# OriLive: A LoRa Mesh Network System for Orienteering Split Times Collection

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The goal of this project is to provide real-time split times for orienteering competitions. Orienteering races are typically held in diverse natural terrains, such as forests, that make data transmission challenging. The OriLive system integrates with widely used timekeeping equipment produced by SPORTident in Germany, collecting and processing the split times data. Current solutions used in Czech Republic are often expensive, require a SIM card and mobile network, or are bulky and cumbersome. OriLive solves most of the problems. The core of the project are the O-Nodes, which are custom-built devices based on ESP32 micro-controllers and LoRa transceivers, featuring OLED display, and full power management capabilities. O-Nodes can be placed in the forest near orienteering controls, where they form a mesh network using their own lightweight protocol built on top of LoRa. This provides the system with excellent coverage, even in rough terrain, independent of mobile operator networks. The network transfers split times data to a gateway unit, which uploads it to a server API. The data is then stored in a database and provided to third-party software, uploaded to online results platforms, and displayed in the system dashboard. O-Nodes can be easily configured using a simple Android app. The project also includes antenna measurements conducted in order to provide the best operating range and tests conducted during orienteering competitions. Overall, the project offers an easy-to-use, compact, and relatively inexpensive solution for race organizers and offers new approach to the problem.

**Awards Won:**
Third Award of $1,000
King Abdulaziz &amp
his Companions Foundation for Giftedness and Creativity: Full Scholarship from King Fahd University of Petroleum and Minerals(KFUPM) (and a $400 cash prize)
K. Soumyanath Memorial Award: First Award of $3,000
K. Soumyanath Memorial Award: $1,000 will be awarded to the winner's school.