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Charting a new frontier: the management of data in the MasterMap environment

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Background

South Gloucestershire Council is a unitary authority to the north of Bristol covering both urban and rural areas. It is an area of significant economic activity with considerable new build both domestic and commercial.

Over three years ago the Council embarked upon a program to improve services for Local Land Charges, Development Control and Building Control. The aim was to provide more efficient ways of processing data and also to improve the quality and consistency of data held. Although these services use a considerable amount of the same data in their processes there was little integration at that time. The services used different computer systems and all the records were held manually, frequently duplicated in several areas and not always corresponding.

A computer system was purchased from MVM Consultants, MVM 20/20, which had integrated modules to serve the needs of the three service areas. The system was capable of holding address data in BS7666 format and met the needs of NLPG, it could also link to spatial data to be held in the Council's corporate GIS, MapInfo.

Early in 1999 as part of this project South Gloucestershire Council commenced building a Local Land and Property Gazetteer (LLPG), being one of the three pilot authorities working with the Improvement and Development Agency (I&DeA).

An associated project commenced in January 2000 to capture the spatial data records required. These were mainly held manually at that time. During the initial phase the BLPU (the spatial boundary as derived from OS Landline data) for each property was captured. The intention was that this would provide the ability to copy polygons for new records when they related to the same property boundary, e.g. several planning applications relating to one property. The LLPG addresses were linked to the individual BLPUs to enable searching by address in addition to spatial searching.   The highway record (the spatial extents of all adopted highways) was also captured during this initial phase.

The contract was awarded to Ordnance Survey who subcontracted to TerraQuest to undertake the actual capture work. A special release of OS Landline was issued in January 2000 to ensure the most up to date mapping was used for the project.

By early 2001 the first phase of the data capture program was completed and a further contract had been awarded directly to TerraQuest to capture the remaining datasets required by the Local Land Charges, Development Control and Building Control services, some 90,000(approx.) records. The major dataset was for planning application records and it was intended where appropriate to copy the BLPUs, which had already been captured, thereby avoiding any discrepancies between two or more polygons relating to the same location.

A new, up to date, copy of OS LandLine was obtained to provide the latest mapping available and the pilot for the planning application data set commenced. However, TerraQuest identified that there appeared to be more than anticipated discrepancies between the old and the new mapping. There had been the anticipated updates to the mapping. However in some areas the position of existing line work had also been modified. Changes to the existing line work had occurred of which the council was unaware which was geometric rectification by Ordnance Survey. In July 2001 the project was put on hold until the mapping issue had been investigated. The data capture project eventually recommenced with LandLine mapping issued in January 2002. A copy of MasterMap was also taken at the same date.

Due to all the changes that had occurred to the mapping the BLPUs could not be used as anticipated.

During TerraQuest's investigations it had been established that significant discrepancies now existed between the data set and the current LandLine data. A further project will be carried out to modify the BLPU and Highways Record data sets and also bring them up to date later this year.

Why is spatial data management important?

There is a critical need that any data captured is fit for purpose and can be maintained as such. Many decisions with legal implications will be taken using the results of spatial data analysis, e.g. Planning Applications, Land Charges searches, admission to schools, etc. If decisions taken are not based on data of a reliable quality they could be challenged, in some cases legally. Therefore there is a critical business need for spatial data to be managed effectively.

On national initiatives South Gloucestershire Council has signed up to both NLPG and NLIS. Both of these projects need spatial data records fit for purpose.

What is spatial data management?

Spatial data management is the management of the quality and continuing accuracy of any spatial data held. It is the management of the changes required to that data in relation to any changes to OS Landline (or MasterMap) to which it relates. In simple terms, where new housing replaces factories etc, built on green field or brown field sites, the mapping will change. It is the setting up of regimes that can identify what should happen to previously captured data where changes to OS Landline (or MasterMap) occur, i.e. should the data be realigned or not?

Research

South Gloucestershire were in a fortunate position as they had been working with Ordnance Survey as an Early Core Adopter for MasterMap during 2001. The knowledge gained during this process led to the view that the use of MasterMap could offer potential for the management of the spatial datasets currently being captured by TerraQuest. The impact of the OS Positional Accuracy Improvement Program also created a need to manage data more effectively. Each time the OS mapping changed, either through Positional Accuracy Improvement or as a result of real world change, the implications for each data set would need to be established. MasterMap may provide advantages in this area.

During early 2002 Peter Roberts of Powys County Council led work with South Gloucestershire Council to assess the potential benefits MasterMap could offer, especially in the area of data management. Peter had also been involved in the OS Ordnance Survey Early Core Adopter for MasterMap program and had significant knowledge in this area. The aim was also to try and identify the processes that would be required to successfully underpin data capture and the maintenance of that data over time. Terraquest, MVM and Ordnance Survey were involved in the discussions, as these organisations were all involved in the work at South Gloucestershire Council.

It was established that whilst MasterMap could offer significant benefits there were many issues that must be resolved. The management information provided by MasterMap was seen as providing significant business benefit however satisfactory processes must be in place to take advantage of that intelligence.

Outline of issues identified

There are times when mapping from a given previous date is required for historic research. At present it is possible to use the annual re-supply of LandLine data issued on CD as an archive. In future it appears that the council will have to create its own archive records, as MasterMap will only be issued as change only updates.

There is some question over whether Ordnance Survey will hold TOID life-cycle history. Unless regular updates of change only are taken then changes to versions of TOIDs may be missed.

Attaching or cross-referencing captured data to TOIDs could be a significant advantage in the management of spatial data. However if captured records were to be attached to either a single TOID or multiple TOIDs there must be a way of managing this extra information. Partial TOIDs must also be catered for.

The concept of standardising TOID referencing was discussed. The view was that it would be impossible to set specifications applicable over the GI industry. Therefore there would be a need for each organisation to develop its own working practices according to its business needs.

Once data had been captured with associated TOID information where would it be held? At South Gloucestershire it was intended that the captured data would be held as an integral part of the MVM 20/20 system. However unless that software is developed to include the ability to store and manage TOIDs, alternative ways of managing the TOIDs would have to be developed.

In some circumstances it will be necessary to change data already captured, e.g. when positional accuracy improvement occurs, in such circumstances it will be necessary to establish whether data already captured needs to be moved. However there will be some data that will be frozen that should never be changed. Mechanisms need to be in place to cover both these scenarios.

Philip W. Williams of Terraquest explores these and other issues in the associated paper.

Future management of spatial data

It has already been established by South Gloucestershire Council that there is a critical need to manage the spatial data once it has been captured both for business and legal purposes and also to meet the needs of national initiatives. However changes need to be made both in the terms of processes, software and the skills and knowledge of staff for this to be achieved.

Conclusion

South Gloucestershire Council is not the only council to face the issue of the management of spatial data, probably just one of the first to try to grapple with it. The council has an urgent need to establish how it will manage the data once the current data capture project is finished later this year. At least the council is aware of the issues and is attempting to progress these.

It is essential that all local authorities and other organisations recognise that in the computerised world of today, data must be satisfactorily managed.

At national level, with the emergence of the NLIS service there is an essential need for constant management of spatial data by all providing an input to this service.

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