



ORIENTEERING COURSE PLANNING

20th February 2017

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1. INTRO

The course planner is probably the event official with the highest profile: the product of his or her work will have the greatest influence on the competitors' views of the success of the event.

The course planner is responsible for everything from the start line to the finish line.

Everything else is up to the organiser (with odd exceptions): frequent communication between the two is essential.

2. OBJECTIVE

Orienteering is "the thinking sport": doing well requires a combination of physical and mental skills.

It is nearly impossible to set a course that does not offer a good physical test: the challenge for the course setter is to offer a good mental test, appropriate to the skill level of the runners.

Two aims for the course setter:

- to stimulate the competitors both mentally and physically
- to plan fair courses which will result in the best orienteer winning

Skill not Luck

You are setting the course for an orienteer,
not a surveyor, so the feature you use
must be distinct.

3. BEFORE PLANNING

Is the area (cartography, map scale, etc.) suitable for the race I want to plan?

Is the terrain simple enough for the easiest courses, yet sufficiently complicated to test the best navigators?

Start and Finish Location

The approximate positions of start and finish should be decided early.

Almost without exception, the ideal location for the easiest course, because of its length, dictates or constrains the Start area for all courses.

- Vehicular access to the start – somebody (preferably not a team of sherpas) has to get all the equipment there.
- Is there room at the start for competitors to warm up?
- Are the starting competitors hidden from the view of those waiting at the pre-start?

- Most competitors like to have the Finish/Competition Center as close to the parking as possible.
- Competitors must arrive at the finish from a predictable direction.
- A particularly scenic finish location helps to create a good atmosphere (should certainly be considered for relays).

4. PLANNING - Tips

Impression produced

| GOOD 😊 | BAD ☹️ |
|--|--|
| pleasant, runnable forest | green areas |
| variety of terrain used | mindless climb |
| variety of leg length and direction | wrong map or control description |
| variety of techniques tested: <ul style="list-style-type: none">- route choice- fine map reading- compass to catching feature- navigation using detail- compass and pacing | easy runs that requires little concentration |
| | many legs of similar lengths |
| | weather (no control here) |

Functions of controls

1. (most important) to provide a good leg
2. to move the competitor from the end of one leg to a better starting point for a good leg (avoid this in sprint events)
3. avoiding dog legs
4. collecting/guiding competitors around a sensitive area, or leading them into a compulsory crossing point

Variety of legs

Many legs of similar length and direction lead to boredom. Try to break up the competitor's rhythm.

Try also to avoid having all the courses going in the same general direction around an area.

Long legs

What are the attributes of a good long leg?

- several possible routes, with the quickest being navigationally the hardest
- routes involve linking many different paths together
- mental problems posed throughout the leg

- fairness (what looks the quickest on the map must also be the quickest on the ground)
- no one leg should be more than 20% of the course length, lest the result of the race hinge on one decision.
(however, the two longest legs of the course together should be around 33% of the course length, in order that route choice be adequately tested)

Avoidance of Doglegs

Leaving a control, there should not be a logical route that doubles back through the same area from which the control was approached.

Avoidance of Dangerous Areas

Avoid dangerous areas such as cliffs with poor visibility, sink holes, or deep swamps. Remember, an easy course runner may go into these areas accidentally, while an hard course runner may be tempted to try a dangerous short cut.

Controls on Similar Features

Have no less than 60 meters distance between any two controls on different courses if the features are similar enough to be confused at all and no less than 30 meters between any two controls on different courses regardless of the feature.

Optimum Route

Determine the "optimum route" that an orienteer would take on all of your courses and calculate the total climb on this route. (this must not be over 4% of the optimum route distance)

Try a design that offers contouring along hillsides as the optimal route. A longer walk to get to a higher Start area can also help.

First Controls

The first control must not be the same for any two courses.

OR

The two courses have to start at different minutes.

AND

Use an angle of max. 180° for first legs.

Easy Course

An Easy Start

Linear/Large Features

Short Legs

Avoidance of vague and dense areas

Very simple route choices

No Use of Compass

Medium Course

Easy Course

Variety of lengths of legs

Route Choice

Catching Features

Limited Use of Compass

Shared Controls

Variety

Hard Course

Controls not too close to attack points

Avoid lost Kilometers

Avoid routes parallel to linear features

Climb

Long Legs

Route Choices

Changes of directions

Different terrains

Control Feature Size

5. WORK ON THE GROUND

- Taping control sites
(with control code if possible)
 - Start and Finish
 - Crossing points
- Dangerous features
 - Test runs
 - Map corrections

6. BACK HOME

- Map corrections
- Rationalising the controls
(the fewer controls you use, the less work you and the controller have to do in putting them out and checking them!!)
- Centre the circles
- Allocating control codes/cut lines
 - Refreshment points
 - Description sheets

- Final details for competitors:
 - course lengths, climb*
 - map scale, contour interval*
 - any non-standard symbols*
 - whether or not any crossing points are compulsory*
 - comments on the nature of the terrain*

- Disaster planning

7. THE EVENT ITSELF

- Control site layout
- Collecting the material you need
 - Putting the controls out

(leave the tape in place – switch the unit ON – do not hide the flag – have a look back at the control when leaving)

- When the race starts, you can finally rest...
(stay close to the finish area, have with you the all-controls map and mobile phone, get feedback from competitors)
- Then collect everything

8. POST-MORTEM

What things worked well/wrong?

About the course lengths/winning times?

How many MP/DSQ/RIT?

(ideally, there should be none)

Publish the maps/courses

Most important:

did you enjoy the experience?

9. PLANNING – Sprint

Just how good was that Sprint race?

Idea by David May

(IOF Foot Orienteering Commission)

Good sprint events, two factors:

TERRAIN and PLANNING

What terrain to use?

"Predominantly very runnable park or urban (streets/buildings) terrain. Some fast runnable forest may be included"
(IOF Competition Rules, Appendix 6)

Assuming that the selected terrain/map is of appropriate standard, let's focus on quality planning, because:

- we CAN have a good sprint on a poor map;
- we CAN'T have a good sprint with a poor course.

Sprint guidelines:

- average leg lengths must be short, 120m to 180m;
- have frequent changes of direction; (small crossover loops are good)
- long legs execution should involve a high rate of decision making along the way;

- dog legs can provide good challenges too, but avoid the possibility that they may cause clashes between incoming and outgoing runners;
- aim to make every leg pose a route choice challenge; control sites will often have to be positioned with great care in order to achieve this!

The table describes how the technical challenge of each leg can be quantified on a four point scale (0 to 3).

| POINTS | URBAN | NON URBAN |
|--------|--|---|
| 0 | Little or no route choice | Simple leg with minimal navigation needed |
| 1 | Two similar routes, easy to identify | Easy route choice leg with little technical detail |
| 2 | Several possible routes, or one longer route which is complex to execute – thinking needed | Route choices not immediately obvious and/or some technical challenge |
| 3 | Complex route choice/detailed navigation needed – many decision points | Complex route choice/detailed navigation needed |

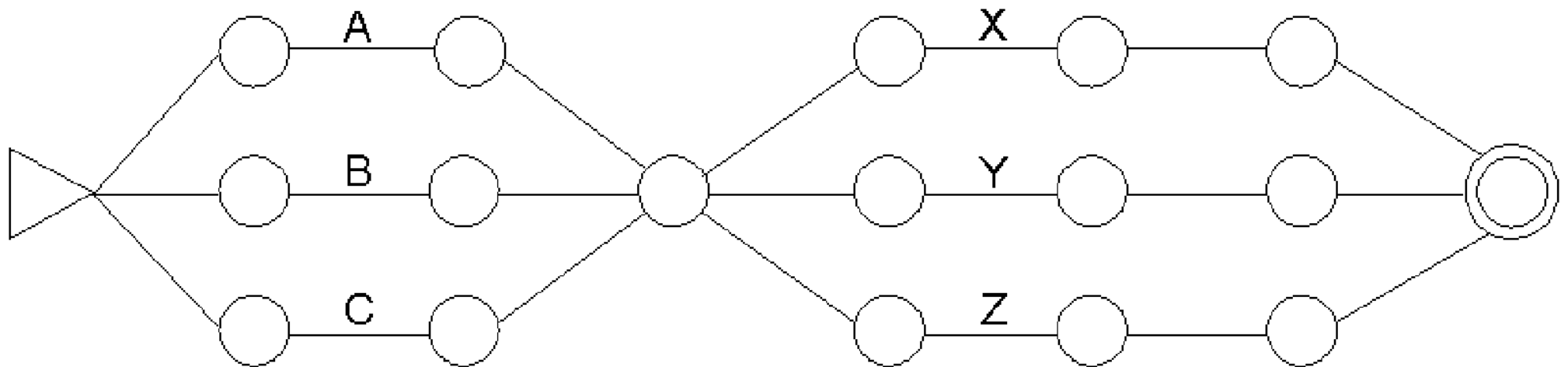
A total score of over 20 correlates well with courses which are rated as enjoyable and challenging.

Divide the total score with 20 legs.

A result of between 1.2 and 1.5 is an indicator of good quality legs on average, provided the points total exceeds the 20 value mentioned earlier also.

10. PLANNING - Relays

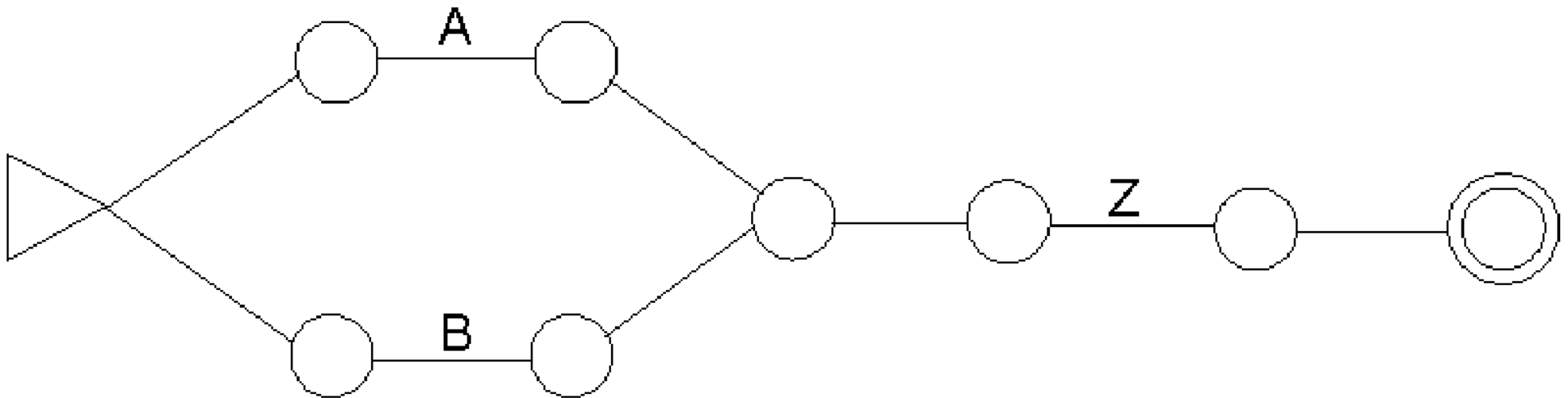
- COMMON CONTROL
- COURSE
- LAP
- SECTION
- LEG



1. Opportunities for competitors to run in packs should be reduced as much as possible (this is particularly a problem with the first lap).
2. Each team must have visited the same controls and run the same legs between controls.
3. All competitors should have courses of similar difficulty.

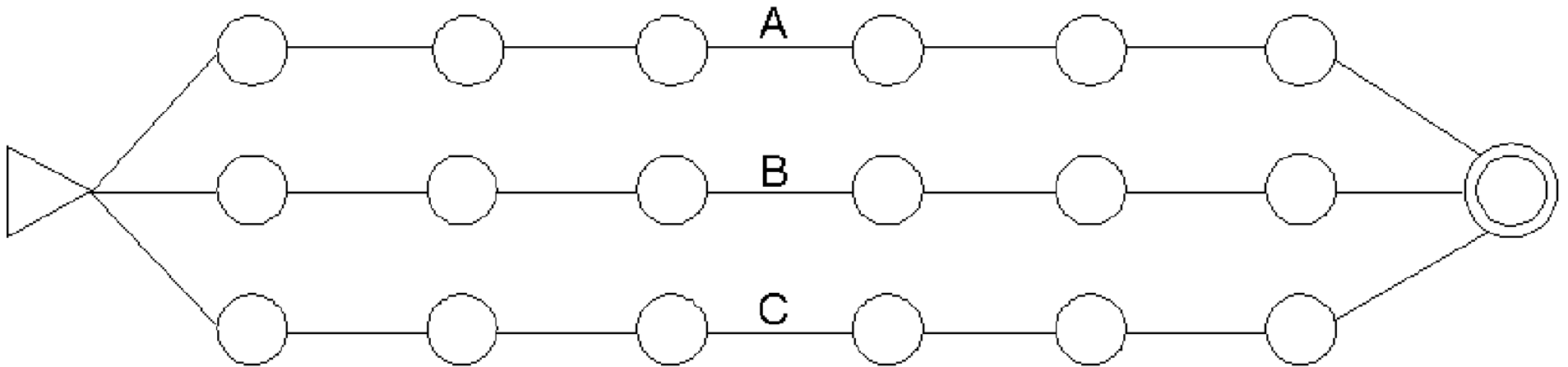
The Main Systems:

1. Two Courses



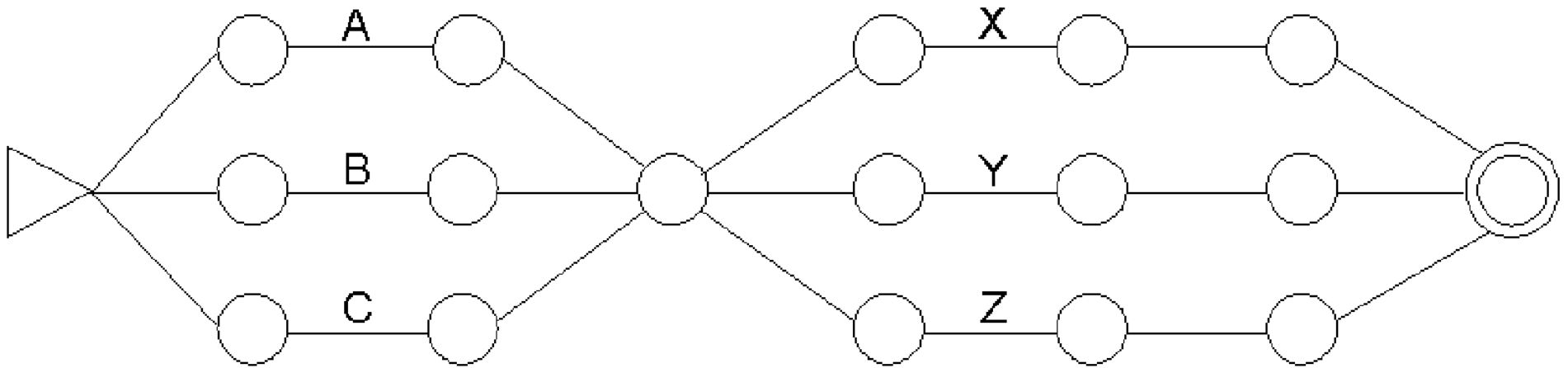
First runners: half do A, half do B.
Second runners: choices reversed.
Third runners: all do the same course.
(this is suitable only for small entries)

2. Motala



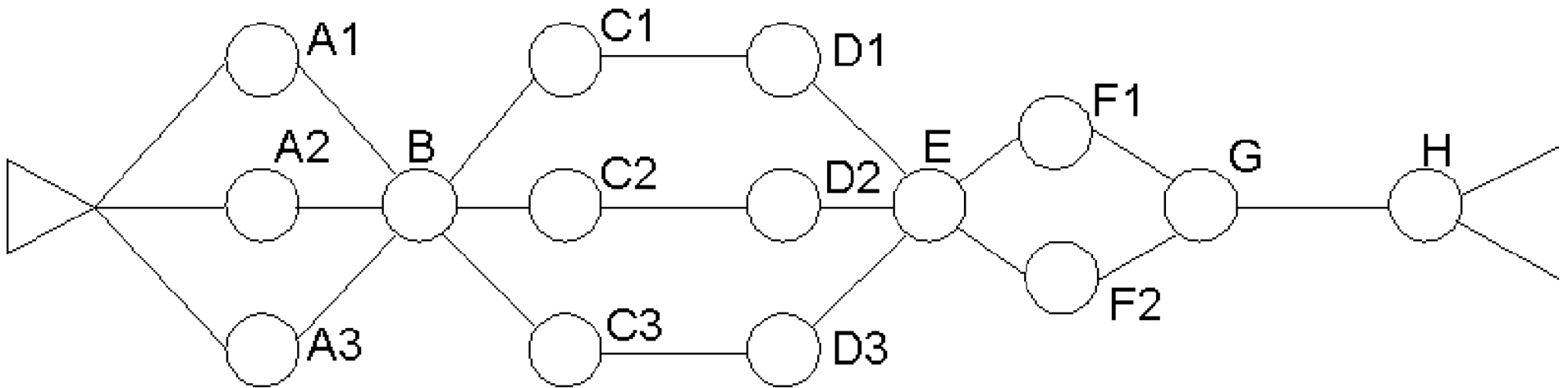
Three courses (A, B, C) are planned.
Teams run these courses in different orders, giving 6 possible permutations.

3. Vännäs



All competitors pass through a common control about halfway around the course. There are three sections (A, B, C) before it, and three (X, Y, Z) between it and the finish. This gives 9 permutations for the first lap.

4. Farsta



Several common controls, producing patterns of considerable complexity.

Sections with two or three consecutive controls in common can be built in. The aim should be to force each competitor to do his/her own navigation



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