In the fast-paced and high-stakes world of modern athletics, the demand for rapid, accurate, and accessible results has rendered traditional methods of competition management obsolete. The seamless integration of athlete data, electronic measurement, and online dissemination is no longer a luxury but a fundamental requirement for the credibility and smooth operation of any reputable track and field event. This necessity has given rise to sophisticated results management systems that link athlete lists with Electronic Distance Measurement (EDM) and instantly publish collated results to online servers.

The Old Way: A Recipe for Error and Delay

Historically, managing an athletics competition was a labor-intensive and manual process fraught with potential for human error. Athlete registration was often paper-based, leading to cumbersome data entry and the potential for transcription mistakes. During the competition, officials in field events would manually read measurements from a steel tape, a method susceptible to inaccuracies in reading and recording. These hand-written results would then be physically transported to a results center, where they would be manually typed into a computer, collated, and printed. The entire process was slow, inefficient, and created numerous opportunities for errors to creep in, leading to delays in announcing results and potential disputes.

The Modern Solution: An Integrated Digital Workflow

Today's athletics competitions strive for a streamlined and automated workflow that minimizes manual intervention and maximizes accuracy and speed. This modern approach hinges on a centralized application that serves as the backbone of the entire results management process.

1. Interfacing with the Athlete List: The process begins with a digital athlete list, often generated from an online registration system. This database contains crucial information for each competitor, including their name, team, and assigned bib number. The integrated results management application accesses this list, ensuring that every result is accurately associated with the correct athlete from the outset. This eliminates the need for manual data entry at the event and reduces the risk of misidentifying athletes.

2. Recording Results with Electronic Distance Measurement (EDM): For throwing and jumping events, Electronic Distance Measurement (EDM) technology has revolutionized the accuracy and speed of measurement. An EDM device, typically a total station or a laser-based instrument, precisely measures the distance of a throw or jump. In an integrated system, the EDM is directly linked to the results management application, often via a tablet or handheld device operated by a field official.

When an athlete completes their attempt, the official uses the EDM to get a precise measurement. This measurement is then instantly and electronically transmitted to the results application and linked to the corresponding athlete's profile. This direct digital transfer eliminates the possibility of human error in reading or transcribing the measurement.

3. Real-Time Collation and Ranking: As the results are electronically captured, the application automatically collates them for each event. It can instantly rank competitors, determine qualifiers for subsequent rounds, and update event standings in real-time. This

automated collation removes the delays and potential for miscalculation inherent in manual systems.

4. Instantaneous Dissemination to Online Servers: The final, and perhaps most crucial, step in the modern results management process is the immediate transmission of collated results to an online server. This allows for:

- **Live Results:** Spectators in the stadium and fans around the world can follow the competition as it happens through live result websites and mobile apps.
- **Media and Broadcasters:** Media outlets and broadcasters receive instantaneous and accurate data feeds, enhancing their coverage of the event.
- **Athletes and Coaches:** Competitors and their coaches have immediate access to official results, allowing for timely feedback and strategic decisions.

This seamless flow of information, from the initial athlete list to the final online publication, is the hallmark of a modern and professionally managed athletics competition. The demand for an application that can orchestrate this entire process is driven by the need for accuracy, efficiency, transparency, and an enhanced experience for everyone involved, from the athletes on the field to the fans watching from afar.

How the Measurement Process Works

Here is a step-by-step breakdown of the distance measurement process using an EDM in a throws event:

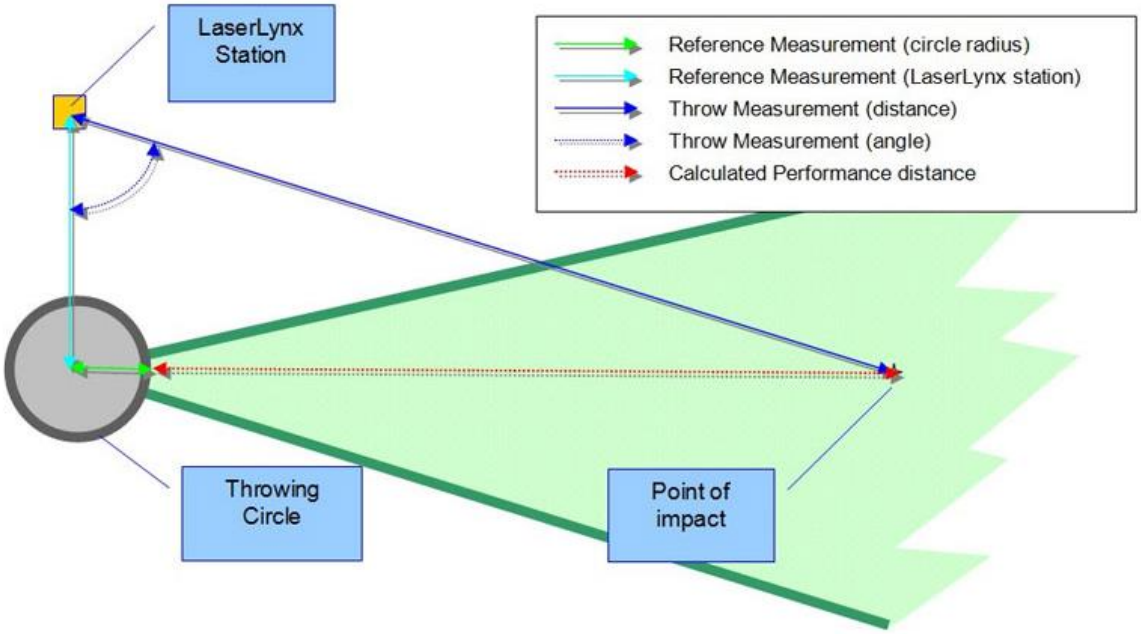
1. **Setup and Calibration:**
    - Before the competition, the EDM instrument is set up at a precise, surveyed location. Its position relative to the throwing area is pre-calibrated and programmed into the system. This ensures that all measurements are taken from the same reference point.
2. **The Throw:**
    - The athlete executes their throw from the designated throwing circle or runway.
3. **Marking the Landing:**
    - A field official carefully observes where the implement lands and places the prism/reflector at the point of impact.
4. **Taking the Measurement:**
    - Another official at the EDM instrument aims the device at the prism being held at the landing spot.
    - The EDM sends out its electronic signal, which bounces off the prism and returns to the instrument.
    - By measuring the time it takes for the signal to travel to the prism and back, the EDM calculates the precise distance between the instrument and the landing point.
5. **Data Transmission and Calculation:**
    - This raw distance measurement is instantly transmitted to the results management software.

- The software then uses trigonometry to calculate the official throw distance. It does this by creating a triangle between the EDM, the center of the throwing circle, and the landing spot. Since the software knows the distance between the EDM and the throwing circle, and it has just received the distance from the EDM to the landing spot, it can calculate the official length of the throw.

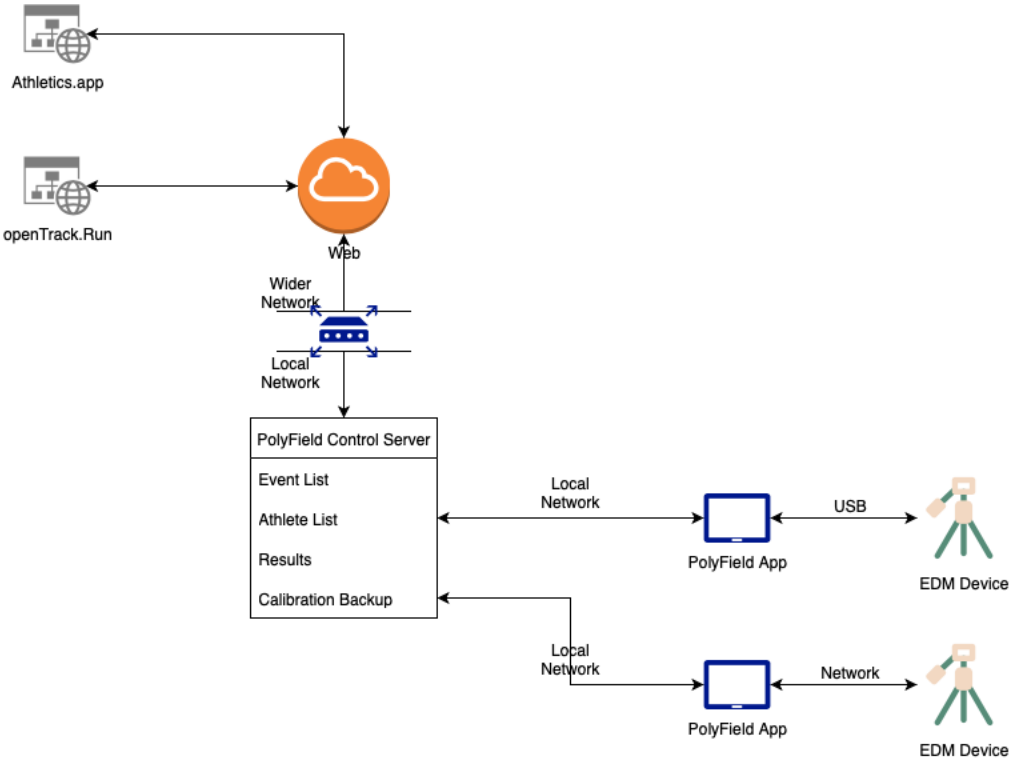
6. **Recording the Result:**
    - The calculated official distance is then automatically linked to the athlete who made the throw.
    - This result is displayed on the field official's tablet for verification and is simultaneously sent to the main results computer, updating live scoreboards and online results portals.

This entire process, from the moment the prism is in place to the official result being recorded, takes only a few seconds. This system significantly improves the accuracy, speed, and reliability of measurements in athletics, eliminating the potential for human error associated with traditional tape measures.

In the diagram below, LaserLynx Station is the "EDM" being used. The point of impact is where the Prism is placed to measure a throw



Example Flow of data:



Note: the PolyField App will be run on multiple devices connecting to the Control Server. Only one use case is shown with the EDM device connected by either Network or USB Serial. This functionality already exists.

The PolyField App will also in future also send the newest measurement to a scoreboard display (over network) It will also support reading a wind gauge over network or via serial.