Industry Project

Department of Computer Science and Information Technology

La Trobe University

2017 Project
Community-Based Orienteering

In Collaboration with

Orienteering Victoria

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Department of Computer Science & Information Technology
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Client

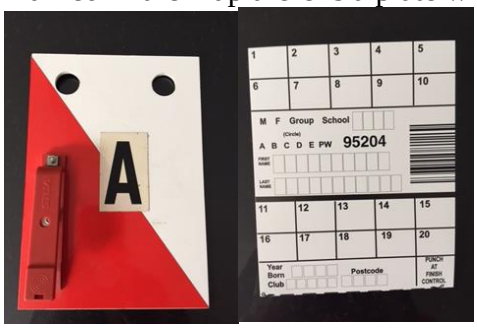
Orienteering Australia's primary objectives are to encourage, promote and coordinate the sport of Orienteering in Australia. There are a number of orienteering clubs around Victoria. At the state level, orienteering is governed by Orienteering Victoria. Dr Damian Spencer will be acting on behalf of Orienteering Victoria for this project.

What is Orienteering?

Orienteering is a sport which appeals to all ages. It involves running / walking across unfamiliar country using a map to find your way around a set course of control locations. It requires physical fitness, skill in map reading, mental alertness and decisiveness. Participants typically compete individually, with their own individual start time, but can compete in group.

Orienteering maps may be simple black and white maps with basic features such as roads, laneways and parks mapped or full colour maps with extensive detail mapped.

Currently orienteering courses use a manual punch card system, where at each control point marked in the map there is a plate with a manual punch. (see pictures below)



Solution/requirement

A simple solution that replaces the need for the manual system but still based on participants visiting the actual control and continue to use a paper map.

Phone application need to be developed to allow participants to:

- Enter their names/Group name
- Have a unique identifier (i.e. class number
- Record when they reach each control (control id and time)
- Record their start and finish time (HH:MM:SS)
- Check their results instantly after finishing the course
- Compare their results with other competitors if participating in groups (ranking)
- Download the information and display it in an Excel spreadsheet for analysis purposes.

The solution will need to display a results list showing the least total time listed from winner down, this list to be viewed on Orienteering Victoria website as well.

The App need to support at least 20-30 control locations (plus start and finish).
If a physical presence is required at each control location, like the present control punch, then this needs to be a **low cost** option as vandalism does frequently occur.

A GPS related system will not be appropriate for this App. It is preferred to use a near field communication technology or optical character recognition. Speed in and out of a control is important, the use of QR codes is not advised as it slows down the operation.

World-wide Orienteering controls are marked with an orange and white symbol as below and on plate photo. It is preferred for this symbol to be incorporated in the design.

Orienteering Victoria is interested to know what risk management features could be incorporated into the App.

The App will ideally need to support three different event styles (listed in order of desired formats, most important at top).

1) Line Event
Courses may have anywhere between 8 controls to 20 controls making up their course. (Shorter courses for younger people typically have fewer controls).
The course is completed by visiting the controls in a set order with the numbering always starting at 1. (e.g. control 1 – 2 – 3 – 4 etc).The person finishing the course in the shortest time having visited all the controls being the winner.

2) Scatter event
All courses have 20 controls.
Here the competitor must visit a specified number of controls in any order (The aim is to link the given number of controls together to form a shortest route possible). The first to finish wins.
It would be ideal to have the flexibility to be able to vary the number of controls specified within the range from 8 to all 20. This would allow for courses to be set for varying abilities.

3) Score event
This maybe the most difficult style of event to set up.
Within this style of event the controls have values ranging from 2 to 5 points.
The aim is to collect as many points as possible within a given time. So the competitor decides which of the 20 Penalties are incurred for being late back.
The points system is as follows:

- Controls numbered 1 to 5 are worth 2 points
- 6 to 10 are worth 3 points
- 11 to 15 are worth 4 points
- 16 to 20 are worth 5 points
- A maximum of 70 points can be scored

A score event has at least 3 courses based on both time and if a competitor is running or walking. The courses are:

- 45min runners course
- 60 min runners course
- 60 min power walkers course

The penalty for being late is that competitors lose 3 points per minute or part minute that they are late.

Use of the application

The application to be used in parks and school events. If successful, it could potentially expand into park and street orienteering and replace punch cards and manual scoring. Part and street orienteering is more complicated that school events because of the mix of scatter/score formats used in a single event.