

Laser Scanning

...*complete*
measurement solutions
for *total* peace of mind...



Plowman Craven

Laser Scanning

Plowman Craven are committed to providing an extra dimension to surveying. The world around us and everything in it exists in 3D. Increasingly the wide ranging Plowman Craven clients demand the accurate measurement and management of all three of these dimensions.

Laser scanning creates an **organised, highly accurate**, digital representation of a subject **quickly and efficiently**. This raw data is processed and is used in a huge number of

geomatic applications such as architectural and industrial design, measured building surveying, civil engineering, heritage preservation, crime scene analysis, the film industry, virtual reality scene acquisition, 3D modelling, reverse engineering, inspection, CAD comparison, and rapid prototyping.

Plowman Craven are proud to be at the **cutting edge** of this amazing **geomatic technology**. We were the first commercial survey company in Europe to purchase a terrestrial laser scanner and have become known as the



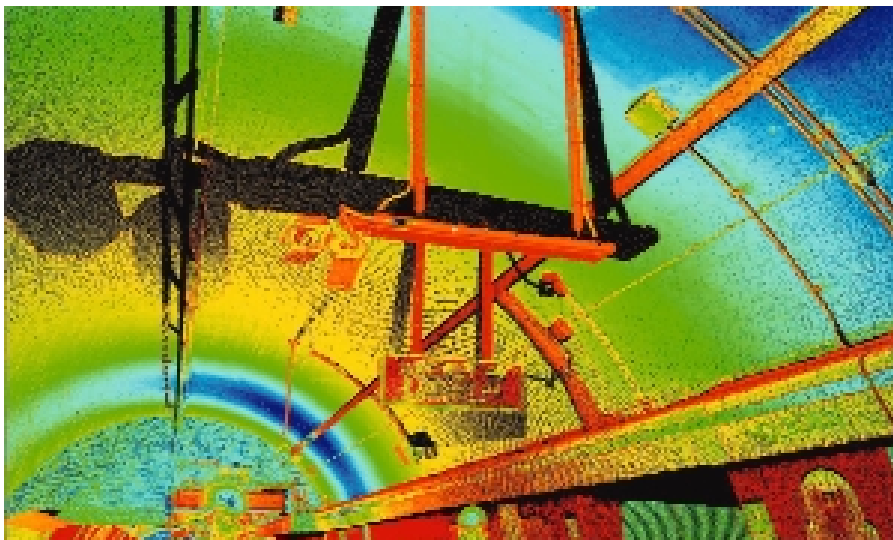
earliest adopters of the next generation of surveying instrumentation in the geomatics industry. Investment and development at Plowman Craven has continued apace with the purchase of state-of-the-art close range laser scanning systems that allows us to capture and model the human form and objects to tolerances finer than a human hair.

Advancements in technology have enabled the automatic collection and processing of large volumes of range data using 3D laser scanning systems. Compared to traditional survey methods, the information provided by laser scanners has a higher level of true geomatic completeness and detail of the site. This virtually eliminates costly site revisits to gather more detail. The laser scanning process has many other advantages over traditional surveying; it provides a 'point-in-time' record of complex surfaces, including interiors and exteriors of structures and spaces. The survey is conducted in a relatively short time and there needs to be no physical contact with the surfaces to be surveyed. The raw survey data needs minimal processing after capture, as further processing is undertaken as and when needed. The modular nature of the methodology for this type of survey translate into a modest initial outlay, with a 'pay-as-you-go' approach to buying survey products from the same dataset at a later stage.

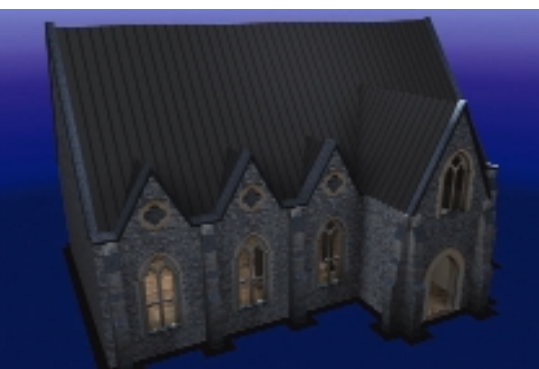
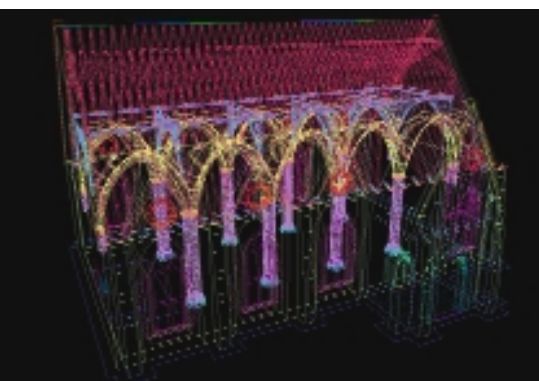
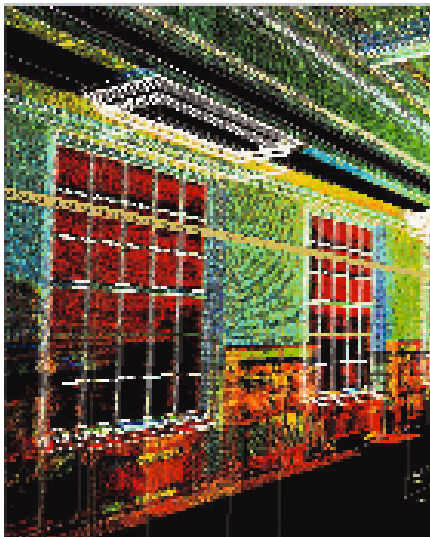
Plowman Craven's particular adroitness in laser scanning has developed from a combination of many years experience as respected photogrammetrists, building and land surveyors. We now combine the most up-to-date image based and point based spatial data collection techniques to provide a completely integrated data capture, presentation, interrogation and visualisation service.

Whether it is **large scale natural features** such as eroding coastlines or fragile objects housed in museum collections that require measuring to **sub-millimetre accuracy**, Plowman Craven has the laser scanning technology, the experience and the enthusiasm to meet your needs. We pride ourselves in providing the **extra added value** above and beyond the normal that allows the maximum benefits of your three dimensional data to be garnered.

Products available from the laser scanning process are as complex or simple as our client's specification dictates. Drawings and 3D models can



be created from the point cloud data as and when they are needed. This can be in the form of traditional 2D/3D line drawings, such as plans, elevations, and sections, with features shown in outline or detail. Or at the higher end of the process, 3D models can be created as polygonal mesh and other types of surface model that seamlessly integrate with the VFX or architectural processes. We also create photo-realistic models with high-resolution photography draped over them for use in visualizations and animations.



Advantages of Laser Scanning

- provides a 'point-in-time' record of complex surfaces, including interiors and exteriors of buildings
- the survey is conducted in a very short time
- minimal disruption to building use – the survey can be undertaken while the building is occupied
- raw survey data needs minimal processing after capture - further processing and drawing creation are undertaken as and when needed
- the modular nature of the methodology, and therefore the costs, for this type of survey translate into a small initial outlay, with a 'pay-as-you-go' approach to buying survey products from the same dataset at a later stage
- the data-collection component is much smaller, and therefore cheaper, than for other survey techniques, while the costs of off-site work are comparable
- no physical contact with the surfaces or spaces to be surveyed
- completeness of data capture - return visits to resurvey missed areas, or areas not specified, are seldom required
- completeness of record - replacement items (eg stonework) can often be manufactured off-site, and simply fitted on-site, saving time and avoiding disruption to building use
- non-selective data capture - the location and shape of all fixed surfaces are recorded
- high levels of detail can be recorded as specified by the user or client
- data can be easily viewed and reviewed by third parties

How could it be used?

- To produce all required graphical spatial data sets during the life of the project
- as a management, planning, and specification of works tool
- as a visualization tool in promotional material, advertising, explanation, interpretation, and 'virtual visiting' via the web
- as an 'as-built' archive record of the site that precludes the necessity for repeated site visits

Can Laser Scanning provide traditional survey products?

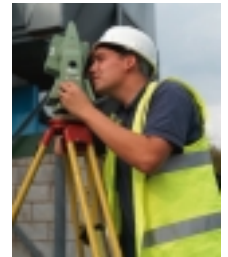
Yes - 2D and 3D plans, elevations, and sections can easily be produced from the registered point cloud

Products available from this data

- the scanning stage produces a record of an object as a 'point cloud', a collection of points representing the surface of an object
- the point cloud can serve as a point-in-time record of an object or building as it is, and can be used, without further processing, in visualizations and animations
- drawings and 3D models can be created from the point cloud data as and when they are needed
- linework produced can be traditional 2D/3D line drawings, such as plans, elevations, and sections, with features shown in outline or detail
- stone-by-stone drawings can also be created when the point cloud data is combined with high resolution photography
- 3D models can be created as polygonal mesh and other types of surface model
- photo-realistic models with high resolution photography draped over them can also be created, for use in visualizations and animations

What about added value products?

- drawings showing visible building services can be produced
- drawings for use in specifying works (repairs, consolidation, conservation, or reconstruction) can easily and quickly be produced
- existing drawings or rectified photography can be accurately located on and integrated into a single, coherent 2D or 3D framework produced from the point cloud
- new survey drawings or rectified photography can be combined with the point cloud and derived data
- the management and use of spaces within a building, using a CAD system or an integrated building management system, becomes possible
- demonstrations of proposed changes or additions to a building or its layout can be made
- visualizations, including still images and animations, of the point cloud or 3D models are possible
- the point-cloud data set can be interactively viewed and explored using free viewing software
- existing survey drawings can be checked against an accurate and objective data set, identifying and eliminating errors



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