

# NJORD Estonia: Legal Risks of Using Virtual and Augmented Reality in the Construction Sector

We are used to the fact that virtual reality is widespread in entertainment and especially in computer game business. However, in recent years, virtual and augmented solutions have been used in other areas, including construction. The Estonian construction sector has also been applying such technological tools.

**Virtual reality** is a world, created by technical solutions and perceived by a person via an imitation of physical environment, by using special equipment (headsets, gloves, etc). Thus, the customer can get acquainted with the future house by moving around in the virtual rooms, assess the planning, materials, interior, the view from the window or balcony, etc. Virtual reality can also be used as a training tool and teach the use of heavy construction machinery to the constructors without being present at the construction site and hence, avoiding the risks of injury and property damage.

**Augmented Reality** is used to combine real-world environment with virtual information. This enables to bring the construction project /model, created in digital format to the real construction site. By supplementing the real-world environment with the computer-generated models, the constructors receive instructions to perform construction work during the construction process. A constructor equipped with augmented reality glasses shall be able to see the exact location, where to install the next detail in the course of construction. The walls are not barriers anymore, as this technology enables to visualize communications, located behind the not visible constructions. All this facilitates taking the necessary decisions in the construction process.

In conclusion, both technologies are targeted to simplify and accelerate the designing and construction processes and to improve communication between the parties in the process. In addition, the use of such technological tools should hedge the risks of construction errors, as the participants are able to visualize the designed object in detail and identify possible errors before they are made in real construction process. It may be assumed that virtual and augmented reality technologies help to prevent also legal disputes, incl. the compliance of the completed construction with what was agreed.

Although the positive influence is significant, the abovementioned innovations are accompanied by certain legal risks. When using virtual and augmented reality in the construction process, the participants are advised to pay attention to the following legal aspects.

## 1. Responsibility

The use of virtual and augmented reality presents a legal challenge in how to identify the breach of employment contract upon a dispute, as the result of the actually performed work does not correspond to the work promised via virtual or augmented reality. Difficulties may arise in finding an answer to the question, who is responsible for the potential errors and losses upon the use of such technologies. The limits of responsibility may be diffused, as several parties (the designer, constructor and client) can create, develop and amend the virtual model simultaneously. Therefore, it is advisable to regulate the division of liability by agreements. The client (who, as a rule, is not a professional) should clearly state that his contribution to the development or amendment of the digital file shall not exempt the designers and constructors from the obligation to ensure the compliance of the works with the terms of the contract.

## 2. Safety at work

The employer must take the specific hazards into account related to the use of virtual and augmented reality technologies. An employee, wearing augmented reality equipment, can get into a situation, where the digital world may not correspond to the real-world situation at the construction site. This may cause occupational accidents, including health problems. For example, an employee may step on an obstacle that does not exist in the digital world but exists in the real environment. In order to ensure safety and reduce health risks, the employer must offer training to the employees and prepare the relevant safety instructions before allowing them to work with virtual and augmented reality technologies.

## 3. Intellectual property

In order to avoid disputes, the agreement must regulate who shall own the intellectual property rights to the objects created using virtual and augmented reality platforms (i.e. digital models, design solutions, files, images, etc). As mentioned earlier, different parties can contribute into the creation of a digital solution and as a result, several persons may claim the intellectual property rights to such final solutions. Considering that, it would be wise to regulate the issue of who shall own the jointly created intellectual property and under which conditions the party has the right to use it in the future. In case it is important for the client to have the possibility to use, amend or adapt the model/project in the future (e.g. for the construction of other objects), such right must be provided for in the agreement.

## 4. Cybersecurity and data privacy

As virtual and augmented platforms may contain confidential information, business secrets and personal data, third parties may show interest in such digital solutions. Like other technologies, virtual and augmented software may become hacking targets. The hackers may aim to disturb the construction process, for example, cause errors and extension of construction deadlines. In order to prevent abusive access to data, it is advisable to think over how to effectively ensure the protection of the systems against cyber-attacks. Also, measures should be taken to manage the risks associated to human factor, inter alia, to determine who and to what extent has access to the software, images, files and client data internally and to ensure that unauthorised persons have no access to the virtual and augmented platforms.

In case the described risk level is not acceptable for a party or the party is not able to manage the risks in a correct manner, the agreement must clearly exclude the possibility to use virtual and augmented reality technologies.



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