

Remote Sensing

Lidar + Digital Phogrammetry

In the last few years, geomatic development has advanced the methods and devices that make documentation capable to obtain accurate million-per-second measurements based on both range and image.

Cultural Heritage

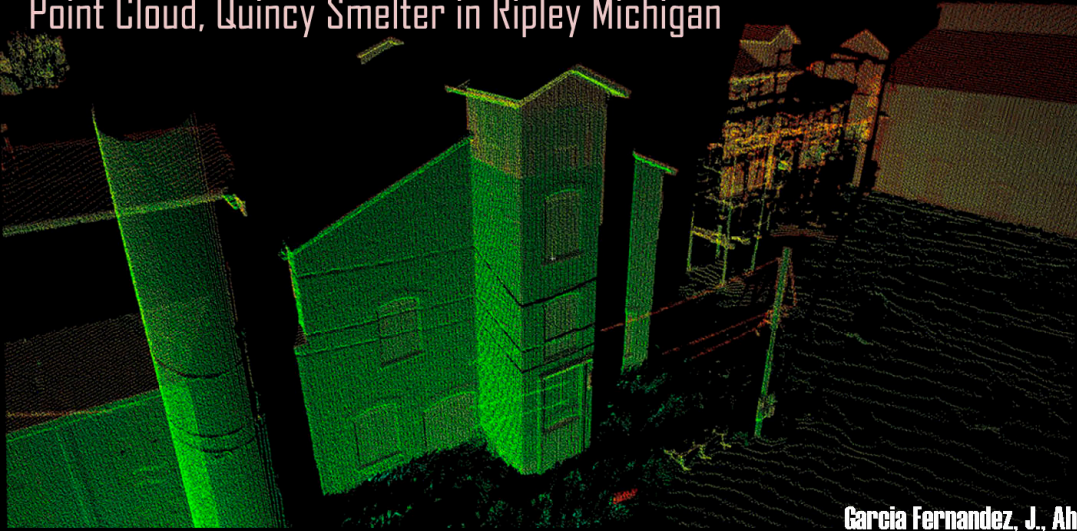
Recreating the past, preserving our history and communicating their values are some of the reasons for which documenting and representing the Cultural Heritage is an essential task for surveyors, architects, archaeologist, among others

Heritage Conservation

For heritage conservation, quantitative information based on the morphology and geometry has now to be connected with information "underneath the surface" -qualitative- such as history, relationships, materials, the intangible, etc).

ON SITE SURVEY • POINT CLOUD PROCESSING • DATA PARAMETRIZATION + ATRIBUTES • HBIM MODELS

Point Cloud, Quincy Smelter in Ripley Michigan



Garcia Fernandez, J., Ahn, Y., Greg, M., Michigan Technological University, 2015

Point Cloud vs HBIM

The point cloud is a quantitative "as-built" 3D information based on accurate and dense spatial data. By contrast, HBIM is an information that combines quantitative and qualitative data semantically described.

The HBIM structure composed of parametric models with attributes, has brought together the different disciplines and end-users in a single management 3D platform. This represents a significant advance in the democratization and the transdisciplinary solutions for heritage conservation and communication.

AN APPROACH TO THE TRANSFORMATION OF POINT CLOUDS INTO

HISTORICAL BUILDING INFORMATION MODELING MODELS

Building Information Modelling (BIM) was born as a system for the representation and management of buildings and sites from a multidisciplinary analysis, through model described semantically. BIM not only represents an advance in the three-dimensional design, but also incorporates the concepts of production and management in the lifecycle of the built environment. This has resulted that in a short period time has been assumed as a fundamental tool in Architecture, Engineering, and Construction (AEC) industry. While BIM has being widely studied, its relationship with Cultural Heritage has important gaps, mainly in the transformation of typical survey data into HBIM models

Point Cloud

- Data cleaning and resampling
- Point Cloud Registration
- Agrupation
- Data processing (triangulation, texturing, etc.)

Manual drawing

Time-consuming process

Feature Segmentation

Automatic segmentation of geometric primitives
Usage of Architectural Rules and Degrees of freedom

Mapping based on HBIM Libraries

Lack of consensus in the HBIM standards
Lack of HBIM open-access library

Technical Documentation

Ortho, Cross-Section, schedule-related info, etc.

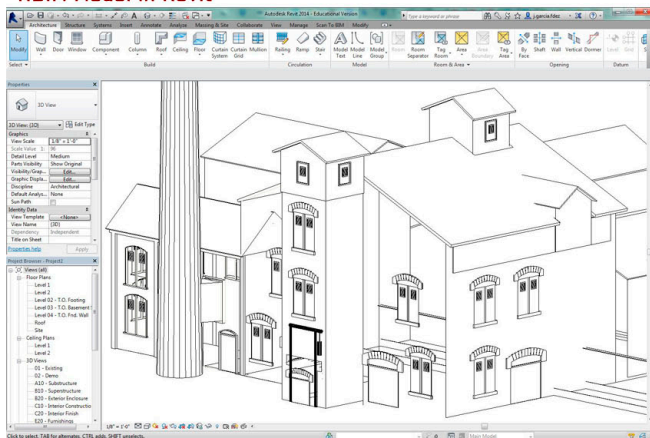
Visualization and Communication

Web based models, Augmented Reality, etc.

Simulation and Evaluation

GIS, Simulation of Noise, Light, Flood, etc.

HBIM Model in Revit



Video in YouTube



3D Model in WebGL



HBIM Model in 3D MAX

