

# Collaborative virtual environment for training radioprotection agents

C. A., Passos<sup>1</sup>, M. H., Silva<sup>2</sup>, A. C., Mol<sup>2</sup>, P. V. R., Carvalho<sup>2</sup>

e-mail: [cpassos.cp2@gmail.com](mailto:cpassos.cp2@gmail.com),  
[marciohenrique.ufrj@gmail.com](mailto:marciohenrique.ufrj@gmail.com),  
[mol@ien.gov.br](mailto:mol@ien.gov.br), [paulov@ien.gov.br](mailto:paulov@ien.gov.br)

<sup>1</sup> PPGI/UFRJ, <sup>2</sup> DENN/LEN

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This research describes a design of a collaborative virtual environment (CVE) for training security agents in big events. The CVE was modeled with Autodesk 3ds Max, while Unity 3D was used to create the terrain and implement the features that make up a virtual environment. We chose the surroundings of the Brazilian soccer stadium known as the real counterparts of the CVE.

The CVE main menu page is displayed in Figure 1.



Figure 1. The CVE menu page.

The usability of the CVE was evaluated through simulations involving security agents dealing with threats related to suspects carrying radioactive material in big events. To perform these simulations, we used the same procedures used during 2014 FIFA World Cup and planned to be used in Rio 2016 Olympic Games. The main objective of this work is to verify the feasibility of designing a CVE and its usability for training security agents involved in big events issues. The CVE was designed based on the 3C collaborative model [1].

The CV was tested in five scenarios that propose particular situations that require different strategies and collaborative aspects/competencies to capture the hostiles. The use of four different scenarios allows the users to enhance several competencies such as

collaboration (scenarios 1, 2 and 3), communication (scenarios 1, 2 and 3), internal coordination (scenario 4), radioactive source identification. Results indicated that the proposed CVE has been successful concerning both, design and usability, besides of helping to improve the ability of each member of the security team on performing his duty [2].

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