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A GRAPHICAL SOLUTION FOR ESPACES VERTS

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Abstract

'Espaces Verts' is responsible for the landscaping of the green areas, the cleaning of the roads, pavements, and car parks on the CERN site. This work is carried out by a contracting company. To control the work previously, there was a database of all the areas included in the contract and paper plans of the site. Given the size of the site the ideal solution was considered to be a visual system which integrates the maps and the database. To achieve this, the Surveying Department's graphical information system was used, linking it to the database for Espaces Verts, thus enabling the presentation of graphical thematic queries. This provides a useful management tool, which facilitates the task of ensuring that the contracting company carries out the work according to the agreed planning, and gives precise measurement of the site and thus of the contract. This paper will present how this has been achieved.

1   INTRODUCTION

The introduction of a new contract in Espaces Verts, which necessitated changes to the database, provided the ideal opportunity to optimize existing systems and to integrate the database and maps of the site. This would provide better control of the work on the CERN site.

2   THE LINKING OF MAPS AND DATABASE

This required the linking of the graphical information system (GIS) used by the Surveying Department, to the database for Espaces Verts.

The surveying Department's GIS system is centrally held and maintain land survey information which is organized in layers of different graphical and alphanumeric information concerning buildings, cables, roads, etc. on the CERN site, (see Fig. 1).
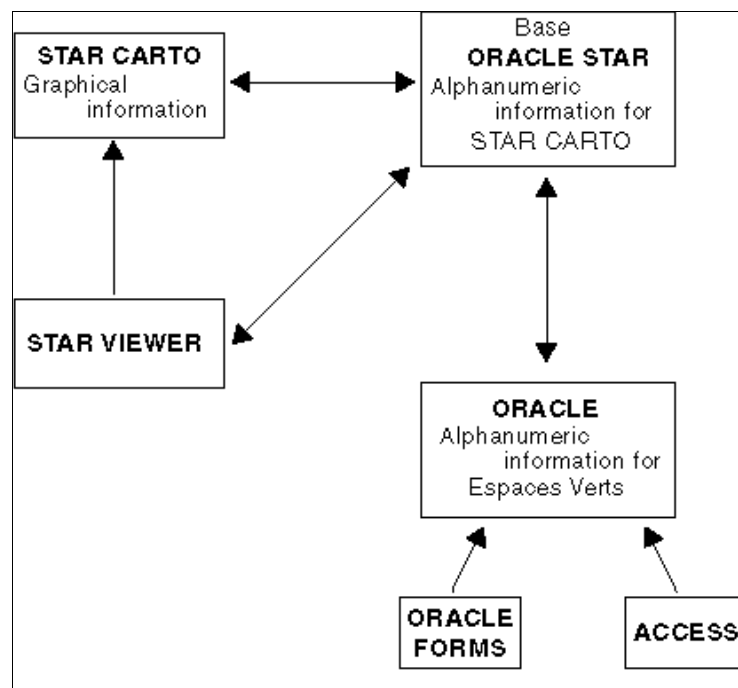

Figure 1: Espaces verts – Distributed databases.

It was therefore necessary to create separate layers of graphical information for Espaces Verts to which the database could be connected. Two layers were created one for the green areas and one for the roads, car parks, etc.

The contract for Espaces Verts divides the site up into numbered parcels of green areas and roads, car parks, pavements, etc. These parcels were drawn onto these two layers using the STAR CARTO CAD system, thus creating objects to which the database could be connected.

The information held in the ORACLE database (see Fig. 1), consists of these different numbered parcels, with a single parcel containing, for example, a hedge, several trees and a lawn. ORACLE FORMS is the interface for making changes to the data and simple queries, and ACCESS is the interface for more complex queries.

To manipulate the graphical information STAR VIEWER is used, which is connected to STAR CARTO (see Fig. 1). This is a PC based consultation tool for non-specialist users,

which permits the user to extract information in any form from queries, thematics to statistics, and to print off maps directly from the PC.

3   VIEWING THE DATABASE AND MAPS

Once the link was made it was possible to view the graphic and alphanumeric information on the same screen via STAR VIEWER as shown in Fig. 2.

A choice can be made as to which layers of information are shown on the screen. In Fig. 2 not only are Espaces Verts layers visible but also buildings, roads, and vegetation. On other occasions other layers may be required, such as the cables beneath the surface if new work is being carried out.

Espvt_Lot (see Fig. 2) is the table that is directly linked to the graphic objects, these being the parcels. This direct link enables the programme to automatically generate the dimensions of each parcel which gives precise measurements of the areas of the site included in the contract and thus a more accurate pricing of the contract as it is priced by the square metre.

Espvt_Fam (see Fig. 2) is a sub-table of Espvt_Lot and gives more details of what is in the parcel, i.e. the various records of trees, hedges, etc. This table can be generated from the Espvt_Lot table.

A parcel may be located graphically or alphanumerically. If a parcel number is known and retrieved in the database it can then be queried graphically and its location on the site highlighted (see Fig. 2). Similarly if the location of a parcel is known on the site graphically, the record can be retrieved from the database.

The contracting company's planning for the year and the actual work carried out is also held in the database and records can be retrieved in the same way as above.

Figure 2: Presentation of the graphic and alphanumeric information via STAR VIEWER.
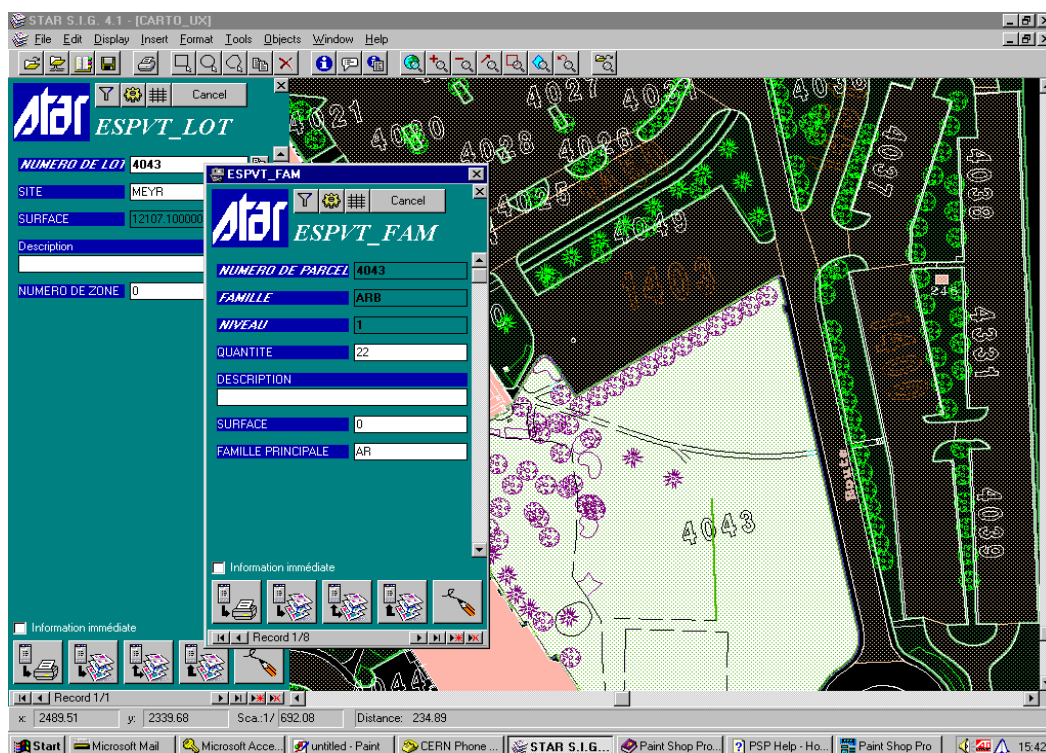
4   THE OVERVIEW

A graphical thematic query provides a very good overview. Figure 3 shows a thematic map of all the lawns, pasture, and fields on the Meyrin site included in the contract. An overview can facilitate discussions with the company with any anomalies being easily identified, thus making it more easy to keep the inventory of the site up-to-date. This is only one example of a thematic query.

Another example might be a query based on the planning proposed by the contracting company and the actual work carried out. The query may be based on the type of work or time period, such as pruning shrubs, fertilizing trees, cleaning roads, or the summer season for the mowing of the lawns to the standard required by the contract. Therefore, a thematic query can provide an overview of the work proposed and the work carried out.
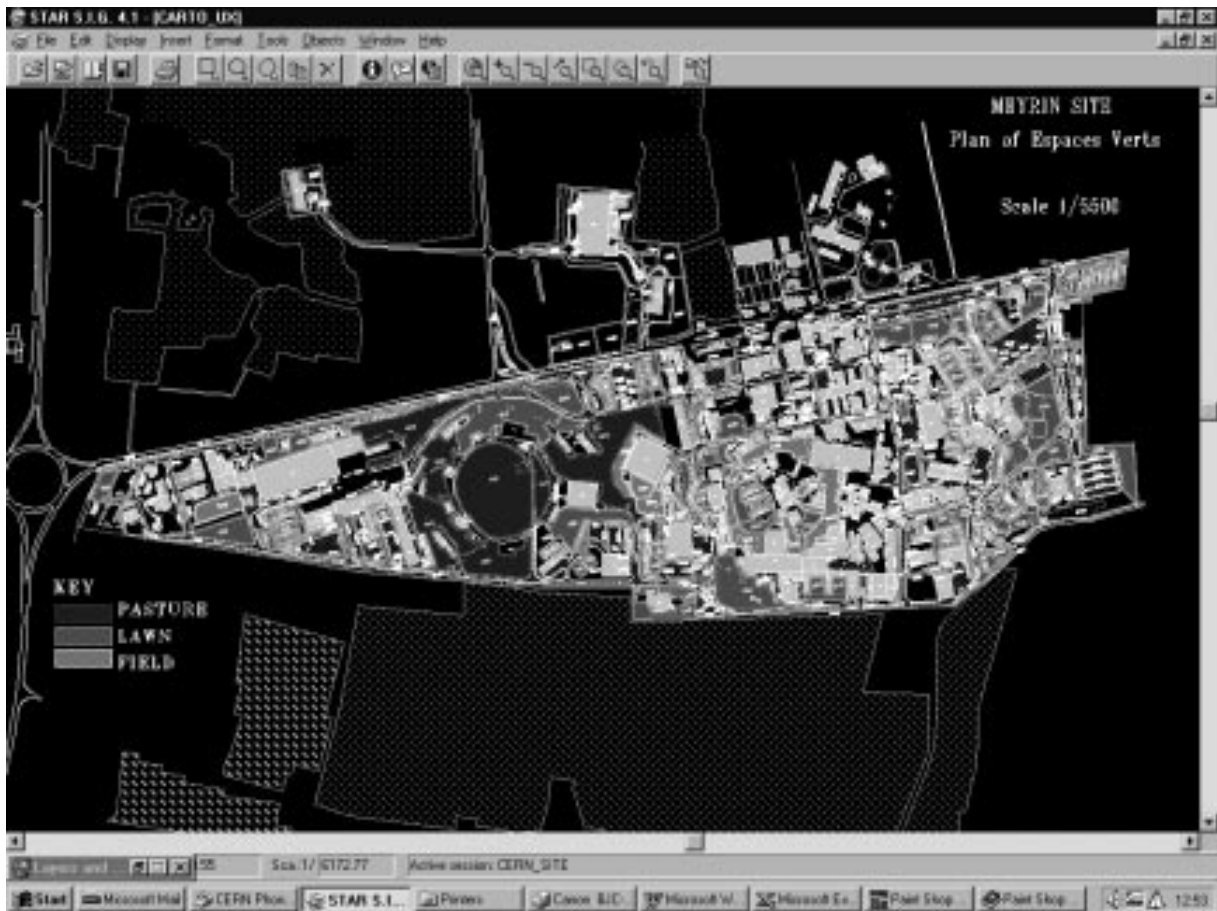

Figure 3: Thematic query of lawns, fields and pasture.

5   CONCLUSION

This provides the Service with a powerful tool, which gives both an overview and detailed information and access to centrally maintained survey information. It is also a user-friendly tool for non-specialist computer users. The result is better control and tighter management of the contract.