Discussion paper for Sportident use
Level 3 Controllers Workshop
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1. Introduction

This paper is designed to be a starting point for discussion on overseeing the use of the Sportident (SI) timing system at a major orienteering carnival. It assumes a working (but not detailed) knowledge of the system including experience with programming SI-units and operating Stephan Krämer's OE/MT software commonly used to run events. I presume that the units are used in "Competition Mode" which means that the units are programmed ahead of the event and remain in dormant mode until the pre-programmed switch-on time.

The single most important aspect of the Sportident system is that the units (controls) switch on at the start of the event and remain active throughout the event. Almost every other scenario can be overcome by an experienced sportident operator. Programming the units is relatively straightforward so, with proper preparation and checking, this problem should never occur.

The next most important aspect is to ensure that there is adequate backup (or preferably redundancy) in the computer systems so that data is not lost due to a computer failure. Again, careful planning should ensure that this is not an issue.

The information below has been learnt from operating Sportident at many OQ events including several state championships and at the Easter 2004 carnival. I have tried to concentrate on aspects relevant to controlling so not all sportident issues are discussed in detail.

The next section gives an overview of aspects of Sportident that need to be considered prior to the event. Thereafter is a checklist of items that a controller should check during the course of the event. Lastly, there are a number of 'scenarios' for discussion.

2. Pre-event considerations

It is primarily the responsibility of the organizer to coordinate the activities below. However a controller would be expected to be involved.

Operating time of SI-units
At first glance one would expect the units to switch on at the first early start and switch off at course closure. Two points need to be considered here
- Early starters need to clear and check so the units need to switch on at least 15-30 minutes prior to the first start
- If the event is delayed (eg bad weather, problems with road access), then start times can only be delayed within what is possible with the switch-off time of the units. It is thus worth considering whether such a delay is possible and adjusting the switch-off time accordingly. An extra 30 minutes or an hour may be advisable.

Programming time

At a major carnival (such as Easter) many units must be programmed, placed in the field, used, and then returned and reprogrammed for a following day. At Easter 2004, we had 220 units available and a significant number of units were programmed each evening (on the Thursday evening, units were programmed for the prologue, family relays, Day 1 and Day 2). With these limitations, it was not possible to program all units for a given day at once (in 2004, unit availability meant that Day 2 units were divided into three separate batches that were programmed on three successive evenings). It is important that a clear protocol is developed to ensure that this happens smoothly and without error. The units themselves need to be clearly labeled so that there is no confusion on control number and day of use.

Batteries

The SI-units have a battery meter that is displayed when the units are programmed (this doesn't apply to the newer units where battery usage is shown in an LCD display). Experience shows that battery failure becomes more prevalent at about 40% usage onwards although there is no clear correlation between usage and failure. A single day event typically increases the battery usage by around 5%. Serious consideration needs to be given to installing fresh batteries into all units before an event. There are two checks of the batteries that should be performed:

- when switching on the units to program them, extended 'beeping' means that the batteries are flat and should not be used
- when placing in the field, the flashing LED in the back of the unit should be checked – flashes about once every 8 seconds in dormant mode, and once every 3 seconds in competition mode.

Computing facilities

My preferred approach is to have two completely independent systems so that there is a redundancy is the database. We typically use one computer to print results slats and one computer to print split times. The competitor must download twice under this system so there are two copies of the results. Extra finish lanes are accommodated by appropriate networking. Regular back-ups, preferable to a memory stick should be made – at least one at the end of the day and more often if time allows (downloads must be halted for about a minute while this procedure occurs).

Use of a start unit

Most major events operate without a start unit and I would expect this would continue to be the practice.

Clears/Checks

Consideration needs to be given to the number of clear and check units. Ultimately this is determined by the number of start lanes and the start interval. A single clear unit accommodates about 4 -6 people per minute. One check unit for every two clear units is sufficient.

Number of finish lanes

This is likewise determined by the number of start lanes and start intervals. One lane can handle about 6 – 8 people per minute.

3. Checking

A controller should be checking the following two items during the course of an event:

Control programming protocol
The SI-Manager program (commonly used to program the units) has an output protocol that should be checked for correctness – preferably immediately after programming. The important points to check are

- the date and time when the units were programmed – the switch on and off times are relative to the programming time. If the computer clock is set to the wrong date or time then the units will not switch on at the correct time
- the power on time is before the first early start
- the turn off time is sufficiently late to allow for any possible delays
- the working time is greater than the duration of the event
- the battery usage is acceptable
- the correct control numbers have been programmed
- clears/checks/finishes have all been programmed

OE/MT Course/Class allocation
The OE/MT software is used to enter competitors, read their SI-cards, check they have punched correctly, and to compile the results. Errors in data entry are easily corrected - even after the event. However, for smooth operation the controller should request and view outputs showing:

- control order on courses
- allocation of classes to courses

4. Scenarios

The following are plausible failures of the system. The organizer in conjunction with the controller would be expected to resolve them. Please discuss possible solutions.

a) At the expected switch on time on the morning of the event, the units fail to activate. A subsequent investigation shows that the date on the computer clock was out by 24 hours and the units have been programmed to activate on the following day.

b) An early competitor returns ands says that a particular unit is not functioning

c) A competitor returns with a mis-punch although they insist they visited the control and that it beeped/flashed

d) A competitor fails to clear their SI-card and the last few controls are not recorded on the card as the memory limit has been exceeded

e) The generator fails sending a spike through the power cable. The power supplies of all connected computers are damaged and cannot be recovered.

f) Others – your input??

5. Scenarios – my solutions

a) The SI-operator's nightmare! A number of alternatives exist with the following decreasing order of preference
   • Delay starts by 1 hour. Collect all spare units and those nearby, reprogram and place in field. Run event as normal although it may not be possible to replace all units and some will need to be recorded manually
   • Reprogram clear/check/finish units and use Sportident only for the timing. Competitors to manually punch on map
   • Cancel/postpone the event to another day

b) Two alternatives
   • Program a replacement unit and place in the field. Reinstate all early competitors provided they have punched their map
   • Remove the control from the course in the OE/MT software. Check all competitors maps for a punch

c) This is the most common problem with the following alternatives
   • The competitor has a recorded punch of a different control number. Either the competitor has punched the wrong control or the wrong unit has been placed in the field (easily checked by looking at other people's control sequences) – mp (missed punch) if it's the competitors error.
   • The competitor has no other recorded punch – just a missing punch. This is the hardest to resolve but in several years of using Sportident I'm yet to be convinced by a competitor that they visited a control that beeped/flashed but that it didn't record on their SI-card (except if the unit subsequently failed). The most common explanation is that they just missed the control. This can be checked by looking at split times – often this competitor will have the fastest split from the control before to the control after the missing punch – showing that they missed the control. Sometimes the competitor has a very long split time indicating they have made a major error and probably missed the control. Unless the competitor has a manual punch on the map, an mp must be recorded.

d) No alternative but to record an mp. A good reason to have a check station at the entrance to the start where competitor's names are checked.

e) Time to admit defeat? Not quite – all results are still recorded on competitor's SI-cards and will remain there until the next clear. Also, the download master stations have a built-in memory so that all details (including splits) of the last 128 or 512 competitors (depending on model) are stored in the unit and can be retrieved. A spare computer should be used together with the most recent back-up to continue downloading the results. Competitors still at the event should be asked to download again. Other details can be recovered from the download station(s) or later from printed split times returned by competitors. As a last resort, if all results cannot be retrieved, the event will need to be abandoned.