

Equipment of the Centre

- **ExaScan handheld scanner** which is mobile, easy to use in the field and in the laboratory, and suitable for digitizing especially small objects
- **The Artec Eva handheld optical scanner** is used to digitize smaller objects, especially in the field. A powerful computer is used to work with the scanner. Specialized programs, which are designed to collect and edit 3D data, are used to process the scanned data, to combine individual scans, and to create a 3D model.
- **The Breuckmann optical scanner** is used to accurately and precisely 3D digitize smaller objects. The scanner is stationary, standing on a tripod and scans 3D shape of the object and its colour, or texture. A powerful mobile computer is used to work with the scanner. We use foreign specialized programs to process the scanned data, to position individual scans, to create a 3D model, and for further processing. The result of 3D digitization is then an accurate and comprehensive 3D color model that can be visualized, for example, on a website or can be used to create a replica using 3D printing techniques. The 3D model is also a good basis for restoration research.
- **FARO Focus S350 laser spatial scanner**, primarily used for scanning large areas, interiors and exteriors. The scanner is lightweight and compact in size. It allows the collection of a large number of points from multiple sites, which are then combined into a single 3D model of the scanned object. The Documentation Centre has the appropriate software to process the processed data. Outputs can be used in architecture, civil engineering, BIM project processing, etc.
- **Mobile 3D handheld laser scanner FARO Freestyle**. The FARO Freestyle Scanner is the only handheld laser scanner that provides fast and easy 3D colour laser scanning. This is the principle of measurement where the user holds FARO Freestyle in their hand and scans the places he points at with the scanner. Thanks to its versatile design, small size and low weight, it can be used for scanning in hard to reach places. It maximizes measurement speed with fast data collection, real-time visualization, and the largest scanning volume on the market. Laser scanning data can be easily imported into all commonly used softwares for architecture, accident reconstruction, construction, forensics or industrial manufacturing.
- For more efficient and faster processing of significantly large spatially scanned data from 3D scanners, the computing server is used. The server can handle even large projects, such as 3D digitization of the entire church, castle or precise documentation of baroque sculpture in a resolution below 0.2 mm. The server is the cornerstone of the computing power of the Cultural Heritage Documentation and Digitization Centre, which is structurally located under the Department of History, Faculty of Arts, Jan Evangelista Purkyně University.
- In the field of photography and photogrammetry, the Centre has modern digital cameras with accessories (e.g. CANON EOS 5D MARK, NIKON D3) and special lenses for photographing architecture and facades. Specialized software (Adobe Photoshop, Zoner, etc.) is available for digital photography processing. The Documentation Centre



is also equipped with a computer and software for photogrammetry, a modern and perspective method of documentation of objects and all movable objects.

- In the field of geodesy and preparation of data for photogrammetry, the Centre has total stations, geodetic GPS, leveling instruments, modern handheld laser rangefinders, analogue measuring aids, GPS navigation.
- **Autodesk AutoCAD Civil 3D** software enables to create plan documentation and three-dimensional digital object models. Unlike the standard AutoCAD, Civil 3D version is enhanced with functions that support the processing of COGO points, which are imported from the total station, or from geodetic GPS.
- **Niton Xl3d handheld XFR spectrometer** is a chemical analyzer designed for the construction industry. By means of X-ray irradiation it is able to determine the presence of elements in the monitored material and to express their make-up in percentage. It enables to analyze and compare chemical composition of studied historical artifacts and used historical materials.
- In addition to the above-mentioned special equipment, the Centre has logistic equipment for special field work which will facilitate the documentation of buildings in difficult terrain, e.g. walkie-talkies, climbing equipment, power generators, etc.