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The integration of the historic maps into the Division's GIS has increased efficiency and improved the service provided from the Lancashire Sites and Monuments Record. These maps are proving of great interest to professional and public users alike.

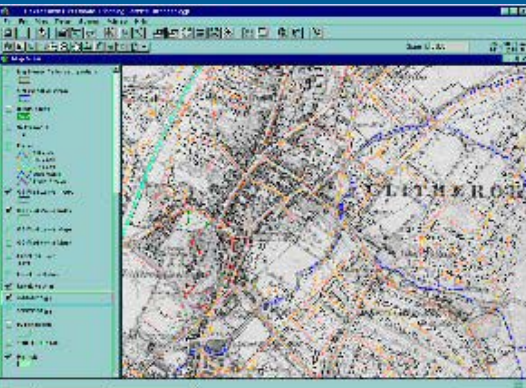
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Customer focus

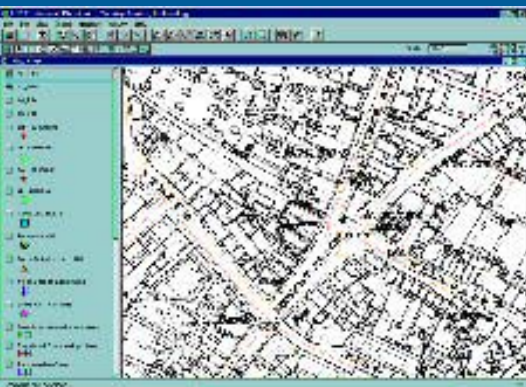
Company: Lancashire County Council

What they do: Responsible for the whole of Lancashire and its entire population

Project title: Archaeological map conversion to digital format



The project: Lancashire County Council needed a solution based around the digitisation of all their Archaeological maps enabling them to overlay the maps onto modern OS map data using the department's ArcView GIS system. Enabling data to be quickly accessed and recorded.



Project : Lancashire County Council



**Lancashire County Council
Archaeology Service**

advantage of today's GIS and Document Capture technology to uncover Lancashire's hidden past and discovers some unexpected benefits.

The Archaeology Service is responsible for maintaining the Lancashire Sites and Monument's Record, a database of known archaeological and historical sites within the County. The Record serves a multitude of purposes and the department is responsible for providing information for use by the County Council, Unitary Authorities and District Councils of Lancashire, as well as the public, major land managers, professional archaeologists and academics. The Archaeology Service also provides a development control advice to the fourteen Local Planning Authorities in the County and the Service uses the Sites and Monuments Record information to assess the archaeological impact of proposed developments.

The historic maps held within the Record are essential to this process as they hold an enormous amount of information on the history and development of the town and landscapes of the County. Physically handling large map sheets on a daily basis and cross-referencing the data to modern maps is time consuming and can be damaging to the maps, which can be up to 150 years old.

The need to provide accurate archaeological information, consistent with ordnance survey data and with the benefits of instant access and increased availability, led the Service to investigate the possibility of obtaining an electronic version of the County's historic maps. The intention was to overlay the maps onto modern OS map data using the department's ArcView Geographic Information System (GIS) enabling the archaeological impact of a development to be quickly assessed and recorded.

The most widely used historic mapping set was the OS first edition County Series 1:10,560 maps, published in the late 1840's and early 1850's. These represented the earliest consistent mapping record at an appropriate scale. Later editions of these maps and 1:2,500 maps of the 1890's were also used.

The Archaeology Service initially purchased an electronic set of OS first edition 1:10,560 maps from Landmark, a retailer of mapping products. However when the maps were delivered, the image quality was not appropriate and it became clear that the maps provided were not actually the first edition but a slightly later revision. Landmark could not correct these problems, and the product was therefore returned.

The Archaeology Service then decided to investigate the possibility of scanning their copies of the original maps. They turned to Cad-Capture because of the company's reputation for providing high quality scanning solutions.

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CAD-CAPTURE

Continued.....

Sites and Monuments Records Officer, Peter Iles, came to Cad-Capture with a requirement to scan and rectify 87 first edition 1:10,560 map sheets each measuring 695mm by 1021mm. The converted map images needed to retain the maximum amount of detail and required accurate manipulation to overlay the existing Ordnance Survey grid. Finally the files were required in a suitable format for use with the County's ArcView GIS system and with the minimum practical file size.

A pilot was undertaken and, after investigation by Cad-Capture and Mr Iles of various techniques for providing the best possible quality images, a satisfactory solution was found and an order was placed for the conversion of the maps.

The first stage in the process involved scanning the maps in greyscale at a resolution of 400dpi using Cad-Capture's high quality large format Colourtrak scanner.

These OS County series maps had been surveyed and published before the introduction of the National Grid, and using a slightly different projection to the modern OS mapping. Consequently they were skewed by around 4 degrees to the National Grid and would not represent rectangles on the modern mapping. The variation in co-ordinates between the two systems thus needed to be accurately calculated in 2 dimensions for each sheet and the blank margins of the maps stripped away, in a process known as 'key-stoning'. Cad-Capture used ERDAS Imagine GIS manipulation software to re-scale and accurately manipulate the huge amount of data on each raster image.

Finally the Archaeology Service were provided with CD-ROMs containing a 200 dpi greyscale jpeg and 400 dpi monochrome tiff file for each map, together with a world file that allowed the maps to be accurately displayed in ArcView.

The success of the conversion contract together with proposals for a rapid assessment of the historic development of some 30 Lancashire towns prompted the Archaeology Service to come back to Cad-Capture to convert a further series of 90 maps, this time 1:2,500 sheets dating to the later 1890's. These were scanned and converted in a similar way to the earlier maps.

The resulting digital mapping now allows maps of the 1840's, the 1890's and the present day to be superimposed, clearly showing changes across the county and allowing the historic origins of the present towns and landscape to be better understood. They have also enabled sites and areas of interest to be quickly located, identified and marked onto the computer database.

As well as making the services provided by the Archaeology Service more efficient and protecting the historic original maps, the information resource contained within the digital images has generated interest in other County Council departments.

The maps are also proving to be of great interest to the public. A sample set of the town maps have been added to other historic map images on the County Council web site and they are now among the most popular pages on the site. When the GIS system featuring the historic mapping was exhibited at the Royal Lancashire Show, show goers were eager to see their local areas as they were in the middle of the nineteenth century and a large queue was present at the stand through all three days of the show. A similar popular response occurred at the recent Lancashire Local History Fair.

The Archaeology Service is more than pleased with the result of the conversion contract. By using the maps with ArcView, the department has been able to automate procedures and save time with faster and efficient information provision. The ability to carry out tasks such as electronically pinning together adjacent sheets and printing out precise sections tailored to enquiries are major benefits.



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