W06.4

OS Positional Accuracy Improvements: Cost and Benefits to Users

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Background

Few users of Ordnance Survey Landline data would criticise the desire to improve the accuracy of the mapping information. Some may question why it is necessary, but as data capture technology improves the answer to the question becomes obvious. Accuracy of data captured using GPS, and the increasing use of aerial photography, have started to highlight mismatches between ground features and the way they are represented on the Landline map. This is a particular issue in areas surveyed at a base scale of 1:2500 scale. Ordnance Survey have recognised the need to improve the accuracy of these maps and have embarked on a Positional Accuracy Improvement (PAI) programme which will improve the accuracy from +/- 2.5m to either +/- 0.4m in urban fringe areas or +/- 1.1m in other areas surveyed at 1:2500 scale.

It is not the purpose of the workshop (and consequently not the purpose of this paper) to consider the reasons for the difference in accuracy – this is widely recorded elsewhere. However, the differences in accuracy will have significant impacts on data held in GIS. It is these impacts which need carefull consideration to ensure that data quality is not compromised as a result of Ordnance Survey's Positional Accuracy Improvement (PAI) programme.

Current Use of Data – A Local Authority Perspective

Increasingly, mapping information is being viewed as a key data source in local government. A very high percentage of local authorities use electronic mapping data and most of these authorities will have captured data electronically against the base map. Some of this data capture will be to satisfy a statutory requirements, for example, recording planning application boundaries.

Clearly, any adjustment to the base information against which this data has been captured will impact on the data, and potentially the statutory duties of the local authority A recent survey of local authority users suggests that this may be a very significant problem. 121 authorities responded to the survey on the subject (West Lothian Council - November 2001), and of those responding, 84% indicated that they are likely to have to modify captured data as a result of PAI. Of course, this high percentage figure is to be expected, since users are most likely to respond to a survey if the issue impacts directly upon them. However, what the survey identified was that, in local government, more than 10,000 layers of GIS data are likely to require modification as a result of PAI. It is difficult to quantify this impact in financial terms, but again the survey was able to show that, almost without except, there is no financial provision for amending datasets within the local government environment.

In recognition of some of these issues, Ordnance Survey have sought to establish an electronic solution to re-matching datasets. Unfortunately, the changes occurring to the mapping data are not consistent across map tiles, making the rematching of captured data to the basemap difficult. Ordnance Survey's solution to the problem is to produce link files which give the before and after co-ordinates of points on the map tile. However, initial testing of the link files suggested that the results obtained were not good enough to provide a workable solution. Subsequent improvements to the number of nodes in the link files have

significantly improved the quality of the results, but the results are still less than 100% accurate. It appears unlikely that a 100% accurate electronic solution to the re-matching of data will be possible.

Issues to be Considered

In the absence of a 100% accurate electronic solution a number of issues must be considered before data users can have an effective strategy for addressing the issues raised by PAI. These include -

- What is an acceptable level of accuracy for datasets held against the mapping data ?
- Should statutory datasets be re-matched or maintained in the condition which they were captured ? What are the legal implications of each course of action ?
- How long will it take to identify and manually correct the data not corrected automatically using the link files. It should be noted that it may be necessary to check all of the data to identify the small percentage of data not corrected automatically ?
- How much will it cost to do the checking and translating ?
- When is the best time to correct data bearing in mind that all PAI improvement programme extends for a number of years ?
- How does PAI impact on MasterMap. Does MasterMap assist with the re-matching of datasets or does it present additional problems?

Conclusion

There is no single answer or solution to the above issues – the solution will depend on a variety of different factors which will vary from user to user. However, resolving the problem starts with an understanding of the issues involved. Considering the above questions in the workshop should provide this starting point.