TERMS OF REFERENCE

FOR

STARTING BLOCK FORCE PLATE FOR SPRINTERS

Accelerating Higher Education Expansion and Development (AHEAD) operation

The Starting Block Force Plate for Sprinters - Digital Screen Development
AHEAD/RA3/UBL/SUSL/OVAA 23/01 & 02
(SUSL/UBLC/IG/2023/04/TOR 01)
University Business Linkage Cell
Sabaragamuwa University of Sri Lanka

1. BACKGROUND

The development of the higher education sector is of a central importance to enable Sri Lanka to make the transition from a Lower-Middle Income Country (LMIC) to an Upper Middle-Income Country (UMIC). Recognizing this, the Government of Sri Lanka (GoSL) and the World Bank have agreed to support the higher education sector through a Bank funded Accelerating Higher Education Expansion and Development (AHEAD) operation.

2. THE OPERATION

Accelerating Higher Education Expansion and Development (AHEAD) operation is organized into two components. The first is a Program Component that supports the national Higher Education Development Program. The second is a systems strengthening, capacity building and technical assistance component that will assist GoSL to strengthen the higher education sector and achieve the objectives of the AHEAD program component. This second component will also cover monitoring and evaluation, policy analyses, program coordination and communication.

The implementing agency is the Ministry of Higher Education and Highways (MHEH). The University Grants Commission (UGC) will coordinate the activities of the universities. There will be an Operations Monitoring and Support Team (OMST) which will coordinate and support all AHEAD activities between the MHEH, UGC, and the universities.

AHEAD has three Results Areas:
Results Area 1: Increasing Enrollment in Priority Disciplines for Economic Development
Results Area 2: Improving the Quality of Higher Education
Results Area 3: Promoting Research, Development and Innovation

The University Business Linkage Cell of Sabaragamuwa University of Sri Lanka was established in April 2018 with reference to the University Grants Commission Circular No.10/2016. The University Business Linkage Cell has taken the responsibility to link the University research and innovation activities with external business stakeholders while promoting research, development, innovation and commercialization and enhancing community engagement through disseminating knowledge to the wider community. UBLC will strive to bridge the gap among Private and State-owned businesses, the academic community, faculties, and undergraduates.

UBLC provided an innovation grant under AHEAD grant for interested parties, which is under the supervision of Dr.A.W.S. Chandana has planned to carry out a project to Introduce the Starting Block Force Plate-Digital Screen Development is a testament to the growing role of technology in sports science. It not only benefits athletes and coaches by improving performance but also contributes to the broader fields of sports research and innovation. As sports continue to evolve, the integration of technology is likely to play a central role in shaping the future of athletics. (SUSL/UBLC/IG/2023/04).

3. THE TITLE OF THE PROJECT

The Starting Block Force Plate for Sprinters-Digital Screen Development
4. KEY TASKS AND RELATED ACTIVITIES

The key tasks and related activities of the project are given below.

No.	Action Item	Description	Timeline
01	Requirement Analysis	- Gather specific requirements for the digital screen system. - Understand technical specifications and user interface needs. - Define performance expectations.	1 Day
02	System Design and Planning	- Design the system architecture. - Plan the digital screen's layout and functionality. - Create user-friendly interface for sprinters and coaches.	7 Days
03	Software Development	- Develop software for the digital screen. - Enable real-time data display. - Include force plate data and sprinter's performance metrics. - Implement feedback mechanisms.	14 Days
04	Integration with Force Plate	- Integrate the digital screen system with the force plate. - Allow seamless data transfer for instant analysis.	5 Days
05	User Interface Development	- Develop an intuitive and user-friendly interface. - Provide real-time feedback and insights into sprinters' performance.	7 Days
06	Testing and Quality Assurance	- Conduct rigorous testing for reliability and accuracy. - Identify and rectify software or hardware issues. - Ensure system stability.	10 Days
07	Training and Documentation	- Develop a training program for sprinters and coaches. - Create comprehensive documentation for user	6 Days

		guidance.	
08	Deployment and Launch	• Deploy the digital screen system. • Officially launch it for use in sprinters' training programs. • Install hardware and software components.	3 Days
09	Monitoring and Maintenance Plan	• Establish a long-term monitoring and maintenance plan. • Ensure continuous system functionality. • Provide regular check-ups, software updates, and technical support.	Ongoing
10	User Feedback and Improvement	• Implement a user feedback system. • Use feedback to make continuous improvements to the system. • Enhance features and usability.	Ongoing

The Starting Block Force Plate for Sprinters - Digital Screen Development project is dedicated to enhancing sprinters' training and performance analysis through the creation of a user-friendly digital screen system. The project's key tasks align with the AHEAD program's objectives, emphasizing innovation and excellence in sports technology.

5. DURATION OF THE ASSIGNMENT

This project will be for a two week after signing the contract agreement.

6. MODE OF PAYMENT

Payments will be made upon submission of the completion report/ certificate or recommendation below mentioned task sheet. (Total payment will be received upon launching the website)

No.	Task	Percentage (%)
01	Requirement Analysis	5%
02	System Design and Planning	10%
03	Software Development	20%
04	Integration with Force Plate	10%
05	User Interface Development	10%
06	Testing and Quality Assurance	15%
07	Training and Documentation	5%
08	Deployment and Launch	10%
09	Monitoring and Maintenance Plan	10%
10	User Feedback and Improvement	5%
	Total	100%
	Total in Rupees	LKR 400,000.00

The payment for software development will be distributed across these tasks as per the provided percentage breakdown.

The payments are under the AHEAD/RA3/UBL/SUSL/OVAA 23/01 & 02.

7. REQUIRED QUALIFICATIONS & EXPERIENCE

- A bachelor's degree in Computer Science, Software Engineering, or related field.
- Proven experience in developing software applications, especially in sports-related or fitness technology.
- Proficiency in relevant programming languages and development tools.
- Familiarity with force plate technology and sprinting biomechanics.
- Strong problem-solving skills and creativity in software design.
- Ability to work collaboratively in a multidisciplinary team.
- Prior experience in UI/UX design for digital screens.
- Knowledge of data integration and real-time data processing.
- Strong communication skills to understand and translate user requirements into software features.
- Experience in software testing and quality assurance.
- Knowledge of agile software development methodologies is a plus.
- Demonstrated ability to meet project deadlines and deliver high-quality software solutions.

8. METHOD OF APPOINTMENT

- A suitable candidate will be selected after evaluating the CVs submitted by relevant individuals based on the ability to comply with pre-defined requirements and according to an agreement.

- A comparison of CVs will be conducted to select a candidate to carry out the task.

- The agreement will be valid for the tasks mentioned above from the given time span and may be changed with agreement from both parties during the period of the relevant TOR.

9. REQUIRED PROFESSIONAL COMPETENCIES

- Ability Technical Proficiency: Skilled in software development, coding, and relevant technologies.
- Project Management: Proficient in planning and managing project tasks and resources.
- Problem-Solving Skills: Strong analytical and creative problem-solving abilities.
- Team Collaboration: Effective team player and collaborator.
- Communication Skills: Strong written and verbal communication skills.
- Adaptability: Flexible and open to changes in project requirements and technologies.
- Quality Assurance: Experienced in testing and ensuring product quality.
- Time Management: Excellent time management skills.
- Technical Research: Capable of in-depth technical research for innovative solutions.
- Documentation Skills: Proficient in code documentation and progress reporting.
- Client Focus: Understands and prioritizes client and end-user needs.
- Ethical and Professional Conduct: Adheres to ethical and professional standards.
- Quality Standards: Committed to adhering to best practices in software development.

- Adherence to Deadlines: Consistently meets project deadlines and schedules.

These competencies will contribute to the efficient and successful development of the digital screen system for sprinters.

10. REPORTING OBLIGATIONS

The individuals will be reporting to Principal Investigator - Dr. A.W.S. Chandana.

11. OWNERSHIP OF THE ASSIGNMENTS

The Ministry of Higher Education funds this assignment via AHEAD-OMST under the program component of AHEAD. As such, the University shall be the owner of the assignment and will reserves the Intellectual Property Rights for all deliverable of the assignment under the terms and conditions given in the IP policy of the University. The University Business Linkage Cell, Sabaragamuwa University of Sri Lanka will hold exclusive right to the software designed and all the content that published on the software. The selected candidate will have no right of claim to the assignment or its outputs once it is completed and no rights to use Data and Information gathered through the assignment for other purposes without written permission from the Vice-Chancellor. Any Reports/Data/Information produced as a part of this assignment shall be handed over to the Client in soft and hard forms.

12. OUTPUT/ OUTCOME

The Starting Block Force Plate for Sprinters - Digital Screen Development project, along with descriptions of each output:

1. **Fully Developed Software**: A comprehensive software application for digital screens that enables real-time data collection and analysis for sprinters. The software is designed to provide valuable insights into a sprinter's performance during training and competition.

2. **User-Friendly Interface**: The software features an intuitive and user-friendly graphical interface. It allows sprinters and coaches to interact with the application easily, enabling them to access performance data and results effortlessly.

3. **Bluetooth Connectivity**: The software seamlessly connects with starting block force plates and other relevant devices via Bluetooth technology. This ensures efficient data transmission from the force plates to the software, reducing the need for physical data cables.

4. **Real-Time Data Display**: The software presents data in real-time, offering sprinters immediate access to key performance metrics, such as ground reaction forces, acceleration, and velocity. This real-time feedback empowers sprinters to make real-time adjustments to their technique.

5. **LED Indicator System**: The software includes a visual LED indicator system that provides instant feedback during sprints. For example, green LEDs may indicate a good start, while red LEDs may signal issues with technique or force application. This visual feedback enhances training effectiveness.

6. **Customization Options**: The software allows users to customize settings and preferences to align with the specific training and analysis requirements of sprinters and coaches. This flexibility ensures that the software caters to individual needs.

7. **Algorithm for Data Processing**: The software employs advanced algorithms to process the force plate data accurately. These algorithms analyse data points, detect patterns, and calculate various performance metrics, such as stride length, ground contact time, and power output.

8. **Documentation**: Detailed user manuals, technical guides, and documentation accompany the software. These resources help users understand how to operate the software, interpret results, and troubleshoot any issues that may arise during its use.

9. **Quality Assurance**: Rigorous testing and quality assurance procedures are conducted to guarantee the software's reliability, accuracy, and stability. It undergoes thorough testing to identify and rectify any software bugs or issues.

10. **Technical Support**: The project includes the provision of ongoing technical support. Users can reach out to a support team for assistance, including resolving software-related queries and addressing any technical challenges they encounter.

11. **Project Reports**: The project involves the generation of periodic progress reports during the development phase, detailing the milestones achieved and the tasks completed. A final project report summarizes the entire project, documenting the development process and outcomes.

These outputs collectively contribute to the advancement of sprinter training and performance analysis, enabling coaches and athletes to make informed decisions, optimize training programs, and enhance overall sprinting performance.