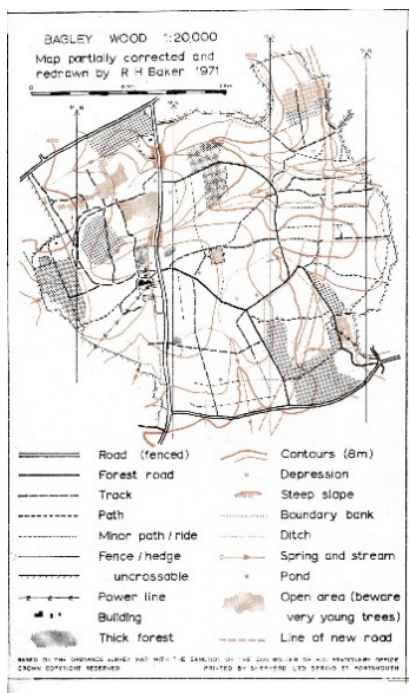


Ever wondered where our orienteering maps come from?

Mapping in TVOC - Introduction

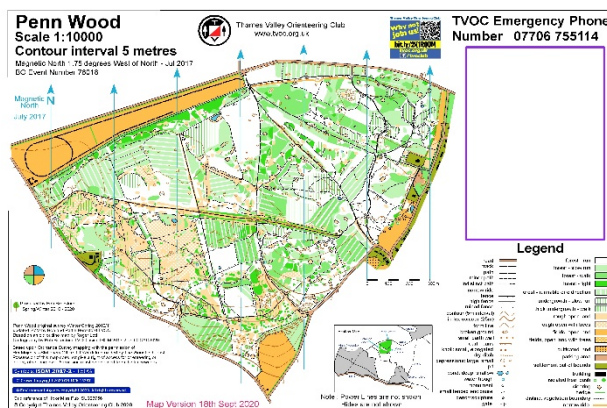
When you are at a TVOC event and have picked up your map, you might pause for a second to think about the time and effort that has gone into creating the map. It is almost certainly more than you might think.

In the past orienteering maps were hand drawn from OS maps supplemented by ground surveys as the 1971 map of Bagley Wood shows.



When computers became a household item, software for creating maps was introduced using professional software such as OCAD (Orienteering Computer-Aided Design), and more recently free open-source software such as OOM (Open Orienteering Mapper).

This resulted in the detailed and sophisticated maps that we use today.



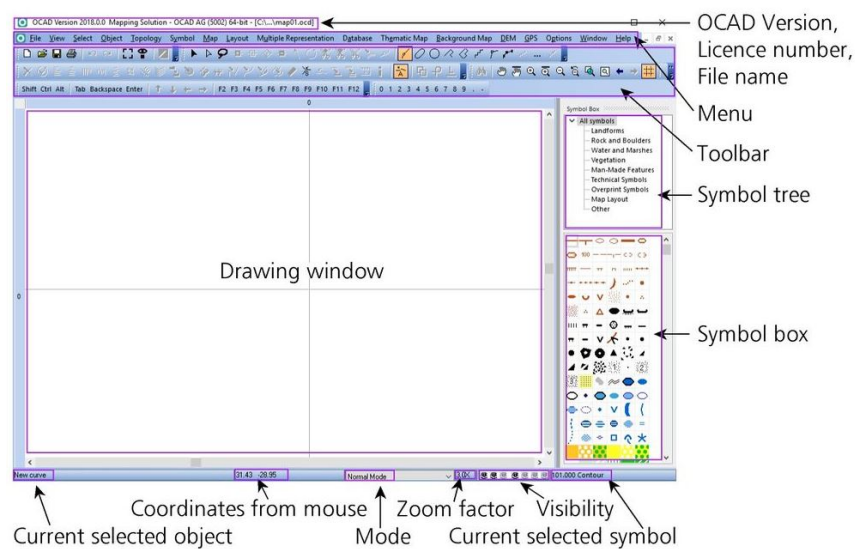
OCAD was developed by a Swiss Company in 1989 and is a very powerful cartography tool. The software only works on a PC, although recently OCAD has developed a version for other types of device but this has limited capabilities. Many of the OCAD staff are orienteers and they have developed software specifically for orienteering maps. Originally the software licence was for an individual computer, but now they have a subscription model with OCAD available in the cloud. The software is regularly updated, and they provide a very rapid response to any questions.



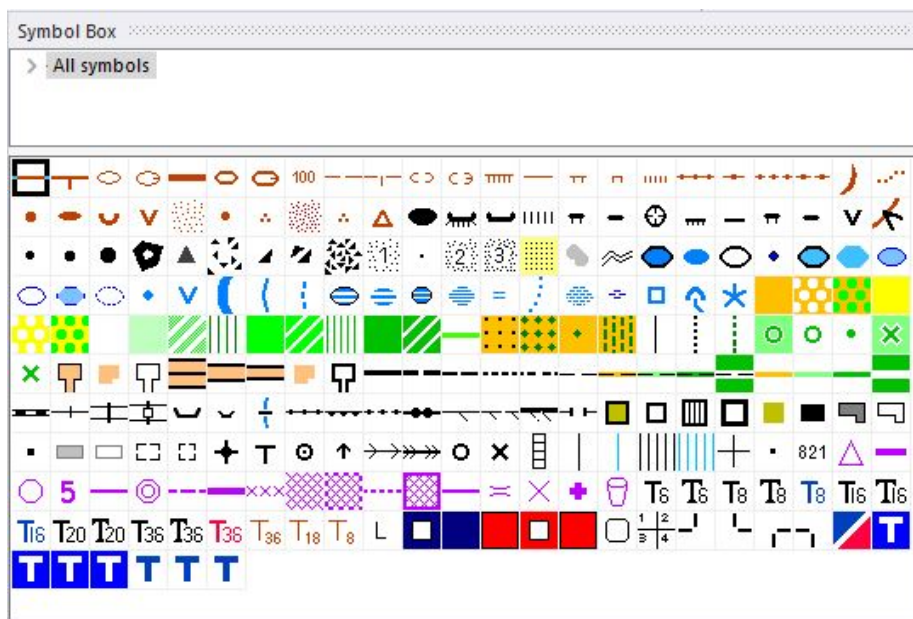
Whilst professional mappers are available to create and update maps, TVOC has always been fortunate to have members who have been keen to learn mapping skills and use these to great effect. All TVOC mapping is done on a voluntary basis, with remuneration just for travelling expenses. Over the years this has saved TVOC many thousands of pounds.

TVOC took the decision some years ago to pay for OCAD licences on individual computers, which often meant OCAD was not in use if the mapper was not actively updating a map. Now that we have OCAD working in the cloud (using Dropbox) we require fewer licences (5 vs 9) as they can be 'booked' up to the licence limit and everyone has the latest OCAD version.

OCAD has a graphical user interface for drawing the maps.



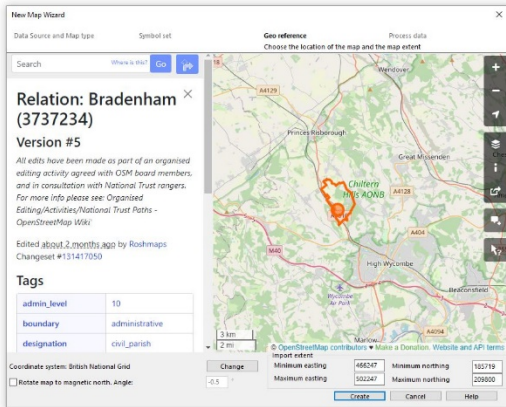
The basis for orienteering maps is an International Orienteering Federation (IOF) specification either for forest maps (ISOM 2017-2) or sprint maps (ISSprOM 2019-2). We use the British Orienteering (BO) symbol sets which have minor adjustments to the above. The size and shape for each symbol is defined in this specification.



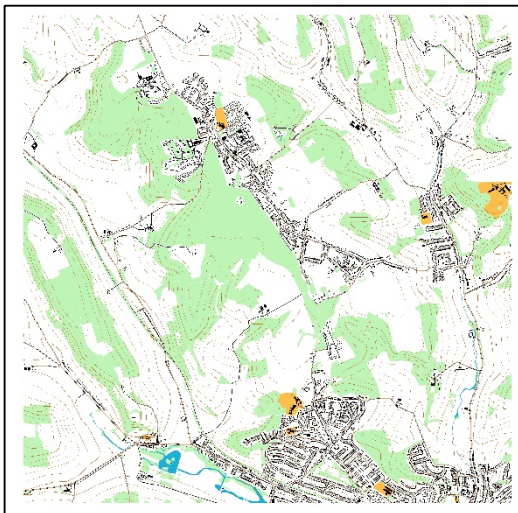
The OCAD symbol table shows all the symbols that can be used for a forest map. Some of these will be regularly seen on Chiltern maps, others less so. These symbols are constructed by OCAD and ensure every symbol on the map conforms to the IOF standard and is exactly the same each time it is entered onto the map.

Our plan for TVOC maps is to get them all up to the latest standard and have them all georeferenced. Georeferencing is the mechanism for locating a digital image (in our case a map) to the correct location in the real world. In the UK this is usually based on the British National Grid. Additionally we want our maps to be aligned to Magnetic North, which is currently moving clockwise towards True North.

When updating our TVOC maps for an event, some are simpler than others. Recent georeferenced maps are relatively simple, requiring checking of the existing map against what is on the ground and using OCAD to modify the map – adding or removing features or adjusting vegetation, for instance when forest work has taken place to thin areas of trees. Additionally adjusting the map to magnetic north is also a simple task in OCAD.



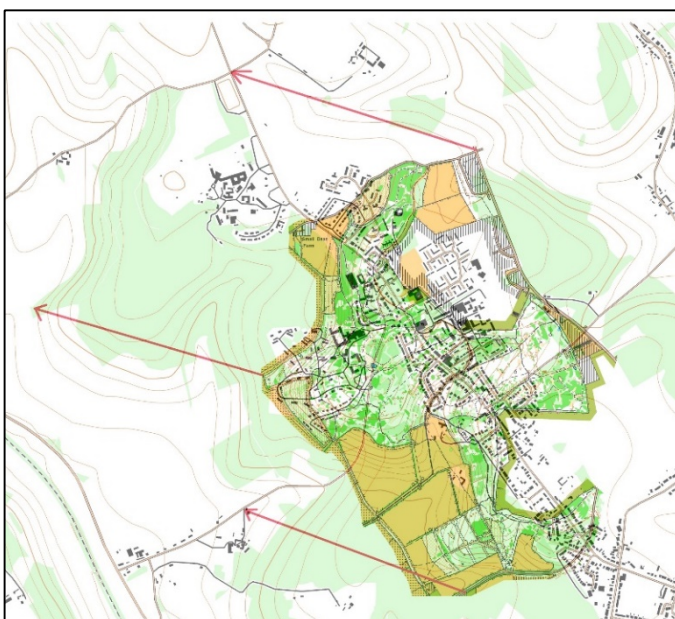
For non-georeferenced maps or a completely new map it is best to start with a completely new map file. In OCAD there is a very useful 'New Map Wizard' which steps through the process, first selecting the type of map, the scale and the symbol set to use, followed by the location and extent of the map (using eastings and northings). The co-ordinate system (British National Grid for the UK) and Magnetic North are also set.



OCAD extracts the required area from Open Street Map and creates an OCAD file using the selected symbol set.

From this base map a new O map of the area can start to be created using additional types of data such as LiDAR and Google Earth.

If an existing OCAD map is not georeferenced, this base map can be saved as a background map and used to locate the old map correctly.



This is done with the map Transform and Affine options, which allows the whole map to be moved. The picture shows how the existing map is moved to known positions on the background map and therefore becomes correctly georeferenced.

If the map has distortions caused by errors in the original mapping and where moving the whole map does not fit to the background map, OCAD has a 'rubbersheeting' option. A number of specific points in an area on the map are chosen and the correct position identified on the background map. OCAD can then move the map disproportionately into the

correct position.

Next time – What is LiDAR and how it is used.