

Erasmus + Project No598241-EPP-1-2018-1-RS-EPPKA2-CBHE-JP

**Strengthening Educational Capacities by Building Competences and
Cooperation in the Field of Noise and Vibration Engineering**

SENVIBE

Quality Report for WP2

Activity 7.2

Date: 10/11/2022

1. DESCRIPTION OF THE WORK PACKAGE (WP)

This comprised three aspects namely:

- 1. Requirement, design and enhancement of an ICT platform. (WP 2.1)**
- 2. Procurement, installation and activation of the equipment. (WP 2.2)**
- 3. Training of Serbian staff (academics and technicians) (WP 2.3)**

WP2.1 ICT Platform. Task description:

The choice of the ICT platform was to be conducted to cover the specified main uses envisaged, which are for the delivery of education material and assessment, be it for either credit bearing undergraduate and master courses at the Serbian HEIs, for Life Long Learning courses as well as for the member of newly established Hub. Hence, initially the focus had to concentrate on the choice of software for such applications, as well as ease of it being incorporated and facilitated for the project and for futureproofing and sustainability. After software choice and code development using moodle, a successful and working version of the e-SENVIBE online delivery and filestore for teaching, communication and assessment feedback was established (see [e-SENVIBE: Pristup sistemu \(uns.ac.rs\)](http://e-SENVIBE.Pristup.sistem.uns.ac.rs)) and now supports delivery for undergraduate courses, the new MSc in Vibro-Acoustic Engineering in the University of Novi Sad, the Life Long Learning course material and the Noise and Vibration Hub.

WP 2.2 Procurement, installation and activation of the equipment. Task description:

The task involves the identification of suitable support educational and teaching material, covering textbooks in addition to practical instrumentation, data acquisition and establishment of a suitably well equipped and functional teaching space in Vibro-Acoustic Engineering at the University of Novi Sad. The equipment would, in some cases, need some technical support from Partners 2 and 3 as well as experts in measurement and instrumentation within the Serbian partners, to ensure that all of the instrumentation was used correctly and it ensured that it could be integrated into the universities for teaching and practical exercises, project work, etc.

WP 2.3. Training of Serbian staff. Task description:

The main planned overseas training was for it to take place during two alternate visits, by a selection of academic and support staff from the four universities and other non-academic personnel (Partners), to each of the EU partner universities in Sweden (P2) and the UK (P3). For training at a national level, dependent upon the training needs, two additional follow up reciprocal training visits from the Serbian partners to other national partners would be required and subsequently this was scheduled generally in regard to specific subjects and more practical exercises and laboratory developments.

2. ACTIVITIES AND THEIR REALIZATION

2.1. Assessment per task

SENVIBE activities		State		
No.	Title	Fully Completed	Partially Completed	Not Completed
WP2.1	Requirement, design and enhancement of an ICT platform.	✓		
WP2.2	Procurement, installation and activation of the equipment.	✓		
WP2.3	Training of Serbian staff (academics and technicians)	✓		

2.2. Description of the implemented activities

WP2.1 involved reviewing different software options and configurations, assessing their advantages and disadvantages as well as ongoing suitable support and sustainability in addition to compatibility with existing systems and transferability and ease of use by both staff and students alike. By comparison of existing software packages (i.e. Blackboard) at KTH and UoS and using these as benchmarks and comparators then the final choice of the free and open source code Moodle was chosen and used as the tool to develop the ICT platform, entitled e-SENVIBE, for the learning platform and subsequent interface. Subsequently, the IT staff at UNS (P1) successfully implemented the framework and system, with feedback given by all partners during the subsequent project adoption and use.

WP2.2 covered the selection and purchase of suitable published textbooks and various pieces of equipment, which could be directly relevant to students studying at four Serbian HEIs involved, and especially on the MSc programme developed in at the University of Novi Sad. The instrumentation and sourcing for the hardware comprising lab based and portable (for external sound level measurements and assessments). Also, both the laboratory and anechoic chamber facility design and choice went through a review and subsequently the complete hardware all ordered, received, checked and then used successfully. The specific hardware for the purpose was sourced as according to the project submission. After delivery of the instrumentation, suitable training and familiarisation has taken place and, as part of WP2.3, suitable assistance from the University of Southampton (P3) has been provided to check and enable experimental laboratory activities and exercises to be designed, tested and implemented.

WP2.3 incorporated the tasks related to personal academic training on both the administration, running and delivery with suitable training covering less familiar topics and subject matter that has not previously been widely taught or with experts in the field in Serbia. It involved all elements of teaching material from delivery and content of the more theoretical aspects, the wider professional engineering training as well as practical use and expertise in the vibroacoustic instrumentation and assistance in the lab designs and implementations for the technicians that would be involved. The main academic training from the international partners comprised two in-person two day events at KTH (P2 Sweden), one two-day in-person event at ISVR (P3 UoS UK) and one delayed online training day delivered by UoS due to Covid19 travel restrictions etc. The second academic training by UoS (P3) was rearranged to follow an online training and feedback sessions with teaching material given in advance. In addition, for the main benefit to the University of Novi Sad (P1), there were two additional days and visits from academics from Novi Sad to ISVR for support and development of physical demonstrators and lab descriptions with a subsequent return visit from a UoS (P3) academic to Novi Sad for completion and assessment of the anechoic chamber for suitable laboratory class exercises. Further inspection

and feedback were also provided, in the period encompassing the final meeting, of the fitted out vibroacoustic teaching laboratory and practical experimental configurations.

Training at the national level, within Serbia, took place through two university training events. The first was in 2021 at the University of Nis, covering sound insulation testing, Life Long Learning courses and the Noise and Vibration Hub. The second at the University of Kragujevac took place on the day that immediately followed on after the one day second UoS (P3) training on Human Vibration. The focus of the day covered curricula developments, the courses that are presently available at P5 and further training in noise and vibration measurements

2.2.1. Involvement of people with fewer opportunities: numerical data

0 persons

2.2.2. Refugees

0 persons

2.2.3. Innovation

A number of existing laboratory and teaching materials (lectures, videos, problem sheets, etc.) were transferred from the EU partner universities. The Serbian partners revisited and improved the material, producing new videos, laboratory instructions/workbooks and animated videos for showing and including within the newly developed modules. These videos, for example, showed dynamic responses for a range of input parameters and assisted in the full understanding of the physical behaviour to complement the mathematical formulation. These were also reviewed and feedback given by the EU academic teams and are certainly improvements on what had been originally transferred across.

2.3. Impact

The uniqueness of establishing the new and first national Master's programme for Serbia in Vibro-Acoustic Engineering, now having successfully completed one full year and with graduates, is a clear measure of the impact at the national level. In addition, the enabling through the provisions of the instrumentation, physical laboratory space and lecture material have also enabled the other academic partners to revisit and revise their own programme content and module options. From this starting point, the generation of undergraduate and postgraduate students knowledgeable and skilled in this discipline will further improve their own employability prospects as well as giving scope for further adoption of EU wide accepted standards and regulation in noise and vibration control with the benefit to the wider national economy and business.

2.3.1. Unexpected outcomes/ spin-off effects

One clear effect and consequence of COVID19 was the postponement of the second training event to be held at ISVR in April 2020. This was eventually rescheduled and took place online in April 2022, although clearly not as beneficial.

3. STATISTICS AND INDICATORS

For Training/Mobility Activities

The training was primarily aimed at training of academic and academically related staff at the four partner universities in Serbia (P1, P4-6) in addition to training of the non-HEI individuals and civil servants (P7-9). The training was designed such that the academics could then develop and integrate the material into existing and the development of new degree programmes in Serbian universities. For the non-academic partners, there was interest in the wider noise and vibration issues, regulations and application to subjective noise and vibration topics, including legislation, noise control and the requirements within the EU.

Number of partner country "HEIs' students" trained

Number of partner country "HEIs' academic staff" trained (P1, P4-6)

Number of partner country "HEIs' administrative staff" trained (including IT support staff for ICT platform development activities at P1)

Number of partner country "non-HEI individuals" trained (priv. sector, NGOs, civil servants, etc.) (P7-9)

The detailed breakdown of attendees and individual names are in the attendance sheets on the SENVIBE cloud, but to justify the above figures there is a breakdown by numbers for each training session given in the table below. In some cases the number of attendees varied over the different events and also were not always the same named individuals at each event.

Training event	P1	P4	P5	P6	P7	P8	P9
KTH June 2019	7 (+1)	5	4	4	5	2	2
ISVR (UoS) Dec 2019	7 (+1)	5	4	3	4	2	3
UNI (P4) July 2021	5 (+1)	5	3	5	3	2	1
KTH May 2022	7 (+1)	5	4 (+1)	6	4	2	1
ISVR (UoS) and UniKG, June 2022	7 (+1)	5	7	4	4	2	2

Table: Number of academic attendees at the training events. For P1 and P5 the numbers in brackets corresponds to the demonstrators, IT and admin staff trained.

Impact at individual level: numerical data

Extent of attention given to vulnerable groups

Number of direct beneficiaries in the Partner country (Serbia) per year: academic staff from HEIs

In 2019

In 2020

In 2021

In 2022

Number of direct beneficiaries in the PCs (/year): administrative staff from HEIs

In 2019

In 2020

In 2021

In 2022

Number of direct beneficiaries in the PCs (/year): HE students

Undergraduate students at University of Novi Sad (through taught modules from 2021)

Masters (MSc) students at University of Novi Sad (through taught modules and use of the laboratory for practical and project work) enrolled in the academic year 2021-22, the first running of the programme in Vibroacoustics.

In addition, the books, notes, laboratory classes and instrumentation were also shared and used in the other three Serbian university partners namely the University of Niš, University of Kragujevac and EDUCONS (P4-6 respectively).

Number of direct beneficiaries in the PCs (/year): non HE individuals

In 2019

In 2020

In 2021

In 2022

4. QUALITY ASSURANCE MEASURES

3.1. Reviews conducted in a descriptive form

WP2.1 The use and practical value of the IT platform is evidenced by the significant use of it by partner universities. It was reviewed by an internal reviewer (annex 6). It is also important to recognise that its establishment was critical for the subsequent teaching that used it and also, as a developmental tool, there was some updating and improvements in ease of use and its functionality as more purposes and requirements were fed back from the academic instructors.

WP2.2 A review has taken place of the usage of the textbooks purchased (presented by P5 at the final project meeting, which showed the textbook usage and feedback). As regards the instrumentation, its use and suitability, this has been assessed by the feedback and actual implementation of the laboratory classes at UNI (Event 3) and the demonstrations and training (Event 6) at the University of Kragujevac (P5). The workshop at UNS concentrated on building acoustics, namely the topic of measuring the sound insulation of airborne noise and measuring the sound insulation of impact noise. It covered theoretical, measurements and international standards.

WP2.3 For each of the training events at the EU partners (P2 and P3) and nationally held within Serbia, there was a formal feedback process and extracts from the reviews are given in Annexes 1-5.

For each event there was feedback requested, via questionnaires, from all attendees on the relevance of the topics, the usefulness of the training materials, the organisation, communication and for any other feedback or comments. Also, the partners submitted 'Lessons Learnt' summary and documented feedback. In the following section a summary of the findings and the subsequent responses and actions to address any issues is given.

3.2. Rebuttal/answer to reviews with the actions taken to improve the state

Training Event 1 (KTH P2): The data clearly showed that the negative feedback was only really on the relevance of the training being of immediate use and, given that this was the first event and still before the majority of the teaching material and its delivery had been possible then it is a marginal criticism. More specific detail was also supplied, see Annex 1, and this was taken on board at the subsequent training both at KTH and UoS.

Training Event 2 (UoS P3): In particular for Event 2, at UoS, the training covered a number of practical vibroacoustic laboratory activities, the equipment, hands-on use and the means for ease of transfer to the Serbian academic institutions. It also took on board the feedback from the first training event and hence focussed the activity on more relevant and directly accessible and useful technical training in vibroacoustics and the teaching of it. Much of the feedback was non-critical, although there was suggestions for future coverage, demonstrations etc., followed up in various ways by future meetings and reciprocal visits by Partner 1. The particular request for subjective response to sound and vibration, including hand arm and whole body vibration, etc., was planned to be covered by the second training event at UoS.

Training Event 3 (UNI P4): Generally the nationally delivered course was very well received. Feedback included mention of the good organisation. Whilst some feedback requested more practical measurement experiences, discussion of LLL content and more coverage, then overall the course has enabled the initiation and possibility for future similar events as part of the sustainability of similar training in this area after the project is completed.

Training Event 4(KTH P2): The course took place over five days and comprised coverage of the Masters level module content interspersed with practical lab class activities. Negative feedback was minimal, see Annex 4. The general request would have been for more practical classes, with more hands-on involvement by the attendees and some less academic content, as the audience also included non-academic attendees. Whilst the majority of personnel taking the training were teachers, then that had to lead the content choice and coverage and hence the inevitable feedback that for some individuals the topics were not so applicable and it is difficult to resolve that.

Training Event 5(UoS P2) and 6(UniKG P5) : Due to COVID restrictions, and hence the timing and budget restrictions for overseas travel, the training event at UoS (P2) was postponed and was held as an online training in 2022, which had followed a previous handover to the taught course material that was uploaded to the SENVIBE Cloud. The training included an online Question and Answer session held at the University of Kragujevac, which coincided with the last training exercise for the project that also took place in parallel with these online sessions. Invariably, without personnel being on site at UoS there were no possibilities of practical classes or demonstrations other than pre-recorded videos to accompany the taught content in the form of notes and presentations. In this combined event the material, lab classes and overall satisfaction was very high for the in person delivery by the team at the University of Kragujevac. Unfortunately the material and delivery from the online presenters was not so highly rated, with either irrelevant coverage or not so good an interaction and feedback possible. As some form of remedial action, offers of follow up individual support was given, which would be useful and appropriate for academic teaching in these topic areas.

3.3. Other measures

Clearly the COVID pandemic completely changed the schedule for the last half of the identified training events and coverage. Whilst this was completely unplanned for and unexpected, the project coordinator and the Steering Committee steered the rearrangements and revised schedule and delivery. So overall the project aims and objectives could be fully achieved within the restrictions in place. Having a central communication and information exchange (the SENVIBE Cloud) was invaluable in this aspect.

ANNEXE 1. REVIEW OF TRAINING EVENT 1 KTH 2019

There was separately uploaded to the SENVIBE cloud a separate document (Annex3_to_QCM_SENVIBE_Event_report_KTH Training 2019) covering the training learnt, but a numerical summary of how well it went was produced (see below taken from the document <https://www.cloud.senvibe.uns.ac.rs/index.php/f/8682>)

EVENT EVALUATION BY PARTICIPANTS (in percentage)	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The information I got will be of immediate use to me.	17,2	55,17	10,34	17,24	0
This event covered the topics I have expected to a very high extent.	13,79	44,82	31,03	10,34	0
I enjoyed the cooperation and interaction with the other participants.	44,82	44,82	10,34	0	0
The materials distributed are useful and informative.	34,48	27,58	27,58	6,89	0
The discussions were relevant for the participants.	37,93	34,48	20,69	6,89	0
The methods of working were suitable for the topics and for the participants.	34,48	44,82	6,89	13,79	0
The overall organisation was professional.	37,93	27,58	27,58	6,89	0
The time management was always to my fullest satisfaction.	48,27	37,93	10,34	3,44	0
The style and level of communication between organisers and participants was professional.	41,38	34,48	17,24	6,89	0
I would recommend this kind of event to my colleagues.	48,27	27,58	10,34	13,79	0

Prior Experience of similar events – Overall %	79,31
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The data clearly shows that the negative feedback was only really on the relevance of the training being of immediate use and, given that this was the first event and still before the majority of the teaching material and its delivery had been possible then it is a marginal criticism. More specific detail was also supplied, see below, and this was taken on board at the subsequent training both at KTH and UoS. In particular Event 2, at UoS, covered a number of

practical vibroacoustic laboratory activities, the equipment, hands-on use and the means for ease of transfer to the Serbian academic institutions.

Strengths and limitations of the event: please include comments received

<p>Strengths of the event and contributions or activities enjoyed by participants:</p>	<ul style="list-style-type: none"> • Exchange of information, experience and knowledge • Insight in organisational structure and education activities of KTH • New people, new environment • Visit to KTH laboratories • Interesting new ideas and methods that are positive at KTH • Visit to Marcus Wallenberg Laboratory • Presentation about KTH education • Insight into research at Marcus Wallenberg Laboratory • It was my pleasure to listen excellent teachers • I enjoyed visiting the laboratories • Visiting KTH campus • Visit to Marcus Wallenberg Laboratory for sound and vib. research • KTH innovation • Sound and vibration master program track at KTH • visit to vibro-acoustics lab • in-depth insight in KTH activities (educational programmes, organisational structure, innovation activities, policy activities in sustainable development • info on strategic partnerships of KTH and different stakeholders (very valuable input for establishment of HUB within the Senvibe project) • I enjoyed in Donnys presentation • I enjoyed interaction and cooperation with other participants as well as with colleagues from host institution KTH. It is a nice experience for all members and participants. Some information's can be useful for further activities on our institution • visit to the laboratories • presentation of the curse organisation and how the students are included • a large number of highly component speakers • lecture of Deny about ideas and research centre and lecture about sustainable development • Training which is organised by KTH was at the basic level of information about organisation of KTH University and too general lectures about ISO and sustainable development goals
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	<ul style="list-style-type: none"> • The quality of the people chosen for the team of this project provides security in the sustainability of the project. Presentation of Donnie Lygonis provides an excellent example of cooperation between academic institutions and economy • Impressive number of very good presentations, great lecturers • highly developed systems were presented so I have gained a lot of knowledge useful both for project and my personal development • Meet new people, talk about how to improve education methods • I enjoyed lecture of Mr. Donnie Lygonis • Team effort, socialisation, networking • the information that I find useful is the successful teaching methods that KTH has implemented • on similar events the topics are better planned and adapted to the participants • better planed time for the participants to work • the interaction with other team members was permanent and enabled immediate analysis of the presented contents, while the impressions and memories still fresh • I would like to emphasize among all, the presentation of Donnie Lygonis. It was very useful for us. Full of energy • Since the topics presented are not in the domain of my interests I cannot give you a comment
<p>Suggestions for the improvement:</p>	<ul style="list-style-type: none"> • More in-depth analysis of HUB structures and activities • Introducing topics on noise and vibration (teaching, experiments, equipment) • More relevant talk about noise and vibration engineering and less about management topics • Maybe more concrete work in the lab. • I think that lectures should be more specific • More topics on HUB organisation and partnerships • Maybe- Training to include some visit to industry - positive examples • Some topics were not relate to the project tasks, so a little bit more communication in order to cover all topics related to the project Senvibe • Providing coffee during coffee break • More practical demonstration

	<ul style="list-style-type: none"> • I hope that next training will be at more practical approach with more information about environmental noise and vibrations measurements • I would appreciate small hosting improvements such as coffee, one mutual lunch etc. This is not crucial but it would improve the overall team atmosphere and peoples satisfaction • Include coffee and tea in coffee breaks • organize at least one lunch or dinner for all participants • include some social events which include all participants • more practical trainings from Senvibe topics • presentations should be more relevant for the Senvibe project • the organisation of the event, enabled by host partner could be better • with better coordination and communication with participants • better planning of topics, planning topics together • adapt the themes to the participants in accordance with project tasks • representatives of non-academic partners often found themselves not interested in academic topics such as recruitment and international cooperation. The future trainings might include representatives of government, industry and other stakeholders as trainers • with practical examples which is directly connect to the interest of the certain stakeholders • with better coordination and communication with participants • better planning of topics for participants and adapt the themes to the participants in accordance with project tasks
<p>Any further comments</p>	<ul style="list-style-type: none"> • Organization of the event could be much better • Excellent presentation of Mr. Donnie Lygonis on KTH innovation-inspiring • In the future I wish more information about legislation in N&V in EU • Participants have shown to misunderstand the role of coordinator and expect the coordinator to be a host as well • The questionnaire isn't actually anonymous • Host partner did not fully understand the theme of the meeting, so much of the presentations and information were redundant, not really applicable in Serbia • A training in communication skills and sensitivity training seem to be needed to the project management team

ANNEXE 2. REVIEW OF TRAINING EVENT 2 UOS 2019

There was separately uploaded to the SENVIBE cloud a separate document (Annex 3_to_QCM_SENVIBE_Event_report_UoS-ISVR_Training) covering the training learnt. Each partner gave feedback via a Training Feedback document subsequently uploaded to the SENVIBE Cloud. Extracts are reproduced below:

EVENT EVALUATION BY PARTICIPANTS (in percentage)	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The information I got will be of immediate use to me.	48,14	48,14	3,70	0	0
This event covered the topics I have expected to a very high extent.	66,66	29,63	3,70	0	0
I enjoyed the cooperation and interaction with the other participants.	81,48	18,52	0	0	0
The materials distributed are useful and informative.	66,66	25,93	7,41	0	0
The discussions were relevant for the participants.	62,96	33,33	3,70	0	0
The methods of working were suitable for the topics and for the participants.	70,37	25,93	3,70	0	0
The overall organisation was professional.	92,59	3,70	3,70	0	0
The time management was always to my fullest satisfaction.	77,77	14,81	3,70	3,70	0
The style and level of communication between organisers and participants was professional.	92,59	3,70	3,70	0	0
I would recommend this kind of event to my colleagues.	88,89	3,70	7,41	0	0

Prior Experience of similar events – Overall %	92,59
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Feedback	<ul style="list-style-type: none"> • Although the participants have different background, the level of presentation was perfectly and suitably chosen to be interesting to the most of them. • The practical part of the lecture was very informative and interesting, because it was focused on both experimental procedure and outcomes (what students should learn through it). • We are very pleased and grateful for the hospitality, well organization and overall efforts.
Possibilities for transfer and implementation in Serbia	Yes
If the previous answer is 'Yes', are there any questions for transfer and implementation in Serbia	<ul style="list-style-type: none"> • The sound power measurement laboratory exercise was very informative, thus we believe we would not have additional questions about it. • It is possible that we would have a few questions related to the sound level meters laboratory exercise.
Suggestions for Training 3 in Southampton	<p>Some demonstration of laboratory exercises in:</p> <ul style="list-style-type: none"> • Applied Audio Signal Processing (array signal processing, MIMO systems in acoustics, hearing aids and cochlear implants) • Biomedical Application of Signal and Image Processing (Noise reduction in biomedical signals) • Architectural and Building Acoustics (impulse response)

Partner: UNS (P1)

Feedback	<ul style="list-style-type: none"> • The theory is presented in the way that all participants have general picture what is the goal of each laboratory exercise. • The rigs are simple but can be used for multiple exercises and we will copy principles. • Lab sheets are detailed and thorough, and enable students to be well guided through the exercises.
Possibilities for transfer and implementation in Serbia	Yes
If the previous answer is 'Yes', are there any questions for transfer and implementation in Serbia	<ul style="list-style-type: none"> • We will compile a list of the equipment to be purchased, and we will need your help to check it and specify it.
Suggestions for Training 3 in Southampton	Some demonstration of laboratory exercises in:

	<ul style="list-style-type: none"> • <i>Human Responses to Sound and Vibration</i> • <i>An example of a lab exercise that includes a small shaker (base excited system)</i> • <i>An example of a lab exercise that includes a hammer (impact excitation)</i>
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Partner: University of Nis (P4)

Feedback	<ul style="list-style-type: none"> • <i>The laboratory exercise is very useful for students</i> • <i>The laboratory exercise can be implemented and adopted for the undergraduate and postgraduate students</i> • <i>Background theory is very good conceptualized</i>
Possibilities for transfer and implementation in Serbia	Yes.
If the previous answer is 'Yes', are there any questions for transfer and implementation in Serbia	<ul style="list-style-type: none"> • <i>No questions. University of Nis, Faculty of Occupational Safety, Noise and Vibration Lab has the Bruel Kjaer equipment (5 Channel Pulse system, Sound analyzer 2250, 2260, 2270, microphones, sound calibrators, sound source, power amplifier, etc.) and sound power measurement (all three method) lab exercise can be completely implemented.</i>
Suggestions for Training 3 in Southampton	<ul style="list-style-type: none"> • <i>Environmental Noise Measurement</i> • <i>Environmental Noise Regulations</i> • <i>Active Noise Control</i>

Partner: University of Nis (P4)

Feedback	<ul style="list-style-type: none"> • <i>Presented laboratory exercises are very interesting, matching the capabilities and background of the undergraduate and master students.</i> • <i>Preparation for the exercises is very well presented and suitable even for those who are not the experts in the field.</i>
Possibilities for transfer and implementation in Serbia	Yes, with the slight modification to match available equipment and facilities.
If the previous answer is 'Yes', are there any questions for transfer and implementation in Serbia	<ul style="list-style-type: none"> • <i>We have bit the immediate questions at the moment as lab exercises were very clear.</i> • <i>If we think of important questions, we will ask them in the coming days.</i>
Suggestions for Training 3 in Southampton	<ul style="list-style-type: none"> • <i>Whole body vibration measurements including frequency measurements and analysis.</i> • <i>It would be interesting to see a lab setup of the whole body measurements when there are some of the vibration dumping material or system structure applied.</i> • <i>Hand-arm vibration measurement in the laboratory environment using MEMS sensor technology.</i>

Partner: Faculty of Mechanical and Civil Engineering in Kraljevo of University of Kragujevac (P5)

Feedback	<ul style="list-style-type: none"> • We are unanimously delighted with the training • Wisely designed and very efficient • The focus put on education and research, could be that non-academic partners might not be that interested as the academic ones • The presentation of the complete methodology for sound intensity measurements was invaluable – especially presentation of the approach to preparation of students for the laboratory exercise and the methodology to develop students' understanding of practical aspects of the measurement – we believe that it is better than the approach that we use;
Possibilities for transfer and implementation in Serbia	Yes
If the previous answer is 'Yes', are there any questions for transfer and implementation in Serbia	<ul style="list-style-type: none"> • Is there any restriction from the point of view of intellectual property rights to develop the identical (at least in the beginning) lab exercise in Serbia?
Suggestions for Training 3 in Southampton	<ul style="list-style-type: none"> • Sound absorbers – education and research • Signal-processing – education and research • Sound absorption materials and metamaterials
Feedback	<ul style="list-style-type: none"> • The complete training was well-organized and useful • The detailed explanation of complete teaching methodology is very interesting and useful • An important aspect was application of the video clips for introduction of students to lab exercises • The application of different instruments for measurement of a single quantity is
Possibilities for transfer and implementation in Serbia	Yes
If the previous answer is 'Yes', are there any questions for transfer and implementation in Serbia	<ul style="list-style-type: none"> • Are there any limitations in terms of intellectual property rights in transferring the presented lab exercises to Serbia?
Suggestions for Training 3 in Southampton	<ul style="list-style-type: none"> • Modal analysis • Vibration measurements for maintenance purposes • Signal processing in education and research in the field of vibration

Partner: University Educons (P6)

Feedback	<ul style="list-style-type: none"> • Exercises were very useful and applicable • Lecturer was excellent • Practical exercises were adjusted to the different level of knowledge of all participants
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Possibilities for transfer and implementation in Serbia	Yes
If the previous answer is 'Yes', are there any questions for transfer and implementation in Serbia	<ul style="list-style-type: none"> • We would like to learn how to prepare practical vibration exercises applicable in the field of environmental protection
Suggestions for Training 3 in Southampton	<ul style="list-style-type: none"> • Impact of vibrations on biota

Partner: SUPEP (P7)

Feedback	<ul style="list-style-type: none"> • Insight in acoustic and vibration lab exercises and practices (methodology, equipment, calculation methods and learning outcomes) was very usefull • Lecturers were excellent
Possibilities for transfer and implementation in Serbia	Yes
Suggestions for Training 3 in Southampton	<ul style="list-style-type: none"> • Defining the roles and responsibilities of different stakeholders/intersest groups in the No&Vib Hub • How to optimize the work and input of different stakeholders in the No&Vib Hub in order to gain mutual benefits • How to provide financial sustainability for the No&Vib Hub • How to provide and implement the long-term mechanisms for the sustainability – shpaing the future of the No&Vib Hub • What should be the learning outcomes for students in the No&Vib Hub (internships/MSc thesis) • How to design the optimal monitoring of environmental noise (measurement frequency, positioning of measurement network, data analysis, reporting...) – experience and recommendations

ANNEXE 3. REVIEW OF TRAINING EVENT 3 UNIVERSITY OF NIS 2021

A quantitative summary of the responses are given in the table below.

EVENT EVALUATION BY PARTICIPANTS (in percentage)	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The information I got will be of immediate use to me.	52.3	36.9	10.8		
This event covered the topics I have expected to a very high extent.	44.6	41.5	6.15	7.7	
I enjoyed the cooperation and interaction with the other participants.	63.1	32.3	4.6		
The materials distributed are useful and informative.	53.8	38.5	6.2		
The discussions were relevant for the participants.	52.3	40	6.2		
The methods of working were suitable for the topics and for the participants.	55.3	33.8	10.7		
The overall organisation was professional.	73.8	21.5	4.6		
The time management was always to my fullest satisfaction.	56.9	32.3	10.7		
The style and level of communication between organisers and participants was professional.	64.6	33.8	1.5		
I would recommend this kind of event to my colleagues.	66.1	21.5	9.2	1.5	

Prior Experience of similar events – Overall %	86.6
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Specific feedback:

Strengths of the event and contributions or activities enjoyed by participants:	<ul style="list-style-type: none"> • strong efforts to be a good host • face to face discussion • there is still no understanding and agreement on the courses - further work is needed • exceptional expertise and enthusiasm of the lecturers • clearly adopted activities and deadlines
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	<ul style="list-style-type: none"> • a guide to the economy to separate - especially noise, especially vibration in the work environment • work together to improve the knowledge needed for the economy • Effective team work • great cooperation • innovative approach • active participation of all • activities to be done • the general public perception of environmental noise • launching a marketing campaign for surveys • hosting • education • positive atmosphere • evaluation of previously held courses • self-evaluation • constructive suggestions for improvement
<p>Suggestions for the improvement:</p>	<ul style="list-style-type: none"> • more concrete examples of measuring noise in the environment • the necessary conclusions are missing • leadership skills are required to lead the meeting • better air conditioning • better audio playback while playing multimedia content • it would be good if all the topics on the agenda were resolved to the end
<p>Any further comments</p>	<ul style="list-style-type: none"> • not done the most important thing - improving the material for LLL

- there is no agreed method for education

ANNEXE 4. REVIEW OF TRAINING EVENT 4 KTH 2022

A quantitative summary of the responses are given in the table below.

EVENT EVALUATION BY PARTICIPANTS (in percentage)	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The information I got will be of immediate use to me.	23.3	60.0	16.7		
This event covered the topics I have expected to a very high extent.	26.7	60.0	13.3		
I enjoyed the cooperation and interaction with the other participants.	50.0	43.3	6.7		
The materials distributed are useful and informative.	30.0	53.3	16.7		
The discussions were relevant for the participants.	50.0	43.3	6.7		
The methods of working were suitable for the topics and for the participants.	30.0	63.3	6.7		
The overall organisation was professional.	83.3	13.4		3.3	
The time management was always to my fullest satisfaction.	53.3	36.7	10.0		
The style and level of communication between organisers and participants was professional.	90.0	6.7	3.3		
I would recommend this kind of event to my colleagues.	80.0	6.7	13.3		

Prior Experience of similar events – Overall %	90.0
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Feedback received is on the following pages.

Strengths of the event and contributions or activities enjoyed by participants:

- exceptional expertise and enthusiasm of the lecturers
- education
- face to face discussion
- Effective team work
- innovative approach
- work together to improve the knowledge needed for the economy
- positive atmosphere
- gaining new knowledge and experience in teaching methods
- professor's approach to problem and method of work
- Easy access to very complex problems
- I liked the lessons with the experiment the most
- Professor methodology
- Organization of classes, equipment of classrooms and laboratories
- Experimental work
- Visits to laboratories
- Gaining new knowledge and experience in teaching methods
- The training was focused on teaching methods and had a clear impact on the area
- Active participation of participants and good interaction between lecturers and other participants
- Enthusiasm of the professor and sharing his knowledge and experience widely
- great cooperation
- active participation of all
- self-evaluation

	<ul style="list-style-type: none"> lecturers (most of them) have excellent sense for participants attention experimental issue lab. Exercise visit laboratories
<p>Suggestions for the improvement:</p>	<ul style="list-style-type: none"> no suggestions, maybe to organize some kind of social events where would be participate both hosts and guests no suggestion; excellent event I have no suggestion Explicit participation in experiments exclude "generic information" from this firm by adding more discussions to each presentation and by organizing more social events with more topics for other participants (except technical profession) include more not academic topics I am satisfied with what was shown, I have no suggestions more experiments more trainings (measurements) more practical examples, lab. exercises etc. very complex group so it is very hard to satisfied interests of all. On my opinion it was great training, it should be more information about environmental noise three topics on environmental noise should be included if possible some exercises may be performed by participants in training, as it was the case at ISVR

	<ul style="list-style-type: none">• perhaps even more demonstrations of experiments• more concrete examples of measuring noise in the environment
Any further comments	<ul style="list-style-type: none">• Ulf Carlsson, Susann Boil and Karl Bolin are excellent lecturer• In general, I am very satisfied• participants should be more involved in conducting experiments• my expectations are completely fulfilled. J don't have any comments• while very useful for teachers, the training might be of much less usefulness to non-academic partners• thank you

ANNEXE 5. REVIEW OF ONLINE TRAINING EVENT5 5 (UOS ONLINE) AND EVENT 6 (UniKG) 2022

EVENT EVALUATION BY PARTICIPANTS <i>(in percentage)</i>	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The information I got will be of immediate use to me.	43.47	43.47	13.04		
This event covered the topics I have expected to a very high extent.	60.87	26.08	13.04		
I enjoyed the cooperation and interaction with the other participants.	86.95	13.04			
The materials distributed are useful and informative.	60.87	34.78	4.34		
The discussions were relevant for the participants.	60.87	34.78	4.34		
The methods of working were suitable for the topics and for the participants.	56.52	30.43	8.69		
The overall organisation was professional.	86.95	13.04			
The time management was always to my fullest satisfaction.	73.91	26.08			
The style and level of communication between organisers and participants was professional.	86.95	13.04			
I would recommend this kind of event to my colleagues.	82.61	17.39			

Prior Experience of similar events – Overall %	100.00
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Strengths and limitations of the event: please include comments received

<p>Strengths of the event and contributions or activities enjoyed by participants:</p>	<ul style="list-style-type: none">• -Lectures and discussion were professional, organization too.• -Time management• -UniKG training was the best part of the event• -Professional organization• -Interesting day 2• -Useful presentation• -Lab equipment was impressed and also presentation and organization from Serbian partner UniKG• -Presentation from ISVR was good but content wasn't suitable for participants• -Insight in measurement and evaluation of biodynamics (characterization and quantification)• -Insight in modelling in practices of biodynamic responses• -Quantification of vibration perception and comfort• -Insight in teaching curriculums research at faculty of mechanical and civil eng• -Excellent organization• -Many competent and professional people are involved• -Interesting topics and useful info• -Presentation of practical work and equipment• -The labs is the best• - Great cooperation between partners• -Great hosts• -Information about cooperation with business sector
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	<ul style="list-style-type: none"> • -Everything was very good • -Practice live • -Good training, all necessary information regarding the training topics were provided with practical examples
<p>Suggestions for the improvement:</p>	<ul style="list-style-type: none"> • -Day 1 was terrible. Poorly prepared material, speakers totally undedicated, examples and references out of date • -More comfortable time schedule during workshops and meetings • -More coffee breaks • -More practical exercises • -All is ok • -Training is well organization, only suggestion is that more environmental topic should be added
<p>Any further comments</p>	<ul style="list-style-type: none"> • -The overall organization was professional. I enjoyed the cooperation and interaction with other participants. Free time and other activities were also well organized • -Excellent organization • -The training by UniKG was much better than the training by ISVR • -All congratulations to the organization • -Thanks for the hosts • -Organization was professional

ANNEXE 6
EVALUATION REPORT

Evaluation report template

Erasmus + Project No598241-EPP-1-2018-1-RS-EPPKA2-CBHE-JP

Strengthening educational capacities by building competences and cooperation in the field of Noise and Vibration Engineering

SENVIBE

Reviewer:	UNI
Executive summary	This document provides the review of the ICT Platform (e-SENVIBE Moodle) <i>PLEASE DO NOT CHANGE</i>
External /Internal Evaluation Methodology	What has been done and how? <i>The review was written based on:</i> <ul style="list-style-type: none"> - the Project Web presentation, URL: https://senvibe.uns.ac.rs/project/# - insight into the e-SENVIBE Moodle learning platform, URL: https://www.e-senvibe.senvibe.uns.ac.rs/
Work Packages	
Deliverable/ ActivityRef. No	<i>PLEASE DO NOT CHANGE</i>
Review of ICT Platform (e-SENVIBE Moodle)	
<p>General opinion: The e-Senvibe is a useful tool developed to enhance knowledge in the area of Noise and vibrations by utilising variety of the digital learning material and libraries. It is intended to be used by university students of the undergraduate and master programmes of different engineering fields containing noise and vibration in their curriculums. In addition, it is intended for the professionals who undertake LLL (Life Long Learning) courses, as well as the</p>	

members of the No&Vib Hub to increase their competences in these areas. This platform creates opportunities for flexible studying by employing an e-learning and b-learning methods, where students and teachers can communicate and exchange knowledge in more interactive way.

Additional remarks:

From the technical point of view, platform is well developed, responsive with hiding menus and no significant visible glitches and errors. Although from the aesthetical standpoint, it seems too minimalistic and some creative touch could improve the visual impression.

Home page:

- Design of the home page is bland and not interesting enough. Landing page should be well formatted supported with multimedia content.
- Description contains enough text, more text would distract the viewer.
- In the section Courses Category, list colored in red could be presented with more details about the content that follows the link, or some multimedia content. Preview would attract the visitors and provide better information.

Undergraduate Courses Category:

- This section gives more preview of the lecturers while there is no course list shown.
- When clicked on the category (e.g., Courses on Noise and Vibration), topics are listed instead of courses which could be confusing to a new user.
- Although there is a list of topics available when user clicks on hamburger menu on the left side of the top bar, long scrolling to access wanted course material could be time inefficient.

LLL Courses Category:

- At the beginning of the page, there is no list of topics, user can see the material only by long scrolling.
- If the user does not have an access to this section message that "You can not enrol yourself in this course." Appears. Explanation about why course cannot be attended, or how to enroll (if possible) should be provided.
- In English version of the webpage, in message that appears, word enrol should be enroll, while words can not should be cannot.

MsC programme in VAE Category:

- At the end of the section, there is a list representing links to pages with first and second semester courses. If user does not have a permission, message

appears "You can not enrol yourself in this course.". A proper explanation should be presented to a user (e.g. "Autumn/Spring semester has ended, courses will be available at...")

- Profile of the course is well structured and easy to navigate, while design of the course profile seems to be too simplistic.
- It was noticed that lecturers cannot access the learning material of all of other lecturers. It would be beneficial that at least lecturers have the access to all of the material for future material improvement and to avoid unnecessary overlapping of the topics.
- Questionary is inaccessible. In the Title regarding questionary, should be stated Autumn/Spring (instead of Winter/Summer) semester as it is generally how periods are used in Serbia.

No&Vib Hub Category:

- This section is a useful virtual platform that connects different stakeholders for the purpose of establishing cooperation in the area of Noise and Vibration.
- It has abundance of useful material and regulations combined at one place. This page is easy to navigate, although design of the page could be more interesting and attractive.

Suggestions for improvements:

Use of the ICT platform such as e-SENVIBE is very useful in building up the competence in the area of noise and vibration. Library of the material is valuable asset to support learning and improvement of students and professionals, and helps No&Vib community in Serbia to grow and develop. Besides having all of the material available, assessing materials and navigation through ICT platform can be improved. In general, from the User Experience standpoint, it is always better to use graphical elements and previews to navigate through the platform. Having only HTML texts and lists as navigating elements makes platform look unfinished and obsolete for today's modern standard.

Home page:

- In description, some unique and interesting graphical design should be used to support the text. Otherwise, it looks unfinished.
- Course category could be designed as graphical previews containing some insight of what follows the link, together with infographic that match the topic of the category.
- Brief info for each category would improve category presentation.

Messages that appear when subcategory or course is selected should be explained to a user in better way.

General:

- Navigation through platform could be more "Graphical". Good example would be Dashboard content design (accessible by clicking on hamburger menu icon, menu opens from the left side of the screen) and by using better formatting, better alignment, font/color variations and infographics/images. This could be a way to structure the entire page.
- Background image containing clouds is distracting. It would be better that background is in single color, while the content holders could be in slight variation of the background color with a drop shadow effect. Also avoiding pure white and choosing slightly colored content elements could bring the design dynamic and make pages looks more interesting.
- Some of the titles are too long containing both Serbian and English within same title. Languages should be separated. User already has an option at the top bar to choose the language of preference and this should be employed to reduce the title size.

EVALUATION

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The model is easily accessible		X			
The description and the aim of the Moodle at their entrance is clear			X		
The division of the model is clear			X		
The material presented the part for Undergraduate courses is well organized			X		
The content of the material presented in the part for Undergraduate courses is appropriate for end-users (undergraduate students)	X				
The material presented in the part for LLL courses is well organized			X		

The content of the material presented in the part for LLL courses is appropriate for end-users (LLL attendees)	X				
The material presented in the part for MSc in Vibro-Acoustic Engineering is well organized		X			
The content of the material presented in the part for MSc in Vibro-Acoustic Engineering is appropriate for end-users (MSc students)	X				
The material presented in the part for No&Vib Hub is well organized		X			
The content of the material presented in the part for No&Vib Hub is appropriate for end-users (No&Vib Hub members)	X				
The content of the Moodle as a whole is rich			X		
The Moodle as a whole is original			X		
The Moodle as a whole is functional			X		
The Moodle has the same graphical identity consistently implemented		X			

Place, date:
signature:

Name and

Marko Ličanin
Marko Ličanin

in Niš, 07. 07. 2022.

**Prepared by N S Ferguson,
Place, 10/11/2022**

**Approved by the Quality Assurance Group Leader, Natasa Stojic
Sremska Kamenica, 11/11/2022**

**Approved by Project Coordinator
Novi Sad, 14/11/2022**

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