

MINUTES

MEETING NAME WG-32

MEETING PLACE/DIAL IN Via Zoom

DATE & TIME Thursday 18 July 2024
 10:00– 11:00 AM Eastern Daylight Time (EDT)

PRESIDING OFFICERS Jonathan J. Halford, Medical University of South Carolina,
 User Co-Chair
 Andrew Ehrenberg, Nihon Kohden Corporation,
 Vendor Co-Chair

IFCN SECRETARIAT Kim Zaiss

DICOM SECRETARIAT Shayna Knazik

Present	First Name	Last Name	Organization	Voting Status
	Emmanuel	Cordonnier	b<>com	Voting
	Kevin	O'Donnell	Canon Medical Research USA, Inc.	Voting
	Felix	Rosenow M.D.	DGKN (German Society of Clinical Neurophysiology and Functional Imaging)	Voting
	Jan	Remi	Ludwig-Maximilians-University of Munich	Voting
X	Ben	Brinkmann	Mayo Clinic	Voting
X	Jonathan	Halford	Medical University of South Carolina	Voting
	Andrew	Ehrenberg	Nihon Kohden Corporation	Voting
	Alan	Huang	Philips	Voting
	Wim	Corbijn van Willenswaard	Philips	Alt. Voting
	Justin	Dauwels	TU Delft	Voting
	Jeroen	Medema	Philips	Alt. Voting
	David	Clunie	PixelMed Publishing	Voting
X	Silvia	Winkler	Sigma Software Solutions	Voting
	Ana	Alves	CortexXus Inc.	Observer
	Guiseppe	Campobello	University of Messina	Observer
	David	Alves	CortexXus Inc.	Observer
	Babak	Razavi	CortexXus Inc.	Observer
	Matt	Stead	Dark Horse Neuro, Inc.	Observer
	Andrea	Bigazzi	EB Neuro	Observer
	Gritsch	Gerhard	AIT Austrian Institute of Technology GmbH	Observer
	Mateo	Pratesi	EB Neuro	Observer
	Ignacio Ramírez	Paulino	Facultad de Ingeniería - Universidad de la República	Observer
	Sandor	Benizcky	Filadelfia	Observer

	Steve	Nichols	GE Healthcare	Observer
	Gardar	Thorvardsson	Kvikna / Stratus EEG	Observer
	Richard	Moberg	Moberg Research, Inc.	Observer
	Desire	Jean		Observer
	Casey	Stengel	Neuralynx	Observer
	Bill	Antilla	Nihon Kohden Corporation	Observer
	Ryuzo	Mase	Nihon Kohden Corporation	Observer
X	Koichiro	Matsumoto	Nihon Kohden Corporation	Observer
	Pedro Fernando	Arizpe Gomez	OFFIS e. V.	Observer
	Daniel	Crepeau	Dark Horse Neuro	Observer
	Andrey	Pirozhenko	Persyst	Observer
	Shane	Ponzikoff	Persyst	Observer
	Wouter	Potters	Amsterdam UMC, Netherlands	Observer
	Stefan	Rampp	University Klinikum Erlangen	Observer
	Dagmar	Krefting	University Medical Center Göttingen	Observer
	Marco	Rossi	University of Milan, Italy	Observer
	Gloria	Menegaz	University of Verona, Italy	Observer
	Matan	Oppenheim	Zebra Medical Vision	Observer
X	Jonathan	Pfaff	Fraunhofer Heinrich Hertz Institute HHI	Observer
X	Gary	Sullivan	ITU-Rapporteur	Observer
X	Kristian	Bernard Nilsen	Oslo University Hospital	Observer
	NS	Nagarajan	GE Healthcare	Observer
	Bruno	Monnerat		Observer
X	Ray	Krasinski	Philips	Observer

1. CALL TO ORDER AND REVIEW OF ANTI-TRUST RULES AND DICOM PATENT POLICY

The meeting was called to order at 10:02 AM. Participants were reminded that the Guidelines for Conducting NEMA Meetings and Patent Disclosure Policy are in effect and they may be found here: <https://www.dicomstandard.org/patent>.

2. WELCOME/ATTENDANCE/INTRODUCTION

Attendance was taken.

3. REVIEW AND APPROVE AGENDA

The agenda was reviewed, motion to approve by JH and seconded by BB.

4. REVIEW MINUTES

The minutes of the 18 July 2024 meeting were reviewed, motion to approve by JH and seconded by BB.

5. OLD BUSINESS

- SW discussed Supplement 236 (PR for montage and visualization filters): The Supplement had been out for Public Comment.
 - Several public comments were briefly discussed. SW stated that resolving these public comments was straightforward and, since they were not significant issues, WG-32 did not need to discuss them at length.
 - An open issue was discussed involving encoding of annotations for which the user specifies a time window and specific channels. Currently, both the Waveform Annotations SR and the Waveform Presentation State PR specify that annotations of this type are encoded such that the specific channels are listed as the original (unmontaged) channels encoded by the Waveform Module (and not with a list of channels derived using a montage specification). JH expressed concern that because clinical neurophysiologists almost never view unmontaged waveform channels, encoding such an annotation with a list of original channels without encoding the montage used to visualize the waveform data would make it difficult to determine later what waveforms the user was attempting to annotate. Given that there are two scenarios for this, JH expressed concern about the second scenario listed below:
 - (1) The first scenario involves a neurophysiology technologist making such an annotation during the live recording, which would be encoded as an annotation using the Waveform Presentation State (PR). If the technologist annotated a particular range of channels, since the montage used by the neurophysiology technologist at all time points in the recording can optionally be encoded, it would be clear which channels the neurophysiology technologist chose to annotate.
 - (2) In the scenario of review of the study after recording has finished, if a clinical neurophysiologist chose to annotate a range of montaged channels in a particular time window, to be encoded as part of an additional Waveform Annotations SR object, it might not be clear how those original channels should be linearly combined to view the montaged waveforms which were visualized during the annotation process.

It was decided in the telecon that this open issue would be discussed further after the telecon was over via email. (Further email discussions a few days later involving SW, JH, SR, and BB concluded that this open issue would be closed. SW reported that WG-06 had expressed concern that encoding of montage information by the Waveform Annotations SR could produce encoded montage information which might not match with montage information already encoded by the Waveform Presentation State PR object and this might cause conflicts. BB stated that he thought that vendor systems could handle this and standardized

annotation encoding might not be necessary. JH stated that he did not think that encoding of montage information by the Waveform Annotations SR would cause conflicts with montage information encoded by the Waveform Presentation State PR, but we did not need to address this now, since a change proposal could address this if WG-32 decided to reexplore this in future years. So it was decided by SW, JH, BB and SR to close this open issue and proceed without making further additions to the Supplements.)

- There was discussion of the ITU-T Call for proposals (CfP) released on 26 Apr 2024 with responses to this requested for consideration at the Q6/16 meeting planned for 30 October – 8 November 2024 in Antalya, Turkey (exact dates to be announced).
 - JH discussed how he was collecting further intracranial EEG data from BB and SR which would include sampling rates over 2k Hz and bit depth greater than 16 bits which could be used to test future novel codec reference software submitted to the CfP. JH reported that he had received needle EMG data from a neuromuscular neurologist in Europe with a sampling rate of 4k and he had written a MATLAB script to reformat the data from CSV to EDF and preserve the muscle source channel label information. GS pointed out that collecting further data to test any reference software submitted to the ITU-T CfP would not constitute an additional test vector for the CfP, because the CfP had already been released with its test vector. JH stated that because the current CfP test vector included only EEG data of sampling rate up to 2k and research and some clinical intracranial EEG data had sampling rates much higher, that we would need to test future codecs on neurophysiology data of sampling rates higher than 2k. JH also stated that the current CfP test vector only included EEG of bit depth 16, but some neurophysiology data acquired now had bit depths higher than 16 bits, so additional EEG data needed to be collected to test novel waveform codecs on such data.
 - Advertising of the ITU-T CfP was discussed. The Letter to the Editor announcing the CfP is now in print in the journal Clinical Neurophysiology. An announcement of the CfP has been sent out in an email announcement by the IFCN.
 - JH briefly discussed that SR could not attend the telecon today, but had recently told him of progress in regard to the Sensor Name and Location Subcommittee (SNALES), for planning DICOM encoding for sensor names and locations in iEEG, MEG, and HDEEG data in anticipation of the initiation of future WG-32 IOD development projects. SR had recently had a teleconference with Scellig Stone, Michelle Chiu, and others to discuss their multicenter initiative for standardizing SEEG electrode nomenclature (Chiu, Michelle Y et al. Journal of Clinical Neurophysiology 41(5):p 405-409, July 2024).
- JH briefly discussed the recent Ad-hoc WG-32 telecon on 14 Aug 2024 held to plan for the new IOD for LTM EEG and Sleep Monitoring. SW presented on encapsulation of pixel data

using image and video codecs in the current DICOM Standard, in order to help guide WG-32 development of this new IOD for LTM EEG and Sleep Monitoring. This telecon was well attended.

- JH discussed that letters requesting donations to IFCN in support of WG-32 will be sent to neurophysiology OEMs and pharmaceutical companies (in the epilepsy and sleep medicine space) to cover IFCN administrative support of WG-32 and for support of engineering and computer science resources for testing of novel neurophysiology codecs.

5. NEW BUSINESS

- JH moved to create a new DICOM WG-32 subcommittee called the Codec Review and Feedback Team (CRAFT) to be chaired by Ben Brinkmann. This is to be a short-term subcommittee to provide support to ITU-T for testing of reference software submitted to the Cfp. BB seconded this motion. JH asked if anyone opposed this motion and no one opposed it. GS added that WG-32 could offer to support the ITU-T Cfp, and ITU-T Q6/SG-16 (VCEG), may allow WG-32 to assist with some work, but judging the submitted reference software would be managed by ITU-T Q6/SG-16 (VCEG).

6. UPCOMING WG-32 FACE-TO-FACE MEETINGS

- It was discussed that a FTF WG-32 meeting may be held on Saturday morning 07 December 2024 at the American Epilepsy Society Annual Conference in Los Angeles CA. (<https://aesnet.org/AES-annual-meeting>).
- DICOM WG-32 will also plan to meet in person at ICCN 2026 in Cartagena, Colombia.

7. DATE AND TIME OF NEXT MEETINGS

Thursday 19 September 2024	10:00- 11:00 am UD ET
Thursday 17 October 2024	10:00- 11:00 am UD ET