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D7.4.2 - High level capacity building seminars and events

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Work package / Task:

WP7 Capacity Building and Dissemination

Task 7.5 – High level capacity building seminars and events

Short Description:

This report contains, for each event organised in the second year, the announcement, the Agenda, the list of participants and the main outcomes of the event.

Keywords:

Awareness, dissemination, communication, seminar

Dissemination Level		
PU	Public	X
RE	Restricted to other programme participants (including Commission services and project reviewers)	
CO	Confidential, only for members of the consortium (including EACEA and Commission services and project reviewers)	

Revision History:

Revision	Date	Author(s)	Status	Description
0.1	20/11/2019	Silvia Gorni (GISIG)	1st draft	Draft
0.2	12/12/2019	Margarita (NEREUS), Silvia Gorni (GISIG)	2nd draft	Updated ch.2 and ch.3
0.5	31/12/2019	Silvia Gorni (GISIG)	Final editing	Updated evaluation questionnaire graphics and partner contributions
1.0	16/01/2020	Silvia Gorni (GISIG)	Final version 1.0	Added few revisions from partners. Ready for the QA
2.0	28/01/2020	Silvia Gorni (GISIG)	Final version 2.0	Final version upon revision by the QA team

Executive Summary

The objective of this report is to describe the high-level capacity building seminars and events that took place in the second year of the project.

In addition to the two seminars already scheduled by NEREUS (Nouvelle-Aquitaine, FR and Brussels), other partners organised seminars/workshops besides some important sectorial events in the technical sector of the project (Earth Observation/Geospatial Information) at European level, with the aim to raise awareness and disseminate project objectives and preliminary results to a wide target audience.

For each event this report describes the announcement, the agenda, the list of participants and the main outcomes.

Around 300 people attended the events, mostly from: government agencies, research organizations, universities, educational centres, training organisations, aerospace centres, businesses active in the geo-information and space sectors; European Commission, European Space Agency and relevant associations, regional representatives, EU authorities, Brussels-based and other associations and students, experts and policy makers.

The capacity-building seminars and EO4GEO events gave the opportunity to consult experts in the field of EO and stimulate a debate amongst them, to contribute to establish an active network of experts valuable for the uptake of the EO4GEO output by the EO/GI sector, to exchange ideas on the BoK and enhance its quality, to get valuable input about the current landscape of Copernicus data user uptake with real case scenarios, to discuss the EO4GEO Sector Skills Strategy contribute to its successful implementation and to reflect more on the training needs in the space sector on a wider spectrum.

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Acronyms

Acronym	Description
EU	European Union
EACEA	Education, Audiovisual and Culture Executive Agency
ICT	Information and Communication Technologies
EO/GI	Earth Observation/Geospatial Information
ESA	European Space Agency
LPS	Living Planet Symposium
BoK	Body of Knowledge
OGC	Open Geospatial Consortium
API	Application Programming Interface
DG GROW	Directorate-General or Internal Market, Industry, Entrepreneurship and SMEs
DG EMPL	Directorate-General for Employment, Social Affairs and Inclusion
DG AGRI	Directorate-General for Agriculture and Rural Development
DG CLIMA	Directorate-General for Climate Action
CNES	Centre national d'études spatiales
LRAs	Local and Regional Authorities
SSS	Sector Skills Strategy
PAs	Public administrations
SMEs	Small and medium-sized enterprises

Glossary

Body of Knowledge (BoK) is the complete set of concepts and relations between them, that make up a professional domain, (in this case EO/GI BoK) and the related learning outcomes as defined by the relevant learned society or a professional association.

Education, Audiovisual and Culture Executive Agency (EACEA) manages funding for education, culture, audiovisual, sport, citizenship and volunteering.

Geographic Information (GI) is the data of a geographic location combined with non-spatial information (e.g. statistical data) and their representation as a map.

Information and communication technologies (ICT) are the infrastructure and components that enable modern computing.

Small and medium-sized enterprises (SMEs) are enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

1. Introduction

1.1. Introduction to EO4GEO

EO4GEO is an **Erasmus+ Sector Skills Alliance** gathering **26 partners from 13 EU countries**, most of which are part of the **Copernicus Academy Network**. Be they from academia, public or private sector, they are all active in the education and training fields of the space / geospatial sector. The project is also supported by a strong group of Associated Partners mostly consisting of associations or networks active in space/geospatial domain. The project started on January 1st, 2018, upon approval by the EU Education, Audiovisual and Culture Executive Agency (EACEA) and runs over four years.

EO4GEO **aims to help bridging the skills gap in the space/geospatial sector** by creating a strong alliance of players from the sector/community reinforcing the existing ecosystem and **fostering the uptake and integration of space/geospatial data and services**. EO4GEO will work in a **multi- and interdisciplinary** way and apply innovative solutions for its education and training actions including: case-based and collaborative learning scenarios; learning-while-doing in a living lab environment; on-the-job training; co-creation of knowledge, skills and competencies; etc.

EO4GEO will define a long-term and sustainable strategy to fill the gap between supply of and demand for space/geospatial education and training taking into account the current and expected technological and non-technological developments in the space/geospatial and related sectors (e.g. ICT). The strategy will be implemented by: creating and maintaining an ontology-based Body of Knowledge for the space/geospatial sector based on previous efforts; developing and integrating a dynamic collaborative platform with associated tools; designing and developing a series of curricula and a rich portfolio of training modules directly usable in the context of Copernicus and other relevant programmes and conducting a series of training actions for a selected set of scenario's in three sub-sectors - integrated applications, smart cities and climate change to test and validate the approach. Finally, a long-term Action Plan will be developed and endorsed to roll-out and sustain the proposed solutions

For more information on the project please visit http://www.eo4geo.eu/about-eo4geo/.

1.2. Objectives of the Work Package

In order to build a **long-term and sustainable strategy** to fill the gap between the supply of and demand for space/geospatial education and training, several actions have been foreseen which imply a progressive strategy to foster the visibility of the project itself in order to engage with specific target audiences. This Work Package includes the definition of an overall approach to Communication and Dissemination, with capacity-building activities as a key element for the dissemination of the project results and community engagement.

Community-building and consolidation is fundamental for pursuing the longer-term objectives, i.e. the sustainability of the project outcomes after its conclusion. This particular item of the

strategy will be developed in close relationship with the coordinator of WP6. The basis for such sustainability started from the beginning of the project with the awareness raising activities and will be consolidated throughout the project.

The work package aims at:

- **Raising awareness** on the uses of EO/GI data and information;
- **Attracting** new stakeholders interested in using EO / GI data;
- **Building capacity** to foster user uptake of Copernicus-based products and services in three sub sectors;
- **Consolidating** the EO4GEO community to build a sustainable long-term strategy;
- **Reach out** to the selected and profiled target groups and raise their awareness and understanding on the uses of EO/GI data and information;
- **Foster the dialogue** between the training/education and the space/geospatial sector and help to build a community;
- **Build a strong EO4GEO brand** which will contribute to the overall Copernicus brand identity and strengthen the recognition of the long-term Action Plan;
- **Identify and establish potential collaboration mechanisms** between the education/training and the space/geospatial industry.

The overall perspective is to **promote the EO4GEO strategy for skills development in different contexts**, towards the target groups addressed by the project dissemination. This will be done by paying attention to the specific skills and knowledge needed for the implementation of the Space Strategy for Europe.

This is a **horizontally supporting work package** that is planned along the whole project duration.

It is crucial as it ensures that the specific objectives and deliverables of the project have an effective outreach during the project life-time. It requires that the consortium partners provide input for profiling the target groups and contribute to the dissemination activities in order to maximise outreach.

1.3. Objectives of the Task 7.5

This task deals with the organisation of High level Capacity Building seminars, focused to specific sectors and in relation with the best-tuned exploitation of the different learning contents produced. They will be organised by the NEREUS network Members, which are part of the Copernicus Academy Network.

Moreover, other EO4GEO seminars/workshops will be organised besides well-known sectorial events in the technical sector of the project at European and National level, with the aim to raise awareness and disseminate project objectives and preliminary results to a wide target audience.

It is already planned to propose workshops within the major sectorial events such as the INSPIRE Conference or the GIForum conference yearly organised in Salzburg.

Other awareness and dissemination events could be organised upon initiative of the partners every time there will be the opportunity to promote EO4GEO in a wider context.

1.4. Purpose and structure of this document

The purpose of the deliverable D7.4.2 is to describe, for each event organised in the period, the announcement, the agenda, the list of participants and the main outcomes of the event.

The annual deliverable is organised in two sections: the first one (chapter 2) includes the results achieved for the reported year; while the second part (chapter 3) includes the description of the planned High-Level Capacity Building seminars, with focus, in this report, on those planned in 2020.

2. EO4GEO events in 2019

The second year of the project was characterized by the organization of some important seminars.

In addition to the two seminars already scheduled by NEREUS (in Nouvelle-Aquitaine, FR and in Brussels), other partners organised significant events.

In the following are presented the announcement, the agenda, the list of participants and the main outcomes of each event.

2.1. ESA Living Planet Symposium (EO4GEO side event)

17 May 2019, Milan (IT)

Title: EO4GEO side-event: Towards an innovative skills strategy for the Earth Observation/Geospatial Information sector

Objectives

The EO4GEO side event at the ESA LPS was entitled 'Towards an innovative skills strategy for EO*GI sector'. It was a consultation meeting with experts in the field of EO. It took place at the ESA Living Planet Symposium (LPS) on Friday May 17, 2019, in Milan, Italy. The ESA Living Planet Symposium is the largest EO conference in the world. The event is held every three years. This symposium focuses on how Earth Observation contributes to science and society, and how disruptive technologies and actors are changing the traditional Earth Observation landscape, which is also creating new opportunities for public and private sector interactions. This year, more than 4000 participants took part in the event.

The workshop gave a great opportunity to discuss and enrich the BoK. The possibility of exchanging ideas on the BoK has enhanced its quality, as well as, in the long term, will contribute to the successful implementation of a sustainable skills strategy in EO*GI field. Moreover, the goal was to establish an active network of experts that will maintain the BoK during and beyond the EO4GEO lifespan.

List of participants

No.	Name	Surname	Organisation
1	Florian	Albrecht	Department for Geoinformatics - Z_GIS, University of Salzburg
2	Roya	Ayazi	NEREUS
3	Mariana	Belgiu	University of Twente
4	Iskander	Benhadij	VITO
5	Marion	Bouvet	EARSC

No.	Name	Surname	Organisation
6	Milva	Carbonaro	GISIG
7	Jordi	Corbera	Institut Cartographic and Geological of Catalonia (ICGC)
8	Katarzyna	Dabrowska-Zielinska	Institute for Geodesy and Cartography
9	Dirk	Daems	VITO
10	Clémence	Dubois	University of Jena, Department for Earth Observation
11	Robert	Eckard	University of Jena, Department for Earth Observation
12	Hilcea S.	Ferreira	National Institute for Space Research
13	Keith	Garrett	World Bank, Africa, Finance and Private Sector Development unit
14	Mario	Gomarasca	CNR-IREA
15	Miro	Govedarica	University of Novi Sad, Faculty of Technical Science
16	Daniela	Iasillo	Planetek
17	Gabriele	Leoni	ISPRA
18	Maggy	Heintz	University of Leicester, Research and Enterprise Division
19	Andiswa	Mlisa	South African Space Agency
20	Antonios	Mouratidis	Aristotle University of Thessaloniki
21	Marc	Olijslagers	KU Leuven
22	Davide	Policastro	GISIG
23	Giorgio	Saio	GISIG
24	Daniele	Spizzichino	ISPRA
25	Martyna	Stelmaszczuk-Górska	University of Jena, Department for Earth Observation
26	Sabrina	Szeto	Yale University, School of Forestry and Environmental Studies
27	Valentina	Vuković	University of Zagreb, Faculty of Geodesy
28	Leong	Wei Ji	Victoria University of Wellington, Antarctic Research Centre
29	Peter	Zeil	Spatial Services Ltd

Agenda

09:00-09:10	**Towards an innovative skills strategy for the EO/GI sector – objectives of the meeting** *(Marc Olijslagers, KU Leuven)*
09:10-09:25	**Presentation of the EO4GEO project** *(Milva Carbonaro, GISIG)*
09:25-09:35	**Presentation of the CopHub.AC project** *(Peter Zeil, Spatial Services Ltd)*
09:35-09:55	**EO/GI Body of Knowledge (BoK)** *(Marc Olijslagers, KU Leuven)*
09:55-10:10	**Development of the EO part of the BoK** *(Martyna Stelmaszczuk-Górska, FSU-EO)*
Coffee break 10:10-10:40	
10:40-12:30	**EO concepts in the Body of Knowledge - discussion**
12:30-12:45	**Summary of the meeting and next steps** *(Marc Olijslagers, KU Leuven)*
13:00	**End of the meeting**

Proceedings:

Workshop's proceedings are available on the web site: http://www.eo4geo.eu/esa-living-planet-symposium-2/

Workshop outcomes

The workshop was divided into two parts. First, the general presentations about the project and the BoK were presented. Afterwards, the extension of the BoK was discussed. Approximately 50 participants took part in the EO4GEO event. Twenty-nine signed the list of participants and another twenty attended the EO4GEO workshop. Nine from thirty registered EO experts did not take part in the event.

The EO4GEO side event started with a presentation of the objectives and some logistics of the meeting (Marc Olijslagers - KU Leuven). Afterwards, the project coordinator gave an overview of the EO4GEO project (Milva Carbonaro - GISIG). Milva presented the main context of the project, its objectives and outcomes. Additionally, another Copernicus user uptake and capacity building initiative was presented, the project CopHub.AC (Peter Zeil - Spatial Services Ltd.). The vision of the Horizon 2020 project CopHub.AC is to establish a long-term Copernicus hub to consolidate and sustain the Copernicus Academy as a knowledge and innovation platform - see presentation for more details.

Following the first presentations, Marc Olijslagers, introduced the Body of Knowledge. His talk was focused on presenting the idea and benefits of the ontology-based BoK for EO*GI. Afterwards, he pointed out how the EO experts can contribute to the extension of the BoK and how they can be acknowledged for their work. The existing and new concepts of the BoK in the field of EO were presented by Martyna Stelmaszczuk-Górska (FSU-EO). In her presentation she explained how the BoK will be extended with the EO concepts. Afterwards, she introduced the second part of the workshop - the breakout session.

In the second part of the workshop, the participants were divided into three groups:

- Group 1: Physical principles and platforms, sensors and digital imagery
- Group 2: Image processing and analysis
- Group 3: Thematic and application domains

The direct involvement of the sector, as happened during this workshop, is very valuable for the EO4GEO project and the Body of Knowledge. The breakout groups created very useful feedback for the project.

Some, not exhaustive, examples are:

- From Group 1: the participants suggested to put together the history of remote sensing and the physical principles; it was also suggested to keep the hierarchy of all concepts consistent and regarding platform and sensor to include the main missions/sensors only.

- From Group 2: the participants highlighted the importance of making a clear distinction between optical and SAR data processing workflows; they also discussed the challenges related to assigning the concepts to the correct knowledge area and emphasized the need to include examples of tools/processing libraries in BoK
- From Group 3: it was explained that the six Copernicus Services are used as a base; the participants highlighted that there are a lot of downstream services available and not each of them should be a separate concept because that would create isolated “bubbles” in the Body of Knowledge

After a summary of the break-out sessions, Marc Olijslagers presented the next steps in the BoK development:

- Currently new concepts are defined for the EO area of the BoK. For the GI part, the concepts of the existing BoK are revised and new/missing concepts are identified.
- In the next step the concepts will be organised by defining relations. All concepts will also get a complete description.
- In a final step learning outcomes will be defined for all the concepts.

Besides work on the BoK content, the EO4GEO project also develops tools to use the BoK. These tools will be tested and in the same time the validity of the defined concepts for defining job profiles and for the creation of curricula will be examined.

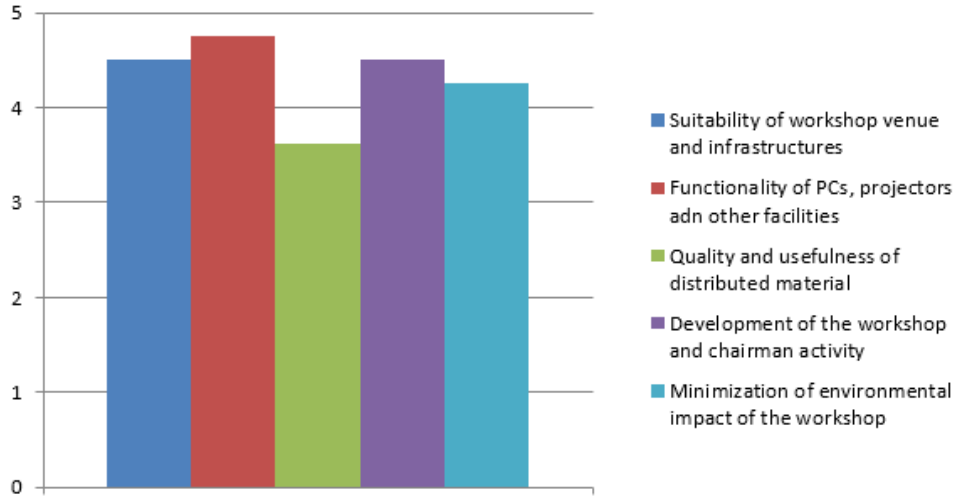
The EO4GEO concept also enhances its efforts to further activate the EO-ecosystem and to expand the network of experts.

Quality evaluation

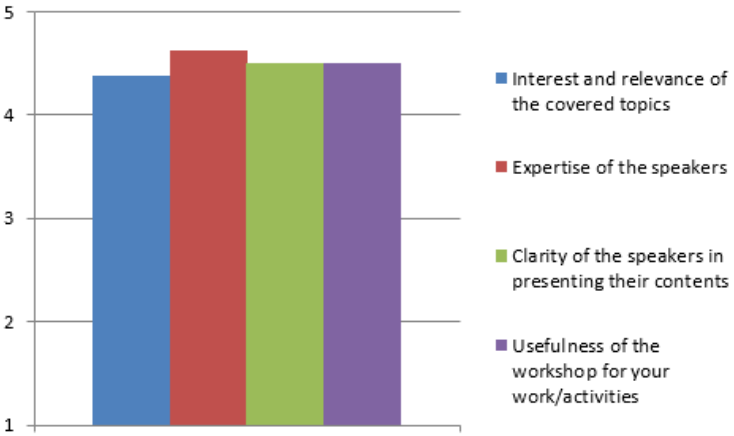
The participants of the EO4GEO workshop at the ESA Living Planet Symposium were asked to evaluate the event. The results of these evaluations were highly positive, with an overall rating of the workshop with 4,6 points on a scale between 1 (poor) and 5 (excellent). All of the participants that filled in the evaluation form would recommend a next EO4GEO event to a friend/colleague and almost all would be interested to participate in evaluating and give contributions to the core deliverables of the project.

The following graphics show the average values of the answers. Not everyone answered all the questions.

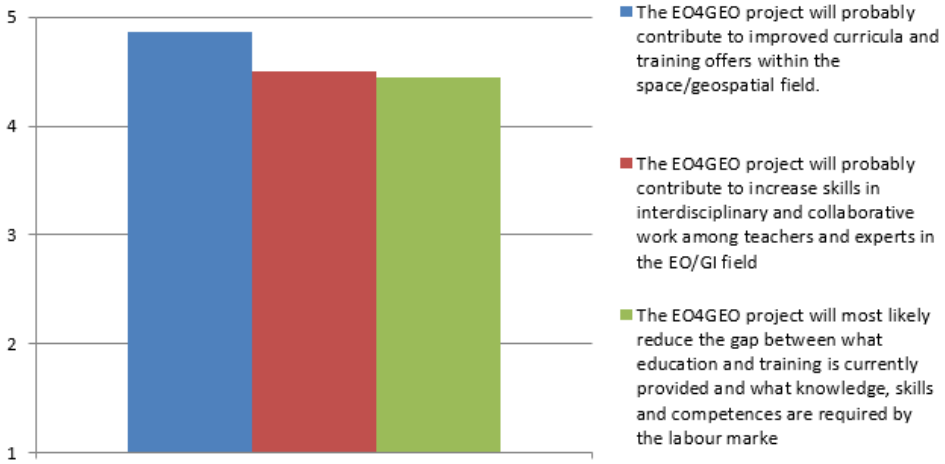
Organisational aspects [from 1 (poor) to 5 (very good)]



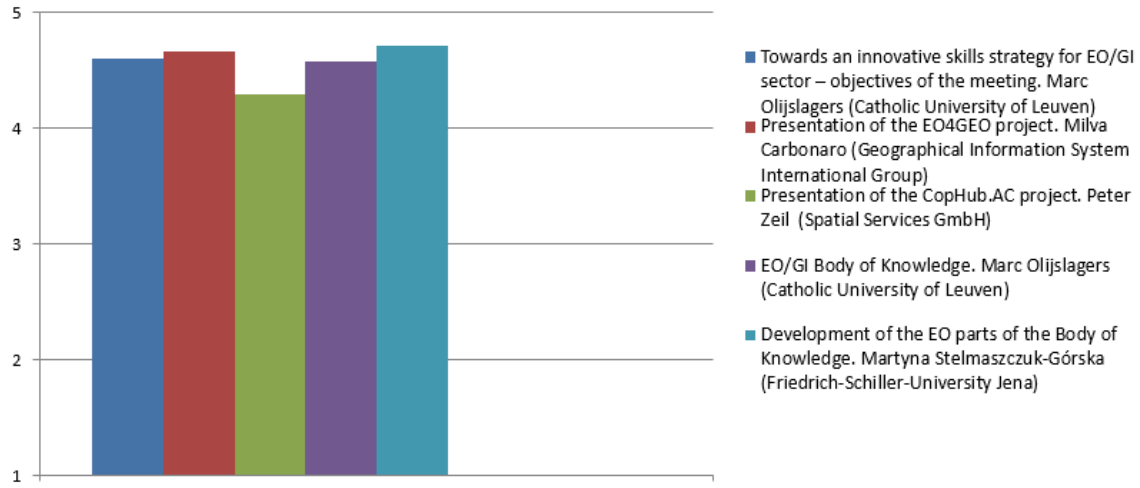
General contents of the programme [from 1 (poor) to 5 (very good)]



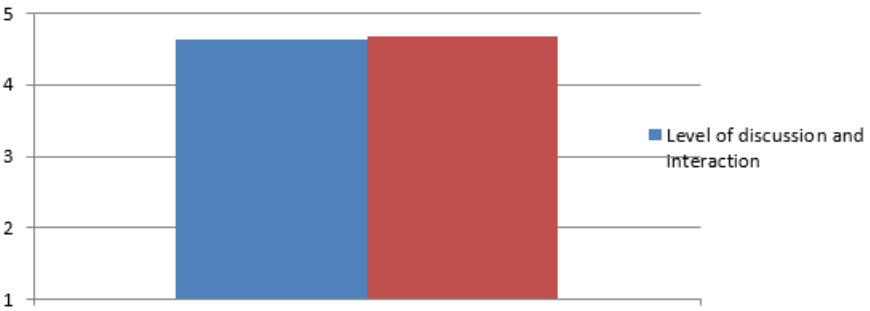
Expected impact of the EO4GEO project [from 1 (poor) to 5 (very good)]



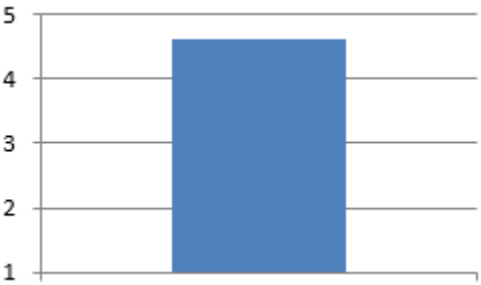
Evaluation of Thematic presentations [from 1 (poor) to 5 (very good)]



Evaluation of the panel discussion on "Space/geospatial Sector Skills Strategy" [from 1 (poor) to 5 (very good)]



Overall grading of the event [from 1 (poor) to 5 (very good)]



General evaluation

General evaluation	Yes
Would you recommend a next EO4GEO event to a friend/colleague of yours?	100%
Would you be interested to participate in evaluating and give contributions to the core deliverables of EO4GEO (the sector skills strategy, the Body of Knowledge, the EO curricula, the learning material, the long-term action plan etc)?	85%

2.2. Earth Observation Summit (EO-Summit) supported by EO4GEO and OGC

25-27 June 2019, Leuven, Belgium.

Title: An EO4GEO special dissemination event in the context of the 111th OGC Technical Committee meeting

Objectives

During the recent 111th OGC Technical Committee (TC) Meeting from 24 to 29 June in Leuven, Belgium, the Spatial Applications Division of the KU Leuven (SADL) organised the first Earth Observation Summit (EO-Summit) supported by EO4GEO and OGC.

The program of the EO-Summit was closely related to the aims of the EO4GEO project. During 3 days, the EO4GEO partners had the opportunity to discuss the new technological and future trends watch and to share and exchange ideas with the key decision makers that are changing the world, with a special focus on the geospatial sector. Day one saw discussion of how the adoption of continuously and quickly evolving technologies has created new skill gaps. Day two showed how a systematic analysis of work processes to design matching curricula can help bridge these gaps. Finally, on day three, the Summit discussed how even though EO4GEO is a project limited in time, the goal is to develop a sustainable long-term skills strategy.

List of participants

The following table contains the names of participants who signed the participant list. The event took place in parallel with the OGC Tc meeting with more than 280 participants. The EO-summit was an open event, OGC Tc meeting participants often followed individual presentations ad hoc, without signing the list. The average daily participation in the 3 days of the Earth Observation Summit was 49 people

N.	Organisation	Name	Surname
1	Aristotle University of Thessaloniki	Antonios	Mouratidis
2	BLB	Bente	Bye
3	Climate-KIC	Kevin	Ramirez
4	CNR-IREA	Mario Angelo	Gomarasca
5	Defence Geospatial Information Working Group (DGIWG)	Stefan	Strobel
6	Deutscher Wetterdienst	Jürgen	Seib
7	DG AGRI. European Commission	Isidro	Campos
8	DHI	Chengzi	Chew

9	DigitalGlobe	Emmanuel	MONDON
10	EARSC	Monica	Miguel-Lago
11	Envitia	Roger	Brackin
12	EOX IT Services GmbH	Stephan	Meißl
13	Epsilon Italia srl	Giacomo	Martirano
14	European Commission	Simon	Kay
15	European Commission	Sarah	Schinazi
16	European Parliament	Fabien	Benetou
17	European Regions Research and Innovation Network	Ilaria	D'Auria
18	Faculty of Geodesy - University of Zagreb	Vesna	Posloncec-Petric
19	Finnish Meteorological Institute	Roope	Tervo
20	Friedrich-Schiller-University Jena	Martyna A.	Stelmaszczuk-Górska
21	GEO	Joost	Teuben
22	Geografiska Informationsbyran	Sara	Wiman
23	Geografiska Informationsbyrån AB	Greger	Lindeberg
24	GeoTech Center	Ann	Johnson
25	GIM	Nicolas	Matton
26	GISIG	Silvia	Gorni
27	GISIG	Giorgio	Saio
28	GISIG - Geographical Information Systems International Group	Milva	Carbonaro
29	Hitachi DS	Nobuhiro	Ishimaru
30	HR Wallingford	Quillon	Harpham
31	Hunter College, CUNY	Jochen	Albrecht
32	ILVO	Fabio	Castaldi
33	Institute for Environmental Solutions	Inese	Suija-Markova
34	Instituut voor Natuur- en Bosonderzoek (INBO)	Stien	Heremans
35	Instytut Geodezji i Kartografii	Marek	Baranowski
36	ISPRA	Federica	Ferrigno
37	ISPRA - Geological Survey of Italy	Gabriele	Leoni
38	KU Leuven	Ann	Crabbé
39	KU Leuven	Lukas	Mattheuwsen
40	KU Leuven	Marc	Olijslagers
41	KU Leuven	Jos	Van Orshoven
42	KU Leuven	Glenn	Vancauwenberghe

43	KU Leuven	Danny	Vandenbroucke
44	KU Leuven - Eavise	Tanguy	Ophoff
45	KU Leuven SADL	Maria Saudade	Pontes
46	Laboratory of Atmospheric Physics - University of Patras	Andreas	Kazantzidis
47	Merkator NV	Maarten	Vanopstal
48	NEREUS- Network of European Regions using Space Technologies	Roya	Ayazi
49	NEREUS- Network of European Regions using Space Technologies	Margarita	Chrysaki
50	Novogit AB	Anders	Östman
51	OGC	Athina	Trakas
52	OGC	Marie-Francoise	Voidrot
53	Planetek	ilias	Ioannou
54	PLUS Salzburg	Eva-Maria	Missoni-Steinbacher
55	Polish Geological Institute - National Research Institute	Katarzyna	Józwik
56	Polish Geological Institute-National Research Institute	Urszula	Stepien
57	SADL(Spatial Application Division Leuven)	Anuja	Dangol
58	Space Applications Services	Bernard	Valentin
59	Szeto Consulting	Sabrina	Szeto
60	UNEP/GRID-Warsaw	Ela	Wołoszyńska-Wiśniewska
61	UNEP/GRID-Warszawa	Maria	Andrzejewska
62	Universidad Jaime I	Sven	Casteleyn
63	Universitat Jaume I	Estefanía	Aguilar Moreno
64	Universitat Jaume I	Aida	Monfort Muriach
65	University of Salzburg	Florian	Albrecht
66	University of Salzburg	Barbara	Hofer
67	University of Twente	Rob	Lemmens
68	University of Zagreb, Faculty of Geodesy	Zeljko	Bacic
69	WIRELESSINFO	Václav	Safar

Agenda

Day 1	Technological Trends
07:30-08:00	Welcome and Registration
08:00-09:45	OGC Tc: Future Directions Session: Edge and Fog Computing. • Edge Computing and Location - Mike Edwards (IBM & JTC1/SC41) • An update on Connected and Autonomous Vehicles - Jeremy Morley (Ordnance Survey) • SensorThings API and Edge Computing - Steve Liang (SensorUp & University of Calgary)
09:45-10:15	Coffee break
10:15-11:10	Introduction to EO4GEO ant the Copernicus program • EO4GEO – Introducing the Space/Geospatial Sector Skills Alliance (Milva Carbonaro, GISIG) • The Copernicus Programme and the importance of user uptake and skills development (Emanuele Barreca, DG GROW)
11:10-12:00	Methods for technology watch • The OGC way of monitoring new technological developments (Gobe Hobona, OGC) • Mapping Knowledge Space: Principles, Platforms, Applications (André Skupin, BigKnowledge, remotely)
Lunch 12:00-13:00	
13:00-14:30	Emerging technologies and examples of their use in real world EO applications • Recent evolutions in datacubes (Peter Baumann, Rasdaman) Live demo • The NextGEOSS data hub and platform (Bente Lilja Bye , NextGEOSS) • From satellite to farmer: bringing remote sensing data into agricultural applications. How computing clusters, datacubes, product algorithms and artificial intelligence all come together to ultimately create understandable information that can be directly used to improve crop yields. (Kristof Van Tricht, VITO) • Artificial Intelligence and Machine Learning techniques: how to get most out of the massive amounts of satellite data (Tanguy Ophoff, EAVISE, KU Leuven)
14:30-14:45	Short Coffee Break
14:45-17:50	Interactive workshop on future trends with breakout sessions and panel discussion
17:50-18:00	Wrap-up and closing

Day 2	From work processes to curriculum design
08:00-09:45	OGC Tc Open OGC Architecture Board
09:45-10:15	**Coffee break**
10:15-12:00	EO4GEO: from work processes to curricula design • EO4GEO – Work Processes as a starting point for curricula design: why and how does it work? (Barbara Hofer, PLUS) • Making the link between work processes and (automation) of geospatial data processing (Jochen Albrecht, Hunter College, CUNY) • EO4GEO – Example of work processes from the sub-sector Integrated Applications (Florian Albrecht, PLUS)
Lunch break: 12:00-13:00	

13:00-13:30	Real world examples of work processes using EO data • An environmental monitoring case (Andrus Meiner, EEA) • The Farm Sustainability Tool for Nutrients (FaST) (Isidro Campos-Rodriguez, DG AGRI) • From remote sensing to actionable insights: automating the monitoring of small landscape elements (Nicolas Matton, GIM) • EO and GI data for climate policy on land: EU data needs for 2021-30 (Simon Kay, DG CLIMA)
14:30-14:45	Short coffee break
14:45-17:50	Interactive workshop EO work processes with breakout sessions and panel discussion
17:50-18:00	Wrap-up and closing

Day 3	**Towards a Space/geospatial Sector Skills Strategy**
08:45-11:15	EO4GEO and a Space/Geospatial Sector Skills Strategy in the European context • A first sight on the Space/Geospatial Sector Skills Strategy to bridge the gap between the supply and demand for education and training (Mónica Miguel-Lago, EARSC) • The Blueprint as part of the wider Skills Agenda for Europe (Sarah Schinazi, DG EMPL) • CopHub.AC: The Copernicus Academy as key node in the Copernicus Ecosystem (Peter Zeil, Spatial Services) • How a new learning scenario could work: starting from the Garden Monitor as a real case (Ben Somers, Thérèse Steenberghen, Danny Vandenbroucke, KU Leuven) • Introducing the Long-term sustainable approach of the Alliance (Kevin Ramirez, Climate-KIC)
11:15-12:00	Panel discussion on the Space/geospatial Sector Skills Strategy based on new technological developments and market
12:00-12:10	Wrap-up and closing the first EO-Summit

Proceedings:

Workshop's proceedings are available on the web site: http://www.eo4geo.eu/earth-observation-summit-june-2019/

Moreover, an article is published on the OGC blog

Workshop outcomes

Day 1	**Technological Trends**

OGC Tc: Future Directions Session: Edge and Fog Computing.

This session explained new developments related to Edge and Fog Computing. The session was an open session of the OGC Tc fitting perfectly in the Day 1 agenda of the EO-Summit.

Introduction to EO4GEO and the Copernicus program

The goal of this first session was to introduce the EO4GEO project and the Copernicus Programme to the participants.

Methods for technology watch

Within EO4GEO a technology watch is being put in place.

Emerging technologies and examples of their use in real world EO applications

To show how new technologies can impact the way EO data is used, a number of new technologies and their uses were presented.

Interactive workshop on future trends with breakout sessions and panel discussion

In the breakout sessions we tried to get an insight about how different stakeholders see a technology watch. Discussions covered following topics:

- Who did already use an existing technology trends watch, tech trends report etc. And what did you use it for?
- Do you think you (academia, private or public sector) can contribute yourself to such a monitoring system? How? Or is it a job for specialists?
- Is there a difference between how the technology trends watch is used for standards compared to when it is used to decide what/when to introduce new technology in curricula?
- A technology trends watch is needed. But is it enough? Don't we also need a societal/ trends watch?
- Do we have to involve other domains in the watch? How can they contribute/ can we cooperate?

The outcome from the breakout sessions were further elaborated in a panel discussion with following specialists:

- Roger Brackin, Envitia
- Gobe Hobona, OGC
- Cristiano Lopes, ESA
- Peter Baumann, Rasdaman

Summary

Experiences with trends watches or similar initiatives were divers. Some participants already follow the OGC trends watch. EARSC conducts a biannual survey with structured questions. In Copernicus Academy there is an exchange of best practices during regular telco meetings. Most use a mix of information sources like personal contacts, networking, newsletters, data mining etc. the private sector the focus is more on monitoring user needs instead of trends watches.

Although technological evolutions are often followed in an informal way, some participants use more formal methods like the OGC trends watch or white papers.

Who can contribute to a trend watch? Such a system can be opened only if it is formalized. There must be a structure and procedures. Otherwise the information becomes less valuable.

Trends watch is important for standardisation. The standardisation process must be able to start its work early enough in the adaption phase to make sure interoperability for new developments is guaranteed. For education on new technologies "learn while doing" (on the job training) is often applied. Networking between academia, private sector and public sector is needed to stay up to date. Value chain analysis is important to understand the impact of new technologies and when to start using them.

It is clear a technological trend watch in itself is not enough. It must be combined with societal trends watch and a maturity watch is needed (is the technology mature enough to be included in daily workflows). For different stakeholders the answer to these questions can differ. It is also clear that there are differences between application domains. The point of maturity can be reach at different moments in time.

Social trends and public acceptance are also important. Technology supporting sustainable goals might be adopted earlier. But also the economic maturity of a technology is important, especially for adaption by the private sector.

How about watching other domains? It is surely important to look cross domain. Not only to new emerging technologies in those domains, but also to see how some technologies are adapted outside our sector and how this can be of value for the EO/GI sector. Some examples of other sectors that are worth following are mentioned: telecommunication, sensor technology, precise farming, gaming, augmented reality, blockchain.

The way a technological trends watch is used might differ for standardisation or education, between academia, private and public sector, or between different application domains, but that such a watch is a very useful instrument is something all agree on.

Day 2	From work processes to curriculum design

OGC Tc Open OGC Architecture Board

Again, the first session of the day was an open session of OGC. Attending the Open OGC Architectural Board gave an insight on how OGC works as a consortium of stakeholders in the geospatial world and how they collaborate.

EO4GEO: from work processes to curricula design

Within the EO4GEO project, curricula design (CD) is based on real world EO applications in order to make sure new developed curricula are better market oriented. In this CD approach, the first step is to analyse existing work processes. This session explained how this is done.

Real world examples of work processes using EO data

As real world processes are the base of CD in the EO4GEO methodology, it is important to see some real world examples. In this session various examples show the use of EO, also putting emphasis on how modern EO technology changes existing work processes

Interactive workshop EO work processes with breakout sessions and panel discussion

During the breakout sessions participants discussed following topics:

- Which scenarios could EO4GEO tackle (as part of the sub-sectors climate change, smart cities and integrated applications)?
- Chose a specific work process and map the major process steps and involved actors
- What should be the knowledge and skills to perform the process steps?

Participants got a first hands on insight in business process modelling as a tool towards Curriculum design.

The outcome of the breakout sessions were further elaborated in an open panel discussion with following experts:

Simon Kay, DG CLIMA

Željko Bačić, UNIZG

Joost Teuben, GEO

Jochen Albrecht, Hunter College, CUNY

Summary

During the breakout session several interesting use case scenarios were proposed: Water scarcity problems; disaster management (with involvement of many stakeholders and with different requirements in different phases); scoring houses/municipalities (e.g. mobility score, energy score etc); putting new satellites in place with specific requirements; circular economy; solar energy policy; several agriculture use cases;

Analyse the use cases and identify the skills needed was not trivial for most workshop participants but it provided a very useful tool to think about and analyse the actual workflow within a process. The focus was on the use of EO data in the work flow. But it is clear that most workflows need also other geospatial data and even a range of skills from other domains. Real world scenarios also involve different actors requiring skills on different levels.

Besides the technical use of the EO data, it was clear that EO data can also be used to create awareness, for example by animating certain phenomena using EO time lapses (e.g. fires, urban spread, shrinking water resources). This dissemination/communication about use case results is often an important part of a complete workflow.

Day 3	Towards a Space/geospatial Sector Skills Strategy

EO4GEO and a Space/Geospatial Sector Skills Strategy in the European context

The development of a Space/Geospatial Sector Skills Strategy is one of the main tasks of the EO4GEO project. In this stage of the project first ideas for this strategy are developed. In this session these first ideas were presented to the stakeholders with also first insight in how work within EO4GEO can be translated in sustainable results

Panel discussion on the Space/geospatial Sector Skills Strategy based on new technological developments and market

A panel of stakeholders discussed the presented first results, also taking into account what was learned during the first 2 days of the EO-summit. The panel consisted of following experts:

- Ann Johnson, GeoTech Center
- Patrick Wauters, Deloitte
- Emanuele Barreca, DG GROW
- Geoff Sawyer, EARSC
- Danny Vandenbroucke, KU Leuven

Following topics were covered:

- views on the vision of the sector skills strategy “foster the growth of the sector ensuring a workforce with the right skills, in the right place at the right time”
- views on the mission of the sector skills Alliance which ensure strategic cooperation among stakeholders supporting growth, diversity and flexibility of educational offer
- geospatial technology is now empowering IT-enabled services and optimizing engineering workflows and business processes… how will this affect the new skills?
- gap between the offerings of academic/vocational education vs training
- uptake of existing (g)eo services due to lack of specialized technical and scientific skills, what is needed to make this uptake happen fluently?
- geospatial industry is now open to larger market drivers, creating new growth opportunities. Giving the value of geospatial knowledge for users became a determining factor for successful integration, how this could be integrated into the skills strategy?
- how we should scale up a sector skills strategy into national perspectives

The integration of EO4GEO’s EO-Summit in the OGC Technical Committee meeting was a success. It was a great opportunity for OGC members to get to know EO4GEO and for EO4GEO partners to get connected to the important network that OGC is. This resulted in a lot of fruitful conversations during coffee and lunch breaks. This was very much appreciated by both EO4GEO partners and OGC members.

Important for the EO-summit was that the 3-day event gave the opportunity to show the importance of some aspects from the EO4GEO project but also how these different aspects are linked in a logical way. Discovering and following up new technologies, integrating them in real world work flows, educating the workforce on them and integrate them in academic curricula and develop a strategy how this chain can be formalised in a long-term strategy for a fast evolving sector; all this was covered during the 3 days of the EO-summit.

The participation from OGC and other external experts was a valuable input for the EO4GEO project. The networking during the event was valuable for the uptake of the EO4GEO output by the EO/GI sector.

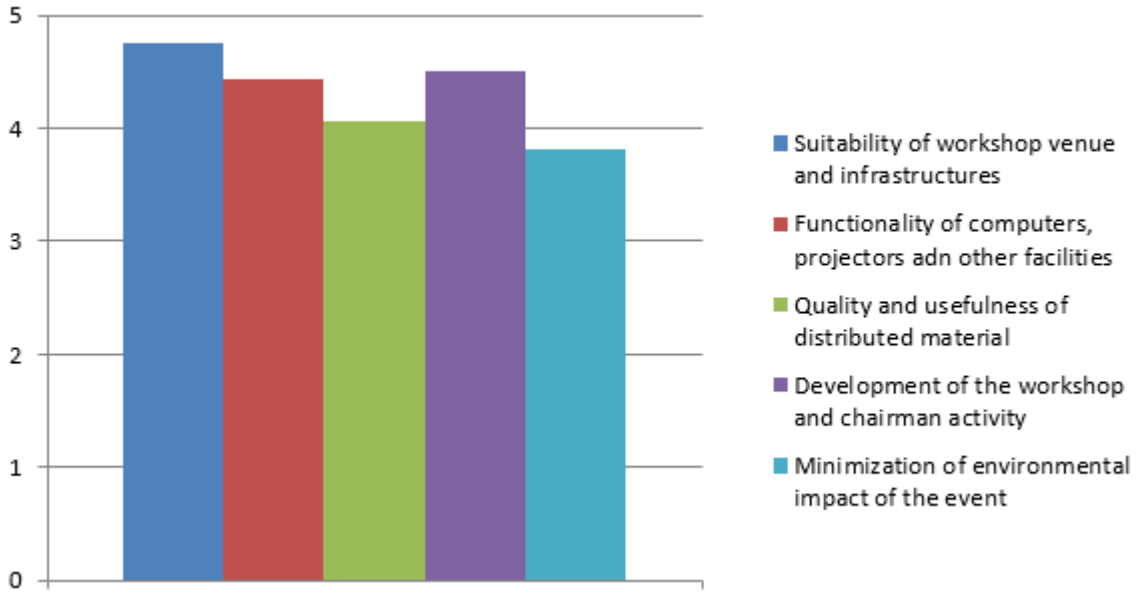
Quality evaluation

The workshop attendants were asked to evaluate the workshop with a questionnaire; the results of these evaluations were positive.

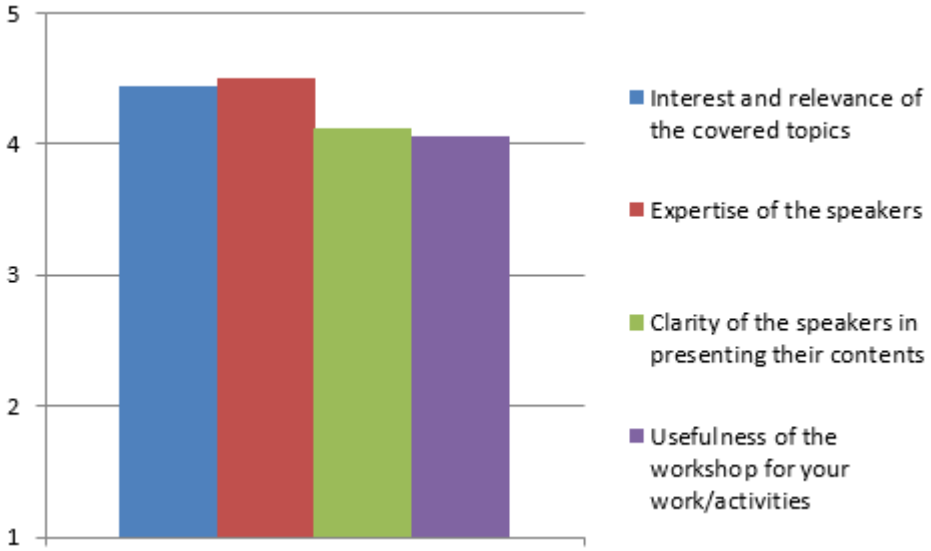
The following graphics show the average values of the answers. Not everyone answered all the questions.

Day 1	Technological Trends

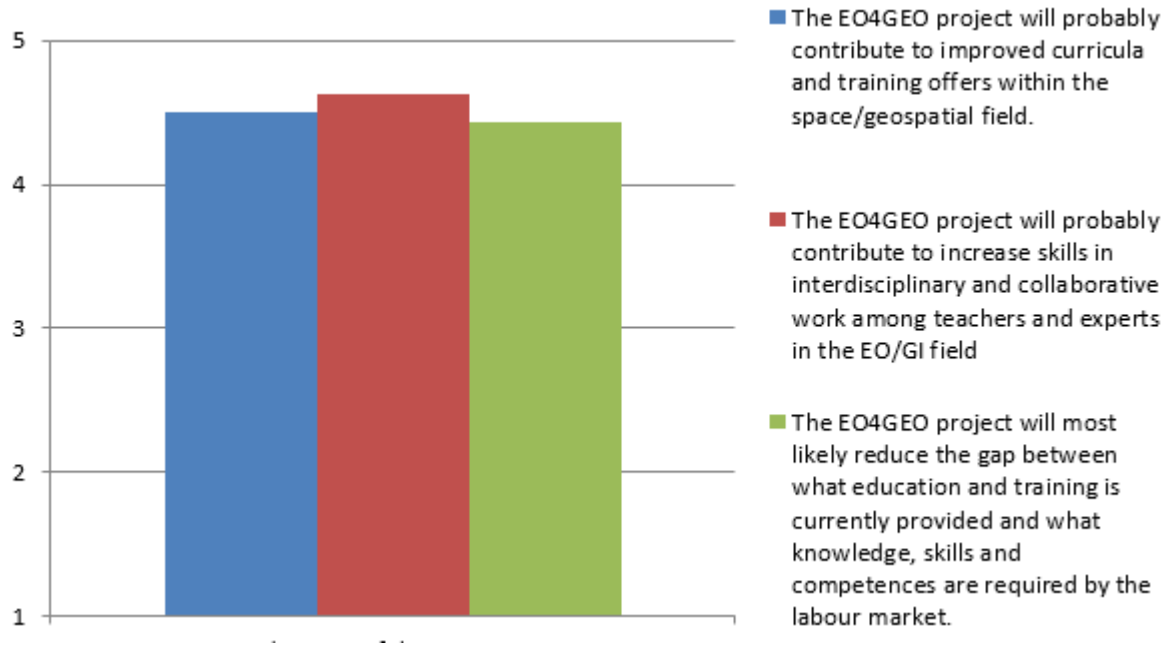
Organisational aspects [from 1 (poor) to 5 (very good)]



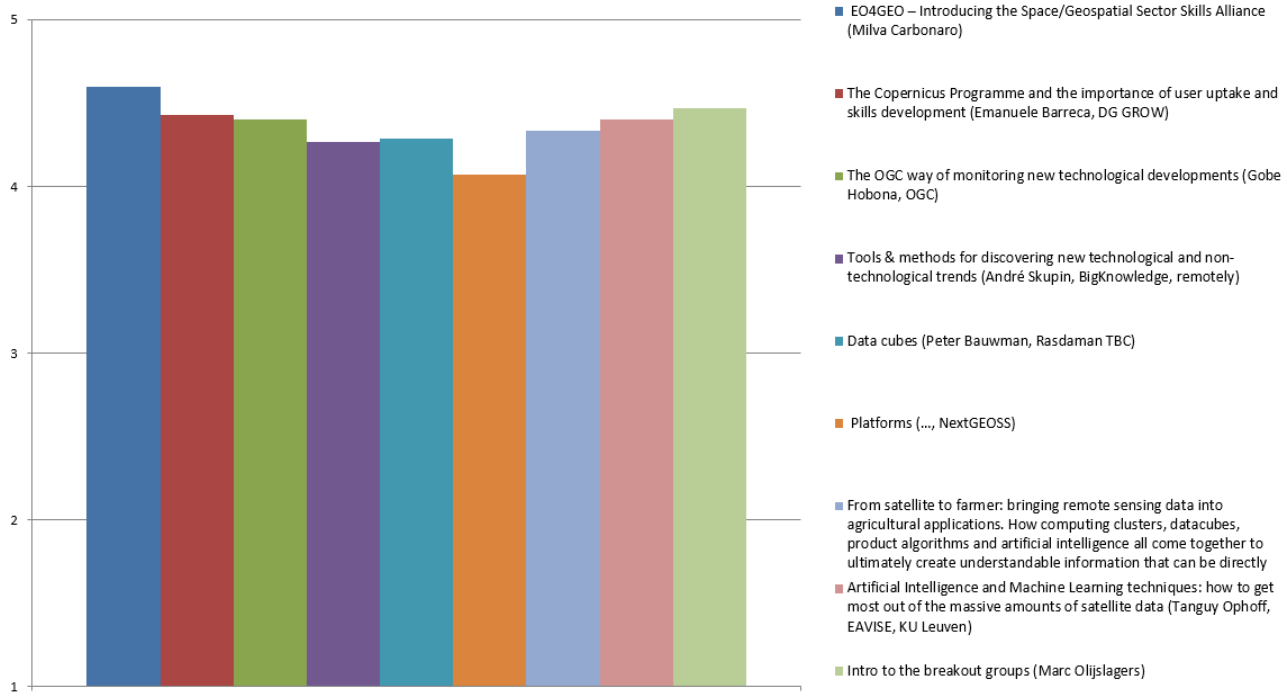
General contents of the programme [from 1 (poor) to 5 (very good)]



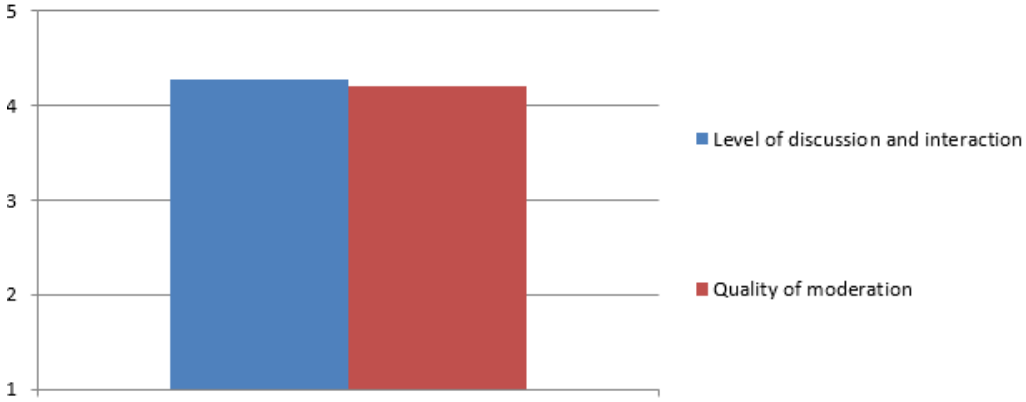
Expected impact of the EO4GEO project [from 1 (poor) to 5 (very good)]



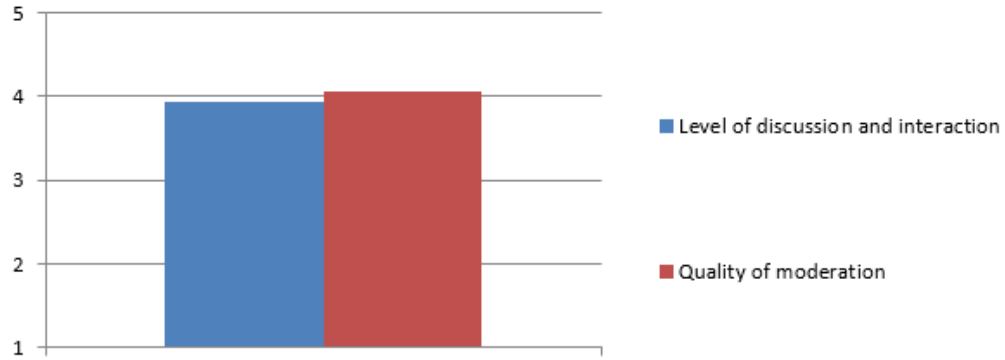
Evaluation of Thematic presentations [from 1 (poor) to 5 (very good)]



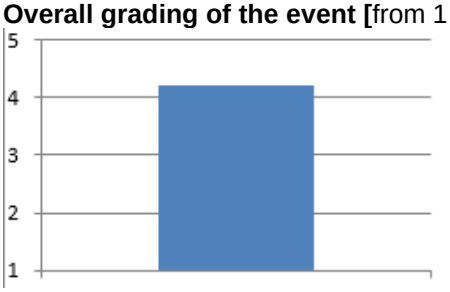
Evaluation of the breakout session [from 1 (poor) to 5 (very good)]



Evaluation of the panel discussion on "Future Trends and methods to monitor them" [from 1 (poor) to 5 (very good)]



Overall grading of the event [from 1 (poor) to 5 (very good)]

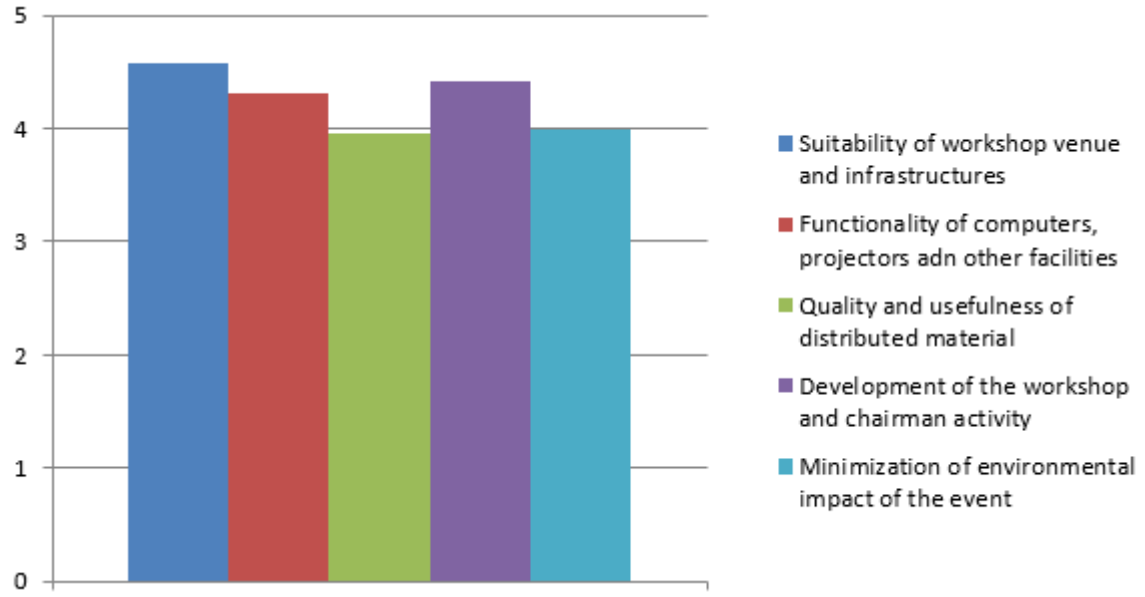


General evaluation

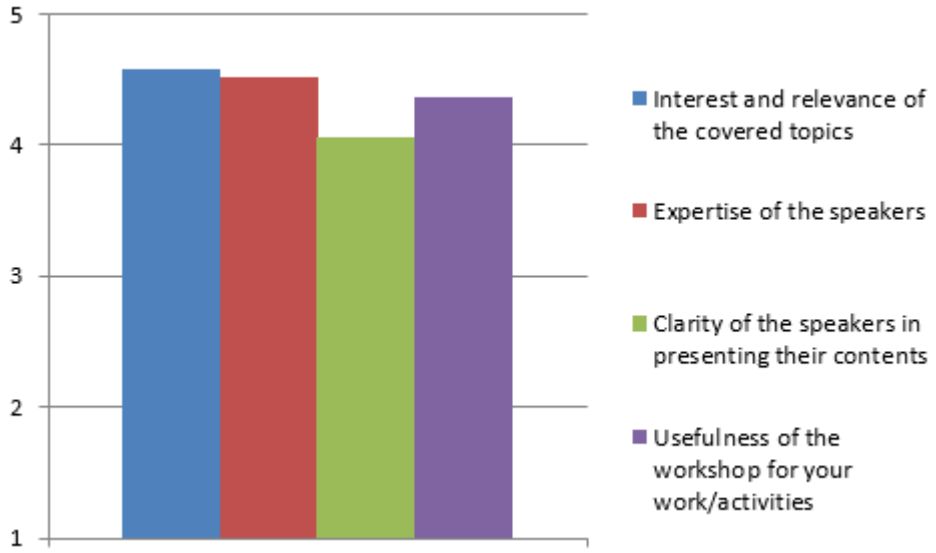
General evaluation	Yes
Would you recommend a next EO4GEO event to a friend/colleague of yours?	95%
Would you be interested to participate in evaluating and give contributions to the core deliverables of EO4GEO (the sector skills strategy, the Body of Knowledge, the EO curricula, the learning material, the long-term action plan, etc.)?	73%

Day 2	From work processes to curriculum design

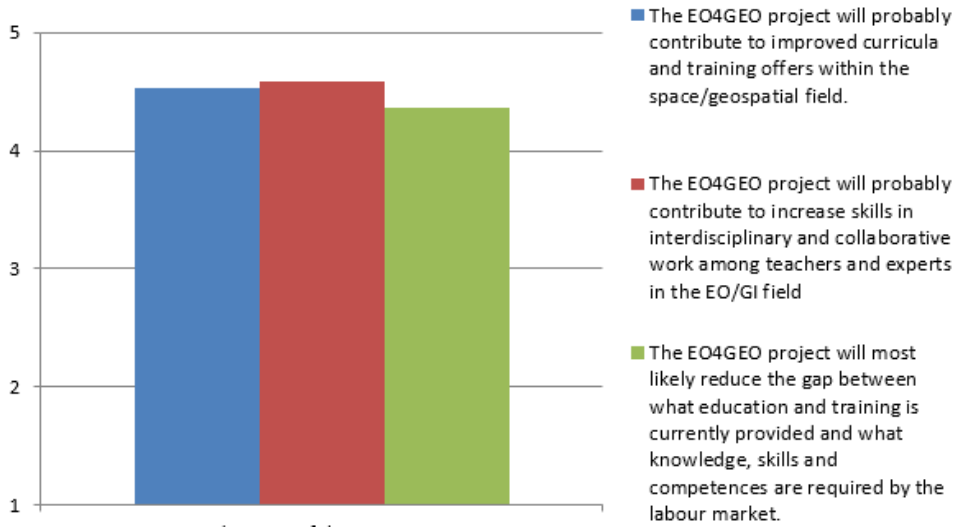
Organisational aspects [from 1 (poor) to 5 (very good)]



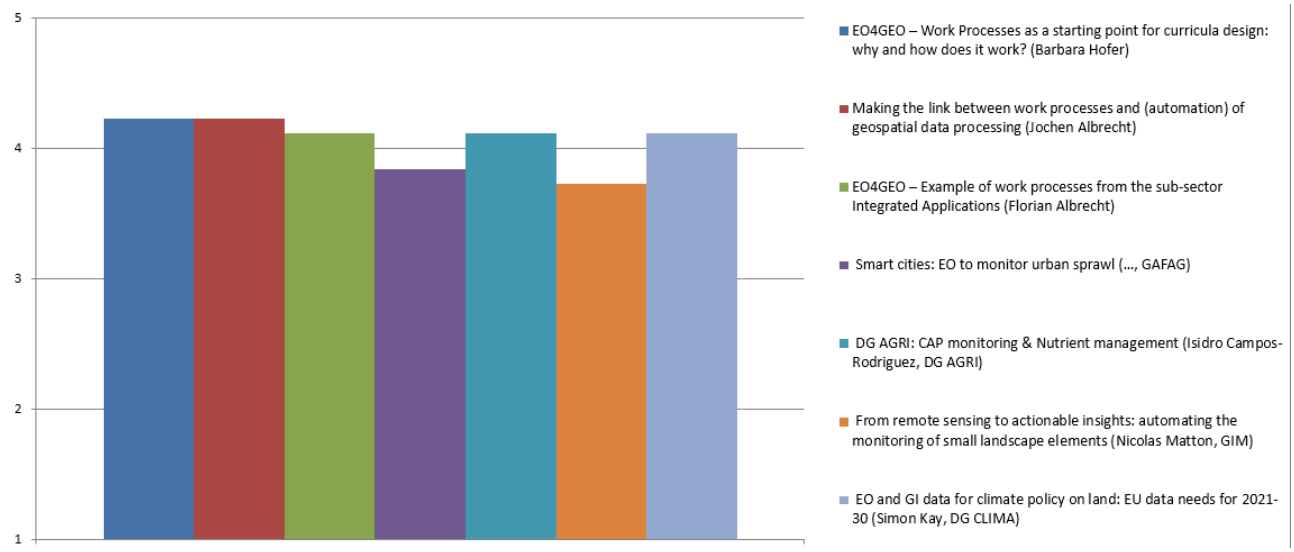
General contents of the programme [from 1 (poor) to 5 (very good)]



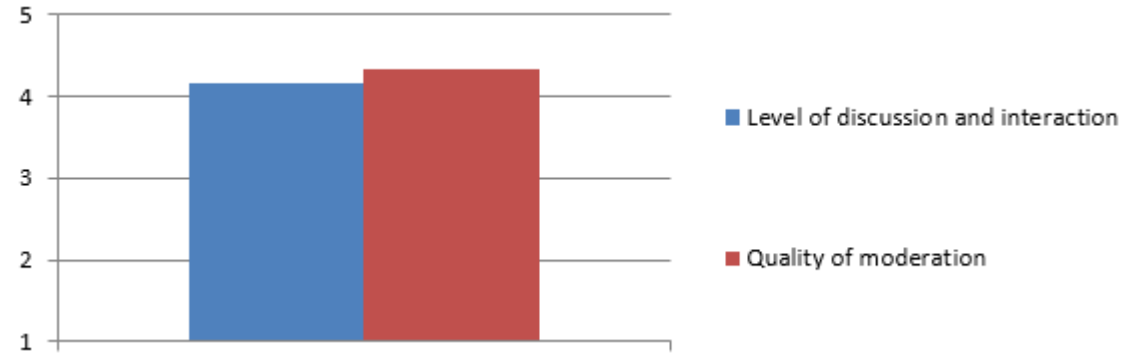
Expected impact of the EO4GEO project [from 1 (poor) to 5 (very good)]



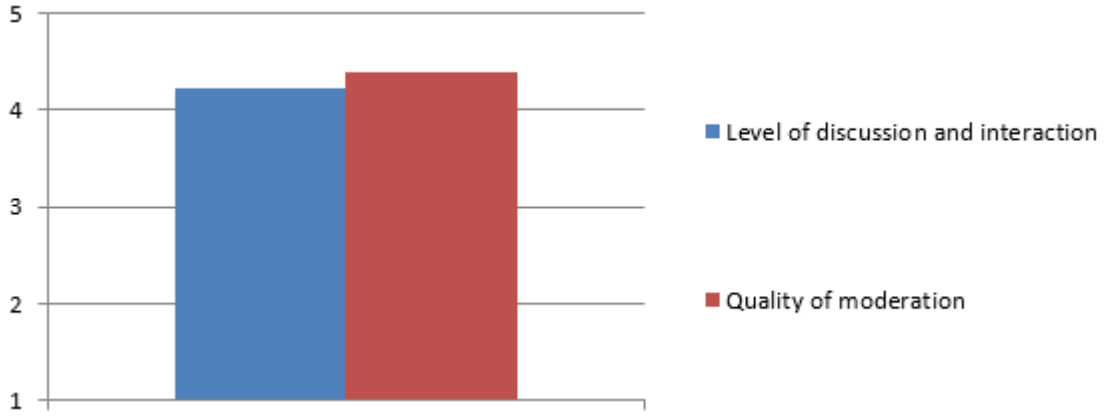
Evaluation of Thematic presentations [from 1 (poor) to 5 (very good)]



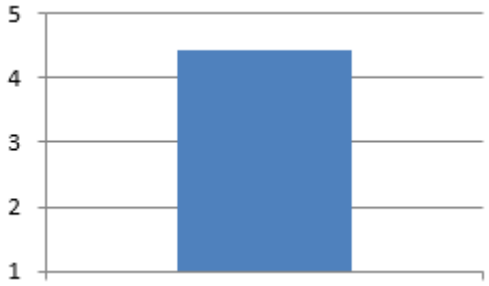
Evaluation of the breakout session [from 1 (poor) to 5 (very good)]



Evaluation of the panel discussion on "Future Trends and methods to monitor them" [from 1 (poor) to 5 (very good)]



Overall grading of the event [from 1 (poor) to 5 (very good)]

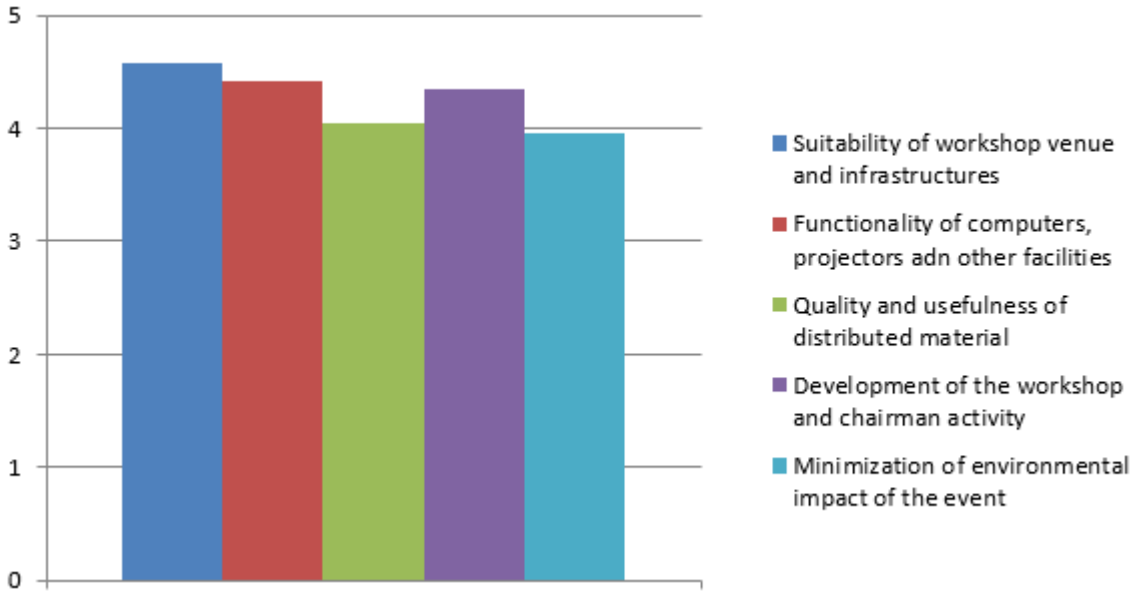


General evaluation

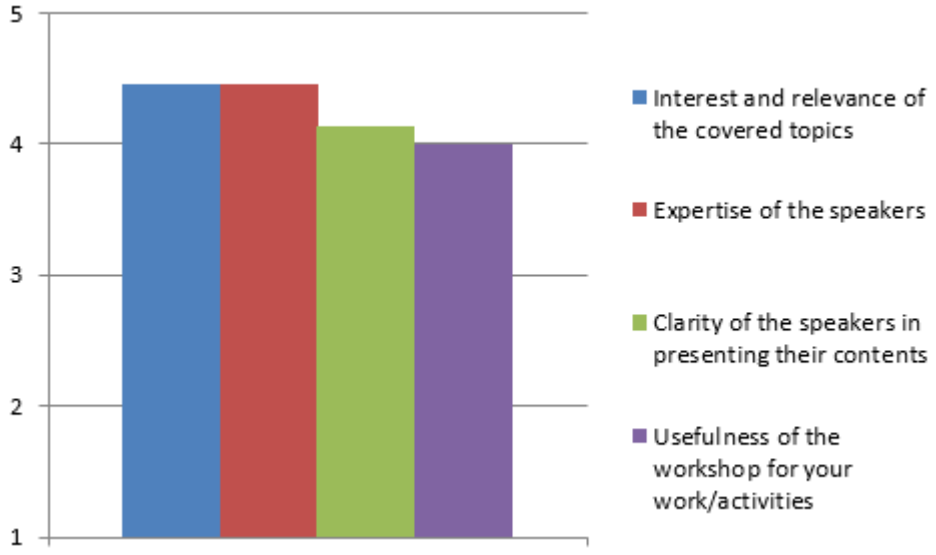
General evaluation	Yes
Would you recommend a next EO4GEO event to a friend/colleague of yours?	90%
Would you be interested to participate in evaluating and give contributions to the core deliverables of EO4GEO (the sector skills strategy, the Body of Knowledge, the EO curricula, the learning material, the long-term action plan, etc.)?	86%

Day 3	Towards a Space/geospatial Sector Skills Strategy

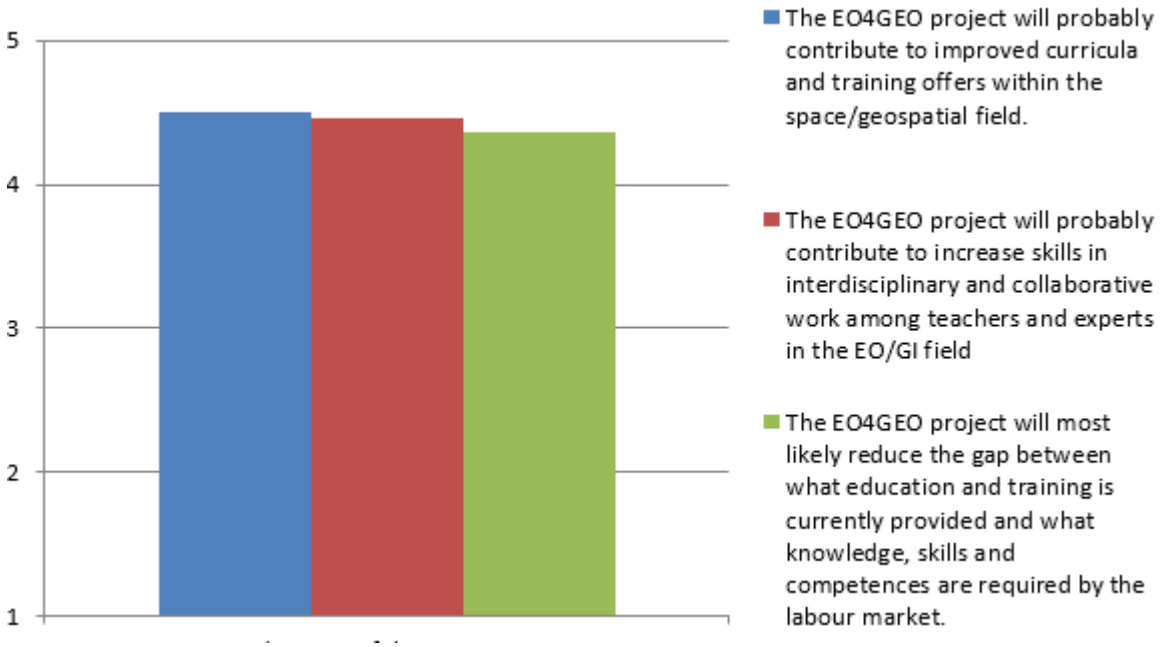
Organisational aspects [from 1 (poor) to 5 (very good)]



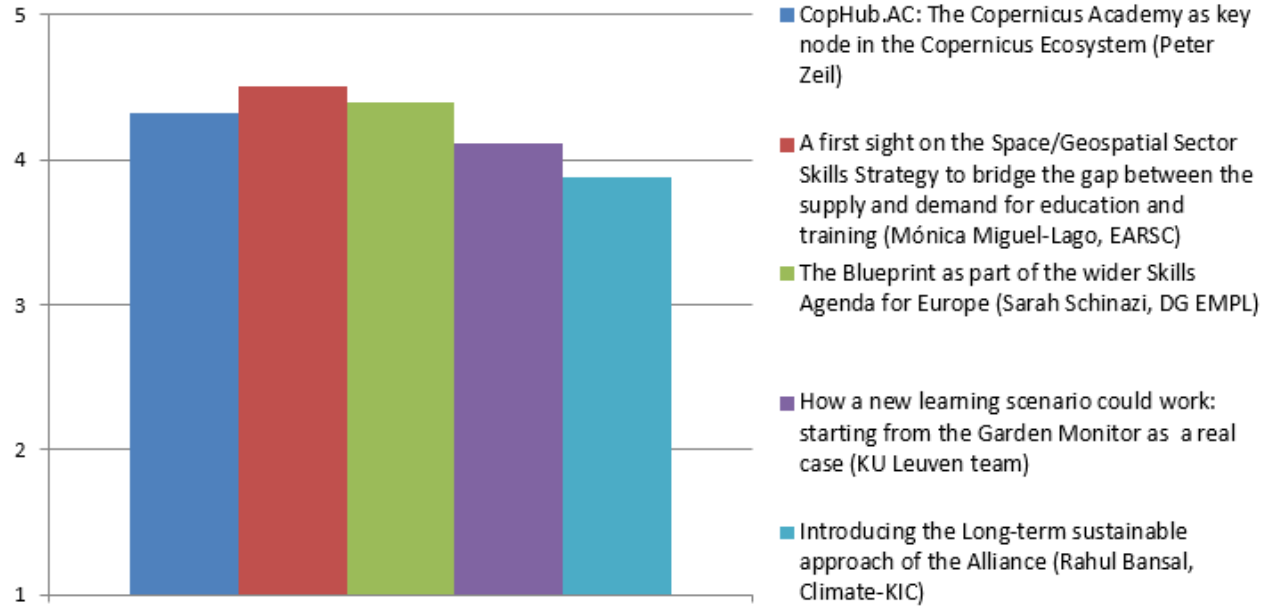
General contents of the programme [from 1 (poor) to 5 (very good)]



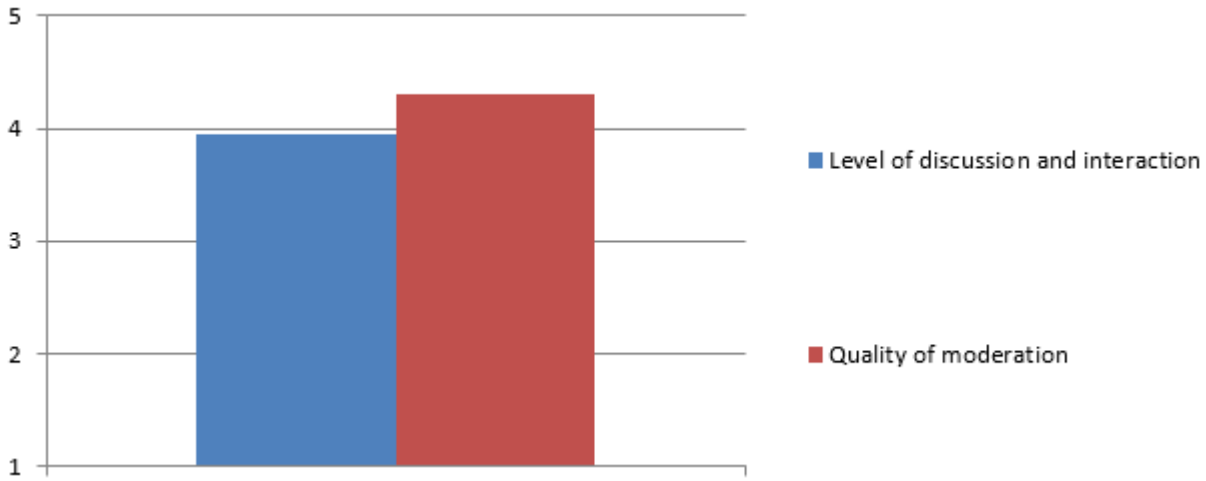
Expected impact of the EO4GEO project [from 1 (poor) to 5 (very good)]



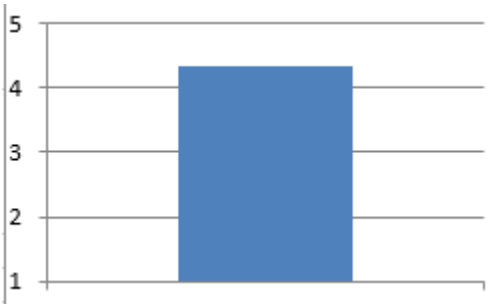
Evaluation of Thematic presentations [from 1 (poor) to 5 (very good)]



Evaluation of the panel discussion on "Space/geospatial Sector Skills Strategy" [from 1 (poor) to 5 (very good)]



Overall grading of the event [from 1 (poor) to 5 (very good)]



General evaluation

General evaluation	Yes
Would you recommend a next EO4GEO event to a friend/colleague of yours?	95%
Would you be interested to participate in evaluating and give contributions to the core deliverables of EO4GEO (the sector skills strategy, the Body of Knowledge, the EO curricula, the learning material, the long-term action plan, etc.)?	77%

2.3. EO4GEO High level capacity building Workshop, (Nouvelle-Aquitaine, FR)

07-08 October 2019 - Latresne (France)

Title: Training and education in GI and EO sectors

Objectives

In the framework of the EO4GEO project, an outreach workshop was organised by NEREUS and its local partner Aerocampus Aquitaine in Nouvelle Aquitaine (Latresne, France) on 7-8 October.

The aim of this workshop was to bring together the French stakeholder community (target audience) by fostering awareness about the project's objectives on better skills development and capacity building in the EO/GI field and by stimulating a debate amongst experts.

High level experts and speakers from a variety of organisations (educational centres, training organisations and aerospace centres, businesses active in the geo-information and space sectors) enriched the workshop with their valuable input about the current landscape of Copernicus data user uptake with real case scenarios. The speakers presented projects and activities engaged on the use of Copernicus in the downstream sector. More specifically, they demonstrated with concrete examples the benefits delivered for the local communities and identified needs of regional users.

The second day of the workshop was dedicated to a study tour to the facilities of the Aerocampus Aquitaine, an aerospace training campus with a view to tailoring and implementing training actions (vocational training, educational training or apprenticeship) to allow young people and adults to find new jobs in the aviation sector. Visiting the aviation training facilities and technical platforms for young students, participants had the chance to reflect more on the discussions about the training needs in the space sector on a wider spectrum.

List of participants

No.	Name	Surname	Organisation
1	Philippe	Lattes	Aerospace Valley
2	Benoit	Rivollet	In Extenso Innovation Croissance
3	Eric	HALLOT	Institut Scientifique de Service Public - Wallonie - Belgique
4	Emmanuel	Jauquet	Service public de Wallonie
5	Roya	Ayazi	NEREUSaisbl
6	Margarita	Chrysaki	NEREUSaisbl
7	Marie	Jagaille	GIS BreTel (IMT Atlantique)
8	Sagnik	Bhattacharjee	ECOTEN urban comfort
9	Pierre-Yves	Vion	AgroParisTech

No.	Name	Surname	Organisation
10	Philippe	Lattes	Aerospace valley
11	Antoine	Videau	Région Nouvelle-Aquitaine
12	Florence	GHIRON	CAPITAL HIGH TECH
13	Frédéric	Collomb	FDC

Agenda

Monday, 07th October 2019
Opening Session
Welcome by Director General AeroCampus Aquitaine, Jérôme Verschave
Short Introduction into the Workshop and "***Setting the stage***" by NEREUS SG Roya Ayazi and Magali Pages, AeroCampus Aquitaine
Impulse Presentation by Roya Ayazi (Secretary General, NEREUS) on behalf of EO4GEO: "***EO4GEO fostering the use of Earth Science data***" (introduction to the project and consortium; Problems and identified needs; Analysis of current status on supply and demand, skill shortages, gaps and mismatches; EO4GEO Sector Skills Strategy; EO4GEO next objectives: Design and development of a BOK and curricula for future applications; Future Long Term Action Plan.) Question & Comments
Session I: "Key skills and competences for future needs" Views by private sector: Industry, SME, companies of different sectors
Moderator: Jerome Darsouze, AeroCampus Aquitaine
"Inform and train: two links of the same chain", by Frédéric Collomb, FDC
Views by the private sector by Florence Ghiron (Capital HighTech)
Views by an entrusted entity (Fabrice Messal, Mercator Ocean)
"***Adaptation to the local training ecosystem***" by Benoit RIVOLLET, Innovation consultant Extenso Innovation Croissance
Session II: Experiences/Best-Practices by regional stakeholder
Views by regional stakeholder: aerospace cluster, regional networks, Copernicus-Relay, Copernicus-Academy
Moderator: NEREUS SG Roya Ayazi
"Analyse of the regional user's needs in local and regional authorities' (LRA), example in Brittany" by Marie JAGAILLE (GIS Bretel)
"Towards an enhanced use of Earth Observation by Walloon Public Services for the benefit of citizens" by Eric HALLOT, Institut scientifique de Service public (ISSeP) – Wallonie, Cellule Télédétection et Géodonnées,
«Working together to boost public sector EO awareness and use : integration in the Geomatic strategy» by Service public de Wallonie secrétariat général, Département de la Géomatique, Direction de la Géométrologie, Emmanuel Jauquet
"Copernicus Relay and Copernicus Academy: 2 experiences - Activities and challenges" (Pierre Yves VION, AFIGEO, AgroParisTech)
"Framework Partnership Agreement on Copernicus User Uptake (FPCUP): encouraging the use of space data", Frédéric Adragna, CNES
Closing remarks
Tuesday, 08th October 2019
Tour of AEROCAMPUS Aquitaine Facilities
End

Proceedings:

Workshop's proceedings are available on the web site: http://www.eo4geo.eu/workshop-nouvelle-aquitaine-fr/

Workshop outcomes

➢ **Recommendations to EO4GEO activities and Sector Skills Strategy**:

- To achieve better dissemination results, it is suggested to exploit the power of existing networks that outreach to the relevant community, in particular local and regional networks, e.g. Copernicus relay network, Copernicus Academy network and thematic networks;
- Copernicus Info-Sessions organised at Member States-level in the frame of the Copernicus-User-Uptake framework contract are a good model for general education/training on Copernicus towards different target groups;
- Start with education and training activities at an early stage/age; sensibilization of students and attracting next generation to space related studies and professions **should start latest at secondary school level;** France is well advanced on outreach/promotion of space towards high-school students, many programs funded by CNES (e.g. CANSAT-competition, teachers programs, special teaching material, etc.);
- Start at an early stage to sensitize users to define their needs; needs analysis and definition should go hand-in-hand with up-take and deployment of the system;
- Act local and regional: promote and inform at the regional and local level about EU-funded activities and programs and help to maximize the effect of public funded programs also for regional stakeholder;
- Participants jointly agreed that defined objectives of the Sector Skills Strategy are relevant and appropriate;
- In particular, the private sector highlighted that, when shaping and discussing educational programs and strategy, the increasing digitalization has to be taken into consideration;
- Participants questioned that there might be the right educational/training program/strategy to make optimal user of EO/Copernicus data; with massive data sets at EU-level and the rapid technological evolution e.g. artificial intelligence, Cloud technologies, Massive computational solutions. Next generation and user have more to be educated to have a set of abilities to develop smart ideas and solutions. There are no teaching programs to develop innovative ideas;
- With huge data sets and rapid technological development, profile of user changes, new user-groups, new business models, new user-approaches – this has to be reflected in capacity building and skills development;
- Participants highlighted specific education/training for public administrations shaped according to specific user-profiles and their specific administrative competence and responsibilities;
- EO/Copernicus deployment are often at regional and local level, therefore skills development and capacity building has to start at the local scale;

- Participants suggested to encourage cooperation between users, private sector, researchers, support structures in order to foster co-design and skills transfer from laboratories and companies to Local and Regional Authorities (LRAs);
- Representative of CNES presented Copernicus Herschel Framework Partnership Agreement and recommended that EO4GEO partnership liaises with successful bidders of education/training activities that are supported in the context of the partnership agreement;

➢ **Lessons learnt:**

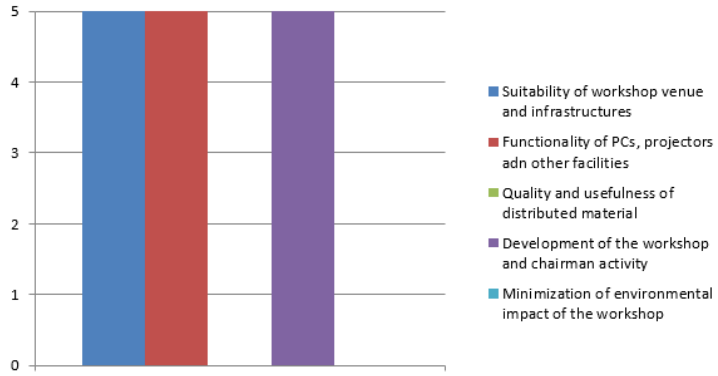
- Promotion of event towards French stakeholder community was challenging mainly because participants responded that there are too many activities in France, therefore less attention to EU-activities. NEREUS realized the wealth of important activities and programs in France for capacity building and skills development. In fact, France has a long tradition in education programmes in Europe therefore is active in many public outreach programs and activities; cooperation and networking with French stakeholder community could be very beneficial for the partnership;
- It is recommended to organise an additional outreach-WS in France but keeping in mind the following points:
    - bottom-up approach and broad promotion works less well in France; participants were either familiar network members and network community with whom NEREUS had worked previously or attracted through institutional contacts; French Copernicus-Relay and Academy Network showed extremely low level of interest; several Copernicus-relay and Academy members declined participation due to lack of travel funds;
    - It had been impossible to attract representatives from relevant French universities; in the future the EO4GEO partners need to go through university networks to attract French university community to activities of the partnership; NEREUS already started mapping and liaising with relevant university networks.

Quality evaluation

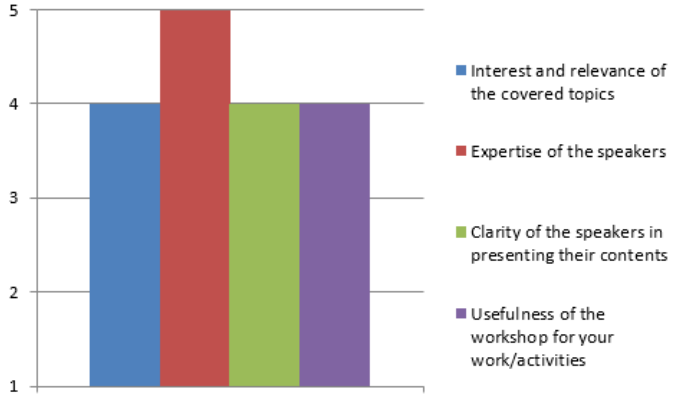
The workshop attendants were asked to evaluate the workshop with a questionnaire; the results of these evaluations were positive.

The following graphics show the average values of the answers. Not everyone answered all the questions.

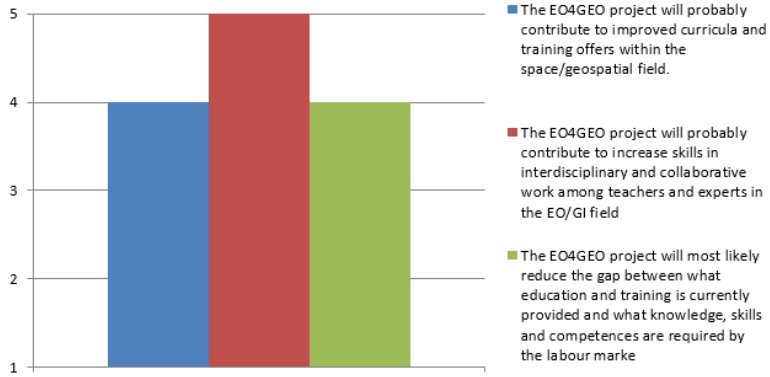
Organisational aspects [from 1 (poor) to 5 (very good)]



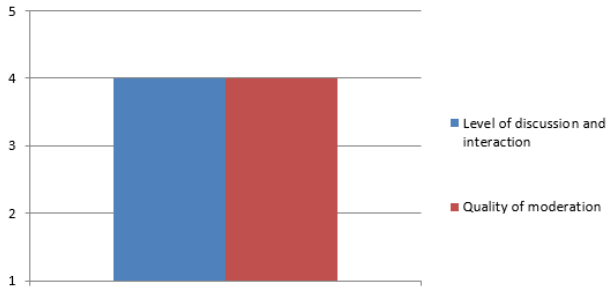
General contents of the programme [from 1 (poor) to 5 (very good)]



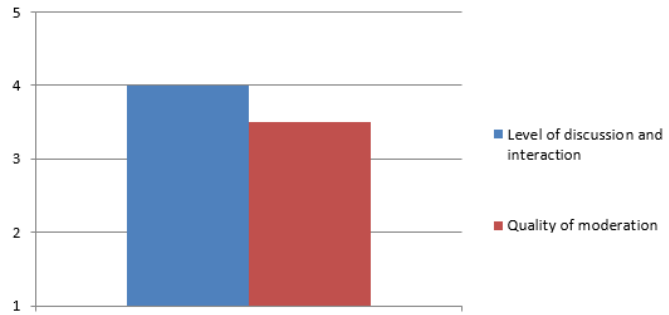
Expected impact of the EO4GEO project [from 1 (poor) to 5 (very good)]



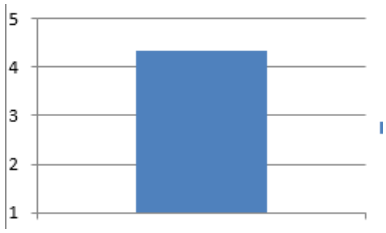
Day 1: Evaluation of the section "Key skills and competences for future needs" [from 1 (poor) to 5 (very good)]



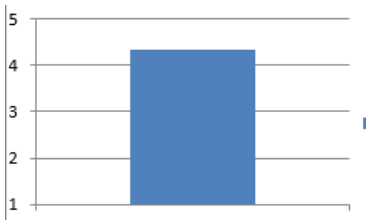
Day 1: Evaluation of the section "Experiences/Best-Practices by regional stakeholder" [from 1 (poor) to 5 (very good)]



Day 2: Overall grading of the tour of AEROCAMPUS Aquitaine Facilities



Overall grading of the event [from 1 (poor) to 5 (very good)]



General evaluation

General evaluation	Yes
Would you recommend a next EO4GEO event to a friend/colleague of yours?	10%
Would you be interested to participate in evaluating and give contributions to the core deliverables of EO4GEO (the sector skills strategy, the Body of Knowledge, the EO curricula, the learning material, the long-term action plan etc)?	35%

2.4. EO4GEO REGIONAL ROLL-OUT AT THE COMMITTEE OF THE REGIONS

24 October 2019 in Brussels/Region (Belgium)

Title: Better Skills for Space Geo-Information and Copernicus User Uptake

Objectives

On 24 October 2019, NEREUS organised under the auspices of Isabelle Boudineau, Vice-President of the Nouvelle-Aquitaine Regional Council, a high-level capacity building Workshop discussing the EO4GEO Sector Skills Strategy and its Recommendations at the European Committee of the Regions in Brussels.

The workshop had a special focus on regions and regional communities. It has the overall objective to promote the EO4GEO sector skills alliance towards representatives of European regions present in Brussels, regional stakeholder associations and university communities and to get their views on the initiative. Thus, it introduced the participants to the EO4GEO sector skills alliance, presented and debated the Sector Skills Strategy with particular focus on strategic stakeholders. In a nutshell:

- Raise awareness on the EO4GEO initiative: Introduction of EO4GEO Sector Skills Alliance to European regions, regional and universities communities present in Brussels;
- Promotion of the EO4GEO Sector Skills Strategy (SSS): Present the EO4GEO SSS to a European audience present in Brussels;
- Gather input and feed-back from the regional space and university community on the EO4GEO SSS;
- Presenting and discussing the Long-Term Action Plan and overall sustainability of the Blueprint Alliance;
- Learn more about approaches, best practices, methods at regional/national level to build develop EO/Geospatial capabilities etc.

The conference welcomed important keynote speakers (European Commission, European Space Agency and relevant associations) who shared their views in line with the deployment of the “Sectoral Cooperation Plan on Competence” – which aims to address shortages in key sectors – such as Earth observation or spatial geo-information.

A lively audience comprised of regional representatives, EU authorities, Brussels-based and other associations and students had the opportunity to join the discussion together with experts and policy makers. They debated on skills needed to strengthen the development of the EO/GI sector and ensure the improvement of qualified workforce contributing to an increased Copernicus user uptake.

List of participants

No.	Name	Surname	Organisation
1	MARIE	VAUGEOIS	Occitanie Europe
2	Cedric	Malfroid	EPPS
3	Education	department	Government
4	Claude	Dubus	IEI EUROPA
5	Maria	Okkonen	WHD
6	Jelizaveta	Gamalejeva	Eurideas
7	Ling	Ou Yang	EC
8	Giovanna	Cialdella	Apulia region (Italy)
9	Wilfried	Meganck	MFE
10	Mirko	Mazzarolo	Veneto Region
11	Marta	Aldegheri	Veneto Region
12	Luis	Estanqueiro	EUROAVIA
13	Jorgeq	Macho Azcarate	Thalassa Consulting
14	Alfredo	Sánchez Gimeno	Comunidad de Madrid - Brussels Office
15	Isabelle	Vandenplas	Isabelle Vandenplas sprl
16	Nathalie	LEROY	Adriano Muratori
17	Luis	Estanqueiro	EUROAVIA
18	Tairon Vinicius	dos Santos	exity
19	Martin	Ditter	European Space Agency
20	Marion	Bouvet	EARSC
21	Armand	BEUF	European Commission
22	André	Jadot	Eurosense
23	Jeroen	Vandeur	European Committee of the Regions
24	Vanja	Pavlović	Permanent Representation of the Republic of Croatia to the EU
25	Antoine	Videau	Région Nouvelle-Aquitaine
26	Bernard	PLANO	NEREUS
27	Stephane	Ourevitch	SpaceTec Partners
28	Bohdan	Yeromenko	eXity
29	Jean-Claude	BENECH	CNES
30	Giorgio	Saio	GISIG

31	Michal	Marchewka	Podkarpackie Region
32	Marion	Feurtey	Airbus
33	Jérôme	Béquignon	European Space Agency
34	Otylia	Trzaskalska	ESA
35	Mario	Parrot	European Commission Union R&D
36	Elena	Demattè	Veneto Region
37	Justyna	Róg	Podkarpackie Region(Poland)
38	Stefano	Spinaci	European Parliament
39	Antonella	Passarani	Marche Regional Office
40	Sara	Serafini	Marche Regional Office
41	Matias Francisco	Lobbi	Marche Regional Office
42	Elif	Hekimoglu	KU Leuven
43	Annie	Kazarjan	KU Leuven
44	Silvano	De Zorzi	Regione del Veneto
45	Felix	Rohn	European Commission
46	Bruce	Edwards	KU Leuven
47	Eleonore	Théry	KULeuven
48	Marco	Borghi	KULeuven
49	Wout	Verschaeren	KU Leuven
50	Wouter	Blokland	Ku Leuven
51	Antoni	Jeż	Marshal"s Office of the Podkarpackie Region
52	Yannick	Proto	Occitanie Europe
53	Graziana	Galati	EU Delegation - Emilia-Romagna Region
54	Aleksandra	Prandota	Mazovia Region Representative Office in Brussels
55	Christian	Hoffmann	GeoVille
56	Stefano	La Terra Bella	European Commission
57	Jeroen	Dries	VITO

Agenda

Thursday, 24th October 2019
Opening Session: Views of regional politicians from interested regions on ERASMUS+ and Education/Training in the Geo-information sector:
Welcome by **Isabelle BOUDINEAU (Vice-president of the Nouvelle-Aquitaine Regional Council, and President of the COTER committee at the CoR)** Introduction: "***Setting the stage***" (Introduction into workshop and its objectives, role of regions in EO4GEO, etc.) by **NEREUS-President Bernard Plano**

Introduction to the ERASMUS + Sectorial Skills Alliance: **the EO4GEO-partnership** (*Towards and innovative strategy for skills development and capacity building in the space geo-information sector supporting Copernicus user uptake*):
 	
▪ Impulse Statements by the **European Commission:**
  ▪ **Dinka Dinkova**, European Commission, DG Growth, Unit: Space Data for Societal Challenges & Growth
  ▪ **Felix Rohn**, European Commission, Directorate-General for Employment, Social Affairs and Inclusion, Unit E.2 – Skills and qualifications
 	
▪ **Presentation** of the **EO4GEO-partnership and its Sector Skills Strategy– by Jeroen Dries (VITO) on behalf of EO4GEO**

Dialogue with space community: Moderator: Roya Ayazi, NEREUS Secretary General ▪ Impulse Statement by the **European Space Agency (ESA)** – **Martin Ditter** ▪ **Debate with representatives of the space community**: Martin Ditter (European Space Agency-ESA), Andre Jadot (European Association of Remote Sensing Companies-EARSC), Luis Miguel Oliveira Estanqueiro (The European Association of Aerospace Students-EURAVIA), Sweety Pate (Young Professional in Space)
Concluding remarks
End of the event and Networking Coffee

Proceedings:

Workshop's proceedings are available on the web site: http://www.eo4geo.eu/workshop-brussels-be-24oct2019/

Workshop outcomes

- **General feedback**
  - Our society and economy depend on space and this dependence will grow driven by digital data. Algorithms, powerful computers and mathematics are needed to use space data. However, to go beyond the technical context and focus to the more competitive side of space, a more diverse skills, expertise and a know how approach will be needed, too;
  - The constant and very rapid adoption of new technologies (such as digitization), digital innovation (more and more companies invest on this) and the growing of Copernicus data (terabytes of data) contribute to the skills gap. To cover this gap, there is a need for training, especially in SMEs that have more limited means in terms of training supply and demand.
  - EO4GEO is an important alliance helping us to understand the future skills and maximising the benefits of the society. To identify the right skills and training material, EO4GEO guides specific actions to be taken by a diverse group of stakeholders in the academia, research or industry and identify new user communities;
  - EO4GEO can provide a better understanding of the needs of the companies and develop some tracks to build appropriate training programs. In support to this, a network of Copernicus academies and other pilot actions have yield important results, according to some speakers;
  - The EO4GEO project is fully in line with the deployment of the "Sectoral Cooperation Plan on Competence" - which aims to remedy skills shortages in certain key sectors - such as Earth observation or geo-information.

- **Lessons learnt**

The participants highlighted that:

- education/training/skills development for Local and Regional Authorities (Public administration) is vital so that they are capable to develop tender and define needs; Training programs should be tailor-made for administrative competences;
- the PAs need to understand how data are used and move beyond the pilot stage to the integration of this data to their services. Regions can benefit from the initiative and use it as a model project to learn and engage more for training and education in the use of geographic information and Copernicus.
- post-doc programs could be better exploited as transfer of competences to stimulate the development of innovative ideas and services in the private sector;
- it would be important for students at the earliest possible stage to get an idea of market requirements and understand how business works.

Final remarks

The transversality of the data needs also induces needs in terms of various skill combinations. EO4GEO must make it possible to identify how all these needs can be articulated in the service of the different sectors. The collaboration between the spatial geo-information and Earth observation sectors within the framework of the project should make it possible to recall the

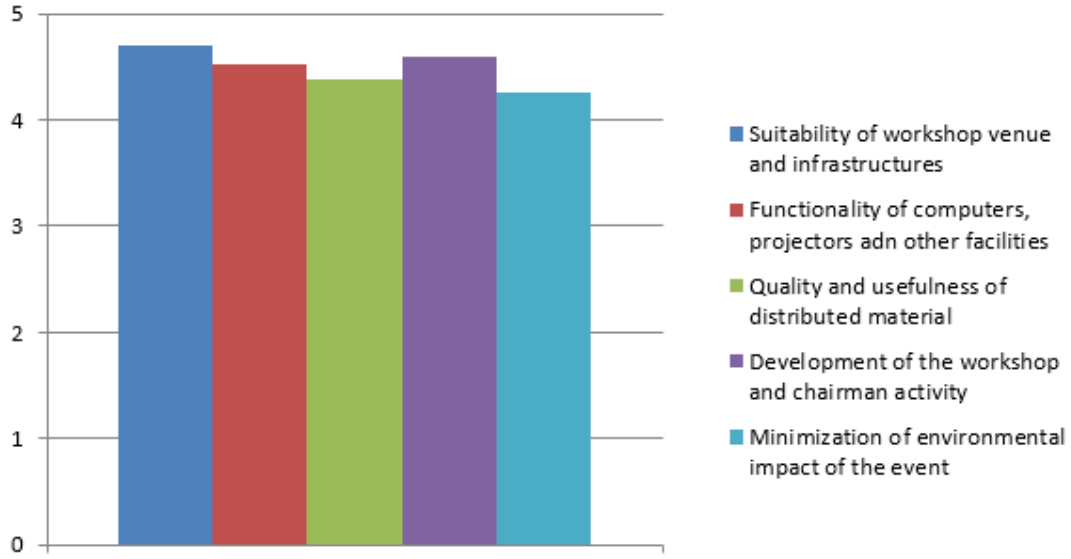
relevance of exchanges between public and private actors of different sectors: agriculture, maritime, energy etc., while encouraging synergies among other blueprint projects.

Quality evaluation

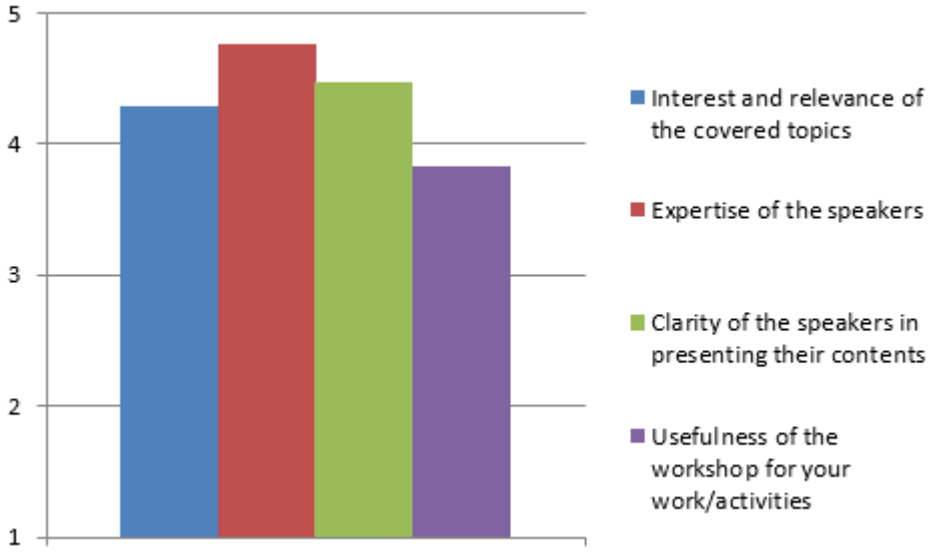
The workshop attendants were asked to evaluate the workshop with a questionnaire; the results of these evaluations were positive.

The following graphics show the average values of the answers. Not everyone answered all the questions.

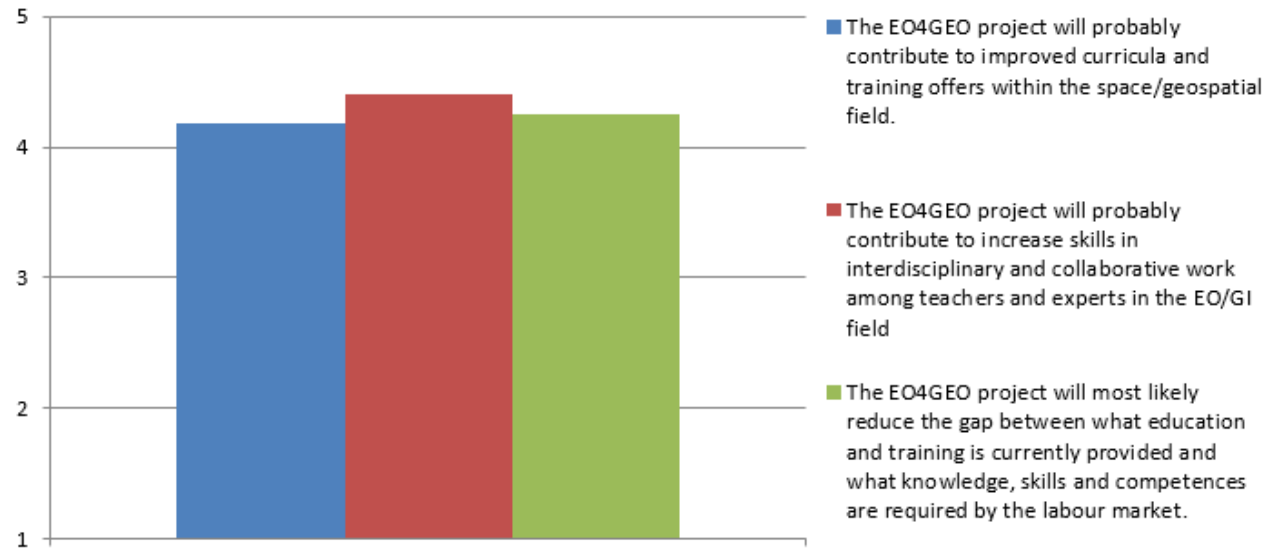
Organisational aspects [from 1 (poor) to 5 (very good)]



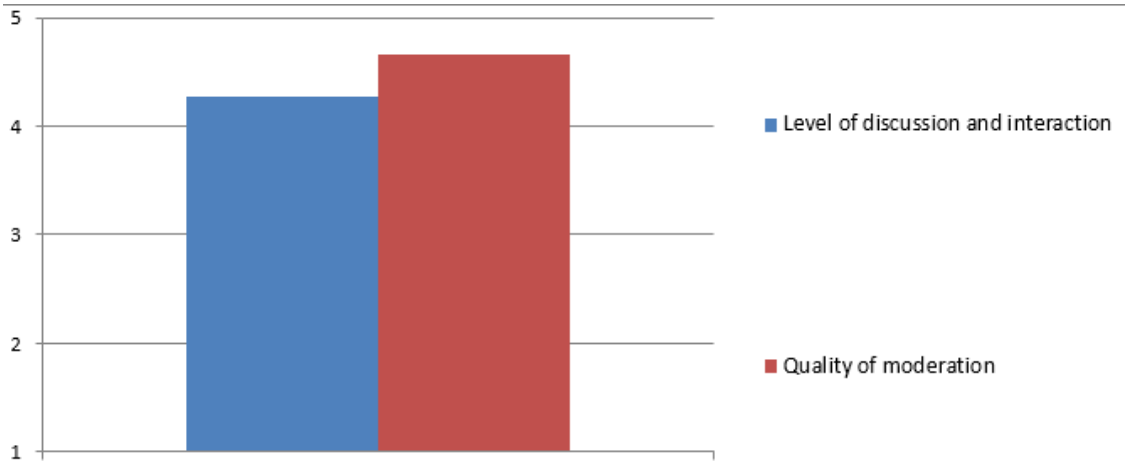
General contents of the programme [from 1 (poor) to 5 (very good)]



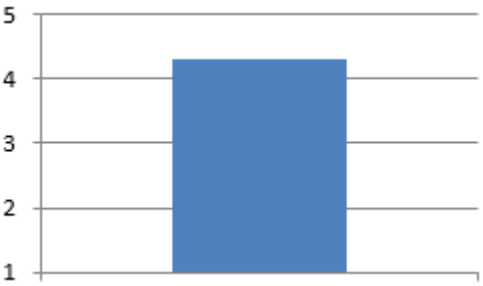
Expected impact of the EO4GEO project [from 1 (poor) to 5 (very good)]



Evaluation of section "Dialogue with space community"[from 1 (poor) to 5 (very good)]



Overall grading of the event [from 1 (poor) to 5 (very good)]



General evaluation

General evaluation	Yes
Would you recommend a next EO4GEO event to a friend/colleague of yours?	86%
Would you be interested to participate in evaluating and give contributions to the core deliverables of EO4GEO (the sector skills strategy, the Body of Knowledge, the EO curricula, the learning material, the long-term action plan, etc.)?	50%

2.5. DATA FOR GOOD - Joint Workshop UN Environment/GRIDs, EO4GEO project and City of Warsaw

26 November 2019 in Warsaw (Poland)

Title: Data for Good

Objectives

The main goal of "Data for Good" conference was to present and discuss the role of data in sustainable development. Information collected with different types of sensors or obtained through satellites, allows to more effectively protect the environment but also to support a sustainable economic growth.

List of participants

No.	Name	Surname	Organisation
1	Željko	Bačić	GEOF
2	Vesna	Poslončec-Petrić	GEOF
3	Andrija	Krtalić	GEOF
4	Valeria	Satriano	UNIBAS
5	Stefan	Livens	VITO
6	Arkadiusz	Kołodziej	Biuro Cyfryzacji Miasta
7	Milva	Carbonaro	GISIG
8	Agata	Hościło	IGiK
9	Margarita	Chrysaki	NEREUS
10	Robert	Kunicki	Biuro Cyfryzacji Miasta Warszawa
11	Marc	Olijslagers	KU Leuven

12	Giacomo	Martirano	EPSIT
13	Maria	Zdunowska	Biuro Infrastruktury Miasta
14	Daniela	Iasillo	Planetek
15	Mónica	Miguel Lago	EARSC
16	Ana	Kuveždić Divjak	GEOF
17	Dražen	Tutić	GEOF
18	Marijan	Grgić	GEOF
19	Mariapia	Faruolo	UNIBAS
20	Anders	Östman	NOVOGIT
21	Elzbieta	Wołoszyńska-Wiśniewska	UNEP-GRID
22	Alexandre	Caldas	UNEP-GRID
23	Pascal	Peduzzi	UNEP-GRID
24	Magda	Biesiada	UNEP-GRID
25	Christiane	Schmullius	UNI-JENA
26	Mario	Gomarasca	CNR-IREA
27	Kevin	Ramirez	CLIMATE-KIC
28	Bartłomiej	Kozek	UNEP-GRID
29	Emanuele	Barreca	CLIMATE-KIC
30	Karol	Spila	Student
31	Zuzanna	Nowotnik	Student
32	Maluina	Jackowska	Student
33	Natalia	Sadowska	Student
34	Justyna	Stepien	Student
35	Marta	Wanizyk	Student
36	Karol	Puchała	Student
37	Joanna	Szymczak	Student
38	Estefanía	Aguilar	UJI
39	Marek	Baranowski	IGiK
40	Robert	Olszewski	Warsaw University of Technology
41	Ewa	Janczar	Marshal Office of the Mazovia
42	Artur	Łączyński	GUS DR
43	Barbara	Hofer	PLUS
44	Marek	Błachnio	MU
45	Andreas	Kazantzidis	UPAT

46	Inese	Suija - Markova	VRI IES
47	Rob	Lemmens	UT-ITC
48	Martyna	Stelmaszczuk-Górska	FSU JENA
49	Daniele	Spizzichino	ISPRA
50	Alessandra	Vercillo	EPSIT
51	Lisa	Bilotti	EPSIT

Agenda

Registration
Opening by the representative of the City of Warsaw & Director of the UNEP/GRID-Warsaw
Global perspective, big data for sustainable development • Alexandre Caldas – Chief Big Data Branch, Science Division, UN Environment / Chair of the UN System Network of the UN-GGIM *United Nations System Network on geospatial information management - towards a United Nations Geospatial Blueprint* • Pascal Peduzzi - Director, UNEP/GRID-Geneva, Science Division, UN Environment *World Environment Situation Room* • Discussion
European perspective, COPERNICUS Programme • Milva Carbonaro – Geographical Information Systems International Group (GISIG) *EO4GEO - Towards an innovative strategy for skills development and capacity building in the space geo-information sector supporting Copernicus User Uptake* • Monica Miguel-Lago – European Association of Remote Sensing Companies (EARSC) *Building the skills of the EO sector embracing its trends & growth* • Discussion
Local perspective, big data for smart cities • Tadeusz Osowski – Director of Digitization Office, City of Warsaw *Data-driven development - the Digital Policy of the City of Warsaw* • Big data for smart cities (ORANGE) • Discussion
Final comments, end of the meeting

Proceedings:

Workshop's proceedings are available on the web site: http://www.eo4geo.eu/data-for-good-warsaw/

Workshop outcomes

The conference took place in the Palace of Culture and Science, Warsaw on 26 November 2019.

Panellists from United Nations Environment Programme, EO4GEO experts and representatives of the City of Warsaw, talked about practical use of data, but also rising awareness activities required to build digital society ready to explore data at their everyday activities. The data are sometimes called "new oil" of today. They are a starting point for the modern, information-based, innovative economy of the future. Information about the environment, in turn, can contribute to broadening public awareness of its condition, as well as direct effective activities of public and private institutions.

The key to the effective use of data is the coordination of collection and activities carried out on their basis - for example, in the United Nations system, as discussed in his speech by Alexandre Caldas, Chief Big Data Branch in the UNEP Science Division. This coordination is necessary to achieve the ambitious goal of directing people, places and the whole planet in a better future. Pascal Peduzzi, director of the UNEP / GRID-Geneva Centre, presented one of the practical tools for using data for the common good - the UNEP World Environment Situation Room, filled with dozens of datasets but also story-maps visualizing data in an easy way, with a goal to raise public awareness. During the event, Pascal Peduzzi drew attention to the fact that the transfer of knowledge contained in the data should influence also the social imagination. Data visualisation shouldn't be the end of the process. We must use psychological knowledge and show the tangibility of facts such as the floods in Venice or tropical forest fires.

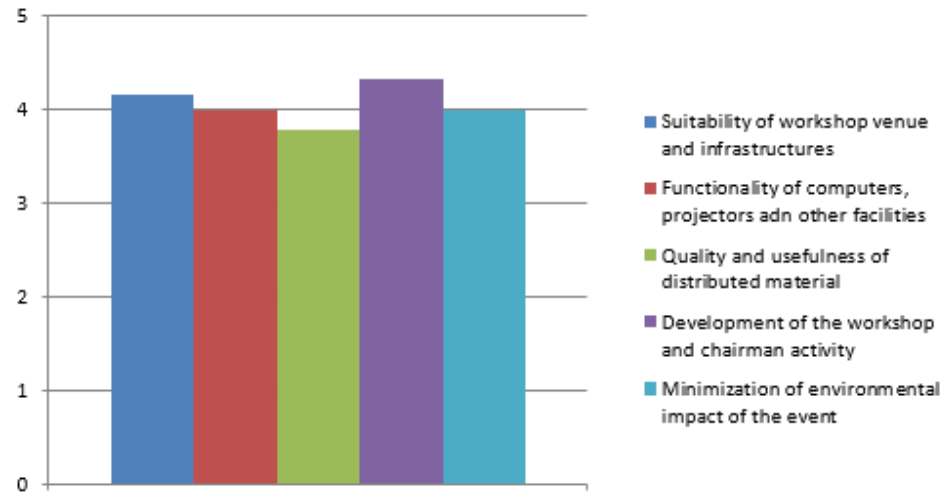
In turn, Monica Miguel-Lago from the European Association of Remote Sensing Companies [EARSC] showed participants how satellite data can serve the economy. As an example, she gave Greenland - a region of the world largely dependent on the ocean and how much ice floats in it at any given time. Representatives of the Digitization Office of the Capital City of Warsaw presented local government initiatives, such as the design of the urban digital transformation strategy and the Data in Warsaw service. Milva Carbonaro from the Geographical Information Systems International Group (GISIG) presented the assumptions of the EO4GO project, which was to map skills in the field of building smart cities, adaptation to climate change and integrated applications of geo-information applications.

Quality evaluation

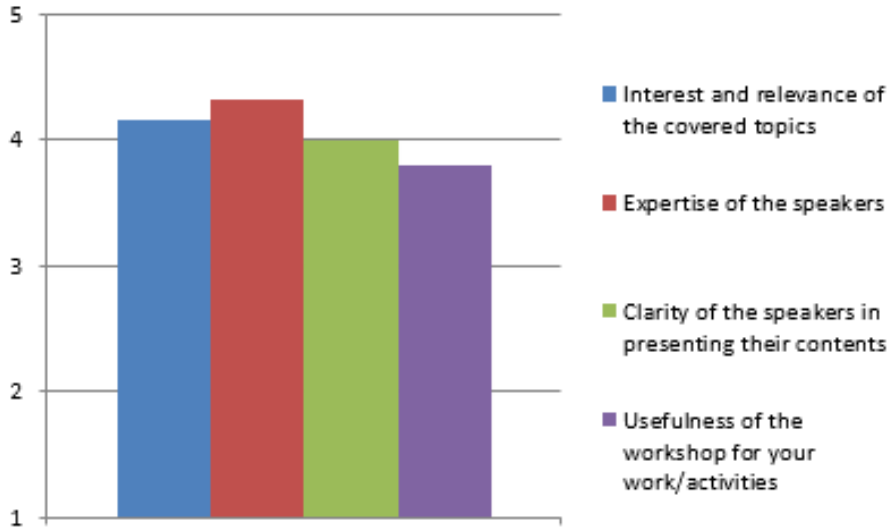
The workshop attendants were asked to evaluate the workshop with a questionnaire; the results of these evaluations were positive.

The following graphics show the average values of the answers. Not everyone answered all the questions.

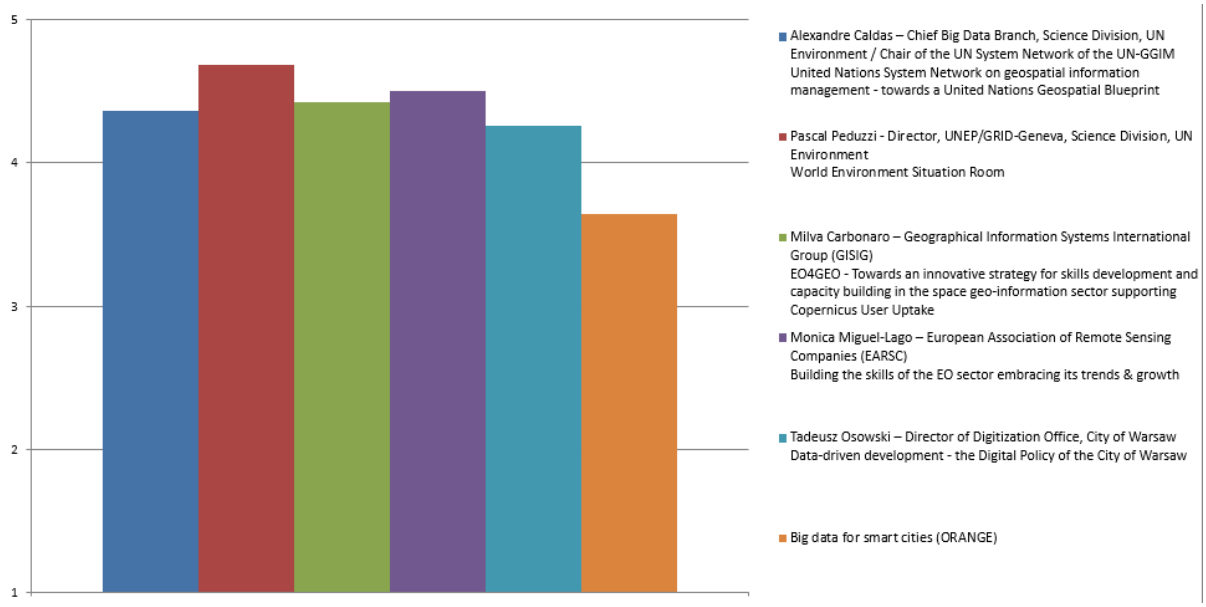
Organisational aspects [from 1 (poor) to 5 (very good)]



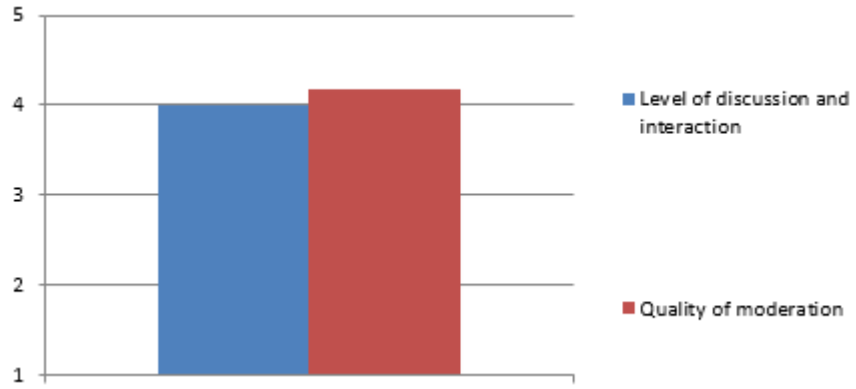
General contents of the programme [from 1 (poor) to 5 (very good)]



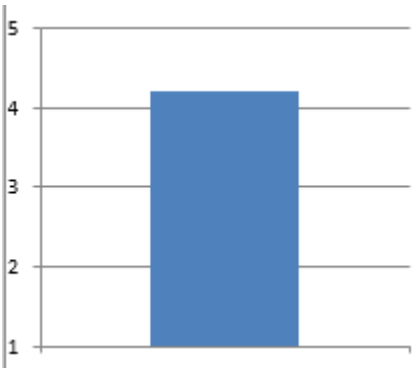
Evaluation of Thematic presentations [from 1 (poor) to 5 (very good)]



Evaluation of the breakout session [from 1 (poor) to 5 (very good)]



Overall grading of the event [from 1 (poor) to 5 (very good)]



General evaluation

General evaluation	Yes
Would you recommend a next EO4GEO event to a friend/colleague of yours?	95%
Would you be interested to participate in evaluating and give contributions to the core deliverables of EO4GEO (the sector skills strategy, the Body of Knowledge, the EO curricula, the learning material, the long-term action plan etc)?	59%

2.6. PARTICIPATION IN OTHER CONFERENCES

2.6.1. Copernicus "Eyes on Earth" Roadshow

24-25/09/2019, Rotterdam (Netherlands)

The event was attended by around 150 people, most of them students. In the stand of EO4GEO there were some visitors who reacted positively to the Body of Knowledge and wanted to know more about it and the other outcomes of the project. CLIMATE-KIC took the opportunity to present the project to few people during the networking spaces stressing the need to find experts for the BoK.

2.6.2. Copernicus "Eyes on Earth" Roadshow

03-04 October 2019, Tallin (Estonia)

On 3 and 4 October, IES represented the EO4GEO project and the consortium at the Copernicus “Eyes on Earth” roadshow in Tallinn, Estonia. The EO4GEO project was displayed in the exhibition which was attended by approximately 150 people, mainly university level students from the Baltic and Nordic countries. The overall objective of the event was to illustrate how the European Union's Copernicus satellite programme creates jobs and business opportunities and contributes to the tackling of different societal challenges. At the EO4GEO stand, the participants gained general information about the EO4GEO project, the expected results and possibilities for students to get involved in the upcoming course, mobility programs, and use of EO4GEO open tools, like the Body of Knowledge for EO/GI.

3. EO4GEO High level capacity building seminars and events in 2020

In the frame of the EO4GEO project, NEREUS is responsible for the organization of 5 high-level capacity building seminars (Task 7.5) focused on specific sectors and in relation with the best-tuned exploitation of the different learning contents produced. They are being organised and structured on the basis of the gap analysis and the profile of each target audience, looking into innovative formats while adopting inter- and multidisciplinary approaches. The 5 seminars branded NEREUS are being organised in collaboration with the network members in order to ensure a strong regional anchorage together with a broad geographic representation. The tentative locations, as indicated in the project proposal are: Brussels, BE (NEREUS); Ponta Delgada, PT (University of the Azores – Copernicus Academy); Latresne, FR (Aerocampus Aquitaine – Copernicus Academy); Matera, IT (Consorzio TeRN – Copernicus Relay); Warsaw, PL (UNEP/GRID – Copernicus Academy).

NEREUS would like to propose the concepts for the 2 high level capacity-building workshops for 2020, based on the outcomes of the workshop in Nouvelle Aquitaine and in Brussels and the ongoing discussions amongst partners. The aim of these seminars is double: on the one hand, they aim at presenting the Sector Skills Strategy with strategic stakeholders. On the other hand, the objective is to gather input with view to the Long-Term Action Plan and overall sustainability of the Blueprint Alliance.

In line with the network's mission to ensure a regional dimension to project's objectives, the first event wishes to look into the cross-sector impact of space data use in the region of the Azores. The strong agricultural and maritime sectors of the region will give the opportunity to the local community to discuss transversal future skills together with experts that will be able to bring concrete experiences of the value of design thinking, creativity and soft skills. The second workshop is targeted to the Polish community, and will be organised in the Region of Podkaparckie (with a preparatory workshop in Mazovia region targeted to the university community- students and academia). The first objective will be to present the Sector Skills Strategy to a Polish audience and gather input from the Polish business community.

Proposal for 2020

- Summer 2020: NEREUS and the University of the Azores (PT edition)
- Autumn 2020: NEREUS and Podkarpackie and Mazovia.

Theme	**Discussing the EO4GEO Sector Skills Strategy and its Recommendations: the private view (Polish edition)**	**Discussing the EO4GEO Sector Skills Strategy and the transversal future skills in the region of the Azores**
Organisers	NEREUS + Podkaparkie region	NEREUS + The university of The Azores
Contributors	European Commission	European Commission
Date	October 2020	June 2020
Place	Poland	The Azores

Objective	- Present the EO4GEO SSS ; - Gather input from the regional space community on the EO4GEO SSS ; - Raise awareness on the EO4GEO initiative .	- Share the progressive SSS by each BA, with a focus on issues related to rolling out the strategies; - Provide input to the Long-Term Action Plan for a sustainable EO4GEO.
Strategic audience	Podkaparckie private sector community and regional politicians Certification representatives	Local and Regional Authorities Academia Private sector
Format	Conference – 50 people	Conference – 50 people
Developed format	Conference, which includes the presentation of the EO4GEO SSS and focus on the debate with the audience in order to gather input and further understand how this could be taken into the regional strategies.	Conference, which includes the presentation of the EO4GEO SSS and debate with experts in order to further understand the challenges and potentialities at a local and regional level.
Budget	TBD	TBD

The events could be followed by a Space Dinner, in collaboration with the local partners.

4. Conclusions

The second year of the project was mainly dedicated to the revision and fine-tuning of existing platforms and tools and to the development of new innovative tools; moreover the revision of GI part and the development of the EO parts of the BoK continued; finally the identification of business processes and occupational profiles took place in the last part of the year.

The EO4GEO dissemination activities were focused on the involvement of the stakeholders as keynote speakers and/or testimonials and on their engagement (as expert) in the current and next phase of the activities.

The capacity-building seminars and EO4GEO events have been a unique opportunity to:

- consult experts in the field of EO,
- exchange ideas on the BoK and enhance its quality,
- contribute to the successful implementation of a sustainable skills strategy in EO/GI field,
- contribute to establish an active network of experts that will maintain the BoK during and beyond the EO4GEO lifespan,
- discuss the new technological and future trends watch,
- share and exchange ideas with the key decision makers with a special focus on the geospatial sector,
- analyse work processes to design matching curricula (with real world examples),
- for OGC members to get to know EO4GEO and for EO4GEO partners to get connected to an important network as OGC,
- do networking, valuable for the uptake of the EO4GEO output by the EO/GI sector,
- bring together the French stakeholder community (target audience) by fostering awareness about the project's objectives,
- stimulate a debate amongst experts,
- get valuable input about the current landscape of Copernicus data user uptake with real case scenarios,
- reflect more on the discussions about the training needs in the space/geospatial sector on a wider spectrum,
- discuss the EO4GEO Sector Skills Strategy and its recommendations at the European Committee of the Regions in Brussels,
- promote the EO4GEO sector skills alliance towards representatives of European regions present in Brussels, regional stakeholder associations and university communities and to get their views on the initiative,
- learn more about approaches, best practices, methods at regional/national level to develop EO/Geospatial capabilities etc.

Around 300[1] people attended the events, mostly from: government agencies, research organizations, universities, educational centres, training organisations, aerospace centres, businesses active in the geo-information and space sectors; European Commission, European Space Agency and relevant associations, regional representatives, EU authorities, Brussels-based and other associations and students, experts and policy makers.

As declared in the D7.4.1 (the report of the previous year) the aims of the two proposed seminars were double: on the one hand, they aim at presenting the Sector Skills Strategy with strategic stakeholders; on the other hand, the objective is to gather input with view to the Long-Term Action Plan and overall sustainability of the Blueprint Alliance. The main objectives were to present the Sector Skills Strategy to a French audience and gather input, and to ensure a regional dimension to European space policies and programmes, looking into the regional roll-out of the Sector Skills strategy.

The goal can be considered achieved.

[1] the average daily participation in the 3 days of the Earth Observation Summit is 50 people