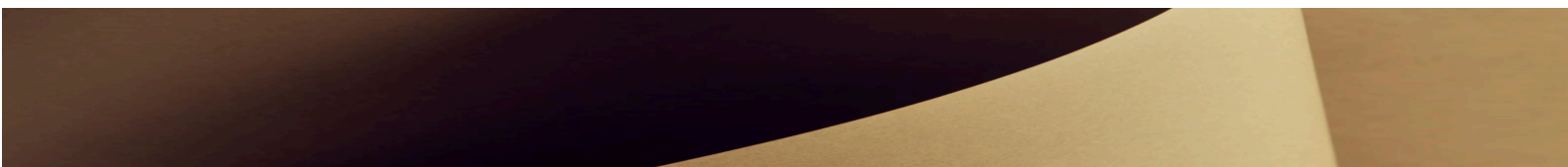


Functional Expectations and Features

Mobile App Name: PolyField

Introduction

The PolyField Mobile Application is designed to modernize athletics competition management by replacing manual, error-prone methods with a digital, automated system. The app has two modes: Stand-Alone Mode, which works offline and directly connects to the EDM device to record measurements, and Connected Mode, which links with a control server via API to fetch event and athlete data, save results, and synchronize across devices. Officials can set up competitions through calibration, configure settings like number of rounds and athlete cut-offs, and manage athlete lists with include/exclude options. The measurement process is fast and precise, with results instantly linked to athletes, displayed for verification, and saved to the system. Each athlete also gets their own heatmap of throws, and results can be ranked in real-time. The app also supports a Demo Mode with simulated values for testing without hardware. Overall, it ensures accuracy, speed, and transparency while enhancing the experience for athletes, officials, and spectators.



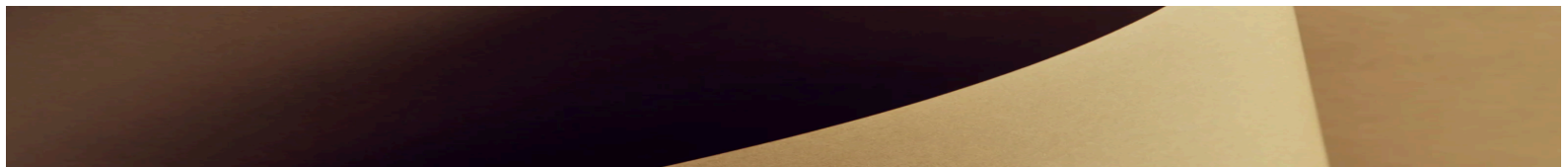


Overview

The PolyField Mobile App is a simple yet powerful tool to manage athletics competitions. It has two main modes: Stand-Alone Mode, where the app works offline and directly connects to the measuring device to record throws and jumps, and Connected Mode, where it connects to a local server to fetch event and athlete details, save results, and share data with other devices or scoreboards. The flow of the app is easy to follow: users open the app, choose either Stand-Alone or Connected Mode, set up calibration, adjust competition settings (like rounds and athlete cut-offs), manage the athlete list, record measurements, and finally view live results. This makes the process faster, more accurate, and less prone to mistakes, ensuring smooth competition management for both small and large events.

Contents

Introduction	1
Overview	2
1. Application Modes	4
1.1 Stand-Alone Mode	4
1.2 Connected Mode	4
2. Server Connectivity Module	4
3. Competition Setup Module	5
3.1 Calibration	5
3.2 Competition Settings	5
4. Athlete Management Module	5
5. Measurement Module	6
6. Visualization & Results Module	6
7. Demo Mode (Testing & Training)	6
Conclusion	7



Application Features

1. Application Modes

1.1 Stand-Alone Mode

- Operates offline, without server connection.
- Uses existing measurement flows with EDM device.
- Provides full competition flow: calibration → athlete entry → measurement recording.
- Heatmap functionality available for throw visualization.

1.2 Connected Mode

- Connects to **Control Server via TCP/IP** using defined port.
- Fetches event list and athlete data from API.
- Offers **dual entry screen after selecting “Throws”**:
 - **Option 1:** Stand-Alone Mode
 - **Option 2:** Select Event (populated from server API).

2. Server Connectivity Module

- **Connection Settings:** Users input IP address and port.
- **Event List Retrieval:** Fetch all active events from server API.
- **Athlete Data Sync:** Automatically download athlete details (name, bib, team).
- **Results Upload:** Save measurements back to server, linked to athlete profiles.

3. Competition Setup Module

3.1 Calibration

- EDM device setup and calibration process.
- Ensures measurements are accurate by referencing the throwing circle/runway.
- Identical to standalone workflow.

3.2 Competition Settings

New settings screen with configurable options:

1. **Number of Rounds** – selectable 1–6.
2. **Athlete Cut-off** – set number advancing, or option for “ALL.”
 - If selected number > total athletes, default to ALL.
3. **Reorder Athlete List** – checkbox to automatically reorder after Round 3.

4. Athlete Management Module

- **Athlete List Display:** Pulled from API in connected mode.
- **Checkbox UI:** Officials can include/exclude athletes from the competition.
- **Rotation Management:** Measurement screen cycles athletes with **Next/Previous** navigation.
- **Individual Heatmaps:** Each athlete has their own heatmap storing plotted throw coordinates.

5. Measurement Module

- **Device Integration:** EDM connected via USB serial or network.
- **Real-Time Capture:** Measurements transmitted instantly to app.
- **Trigonometric Calculations:** Mobile app replicates verified mathematical functions (from GoLang implementation) for precise measurement validation.
- **Recording & Storage:** Each measurement linked to the correct athlete profile.
- **Verification UI:** Results shown to officials for confirmation.
- **Data Sync:** In connected mode, results pushed to Control Server.

6. Visualization & Results Module

- **Heatmap Display:**
 - Plots throw/jump coordinates.
 - Extended to individual athletes in connected mode.
- **Live Ranking:** Real-time collation of results by distance.
- **Cut/Qualification Status:** Highlights which athletes advance per competition settings.
- **Future Extension:** Results sent to scoreboards over network and integration of wind gauge readings.

7. Demo Mode (Testing & Training)

- **Switch Between Modes:** Toggle between “Live Mode” (requires EDM) and “Demo Mode” (simulated values).
- **Use Case:** Allows officials to test app flow without hardware.
- **Simulation:** Walks through calibration, competition setup, athlete management, and measurements with fake data.



Conclusion

The PolyField Mobile App is built to make managing athletics competitions easier and faster. Instead of using paper and manual measuring, it uses modern digital tools to record results quickly and accurately. The app works in two ways: offline mode, where it connects directly to the measuring device, and connected mode, where it talks to a server to get event and athlete details, save results, and share updates instantly. It also shows live rankings, creates heatmaps for each athlete's throws, and can connect to scoreboards. This makes it useful for both small local events and big international competitions, giving athletes, officials, and spectators a smooth and reliable experience.

