

ISSOM standpoint - Map Council CSOB (Czech orienteering Federation)

In the spring 2003 was published new specification for sprint orienteering maps – ISSOM, which defines new standards for sprint maps. Map Commission IOF presented this draft without any preceding discussion. It seems to be very important and useful to open such a discussion. Its conclusions can help to arrange the specification into more acceptable and balanced form. Only if the ISSOM will be positively accepted both by orienteers and mappers, only then can the specification contribute to generally accepted interpretation in all IOF member states and to further development of the sprint orienteering.

Sprint orienteering is already a well established discipline in the Czech Republic. Many special maps for this discipline were made in the last eight years. Many Czech cartographers are very experienced in sprint maps mapmaking process. Czech Map Council feels strong mandate to express its viewpoint to the ISSOM draft. In the following text Czech Map Council presents principles, which should sprint maps fulfill, confronts these principles with the ISSOM concept, shows particular examples of inner ISSOM discrepancy and remarks upon graphic interpretation of individual symbols with possible solutions. Czech Map Council believes that Map Commission IOF will understand this initiative as a possible starting point for a serious discussion.

Map Council CSOB (Czech Orienteering Federation)
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Sprint map principles

1. Map legibility

Orienteer runs in a very high speed during a sprint competition. Orienteer should obtain as much information from a map as possible. A map should allow it, make map reading easy, not the other way round.

2. Barriers versus communications

Barriers make running difficult in contrast to communications. Graphic expression of symbols should respect it. Symbols for barriers and communications should be most different.

3. Passable versus impassable barriers

Distinct differentiation between passable and impassable barriers is an important precondition for right route choice and fair conditions.

4. Communications with traffic versus without traffic

Traffic is kind of danger for an orienteer. That's why areas with traffic should be emphasized in a map. Intensity of danger should be shown, at least in two degrees.

5. Navigation value of feature versus its dimensions

Selection of features for a map should be influenced primarily by their navigation values, secondary by their dimensions. Specification for orienteering maps should only guide and recommend by this selection.

6. Map scale and contour interval

Map scale should compromise between map legibility and map format. Contour interval should correspond with prevalent terrain gradient and compromise between understandable expression of terrain and drawing density. Map should be mapped in bigger or same scale as published.

7. Vertical level

Map represents features in basic vertical level and underpasses, overpasses and passages, which primary connect basic vertical level. Vertically multilevel features are represented by its ground plan in basic vertical level.

8. Distinctive representation of passages and inaccessible areas

Passages which are usually unopened should be represented in a map as closed. Their passability during a competition is represented with overprinting symbols. All features and areas which are forbidden to pass should be represented with overprinting symbols.

Sprint map principles in comparison with ISSOM draft

ad 1. Map legibility

Maps in scale 1: 10 000 according to ISOM2000 must have symbols enlarged at 150 % (in comparison with maps in scale 1: 15 000). ISSOM does not follow this rule. Some symbols are even smaller than for scale 1: 15 000. E. g. distinctive cultivation boundary (414) or edge of pavement (529.1) are according to ISSOM 0.7 mm wide. That is nearly illegible. It also does not correspond with minimum optical dimensions for line symbols (according to ISSOM 7.3).

ad 2. Barriers versus communications

Barriers make running difficult in contrast to communications. Graphic expression of symbols should respect it. Symbols for barriers and communications should be most different. ISOM2000 does not solve this fact. Black line on such a map can mean stop as well as move forward. This discrepancy can cause problems especially in sprint competitions that are rich both in barriers and communications. False interpretation can mean much bigger delay than in classical forest terrains, where barriers are isolated. Communications represent a fundamental piece of information. They should be very distinctive and unexchangeable with other symbols.

ISSOM tries to solve this problem. Paved areas are represented by 15 % brown. Unfortunately 15 % brown is visually very undistinctive and communications can be in other features easily overseen. The easiest solution is to use darker brown.

Other way how to make the difference between communications and other symbols more distinctive is to use a special color for communications, e.g. red. It would be necessary to use a special shade, legible also for colorblind people.

ISSOM implements a new rule - impassable barriers are forbidden to overcome. We think: prohibition should be made by organizer of respective competition, not by cartographer. Forbidden areas should be represented by overprinting symbols as well as by markings in terrain. From this point of view symbol 421 Impassable vegetation seems needless.

ad 3. Passable versus impassable barriers

Overcoming of passable barriers should not mean a delay. Passable and impassable barriers should distinctively differ – e.g. by line width or color shade. ISSOM combines both methods - different width and shade solve passability of walls (519.1, 521.1), passability of other barriers is solved only by different width. We think: all barriers should follow only one principle.

Passable barriers should not endanger safety of an orienteer. Impassable barriers can be impassable, dangerous or can represent inaccessible areas.

ad 4. Communications with traffic versus without traffic

Traffic is kind of danger for an orienteer. That's why areas with traffic should be emphasized in a map. A map should show danger intensity at least in two levels (shades).

ISSOM avoids this problem by forbidding competitions in areas with unexpellable traffic. That is not a solution - far more practicable is to percept traffic as a fact and correspondingly represent it on a map. Traffic intensity and type of ground can be represented by different shades of brown. It is usually so on Czech sprint maps: heavy traffic 100 % brown, weak traffic including parking lots 75 % brown, paved pedestrian area 50 % brown, dusty pedestrian area 25 % brown.

ad 5. Navigation value of features versus its dimensions

Selection of features for a map should be influenced primarily by its navigation value, secondarily by its dimensions.

Minimal dimension 2x2x2 meters presented in ISSOM is too strict. It also does not correspond with dimensions of some ISSOM symbols such as 206 Boulder (minimal height 1 meter). Minimal dimension 1x1x1 meter would be more appropriate. However only as a guideline not a strict condition.

Specification for sprint maps should allow surveying of different special features that are common in parks and urbanized areas and serve as an important navigation points. ISOM2000 enables their expression by so called special symbols - small crosses and circles in different colors for each class of features. ISSOM has canceled some of these features. In many cases a point feature fits much more than a ground plan. ISSOM should not reduce number of special symbols. On the contrary it should widen the range of prevailing symbols.

Urban terrains are often so specific, that it is nearly impossible to assign symbols firmly to all possible features. It is cartographers task to creatively depict situation with basic symbols in a legible way. Only general rules can serve to this purpose: e.g. the darker color (green, gray, brown), the less passable features; black color represent "hard" features, brown color represents "soft" features; green and yellow colors represent vegetation features; thin black line represents passable features; thick black line represents impassable features.

ad 6. Map scale and contour interval

Map scale should compromise between map legibility and map format. The most suitable scales for sprint maps as experience shows are 1: 4 000 and 1: 5 000.

Very detailed scale can cause that some symbols will be smaller in a map than corresponding real feature proportions. The scale limit is probably 1: 2 500, suitable especially for instruction maps.

ISSOM chapter 3.1.1 allows scales 1: 5000 and 1: 4000 in contrast to Appendix that mentions also scales 1: 3000, 1: 2500 and 1: 2000 (Chapter 7.4 does not mention scale 1: 4000 at all).

Contour interval should correspond with prevalent terrain gradient and compromise between understandable expression of terrain and drawing density. In flat terrains could be that 1 meter, in steeper terrains 2 or 2.5 meters.

ISSOM is not coherent in this. Chapter 3.1.1 allows contour interval 2 and 2.5 meters, chapter 7.5 recommends contour interval 1 and 2 meters.

ad 7. Vertical level

Map represents features in basic vertical level and underpasses, overpasses and passages, which primary connect basic vertical level. Vertically multilevel features are represented by its ground plan in basic vertical level. This principle corresponds with ISSOM.

ad 8. Distinctive representation of passages and inaccessible areas

ISSOM forbids overcoming of many barriers. Overcoming of forbidden barriers means disqualification.

Map specification should not contain a principle which is not to be checked by map committee .

That is an organizer matter and competency. Organizer should represent areas with forbidden access by overprinting symbols and mark it in a terrain. Causes of no entries do not have to necessarily correspond with cartographer's point of view.

Particular comments to ISSOM proposal (according to its chapters)

4 Principles:

- 4.3.1. – prohibition of underground control points is too strict, especially in underpasses bellow obstacles (railway, highway, river) are controls suitable, problems may be avoided by control description.

5 Print:

- definition of acceptable color combinations is missing (combinations should be based on those in ISOM2000)

6 Symbol definitions

- no statement where point symbols should be placed – in center of gravity
- we appreciate that some symbols are omitted in ISSOM which are nothing more than other symbols (111, 114, ...) or an instruction how to use them
- generally too many ISOM2000 symbols were omitted in ISSOM, in spite of fact that terrains for sprint are very often a combination of forest area and urban area (parks, historical city centers,...)
- presentation of symbols is not unified (some as straight line or rectangle, some as curve, some in combinations with other signatures) – should be unified, an extra column may be introduced for examples

6.1 Land forms

115, 116 – minimum depth is too strict, on park maps may eliminate plenty of suitable objects

6.3 Water

304.1 fill in for impassable water should be 100%!

305.1 – should be stated, that the border may be symbol 529.1 as well, or other line object

306, 307 –union of stream and ditch into one signature is not suitable

312 – if this symbol is not to be used for covered wells, then the special symbol 314 should not be canceled.

313 – why not to use it in built-up area?

6.4.Vegetation

421 – superfluous symbol, out of logical system, symbol 410 is sufficient

411 – specification of shades is missing, or link to symbols which may be treated in this way (406, 408, 410)

414 – line width 0.07 mm is under the legibility limit given in Appendix 7.3 (0.10 mm for full line)

418 – the criterion should not be the thickness of trunk, but the distinctness compared to surroundings

6.5 Man made features

- trend to distinguish communications and barriers
- general principles may be as follow – thin full black line may be used for border of any communication or manmade feature (pavement edge, step) wherever the corresponding line in terrain is absolutely clear and striking and passable (exceptions are contours of features impassable due to their substance, e.g. buildings, impassable water); thick full black line must be used wherever the corresponding line is impassable.

506.1 – 15% brown fill in is too pale and will cause poor legibility (at least 25%)

506.1, 507 – it is illogical to show the same object differently in forest and in city or park and to use two essentially different symbols – we recommend to retain only 507, add the original 506 and for all paved communications use symbols 529 and 529.1 with minimal dimensions like at 506.1

515.1 – graphically much better than the corresponding symbol in ISOM2000

515.2 – reduced symbol 515.1 should be used for tramway, both kinds of traffic are dangerous for orienteers, the symbol proposed in ISSOM disappear if tramway is not on communication

516 – removed symbol was useful for cable cars and ski lifts, how to express them in ISSOM? We recommend to take it over from ISOM2000

518.1 – similar parameters to distinct vegetation boundary, may be mistaken, short dashes might be better

519.1, 521.1 – what should the pictures say?

529 - 15% brown fill in is too pale and will not be legible (at least 25%)

529.1 - line width 0.07 mm is under the legibility limit stated in Appendix 7.3 (0.10 mm for full line)

536.1 – small tower has the same symbol in ISSOM as big tower in ISOM2000, no sense to cancel small tower (hunting place) and retain fodder rack

541 – symbol for statue should be symmetrical (e.g. asterisk)

539 – no sense to avoid special symbols for manmade objects, especially on sprint maps may be more useful than on forest maps (there is no symbol for benches and other common objects in urban areas)