IEEE SA STANDARDS ASSOCIATION

IEEE P4005 Working Group
Teleconference 3rd Meeting Minutes
8th of October, 2020
WG Chair: Eyal Ben-Dor
WG Vice Chair: Sabine Chabrillat
WG Secretary: Konstantinos Karyotis

1. Call to Order & Opening Remarks
    a. *The meeting was called to order by the Chair at 15:00 CEST. He gave his welcome and opening remarks. The Chair sketched out the agenda of the meeting.*
2. Roll Call and Affiliation
    a. *The chair invited the attendees to present their affiliation. 43 attendees presented themselves at the 3rd meeting. Their names and affiliation are listed at the end of the minutes' document. The participants attended the meeting are from Brazil, USA, Europe, Australia, Middle East, Africa and Asia*
3. Quorum establishment
    a. *The Quorum was established to 17 members. The previous meeting voting members' participation was reported on 34.*
    b. *The Quorum for next meeting is established to 19 since voting members participation for 3rd meeting is reported to 37.*
4. Approval of agenda and 2nd WG meeting minutes
    a. *The Chair presented the meeting agenda and briefly highlighted sections of the 2nd WG meeting minutes (which were shared with the participants for their review prior to the meeting).and called for a motion to approve.*
        i. *Motion moved by Dr Siri-Jodha*
        ii. *Seconded by Dr Chabrillat*
        iii. *Motion passed unanimously*
5. Presentation of WG P&Ps
    a. *The Chair briefly highlighted sections the P&Ps (which were shared with the participants for their review prior to the meeting).*
6. Presentation of sub groups
    a. *The Chair proposed in 2nd meeting the formation of six distinct Sub Groups. The WG members were invited to elaborate on the formation of proposed sub groups in terms of leader selection, scope and title. The Chair briefly presented the scope and leader of each sub group, and called the leaders to give an introductory presentation for each sub group. The Chair finalized the sub group presentation by pointing out that consideration to mineral and organic soil should be*

given to all sub groups. After thorough discussion that was conducted via email, the number of sub groups were set to 6, with subjects and leaders as listed below:

i. *Optical operational scheme (0.4 – 2.5) – Eyal Ben Dor and Sabine Chabrilat*
ii. *Thermal operational scheme (3 – 15 um) – Martin Schodlok – Robert Milewski*
iii. *Data saving and archiving (Optical + Thermal) – Jose Dematte*
iv. *Cross calibration for spectral exchange (Optical + Thermal) – Milla Luleva*
v. *Spectral performance assessment for Optical and Thermal spectral ranges – Bas van Wesemael*
vi. *Field operational scheme – Thomas Schmid and Nicolas Francos*

7. Sub group presentation:

a) *Sub group 1: Dr. Eyal Ben-Dor and Dr. Chabrillat presented the Sub group at full extend. He pointed out that the goals of sub group and its scope that will cover the operational scheme concerning the usage of optical sensing instruments and contains: The warming process, the measurements' method, the geometry and illumination, sample preparation, the compilation of a list of valid instrumentation for which this protocol applies and room conditions. They pointed out the importance of maximizing precision and accuracy of measurements by respecting principles of spectral measurements' acquisition.*

b) *Sub group 2: Dr. Robert Milewski who sketched out the scope of the sub group's objectives that namely are:*

i. *The development of a protocol for laboratory soil TIR spectral library*

ii. *The evaluation and identification of suitable instrumentation and setup* Call for any additional discussion or topics

iii. *Evaluation of calibration approaches*

iv. *Defining sample preparation for TIR*

v. *Challenges that have to be addressed*

c) *Sub group 3: Dr. Jose Dematte gave a detailed presentation regarding key points that need to be taken in consideration regarding data and information regarding spectral and soil data that need to be saved. The database structure that was presented was a compilation of Metada, database for non-spectral information, Vis-Nir data and Mid-Ir data.*

d) *Sub group 4: Dr Mila Luleva outlined the inventory, the testing procedure and the protocol outline sketching procedure. Regarding each item, the following highlights were given:*

i. *Make an inventory of existing libraries open access/private*

ii. *Inventory of protocols for soil sample handling/preparation*

iii. *Inventory of instruments, wavelengths that have been used to build the major global libraries (refer to Glosolan Survey)*

iv. *Inventory of materials/soil samples used as Internal standards for calibration transfer*

v. *Inventory of materials used for radiometric correction*

vi. *Selection of instruments that can be used as master instruments*

vii. *Develop a global method and set of parameters used for the assessment*

viii. *Test different materials for wavelength position correction*

ix. *Evaluate existing methods and practices*

x. *Select internal standards for each wavelength range*

xi. *Design protocol correction of libraries in retrospect*

xii. *Design protocol for newly collected libraries*

xiii. *Design protocol for best user practice*

xiv. *Design protocol assessment of quality of Master instruments to account for damage*

e) *Sub group 5: Dr Bas van Wesemael highlighted the scope of the sub group a d stated as key objectives the evaluation and enhancement of the performance assessment techniques by concerning the stability, replication, threshold error, QA and QI parameters, uncertainties and variation, during and after measurements and the Proxy quality. The main goal according to sub-group leader is segmented to the following sub-goals:*

i. *The decision of a set of reference samples*

ii. *The selection of a threshold beyond which duplicate spectra differ*

iii. *The decision of a protocol for including references in series of scans and evaluate the effect of signal quality on prediction of soil characteristics*

iv. *The monitoring of signal quality over long term using reference samples*

v. *The investigation of the possibility of using sealed standards*

f) *Sub group 6: Dr. Thomas Schmid stated as main objective of the sub-group the coverage of operational scheme concerning the usage of optical sensing instruments in the field by addressing:*

i. *Warming process of the instrument*

ii. *Measurement method*

iii. *Geometry of measurements*

iv. *Illumination*

v. *Replications quantity*

vi. *Internal standard*

vii. *Reflectance conversion*

viii. *List of valid instrumentation*

ix. *Minimum atmospheric conditions*

After the contextualization of sub-group leader, the WG Chair defended the formation of this sixth subgroup by pointing out the importance of regarding it as a separate activity and not merge it with the other five, as discussed in 2nd meeting.

8. A quick discussion took place via Webex chat regarding the collaboration practices that will be adopted. Participants were prompted to use iMeet Central for documents exchange and was decided to be compiled a guide for its usage that will be shared over email.
9. The chair proposed to reschedule the technical presentation of Dr. Nikolaos Tsakiridis that was put on agenda for the 3rd meeting, and Dr. Tsakiridis agreed.
10. The chair opened the floor for discussion regarding sub-group formation and future meetings and a compendious discussion followed.
11. Next meeting
    a. *It will be announced after 1st of November.*
12. Adjournment
    a. *The Chair called for a motion to adjourn the meeting at 17:02*
        i. *Motion moved by Mr Karyotis*
        ii. *Seconded by Dr Tsakiridis*
        iii. *Motion passed unanimously*
    b. *Minutes submitted by: Konstantinos Karyotis*

13. List of attendees (Participants marked with red are registered for first time)

Agnelo Rocha da Silva, METER Group, Inc. USA,

Andrew Bradley, University of Nottingham

Anna Brook, Geogrpahy Department, Haifa University

Anne Gobin, VITO

Asa Gholizadeh, Czech University of Life Sciences Prague

Bas van Wesemael, Universite catholique de Louvain

Charles Bachmann, Rochester Institute of Technology, Rochester, N.Y

Eyal Ben Dor, Tel Aviv University | TAU

Fabricio da Silva Terra, Institute of Agricultural Sciences, Federal University of Jequitinhonha and Mucuri Valeys

Fenny van Egmond, Wageningen Environmental Research (and ISRIC - World Soil Information)

Gifty Acquah, Rothamsted Research, Harpenden, UK,

Ian Lau, CSIRO Perth

János Mészáros, Agricultural Research Centre, Institute for Soil Science and Agricultural Chemistry

Jean Robertson, The James Hutton Institute, Scotland UK,

Jonathan Sanderman, Joint research centre, United States

José Alexandre Melo Demattê, University of Sao Paulo

Konstantinos Karyotis, Interbalkan Environment Center

Lubos Boruvka, Life Science University Prague

Macoumba Loum, National Institute of Pedology

Mareike Ließ, Helmholtz Centre for Environmental Research – UFZ

Maria Knadel, Aarhus University, Dept. of Agroecology

Mariana Hoelent, Unidad de Desarrollo de Applicioned Especificas Buenos Aires

Mbedzi Thembinkosi, Soil Science and Agricultural Engineering

Michael Berger, ESA/ESRIN

Mila Luleva, Agrocares BV

Nathan Levi, Ben-Gurion University of the Negev | bgu · Department of Geography and Environmental Development

Nicolas Francos, The Remote Sensing Laboratory, Tel Aviv University

Nikos Tsakiridis, Interbalkan Environment Center

Penelope Nagel, Persistence Data Mining

Raffaele Casa, University of Tuscia

Robert Milewski, Research Institute for Soil and Water Conservation

Sabine Chabrillat, Helmholtz Center Potsdam GFZ German Research Center for Geosciences

Sadeq Dwenee, Ministry of science and technology/ Directorate of agricultural research, Iraq

Siri Jodha Khalsa, National Snow and Ice Data Center

Stefano Pignatti, CNR IMAA

Tarin Pas Kagan, Agriculture Engeenirngs Departemnt Vulcani Center Israel

Theodora Angelopoulou, Laboratory of Remote Sensing, Aristotle University of Thesaloniki

Thomas Schmid, Soil Conservation and Remediation Unit, Department of Environment

Uta Heiden, DLR Oberpfaffenhofen

Vanessa Lalitte, IEEE Standards Association

Veronika Strnadová, Czech Geological Survey

Viktor Bacu, Technical University of Cluj-Napoca

Zsofia Kovacs, Institute for Soil Sciences and Agricultural Chemistry, Centre for Agricultural Research of the Hungarian Academy of Sciences