ICT-supported learning and training tools for terrestrial laser scanning applications

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Introduction – Content and Access

The package consists of a

• theoretical introduction on laser scanning and data processing

• number of case studies in the form of
  – online tutorials
  – lesson e-books
  – decision flowcharts for procuring projects with terr. laser scanning

• languages:  

Access via a didactic portal on the internet free of charge:

* online course
* download all the course material

Aim: create ICT-supported ‘learning on demand’ tools for the use of terrestrial laser scanners in documenting our built environment

Users / Target groups:

• academic institutions; in their current and future curriculum
• enterprises; for in-house training
• private persons; for advanced vocational training purposes
Didactic approach

Characteristics of the didactic approach are:

- Tutorials cover various applications
- Real data of a measured object
- Use of the most advanced laser scanning tools to address the project needs
- Sufficient case study material to illustrate common problems of TLS in practice

Teaching Material

Lesson ebooks – Theoretic basics

Are designed to procure an theoretic background on laser scanning, including:

- the process of applying adequate technology
- the application of the technology for recording three-dimensional spatial information: process of collection and registration
- the application of software to provide three-dimensional spatial information: process of modeling and visualization
2 Training material – Best practice examples

- Heritage documentation (Church)
  - Data processing and 3D modelling

- Industrial Case Study (FPSO vessel)
  - Simulation the scan process

- Deformation monitoring of a Dam
  - Session planning and quality control

Modular training

The pre-processed datasets offer the possibility to select individual modules for training for experienced trainees.

The trainee is guided through the entire course by:

- Interactive step-by-step instructions
  - Cross-references as well as hyperlinks offer further information on the specific items.

- Video tutorials
  - The more complex processing steps are explained using short film sequences.

- To do” summary
  - to recapitulate all steps necessary to achieve the required result are available at the end of the chapters

- Self test “Question boxes”
  - The trainee is asked to explain the reasons for failures or errors that occurred during data processing

- Success control using pre-processed datasets
  - The trainee can compare the results achieved with the “correct” results at different stages of the course.
3 Decision flowcharts

- Interactive flowcharts were developed to find adequate solutions to different questions
- are individually coordinated with the requirements of the respective processes
- each stage of the cycle provides the trainee with information on how to apply this technique adequately

4 Information hub

Information hub (links)

- Government and international organizations
- Application organizations
- Hardware and Software
- Further reading
- Visualization (3D)
3D Risk Mapping project team consists of partners from 6 EU-countries, with both extensive experience in 3D-modelling and training. The partnership’s experience to the project includes:

- vocational universities with different levels of specific experience and also a lot of experience with Leonardo-projects;
- surveying companies on a different scale and with different types of customers;
- expert in training and instruction in the field of 3D-scanning and modelling.

Our partners are:

- University College St. Lieven (belgium)
- GlobeZent (belgium)
- BnG Engineering (belgium)
- Universitat Politecnica de Valencia (UPV/ECL) (spain)
- DelfTtech (the netherlands)
- University of Natural Resources and Applied Life Sciences, Vienna - Institute of Surveying, Remote sensing and Land Information (austria)
- Plowman Craven (United Kingdom)
- Gh Asacite Technical University of Iasi (Romania)

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