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 and 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, Geography 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