**Grayscale Softcopy Presentation State for Varying Dynamic Range**

## SUBMITTED on Behalf of Working Groups 16 and 3

(Magnetic Resonance Imaging and Nuclear Medicine)

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## Introduction/Scope

Grayscale Softcopy Presentation State objects are widely adopted to maintain repeatable, consistent intensity and image transformations between different hardcopy and softcopy devices.

This supplement defines a new SOP Class based on the capabilities of the existing GSPS SOP Class for cases in which the dynamic range varies between images or frames. This SOP class will not require the GSPS Modality LUT and address handling of absent image rescale values.

## Limitations of Current Standard

GSPS requires the per-image Modality LUT be ignored in the presence of a GSPS object with no Modality LUT. This is problematic in cases in which the dynamic range of the measured values varies between images, such as in PET with varying image level Modality LUT, or in the MR enhanced object with frame level Modality LUT. In such a situation, the GSPS creator must: forgo use of a GSPS, render a GSPS object for each image, or implement a private solution, none of which promote interoperability.

## Description of Proposal

## The scope of this work item is to define a new GSPS IOD and Storage SOP Class that will not contain the Modality LUT in order to avoid overriding the Modality LUT of the Image object if present. The goal is to provide the DICOM community a GSPS compatible object for modalities producing images with a varying per-fame or per-image dynamic range.

## Parts of Standard Affected

This proposal does not introduce new services, messaging or encoding. This work item will affect Parts 3, 4 , 6 and 11 of the DICOM standard.

## Resources & Time Line

Steven Nichols from GE Healthcare and Wim Corbijn from Philips Healthcare have volunteered to write this supplement. WG-16 has 6-8 active members and meets monthly, although WG-03 is dormant, active members will be consulted in the development of this supplement.

We anticipate that four hours of Working Group Six meeting time will be required on each of four occasions during 2021 and 2022 to review and approve an early draft as well as public comment, letter ballot, and final text versions of the supplement.