

# My methodology for mapping in ISSOM

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*The Map Commission of the International Orienteering Federation is responsible for all matters related to orienteering maps within the IOF, such as map standardisation, development, education and quality assurance.*

*The ISSOM project started in 2001, as a result of the Leibnitz Convention, which introduced the sprint discipline into the World Orienteering Championships (WOC) programme.*

*Sprint orienteering introduce new mapping challenges. We have previously had park maps, but sprint events can take place in forests, in urban areas and in mixed environments. To establish a mapping standard for this new discipline has proven much more complicated than for traditional orienteering.*

*The Map Commission issued draft versions of the ISSOM in 2003 and 2004 and the opinions of the participants in the sprint discipline of the WOC in those years were sought. Their responses and those of National Federations was invaluable in producing the final version of the ISSOM in 2005.*

*Since the publication of the 2005 version several smaller issues have been discovered, such as textual inconsistencies and grammatical errors. We hope that most of these have been fixed in this 2006 update.*

*A clarification has been made for symbol (529.1): Steps shall always be represented with a 0.07 mm line. The symbol (710) has been removed. The symbol (709) shall be used also for dangerous areas.*

*The sprint orienteering format has been defined by the IOF as follows:*

*Sprint orienteering is a fast, visible, easy-to-understand format, allowing orienteering to be staged within areas of significant population. The sprint profile is high speed. Sprint is built on very high speed running in very runnable parks, streets or forests. The winning time, for both women and men, shall be 12-15 minutes, preferably the lower part of the interval.*

*The main characteristics of the ISSOM:*

*ISSOM is based on the ISOM2000; but competitors and mapmakers must understand that sprint maps are special maps. Many of the requirements in ISOM2000 will also apply to Sprint maps.*

*The most important difference between ISOM2000 and ISSOM is that thick black lines are now only used for uncrossable features. To ensure fairness it has been decided that features which are mapped uncrossable (e.g. walls, fences, cliffs, water and hedges) are also forbidden to cross.*

*Sprint orienteering differs from the longer established forms of foot orienteering. Whilst foot orienteering events traditionally have been staged mainly in forested areas, sprint events can be staged in any type of terrain. The use of parks and urban terrain in particular has important advantages: it brings the sport to where people are, and offers opportunities for increasing public and media awareness of orienteering, in accordance with the objectives of the Leibnitz Convention.*

*The expansion from classical forested terrain into parks and urban terrain presents new challenges in orienteering cartography. The current international specification for orienteering maps (ISOM 2000) contains symbols that are suitable for representing forested terrain. However, to ensure fair sprint orienteering competitions, the symbol set needs revision and extension in order to better accommodate parks and urban terrain. There are a number of reasons why the cartographic representation of terrain for sprint orienteering requires a different approach compared to that used for representation of 'classical' forested terrain.*

*These include: Many more restrictions affecting route choice have to be considered in parks and urban terrains, such as physical barriers and areas with forbidden access. The amount of significant detail in urban terrain, particularly in the centre of old towns, is often much greater than in a forested terrain. Not only must the new types of terrain be considered when making the sprint map specification but also the purpose of the map – sprint orienteering – must be taken into account. To achieve fairness, it is necessary for mapmakers and course planners to collaborate more closely than for other disciplines. The correct mapping of reduced running speed, both to degree and extent, is extremely important for sprint orienteering because of the short winning times.*

*In urban areas, it is not unusual to find multilevel areas. ISSOM allows for the representation of simple underpasses and overpasses. More complex multilevel areas which cannot be mapped clearly are not suitable for IOF events.*

*Due to these restrictions and constraints, principles have been settled for the International Specification for Sprint Orienteering Maps (ISSOM), which in some respects deviate significantly from those of the ISOM 2000.*

*Only symbols that are listed in Chapter 5 (ISSOM), may be used for Sprint Orienteering maps.*

*The ISSOM must therefore be treated as a specification in its own right.*

Source: [www.orienteering.org](http://www.orienteering.org)

## Introduction

*The previous page is an excerpt taken from the rules for ISSOM, as created by the International Orienteering Federation and the whole file can be viewed on "[www.orienteering.org](http://www.orienteering.org)". I did not intend to begin with external information, as I would like to keep this lecture about my experience with mapping and about showing you the ins and outs of getting started as an individual. However, the information was extremely well written and contains the exact sort of content I considered beginning this lecture with. And of course, the above information is as official as it gets, take a look for yourself at the remainder of that file.*

*I'll begin with a little bit of my background which I hope will reassure you that anybody can begin projects in making sprint maps. As with any part of this lecture, whether it be due to previous experience or general disinterest, feel free to skip on to the sections you require more assistance in or indeed hold more interest in. Orienteering has always been a part of my life, due to paternal connections in the sport. I remember being brought out as a youngster, even if maps and whatever else made little sense to me back then. I began orienteering by myself and regularly as a young teenager. It didn't take long before my relationship with orienteering became more than a family activity. Almost immediately I found myself interested in maps and how they were made. It became a passion, more so than most people realise. The time and effort spent examining maps or testing map making software runs far beyond the time spent on the few sprint maps I have made to date.*

*The maps I have produced to date have been very much my own making. I do not say this to boast. I say this in the hope that you will be encouraged that anyone can make a high quality sprint map. You do not need expensive equipment, you do not need to have been taught in by somebody else, you do not need to be a computer geek. All you truly need is a passion for maps. If you do not have any fundamental interest in maps, then this is not for you.*

*Throughout transition year I had a lot of free time, and I spent a lot of it messing around with OCAD, software for drawing orienteering maps. The software became second nature and although I do not know every feature of OCAD, I know enough (the necessities) to create an orienteering map. There is not a huge amount to learn if you adopt a mapping style similar to mine. Speed and efficiency increases as more time is spent with the software, as you become more specialised in what you need to do. Another thing that has helped me in my journey is many experiences orienteering, at home and abroad. I assume I picked up more from the maps I ran on abroad than the maps I have run on in Ireland. There is no doubt that they are of a higher quality abroad, and although I do not think I have reached such a level yet, I aim to create maps of the same quality. It will come in time to me, to anybody.*

*This lecture is not a full overview on creating orienteering maps. It has a focus. In this lecture I am going to speak about my method for creating orienteering maps. I am sure it is not the best method in the world, but it is a method that allows for the production of high-quality sprint maps with little to no cost and little to no new equipment necessary. I am assuming that you already have certain materials (laptop, access to internet). I want to emphasise the emphasis I place on using online resources in trying to reduce the amount of fieldwork to close to nothing.*

*I could say more but I would like to keep this short and accessible, so let's continue.*

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## What Do I Need?

*My method of sprint mapping is primitive I guess. You do not need a lot of materials. I developed a method whereby I utilise free and available technology to the absolute advantage. Of course (for the most part) we cannot complete the whole map sitting at home with the computer. But I encourage you to do as much as you can with the computer to minimise time and maximise accuracy of projects.*

Essentials:                      A computer / laptop  
                                        Access to internet  
                                        Cartographic software (OCAD etc.)

Likely necessary:              A compass  
                                        Pens / pencils / ruler

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## Cartographic Software

*Before you even start looking at undertaking a project you should have acquired and preferably have had some practice with a piece of cartographic software. This is the program in which you will digitise your map. The most common program used for map-making is OCAD. It is very expensive, but common practice is for a club to purchase it and share it out among all the members. Although this is frowned upon by the creators there isn't really anything to stop you*

doing it. And of course the mighty price tag only acts as an incentive for individuals to share the program around. Contact your club and chances are they will have a recent version if not the newest version of OCAD. As I write this the newest version is OCAD 11. I use OCAD 9 and it can do everything I want and need it to without problems. I think the newer version has more features for GPS technology, co-ordinate mapping and the like but I am not sure on this. If you aim for a similar mapping method as me then do not fret, OCAD 9 is perfect. In a worst case scenario OCAD 6 is available as free-ware online at "[www.ocad.com](http://www.ocad.com)".

But in my opinion, if you can not find OCAD 9 or better, you should go with Open Orienteering Mapper. This is free online software written for all the aspiring map-makers out there who cannot afford the likes of OCAD. Personally I prefer OCAD but a lot of people in fact prefer the free Open Orienteering Mapper! I suggest that you take a look at it even if you have achieved access to a recent version of OCAD. It is available online at "<http://oorienteering.sourceforge.net>".

So I hope you have found access to a recent version of OCAD or taken a look at Open Orienteering Mapper. The next step is to become proficient in the program of choice. The best way to do this is to spend lots of time working with the program. I used to spend time tracing over image files in OCAD, so I would end up with my own version of a map in OCAD. It was a good way to get used to drawing in different styles, finding all the tools and getting accustomed to where everything was. You want to have a decent idea of what you're doing before you start a project and practice really does make perfect.

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## Basic Steps

In any mapping project there are of course a few steps that have to be covered, there are others that will be necessary in certain mapping projects and then there are some that are purely optional and up to your discretion. I have created a list below as to steps that I routinely cover and which order I cover them in.

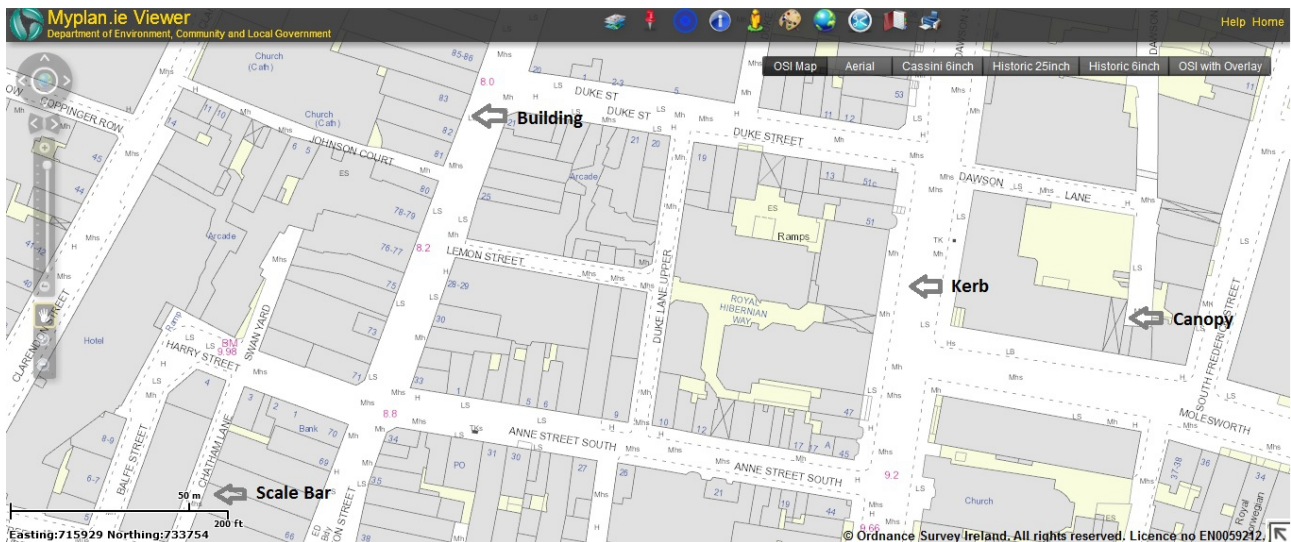
1. Select area
2. Seek relevant permissions
3. Prepare base-map(s)
4. Fieldwork
5. Cartography
6. Event Day

Select Area and seek relevant permissions: For reasons that I am sure are self-explanatory this is the first step in a mapping project. Take a visit to the potential area. You must assess if it is suitable for orienteering. Some areas, although they have perfect architecture for challenging sprint orienteering, just will not be feasible most probably due to permissions or safety concerns. You must be sure that the area is safe for competition and that you will actually be allowed to hold events there. What is the point in having a new map if you can not obtain permission for events on it? You will find yourself contacting county councils for the most part with sprint maps, forestry management (eg. Coillte) with events on ISSOM maps etc.

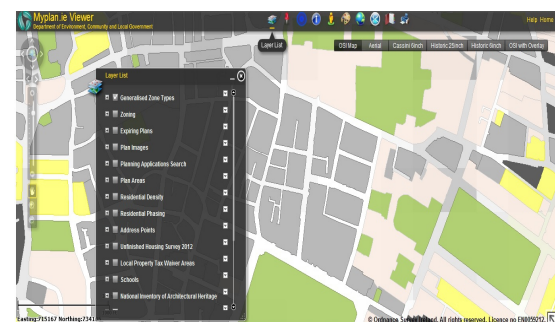
Once your area has passed this initial assessment decide where the extents of the map will be.

Prepare base-map(s): A base-map is not essential, but a good base-map can really cut out a lot of work for you. Orienteering maps are very high in detail, especially sprint maps. With a good base-map you have a lot of this detail already provided for you, for example buildings, walls, fences, roads.. all of which would take a painstakingly long time to map yourself. Some areas will even have excellent aerial imagery which can provide you with further detail like single trees, vegetation and more. I have gone through many sources throughout the years. I change sources when a previous source is no longer available or indeed if a better source is located. I started off using maps from Ordnance Survey Ireland. Of course such maps are available online but at a cost. I have never paid for a base-map. There is no need. When my initial source no longer existed I searched online, using only Google, to find another source with a similar style to the base-maps in my previous source. My search was something as trivial as 'Government Street Survey Ireland', and I had my source within a few minutes. You may call this luck but I will now outline my current base-map sources and you will see the diverse range of sources I have used.

[An Irish Example] [myplan.ie/viewer](http://myplan.ie/viewer): This is my current source for base-maps, which was found with the simple Google search outlined above. It provides great detail and could do a lot of work for you. You can see in the image below features that you will be supplied with, even features such as canopies and kerbs. (Of course this only applies to Irish projects, I highly recommend this source.)

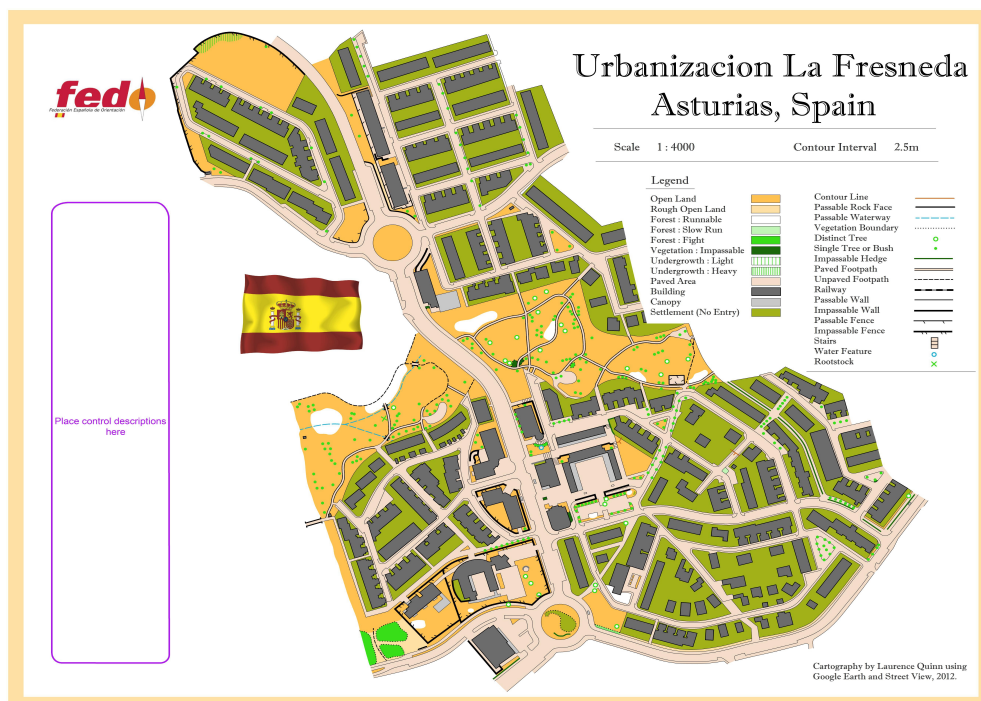


N.B. When you initially open the site the map displayed will not be in the mode we want it. It will be in a default governmental zoning mode and will look ugly. To change to the mode most helpful for sprint orienteering mapping choose the option 'Layer List' at the top of the page and then untick 'Generalised Zone Types'. (Shown below)



Alas it does not simply provide everything you will need on your orienteering map. More sources must be consulted or fieldwork carried out on the way to completing a satisfactory mapping project.

[A Worldwide Example] Google Earth and Street View: I am sure that any reader of this lecture will have heard of Google Earth and likely fiddled around with the program. It is a very powerful piece of software and one which we can utilise to help us in mapping projects. To state the obvious, Google Earth provides detailed aerial imagery of the Earth but when we combine this with Street View mode in the software, in certain areas it is as good as being there. Something might seem unclear in the aerial photograph but we can often check what we are looking at with Street View. As the name suggests Street View provides panoramic photos down streets and you can virtually travel, as if walking, around streets which have been photographed. There will not be imagery in parks, forests etc. so the majority of the time there will still be areas on your map that will need fieldwork.





The map above was made completely with Google Earth and Street View. I did not look for any other sources although I am sure there are some available. I took it as a project upon myself to see how accurate the map could be. The final result was very satisfying. If I recall correctly, the only error on the map was two trees that had been cut down since Google's most recent aerial images. Interestingly you can see that the corrections to the map could have been done in a very short space of time by an inexperienced individual. As a result, we can make maps anywhere in the world without a visit if the satellite imagery is sufficient, and areas with no experienced mappers do not need to bring in an experienced mapper but can simply contact one completely through the internet.

[A Czech Example] Hradec Kravolé, JWOC Sprint 2013: During the summer of 2012 I held some interest in attending JWOC 2013 in the Czech Republic. This was never realised but I can share a short analogy from initial preparations for that competition. I had seen before online an effort by one Fabian Hertner to create a map, as accurate as possible, of the sprint area for WOC 2010. The map he produced was indeed very accurate, and one from which I drew belief that for certain mapping projects the internet may be the only resource we need. I had an idea to try this for myself with the sprint area for JWOC 2013.

Again a simple Google search was all that was necessary to find very accurate base-maps for the town in question, Hradec Kravolé. I did not continue with the idea, as recent orienteering maps of the area were available and I would simply have been re-creating them. But this again further assured me that with the majority of mapping projects there are accurate, free base-maps to be acquired for oneself.

[Varied] City Planning: I recently was working on a project in Dublin and there was a new, large and complex playground that was not on my base-map from myplan.ie. This frustrated me as I did not want to spend a long time doing out fieldwork, defeating the purpose of my method. Another Google search, I hope something is now becoming clear, produced a base-map for me, removing the need for more fieldwork. The base-map is below and I found it from focusing my online search on park planning in Dublin city. Be intuitive with your searches and you should be able to find anything you want online to help you with your project.



I hope that these examples will help some of you. But providing you with examples of my sources was not my aim. My aim was to convince you that there are sources out there and that you do not need somebody to inform you of a source. I found three of the four above myself and I am confident that I will find more to suit my needs on future projects. Using freely available base-maps in a project (more being preferable to less) we can reduce the time and cost needed to make the map.

You may have noticed significant more length in this last section, but that reflects my mapping methodology where base-maps are of critical importance, where we get as much done as possible without doing any work at all.

Fieldwork: However fieldwork is a must by somebody. I can make a map in a different country using all my sources but somebody there must check it to ensure the credibility of the map. Things do change and sources are not updated for years at a time. Such fieldwork will be short and sweet, with only minor corrections likely necessary. Of course I like to carry out the fieldwork myself. I have only made one map where this was not possible as it was in South Korea. I will not delve into the fieldwork process as this has been widely covered by others online and elsewhere. Instead you should research this process at your leisure. There should be no trouble in finding information.

<http://www.oringen.se/download/18.5b1ba4213143d9cdf800019046/1314004202093/Orienteering+Map+Making+20110723.pdf> – Very helpful in every aspect of making an orienteering map, far surpassing the extent of this lecture.

Cartography: Many people preach that one should only begin to start digitising the map once all fieldwork has been completed. This is in no way a bad idea. However, I do not follow this advice, solely because of the nature of my technique for making maps. I draw up as much as possible before fieldwork, using my online base-map sources. Hopefully this eliminates the need for any fieldwork, which is why I do it first.

For me digitising the map is a very important process. You can have the most accurate base-maps and fieldwork, but if you do not draw it correctly and neatly on the computer then this accuracy can be compromised. Make sure that you are consistent through the whole process. Make sure that you take your time with the cartography and that the map is clear and concise throughout.

You should also give time to the final map artwork. Create an image in your head of how you would like the printed map to look and try to re-create that. What scale will the map be printed at? Where will the legend, control descriptions, map title, scale bar etc. go? Of course an attractive map doesn't affect the accuracy of the finished map but it really does impact on the overall quality.

*Event Day: I do not have a whole lot of experience in this field, but a little nonetheless. You may feel anything to be said about the map on event day is redundant as all map work is completed long before this. However often small but just wholly unnecessary mistakes are made. I have run events where the map was printed at the wrong scale, resulting in incorrect course lengths and the symbols being far too large or too small. There is not much to say here, but please remain vigilant until the very end that the map has no issues, on the computer or on paper.*

### Conclusion

*I felt compelled to write something short after my presentation at the Shamrock O-Ringen recently. I was asked to forward my slide-show to be available on the website but my slide-show did not really contain any information, I left that for myself to say during the presentation. So I have written this in the hope that I will provide some help to amateurs who do want to start making maps. I hope I have shown you that you do not need years of experience or expensive equipment to make a good quality map. I hope I have in some way inspired a dormant passion within you.*

*There are more detailed lectures out there such as the link I provided above. But these are more complicated and not that accessible. Here I have provided you with an insight to my methodology and the means to start a mapping project yourself. There is nothing to stop you, where there's a will there's a way. Good luck in your efforts.*

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