# Communication and dissemination plan

**Erasmus+ Programme**

Key Action 2 "Capacity Building for Higher Education"

Grant agreement: 585938-EPP-1-2017-1-FR-EPPKA2-CBHE-JP


Co-funded by the
Erasmus+ Programme
of the European Union

| Title | Communication and dissemination plan |
|---|---|
| Version | Version #3 − 18.02.2019 |
| Contents | Final document |
| Status | Validated by the e-LIVES Steering Committee |
| Partners | Lead partner: IPP<br><br>Back-up partner: UNILIM |

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## Acknowlegments

"This communication and dissemination plan is an output of the e-LIVES project, co-founded by the Erasmus+ programme under the Key Action 2 "Capacity Building for Higher Education" 585938-EPP-1-2017-1-FR-EPPKA2-CBHE-JP grant agreement.

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein."

# 1   About the project / Executive summary

## 1.1  Aim

The e-LIVES project aims to develop innovative solutions in e-learning for e-engineering as part of the modernization of the Southern and Eastern Mediterranean countries training programs (Algeria, Jordan, Morocco, and Tunisia).

## 1.2  Context

The number of worldwide students enrolled in tertiary education more than doubled since the end of the XX century, growing from 94.5 million in 1999 to almost 221 million in 2015, a gross enrolment ratio change from 19% to 36%. However, these global figures hide major differences between regions. While in Europe and North America the higher education gross enrolment ratio is around 75%, in the South and Eastern Mediterranean Basin countries the values range from 28% to 45% [1] [2]. In the last few years, however, higher education enrolment has been on the rise in this region. The graphic in figure 1 shows that the number of students enrolled in higher education in Morocco doubled in the last five years while in Algeria it incremented by a third in the same period. On the contrary, in Jordan and Tunisia, the number remained stable but rather below the desirable value, mainly when compared to the European rates [3]. Algeria is a successful case in this region. There, the percentage of students transitioning from upper secondary to tertiary education by the end of the school year 2015 was 109%, meaning that a lot of students that had left school after the end of their secondary studies in the past are returning to continue their higher education studies [2].
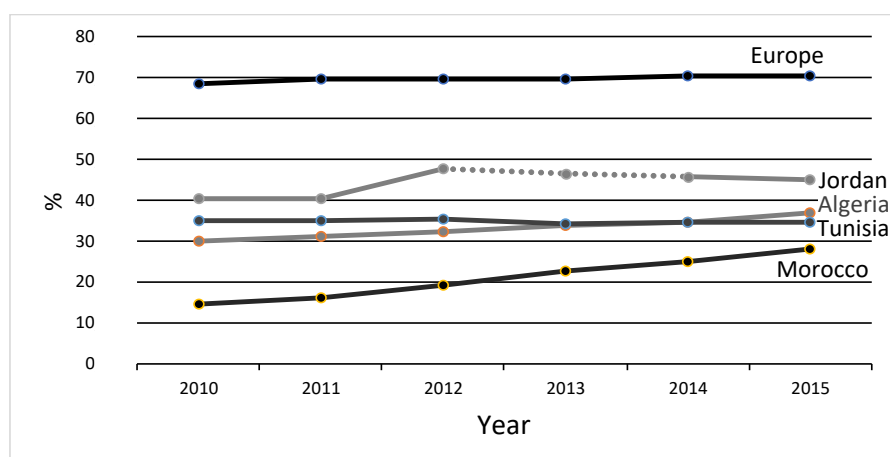


**Fig. 1.** Gross enrolment ratio in tertiary education between 2010 and 2015 in the countries involved in the e-LIVES project [3]

## 1.3 Problem

This growth in the number of students in the tertiary education is highly encouraged by national governments committed to the development of higher education in advanced engineering fields – physical sciences, computer sciences, engineering, and engineering trades – perceived as essential to making their economies competitive in today's globalized knowledge society.

Despite being highly positive and desirable, the recent rise in the number of students in the higher education system in South and Eastern Mediterranean Basin countries created important challenges for Universities forced to handle overcrowded classes. These difficulties are particularly significant on some STEM (Science, Technology, Engineering, and Mathematics) related courses where the need for new laboratory spaces and associated equipment is critical.

One promising solution involves the extensive development of nationally accredited e-learning undergraduate and postgraduate courses. E-learning is a very efficient solution to cope with higher education access massification while meeting multiple students' profiles. For instance, students with low economic resources and/or living in distant isolated areas may pursue their higher education studies at home without incurring temporary and expensive relocations. Another case is students looking for lifelong learning training. Usually, these students work and therefore may not attend classes during regular hours. In this case, e-learning provides them with the flexibility they need to study after-hours and to progress at their own pace, pursuing their studies without interrupting their working careers. And even regular students may blend their learning to avoid some overcrowded classes.

Notwithstanding the great revolution made possible by the development of data communication networks, especially the Internet, in the last 20 years, only during the last decade many established Universities started offering undergraduate e-learning courses, in addition to their classic on-site courses.

But while postgraduate level engineering courses awarding a final Certificate, Diploma or Master degree are easy to find, the undergraduate offer is mainly restricted to no-engineering areas. The widely available fully online Bachelor courses in Computer Science & Information Technology [4] are the exception as the same computer students use to follow the courses are used to perform practical software development work in the field.

Rather generic master's degrees in engineering may also be found, but their content is essentially restricted to paper research work and writing. Apart from personal teaching guidance, no classes are generally provided. The only tools students have access to are modeling and simulation tools.

Indeed, they are the reason why master's degrees in Electrical and Computer Engineering are often found online.

Undergraduate courses in Electrical and Computer Engineering do exist, but either they require students to attend one- to two-week lab sessions on-campus usually during the summer months, or to do an internship, or to possess some work experience in the area [5,6]. These conditions have obvious disadvantages. To attend on-campus face-to-face sessions students must have the necessary time and funds to travel. And additionally, the non-existence of synchronization among theoretical, tutorial and laboratory classes creates complications to the normal learning process by postponing the correct understanding and assimilation of the different subjects. On the other hand, the work experience of different students may considerably differ, namely if obtained during different internships. The experience gained in a workplace albeit valuable tend to be focused on very specific aspects hindering the desired broader background knowledge an electrical engineer must possess. This broad background knowledge is essential for him/her to be able to successfully adapt him/herself to a technological world in constant change requiring continuous lifelong learning training.

This reality is changing with the advent of remote laboratories. These laboratories are real-time remotely controlled real physical laboratory facilities made possible by the developments on high-speed broadband networks, which enable students to remotely access and control in real-time a myriad of experiments in different areas of physics and electrical engineering [7].

## 1.4 Proposed solution

The use of remote laboratories on a fully online engineering course enables to expand the offer of distance learning courses to engineering courses without abdicating of the crucial practical component of any engineering course. This seems to be the natural path in the evolution of e-learning towards fully online accredited e-learning engineering courses enabling the transition of e-engineering from concept to reality.

The e-LIVES project aims to help partner countries' universities to build innovative e-engineering courses by themselves in a sustainable way. This ambitious objective is based on two main goals:

- to help universities to move through the different course design and development stages (building of a curriculum, getting the national accreditation, training teachers, create contents,...);
- to help universities to develop by themselves (from A to Z) a remote laboratory.

It is important to note that these remote laboratories can also be used in face-to-face training. Indeed, due to the exponential growth in students' number, numerous universities had to replace the laboratory works in the first year of their bachelor's degrees in STEM fields by paper-and-pencil work. This project is then expected to have a direct structural impact on the higher education system modernization of the involved Partner Countries.

## 1.5 Expected result

Different target groups from the Partner Countries and other countries of the South and Eastern Mediterranean Basin are expected to benefit from the outputs of the e-LIVES project during and after its conclusion:

- National decision-makers (university deans and national higher education officials) will be able to clarify their doubts about this innovative way of teaching and learning, which will expedite the national accreditation process of new e-engineering courses in their countries;

- Partner institutions will acquire the know-how to create ambitious e-engineering courses, and in particular, will master all the administrative, human and material resources obstacles they face today;

- Each Partner institution will have a fully operational remote laboratory ready to be used by the students enrolled not only in e-engineering courses but also in face-to-face courses, partially solving the problem of having to replace laboratory works in the first year of their Bachelor's degrees in STEM fields by paper-and-pencil work due to lack of enough resources to accommodate all of them;

- Students will benefit from the e-LIVES project results since the participating institutions will be able to build innovative high-quality accredited e-engineering courses suitable for different profiles of students, namely students with weak economic resources and/or living in isolated areas, or students in continuing education and their number is therefore expected to grow in the coming years;

- Teachers and technical staff involved in the project activities will be ready to be part of an e-engineering course by the end of the project.

All the Partner Countries' Universities will benefit from the outputs of the e-LIVES project since they will have the required resources and master the necessary know-how to offer high-quality e-engineering courses.

## 1.6 Specific objectives

The e-LIVES project is divided into five specific objectives:

- Identification of best practices in order to build high-quality e-engineering training;
- Development of reliable remote laboratory solutions enabling online access to practical laboratory works 24/7;
- Development of practical open staff training in South Mediterranean universities;
- Control and evaluation of the adopted innovative pedagogical solutions;
- Promotion of National Dissemination Workshops (NDWs) in the partner countries for the dissemination of the e-engineering concept.

The actions associated with the list of specific objectives contemplated in the project proposal are directed to the partner countries involved on it. However, a range of other actions will be taken to disseminate the results and outputs of the project and the e-engineering concept worldwide - the website and the presence of the project in the social media, the participation in several major conferences, for example.

## 2  Introduction

Dissemination is of paramount importance for the e-LIVES success, considering the project aims and its specific objectives. The promotion of the project results must go beyond its temporal existence and the frontiers of the involved countries, to assure its widespread and long-term impact on the e-learning panorama of electrical engineering and related knowledge fields worldwide.

The communication and dissemination plan aims to describe the actions that will ensure not only an efficient transfer of knowledge among consortium members, for their mutual benefit, during the duration of the project, but also the dissemination of the work done and its sustained exploitation after the end of the project.

### 2.1  Aim and scope of the document

This document specifies the dissemination and networking activities to be developed within the time frame of the project, aimed at its dissemination and sustainability beyond the project's end.

### 2.2  Role of each partner

The success of e-LIVES requires the involvement of all partners in the dissemination process. It is therefore expected partners to use their own network of contacts to disseminate formally and informally the existence, objectives, evolution, and results of the project. Namely, partners should promote the dissemination of the project by submitting the work done within the e-LIVES project to local, regional and global conferences and workshops, by distributing project leaflets in the forums they attend, by affixing posters in their universities, and by announcing the project in their university website, with a link to the e-LIVES project's website.

Partners should also supply contacts of the educational administrative and governmental staff and of other potentially interested colleagues to the dissemination work package coordinators. The aim is to ensure the e-LIVES newsletter, and the documentation produced during the project reach the countries' decision-makers - rectors or university presidents, and eventually ministers or at least national higher education authorities. Partners should also directly contact the various stakeholders at the national level whenever they feel it may be relevant for the objectives and success of the project in their countries.

One partner University in each of the partner countries will be responsibly for the organization of the National Dissemination Workshops (NDWs):

- Université Abdelmalek Essaadi (UAE) - Tétouan - Morocco
- Université Virtuelle de Tunis (UVT) - Tunis - Tunisia

- Université 8 Mai 1945 Guelma - Guelma - Algeria
- Princess Sumaya University for Technology (PSUT) - Amman - Jordan

At least fifteen employees of the partners' universities will attend the country's NDW, which will also be open to anyone interested in e-engineering and/or with administrative decision influence at the university and/or governmental level. During the NDWs, organizers will present the main results of the project including lectures, training sessions, practical work demonstrations, etc.

The project partners will announce the NDWs events by distributing leaflets and posters and by directly inviting their colleagues and other stakeholders from other institutions in their countries. Project's members from the partner countries will conduct the NDWs with the support of their European colleagues who will help in the definition of the workshop contents and on the preparation of the presentation materials and support remote lab demonstrations.

The Tafila Technical University will organize a two-day final international dissemination conference, sponsored by the local authorities, in the context of the Final General Assembly of the project. During the conference, state-of-the-art research and successful implementations of the e-engineering concept at the international level will be presented and discussed. Research papers will be invited, reviewed and presented by leading scientists in the world. A dissemination committee will be responsible for organizing the conference.

## 2.3 Abbreviations and Acronyms

IAOE    International Association of Online Engineering

NDW    National Dissemination Workshop

REV    International Conference on Remote Engineering and Virtual Instrumentation

SIG

STEM    Science, Technology, Engineering and Mathematics

# 3 Exploitable results

## 3.1 Target groups/audience

The target groups of the e-LIVES project dissemination strategy are all those involved in the development, implementation, and accreditation of engineering higher education courses.

All the dissemination, networking, and sustainability actions undertaken by the e-LIVES project concern three mains objectives:

- to promote the new best practice guidelines for the creation of e-engineering courses and to assist external users in the implementation of those practices;
- to open the remote laboratory, as an example of a best practice implementation of a remote laboratory solution, to external users interested in creating e-engineering courses;
- to open the consortium, disseminating the experience obtained during the project towards colleagues, other universities, and institutions, assuring the long-term interest and implementation of the project results and of the institutional links, even after its formal end, by creating a Special Interest Group (SIG) within the International Association of Online Engineering (IAOE), the e-Engineering Alliance SIG.

Depending on their nature, the dissemination, networking, and sustainability tools linked to these objectives may target local, national or international parties. These tools are:

- the project website, containing up-to-date information about project advancements, activities, and all the guidelines produced by the partners made available in a public database, namely the best practice guidelines for the creation of e-engineering courses, and installation instructions and operating manuals for the remote laboratory; the target audience is personnel from other educational groups from all countries involved or not in the project that may be interested in the project development and on its outputs, namely on the best practice guidelines produced by the consortium;
- regularly updated project pages with information about the project's activities and initiatives in the most relevant social networks; this is aim to a wider audience that may not even be directly connected with remote education but has a keen interest on innovative education-related subjects;
- Internet-based support and discussion forums created within the website mainly target for personnel involved in the design and development of innovative education solutions;

e-LIVES
E-Learning InnoVative
Engineering Solutions

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- bi-annual newsletter sent to official entities and to all those interested in the project's activities and results; the emphasis on official entities has to do with the fact that legislation and financial support to enable the implementation of innovative educational resources depends on political decisions;

- promotion materials designed to disseminate information, including an easily recognizable logo, brochures, posters, and banners, target to those in the area that may be interested in the development of this kind of innovative educational solutions, mainly those attending conferences and workshops in the area;

- annual meetings of the e-Engineerinage Alliance SIG members and organization of e-LIVES workshops both during the IAOE flagship conference REV (International Conference on Remote Engineering and Virtual Instrumentation); the target of these actions are mainly people outside the consortium that may be interested in design and implement their own e-engineering courses at their own universities and look for the support of the consortium members;

- dissemination workshops in each partner university to propagate the acquired experience, target to local and national teaching, technical and administrative staff that may participate in the implementation of e-engineering courses in their universities;

- the publication of research papers in international conferences and journals about the development of the remote laboratory and of the best practices guidelines for the creation of new e-learning curricula in engineering, target to those in the area that may be interested in the development and implementation of e-engineering solutions.

The plans to ensure the long-term sustainability of the e-LIVES project include the continuance and expansion of the e-Engineering Alliance SIG and the public database.

## 3.2 Key messages

The key message of the project is the importance of the development of e-engineering, a concept that results from the concatenation of two previous ideas: e-learning and remote laboratories, to cope with the tertiary education access massification, primarily in the South and Eastern Mediterranean Basin countries, in response to a strong market demand for highly qualified engineers. The development of nationally accredited e-engineering undergraduate and postgraduate courses is a very efficient solution to cope with the growing number of students. e-Engineering courses may be accessible 24/7 allowing a more efficient use of the scarce resources available than regular face-to-face courses which are limited in time and space.

# 4 Dissemination channel

## 4.1 Website

The e-LIVES website went live December 15th, 2017. The aim of the website is to publish information about the progress of the project and to give external users access to the documentation produced by the consortium and available in its database, namely the e-engineering best practice guidelines. The website is translated into five languages: English, Arabic, French, Portuguese and Spanish. It has blogs in all those languages open to the participation of any visitor.

The website also provides information about the e-Engineering Alliance SIG, its objectives and how to be part of it.

The website pages and the blog are continuously updated, publishing relevant information about the project activities and initiatives.

Contact forms in all of the five languages enable website visitors to contact project members.

## 4.2 Newsletter

The aim of the bi-annual e-newsletter is to inform stakeholders about the objectives and progress of the project while publishing new ideas and innovative technologies and methodologies behind the best practices in the creation of e-engineering courses.

The newsletter advertises all project initiatives, like the dates of the NDWs, of the e-LIVES workshops organized by the e-Engineering Alliance SIG and associated with REV conferences, of any other presentations of the project at other conferences and workshops, etc. The e-newsletter is distributed through an e-mail distribution list. Apart from institutional members, anyone may subscribe the e-newsletter through a form available at the project's website.

Only the English version of the newsletter is distributed through the mailing list but links for its integral translation into the other four languages: Arabic, French, Portuguese and Spanish, are provided. All past newsletters in all five languages are available on the website.

## 4.3 Social Media

Social media presence is fundamental for reaching wider audiences and spreading information about project existence, its objectives and results. While on websites stakeholders must deliberately enter the page to access information, on social media platforms the information is broadcasted directly to them. Of course, the type of information published on the website cannot be the same twitted through Twitter or posted on the Facebook page, for example. But through

these platforms, it is possible to efficiently alert people to the existence of new content on the website.

The project is present in five of the most important social media platforms:

- Twitter (https://twitter.com/elives_project)
- Facebook (https://www.facebook.com/elivesproject/)
- LinkedIn (https://www.linkedin.com/groups/12084626/)
- tumblr (https://elivesproject.tumblr.com/)
- Instagram (https://www.instagram.com/e_lives_project/)

To engage potential stakeholders the information on the various social media platforms is continuously updated.

## 4.4 Mailing list

A form available on the website enables anyone to subscribe to the newsletter.

## 4.5 National Dissemination Workshops (NDWs)

To ensure an efficient transfer of knowledge among consortium members the main results of the project will be presented at NDWs organized in each one of the partner countries during the last year of the project. The focus of the NDWs will be the pedagogical and practical aspects related to the implementation and running of e-engineering courses and will include lectures, training sessions, and practical work demonstrations.

These one-week training workshops organized with the support of the local partner institutions will take place in the cities of Tetouan, Tunis, Guelma, and Amman.

Fifteen persons - educational authorities, teachers, technicians, administrative staff - from the beneficiary partner are planned to attend the workshop, which will also be open to interested persons from the whole country. Local project members will deliver the training with the support of two members from one of the European partners.

## 4.6 Organisation of a final e-LIVES international dissemination conference

The Tafila Technical University (TTU) will organize a two-day final e-LIVES international dissemination conference just before the end of the project. During the conference, apart from the presentation of the e-LIVES results and the promotion of the concept of e-engineering, state-of-the-art research and successful implementation examples in e-engineering at the international level will be presented and discussed. A call for papers will be issued inviting experts to submit their research papers in the area, which will be reviewed and presented at the conference and

published in the conference proceedings. The call for papers will be disseminated in the most important engineering education forums.

A dissemination committee will be responsible for organizing the conference.

## 4.7 Participation in conferences, events and workshops

Papers detailing the objectives and the results achieved during project execution will be presented at the most important engineering education forums.  So far, the e-LIVES project was presented at:

- The 10th International Conference on Education and New Learning Technologies (EDULEARN'2018), Palma de Mallorca, Spain, July 2018
- The 15th International Conference on Remote Engineering and Virtual Instrumentation (REV'2018), Düsseldorf, Germany, March 2018

It is planned e-LIVES will be present, at least, in the following conferences:

- The 16th International Conference on Remote Engineering and Virtual Instrumentation (REV'2019), Bengaluru, India, February 2019
- The IEEE Global Engineering Education Conference (EDUCON'2019), Dubai, UAE, April 2019
- The 17th International Conference on Remote Engineering and Virtual Instrumentation (REV'2020), Atlanta, Georgia, USA, February 2020
- Final e-LIVES two-day international dissemination conference

## 4.8 SIG

To ensure the long-term sustainability of the e-LIVES project, namely the dissemination of the knowledge acquired and systematized by the e-LIVES consortium members and the expansion of the e-engineering concept, the e-Engineering Alliance SIG was established within the IAOE. The objective of the SIG is to promote the e-engineering concept, demonstrating its importance for the development of higher education and lifelong learning training, and to help Universities to build innovative e-Engineering courses by themselves in a sustainable way.

The SIG promotes the transfer of the knowledge necessary for Universities to create their own e-Engineering courses. These are online engineering courses in the electrical and electronics field based on established e-learning concepts and on remote laboratories specially designed to support the students' acquisition of practical skills in the studied subjects.

SIG assistance comprises helping Universities to build a curriculum, obtain the course national accreditation, train teachers and technicians, create contents, design and develop a remote laboratory, and perform their quality assessment.

The long-lasting purpose of the e-Engineering Alliance SIG is to generate in Universities a more committed and professional environment ready to introduce new forms of flexible learning into daily training activities and to create and manage accredited e-Engineering courses.

# 5 Project visibility

The relationship between the communication materials produced by the e-LIVES project and the project in itself should be at a glance identified. Therefore, the logo must be appealing while at the same time to direct the onlookers to the knowledge areas of the project.

## 5.1 Logo

The design of the logo was subjected to a call for proposals within the consortium. The logo was chosen by a ballot open to all consortium members.

The logo visually identifies not only the acronym of the project but also its main areas: electrical engineering, by the use of a stylized integrated circuit; and e-learning, by the use of the e- prefix, commonly associated to distant electronic transmission. It is complemented by the acronym in full.



## 5.2 Visibility of the European Union cofounding

All communication materials produced in the context of the e-LIVES project follow the rules defined by the EU Commission regarding the acknowledgment of the support received under EU programmes. According to those rules, all beneficiaries of EU funding shall use the European emblem in their communication. Therefore, in all e-LIVES communication materials, it is inserted the mention "Co-funded by the Erasmus+ Programme of the European Union" next to the EU emblem.



The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsi-ble for any use which may be made of the information contained therein.

## 6 Monitoring and evaluation

| TOOLS | INDICATORS[1] |
|---|---|
| Website | Live since December 15th, 2017<br>Translated in 5 different languages: English, Arabic, French, Portuguese and Spanish<br>Average number of visitors per month: 630<br>Visitors' country or origin (countries with more than 50 visitors): United States, Algeria, France, China, Portugal, Spain, Germany, Jordan, Ukraine, Russian Federation, Japan, Morocco, Netherlands, Tunisia, Canada, Ireland, Belgium, India, United Kingdom, Republic of Korea<br>Total number of pages: 48 |
| Newsletter | Distributed to 1192 mailing list subscribers twice a year<br>The newsletter is distributed in English only but links to the e-LIVES website are provided for the integral translation in the other four languages: Arabic, French, Portuguese and Spanish |
| Social Media | <ul><li>e-LIVES presence in the following social media platforms:</li><li>Twitter (https://twitter.com/elives_project) with 21 followers</li><li>Facebook (https://www.facebook.com/elivesproject/) with 48 followers</li><li>LinkedIn (https://www.linkedin.com/groups/12084626/) with 13 members</li><li>tumblr (https://elivesproject.tumblr.com/)</li><li>Instagram (https://www.instagram.com/e_lives_project/) with 7 followers</li></ul> |
| Mailing list | The mailing list contains 1191 e-mail addresses |
| National Dissemination Workshops (NDWs) | NDWs will be organised at Tetouan, Guelma, Tunis and Amman during the first half of 2020<br>Expected public: 25 to 30 people |
| Final e-LIVES international dissemination conference | Organized by the Tafila Technical University by the end of the first half of 2020<br>Expected number of participants: 100 or more |
| Participation in conferences, events and workshops | e-LIVES was presented at: |

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[1] All data valid at the time of writing - 21st of September

| | |
|---|---|
| | • The 10th International Conference on Education and New Learning Technologies (EDULEARN'2018), Palma de Mallorca, Spain, July 2018 |
| | • The 15th International Conference on Remote Engineering and Virtual Instrumentation (REV'2018), Düsseldorf, Germany, March 2018 |
| | It is planned e-LIVES will be present, at least, in the following forums: |
| | • The 16th International Conference on Remote Engineering and Virtual Instrumentation (REV'2019), Bengaluru, India, February 2019 |
| | • The IEEE Global Engineering Education Conference (EDUCON'2019), Dubai, UAE, April 2019 |
| | • The 17th International Conference on Remote Engineering and Virtual Instrumentation (REV'2020), Atlanta, Georgia, USA, February 2020 |
| | • Final e-LIVES international dissemination conference, Tafila Technical University, Tafila, Jordan, 2020 |
| SIG | The e-Engineering Alliance was created in June 2018<br>Number of members: 18 |

## e-LIVES project communication and dissemination plan

| % done | Action | Due date | Notes |
|---|---|---|---|
| 30% | Website | 14/Oct/2020 | Requires constant update. Maintenance to up 10 years after project conclusion |
| 20% | Newsletter | 14/Oct/2020 | |
| 30% | Social Media | 14-Oct-2020 | Requires constant update |
| 25% | Mailing list | 14-Oct-2020 | Mailing list subscriptions open until the end of the project |
| 0% | National Dissemination Workshops (NDWs) | 14-June-2020 | |
| 0% | Final e-LIVES international dissemination conference | 30-July-2020 | |
| 20% | Participation in conferences, events and workshops | 14-Oct-2020 | |
| 100% | SIG | 15-Oct-2017 | |

Revision table

| v. 1 | Content definition | June 2018 |
|---|---|---|
| v. 2 | First complete version of the document | September 2018 |
| v. 3 | Exchange of Google+ for tumblr | October 2018 |

# 7 References

[1] "Six ways to ensure higher education leaves no one behind", Policy Paper 30, *Global Education Monitoring Report*, United Nations Educational, Scientific and Cultural Organization (UNESCO), 2017

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