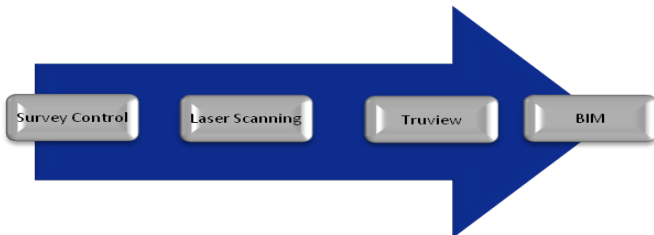


## Laser Scanning and BIM for Refurbishment and Retrofit

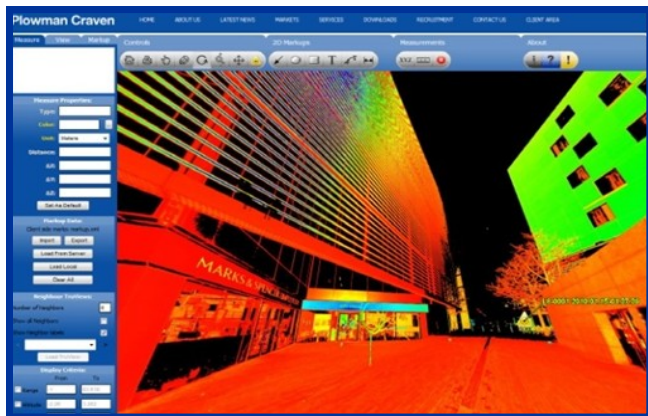
The number of refurbishment schemes has increased rapidly and there is a general misconception that the cost of surveying the building and delivering into a BIM format is restrictive. With laser scanning and efficient workflows it is now more cost effective to build a BIM model in an As-Built environment.



### Laser Scanning

Laser scanning instruments collect high accuracy (+/- 3mm) data at 500,000 points a second providing millions of measurements in three dimensions called point clouds.

The result is an organised digital representation of a subject which is delivered quickly, efficiently and accurately. Real-time access to this data can provide critical measurements instantly, or post process provides the measurement platform to extract 2D drawings or 3D models.



### Benefits of 3D laser scanning:

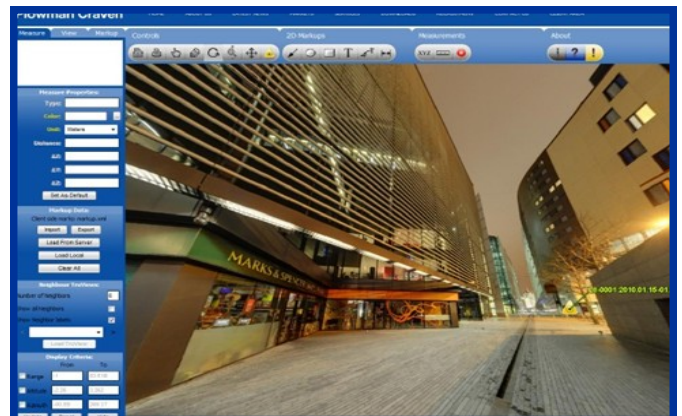
- Rapid site data collection
- Completeness of data – reduces returns to site
- Immediate data archive record and accessible measurements
- Operates remotely and in difficult situations
- Improved safety and non contamination
- Collects data from complicated environments

### TruView

From laser scanned on-site positions, high dynamic range photography can be taken and mapped onto the actual point cloud data.

This can be viewed within the supplied free view “TruView” application and provides the user with a high definition photorealistic duplicate of the site environment. The user can pan, zoom and accurately measure any visible details, all this while the 2D/3D deliverable is being completed.

An added advantage is its multi-user capacity - Engineers can be investigating the structural arrangement while the retail designer can be measuring merchandise layouts.



### Benefits of TruView:

- Early access to data and quicker decision making
- High dynamic range photography
- Measurement and investigation
- Internet access and multi-user facility
- Move around easily in a visual tour of the site
- Attach notes/hyperlinks/legal documentation

### 3D Models and BIM

Utilising the 3D point cloud data and employing both traditional survey techniques and the latest combination of surface and edge recognition, the final delivery can be standard 2D floor plans, elevations and sections or in the following 3D models:

- 3D Wireframe - all surfaces are visibly outlined in lines
- Solid Model - application of solid objects to represent a realistic representation of real life objects and features
- Photo Model - photos are rectified in elevation and are combined in CAD to form a 3D model



- Surface Model - surface models employ surfaces constructed across the wireframe to represent a "skin" that can be rendered
- Building Information Model - (BIM) 3D deliverable using Revit®

Continually, clients are requesting a BIM deliverable which can seamlessly integrate with existing design requirement and workflows.

The professionally surveyed BIM model has a major advantage in the fact that relevant parties can work directly in the BIM environment without the need to construct from 2D plans or convert from another 3D model format.



### Benefits of BIM delivery:

- Minimise potential risk by reducing production stages
- Integrate conceptual design in an as-built environment
- Highly accurate as-built survey data
- Linked to survey data and control framework
- Time and cost savings by upgrading 2D survey data into Revit®
- Reduced project time

### Save time and money

Providing accurate as-built information in a BIM format:

- Equips you with the sound base data upon which to build your designs
- Allows your design process to commence immediately after survey data delivery - without the need for preparing and transferring surveys from CAD
- Gives relevant stakeholders immediate access to work directly within the BIM Environment

### About Plowman Craven

Plowman Craven is an innovative surveying company and a trusted name which offers a broad range of measurement services across numerous and diverse markets. Operating worldwide, our highly skilled and motivated team make a difference by providing timely, collaborative and accurate solutions to meet your requirements.

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