COURSE OVERVIEW DE1074-3D
Seeing from Above: Remote Sensing & Photogrammetry

Course Title
Seeing from Above: Remote Sensing & Photogrammetry

Course Date/Venue
August 10-12, 2026/Online Virtual Training

Course Reference
DE1074-3D

Course Duration/Credits
Three days/1.65 CEUs/16.5 PDHs

Course Description

This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.

This course is designed to provide participants with a detailed and up-to-date overview of Seeing from Above: Remote Sensing and Photogrammetry. It covers the basic concepts of remote sensing, electromagnetic spectrum basics and remote sensing platforms; the sensors and data types, image acquisition principles and image interpretation; the photogrammetry, principles of image geometry and aerial photography concepts; the importance of ground control points (GCPs) as well as 3D mapping and modelling; and the drone mapping covering UAV basics and components, flight planning for mapping, data capture workflow and safety and regulations.

During this interactive course, participants will learn the image processing basics covering pre-processing steps, radiometric and geometric correction, noise removal techniques and image enhancement methods; the GIS integration by linking remote sensing with GIS, data layering and visualization and coordinating systems and projections; the land cover classification basics, training data selection and accuracy assessment; the concept of temporal analysis, methods for detecting change and applications in environmental monitoring; and the pipeline route monitoring, environmental impact assessment, infrastructure mapping and asset inspection using remote sensing.

Course Objectives/Outcomes & Benefits for the Participants

Upon the successful completion of this course, each participant will be able to:-

- Apply and gain an in-depth knowledge on remote sensing and photogrammetry
- Discuss the basic concepts of remote sensing including electromagnetic spectrum basics and remote sensing platforms
- Identify sensors and data types, image acquisition principles and image interpretation
- Explain photogrammetry, the principles of image geometry and aerial photography concepts
- Discuss the importance of ground control points (GCPS) as well as 3d mapping and modeling
- Describe drone mapping covering UAV basics and components, flight planning for mapping, data capture workflow and safety and regulations
- Illustrate image processing basics covering pre-processing steps, radiometric and geometric correction, noise removal techniques and image enhancement methods
- Apply GIS integration by linking remote sensing with GIS, data layering and visualization and coordinating systems and projections
- Compare supervised versus unsupervised classification and apply land cover classification basics, training data selection and accuracy assessment
- Discuss the concept of temporal analysis and carryout methods for detecting change and applications in environmental monitoring
- Apply pipeline route monitoring, environmental impact assessment, infrastructure mapping and asset inspection using remote sensing

Who Should Attend

This course provides an overview of all significant aspects and considerations of remote sensing & photogrammetry for GIS specialists and geospatial analysts, surveyors and geomatic engineers, civil and structural engineers, urban and regional planners, environmental scientists and climate specialists, geologists and earth scientists, agriculture and forestry professionals, disaster risk and emergency management personnel, infrastructure and construction project managers, researchers, academics, and students (geospatial/earth sciences), government land use and mapping officials, oil and gas, mining and utilities professionals, drone/UAV operators and other technical staff.

Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures
20% Practical Workshops & Work Presentations
30% Hands-on Practical Exercises & Case Studies
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

Course Certificate(s)

Internationally recognized certificates will be issued to all participants of the course who completed a minimum of 80% of the total tuition hours

Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations: -

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

- The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **1.65 CEUs** (Continuing Education Units) or **16.5 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:

Dr. Nawras Shatnawi, PhD, MSc, BSc, is a **Senior Civil Engineer** with integrated industrial experience and academic experience as a **University Professor**. His extensive experience widely includes in the areas of **ArcGIS** Fundamental for GIS Support, **AutoCAD** for GIS Support, **Structural Design**, **Construction Materials**, **Concrete Structures** Design & Maintenance, Introduction to **ArcGIS** Pro/Spatial Analysis and Editing in **ArcGIS Pro**, **ArcGIS** Essential Workflows, **Structural** Health Monitoring, Testing Equipment and Statistical Application, **AutoCad Civil 3D**, Geographical Information System (**GIS**), **Mapping Information** Management Systems, **Data Analysis Techniques**, **Detailed Engineering Drawings, Codes & Standard**, **Surface Drainage** Design System, **Drainage System** Operation & Maintenance, **Structural Reliability Analysis**, **Road** Inspection, **Drainage** Inspection, **Road** Design & Safety, **Road** Condition Surveys, **Road** Maintenance Management System, Quality Control & **Site Inspection**, Construction **Site Inspection**, **Drainage** Network Operations, **Urban Drainage** Management, **Drainage Network** Cleaning & Rehabilitation, **Drainage** Network Inspection, Precise Geodetic Survey, **Topographical Survey & Mapping**, **Photogrammetry & Remote Sensing**, **Engineering Survey**, **Excavation**, **Backfill & Compaction**, **Excavation & Reinstatement**, **Excavation Safety** for Construction, **Groundworks Supervision**, **Project Relocation** & Development, **Site Inspection**, **Site** Management, **Site Supervision**, **Quality Control & Team** Management, **Planning & Monitoring** the Progress & Quality of Work, Physical **Planning & Operations**, Strategic **Planning & Implementation**, **Spatial Data** Management, **Geodatabase** Management, **Remote Sensing Analysis**, **Geometrics** Engineering, **Geodesy & Cartography**, **Geomatics**, **Geodetic Positioning** & **GPS**, **Space Geodesy**, **Civil Engineering**, Engineering **Surveying**, **Digital Image** Processing, Highway Design, **Satellite** Positioning & Applications, **Route & Construction Surveying**, **Quantity Surveying & Specification**, Civil **Drawings & Construction Specifications**, **Land Surveying**, **Conventional Control Surveys**, **Trigonometric Survey**, **Site Survey** Work Supervision, **Road/Building** Design Mapping Techniques, Underground **Surveying** and **Mass Data Methods**. Further, he is also well-versed in various engineering software including GIS, PCI Geomatica, ENVI 5, ERDAS, ArcMap 10, ILWIS, IDRISI, e-Cognition, MATLAB7, SIMULINK, AutoCAD and VISIO2016**.** He is currently the **Assistant Professor** wherein he is a highly involved in lecturing Surveying & Geomatics Engineering.

During his career life, Dr. Nawras has gained his practical and field experience through his various significant positions and dedication as the **Senior Site Engineer**, **Assistant Professor**, **Senior Researcher**, **Senior Lecturer** and **Teaching Assistant** for international companies, universities, colleges, institutes and research centers like the Al-Balqa Applied University, Karlsruhe Institute of Technology (Germany), Lacasa Company for Construction, Applied Science University and Jordan University of Science and Technology. Further, he has an experience in environmental engineering, water management, and technical support to different national and international projects and programs through maps production using ArcGIS and other tools, web mapping, multiuser – geodatabase management, GIS users supervision and training, liaising with different departments concerning GIS, in addition to geospatial and statistical analysis, multi-sensor remote sensing data acquisition, archiving, processing, modeling, implementation of GIS/RS tools, implement tools for remote sensing analysis, land use land cover mapping and related accuracy assessment and time-series analysis.

Dr. Nawras has **PhD** in **Photogrammetry & Remote-Sensing** and **Master's** and **Bachelor's** degree in **Civil Engineering**. Further, he is a **Certified Instructor/Trainer** and has delivered numerous trainings, courses, workshops, seminars and conferences globally.

Virtual Training (If Applicable)

If this course is delivered online as a Virtual Training, the following limitations will be applicable:-

Certificates	Only soft copy certificates will be issued to participants through Haward's Portal. This includes Wallet Card Certificates if applicable
Training Materials	Only soft copy Training Materials (PDF format) will be issued to participant through the Virtual Training Platform
Training Methodology	80% of the program will be theory and 20% will be practical sessions, exercises, case studies, simulators or videos
Training Program	The training will be for 6 hours per day starting at 0800 and ending at 1400
H-STK Smart Training Kit	Not Applicable
Hands-on Practical Workshops	Not Applicable
Site Visit	Not Applicable
Simulators	Only software simulators will be used in the virtual courses. Hardware simulators are not applicable and will not be used in Virtual Training

Course Fee

US$ 2,625 per Delegate + **VAT**.

Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the workshop for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

Day 1: ***Monday, 10th of August 2026***

0800 - 0815	*Registration & Coffee,*
0815 - 0830	*Welcome & Introduction*
0830 - 0845	***PRE-TEST***
0845 – 0930	***Introduction to Remote Sensing*** *Definition and Basic Concepts • History and Evolution of Remote Sensing • Applications in Oil & Gas • Advantages and Limitations*
0930 – 0945	*Break*
0945 - 1115	***Electromagnetic Spectrum Basics*** *Understanding Electromagnetic Radiation • Wavelengths and Frequency Ranges • Visible versus Non-Visible Spectrum • Interaction with Earth Surfaces*

1115 – 1145	***Remote Sensing Platforms*** *Satellite Platforms (e.g., Landsat, Sentinel) • Aerial Platforms (Aircraft, Drones) • Ground-Based Systems • Platform Selection Criteria*
1145 – 1200	***Sensors and Data Types*** *Passive versus Active Sensors • Optical, Thermal and Radar Sensors • Spatial, Spectral, Temporal Resolution • Examples of Commonly Used Sensors*
1200 - 1215	*Break*
1215 - 1300	***Image Acquisition Principles*** *How Images are Captured • Viewing Geometry and Angles • Illumination Conditions • Sources of Distortion*
1300 - 1350	***Basics of Image Interpretation*** *Visual Interpretation Techniques • Elements: Tone, Texture, Pattern, Shape • Identifying Land Features • Basic Interpretation Exercises*
1350 – 1400	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1400	*End of Day One*

Day 2: ***Tuesday, 11th of August 2026***

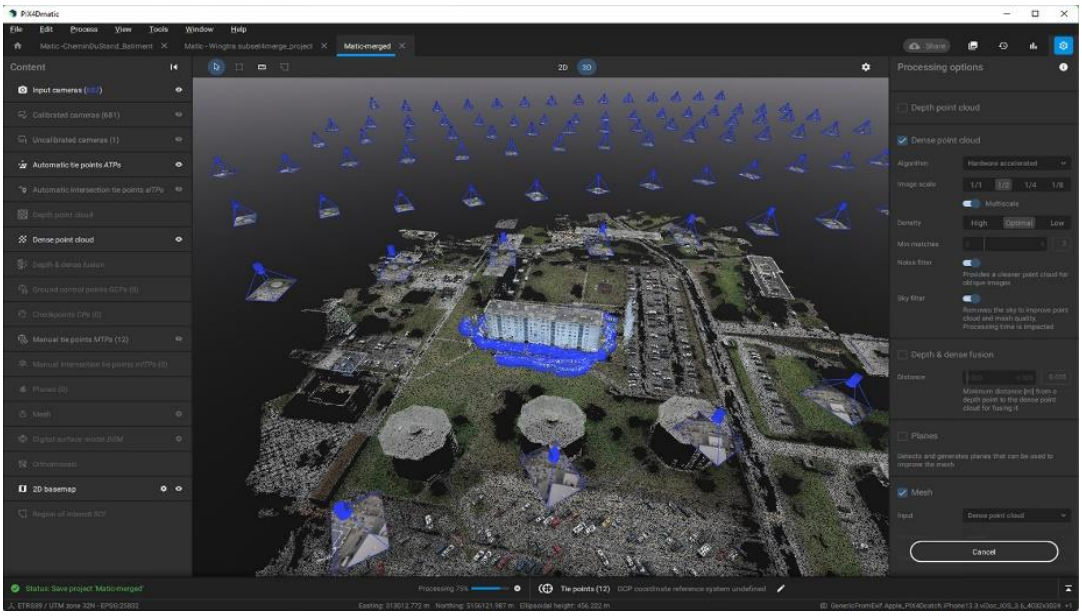
0800 - 0845	***Photogrammetry*** *Definition and Purpose • Types: Aerial versus Terrestrial • Role in Geomatics and Mapping • Applications in Oil & Gas*
0845 - 0930	***Principles of Image Geometry*** *Perspective Geometry Basics • Scale and Measurement Concepts • Parallax and Depth Perception • Overlap and Stereoscopy*
0930 - 0945	*Break*
0945 – 1100	***Aerial Photography Concepts*** *Flight Planning Basics • Image Overlap (Forward & Side) • Camera Types and Settings • Ground Coverage Calculations*
1100 – 1200	***Ground Control Points (GCPs)*** *Definition and Importance • Methods of Collection (GPS/GNSS) • Accuracy Considerations • Use in Georeferencing*
1200 - 1215	*Break*
1215 - 1300	***3D Mapping & Modeling*** *Concept of Stereoscopic Vision • Generating 3D Models • Digital Elevation Models (DEM) • Applications in Terrain Analysis*
1300 - 1350	***Drone Mapping*** *UAV Basics and Components • Flight Planning for Mapping • Data Capture Workflow • Safety and Regulations*
1350 – 1400	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1400	*End of Day Two*

Day 3: **Wednesday, 12th of August 2026**

0800 - 0845	***Image Processing Basics*** *Pre-Processing Steps • Radiometric and Geometric Correction • Noise Removal Techniques • Image Enhancement Methods*
0845 - 0930	***GIS Integration*** *Linking Remote Sensing with GIS • Data Layering and Visualization • Coordinate Systems and Projections • Basic GIS Workflow*
0930 - 0945	*Break*
0945 – 1100	***Classification Techniques*** *Supervised versus Unsupervised Classification • Land Cover Classification Basics • Training Data Selection • Accuracy Assessment*
1100 – 1200	***Change Detection*** *Concept of Temporal Analysis • Methods for Detecting Change • Applications in Environmental Monitoring • Oil & Gas Use Cases (Pipeline Monitoring, Land Changes)*
1200 - 1215	*Break*
1215 - 1300	***Practical Applications*** *Pipeline Route Monitoring • Environmental Impact Assessment • Infrastructure Mapping • Asset Inspection Using Remote Sensing*
1300 - 1330	***Future Trends & Technologies*** *AI and Machine Learning in Remote Sensing • High-Resolution Satellite Data • LiDAR and Advanced Sensors • Digital Twins and Smart Mapping*
1330 – 1345	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1345 – 1400	***POST-TEST***
1400	*End of Course*

Simulator (Hands-on Practical Sessions)

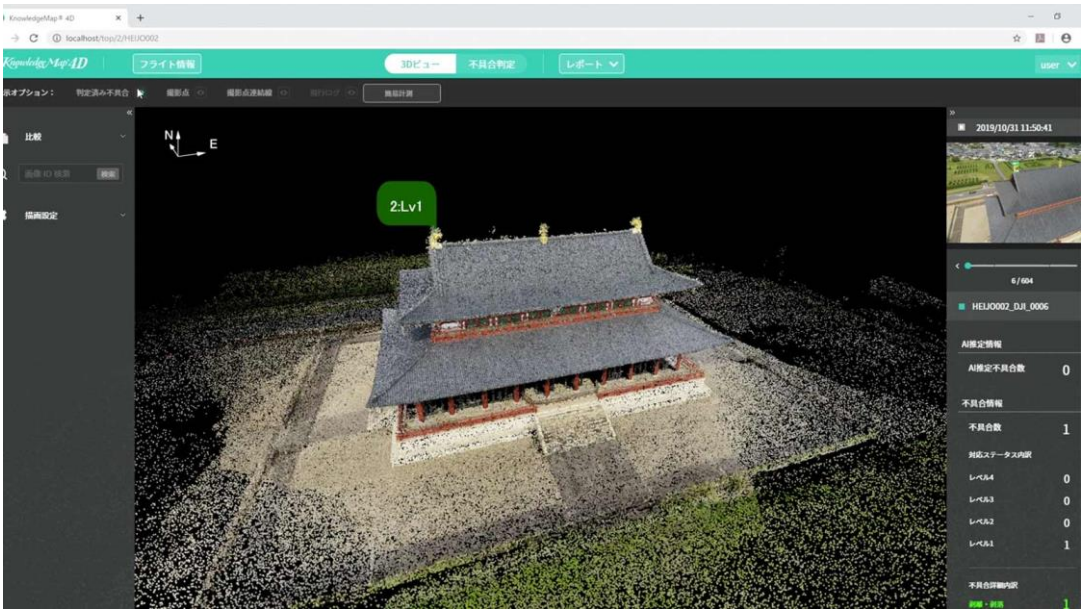
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using the "PIX4Dmatic", "PIX4Dfields", "Pix4Dengine", "Pix4Dmapper", "SNAP 13.0" and "ArcGIS Desktop v.10.8.2" simulators.



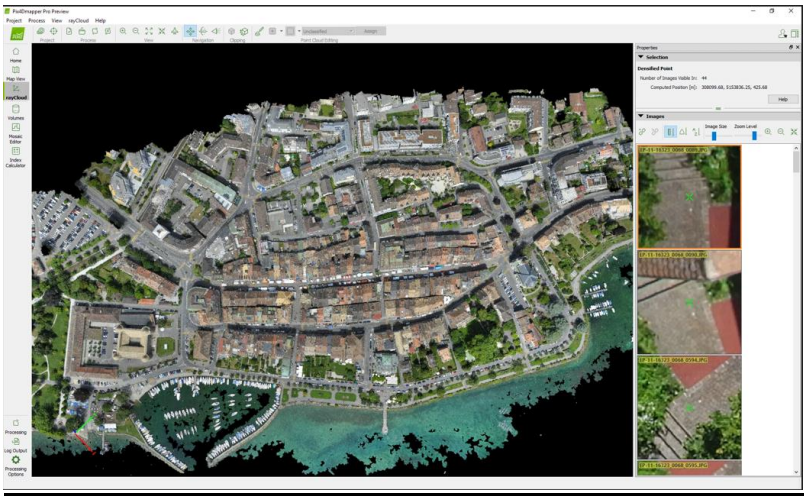
PIX4Dmatic

PIX4Dfields

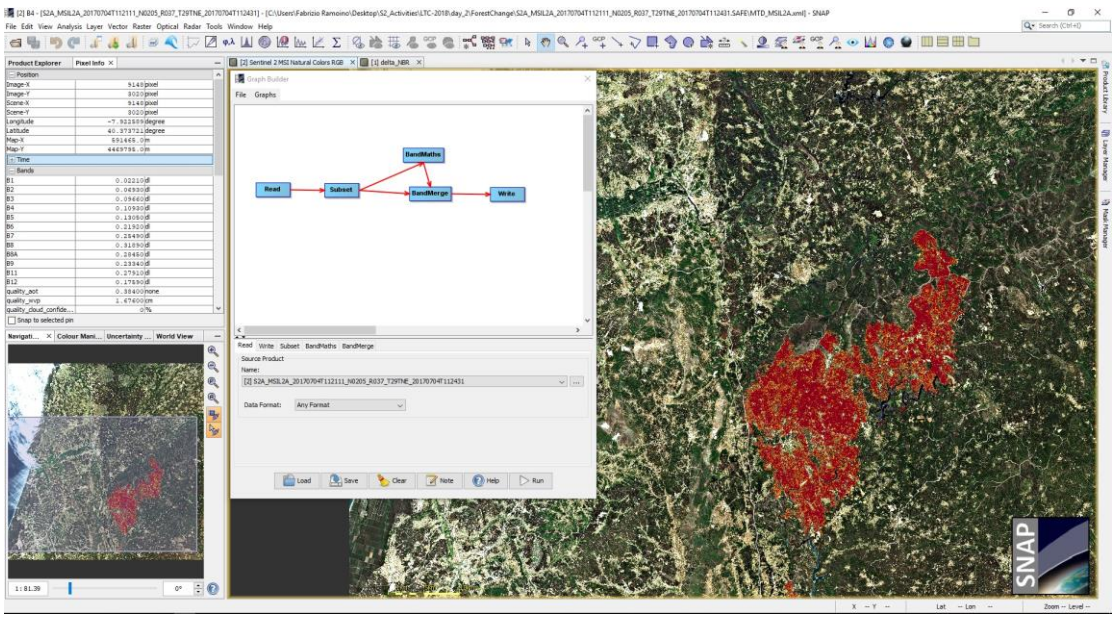
Pix4Dreact



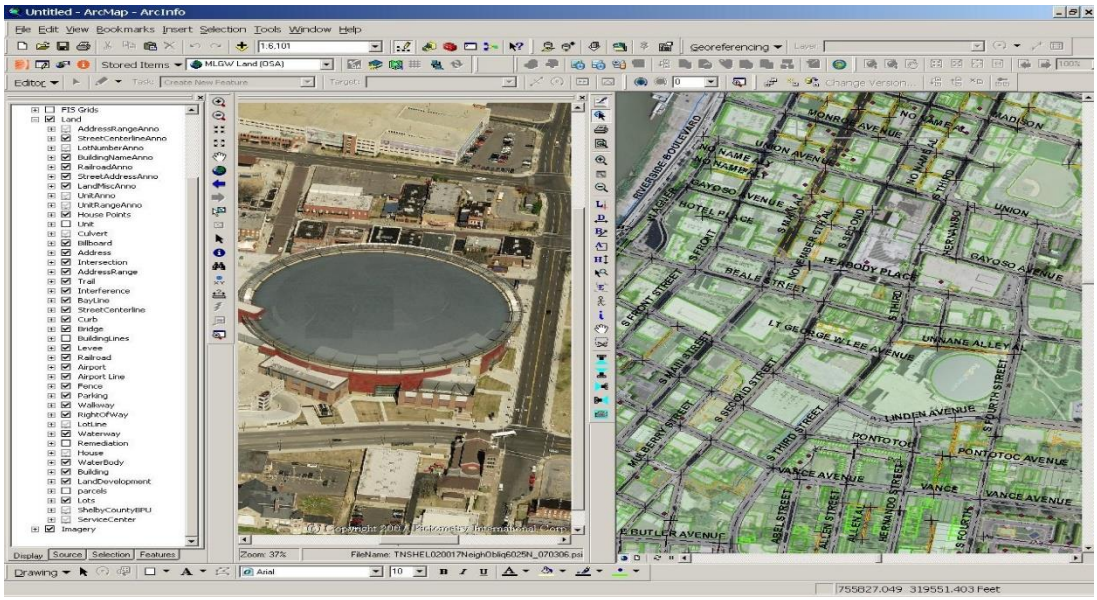
Pix4Dengine



Pix4Dmapper



SNAP 13.0



ArcGIS Desktop v.10.8.2

Course Coordinator

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