lessons Learned

ISRA's current assignment tracking and referee status process is manual and time consuming for employees

The **Indiana Soccer Referees Association** is currently responsible for **assigning referees** to U.S.S.F.-sanctioned club matches in the greater Indianapolis area.

Tracking the assignments and status of referees has become a very time-consuming process and taken over employees roles. Employees have **less time to spend on value-generating responsibilities.**

How can we work with Indiana Soccer Referees Association to provide the **most valuable, user-friendly, and scalable software solution**?

Investing in a software-solution will provide direct business impact

Transparency

The software solution will allow for users to view certified **referee personal information** and **assignment status. Special users** with the "assignor" role will be able to view the private rating of referee skill (0-100). The entire organization will be aware of current assignments.

Data Analysis

With the report functionality, ISRA will be able to pull data from all games assigned to a referee for a specific data range for example. ISRA can then **gather key insights and analysis.**

ISRA Efficiency

The software solution will **decrease time spent on manual assignment tracking.** The solution will provide **quick access and game assignments.** This will allow for employees to spend time on other tasks and increase the overall efficiency of the organization.

Scalability

ISRA will have the opportunity to scale the solution because of common version control and **eventually open-source the project to similar associations**. The organization will also be able to easily **alter the data** with the add, edit, and delete functionality.

Employee Satisfaction

With the solution, employees will spend more time on **valuable roles and responsibilities.** This will translate into greater satisfaction and employees feeling they are making a **direct impact** on the organization. Employee satisfaction will **translate into a better morale** as well.

Defining our scope, timeline, and resources helped keep our self-managed team on track to produce a strong solution

1

Scope

The scope for this project included creating a **cloud database** to store relevant referee and game data for the ISRA. This included **HTML, CSS, APIs,** and final deployment to the cloud. There were three requirement use cases for **data entry, detail view with related list,** and **reports.**

2

Time

Our team was given **6 weeks** to showcase the first prototype for ISRA. Along the way, we had **milestones** to hold the group accountable and showcase continuous improvement. Given additional time, our team has **a vision for additional functionality** and the second prototype. **Multiple iterations** will provide the highest return of value.
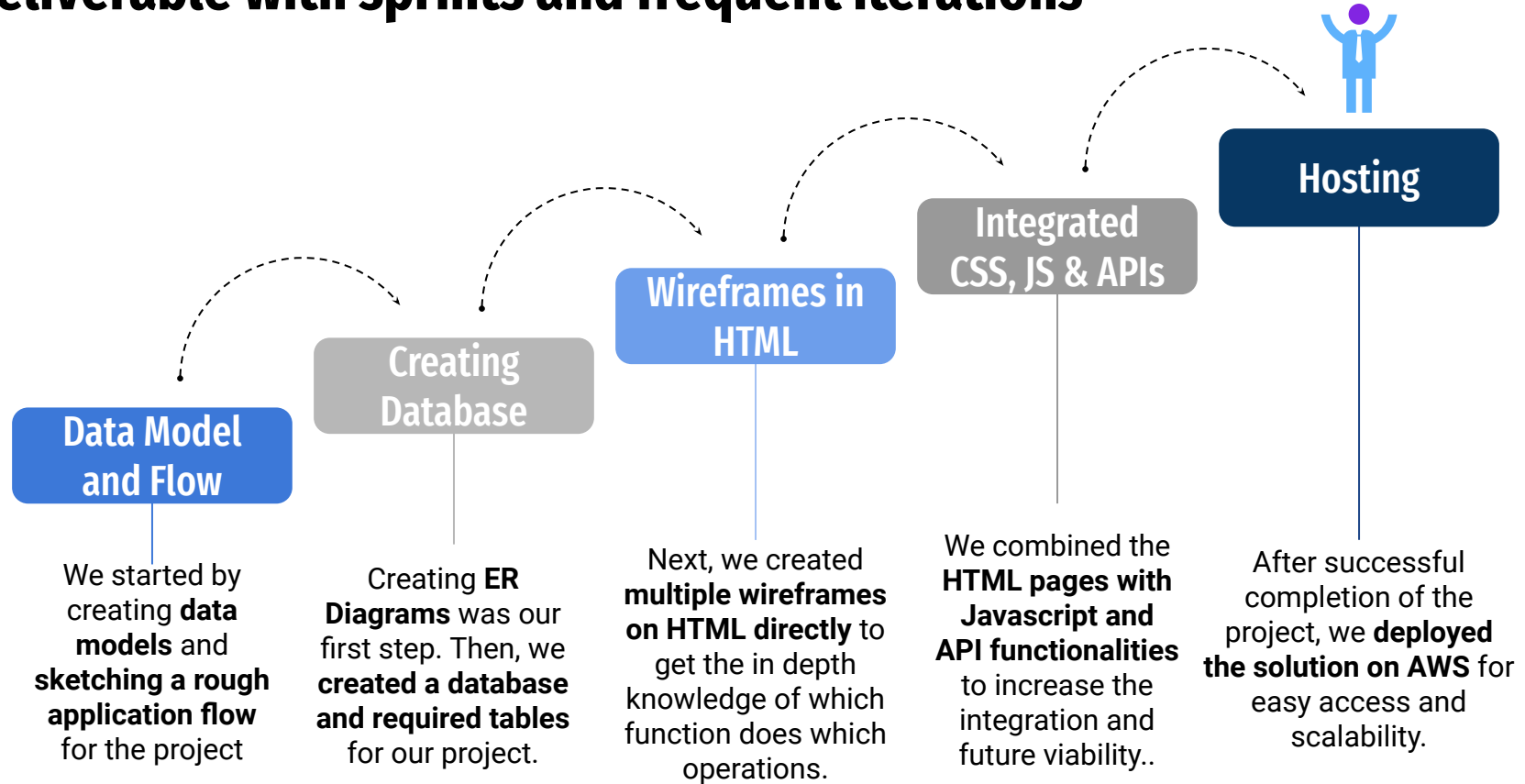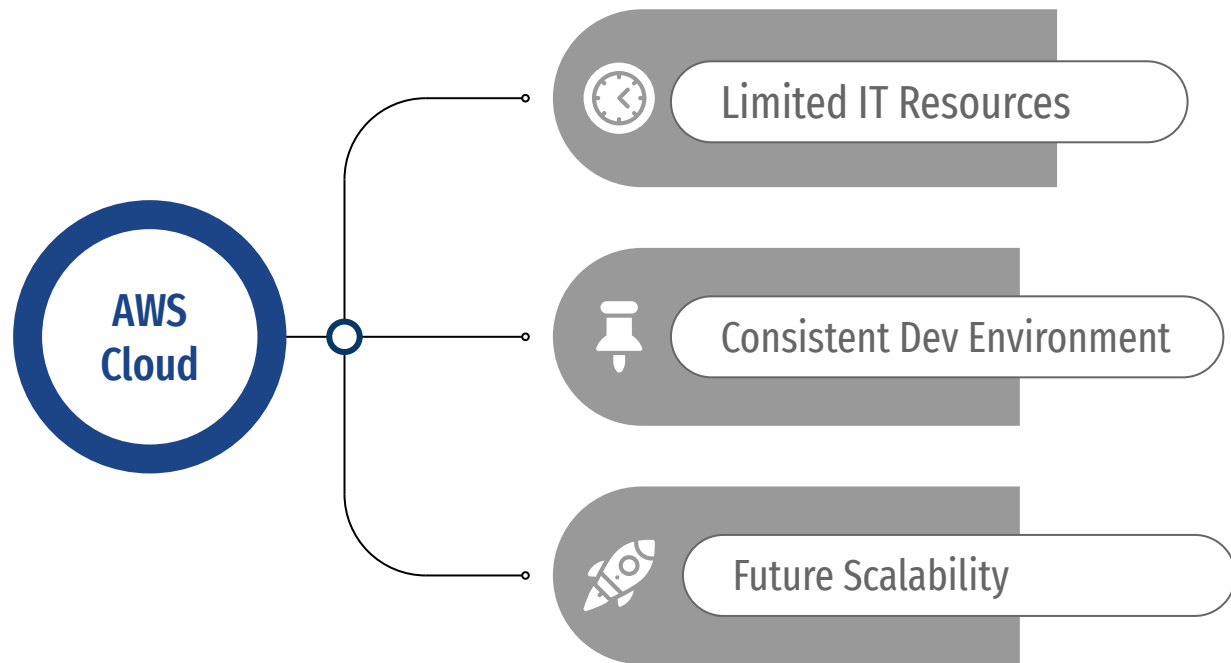
3

Resources

Resources for this project included specific tools, people, and labor:

- **4 developers**
- **MySQL**
- **AWS RDS**
- **AWS EC2**

Our team utilized an agile methodology when approaching this deliverable with sprints and frequent iterations

Data Model and Flow

Creating Database

Wireframes in HTML

Integrated CSS, JS & APIs

Hosting

We started by creating **data models** and **sketching a rough application flow** for the project

Creating **ER Diagrams** was our first step. Then, we **created a database and required tables** for our project.

Next, we created **multiple wireframes on HTML directly** to get the in depth knowledge of which function does which operations.

We combined the **HTML pages with Javascript and API functionalities** to increase the integration and future viability..

After successful completion of the project, we **deployed the solution on AWS** for easy access and scalability.

The Tech Stack for our project focused on deployment on AWS

AWS Cloud

🕐 Limited IT Resources

📌 Consistent Dev Environment

🚀 Future Scalability

The ISRA currently has **limited IT personnel and resources available**. It is unlikely that ISRA will be able to maintain the infrastructure needed to run a software solution. AWS cloud deployment can provide an **efficient, cost-effective solution.**

This solution allows for a consistent development environment and **common version control**. This will allow for ISRA to **utilize less resources and avoid issues due to changes** in development platforms.

ISRA will be able to scale up easily with this deployment. AWS provides **the ability to increase or decrease storage** as the business evolves with a **pay as you go** model.

Multiple Iterations with highly interactive, client support are key for continuous success and evolvement

1

Different user groups

Adding **additional user groups into the system**. So if say the game assignor gets an assistant he/she can have his own account. And to make the system more secure we will **add in login ids and passwords** for each roles.

2

Additional reports

Creating **an analytics dashboard** and real time game board to show multiple reports at the same time in the same place. **Additional dynamic reports** can be generated based on the columns the referee's/ assignor's requirements.

3

Email Notifications

Sending **real time emails to the referee**, notifying them about new games, and asking for approvals. Furthermore, an option to **mail the reports directly to the referee**.
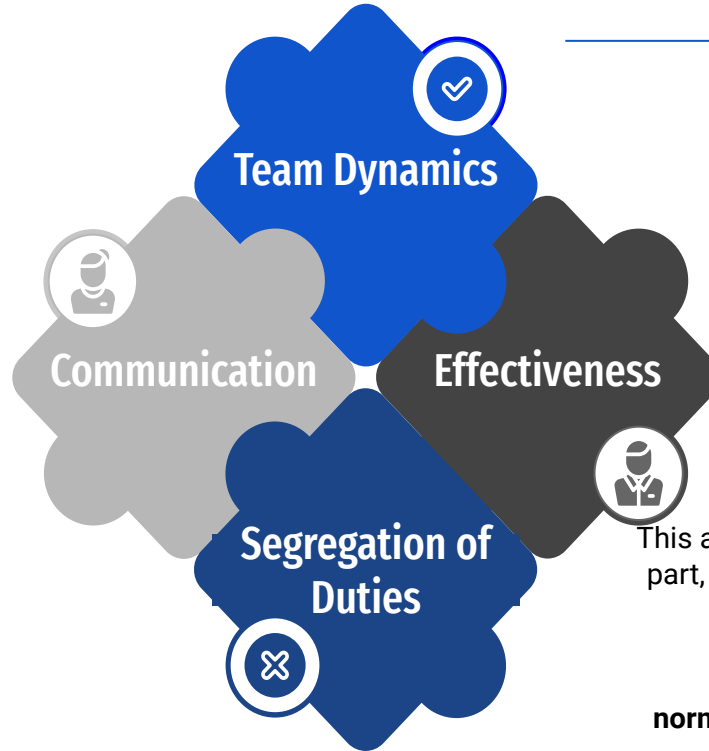
Our team was pushed to grow because of this project and course

Built on communication

Due to the Agile approach, our team had **high visibility into the roles and tasks**, effective communication is key to succeed in such an environment. Our tasks were clearly defined and communicated by one-member reducing confusion.

Task Division

Major tasks were data management by Aditi, Solution Architecturing by Austin, Visual Alignment by Aaron and testing, solution definition and management by Meredith.

Team Dynamics

Communication

Effectiveness

Segregation of Duties

Complementing Strengths

Our group took the time to identify our strengths which allowed us to **understand what activities we would lag in.** This strongly improved our **team culture,** as we would know what tasks would create issues within the team and how we could help one another improve.

Working-Styles

This aspect required maximum work from our part, coming from **different backgrounds** we had different working styles, hence effectiveness used to take a hit. We eventually did **overcome it in the norming-phase** and have been very effective and moved into the performing stage.

Each of us took away our own unique lessons learned from D&S

Aaron

I learned a great deal about **debugging**. I got *really* comfortable with reading the **network section of the inspect tool**. I also learned a great deal more about **how to code web applications**, specifically going beyond HTML and CSS. It was also brought home to me the **value of finding code** on the internet and I was able to **resonate more** deeply **with struggles of** the common **coder**.

Aditi

Problem solving is a task in itself, but when team dynamics are involved, getting to an answer demands **a patient approach.** I also picked essential skills on **conflict-management,** coupled with these, practical skills in **Vuejs, MySQL and PHP. Containers** were a whole new-concept that I feel confident about now.

Austin

When I originally came into the course, I had a decent amount of experience in coding due to my undergraduate program. However, I was pleased to **learn beyond just the coding paradigms** that I originally expected to consume. Instead, I learned more about the **reasonings** for different code designs and **processes** to achieve the outcomes we want instead of just the code.

Meredith

While I was very nervous for this course and had little experience in development, I am walking out of the class feeling that I understand the **challenges, tasks, and strategies of developers**. I learned many more soft skills than expected such as knowing when to **ask for help, go for a walk,** and **look up specific code.** I learned hard skills of the importance of **version control, containers, and APIs.**

Appendix

01 User Stories

02 Risks and Mitigation Strategies

03 Data Model

User Stories

- As Indiana Soccer Referees Association chair i want to see the list of all the referees and games associated with us.
  - Acceptance Criteria - Select table is successfully running and showing the list of referees & games.
- As a referee i want to see all the games that are assigned to me along with downloading the report for the same in a tabular format.
  - Acceptance Criteria - Downloading csv file successfully and viewing the list of games specific to that referee
- Being the games assignor for Indiana Soccer Referees Association i want to add, delete and update; games, and referees easily and access the platform real-time from anywhere.
  - Acceptance Criteria - User is able to perform Add, Edit and Delete functions and the software is running without any errors on the cloud.

User Stories

- As a referee, I want to be able to see what games I am assigned to, as well as the time and date of these games
  - Acceptance Criteria - Ability to filter games based on the time & date
- As a referee, I want to be able to see what position I am assigned in each game
  - Acceptance Criteria - Viewing table data which includes the position details of the referee
- Being the games assignor for Indiana Soccer Referees Association, I want to be able to modify records of referees and their assignments to various games in the past, present, & future
  - Acceptance Criteria - Ability to view referee assignments by game, date, and time

Risks and Mitigation Strategies

We identified following risks and used these mitigation strategies to overcome them:

Risks	Mitigation
Lack of rollback options.	Consistent Abidance to version control systems provided us a fail-safe development structure.
Thrown off schedule due to impediments	Clear estimation of tasks and planning events for the smallest of requirements made sure that any impediments were identified at the earliest.
Troubleshooting taking more time than development.	Utilizing a common ledger of variables and methods, that any member created/modified helped us reduce the time required to troubleshoot.
Integration and deployment incompatibilities.	Working on loosely coupled consolidated methods between team members reduced the integration effort.

Data Model

games
- game_id 🔑
- field_num
- start_time
- game_level

assignment
- assignment_id 🔑
- game_id 🔑
- referee_id 🔑
- current_status

referee
- referee_id 🔑
- fname
- lname
- age
- grade
- referee_skill