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| **Source:** | DICOM WG32 |
| **Title:** | LS on selecting a DICOM biomedical waveform codec [from DICOM WG32] |
| **LIAISON STATEMENT** |
| **For action to:** | ITU-T SG16 |
| **For information to:** | – |
| **Approval:** | By correspondence (7 November 2022) |
| **Deadline:** | 31 December 2022 |
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| **Abstract:** | In this LS, DICOM WG32 (Neurophysiology Data) consults on the availability and possible development of a waveform codec that would be suitable for compressing biomedical data and use in DICOM systems. |

DICOM Working Group ([WG-32](https://www.dicomstandard.org/activity/wgs/wg-32)) works to extend DICOM to be usable as a common standard format for clinical neurophysiology data exchange. This would include time-based neurophysiology signal data (and associated video recordings, if present) from electroencephalography (EEG), video-electroencephalography (VEEG), electromyography (EMG), evoked potentials (EP), polysomnograms (PSGs), electrocardiograms (ECGs), and other types of neurophysiology signals.

DICOM has benefited from codecs for images and video which were developed by the ITU (and partner organizations) for non-medical commercial products (JPEG, MPEG, etc.). But there is not a codec for biomedical waveform data such as electrocardiography (ECG), electroencephalography (EEG), and electromyography (EMG).

DICOM WG-32 is advancing standardization for neurophysiology and electrocardiography waveform data, but a big impediment is the lack of a codec designed for biomedical waveform data. We will probably implement some ITU codecs for voice or music audio data as a stop-gap measure, but these codecs have significant limitations when applied to biomedical waveform data due to application of psychoacoustic masking approaches and limitations on channel number and block size. An option for a lossless and near-lossless codec/transmission-syntax specifically for biomedical waveform data is almost certainly needed.

We would like to consult with you on the possibility of amending an existing ITU voice or music audio codec with a few additional lossless and near-lossless options for biomedical waveform data. DICOM WG-32 has assembled a small informal subcommittee of academic engineers with experience in coding biomedical waveform compression algorithms who have agreed to work on this project. This subcommittee can be augmented with experienced engineers from industry.

We look forward to your reply and further collaboration on compression of biomedical waveforms.

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