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TOPONYMIC DATA FILES

AUTOMATIC DATA PROCESSING (ADP) SYSTEMS

Toponymic data bases and editing of text

Submitted by Sweden**/

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Report of Sweden
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Toponymic Data Bases and editing of text

In the spring of 1991, the National Land Survey of Sweden (NLS) purchased a new interactive mapping system called 'PC-Mapper', a system developed by the Swedish company 'Kart och Datakonsult AB'. Among the reasons for the purchase of this particular system was that it proved to have efficient text editing and panning functions as well as the fact that NLS would have an opportunity to influence the shaping of the system in the future. Software used is the PC-Mapper package and hardware an IBM/AT compatible personal computer with either MS-DOS or OS/2 operative system. The only hardware which is not standard is a specially developed graphics card, GRAF 3, which governs the display on the colour monitor.

Between 1984 and 1987 NLS built up a toponymic data base from topographic maps at the scales of 1:50 000 and 1:100 000 ('Mountain Map'). Since 1991 NLS is establishing a Gazetteer which will be stored in a relational data base (ORACLE).

The new PC-Mapper system is today used for digitising and editing geographical names at the scales of 1:10 000, 1:50 000 and 1:100 000 as well as on commission. The new topographic map ('Green Map', scale 1:50 000) and the topographic roadmap ('Blue Map', scale 1:100 000) are both fully digital.

The following describes how the PC-Mapper system is used to edit and place text on the topographic maps, and the process of transferring data between PC-Mapper and NLS' toponymic data base and Gazetteer.

In the Gazetteer every unique geographical name has its own identification number and is stored as one record. In the record there is also other data which is associated with the feature, such as co-ordinates which define its geographical location, a feature code, and the county, municipality and parish to which it belongs.

In the toponymic data base one geographical name can appear several times on one map sheet as well as on a number of different sheets, for example, a river name. In the records of the data base is information about how the name will be placed, a pair of co-ordinates defining where it will be placed on the map, its direction, letter spacing, and more. With the help of the identification numbers these repeated occurrences can be quickly linked to the corresponding record in the Gazetteer.

The map text which is not regarded as a geographical name, and therefore does not have a corresponding record in the toponymic data base is called 'Accompanying Information'. An example of this is text such as 'Walking track', 'Ski slope' and 'Waterworks'. The records contain sufficient information to be able to unambiguously place the text on the map.

When text is placed on a new edition of the topographic map the data in the toponymic data base required for the relevant map is transferred to PC-Mapper. In this way the considerable amount of editing required to place text near the appropriate feature is reduced.

When building up the toponymic data base the original digitizing of the place names' geographical location must be done with a lower accuracy than that which is normally required for text placement. Therefore minor adjustments of the text co-ordinates have to be carried out where necessary in PC-Mapper. Although some text must be deleted and added at the editing stage in PC-Mapper, a large proportion of time is spent adjusting the position of the entered text. Furthermore, PC-Mapper is not only used for the printing of the new map but the edited digital text is also transferred back to the Gazetteer which is then accordingly updated.

A special file format has been defined to transfer the parts of the Gazetteer which need to be updated after

editing in PC-Mapper. Both PC-Mapper and the toponymic data base have been adapted so that both can accept and generate data with this format.

A file is generated from the toponymic data base for every new map. In PC-Mapper the file is converted to the system's internal format after which it is then possible to move, spread, rotate, curve, hyphenate or abbreviate text, and perform any necessary code and spelling alterations. All this is done interactively with a graphics screen, where the map face and text are displayed with the correct specifications, and a menu. When text is activated on the graphics screen the menu is automatically displayed with the text information already entered. It is then easy to change codes, spelling etc using the computer's keyboard. The text's position is changed interactively on the graphics screen either with the help of a cursor and a digitising table or with a mouse.

The system is also used for editing text on the topographic road map (scale 1:100 000) using data from the toponymic data base. As the data base is mainly built up at the scale 1:50 000 the number of names is first reduced with the help of codes and then automatically translated to the road map's codes (above all, altering the text's point size) thereby producing a text file. This file is output on film and laid over a colour proof of the map and obvious errors edited. Text placement errors which have arisen due to scale changes and other factors are corrected on the graphics screen. The working time per sheet has been reduced by almost half.

When editing is completed the text and all its respective fields are transferred back to the toponymic data base. The map text is also transferred via another especially defined transfer format, the MTX format, to NLS' output system, the 'Mercator' system. From here the text is plotted together with the remaining map data onto film which is then used for making the printing plates.

Since the completely digital text editing method has been in operation, the staff editing the text on the Green Map have experienced a considerable reduction in the time required to modify text.

Equipment required for editing text in PC-Mapper:

Software

The PC-Mapper package.

Hardware

An IBM/AT compatible personal computer with either the MS-DOS or OS/2 operative system. (MS-DOS is recommended).

A hard disc of at least 20 megabytes.

An internal memory of at least 2 megabytes is recommended.

RS 232 serial interface and parallel interface.

A standard keyboard and text monitor.

A CRT colour monitor (RGB) with TTL input.

A three button mouse or a digitising table and a cursor with at least four buttons. The size of the digitising table must be at least 12 inches by 12 inches, have a resolution of at least 0.10 mm and be equipped with an RS 323 serial communication port.

The only hardware which is not standard is a specially developed graphics card, GRAF 3, which governs the display on the colour monitor.

The retailer for the PC-Mapper program and GRAF 3 graphics card is the Swedish company 'Kart och Data Konsult AB'. Other equipment is available through most computer equipment retailers.