**Номинация «Научно-технический текст»**

**Text 1.**

**3D LASER SCANNING FOR CULTURAL HERITAGE**

New technologies and new hardware are pushing to increase the quality of 3D models with the purpose of attracting new people into the 3D world. Many companies entered inside this market developing and employing software and survey systems with good potentialities and often very impressive results. Indeed the number of 3D products is huge and if one hand the cost of these technologies is slowly reducing, on the other hand it’s difficult, in particular for nonspecialists, to select the right product due to a lack of standard terminology and specifications. Furthermore, new technologies can for sure be a powerful tool to improve the classical standard of documentation and create a new methodology, however caution must be used and they have to be further studied and customized to be fully effective and useful, since even the standard bi-dimensional representations are still not problem-free.

When planning a 3D surveying and modeling project, beside all the technical parameters that should be kept in mind (e.g. location, accessibility, geometric detail, budget), a very crucial thing to know is the final user of the 3D data and the final project’s goal, in order to clarify what is actually needed.

Nowadays there is a large number of geomatics data acquisition tools for mapping purposes and for visual Cultural Heritage digital recording. These include satellite imagery, digital aerial cameras, radar platforms, airborne and terrestrial laser scanners, UAVs, panoramic linear sensors, SRL or consumer-grade terrestrial digital cameras and GNSS/INS systems for precise positioning. Beside data acquisition systems, today new software has been developed and many automated data processing procedures are available.

For what concerned new functionality for 3D data management, there are new advances in Geographic Information Systems (GIS) and 3D repositories (e.g. BIM) while in the visualization field the rendering and animation software are now more affordable with lower costs and higher results. The continuous development of new sensors, data capture methodologies and multi-resolution 3D representations are contributing significantly to the documentation, conservation, and presentation of heritage information and to the growth of research in the Cultural Heritage field. The generation of reality-based 3D models of heritage sites and objects is nowadays performed using methodologies based on passive sensors and image data, active sensors and range data, classical surveying (e.g. total stations or GNSS), 2D maps, or an integration of the aforementioned techniques.

**Text 2.**

**Stillwater Bridge**

The Stillwater Bridge, featuring a counterweighted, cable-and-tower design, embodies engineering significance as a rare surviving example of vertical-lift highway bridge construction of the Waddell and Harrington type. The significance of the Stillwater Bridge is best evaluated within the general context of Minnesota and Wisconsin movable highway bridges.

*Historic Significance*

Movable bridges, also known as drawbridges, are constructed over navigable waterways when it is impractical or uneconomical to build fixed bridges of sufficient height to permit the passage of vessels. Human ingenuity has devised numerous systems for lifting, dropping, folding, rotating and retracting a span to provide temporary clearance. By the early 20th century, however, engineers had focused their attention on three, basic drawbridge categories: swing, bascule and vertical lift. Briefly defined, a swing span revolves in a horizontal plane around a vertical axis, a bascule span rotates in a vertical plane around a horizontal axis and a vertical-lift span rises and descends in a vertical plane.

In Minnesota and Wisconsin, as well as elsewhere in the nation, virtually all 19th century movable bridges were of the swing-span variety and the type continued to be constructed during the early 20th century. As late as 1935, a total of 51 highway swing spans were in operation in the Minnesota and Wisconsin. Not one of these structures survived. The demise of the highway swing span was nation-wide, reflecting its growing incompatibility with an urban setting. There were two basic problems with swing spans. First, the central pivot pier increasingly became an obstruction to navigation for the ever-larger vessels of the late 19th and early 20th centuries. Second, the swing span itself squandered valuable space. By requiring a clear turning radius, it prohibited the development of docking facilities adjacent to the bridge site. These shortcomings were especially onerous along highly industrialized urban waterways, where shipping channels tended to be narrow, highway crossings numerous and real estate prices high. For less crowded sites, the swing span remained a viable form of technology well into the 20th century, Most surviving swing spans, for example, are railroad bridges in rural regions or in relatively uncongested urban areas. But in the downtown waterfronts of the late 20th century American cities, the swing span was marked for extinction. Its major adversary was the federal government.

**Text 3.**

**The principles of architecture design**

Architecture is a reflection of time, representing the cultural, technological, and societal shifts of different periods. While the basic principles of design remain consistent, their application varies across architectural styles. Below, we delve into a few prominent styles and examine their unique takes on these principles. Classical architecture, drawn from the ancient Greeks and Romans, is characterized by its symmetry, proportion, and adherence to a set of canonical rules and orders. It values harmony and balance above all, resulting in designs that exude a sense of timeless elegance and order. Modern architecture, taking root in the late 19th and early 20th centuries, places a strong emphasis on function. It espouses the mantra “form follows function,” aiming for simplicity and eliminating unnecessary details. This style utilizes modern materials such as steel, glass, and concrete, focusing on geometric forms and horizontal and vertical lines. Postmodern architecture arose as a reaction against the starkness of modern architecture. It reintroduces ornamentation, color, and symbolism, often through playful and eclectic designs. Postmodern buildings, while adhering to the principles of balance and rhythm, may intentionally distort scale and proportion for dramatic effect. Sustainable or green architecture prioritizes environmental conservation and sustainability. It applies architectural design principles with careful consideration of the environment, focusing on energy efficiency, the use of sustainable materials, and minimal environmental impact. This style often incorporates natural elements and adapts to the local climate and context. Each architectural style represents a unique interpretation and application of the fundamental principles of architectural design. They not only provide diverse aesthetics but also different ways of understanding and interacting with the spaces we inhabit. The architecture design process is a complex journey that transforms a client’s vision and needs into a functional, aesthetically pleasing, and sustainable built environment. This process is more than merely creating a building’s aesthetic appeal; it involves understanding the client’s needs, the building’s purpose, the surrounding context, and potential constraints, such as budget and site conditions. It is often a collaborative effort involving the client, architects, engineers, and other professionals, and usually involves the following stages: Pre-Design (Programming), Schematic Design, Design Development, Construction Documents and Construction Administration. Each of these phases plays a crucial role in bringing an architectural design to life, allowing architects to translate ideas into built realities.