

Usability of GI – Case Study using Address Locations

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Overview

The usability of geographic information (GI) has a significant impact on whether people utilise the information available to them. This paper focuses on how certain aspects of Ordnance Surveys MasterMap Address Layer 2 data are used, why they are often ignored and how their use could be increased. This case study is drawn from the authors PhD work, analysing how sound could be used to represent spatial data.

Usability is All Important

The presence of the Internet and the rise of faster connections has led to the development of a number of online mapping systems (see Boulos, 2005 for an overview of the 'big names'). The wide availability has also led to an increase of users expectations of usability. It is not a big step to say that part of Google's success is down to its easy to use nature (for more details on Google's corporate philosophy, see Google, 2009). The combination of these two have led to the creation of 'mapping for the masses' where the general public can access satellite images, maps and information which would have been unthinkable 15-20 years ago. The usability aspect is very important to the take-up of any service. This applies to many different situations and often if a product or aspect of a product isn't utilised, it is because it is not easy to use.

Ordnance Survey MasterMap Address Layer 2

This research focuses on Ordnance Surveys Address Products – specifically Address Layer 2. This is used for geo-referencing third party data, based on postal addresses. There are many additional fields of information associated with this data and it is designed to be a comprehensive tool used by professional data users. One particular set of fields are the status flags. These exist for each address location and specify a number of pieces of information that are important for the data's use (see Table 1).

Type	Description
OS Positional Status Flag	<i>The importance of checking this attribute to see the known quality of the position of the address cannot be overemphasised.</i> The quality is indicated by a combination of the other status flags below.
OS Match Status	The quality of the match between Ordnance Survey data and Royal Mail address data.
OS Physical Status	The existence of the building/structure.
OS Position Accuracy	The accuracy of the geographical position, as a result of how it was acquired.
OS Position Status	Whether the address is in a final or provisional geographical position.
OS Structure Type	Whether the structure is permanent or temporary.

Table 1. Examples of status flags found in Address Layer 2 (after Ordnance Survey, 2009 p.26)

The status flag examined in this work is OS Position Accuracy (also known as Positional Quality Accuracy or PQA). This shows how accurately the point in the database (referred to by its postal address) reflects the building's position on the ground. It has five different values outlined in Table 2.

Value	Description
Surveyed	Within the building that the address refers to.
Approximate	Usually within 50m.
Postcode Unit Mean	Mean position calculated from correctly located points within the postcode unit (e.g. NR4 6AA is a postcode unit).
Estimate	Usually within 100m.
Postcode Sector Mean	Mean position calculated from correctly located points within the postcode sector (e.g. NR4 6__ is a postcode sector).

Table 2. The different possible values for the Positional Quality Accuracy status flag (after Ordnance Survey, 2009 p.30)

The vast majority of the data have the value 'Surveyed' which means they are correctly located within the building the address refers to. However if the user assumes all entries have the value 'Surveyed' and they actually do not, problems can occur. For example, in a route finding application, if the address point was not in the correct geographic location (and therefore the PQA value was not 'Surveyed') then a vehicle could be directed to the incorrect location. This is a known issue with the data and is highlighted by the italicised statement in Table 1.

One additional measure taken to address some of these issues has been to change the way the PQA is represented in the data. In the product evolution from Address Point to Address Layer 2, the PQA used to be expressed as a four digit code (e.g. 0354, see Ordnance Survey, 2008 p.16) which referred to a certain combination of status flags. For users who understood the codes this was fine, but for users who did not, the codes could be very difficult to understand. In AL2 this is now expressed as a phrase (e.g. 'Surveyed', see Table 2) which is clearer to understand. However the phrases that are used are only clear if read in conjunction with the user guide (Ordnance Survey, 2008) and this could be part of the reason why the data is not used as frequently as it should be.

Issues with Use of the Status Flags

From a number of telephone interviews with Ordnance Survey staff (Pre & Post Sales and Account Managers) it appears that it is still reasonably common for the status flags to be ignored. The two main reasons for this appeared to be a lack of knowledge about the data and difficulty in understanding the data that is available. The complexity in the data has been partly addressed by the change in the transition from AP to AL2, but the AL2 Technical Specification (Ordnance Survey, 2009) is a complex document which does not make the presence or the importance of the status flags particularly clear. Account Managers and Pre & Post Sales staff have been highlighting the issues, which is helping raise the users awareness. However, a combination pressure from the users management to get things done, a low number of uncertain data points and a lack of impact of the uncertainty on the end product is likely to have led to the fields being ignored.

AL2 is used for many different applications and for some the status flags are not required. However if the data forms part of a complex selling chain, it could be that the status flags are removed at one stage, but the use of derived data may require status flags to be there.

The main study involved representing the values of the PQA status flag for each building using sound, to see if this increased the understanding of the variable. The aim was to try and see if alternative methods would encourage users to make more use of the data. Local Authorities generally have their own Local Land and Property Gazetteer (LLPG) which lists the addresses and locations of all of the properties within their boundaries. They do use AL2 for a number of uses, including comparison with their LLPG. The relatively small number of data points involved mean that when the status flags are found to show the information is incomplete, the point is not included in the LLPG. Often this results in a site visit, and it is not unusual for Local Authorities to find their in-house databases are more complete than AL2.

It is often unclear why the AL2 status flags were not used, and more investigation is required to understand these issues. It is important to remember the task and context when AL2 data is being used in order to understand why the status flags are not considered. Methods for increasing the usability of the data also need to be researched.

Summary

The uncertainty contained in the AL2 status flags is often very important for many applications of the data. However it is often not used for a number of reasons, including lack of awareness of the data and what impact it may have on the application. This low use of the data may be a result of the fact that the status flags are not shown in an accessible way. Reasons for not using the status flags and methods for making the data more accessible (and therefore utilised more frequently) need to be investigated.

References:

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