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SMAGRINET

POWERING SMART GRID
EXPERTISE IN EUROPE

his project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 837626

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DELIVERABLE 4.3.

SHORT-TERM PROGRAMMES' PILOT REPORT (2)

DELIVERABLE TYPE
Report

MONTH AND DATE OF DELIVERY
Month 36 - March 2022

WORK PACKAGE
WP 4

LEADER
University of Lorraine

DISSEMINATION LEVEL
Report

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Revision History

Version	Date	Reviewer	Modifications
1.1	22/03/2022	Gabriel Alex	Initial version
1.2	23/03/2022	Kevin Berger	Correction and adjustment
1.3	28/03/2022	Anna Czerwinska	Correction

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1. Summary

SMAGRINET operational objective is to update, develop and implement a capacity building programme (CBP) for boosting the research, innovation and education for energy transition.
This report is part of the Work Package 4 "Capacity building programmes for responding to urgent challenges" of the SMAGRINET project. It evaluates the work carried out under the T4.2. The first deliverable D4.2 presented the evolvement of the participants and improvements expected for the second phase of the implementation. The current document is the final deliverable D4.3, which presents the improvements implemented during the second phase and also compares participations and results.

2. Introduction

The aim of the work package 4 is to develop three short-term programmes according to the principle of blended learning. Each programme is designed to satisfy the needs of a different target group, which are: engineering researcher, workforce and broader public.
To achieve the aim of this work package, there are three different tasks resulting in three different deliverables:

- The first document (D4.1 – short-term programmes) presents the content of the short-term programmes, the approach adopted to identify this content and the distribution of contributions among the partners.
- The second document (D4.2 – short-term programmes' pilot report) presents the implementation of the short-term programmes and the results.
- The third document (D4.3 – short-term programmes' pilot report (2)) presents the improvement implemented during the second session and compares the results with the first session.

This document is the final version of the D4.3 expected at M35. It aims to present the short-term programmes' achievement and the validation of the objectives defined in the proposal.

3. Implementation of the pilot

In order to address the local specificities and eventually respond to questions in native languages, the three short term programmes were replicated by each partner. Furthermore, the proposal suggested a quota of participants for each partner which implies implementing indicators for each one. To deal with this multiplication of programmes, the SMAGRINET website only displays the 3 programmes (Figure 1) and redirects to the right programme according to the location of the visitor detected from the IP address. This access modality did not change between the first and the second phase. When new countries joined the programme, a new IP address filter was added to redirect to the right programme.

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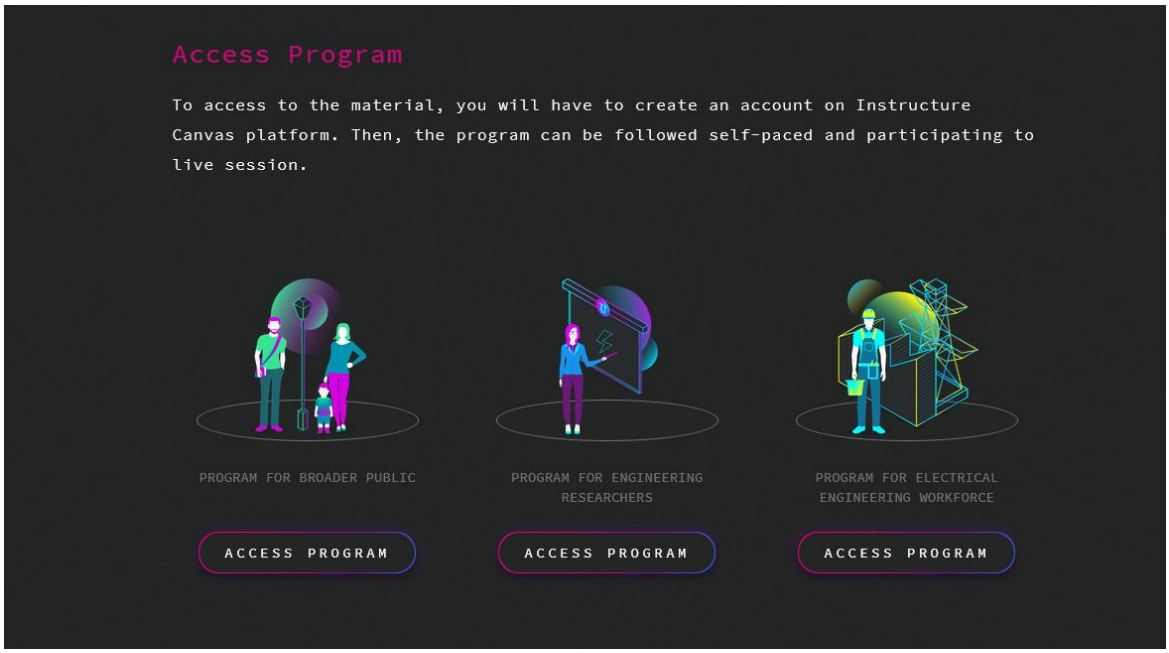
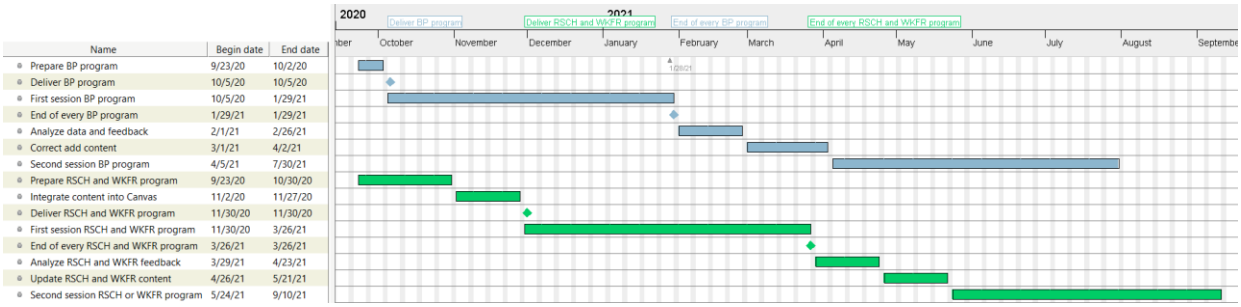


Figure 1. SMAGRINET website to access programmes.

3.1. Schedule

A global schedule was defined to let each partner manage its own implementation of each programme pilot. As illustrated by the planning shared among partners (Figure 2), the broader public programme had to be implemented between October 2020 and January 2021. As the researcher and the workforce programme were released later, the beginning of the pilot was delayed between December 2020 and March 2021. The second phase of the programme was planned to start in April 2021 for broader public and in June 2021 for engineering researcher and workforce.



Name	Begin date	End date
Prepare BP program	9/23/20	10/2/20
Deliver BP program	10/5/20	10/5/20
First session BP program	10/5/20	1/29/21
End of every BP program	1/29/21	1/29/21
Analyze data and feedback	2/1/21	2/26/21
Correct add content	3/1/21	4/2/21
Second session BP program	4/5/21	7/30/21
Prepare RSCH and WKFR program	9/23/20	10/30/20
Integrate content into Canvas	11/2/20	11/27/20
Deliver RSCH and WKFR program	11/30/20	11/30/20
First session RSCH and WKFR program	11/30/20	3/26/21
End of every RSCH and WKFR program	3/26/21	3/26/21
Analyze RSCH and WKFR feedback	3/29/21	4/23/21
Update RSCH and WKFR content	4/26/21	5/21/21
Second session RSCH or WKFR program	5/24/21	9/10/21

Figure 2. Updated pilot deployment schedule for the SMAGRINET project.

Within these dates, each partner had to manage its three programmes by its own. It means they had to communicate about the programme, engage participants, plan the live sessions and do the follow-up to participants. Table I provides the programmes' dates indicated by each partner for the first phase. Concerning the second phase, the implementation lasts for a larger time span since it required some talks and adaptions to external partners' availability. Table II provides the implementation dates for each partner.

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Partner	Broader Public		Researcher		Workforce	
	Start	End	Start	End	Start	End
KTU	/	/	/	/	/	/
TALTECH	16/10/2020	31/12/2020	22/01/2021	31/03/2021	15/03/2021	30/06/2021
TUB-TUD	11/01/2021	26/02/2021	15/02/2021	19/03/2021	15/02/2021	19/03/2021
ULJUB	09/11/2020	13/12/2020	01/02/2021	07/03/2021	15/02/2021	21/03/2021
ULOR	01/10/2020	31/12/2020	01/01/2021	31/03/2021	/	/

Table I. Deployment of the first pilot programmes for each partner.

Partner	Broader Public		Researcher		Workforce	
	Start	End	Start	End	Start	End
KTU	30/09/2021	31/01/2022	30/09/2021	31/01/2022	30/09/2021	31/01/2022
TALTECH	04/10/2021	20/12/2021	04/10/2021	20/12/2021	04/10/2021	20/12/2021
TUB-TUD	15/11/2021	31/12/2021	15/11/2021	31/12/2021	15/11/2021	31/12/2021
ULJUB	26/09/2021	28/02/2021	26/09/2021	28/02/2021	26/09/2021	28/02/2021
ULOR	31/10/2021	28/02/2021	31/10/2021	28/02/2021	/	/
KNAME	01/09/2021	15/11/2021	01/09/2021	15/11/2021	01/09/2021	15/11/2021
UKR	18/11/2021	31/12/2021	18/11/2021	31/12/2021	18/11/2021	31/12/2021
PL	10/01/2022	20/03/2022	10/01/2022	20/03/2022	10/01/2022	20/03/2022
CZ	25/01/2022		25/01/2022		25/01/2022	
PT						
NO						
NL						

Table II. Deployment of the second pilot programmes for each partner.

3.2. Implementation Instructions

In order to provide all participants with a similar instructional experience independently of the country, the Canvas LMS platform was introduced to all the partners during a live webinar. A brief notice was also produced to summarize the information, as a reminder. This notice provides the link to the respective programme (Table III), enumerates the tasks to do to implement it and provides some screenshots of the platform.

Countries	Partner	Referees	Broader Public programme
Estonia	**TalTech**	merylin.pill@taltech.ee	https://canvas.instructure.com/enroll/GJYF7G
France	**ULOR**	alex.gabriel@univ-lorraine.fr kevin.berger@univ-lorraine.fr	https://canvas.instructure.com/enroll/TTWAYB
Germany	**TUB** **TUD**	christine.michalek@tu-berlin.de sascha.mueller@tu-dresden.de olga.zyabkina@tu-dresden.de	https://canvas.instructure.com/enroll/8KMJMY
Lithuania	**KTU**	lina.startiene@ktu.lt	https://canvas.instructure.com/enroll/C7JDDR
Slovenia	**ULJUB**	janja.dolenc@fe.uni-lj.si	https://canvas.instructure.com/enroll/YFGP8G

Table III. Referees and links to the short-term programmes.

The tasks that the referees had to do were:

- Define the starting date for the programme
- Send an invitation to the potential audience with the link to the Canvas Instance (Table III)
- Define the date of the first FAQ live session (we suggest after the second or the third module). The suggested duration is 1 hour and organizers are also invited to document the live session with screenshots.

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- Define the date of the second and last live session (we suggest after the fifth module). The suggested duration is 1 hour and organizers are also invited to document the live session with screenshots.
- Tell us when the end of the course is achieved in order to initiate data collection for T4.3.

The aim of the screenshots was to bring the essential information to do the follow up of the programme. As illustrated by Figure 3 and Figure 4, these screenshots remind how information is structured on the platform and what the main action the referee has to do to manage its programme is.

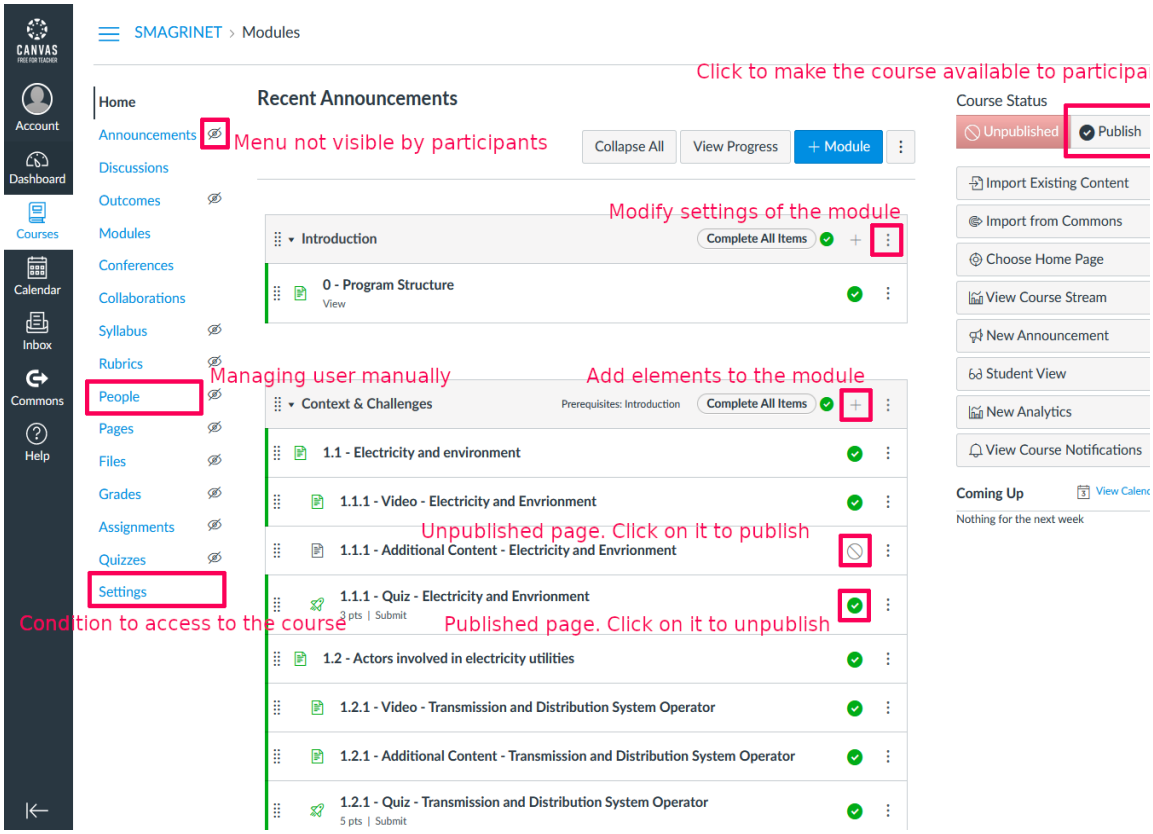

Figure 3. Screenshot to explain the main page of Canvas LMS.

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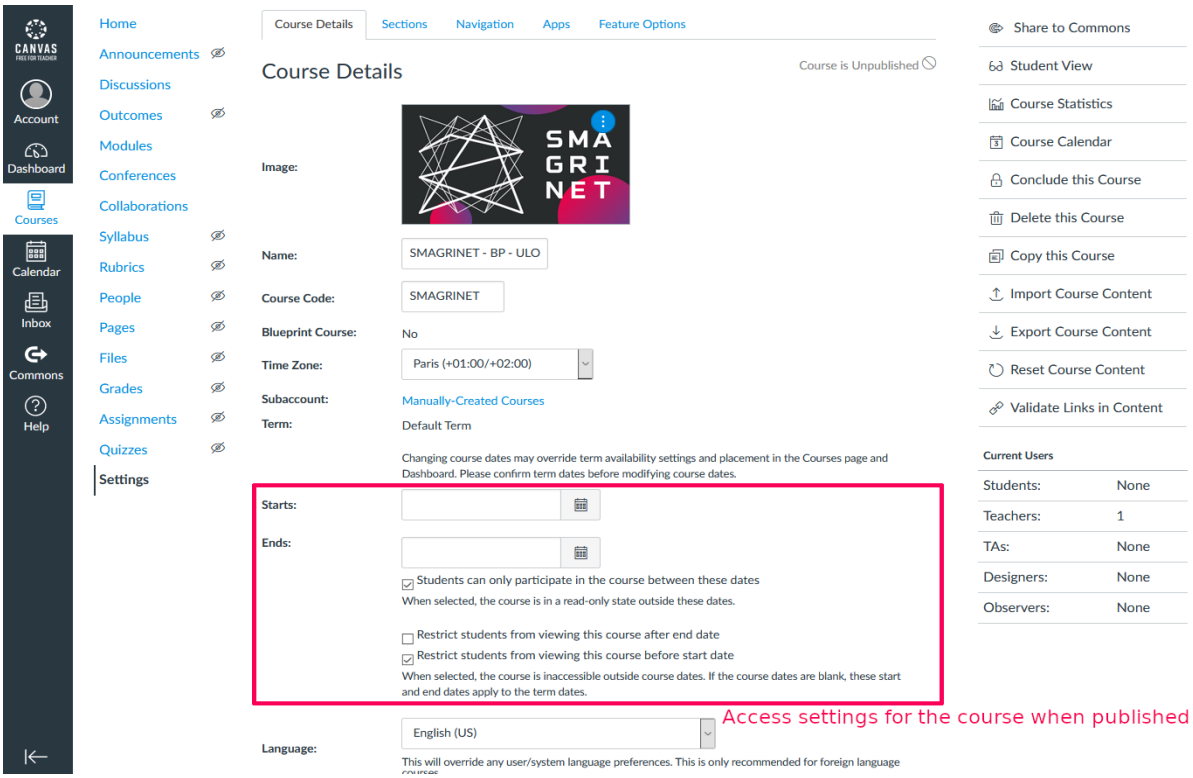

Figure 4. Screenshot to explain the setting of the programme access parameters.

In addition to this, video captures were made to show how to do a specific action as required by several partners.

3.3. The certificate of completion

In order to reward people who achieved the success criteria of the programme, meaning 70% of correct answers, a certificate of completion has been set up. The template of the certificate of completion is given in Figure 5. However, the canvas LMS does not provide this feature so a workaround was implemented based on a third-party service on Google marketplace: AutoCrat[1]. This tool works on Google spreadsheets. Each time the spreadsheet is modified, it triggers an action.

[1] AutoCrat website: https://cloudlab.newvisions.org/autocrat

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Figure 5. Original template of the certificate of completion.

In the case of the short-term programme, a Google form has been created to allow people to request their certificate of completion (Figure 6). The form generates/modifies a spreadsheet that is associated with AutoCrat. It means that each time someone completes the form it triggers an action, replacing the first and last name on the template (Figure 5), generates a PDF and sends it to the email provided in the form. The way to deliver the form to people who reach the required score was to embed form into a page on Canvas and make this page accessible when all modules have been validated (Figure 7).
The first phase of the pilot programme also highlighted the needs for some partners to have a better representation of the content and the effort it required to get it. To do so, it was decided to slightly modify the certificate adding the mean time required to complete the programme and a QR that redirects to the online syllabus of the programme. Figure 8 illustrates the new certificate of completion with these two elements.

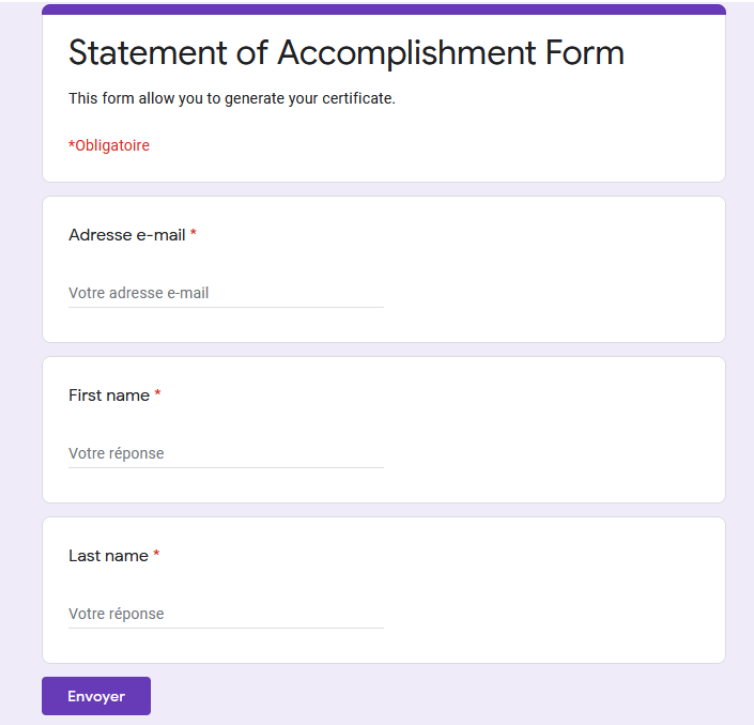

Figure 6. Form to generate the certificate of completion.

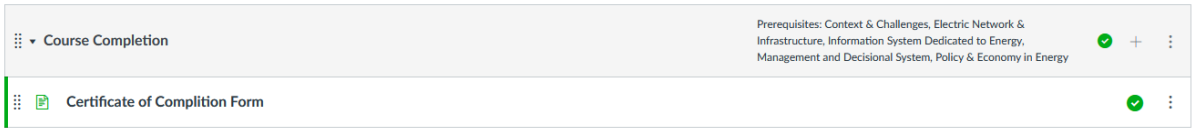

Figure 7. Access to the certificate form on Canvas.

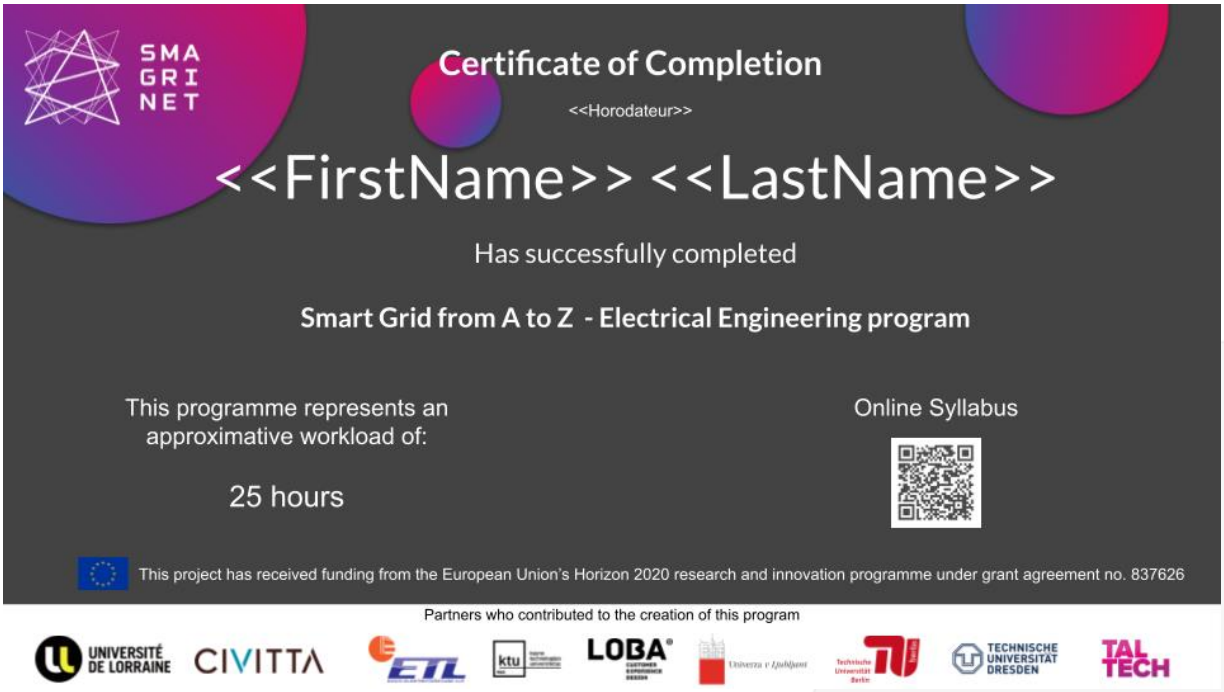

Figure 8. Updated template of the certificate of completion.

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Based on the previously mentioned protocols to generate certificate of completion, a total of **402 certificates** were produced along the two phases.

In addition to the certificate of completion, the consortium decided to implement rewards for each module inside the three programmes. To do so, open badges have been created using Badgr[2]. It means, illustrations have been created for each reward and metadata were associated to it. Figure 9 shows the different visuals used for the badges. However, open badges are not limited to visual, open badges are also associated to a description and earning criteria as illustrated by Figure 10. All the badges produced for SMAGRINET programmes are available on the Open Badge issuer[3] list.

Figure 9. Illustration associated to SMAGRINET Open Badges.

[2] Badgr: https://info.badgr.com (08/03/2022)
[3] Badgr SMAGRINET issuer: https://eu.badgr.com/public/issuers/PeddW7gCSLOe-wumB3rfPRg/badges (08/03/2022)

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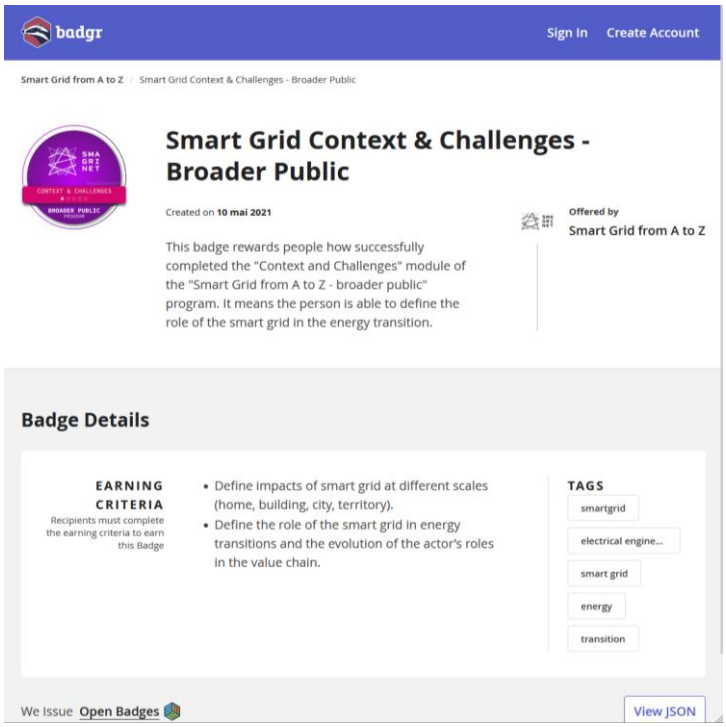

Figure 10. Information associated with an Open Badge.

As one badge is associated to one module, it means if someone completes all the modules of the programme he or she would receive 5 badges and one additional that rewards the fact to complete all the modules. This reward system is complementary to the certificate of completion. During the second phase, **1368 badges** were issued over the three programmes.

Programme	Module 1	Module 2	Module 3	Module 4	Module 5	Complete	**Total**
BP	77	73	73	72	72	134	**501**
RSCH	85	71	69	68	56	29	**378**
WKFR	84	80	76	76	74	99	**489**
Total	**246**	**224**	**218**	**216**	**202**	**262**	**1368**

Table IV. Distribution of open badges issued during the second phase.

3.4. Live Sessions

In addition to the short-term programmes, the proposal defined the organisation of live sessions. Table V presents the dates of these live sessions during the first phase of the programme. It was suggested to split the live session into 2 parts:

- a presentation concerning one topic,
- a question and answering session.

Partner	Broader Public		Researcher		Workforce	
	1st	2nd	1st	2nd	1st	2nd
KTU	/	/	/	/	/	/
TALTECH	13/11/2021	27/11/2021	19/01/2021	20/01/2021	11/05/2021	in the fall
TUB-TUD	04/02/2021	26/02/2021	03/03/2021	17/03/2021	04/03/2021	17/03/2021
ULJUB	20/11/2020	11/12/2020	12/02/2021	05/03/2021	26/02/2021	19/03/2021
ULOR	20/11/2020	/	11/03/2021	/	/	/

Table V. Dates of the live sessions during the first phase of the programme.

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Due to the health crisis, all the live sessions were held online. Each local referee was free to organise it and use its preferred videoconference software. Figure 11 to Figure 13 presents some screenshots of the live sessions among partners during the first phase of the pilot programme and Figure 14 presents a screenshot from the second phase.

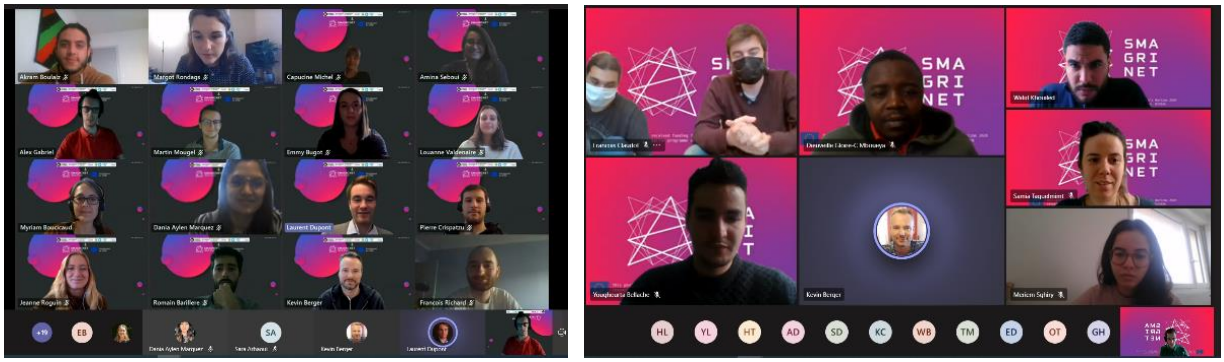

Figure 11. Screenshots of the live sessions at ULOR for the BP and RSCH programme during the first phase.

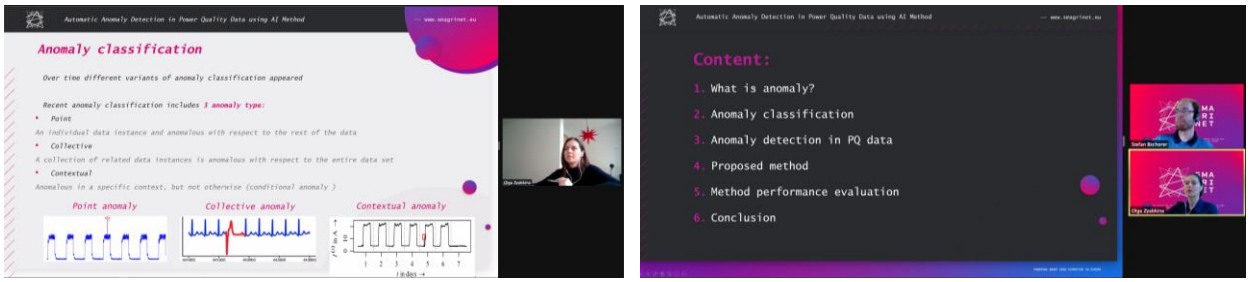

Figure 12. Screenshot of the live session at TUD for the RSCH and WKFR programme during the first phase.

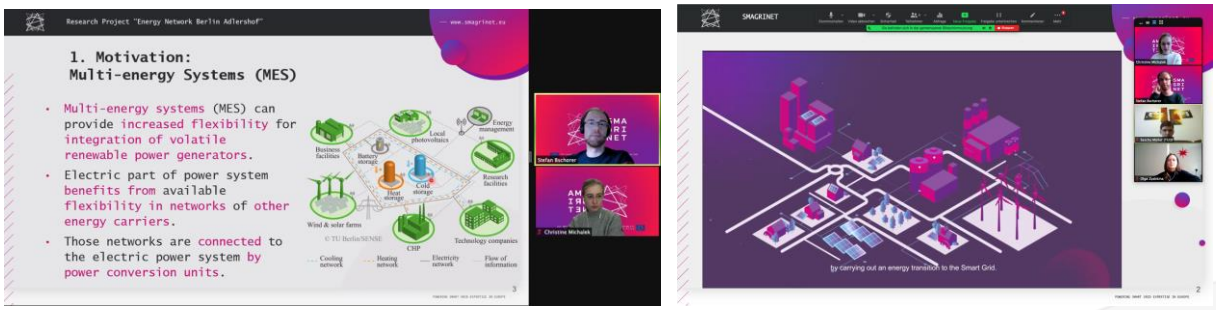

Figure 13. Screenshot of the live session at TUB for the BP and RSCH programmes during the first phase.

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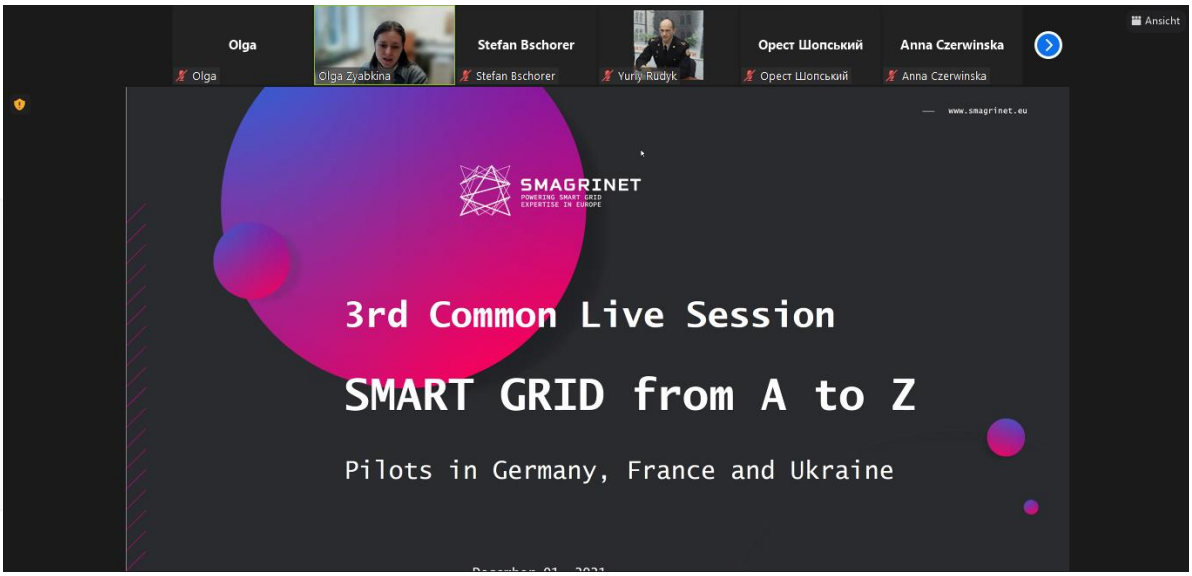

Figure 14. Screenshot of the common on-line live session during the second phase.

After this first experience during the first phase of the programme, partners decided to combine and mutualize as much as possible the live sessions. During this second phase, **11 on-line live sessions** were organised, incl. **3 common** on-line live sessions (Germany - France – Ukraine) and **Workshop for broader public** during the International Conference "Information and communication technologies in modern education: experience, problems, prospects", Live broadcast from Lviv (05.11.2021). The live sessions organised during the programme are listed in Table VI. These live sessions included lectures from experts from the consortium as well as external experts. These lectures were:

1) Electrolyzer and Fuel Cell: The Key Technologies for the Development of Smart Grid.
   Speaker: Dr.Damien Guilbert, Associate Professor, Université de Lorraine

2) Explorative Implementation of Open-Source Peer-to-Peer Energy Trading Approaches
   Speaker: Alex Gabriel, researcher, Université de Lorraine

3) Smart Energy Grid trends - from digital twin to AI.
   Speaker: Sebastian Kosslers, Head of VDE Competence Center Smart Grid, Germany

4) Automatic Anomaly Detection in Power Quality Data using AI method.
   Speaker: Dipl-Ing. Olga Zyabkina, research assistant, Chair of Electrical Power Supply, Institute of Electrical Power Systems and High Voltage Engineering, Technical University Dresden, Germany

5) Energy Network Berlin Adlershof
   Speaker: Stefan Bschorer M. Sc., researcher, Department of Energy and Automation Technology, Technical University Berlin

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6) Innovative Teaching Approaches
Speakers: Anna Czerwinska M. Sc., Flavio Gromann M. Sc., researchers, Department of Energy and Automation Technology, Technical University Berlin

7) Evaluation of potential benefits of load flexibility as a part of distribution network planning
Speaker: Gregor Lekan, mag. ing. el., Researcher at Laboratory of Electricity Networks and Devices, Faculty of Electrical Engineering, University of Ljubljana, Slovenia

8) Optimal sizing of battery storage for electrical power systems
Speaker: Aivaras Slivikas, project engineer, Kaunas University of Technology, Lithuania

Partner	Broader Public		Researcher		Workforce	
	1st	2nd	1st	2nd	1st	2nd
TALTECH	07/12/2021		07/12/2021		07/12/2021	
TUB-TUD	17/11/2021	24/11/2021 01/12/2021	17/11/2021	24/11/2021 01/12/2021	17/11/2021	24/11/2021 01/12/2021
ULJUB	08/10/2021	29/10/2021	08/10/2021	29/10/2021	08/10/2021	29/10/2021
ULOR	17/11/2021	24/11/2021 01/12/2021	17/11/2021	24/11/2021 01/12/2021	17/11/2021	24/11/2021 01/12/2021
KNAME	17/11/2021	24/11/2021 01/12/2021	17/11/2021	24/11/2021 01/12/2021	17/11/2021	24/11/2021 01/12/2021
UKR	17/11/2021	24/11/2021 01/12/2021	17/11/2021	24/11/2021 01/12/2021	17/11/2021	24/11/2021 01/12/2021
PL	26/01/2022	02/02/2022	26/01/2022	02/02/2022	26/01/2022	02/02/2022

Table VI. Dates of the live sessions organised during the second phase.

3.5. Participation and Completion

The task to involve participants in each programme was not easy for each partner whatever the phase. Table VII summarises the number of persons involved in each programme for the first phase while Table VIII provides the same information for the second phase. Total of participations and total of programme completions during the first and the second session is shown in the Table IX. The first pilots gathered a total of 589 participants out of whom 216 persons completed the whole programme by achieving all the quizzes. This represents a **37% completion rate**. In the second phase, with organizations beyond the consortium, 894 persons signed up for the short-term programmes. Among them, 364 persons completed the programme and reached the minimum score of 70%. It represents a **completion rate of 41%**. Whether it is the first or second phase, the **completion rate is higher than usual completion rate** of MOOC which is on average around 7.5% (Khalil & Ebner, 2014).
Both first and second phase objectives in terms of participation have been reached. The first phase involved **589 persons** over the 270 expected and the second phase involved **894 persons** over the 450 expected. These participants have produced **1368 badges** and **318 certificates** of completion. It remains a limitation for this result, not every country participates equally. Although Portugal, Netherland and Norway were contacted and specific instances of the online course prepared, it was more difficult for them to find the availability and the right timing compliant with the SMAGRINET project. These external partners will finish the short-term programme after the end of the project.

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Partner	BP enrolled	RSCH enrolled	WKFR enrolled
KTU	19	0	0
ULOR	34	42	0
TalTech	89	43	148
TUB-TUD	46	30	41
ULJUB	20	11	60

Table VII. Number of participants for each programme for the first phase.

Partner	BP enrolled	RSCH enrolled	WKFR enrolled
KTU	33	31	50
ULOR	14	65	16
TalTech	46	43	162
TUB-TUD	8	47	55
ULJUB	31	5	24
KNAME	58	23	38
UKR	/	30	5
PL	64	6	1
CZ	0	38	1
PT	0	1	/
NL	0	0	0
NO	0	0	0

Table VIII. Number of participants for each programme for the second phase.

	BP enrol	BP compl	RSCH enrol	RSCH compl	WKFR enrol	WKFR compl	Total enrol	Total compl	Rate
Phase 1	214	84	126	29	249	103	589	216	37%
Phase 2 Consortium	132	61	191	42	307	120	630	223	35%
Phase 2 Outside	122	83	98	26	44	32	264	141	53%
Total	**468**	**228**	**415**	**97**	**600**	**225**	**1483**	**580**	**39%**

Table IX. Number of participation and completion for the first and second phase.

Another interesting indicator concerning the participation is the time spent on the platform. Luckily, Canvas LMS provides the time a participant was connected to the platform. Although it provides an indication of the time required by the different programme, there is an important limit since inactive presence is also counted. It leads to really extreme values as for instance a participant with a total time of 180 hours. Table X provides this indicator for each programme and partner. While creating this table, it was noticed that a part of the participants spends only several minutes on the platform. For this reason, the data was filtered to only consider the statistic of people who completed

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the programme. Even with this filter, there is an important variation. Participants in the Broader Public programme from TUB-TUD were nearly 4 times faster than participants from ULOR. The same observation can be made for the researcher programme between ULOR or TUB-TUD and ULJUB. It can be supposed that participants did not have the same familiarity with the subject.

	BP enrolled	BP completed	RSCH enrolled	RSCH completed	WKFR enrolled	WKFR completed
KTU	8:50:27	7:28:03				
ULOR	15:38:52	17:03:40	11:26:36	25:34:45		
TalTech	6:11:24	10:18:21	1:21:30	9:32:26	20:30:50	26:08:17
TUB-TUD	3:26:52	4:26:51	11:28:01	24:29:06	5:08:07	25:05:07
ULJUB	6:10:21	12:17:36	4:04:44	3:47:11	19:16:44	29:07:29
Mean	**8:03:35**	**10:18:54**	**7:05:13**	**15:50:52**	**12:12:26**	**27:06:18**

Table X. Mean time spent by participants on the Canvas LMS during the first phase.

The same table was produced for the second phase of the programme (Table XI). It can be noticed that total numbers of this second phase are really different from the first phase. It is not surprising from the standpoint of the mean time spent by enrolled people as it gathers people who spend time to complete the programme with people who only read or watch the first lecture. It is much more surprising for the time spent by people who completed the programme. The cumulative time of the video is over 4 hours, it means some students did not watch or read the content, they directly answered the quiz.

	BP enrolled	BP completed	RSCH enrolled	RSC completed	WKFR enrolled	WKFR completed
KTU	8:58:14	8:30:03	24:41:17	24:21:54	10:52:04	10:16:04
ULOR	14:50:35	11:45:16	10:09:32	11:43:39	7:17:44	0:00:00
TalTech	5:13:55	2:19:50	5:35:39	0:00:00	2:18:07	0:00:00
TUB-TUD	0:12:41	0:00:00	8:42:15	14:27:09	3:03:34	0:00:00
ULJUB	4:50:49	2:59:53	13:57:33	21:16:52	12:15:51	13:24:50
KNAME	8:19:38	7:40:04	19:47:25	10:40:18	22:02:00	21:01:01
UKR	/	/	12:26:30	7:39:03	5:58:29	3:31:41
PL	8:29:04	5:22:58	4:27:12	0:00:00	0:00:00	0:00:00
CZ	0:00:00	0:00:00	2:38:25	0:00:00	/	/
PT	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
NL	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
NO	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00	0:00:00
Total	**4:37:43**	**3:30:44**	**8:32:09**	**7:30:44**	**5:47:59**	**4:23:03**

Table XI. mean time spent by participants on the LMS during the second phase.

Another indicator that can be considered to evaluate the implication and the impact of the project is the number of views on YouTube. As each video embedded in the Canvas platform generates statistics regarding YouTube indicators, it can provide an idea of the interest in the videos in the programme. On YouTube, videos are gathered into playlists. These playlists are only accessible on

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YouTube and reached 128 and 1306 views respectively for the French and the English version. These number of views are not related to the sum of views of each video, it is the number of views of the playlist page.
As there are 72 videos for the programme on YouTube, we will not give the details of each one, however the Table XII provides general statistics of the videos. Statistics for the French version are very low arguing the benefits of the efforts invested for the French translation. The low number of views of the French videos can also be justified by the fact that French videos are not listed in the SMAGRINET YouTube channel and not listed through research to avoid confusion with English version. It means views for French videos are closer to views through Canvas. For the English perspective, the number of views is very high however it stays below the number of theoretical views if each participant who completed the programme had watched the 36 videos. The number of average views leads to a similar conclusion. Participants do not watch all the videos. This is especially true since the videos are also listed on YouTube and accessible to people who do not follow the programme. It stays coherent with the mean time measure; some participants only read the content and answered the quiz.

	FR	EN
min	1	42
max	39	1 197
mean	9,8	297,8
std dev	6,6	241,8
total view	354	13 101

Table XII. Overall statictics of videos on YouTube.

3.6. Notes about implementation

Several difficulties were met to engage people in the short-term programmes notably for the workforce programme. At ULOR, the local actors and companies did not want to participate due to videos and content in English. To involve more actors, it was decided to translate the content, the voice over on the video and add French subtitles. This translation has opened up opportunities for collaboration with RTE to integrate the programme in the internal training catalogue. However, negotiation took time as some modification were asked before spreading it inside the company. This collaboration will be achieved after the end of SMAGRINET project. Similar reactions were also observed by partners in Estonia. In addition to translating the content, TalTech also found a slightly different way to involve participants in the short-term programme. They succeed to add the short-term programme to the training catalogue of the national re-education programme for unemployed people. It increases the potential impact of the programme. One of the drawbacks is the usage of another learning management system that does not allow the identification of improvement for the programme. The initiative also provides an insight to deploy the programme on national MOOC platform that has much more audience. Another alternative would be to publish the programme on a notorious MOOC platform such as EdX but after a quote, it is limited to university and organisation that are partners of the platform.

To effectively spread the short-term programme and reach more people in the second phase, partners have shared with each other the communication strategy used for the first phase. For the broader public, social networks such as Facebook and Twitter were used by some partners. Some partners took benefits of the

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audience of the university and faculty on social networks whereas others were not allowed by their university to benefit from their visibility. For more specific audience like RSCH and WKFR, social networks such as LinkedIn or Telegram were used in parallel to take advantage of professional associations to promote the programme through their newsletter to their members.

Concerning the live sessions, the difficulty to involve participants was also highlighted. In response, some partners involved industrial partners to present an industrial point of view concerning smart grids. This initiative was well received and increased the number of participants. Two responses were suggested to increase the participation rate in the live sessions:

- Make it mandatory to get the certificate of completion.
- Perform a live session / conference with external partners to kick-start the launch of the short-term programme.

4. Content Improvement

4.1. First phase

4.1.1. Feedbacks

The overall feedback from participants is clearly positive. However, the first pilot allowed to identify several issues in quizzes and lectures, such as mistakes, typo or misleading sentences. It also revealed difficulties in delivering the certificate of completion. Another feedback was about the work time required by the programmes. Indeed, the time estimation for the RSCH and WKFR programmes seems to be underestimated.

Some participants also wanted more practical approaches for smart grids, with for example, more calculation and exercises during the live sessions. This additional content can be handled in a specialisation module.

4.1.2. Difficulties

Several difficulties were faced during the first phase of the pilot:

- Wrong correction of the quizzes,
- Correction of the open-ended question was both time-consuming for local programme leaders and blocking delivery of the certificate,
- Bad settings in the quiz feedback and number of attempts,
- Add hints about the number of responses expected in the quiz
- Some quizzes were quite hard notably concerning the information system,
- Some participants reached the minimal score to receive the certificate but an error in a quiz can block access to the certificate,
- Some open-ended questions were inadvertently left in several quizzes and were both confusing for participants and local programme managers,
- Issues with the “fill in the blank” questions.

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4.2. Second phase

4.2.1. Implemented improvements

According to the observation done and feedback received during the first phase, several improvements have been realised in order to improve the quality of the training for the second phase. The improvements were:

- removing the open-ended questions.
- clarifying some questions in quizzes and their automatic correction.
- reviewing the entire content of the programme to remove typos and clarify abbreviations that may not be explained.
- experimenting a way to split new joiners from first phase participants. The ambition was to keep access to participants who finished the programme.
- Experimenting another way to deliver the certificate of completion.
- Implementing micro rewards to have a more engaging experience (open badges). It would provide a proof of small success even if the main certificate is not reached
- Improving the certificate of completion to better traduce the content and the effort it represents to have it. A QR code was added to redirect to the syllabus of the programme as well as the mean time required to finish it.

4.2.2. Difficulties

The second phase of the pilot was also the opportunity to identify other difficulties in the way the pilot was organised. The idea of monitoring the participation of each country in the short-term programmes influenced its implementation. Each country had its own three short term programmes that were piloted according to their own schedule. The organisation allowed a high degree of flexibility but it has also some limitations. A lack of reactivity in the creation of the Czech instances and the modification of the landing page to redirect them to the right Canvas instances had a huge impact on the Czech programme. They were redirected to the default instances that were those of TalTech with no ability to transfer them or sperate them from the prior group.

5. Summary

The short-term programmes have been implemented twice for three target groups: broader public, engineering researcher and workforce. Improvements and corrections were done between the first and the second phase to improve the content quality and the rewards. The objectives in terms of participation have been reached during both first and second phase of the pilot programme with respectively 437 and 894 persons who participated. This is almost double of the initial objectives. In addition, 1368 badges have been rewarded to participants who properly completed the quizzes. This is also almost double of the initial objectives. The short-term programmes “Smart Grid from A to Z” were also disseminated in countries outside those of the consortium. Among these countries, Ukraine, Poland and Czech Republic brought participants. Other outreaching countries are currently applying the programme.

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From the perspective of the short-term programmes, SMAGRINET project is a success, all the objectives can be considered as completed. Furthermore, some of the participants already asked for the material to reuse it in their course. Based on this kind of needs, it would be valuable to share on the project website the materials or at least make the programme accessible as a self-paced programme. Additionally, designing and especially involving companies to the workforce programme has enabled consortium partners to create/reinforce synergies with private partners. The project was the opportunity to establish a connection between universities and private actors. Nowadays, private actors are formulating the needs of collaboration with universities to tackle issues related to lifelong training.

All the materials created during the project will be made available for any trainers who would like to reuse it. Some teachers who participated to the programme already asked for the material to reuse it in their course. However, for organisation who would like a personalized service with follow-up and additional chapters on specific topics, the consortium is thinking about an economical model. This could be done individually based on the resources produced during the project or collectively sharing the additional resources created for industrial needs with the members of the consortium. Whatever the solution selected, the short-term programmes have created a dynamic interaction with companies who wish to update themselves in the field of smart grid and involve their employees in a life-long training process.

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www.civitta.com

LITHUANIA
www.ktu.edu

GERMANY
www.sense.tu-berlin.de

ESTONIA
www.elektriliit.ee

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www.welcome.univ-lorraine.fr

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