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D5.8 – Feedback and lessons learned

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Work package / Task:

WP5 - Testing and validating the strategy based on case-based learning scenario's in 3 sub-sectors

T5.6 - Feedback and lessons learned from the testing and validation

Short Description:

Feedback compiled from the testing and validation of implemented training measures in the form of achievements and challenges with recommendations for the long-term action plan.

Keywords:

evaluation, training offer, online training, trainer, knowledge transfer, skill transfer, quality assessment

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)	

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Executive Summary

This report present activities conducted under the "Feedback and lessons learned from the testing and validation" task in the framework of the EO4GEO project. It's main objective was to provide feedback compiled from the testing and validation of implemented training measures in the form of achievements and challenges with recommendations for the long-term action plan.

One of the main objectives of this task was to evaluate effectiveness and efficiency of the Training Actions, as well as assess their impact, relevance and sustainability. To achieve this goal, every Training Action was followed by detailed questionaries both for participants and the trainers. In total, 25 Training Actions have been developed and organized under the EO4GEO project, with more than 1,400 participants from all over the world, of whom more than 500 have completed the evaluation questionnaires (~36%).

Most respondents were satisfied with the organisation and the technical features of the Training Actions and almost all of them would recommend the next EO4GEO Training Action to a friend. On average, they rated their satisfaction with the Training Action as 4.47 out of 5. The participants agree that the Training Actions raised their interest in the topic, provided training material was useful and case studies added high value to the course. They also find knowledge and skills received with Training Actions as valuable to their work/future career or studies, which confirms the effectiveness of the actions. However, from the trainers point of view the challenging task was getting a satisfactory level of participants engagement during Training Action.

Based on the Training Actions evaluation and discussions between project partners during EO4GEO Subsector intermediate results workshop, it was possible to establish recommendations for the long-term action plan, in the form of recommendations for people responsible for developing and implementing Training Actions and Training Materials. They can be split into three different categories, related to the phases of developing and implementing Training Actions: content preparations, registration process and implementation.

In order to assess the testing and validation phase even more effectively, two summer schools were organised to provide a comprehensive training including group work. Both Summer Schools successfully based their training approach and material on EO4GEO materials and tools, such as the Body of Knowledge and Curriculum Design Tool, proving the usability and reusability of tools developed by the EO4GEO Alliance.

Despite the difficulties that emerged with the pandemic, new opportunities have arisen from the better use of online resources. Results obtained from all of the sub-sector exceeded expectations and projections, both in terms of quality of the Training Actions and in number of participants. This outcome has been achieved even despite the COVID-19 crisis that had affected most aspects of the Training Actions development and implementation.

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Acronyms

Acronym	Description
AI4EO	Artificial Intelligence for Earth Observation
BoK	Body of Knowledge
EACEA	Education, Audio-visual, Culture Executive Agency
EO	Earth Observation (incl. Meteorology)
EO*GI	EO and GI sectors
EU	European Union
GEOF	Faculty of Geodesy, University of Zagreb
GI	Geographic Information
GIB	Geografiska Informationsbyrån AB
ICT	Information Computer Technology
KU Leuven	Catholic University of Leuven
LPAs	Local Public Administrations
PLUS	Paris Lodron University of Salzburg
SpaSe	Spatial Services
TA	Training Actions
UHI	Urban Heat Island
UNIBAS	University of Basilicata
UPAT	University of Patras
WP	Working Package

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.
- **Earth Observation (EO) related services** is any geo-spatial information service activity which in some way involves data coming from EO satellites (including meteorological satellites) i.e. any satellite with one or more sensors that measure parameters coming from the earth's surface or atmosphere. The involvement may be direct i.e. processing or distributing imagery or indirect i.e. consultancy based around knowledge of the imagery or its use. It starts from the point where imagery is transmitted to the ground, so it does include reception and processing of imagery but does not include construction of ground stations or the satellites delivering the data. Note that it includes all geo-spatial information services activities where satellite EO data has been used and so extends to downstream information processing of geospatial information where data being used has been derived from EO imagery possibly in combination with other data types.
- **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.
- **Geographical Information System (GIS)** is a computerized tool designed for storing, analysing and consulting data where geographic location is an important characteristic or critical to the analysis.
- **Information and communication technologies (ICT)** are the infrastructure and components that enable modern computing.
- A **Course** is a unit of teaching, a set of lectures or a plan of study on a particular subject, usually leading to an exam or qualification. This unit can be used for teaching theoretical as well as practical content; depending on the specific subject of the course and its theoretical or practical nature the assessment of learners is done with an exam or through the assessment of assignments.
- **Knowledge** means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices related to a field of work or

study. In the context of the European Qualifications Framework, knowledge is described as theoretical and/or factual.

- **Learning** is the process by which an individual assimilates information, ideas and values and thus acquires knowledge, know-how, skills and/or competences. (Source: Cedefop, 2008) Learning occurs through teaching (from a perspective of teacher, fasilitator) / learning (from perspective of learner, trainee) activities such as reading, reflecting, practising, networking, discussing, problem solving etc. It may take place in formal (in an organised and structured environment), non-formal (embedded in planned activities not explicitly designated as learning) or informal.

- A **Module** is a collection of courses grouped because courses are runned over the same year or semester, or tackle the same topic.

- **Skill** means the ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the European Qualifications Framework, skills are described as cognitive or practical skills.

- **Training** is the organized activity aimed at transmitting and receiving information and/or instructions to improve the recipient's (learner, trainee) knowledge and/or skill. Methods of imparting training are, for example, on-the-job training (development through performance), case-based methods (analysis of an actual situation), knowledge-based methods.

1. Introduction

1.1. EO4GEO project

EO4GEO is an **Erasmus+ Sector Skills Alliance** gathering **25 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 geoinformation sector. The project is also supported by a strong group of Associated Partners mostly consisting of associations or networks active in space geoinformation domain. The project started on January 1st, 2018, upon approval by the EU Education, Audiovisual and Culture Executive Agency (EACEA) and runs over four and a half years.

EO4GEO **aims to help bridging the skills gap in the space geoinformation sector** by creating a strong alliance of players from the sector/community reinforcing the existing ecosystem and **fostering the uptake and integration of space geoinformation data and services**. EO4GEO works in a **multi- and interdisciplinary** way and applies 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 defines a long-term and sustainable strategy to fill the gap between supply of and demand for space geoinformation education and training taking into account the current and expected technological and non-technological developments in the space geoinformation and related sectors (e.g. ICT). The strategy is being implemented by: creating and maintaining an ontology-based Body of Knowledge for the space geoinformation 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 is being 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

The scope of work package 5 is testing and validating the (EO4GEO) strategy based on case-based learning scenarios in three sub sectors. The three sub sectors are “Integrated Applications”, “Smart Cities” and “Climate Change”.

The work package specifies curricula based on case-based scenarios for the sub-sectors, and tests and validates them in concrete training actions. These training actions included on-the-job training like webinars and workshops but also (academic-) courses and summer schools. In this context remote sensing and related techniques were considered as supporting or horizontal competencies needed for conducting the case-based scenarios. The training actions were prepared in detail by mixed task forces. Each training action is complete in terms of learning objectives and content and thus is independent. This assures that in a single training action a complete lesson is learnt, and well-defined learning outcomes are achieved. Nonetheless, the different training actions are part of learning paths that link them to related training actions. Trainees can choose a learning path that guides them through training actions that are relevant for their interests.

The space geoinformation sector and the education/training providers worked closely together to prepare, conduct, and evaluate the training actions. Testing and validation were performed by involving the education/training providers, the space geoinformation industry and public sector players, the end-users of the Alliance and other relevant stakeholders.

Case-based learning

Case-based learning starts from ‘real-world’ problems or scenarios, rather than from the ‘solutions’ or supporting technologies. Training action participants learn to analyse a problem, explore how GI and EO techniques can be used for a solution and more particularly how Copernicus data and information can help in the particular case. This approach allows to demonstrate how to support different users and different types of usage. The selection, acquisition, and preparation of the GI and EO data, their (pre)processing and integration, and their transformation into information readily usable for problem-solving are important parts of the teaching/learning process.

1.3. Objectives of the task

Task on feedback and lessons learned from the testing and validation covers two main objectives:

1) Test and validate implemented Training Actions,
2) Provide the necessary input to help defining the Long-term Action Plan.

The testing and validation was performed by involving the education/training providers, the space geoinformation industry and public sector players, the end-users of the Alliance and other relevant stakeholders. It outlined achievements and challenges of the EO4GEO approach.
In order to assess the testing and validation phase even more effectively, the organization of two summer schools provided a comprehensive training including group work to test and validate the usability and reusability of the curricula and training materials in other settings.

Task on feedback and lessons learned from the testing and validation consisted of the following activities:

- Accompany and advise the design and implementation of the training actions in the three sub-sectors with the objective to ascertain the impact of EO4GEO in regard to the sector skills strategy
- Evaluate effectiveness and efficiency of the actions
- Assess the impact, the relevance and the sustainability of the actions
- Design and organize (joint effort of the consortium) two Summer Schools linking sub-sector scenarios to further explore cross-fertilization between space and geospatial applications to address skills gaps
- Compile extensive feedback for the definition of the Long-term Action Plan.

1.4. Purpose of the document

The purpose of the document is to briefly present activities conducted under the ”Feedback and lessons learned” task. It’s main objective is to provide feedback compiled from the testing and validation of implemented training measures in the form of achievements and challenges with recommendations for the long-term action plan.

1.5. Structure of the document

This report consists of six sections. The **introduction** part (chapter 1) is followed by **training actions evaluation** (chapter 2) which describes evaluation process and its results. The third chapter provides an overview of the **summer schools** conducted under reported task, whereas chapter 4 covers **feedback** compiled from the testing and validation of implemented TAs. **Recommendations for the long-term action plan** are described in chapter 5, with report **conclusions** in chapter 6.

The report also includes an **appendix** with evaluation questionnaires for participants and trainers.

2. Training Actions evaluation

One of the main objectives of this task was to evaluate effectiveness and efficiency of the Training Actions, as well as assess their impact, relevance and sustainability. To achieve this goal, every TA was followed by detailed questionnaires both for participants and the trainers. The evaluation results provide also qualitative project indicators, feedback from students and feedback from invited speakers.

The evaluation methodology is described in chapter 2.1. Analysis of the results of the surveys are described in chapters 2.2 and 2.3, whereas the evaluation questionnaires for participants and trainers themselves are in annex 7.1-2.

In total, 24 Training Actions have been developed and organized under the EO4GEO project, gathered in three sub sectors: “Integrated Applications”, “Smart Cities” and “Climate Change”, along with two Summer Schools, organized to assess the testing and validation phase even more effectively. More than 1,400 participants from all over the world have attended EO4GEO Training Actions, of whom more than 500 have completed the evaluation questionnaires (~36%). An overview of the implemented Training Actions can be found in table 1, with information about the TA’s type, responsible partner and number of participants.

During the project, different types of training actions were developed with varying nature, including on-the-job training like webinars and workshops but also (academic-) courses and summer schools. Training Actions such as webinars were expected to bring together a larger number of participants because of the easy-to-access and short format than for example project work or summer school.

Table 1 Training Action overview

Subsector	Training Action	Partner	Type of TA	Participants
Integrated Applications	Landslide affecting Cultural Heritage sites - Roman Thermae of Baia	ISPRA	OOC	11
	Observing from space agriculture and environment	UJI	Workshop	31
	Change detection using EO data	ROSA	Academic course	1st: 10 2nd: 15
	Optical Earth observation data for landslide risk management	PLUS	Workshop	22
	The rise of Artificial Intelligence for Earth Observation	Planetek	Webinar	275
	WP7: A new Common Agricultural Policy (CAP) based on Copernicus program and EO4GEO tools	CNR-IREA	Webinar	80
	Fast disaster response – satellite technologies for surface displacement monitoring	GEOF	Webinar	77
	Partner TA: Usability of EO+IoT+GIS data in agriculture	IGEA	Webinar	45
Smart Cities	Identification of local heat islands to support city planning	GIB, EPSIT	Webinar	82
	Evaluation and planning of urban green structures	GIB	Webinar	21
	Evaluation and planning of urban green structures	GIB	Webinar	14
	Improving sustainability of cities to storm and water	GIB (FSU-EO)	Project work	1
	Smart cities, UHI and urban green (preparing for workshop), Swedish	GIB	Webinar	10

	Smart cities, UHI and urban green (WS with a technical focus and more hands on work), Swedish	GIB	Workshop	8
Climate Change	Air quality monitoring and management	UPAT	Webinar	156
	Air quality monitoring and management (e-shape)	UPAT	Workshop	46
	Solar potential maps at municipality level (Hybrid event)	UPAT	Webinar	~ 200
	CO2 budgets for municipalities	NOVOGIT	OOC (without "M")	13
	Early warning for disease epidemics at regional level	UPAT	Webinar	122
	EO for urban greenery management	UNEP-GRID	Webinar	54
	Spark! - Earth Observation and Geographic Information: a crucial tool to monitor and tackle climate change	Climate-KIC	Workshop	80
	Partner TA: Active fire detection with Sentinel-3	Serco	Webinar	39
Summer Schools	Introduction to Satellite Remote Sensing (on the Website after the TA)	UNIBAS / UNEP-GRID	Summer School	21
	Intelligent Earth Observation	PLUS / UNEP-GRID	Summer School	20

2.1. Methodology

Evaluation of training actions by participants and trainers was run in parallel. Trainers had one common questionnaire to fill, each training action had its own one for participants, however very similar and based on the same pattern (questions, Microsoft forms utilization).

At the very beginning of the project questionnaires were prepared, discussed and accepted among the project partners. This was to establish a solid base for the future training action questionnaires, as well as to establish a final version of the questionnaire for trainers. Questionnaires were prepared using the Microsoft Forms online platform, in order to easily distribute them among the interested parties.

Before each and every training action, the questionnaires for participants were distributed to organizers. If they reported some issues resulting from the character of the training action, questionnaires had the possibility to be slightly customized for the purposes of a particular training. Training action organizers later forwarded the questionnaires to their participants and responded to the questionnaire for trainers themselves. The results were collected and put on the Moodle platform in the form of an excel file.

At the end of the TAs evaluation process, averages were calculated from the closed questions and conclusions were drawn from the open questions. Details on the assessment of achievement of learning outcomes can be found in chapter 2.4.

2.2. Participants evaluation

2.2.1. Demographic data

During the evaluation process, demographic data like age, gender, country and occupations were gathered. They have been summarized in the form of charts for all sub-sectors (fig. 1 - 4). From more than 1,400 participants from all over the world that have attended EO4GEO Training Actions, more than 500 (N=531) have completed the evaluation questionnaires (~36%). Regarding data on the country, the number is smaller (N=517), because the question was open-ended (not list-based) and the respondent's answer could not be determined in some cases.

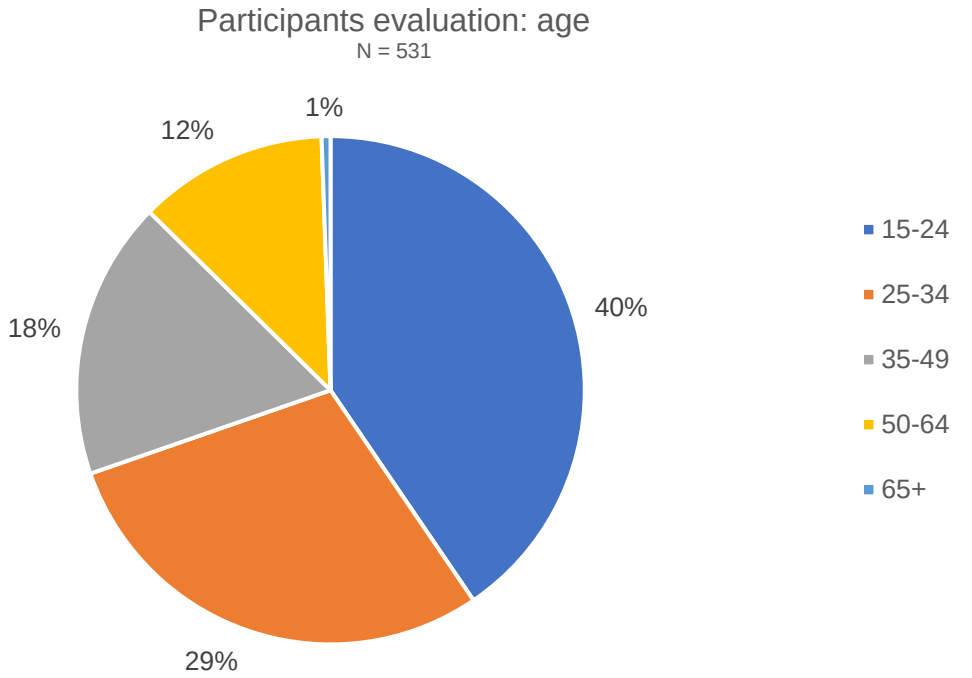

Figure 1 Results from Participants evaluation: age

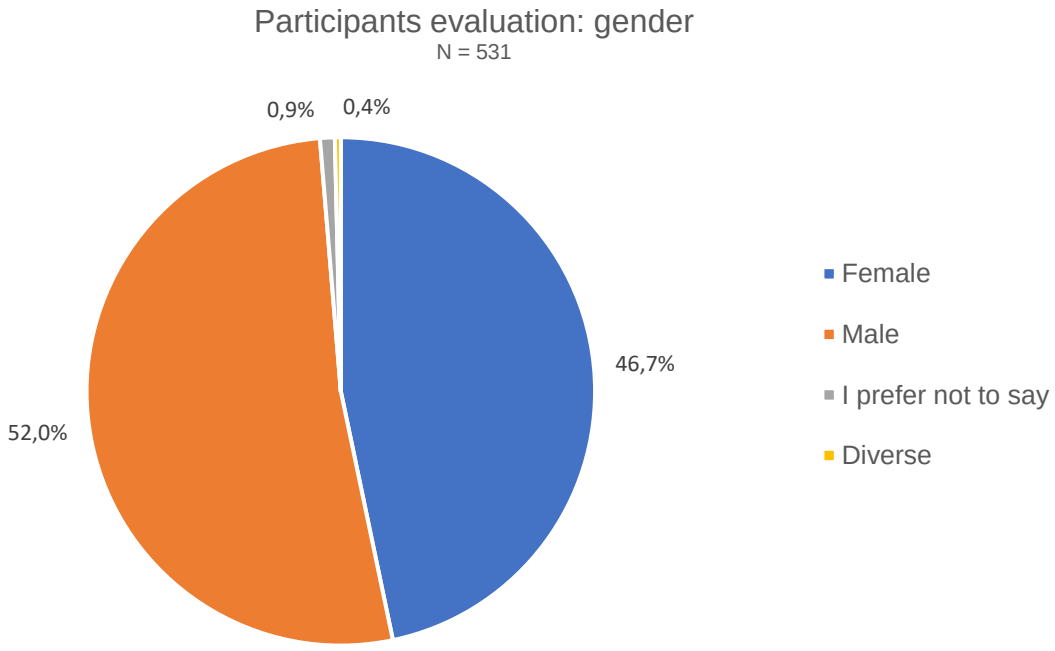

Figure 2 Results from Participants evaluation: gender

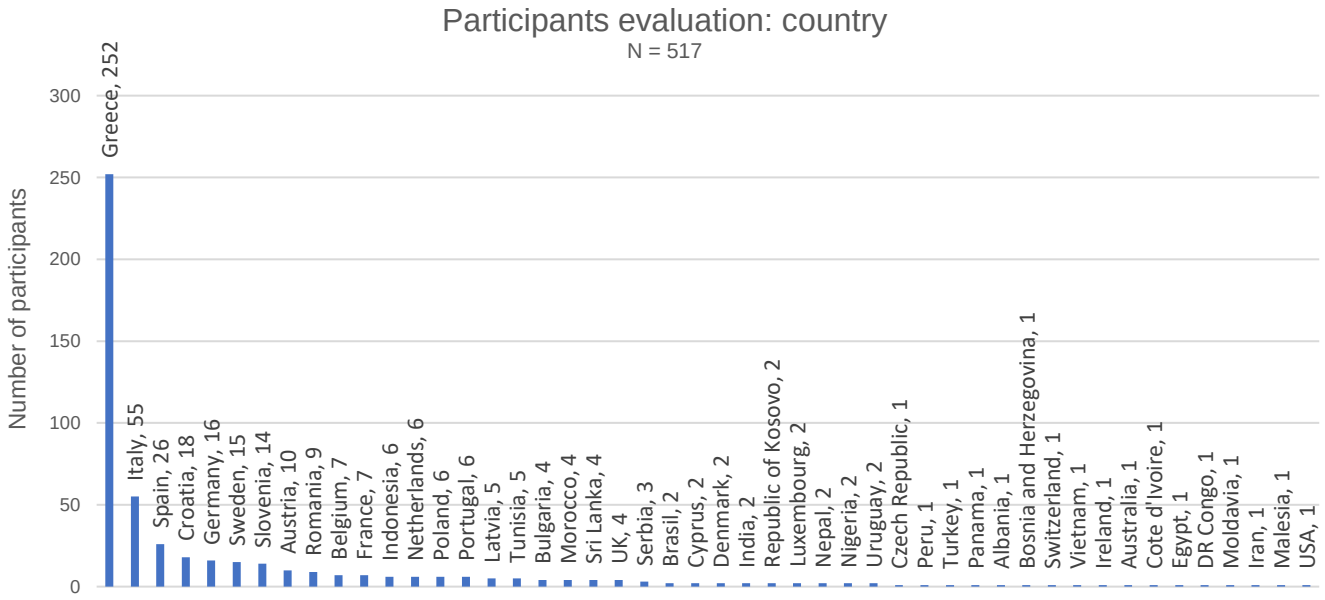

Figure 3 Results from Participants evaluation: country

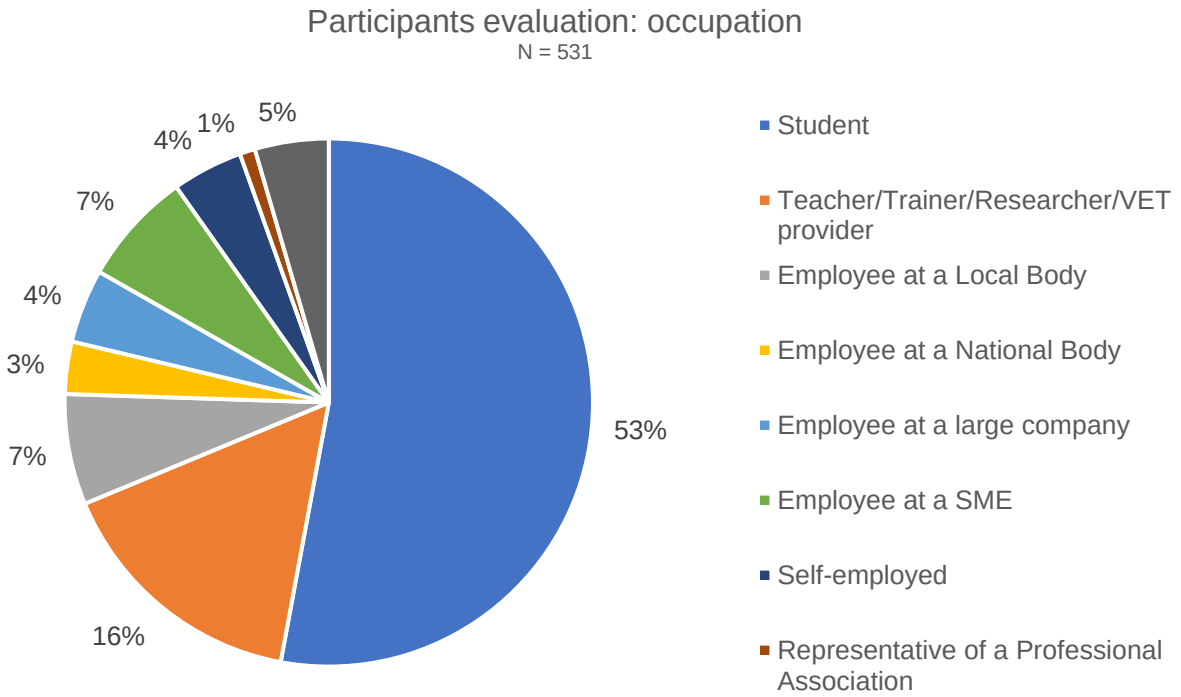

Figure 4 Results from Participants evaluation: occupation

Participants represented almost 50 countries from all over the world, mostly Greece, Italy and Spain. Almost 70% of participants that filled the questionaries were youth, age from 15 to 34, and more than half is a student. 16% of respondents were teachers, trainers, researchers or VET providers. Those results indicates that the developing and organizing of the Training Action made it possible to

reach out to young people who, early in their careers, don't want to get into the skill gap in the space geoinformation sector, as well as to people responsible for their education.

The reason behind the majority of youth activity in TAs can be that students tend to be more active in seeking additional sources of development. Among young people there is more interest in looking for new areas in which to develop their future career, and they are more willing to take action to learn new competences. Also, they usually have more time that older employees, so that they are more willing to undertake additional activities.

2.2.2. In-depth questions

The majority of the questionnaires included closed questions that respondents answered on a scale from 1 (very poor/strongly disagree) to 5 (very good/strongly agree). Results in form of average scores in sub-sectors and all TAs are presented in Table 2.

Table 2 Results from Participants evaluation: In-depth questions

	Integrated Applications	Smart Cities	Climate Change	Summer Schools	Average
Organisation of the training on behalf of the organising institution (e.g. registration platform, contact with the organizer, proper communication about training details, ...).	4,82	3,91	4,71	4,69	4,53
Functionality of conference tool and software used (video, sound, other technical aspects, ...).	4,66	4,43	4,58	4,66	4,58
Possibility to exchange and interact with tutor(s) and other participants (forums, sessions for discussion, Q&A, ...)	4,67	4,23	4,57	4,44	4,48
When starting the course, I was well informed about the content of the training.	4,1	3,94	4,32	4,17	4,13
I find the knowledge and skills I received through the training to be very useful to me.	4,29	4,25	4,44	4,26	4,31
I think the case studies added high value to the course.	4,43	3,92	4,52	4,41	4,32
I consider the provided training materials to be useful.	4,27	4,12	4,51	4,49	4,35
In my opinion the structure of the training was logical and well organized.	4,55	3,81	4,61	4,52	4,37
The training schedule and time frame were very good.	4,53	4,06	4,49	4,3	4,35
The training was appropriate for my level of experience.	4,31	4,04	4,37	4,15	4,22
The training met my expectations.	4,35	3,72	4,48	4,15	4,18
The training raised my interest in the topic.	4,46	4	4,47	4,52	4,36
I reached the learning outcomes being specified.	4,21	3,75	4,26	4,12	4,09
I think the training is very relevant for my current work duties/studies.	4,15	3,81	4,22	4,23	4,1
The knowledge and skills I received in this training are valuable to my work/future career or studies.	4,21	4,43	4,35	4,29	4,32
How satisfied are you with the training action?	4,63	4,17	4,63	4,44	4,47
Would you recommend a next EO4GEO training action to a friend/colleague of yours?	Yes: 95%<	Yes: 89%	Yes: 95%<	Yes: 91%	-

What can be learned from the closed in-depth questions is that most respondents were satisfied with the Training Action: on average, they rated their satisfaction as 4.47 out of 5. When assessing the results of an evaluation, it should also be noted that evaluation questionnaires are usually filled out by less satisfied participants, since usually a contented person has less need to fill out an evaluation questionnaire after an event. All the more the result of the evaluation of the TAs being around 4.3/5 as an average answer from all of the questions with almost all of the responded that would recommend the next EO4GEO TA to a friend is a highly satisfactory result.

The respondents were most satisfied with the organizational aspects and the structure of the TAs, functionality of used tools and the possibility to interact with trainers and other participants, despite the difficulties associated with the pandemic. They also agree that the TA raised their interest in the topic, provided training material was useful and case studies added high value to the course. Significant in terms of EO4GEO objectives is information that participants find knowledge and skills received with TAs as valuable to their work/future career or studies (an average answer 4.3 out of 5). However, participants rated the question if the training is very relevant to their current work duties studies slightly lower (4.1 out of 5), what can be caused by a more forceful tone of the word *very*.

Furthermore, some of the areas of TAs had evaluation score slightly below average (approximately 4.1 out of 5), like level of difficulty (too low or too high), usefulness of chosen data and tools for achieving learning objectives and the reached learning outcome. These topics correspond to the challenging but also very individual needs of each participant and were therefore taken into special consideration during the development of the Training Actions. Despite the evaluation value slightly below an average, this is still a satisfactory result.

2.2.3. Open questions

The evaluation questionnaires also allowed participants to answer open-ended questions, which gave them the opportunity to speak freely about the Training Action in question. They overview is split into sub-sectors.

Integrated Applications

The participants of this subsector mostly liked the case-based learning methods, quality of speakers' presentations and materials, utilised methods and innovative approach, as well as practical information on spatial services and how to utilise them. They also appreciated good technical organisation and provision of useful examples.

Among the suggestions, one can list issues such as providing more time for the practical and interactive sessions, as well as discussions, not only during the event but also as a platform for exchange of knowledge and skills for the future. Moreover, numerous participants pointed out that it would be useful to have access to materials not only after the event, but also beforehand, so they can prepare themselves for the training. Alternatively, training action organizers could also provide the participants with a short PDF follow up, with a short summary of the focal points. Participants would also welcome more application examples and case studies. It would be also useful to have a wider perspective thanks to involvement of multi-national experts, as well as inviting representatives from the public administration and encouraging them to join the trainings.

From the technical point of view, the respondents think that it would be also useful to provide the materials from the training not only in English, but also in the native language (appropriate for the training location).

Smart cities

Participants of this subsector enjoyed the useful methods being presented, smooth flow of the training actions and appropriate selection of moderators and "work on your own time". Moreover, they also highly ranked the case-based learning methods, quality of presentations and case studies, as well as possibility to develop skills that can be useful in the future.

Among the suggestions coming from the questionnaires, one can find:

- providing detailed instructions (list of tasks and objectives) for the participants of the workshops, so the results can later be discussed between them,
- introducing a "click-along" session, so the participants can learn how to produce analysis on their own,
- limiting the number of topics, and diving into more detail instead, as well as saving more room for discussion,
- discussing the possible opportunities resulting from the method utilisation, as well as its shortcomings,

Climate change

The participants from this subsector enjoyed the logical step by step explanations, case-based learning methods, applicability of the knowledge and availability for participants with different levels

of knowledge. Moreover, the quality of speakers and training materials was ranked high, the variety of methods, topics and multimedia shown was sufficient, the pace well adjusted, useful links and tools provided.

Among suggestions, one can point out saving more time for practice and interactive parts (such as polls). It would be useful for the participants to have access to materials before the event. Providing notes, references, useful links, as well as a short summary for participants would be warmly welcomed.

Technical suggestions: providing trainings in a native language, sticking to the schedule - better time management, as well as management of participants (namely: making a selection of those, who are really involved and inviting this particular group to work on case studies).

Summer schools

Participants of Summer schools were happy with the innovative and professional approach, case studies and examples of applications provided, as well as with the possibility of networking and teamwork. Moreover, they reported that difficult aspects were presented in an understandable way, a wide network of professionals was involved and that they appreciated utilisation of tools such as e.g. Lucid.app.

Suggestions from the participants indicate that Summer Schools could have been more interactive (thanks to utilisation of dedicated tools), preferably carried out live instead of remotely. Moreover, it would be desired to put more focus on the implementation part instead of theoretical introduction and provide the materials before the event, so participants can prepare themselves. Participants also came up with ideas such as: continuation of knowledge exchange thanks to mini courses for the public administration (more specific topics), as well as competition for the best group work to boost the motivation of participants.

Technical issues mentioned by the participants: problems with accessing the classroom platform, need to make sure that participants of groupwork represent similar levels of knowledge. Based on experience from International summer school Intelligent Earth Observation, It would be also useful to make the schedule a little bit less tight.

2.3. Trainers evaluation

This part of the evaluation is based on the questionnaires collected from trainers (available in the annex 7.2), their experiences and observations gathered while working and communicating with the training action participants.

Closed questions

Trainers marked the closed questions from the questionnaire on scale from 1 (very poor/strongly disagree) to 5 (very good/strongly agree). The results with average score are presented in Table 3.

Table 3 Results from Trainers evaluation: closed questions

Question	Average score
Suitability of venue and infrastructure (if applicable)	4.44
Functionality of computers, projectors and other facilities	4.46
Functionality of used conference tool and software (video, sound, other technical aspects, ...) (if applicable)	4.36
Possibility to exchange and interact with participants (forums, sessions for discussion, Q&A...)	4.03
The presentations can easily allow reuse and integration	3.93
The training materials are useful and appropriate to the learning objectives	4.4
The timeframe is appropriate to complete all the content and perform exercises	4.17
I think the training action adequately integrates the latest trends and developments and complements the participants' knowledge	4.67
The exercises' level of difficulty was appropriate	4.56
The time needed to complete the practical tasks was right	4.33
The data, software tools and network services being used in the training, supported the achievement of learning objectives	4.78
When working with this course, I have significantly improved my personal skills in collaboration and multidisciplinary work	3.55
When working with this course, I have received significantly better insight into the daily problems of other professionals and domain experts	3.55
The acquired competencies/skills/knowledge are helpful for my job	3.93
The level of participants' engagement (sharing experiences, willingness to deepen knowledge etc)	3.84

Based on the trainers' responses to the questionnaires, they rated TAs on average at 4.2 out of 5, with high rates regarding usefulness of the TAs. According to the trainers, the training action adequately integrates the latest trends and developments and complements the participants' knowledge. The data, software tools and network services being used in the training supported the achievement of learning objectives. The trainers were also satisfied with the technical aspects of conducting TAs, appropriate level of difficulty for exercises and amount of time that was dedicated for completing tasks by participants. They rated some questions a bit lower than average, like issue of improving trainers' personal skills and more impactful insight into the daily problems of other professionals, and the possibility to easily reuse the presentation. However, it was important that each TA would be adopted to local needs, like fine-tuning for different profiles, adding local examples or translations to local language. From trainers point of view, getting a satisfactory level of participants engagement during TA was a challenging task.

A set of pie charts (figure 5) complements the closed part of the questionnaires, with questions about trainers involvement in the development of the TA, that serve a more informative purpose. More than 80% of trainers involved in TA took part in TA development. 16% of trainers were invited speakers.

30% of trainers states that they TA included an exercise part, what agrees with numerous TA in webinar form (due to the pandemic), focused on knowledge transfer.

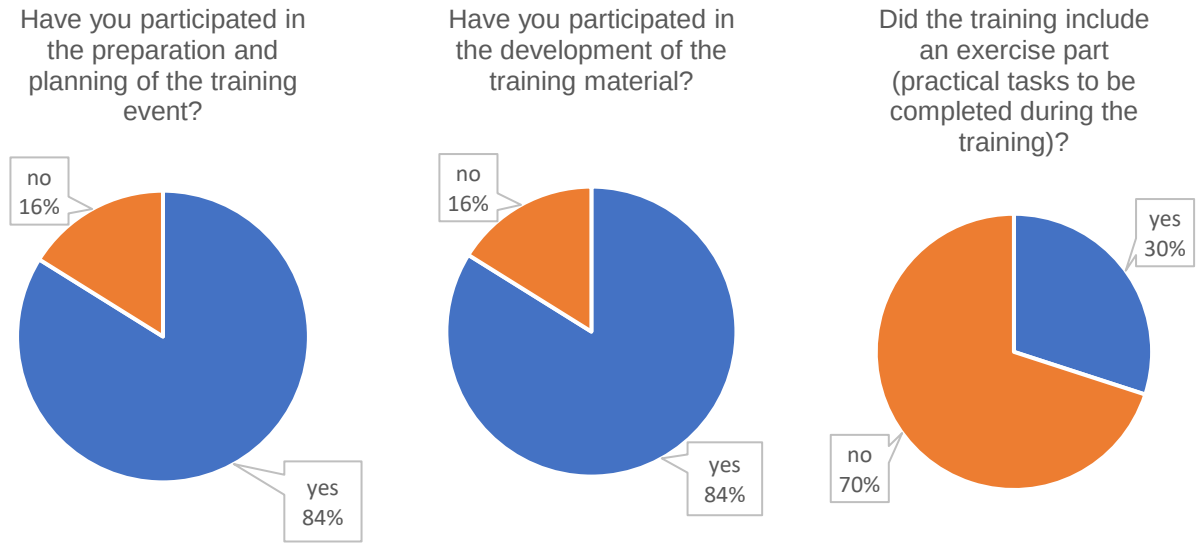

Figure 5 Trainers evaluation: informational part

Open questions

Trainers had the possibility to share their thoughts during the evaluation process. In an open question "Do you have any suggestions or recommendations for improvements of organizational aspects?", trainers suggested to work on particular on the following aspects: saving more time for discussion and practical parts, double checking the quality of online broadcast, coming back to the "face to face" formula of trainings, as well as limiting the number of participants and seeking opportunities to enhance interaction.

In terms of the tools used, nearly half (14 out of 30) of the questionnaires provided by the trainers state that they did not use the EO4GEO tools in order to prepare the training action. Those who used them, took the most advantage of the following: BoK, CDT, reveal.js. Some of those who did not use the EO4GEO tools, others used their own tools or have not seen the need for EO4GEO tools utilisation, due to the more general character of the training action.

Time spent by trainers to prepare and integrate the materials for the training action was specified mostly as several days, however some answers was very diverse, and ranged from 1 hour to over 100 hours. Such a variance depends mainly on the number of tasks associated with organizing and preparing for the TA a particular person has to perform, as well as level of experience in preparing training materials, unique for each TA and trainer. For example, preparing a short presentation during a webinar will take far less time than developing materials for a summer school.

2.4. Assessment of learning outcomes

Due COVID-19 pandemic, the most common type of TA was a webinar. It is a good form to introduce a topic at a base level, focusing on knowledge transfer but can be challenging in topic of skill transfer. In general, testing if learning outcomes with regard to obtained skills have been achieved is more complex to verify.

The assessment of learning outcomes was recommended for the most training actions such as: summer schools, project works, academic courses and OOC's. To make sure that the learning outcomes have been achieved, participants were asked, among others, to participate in an interactive session, or to provide a short summary in writing, together with the trainers (for project work).

The following training actions were covered with assessment of learning outcomes:

- Landslide affecting Cultural Heritage sites - Roman Thermae of Baia (OOC by ISPRA),
- Change detection using EO data (Academic Course by ROSA),
- Improving sustainability of cities to storm and water (Project work by GIB-FSU-EO),
- CO2 budgets for municipalities (OOC by Novogit),
- Introduction to Satellite Remote Sensing (Summer school by UNIBAS-UNEP/GRID),
- Intelligent Earth Observation (Summer school by PLUS-UNEP-GRID).

2.5. EO4GEO Subsector intermediate results workshop

The EO4GEO Subsector intermediate results workshop was held online (on Zoom platform) on September 28th 2021, 11:00-13:00 CEST and was organized by UNEP/GRID-Warsaw Centre supported by Spatial Services.

It was focused on feedback and validation of implemented training actions developed within the EO4GEO project up to workshop's day. It covered realized events with recommendations for the future training actions. Participants learned more about the EO4GEO project and its progress and took an active part in discussing lessons learned from previous events.

In the breakout session the participants developed suggestions and methods for improving future TAs and overcoming potential challenges. Different perspectives could be confronted with each other during group discussions. Since all consortium partners were represented, it was possible to gain a broad view of these issues.

The main challenge that emerged during presentations and discussion regarded the form of the TA, mainly questionable ability to achieve effective skill transfer in webinars. As it was pointed, webinars are a great way to transfer knowledge, especially at basic level, but the skill transfer requires time and multiple events to ensure its effectiveness. Therefore, TA's in form of summer schools should be chosen more often in the future, to guarantee enough time and individual learning paths for the participants. Another vulnerable area focused on ensuring that the prepared material would match the skill level and expectations of the participants. The need of repetitive feedback during the TA was also raised, to assess learning progress.

Significant part of the discussion covered the topic of difficulties regarding remote form of TAs, made necessary by the epidemiological situation in the world. Even if the virtual form worked well for the students, the social component of such activities was noticeably missing. Due to pandemic, it was difficult to create an environment that could enable and enhance effective skill transfer. In lessons learned from the TAs, organizers pointed the importance of giving administration's decision makers as much information about the Copernicus solutions as possible, so they can understand not only possibilities, but also the complexity, limitations and potential, as well as significance of choosing the right topic to meet audience expectations. However, it is important to take into account the fact that participant's expectations could slightly differ from the needs of the labour market that should be anticipated by the capacity building action in this rapidly changing sector.

3. Summer schools

In order to assess the testing and validation phase even more effectively, two summer schools were organised to provide a comprehensive training including group work to test and validate the usability and reusability of the curricula and training materials in other settings.

The COVID-19 pandemic has significantly affected the course of designing and organizing planned Summer Schools. However, two different formats were used in developing both Summer Schools: 1) The PLUS summer school on Intelligent Earth Observation was designed as international summer school with a broad audience, completely conducted in a virtual environment; 2) The UNIBAS summer school on Introduction to Satellite Remote Sensing was designed as a local/regional summer school with a limited pre-selected audience, conducted in presence (in Potenza) allowing remote attendance too.

3.1. Intelligent Earth Observation

The virtual EO4GEO International Summer School: Intelligent Earth Observation took place from 8th of June and lasted until 6th of July 2021. The summer school was orchestrated by PLUS, with assistance of UNEP/GRID Warsaw. 20 participants (14 nationalities) from 130+ preregistrations fulfilled the requirements of the registration process and were accepted.

Through the use of different learning methods and jigsaw learning[1], the Intelligent Earth Observation Summer School has successfully implemented an innovative educational design. The event made use of/employed an innovative educational design approach. It consisted of different phases (fig. 6), exhibiting different learning modes, allowing to build upon and expand existing training materials provided by the EO4GEO project, testing it in different settings for a broad international audience. Moodle was used as a learning platform for the entire summer school.

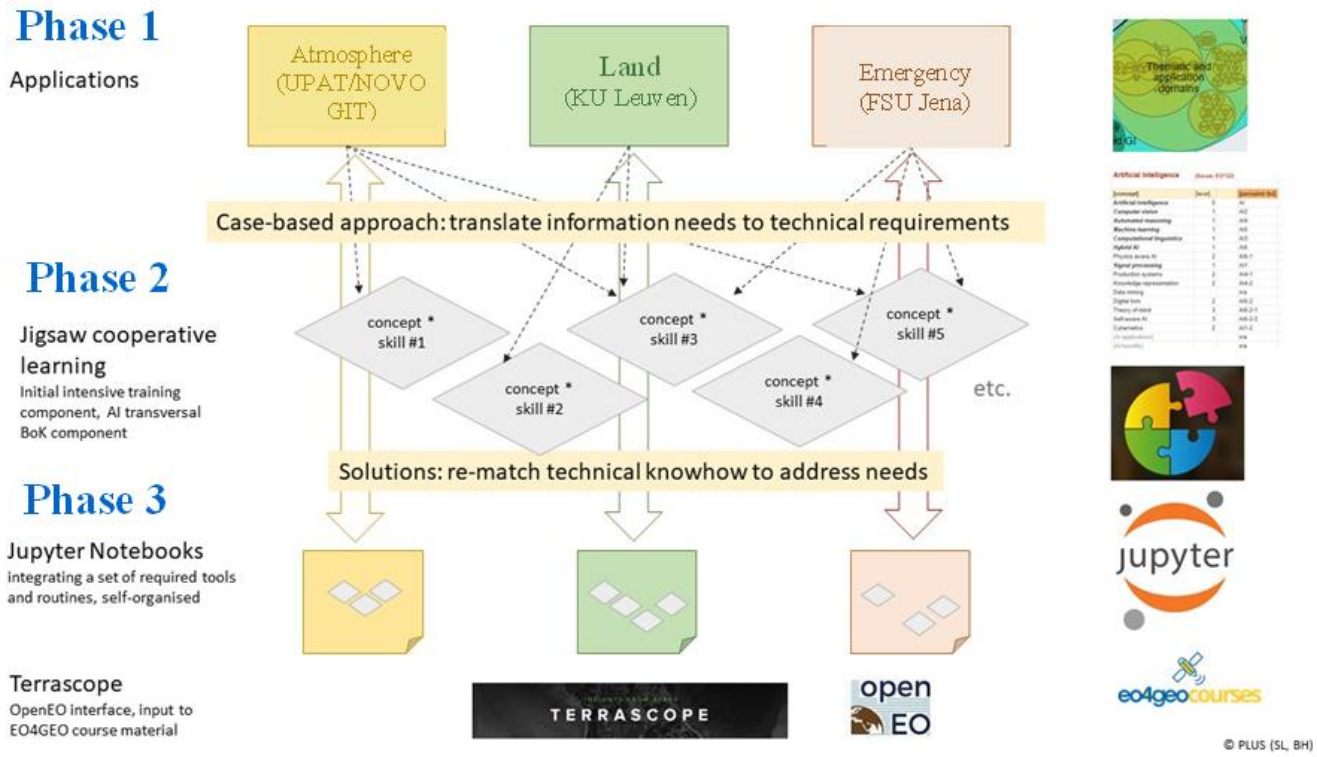

Figure 6 Phases of the Intelligent Earth Observation Summer School

The Intelligent Earth Observation Summer School exceeded expectations about acquiring new skills, but not met them for all participants on conceptual inputs vs previous knowledge. Both form participants and tutors point of view the virtual setting for this summer school worked well, although social component was significantly missing.

[1] Participants were undergoing training in specific technical building blocks (concepts and tools), from which they could choose the specific technical elements they are most interested in and where they want to become 'experts'.

3.2. Introduction to Satellite Remote Sensing

The Summer School “Introduction to Satellite Remote Sensing”, was held in Potenza (Italy) in semi-virtual mode from 15 to 17 June 2021. The school was addressed to employees of Local Public Administrations (LPAs), aiming at increasing their level of knowledge of the Earth Observation (EO) fundamentals and their awareness about the potential of satellite-based remote sensing technologies/applications. Together with UNIBAS (member of the Copernicus Academy Network) the school was also supported by CNR-IMAA on behalf of the local Copernicus Relay member TeRN who is an EO4GEO associated partner.

The summer school was in Italian language to facilitate participants comprehension and stimulate their interaction with teachers (all Italians too). The main goal was to offer to the technical personnel and managers of the LPAs, those fundamentals that are necessary to fully understand, compare, wonder, the possible advantages coming from the introduction of EO-based solutions in their routinely work. The school offered also the occasion to discover the unique role of available long-term global EO dataset to evaluate historical variations.

Besides the up-skilling and re-skilling of employees, the school was a good occasion to establish a direct link between potential service providers (i.e., UNIBAS students and researchers) and LPAs users. During the course, tools and resources developed in the framework of the EO4GEO project were also tested, proving useful for achieving the school goals.

Based on the evaluation phase of the Introduction to Satellite Remote Sensing Summer School, participants recognized and appreciated an innovative approach, intensive structuring of the course and case-based learning method.

4. Feedback

Through tasting and evaluating of performed Training Actions it was possible to distinguish main challenges that had to be faced by TAs organizers, as well as achievements that should guide future action. Lessons learned from this overview can help provide the necessary input to help defining the Long-term Action Plan.

To fully understand the challenges that had to be faced by Training Actions organizers it was necessary not only to perform detailed evaluation of each event, but also analyse the TAs and discuss what lessons can be learned from them. EO4GEO Subsector intermediate results workshop

provided space for such discussion and provided a better understanding of the challenges and accomplishments of the Training Actions.

4.1. Achievements

Successfully developing Training Actions in the time of global pandemic was a major challenge but also a major achievement. The indicator for additional training initiatives (target value: 10) was not only met, but significantly exceeded (achieved value: 19). As for other indicators, 10 organisations are aiming to use the curricula and the courses, 7 aims to develop additional learning actions and 2 asked for dedicated training within a specific sub-sector. The change in TA format, from planned stationary contact between tutors and students to online events increased organizers' efforts to disseminate and implement the online platform for the events. Implementing the open access availability of the Moodle platform created user-friendly conditions for TAs participants and led to the use of resources from a broader audience than the one initially foreseen.

Even though the COVID-19 crisis has significantly affected the TAs, their remote form had some advantages. The on-line presence of the TAs allowed a better dissemination and reaching a wider group of interested people was possible. All performed Training Actions gathered over 1400 people from almost 50 countries, largely exceeding the initial targets. It's even more significant, considering that the project guidelines were developed before the pandemic and consecutive lockdown. The online process leads more people with different occupational profiles to be interested and participate, which can explain the high number of participants involved in TAs, as well as their different nature and background.

Despite the difficulties with effective skill transfer during the remote form of the TAs, the participants that filled the evaluation questionaries feel that they reached the learning outcomes being specified as 4.09 out of 5. Also, most respondents were satisfied with the Training Action: on average, they rated their satisfaction as 4.47 out of 5 and almost all of them would recommend the next EO4GEO TA to a friend. Both participants and trainers were satisfied with the technical and organisational aspects of TAs. The participants agree that the TA raised their interest in the topic, provided training material was useful and case studies added high value to the course. They also find knowledge and skills received with TAs as valuable to their work/future career or studies. From the trainers point of view, they recognise that the used data, software tools and network services supported the achievement of learning objectives. They also agree that the training actions adequately integrate the latest trends and developments and complements the participants' knowledge.

Combining knowledge and experience from various organizations and sectors led to interesting Training Actions and allowed to strengthen connections in the Alliance as well as establish new contacts. It also gave the Alliance an opportunity to look at the development of TAs from different perspectives, which reflected positively in their quality. It has been noted that in TAs that were developed as a combined effort of multiple partners it was possible to reach a broader group of participants. Also, TAs in English gather a larger audience.

The workflow provided for the creation of TA's led to a valuable increase in the quality of training, allowing participants to easily discern the application context, the logical workflow (BPMN modeling, Curriculum Design Tool), the tools (using the BoK), the roles (Occupation Profile Tool) and the expected results in terms of new knowledge and skills.

The case-based approach of the EO4GEO Training Actions is what was particularly interesting, as it is focused on 'real-world' problems or scenarios. This approach not only attracts the audience, but helps with both knowledge and skills transfer.

4.2. Challenges

The pandemic time was a considerable setback and challenge for the whole world, and it significantly affected the process of sharing knowledge via EO4GEO training actions. Even if the virtual form worked well for the students, the social component of such activities was noticeably missing. We can also argue that the transfer of skills is more difficult in an online event than in face-to-face TA's. Due to pandemic, it was difficult to create an environment that could enable and enhance effective skill transfer. Also, the remote form of TAs made the evaluation of learning process very difficult.

Therefore, one of the challenges that emerged was the form of the TA, mainly questionable ability to achieve effective skill transfer through webinars (less interaction, short timing). They are a great way to transfer knowledge, especially at basic level, but the skill transfer requires time and multiple events to ensure its effectiveness. In this regard TA's in the form of summer schools should be chosen more often in the future, to guarantee enough time and individual learning paths for the participants. It was also mentioned, that it is very important to carefully formulate learning outcomes. Also, during webinars the interaction between trainers and participants, and between participants themselves is very limited. The sessions of questions and answers can be fruitful and important, yet it cannot adequately replace a physical meeting. For this reason, attention should also be paid to

prolonging time dedicated to completing tasks, since it's more difficult to get tutor's help during remote Training Action than in face-to-face interactions.

What has been a challenging task from the trainers point of view was getting a satisfactory level of participants engagement during TA. It must be said that encouraging participants to complete evaluation forms after the TAs was also one of the challenges that had to be faced by TAs organizers. Also, the trainers rated the possibility to easily reuse the presentation a bit lower than average. However, it was important that each TA would be adopted to local needs, like fine-tuning for different profiles, adding local examples or translations to local language.

During evaluation part some areas of Training Actions emerged with evaluation score slightly below average, like level of difficulty (too low or too high), usefulness of chosen data and tools for achieving learning objectives and the reached learning outcome. These topics correspond to the challenging but also very individual needs of each participant and were therefore taken into special consideration during the development of the Training Actions.

5. Recommendations for the long-term action plan

Based on the Training Actions evaluation and discussions between project partners during *EO4GEO Subsector intermediate results workshop*, it was possible to establish recommendations for the long-term action plan. They can be split into three different categories, regarding phases of developing and implementing Training Actions: TA content preparations, registration process and execution of TA. They are listed below in form of accessible recommendations for people responsible for developing and implementing Training Actions and Materials.

Preparing training action content

- To ensure an effective skill transfer consider workshops, summer schools or academic courses. For an introduction to a topic with a focus on knowledge transfer consider webinars.
- The target group for the TA should be carefully selected before choosing the exact material. Best to have a representative participating in course development, to meet the needs. Adjust TA's timing for chosen target group.
- Join your efforts with other partners or experts to provide diverse perspectives on the subject.

- Involve experts from the sector that is at stake, to ensure that shared knowledge is relevant for participants work and study.
- Provide detailed information with clearly defined learning outcomes and needed knowledge before registration, so every potential participant can have an idea not only what the TA will be about, but also what won't be learned (or provide a little sneak-peak to the material at registration time).
- Choose TAs language carefully to match it with your target group. English can gather broader group of participants and help with the promotion phase, but can also create a language barrier with some communities.
- Take time to prepare pools and questionnaires to get to know your audience better.
- Include case-based learning approach, to attracts the audience and enhance both knowledge and skills transfer.

Registration process

- Properly establish target group for TA's promotion phase.
- Test potential participants before accepting their application, or ask them for their CVs, to have an understanding of the level of experience with presented topic, as well Identify and list the expectations. If needed, split participants into different levels of difficulty and have more events under one TA.
- Recommend learning paths to take before TA.

Execution of Training Action

- Make sure to have enough time for discussion and interactions between participants - cut the presentations if needed.
- In case of variation in the level of knowledge, have someone explaining technicalities in a chat box in case of remote TAs, or make sure that the tutors will define them during their presentation.
- Get repeated feedback during the course and end individual lessons with a quiz to assess the learning progress.

- In case of TAs in form of workshops and summer schools, make sure to provide enough time for completing the tasks. More for the online format, since it's more difficult to get tutor's help than in face-to-face interactions.

6. Conclusions

Despite the difficulties that emerged with the pandemic, new opportunities have arisen from the better use of online resources. Results obtained from all of the sub-sectors exceeded expectations and projections, both in terms of quality of the Training Actions and in number of participants. This outcome has been achieved even despite the COVID-19 crisis that had affected most aspects of the TAs development and implementation. One of the indicators for this task was a number of additional training initiatives, with target value at 10 (the target for number of fixed training actions was 5). With total of 24 TAs the target was not only met, but significantly exceeded. As for other indicators, 10 organisations are aiming to use the curricula and the courses, 7 aims to develop additional learning actions and 2 asked for dedicated training within a specific sub-sector. At this point, we do not have the information on new initiatives to develop new services or products based on Copernicus after taking classes or internships. However, such initiatives need time to develop and require a long-term actions, so it is most likely that TA-inspired services or products will emerge in the future.

Demographic data from evaluation questionnaires indicate that the developing and organizing of the Training Actions made it possible to reach out to young people who, early in their careers, don't want to get in the skill gap in the space geoinformation sector, as well as to people responsible for their education. Almost 70% of participants that filled the questionaries were youth, more than half identifies as students and 16% as teachers, trainers, researchers or VET providers.

Thanks to the joint commitment of all partners it was possible to develop high quality training material, and led to cooperation and sharing good practices. It also allowed to strengthen connections in the Alliance as well as establish new contacts. During *EO4GEO Subsector intermediate results workshop* it was possible to discuss lessons learned from developing TAs, and to look at their challenges from different perspectives to find common solutions. Case-based approach of the EO4GEO Training Actions is what was particularly interesting, and it will be crucial to produce more case-oriented material to combine the existing training resources together.

Organization of two summer schools provided a comprehensive training and enabled testing and validating the usability and reusability of the curricula and training materials in other settings. The

participants recognized and appreciated an innovative approach, intensive structuring of the course and case-based learning method. Both Summer Schools successfully based their training approach and material on EO4GEO materials and tools, such as the BoK and Curriculum Design Tool, proving the usability and reusability of tools developed by the EO4GEO Alliance.

The evaluation part of the task provided data to evaluate effectiveness and efficiency of the Training Actions, as well as qualitative project indicators, feedback from students and feedback from invited speakers. What can be learned from it is that both participants and trainers were satisfied with the technical and organisational aspects of TAs. The participants agree that the TA raised their interest in the topic, provided training material was useful and case studies added high value to the course. They also find knowledge and skills received with TAs as valuable to their work/future career or studies, which confirms the effectiveness of the actions. From the trainers point of view, they recognise that the used data, software tools and network services supported the achievement of learning objectives. They also agree that the training actions adequately integrate the latest trends and developments and complements the participants' knowledge. However, the challenging task was getting a satisfactory level of participants engagement during TA and effectively encourage them to complete evaluation forms after the TA.

During evaluation part some areas of Training Actions emerged with evaluation score slightly below average, like level of difficulty (too low or too high), usefulness of chosen data and tools for achieving learning objectives and the reached learning outcome. These topics correspond to the challenging but also very individual needs of each participant and were therefore taken into special consideration during the development of the Training Actions. However, almost all of the respondents would recommend the next EO4GEO TA to a friend.

By testing and validating the EO4GEO strategy based on case-based learning scenarios it was possible to develop Training Actions complete in terms of learning objectives and content, that gathered more than 1400 participants. Compiled recommendations that emerged from evaluation phase can provide feedback for the long-term action plan, but also help tutors in effective skill transfer even in remote conditions. Thus, bringing us one step closer to closing the skill gap in the space geoinformation sector.

7. Annexes

7.1. Evaluation questionnaire for participants

Evaluation of EO4GEO training action Each participant is warmly invited to fill in the following anonymous questionnaire, helping us to better manage and improve the quality of next EO4GEO trainings and to provide useful ideas for project activities.	
Your details	
1. Country	*Enter your answer*
2. Gender	□ Male □ Female □ Diverse □ Prefer not to say
3. Age	□ 15-24 □ 25-34 □ 35-49 □ 50-64 □ Age 65 and older
4. Select the category that better fits with you	□ Student □ Teacher / Trainer at a University/Research Centre/VET provider

	□ Employee at a Local Body (Region, Province, Municipality, ...) □ Employee at a National Body (Civil Protection, ….) □ Employee at a large company □ Employee at a SME □ Self-employed □ Representative of a Professional Association/ Professional □ Other
5. Please specify the level of study	□ High School □ Bachelor □ Master □ Doctoral
6. What is your motivation to take part in this training?	*Enter your answer*
Organizational aspects	
7. Date of the training action	*Enter your answer*
From 1 (strongly disagree) to 5 (strongly agree)	
8. Organisation of the training on behalf of the organising institution (e.g. registration platform, contact with the organizer, proper communication about training details, ...).	
9. Functionality of conference tool and software used (video, sound, other technical aspects, ...).	

10. Possibility to exchange and interact with tutor(s) and other participants (forums, sessions for discussion, Q&A, ...)	
11. Do you have any suggestions or recommendations for improvements of organizational aspects?	*Enter your answer*
Training content and structure	
From 1 (strongly disagree) to 5 (strongly agree)	
12. When starting the event, I was well informed about the content of the training.	
13. I find the knowledge and skills I received through the workshop to be very useful to me.	
14. I think the case studies added high value to the course.	
15. I consider the provided training materials to be useful.	
16. In my opinion the structure of the training was logical and well organized.	
17. The training schedule and time frame were very good.	
18. The training was appropriate for my level of experience.	
19. The training met my expectations.	
20. What did you most like about the training? (e.g. innovative approach, quality of presentations...)	*Enter your answer*
21. What can be improved regarding structure, format and material?	*Enter your answer*
Impact of the training action	
From 1 (strongly disagree) to 5 (strongly agree)	
22. The training raised my interest in the topic.	

23. I reached the learning outcomes being specified.	
24. I think the training is very relevant for my current work duties/studies.	
25. The knowledge and skills I received in this training are valuable to my work/future career or studies.	
Practice	
From 1 (not satisfied at all) to 5 (very satisfied)	
26. The exercises' level of difficulty was appropriate.	
27. The time needed to complete the practical tasks was right,	
28. The data, software tools and network services being used in the training, supported the achievement of learning objectives.	
Overall grading of the training action	
From 1 (not satisfied at all) to 5 (very satisfied)	
29. How satisfied are you with the training action?	
30. Have you recognized differences as compared to other trainings? (Y/N)	
31. If "Yes", where (structure, approach, content, tools, …)? Do these differences support learning success or learning motivation?	*Enter your answer*
32. Have you attended or are you planning to attend other Training Actions within the EO4GEO?	*Related training actions to choose from*
33. Please indicate other Training Actions from the question 32, that you have attended or you are planning to attend (otherwise please just put a dash in the bracket below):	*Enter your answer*

34. Would you recommend a next EO4GEO training action to a friend/colleague of yours? (Y/N)	
35. If "No", please motivate and indicate suggestions to improve the organization or the content of the training actions.	*Enter your answer*
36. Would you be interested to be included in the mailing list of the project and receive more information of the project? You may also sign up to the mailing list on http://www.eo4geo.eu/contact-us/. (Y/N)	
37. If “Yes”, please provide your e-mail address (*) (*) Privacy statement: in accordance with Art.13 of L. Decree 196/03 and Art. 13 of Regulation (EU) 2016/679, the GISIG Association, EO4GEO project coordinator, wants to inform you that your contact data are acquired and processed using the support of telematics, hardcopy and IT means in full compliance with the Privacy Code and the GDPR. Your personal information is collected, stored and used to contact you in relation to the purposes stated under Q34 above and to keep you informed about the activities of the EO4GEO project. You can exercise at any time the right to be removed from the EO4GEO mailing list by contacting gisig@gisig.it.	*Enter your answer*
38. Would you like to receive a certificate of participation? (Y/N)	
39. If “Yes”, please provide your e-mail address, as well as first and last name (if needed on the certificate) (*) (*) Privacy statement: in accordance with Art.13 of L. Decree 196/03 and Art. 13 of Regulation (EU) 2016/679, the GISIG Association, EO4GEO project coordinator, wants to inform you that your contact data are acquired and processed using the support of telematics, hardcopy and IT means in full compliance with the Privacy Code and the GDPR.	*Enter your answer*

Your personal information is collected, stored and used to contact you in relation to the purposes stated under Q29 above and to keep you informed about the activities of the EO4GEO project. You can exercise at any time the right to be removed from the EO4GEO mailing list by contacting gisig@gisig.it.	

7.2. Evaluation questionnaire for trainers

Evaluation of Workshops: Evaluation of EO4GEO Training Action For Trainers Each trainer is warmly invited to fill in the following anonymous questionnaire, helping us to better manage and improve the quality of next EO4GEO trainings and to provide useful ideas for project activities.	
Training action details	
1. Name of training action/module:	*Enter your answer*
2. Date	*Enter your answer*
3. Place	*Enter your answer*
4. Type of training action	□ Webinar □ Workshop □ Academic course □ Project work □ OOC □ Thesis □ Internship □ Summer school
5. Type of interaction during training action between participants and trainers:	□ Online □ Face to face □ Both
Organizational aspects	
From 1 (very poor) to 5 (very good)	
6. Suitability of venue and infrastructure (if applicable).	
7. Functionality of computers, projectors and other facilities (if applicable)	

8. Functionality of used conference tool and software (video, sound, other technical aspects, ...) (if applicable)	
9. Possibility to exchange and interact with participants (forums, sessions for discussion, Q&A...)	
10. Do you have any suggestions or recommendations for improvements of organizational aspects?	*Enter your answer*
Training content and structure	
11. Have you participated in the preparation and planning of the training event? (Y/N)	
12. Have you participated in the development of the training material? (Y/N)	
13. How much time did you spend on preparation and integration of training materials?	*Enter your answer*
14. If you said “Yes” to #11 or #12, Did you use any EO4GEO tools when developing the learning material or preparing the training event? (e.g. reveal.js, CDT, BoK) (Y/N)	
15. Please specify which tools were used and describe your experiences. Do these tools support the process of developing and providing training action and achieving learning objectives in your opinion?	*Enter your answer*
16. Please explain why you didn't use the tools.	*Enter your answer*
From 1 (strongly disagree) to 5 (strongly agree)	
17. The presentations can easily allow reuse and integration	
18. The training materials are useful and appropriate to the learning objectives	
19. The timeframe is appropriate to complete all the content and perform exercises	
20. I think the training action adequately integrates the latest trends and developments and complements the participants’ knowledge	

21. Do you have any suggestions or recommendations for improvements?	*Enter your answer*
Practical session	
22. Did the training include an exercise part (practical tasks to be completed during the training)? (Y/N)	
23. What kind of data, software and network services did you use during training?	*Enter your answer*
From 1 (strongly disagree) to 5 (strongly agree)	
24. The exercises' level of difficulty was appropriate	
25. The time needed to complete the practical tasks was right	
26. The data, software tools and network services being used in the training, supported the achievement of learning objectives	
Impact of the training action	
From 1 (not satisfied at all) to 5 (very satisfied)	
27. When working with this course, I have significantly improved my personal skills in collaboration and multidisciplinary work	
28. When working with this course, I have received significantly better insight into the daily problems of other professionals and domain experts	
29. The acquired competencies/skills/knowledge are helpful for my job	
30. The level of participants' engagement (sharing experiences, willingness to deepen knowledge etc)	
Your details	
31. Country	*Enter your answer*
32. Gender	❑ Woman ❑ Man ❑ Non-binary ❑ Prefer not to say
33. Age	❑ 25-34 ❑ 35-49

	❑ 50-64 ❑ 64+
34. Select the category that better fits with you:	❑ Teacher / trainer at a University/Research Centre/VET provider ❑ Employee at a Local Body (Region, Province, Municipality, ...) ❑ Employee at a National Body (Civil Protection, ….) ❑ Employee at a large company ❑ Employee at a SME ❑ Self-employed ❑ Representative of a Professional Association/ Professional ❑ Other
35. Please specify:	*Enter your answer*