D4.2 eStudio HDR Graphics Engine Initial Version

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Author(s)	Javier Montesa, Moises Ferrer
EC Project Officer	Mr. Rapolas Lakavicius, Rapolas.LAKAVICIUS@ec.europa.eu
Abstract	Brainstorm tasks in WP4 have been organised in order to obtain as soon as possible the required modules in the graphic engine required to test the whole real time HDR chain as it will be populated during the project. This document reports the demonstrator of the initial graphics engine to partners and key stakeholders.
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1. Introduction

This document reports the first demonstrator of the initial version of the eStudio HDR graphics engine developed according to the description reported in D4.1. Several tasks have been carried out to get the first demonstrator of this graphics engine:

- WP4T1 Video Playout
  Focused on the *HDR Video Output* and *HDR File Output* blocks. This task provides one of the required tools to test the rest of modules in the system.
- WP4T2 Video Capture
  Following the *WP4T1* developments, this tasks focuses on the *HDR Video Input* and the *HDR File Input* blocks. It provides one of the required tools to test the rest of modules in the system.
- WP4T3 Testing & Validation of Colour Conversion Modules
  This task focuses on the *Input Colour Conversion* and the *Output Colour Conversion* modules, providing conversion methods, algorithms and shaders to manipulate HDR frames in real time. Although some module need to be integrated in the demonstrator, some of them is already integrated and demonstrated.
- WP4T4 Demonstration & Validation Colour Control User Interface
  This task focuses in the overall Graphical User Interface required to control all the HDR parameters present in the system. More concretely it deals with the *Input Tone Mapping* module and the *Output Tone Mapping* module interfaces and also uses the render pipeline in order to provide real time output through the *WYSIWYG* module.

The broadcast field demands real time graphics for many types of TV shows programs and contents: news, elections, sports, entertainment programs… In addition, there is always an increasing demand for both quality and realism.

Brainstorm provides a set of tools to create and render those graphics targeting different types of programs or usual TV workflows. However, the core of the graphics generated by those tools is the render engine, the eStudio. By enhancing the capabilities of the core engine, the whole set of tools will take advantage of the new developments.

During this project, we are adding HDR capabilities to the render engine. Those capabilities will allow designers to generate virtual graphics with a higher degree of quality and realism. But adding HDR to the input and output system opens the possibility to use and deliver HDR video for all HDR compatible devices.

As we will see in the following document, the engine is being updated to gradually incorporate HDR features. We will review different parts of the engine (mainly the input, output and renderer), and what new features are now available. Also we will provide some feedback about future developments or improvements.