D7.2 INTERIM VIRTUAL STUDIO INTEGRATION REPORT

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Abstract	This document describes the activities carried out to integrate the virtual studio and the agent in order to make available the current set of functionalities provided by the agent from Unreal Engine and the new capabilities implemented in InfinitySet. It introduces all these functionalities, describes the Proof of Concept made available through this integration, and finally provides very brief instructions to set the environment up and test it.
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1. EXECUTIVE SUMMARY

Activity on the Virtual Studio integration started even before the Virtual Studio Pipeline was ready. At this point of development, the first integration has been achieved. Although both the Virtual Studio Pipeline and the Virtual Studio integration works continue and will keep active until the end of the project, this first integration is already functional and has permitted setting up a first Proof of Concept. This prototype integrates, for the first time, all the systems which have been subject to modifications to include features to acquire the agent and control him through interactions with the virtual environment. This has allowed not only to check how modules work together and how well they integrate, but also to understand the nature of the results that can be expected, and the kind of interactions that presenters and virtual scenario operators can expect from PRESENT Agents.

This document first introduces the status of the Virtual Studio Pipeline, the modules in the system that need adaptation and the modules to be developed to achieve the virtual agent system components integration. Afterwards an explanation on how the virtual agent features are related with the components implemented in the Virtual Studio side and how they interact from a procedural point of view. The first implementation of the Proof of Concept is then presented in detail along with its results and conclusions; the strengths and weaknesses found and the plans of improvement.

Finally, in order to provide a more complete view of the system capabilities and behavior, a brief user manual on the new features provides detailed information on the system operation.

2. BACKGROUND

The broadcast use case has been taken as the base for the implementation of the Virtual Studio Pipeline in task WP7T1, which has been designed over the PRESENT reference implementation reported in the deliverables 2.1 *"Report on Scenario use-cases and Pipelines for Virtual Sentient Agent"* and 2.3 "*Revised report on modular architecture, protocols and APIs*". While the activities and developments performed in task WP7T1 have been oriented to the integration of InfinitySet and Unreal Engine, the developments carried out in task WP7T2 are focused on final interfaces and functionalities so the resulting piece of software satisfies the required capabilities for the upcoming tests and proofs of concept in the project.

Therefore, WP7T2 takes the outputs of WP6 to create the integrated tool that will finally allow for Agents in virtual sets. It takes advantage of Unreal Engine (UE) version 4.26 (https://docs.unrealengine.com/4.26/en-US/WhatsNew/Builds/ReleaseNotes/4_26/) and InfinitySet integration to allow rendering of high realism scenes and virtual Agents. The integration result already sees a very similar user interface and workflow to the already existing one on the current broadcaster setup, with almost no software configuration and no need for extra devices or knowledge.

3. INTRODUCTION

Focusing on the InfinitySet-Unreal Engine Agent interaction, the existing modules are already capable of making queries to the Agent from the InfinitySet (BrainStorm Suite 4.2, https://www.brainstorm3d.com/products/infinityset/) operator interface, or as part of a script, for example there are specific queries to ask the Agent to walk or point to elements in the scene, like for example a cloud on a weathercast map, and it is already possible to make the avatar say prerecorded sentences, so it can present existing (scripted) content as well as take part in a scripted dialogue. But on the other side, the Agent, as a result of these rich scripted sentences, could require to present a diagram, or a video, or maybe moving the camera, or change lights or the whole scenario; The Agent is not already capable to trigger these actions, but the required events are already triggerable, and their specification and setup occurs in the scripted sentences.