Research report: use of the virtual reality helmet samsung gear vr as interaction interface of a radioactive waste repository simulator

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Keywords: virtual reality, radioactive waste, samsung gear vr, unity 3D.

Repositório para Rejeitos Radioativos de Baixo e Médio Níveis de Radiação (RBMN) is one of the most important of CNEN's projects, which is associated with the final deposition of radioactive waste generated in the national territory. In addition, RBMN is the Brazilian solution for waste tailings generated in nuclear power generation in Brazil. RBMN includes waste from the operation of nuclear power plants, nuclear fuel cycle facilities and the use of radionuclides in medicine, industry and R&D activities. On the other hand, virtual reality can be used on the development of environments that help the training of operational procedures without the need to expose users to radiation levels above natural standards [1, 2]. The virtual model of the radioactive waste repository was developed using Autodesk 3Ds Max and Unity 3D. Figures 1 and 2 show examples. Unity 3D was used to model the virtual environment, whereas 3Ds Max was used to the three-dimensional modeling of existing buildings. It is important to note the presence of the Samsung Gear VR, which gave more realism to the created virtual environment bringing more immersion to the user, and finally, the use of a joystick to provide the interaction with the environment.

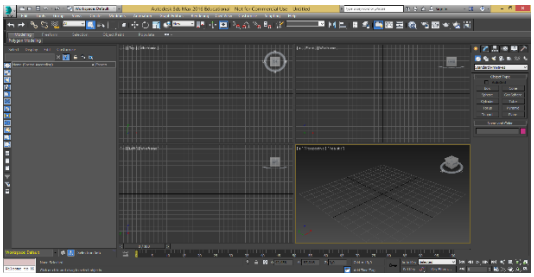

Figure 1. 3DS Max.

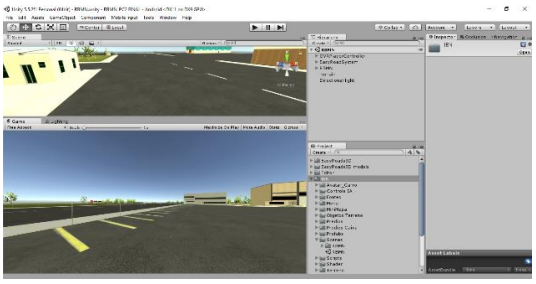

Figure 2. Unity 3D interface.

Figure. 3 shows Gear VR equipment.

Figure 3. GearVR.

This work showed the feasibility of using virtual reality to interact with virtual environments. This new technology presents the ability of this new equipment to reproduce a virtual world of a real environment, which can be used for safety training, virtual touring at a nuclear facility, operations carried out at RBMN and others. With the Samsung Gear VR and the joystick, this form of interaction allows the agent the possibility of interacting with the virtual environment without using a mouse or keyboard, being totally immersed and devoid of wires. In addition, this technology serves to assist in the training of more specific tasks, minimizing the risks and cost.

References

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