DICOM Secretariat/MITA
1300 North 17th Street, Suite 900
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MINUTES

MEETING NAME WG-32

MEETING PLACE/DIAL IN Via Zoom

DATE & TIME Thursday 17 October 2024
10:00– 11:00 AM Eastern Daylight Time (EDT)

PRESIDING OFFICERS Jonathan J. Halford,
Ralph H. Johnson VA Medical Center (Charleston, SC)
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
	Ben	Brinkmann	Mayo Clinic	Voting
x	Jonathan	Halford	Medical University of South Carolina	Voting
x	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
x	Raymond	Kraskinski	Philips	Observer
	David	Clunie	PixelMed Publishing	Voting
x	Silvia	Winkler	Sigma Software Solutions	Voting
	Ana	Alves	CortexXus Inc.	Observer
	Giuseppe	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

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	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
	Koichiro	Matsumoto	Nihon Kohden Corporation	Observer
	Pedro Fernando	Arizpe Gomez	OFFIS e. V.	Observer
	Daniel	Crepeau	Dark Horse Neuro	Observer
	Andrey	Pirozhenko	Persyst	Observer
x	Shane	Ponzikoff	Persyst	Observer
	Wouter	Potters	Amsterdam UMC, Netherlands	Observer
x	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
	Kristian	Bernard Nilsen	Oslo University Hospital	Observer
X	NS	Nagarajan	GE Healthcare	Observer
	Bruno	Monnerat		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 EDT. 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 SR.

4. REVIEW MINUTES

The minutes of the 19 September 2024 meeting were reviewed, motion to approve by JH and seconded by SR.

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5. OLD BUSINESS

- Supplement 236 (Presentation State for montage and visualization filters). SW reported that on 17 Oct 2024 (today) the DICOM Secretariat forwarded Supplement 236 by email to the DICOM Standards Committee (DSC) for letter ballot (LB) vote. Each DSC member is allowed 35 days to cast their ballot. DSC members have four possible LB vote options: approve, approve with comments, disapprove with comments, and abstain. During the LB stage, the DICOM Secretariat will report the results to WG-06 and sends any ballot comments to WG-32. (WG-06 is the Base Standard committee, which provides technical guidance to all DICOM working groups and serves as the technical coordination point for DICOM.) This LB stage will end on 21 Nov 2024. It will be the responsibility of WG-32 to address all LB comments and suggest to WG-06 a final text for Supplement 236. The LB stage will not be completed when WG-06 meets the week of 04 November 2024, but WG-32 will be given several hours at this WG-06 meeting to discuss any LB comments from DSC members that have come in by that time. SW reported that an ad-hoc WG-06 meeting will probably be scheduled in late November or December so that any remaining LB comments can be discussed, so that Supplement 236 can be finalized by the end of 2024.

- International Telecommunication Union Standardization Sector (ITU-T) Call for Proposals (CfP)
  - GS reported that the current situation with the CfP was "a little confused" since it had been decided recently by ITU-T Q6/SG-16 (VCEG) that they could not use the EEG test vector which had been submitted with the original CfP earlier this year. Q6/SG-16 was searching for another EEG dataset which could be used for the CfP. GS reported that JP, a member of Q6/SG-16, had recently identified other candidate EEG datasets, which are publicly-available datasets but that since there was not yet agreement on whether this new EEG data was acceptable to be an EEG test vector, and since there was not time to perform experiments on this new EEG data anyway, it was likely that the CfP would be postponed until at least January 2025. JH apologized for the problem with the previous EEG test vector and stated that he would work with others to try to identify other EEG which was possible more expansive than the previous EEG test vector in terms of including more intracranial data, intracranial EEG data with more channels, and data with bit depth greater than 16.
  - GS reported that the new EEG data which had been identified was publicly available, but it was unclear whether the data was acceptable to be used because, despite the EEG data being publicly-available, there were some expressed

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constraints on how this data could be used. GS reported that he did not understand how neurophysiology data which was made publicly-available could come with restrictions on its use, but stated that there was currently a "conservative approach" to the review of this by the organizations currently involved and GS reported that ITU-T wanted to make sure that all companies involved with this CfP were comfortable with use of any possible EEG data to be used as an EEG test vector. GS reported that there were four companies that had notified ITU-T that they planned on responding to the CfP: Dolby (employes GS), Philips (employes RK), Fraunhofer Heinrich Hertz Institute (HHI; employes JP), and the Electronics and Telecommunications Research Institute (ETRI) of Korea. JP reported that he had identified multiple EEG datasets (including more than 4000 EEG recordings) on PhysioNet which included the best type of use license that could be expected, including the ability to redistribute, re-edit, share, and use for commercial purposes. RK reported that it was Philips that was raising concerns about this PhysioNet EEG data because Philips is a regulated healthcare company and that this was a legal regulation issue because government regulators require that hospitals and healthcare companies do an assessment of any publicly-released data (which might be used for projects such as this) and document, in a manner acceptable to regulators, that the dataset actually contains the type of healthcare data which it claims to contain. AE stated that he agreed with this regulatory approach because it helped prevent commercial organizations from making spurious claims based on hand-picked (biased) data. RK stated that he could not guarantee that Philips can complete its regulatory review of any new EEG test vector before the deadline of the current CfP (at the end of October 2024), and that he did not have control of how quickly this review was performed by staff at his company, but agreed that the license for this new EEG dataset looked like it would probably be acceptable to Philips legal regulatory reviewers. GS stated that it was not clear what ITU-T Q6/SG-16 would decide about the EEG test vector at the upcoming Q6/SG16 meeting (which begins in late October). RK asked WG-32 if the PhysioNet data which was being proposed by JP was acceptable to WG-32, in terms of content. JP shared a description of this PhysioNet EEG data and its license with WG-32 during this telecon. SR stated that, based on the description of EEG dataset that JP shared, that it looked like the data was likely useful for the CfP, since one of the datasets included seizures in the pediatric population.

- GS noted that it had been proposed previously in a WG-32 telecon that a subcommittee of WG-32 (headed by Benjamin Brinkmann) would consult with ITU-T Q6/SG-16 to help evaluate the performance of reference software submitted to the CfP and GS noted that there was currently solicitation of financial support by IFCN to support such as effort by certain WG-32 participants. GS inquired if more details could be provided about what sort of assistance might

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be provided by WG-32 participants to the evaluation of CfP reference software. JH stated that JP, in the previous WG-32 telecon, had mentioned that use of the web-based EEGnet software hosted at Clemson University would be useful to test whether neurologist experts could detect a difference in original versus compressed/decompressed signals in the EEG test vector as processed by novel CfP reference software, as had been done previously with the MPEG-AAC audio codec and the original CfP EEG test vector. JH also mentioned that Benjamin Brinkmann, Giuseppe Campobello, and Justin Dauwels had offered that engineering staff in their labs could help test performance of CfP reference software. JH stated that a some funds to help support this effort would be helpful (including funds to support Google Cloud compute time for the Clemson EEGnet server and support for engineering effort at the labs of BB, GC, and JD) and that WG-32 was attempting to raise funds to help support this.

- Sensor Name and Location Subcommittee (SNALES). SR stated that the purpose of the subcommittee was to develop of method for encoding in DICOM the sources of additional neurophysiology signals (beyond those signals already supported by DICOM such as scalp EEG, EMG, EOG, ECG, respiratory waveforms), including invasive intracranial EEG (including stereo EEG[SEEG] and subdural electrode EEG recordings), high-density scalp EEG, and magnetoencephalography (MEG). SR reported on a paper by Michelle Chiu (Boston Children's Hospital) and coauthors who describe a novel nomenclature for SEEG named the Standardized Electrode Nomenclature for SEEG Applications which they have developed and used in clinical practice at their hospital. (https://journals.lww.com/clinicalneurophys/fulltext/2024/07000/in_search_of_a_common_language__the_standardized.4.aspx). SR stated that he thought that this nomenclature for SEEG naming was well-constructed and sufficiently comprehensive and reported that he had met with the authors in a teleconference and asked them if they would be willing to contribute to the work of WG-32 in this area, and the authors reported that they would be very open to doing this. SR requested feedback from other WG-32 participants on this SEEG nomenclature. SR mentioned that this SEEG nomenclature does not include sensory labeling for subdural intracranial EEG recordings. Sensor encoding for HDEEG (which often involves EEG electrode sources beyond the 10-10 electrode naming standard included currently in DICOM) and MEG would need to include 3D stereotactic coordinate specification, which currently can be described using several different coordinate systems including the MNI system and Talairach system. Additionally, coordinate specification for advanced EEG recordings and MEG often involves relating sensor coordinate positions to positions in either CT or MRI images, which might need to be addressed in DICOM encoding. SW, SR and JH agreed that their would probably need to be some sort of new DICOM object to encode invasive EEG (which includes SEEG and subdural EEG) and that we would continue to work on how to encode the sensors for this before we started work on writing the DICOM object.

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- WG-32 Fundraising. JH reported that over the previous month he had sent solicitations for donations to IFCN to support the work of DICOM WG-32 to eight pharmaceutical corporations and 18 neurophysiology original equipment manufacturers (OEMs). The solicitation of pharmaceutical corporations involved filling out web forms. The solicitations to neurophysiology OEMs were email invitations. All invitations included a solicitation email from IFCN, a proposed one-year budget, and past WG-32 publications. So far, 3 companies had responded-- one stating they would provide funding and two stating they would not.

- Development of IOD for Long-term EEG and Sleep Monitoring. This is the next IOD that WG-32 plans to develop. SW reported that she had reached out to David Clunie (Editor of the DICOM Standard) to discuss this object and David recommended that we start with creating a description of the transfer syntaxes that will be used for this object, because in many other ways (including the metadata about the signal sources), this object will be very similar to the existing DICOM Routine Scalp EEG and Sleep EEG IODs. A specification for new transfer syntaxes for waveforms will require modification of the Standard in multiple locations.

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

- None. We will probably have an informal meeting at the AES Conference in early December 2024 (https://aesnet.org/AES-annual-meeting). Details to follow.
- DICOM WG-32 will also plan to meet in person at ICCN 2026 in Cartagena, Columbia.

7. DATE AND TIME OF NEXT MEETINGS

Thursday 21 November 2024	10:00- 11:00 am UD ET
Thursday 19 December 2024	10:00- 11:00 am UD ET

NEMALINK CODE	Click here to enter text.
SUBMITTED BY	Kim Zaiss
SUBMITTED ON	Enter submission date.
LEGAL APPROVAL	Enter approval date.
UPLOAD LOCATION	Enter upload location.