Erasmus+ KA2 Capacity Building in Higher Education

Annex V - Final Report

Annex VI – Financial Statements

561735-EPLUS-PT-2015-CBHE-JP
(Project No. / Agreement No.)

FINAL REPORT	DEADLINE
• Final Report on implementation of the project (Annex V) • Financial statement including request for payment and the financial tables for each budget heading (Annex VI) • An external audit report on the action's financial statements and underlying accounts	**Two months after the end of the eligibility period**

Structure of the Report

Annex V	Narrative sections
	Statistics and Indicators
	Table of achieved/planned results
	Declaration of honour (including Check-list)
	SMS report (not applicable to the present project)
Annex VI	CBHE 2015 – Annex VI - Financial Statements (Excel file)
	Final Financial Statement*
	Audit Certificate

**Please note that the Final Financial Statement needs to be accompanied by all relevant supporting documents in agreement with the Guidelines of the use of the grant.*

The Final report on implementation of the action, including all attachments, needs to be sent in two copies:

- **Electronic version** via e-mail: EACEA-EPLUS-CBHE-PROJECTS@ec.europa.eu
- **Original paper copy** to:

  Education Audiovisual and Culture executive Agency (EACEA)
  Mr Ralf Rahders
  Head of Unit A4
  J-59 04/033
  1, Avenue Bourget
  1049 Brussels Belgium

NARRATIVE SECTIONS

This document comprises the following narrative sections:

Section 1	**Relevance**
Section 2	**Quality of the project's implementation**
Section 3	**Quality of cooperation**
Section 4	**Impact and sustainability**
Section 5	**Horizontal issues**

It is necessary to complete all sections in full and to address all questions applicable to the project.

Guidance notes on how to complete each section can be found in each section itself.

In each section, provide (if applicable) practical examples, qualitative and quantitative data, as well as links to the products and outcomes.

SECTION 1: RELEVANCE

1. Relevance of the results

For each of the Partner Countries included in the consortium:

a) List 3 main achievements/results of your project at institutional, national and/or regional level;

b) Explain how the achievements/results are relevant to the policy area (national and /or regional), the strategic priorities of the partner institutions and/or their modernization and internationalization strategies;

c) List any change that may have affected the project relevance, and how you dealt with it.

Concerning Brazil, the 3 main achievements/results were: (1) the full completion of all planned activities that resulted in the installation of 3 remote labs in the partner Higher Education Institutions (HEI), the training of 175 faculty members, and more than 1200 students having benefited from the proposed enquiry-based teaching and learning methodology based on the combined use of calculus, simulations, remote labs, and hands-on activities; (2) the national dissemination effort, done in particular through the annual conference of the Brazilian Association for Engineering Education (ABENGE); and (3) ABENGE's recognition of the project contribution to its internationalization policy and to the need to apply active teaching and learning methodologies in engineering degrees offered in Brazil, as verifiable through the document available at [1] (see section 7, in particular).

Concerning Argentina, the main achievements/results were: again, (1) the full completion of all planned activities that resulted in the installation of 2 remote labs in the partner HEI, the training of 99 faculty members, and approximately 400 students having benefited from the proposed enquiry-based teaching and learning methodology based on the combined use of calculus, simulations, remote labs, and hands-on activities; (2) the national dissemination effort, done in particular through the 1st Latin-American Conference on Engineering (CLADI2017), organized by the Argentinean Federation of Engineering Deans (CONFEDI); and (3) CONFEDI's involvement, in particular by promoting the VISIR+ project in the whole country. CONFEDI (an associated partner of the VISIR+ consortium), invited all of its associates to participate in the local training actions delivered at/by the two partner HEI (see in particular documents [2] and [3].

*Concerning the project relevance, one fact should be mentioned. CONFEDI was not able to join the project as a partner due to bureaucracy problems related to the PIC validation process. The consortium required permission to replace CONFEDI by IRICE-CONICET, a research Institution in Educational Sciences, part of the Argentinean National Council of Technical and Scientific Research (*Consejo Nacional de Investigaciones Científicas y Técnicas, CONICET*), who successfully led the project quality assurance plan. In addition, CONFEDI was able to participate as an associated partner, having contributed to project dissemination activities in Argentina.*

[1] ABENGE, MEI/CNI, "Proposta de Diretrizes Curriculares Nacionais para o Curso de Engenharia", available at http://www.abenge.org.br/file/PropostaDCNABENGEMEI_CNI.pdf, accessed May 30th, 2018. In Portuguese.
[2] https://confedi.org.ar/wp-content/uploads/2016/04/Convocatoria-Participaci%C3%B3n-ERASMUS-VISIR-CONFEDI-2016.pdf, accessed May 30th, 2018. In Spanish.
[3] https://drive.google.com/file/d/1h1ZkluMaxmdL42KB7NmIFH1sWwy6Fc0o/view?usp=sharing, accessed May 30th, 2018.

2. Regional cooperation

In the case of multi-country/regional projects, explain how the project has contributed to regional integration and cooperation between different regions of the world.

Please provide information and quantify the inter-institutional agreements or bilateral agreements signed/to be signed by partner country institutions to promote cooperation in the field of education and/or research, as a result of cooperation in Erasmus+.

The VISIR+ project proposal was built upon existing cooperation schemes between ABENGE and CONFEDI. The project execution provided yet another opportunity to strength that cooperation, for instance CONFEDI's invitation sent to ABENGE's president, Prof. Vanderli Fava de Oliveira, to attend CLADI2017. The project quality assurance scheme also provided the chance for an Argentinean partner, i.e. IRICE-CONICET, to visit all Brazilian partner HEI, during training action 2, and also for ABENGE (Brazil) to visit all Argentinean partner HEI, for promoting the enquiry-based teaching and learning methodology, employed in the project, as one of the right directions in current Engineering Education trends.
Also, as a result of the scheme planned for training actions 2 and 3, the partner HEI increased their bilateral relations with the local associated partners, this effectively leading to a number of teachers and students from those associated partners to have benefitted from the use of the installed VISIR remote labs.
As an extension of this enlarged cooperation/training scheme, one of the programme HEI, i.e. the University of Deusto (Spain), established a collaboration/cooperation protocol with the National Distance Education University at Costa Rica (UNED-CR), for spreading the VISIR remote lab in that country. The collaboration was focused on several meetings and courses with hundred of accesses to the VISIR@UDEUSTO node. As result of this collaboration, UNED-CR is going to deploy a VISIR remote lab at their premises. Furthermore, the Tecnológico de Monterrey (MX) has organised one meeting/course with 40 attendees that used the VISIR@UDEUSTO node, this course being organized by a teacher from UNED-CR, which shows a cascade effect derived from project activities.

As a side/complementary, yet also important, cultural/social aspect of how the project has contributed to regional integration and cooperation between different regions of the world, one should mention:
(1) the face-to-face meetings, frequent mailing and WhatsApp messaging among members of different countries and country regions as well as participation in dissemination situations (congresses, workshops, presentations, meetings) where different academic, political and cultural dimensions turn up. These dimensions converge and diverge. In either synergic direction, regional integration and cooperation took place: ABENGE (Brazil) and CONFEDI (Argentina), two institutions with similar aims sharing the VISIR+ Project; (2) Universities with associated partners and teachers who work in different universities and take experiences from one to the other; and, (3) Language diversity: Portuguese, English and Spanish, plus own regional languages (Basque, Portuguese from Brazil and Portugal, Spanish from Argentina and Spain).

SECTION 2: QUALITY OF THE PROJECT'S IMPLEMENTATION

1) Activities implemented

- Summarise the activities implemented and the corresponding outputs;
- Describe any deviation and discrepancy compared to the original work plan and the corrective measures implemented (refer to table of achieved results).

The activities planned for the VISIR+ project can be summarised in 3 main types: (1) acquire and install the VISIR remote lab in the 5 partner Higher Education Institutions (HEI) of Brazil and Argentina; (2) train the teachers in how to use and integrate the VISIR remote lab into their courses, following an enquiry-based teaching and learning methodology, which combines other educational resources like hands-on labs, simulations and calculus; and, (3) collect evidence of the didactical implementations, for later analysis and report in a number of dissemination events and publications. The 1st main activity type resulted in a new remote lab installed, in each partner HEI, verifiable through the web links provided in the table of achieved / planned results, concerning WP1. This activity also included technical workshops for non-academic staff members of the partner HEI who received the VISIR remote lab. [Deviation] Although there was a huge delay in completing this activity, mainly due to bureaucratic problems in the equipment acquisition process, the proposed results were achieved in 100%.

The 2nd main activity resulted in 274 academic staff members from the partner country's HEI (including consortium and associated partners HEI) trained in the project's active teaching and learning methodology. This result surpasses the original planned numbers by more than 100%, as properly described in the [Deviation] cell of the table of achieved / planned results, concerning WP2.

Finally, the 3rd main activity resulted in 49 teachers and 1561 students having used the VISIR remote lab in teaching and learning activities related to electrical and electronic circuit analysis. To achieve these numbers, the courses where VISIR was used were enhanced with new materials, for instance video tutorials explaining what VISIR is and how it can be used, the difference between results obtained through simulations and real (remote) measurements, etc.
The outputs produced as a result of the implemented activities are thoroughly described in the table of achieved results, in particular concerning WP1 and WP2. The 1st (partially), 2nd and 3rd main activity types were subject to a quality framework described in detail in the next point.

2) Quality Assurance Measures

- Describe the main results of the evaluation (internal and /or external) related to:
  - Process-management;
  - Outputs and products;
- Provide the links to the QA reports;
- How and to what extent the quality assurance mechanisms will be continuing beyond the lifetime of the project (provide examples)?

The project quality framework was mainly targeted to project activities and the resulting outputs. One project partner, i.e. IRICE-CONICET, was fully committed to the evaluation process, which had no external intervenors, except in the case of submitted manuscripts, which are typically peer-reviewed. In addition, ABENGE also intervened in the evaluation process, in particular concerning TA3. The project management was not subject to a quality evaluation process, although no conflicts have arisen, and a proper number of videoconference and face-to-face meetings were held during the project lifetime, among the project management board members. The consortium also had the

opportunity to meet the project officer, through Skype, during 3 of the 4 project general meetings, and the Argentinean partners (UNR, UNSE, and IRICE-CONICET) also met her personally during the Erasmus+ Cluster meeting held in Buenos Aires, on October 30th, 2017. On two other occasions, Mr. Clivio Casali, from the EACEA, visited one partner HEI, i.e. PUC-Rio, on December 4th, 2015, and Mrs. Lise Pate, from the EU delegation in Brazil, attended COBENGE2017, where she had the opportunity to meet all the Brazilian partners (UFSC, IFSC, PUC-Rio, and ABENGE).

Concerning the technical workshops, training actions, and didactical implementations, the applied quality evaluation scheme included Satisfaction Questionnaires (SQ), plus a specific educational data collection and analysis plan. The links to the quality assurance tools are listed in the table of achieved results, respecting WP3.

One important aspect worth mentioning here is that the implemented quality assessment tools provided much of the data used in the technical and scientific papers that were submitted, evaluated and published during the project lifetime. Their number and relevance (more than 30 papers, including one chapter in a book edited by Springer) plus the recognitions obtained (i.e. Best Paper Awards at CISPEE'16 and TEEM'16) are just two indicators that sustain the project quality.

Concerning the continuation of the quality assurance mechanisms beyond the lifetime, besides the SQ that are available for evaluating subsequent didactical implementations, a number of consortium partners are now working in automated assessment mechanisms for experiments done with VISIR. These mechanisms rely on machine learning algorithms and a knowledge base that is being built by the teachers who develop experiments for VISIR. Initial work will be presented in [4] and [5]. Finally, it should be mentioned the deviation shown in the table of achieved results, concerning WP3, in particular the additional effort made to translate every evaluation tool, originally written in English, into Spanish and Portuguese.

[4] Alexandre Gonçalves, Lucas Soares, Juarez B. Silva, and Gustavo R. Alves, "Personalized Student Assessment based on Learning Analytics and Recommender Systems", 3rd International Conference of the Portuguese Society for Engineering Education (CISPEE), Aveiro, Portugal, 27-29 June 2018
[5] Contribution to LASI2018 [result expected to be announced 2nd week of June] [URL87]

3) Equipment

- Describe and justify where and when equipment items have been installed and how they have been used in the project and will be used in the future;
- Describe if any changes occurred for the purchase and/or use of equipment as compared with the proposal;
- If applicable, refer to the challenges/difficulties encountered in purchasing, installing and/or using the equipment.

The project supported the acquisition of 5 VISIR systems by 5 partner country HEI, i.e. PUC-Rio, UFSC, and IFSC, in Brazil, and UNR and UNSE, in Argentina. Each VISIR system comprises the following equipment:
- 1 PXI system, manufactured by National Instruments
- 1 switching matrix, manufactured by Grepehall/Ingvar Gustavsson
- 1 Personal Computer (PC) with a PCIe expansion slot
It is possible to have different systems configurations. A minimal configuration comprises a PXI system with 4 instrumentation boards (Digital Multimeter, Oscilloscope, triple-output DC Power Supply, and a Function Generator) and a switching matrix with 7 boards. A more powerful

configuration comprises a PXI system with 5 boards (adds another Digital Multimeter) and a switching matrix with 11 boards (adds one more Multimeter board and 3 new 2ComponentsBoards).
The original proposal mentioned the possibility to have different VISIR system configurations (see section H.2).
As it was not possible to foresee the exact situation for each partner, concerning exchange rates, tax exemptions, etc., when effectively ordering the equipment, the proposed budget was set to a number that would allow different options. The consortium decided to go for the minimal configuration in PUC-Rio as it wasn't possible to obtain a tax exemption for the institution (private non-profit). The remaining partners were able to accommodate a more powerful system into the available budget as it was possible to acquire the equipment with tax exemptions (although this required a more complex procedure, as explained in the management of the grant). These enhanced systems allow for more flexibility and a potentially larger number of experiments, which benefits the long-term usage of the system. Each partner will maintain and be able to upgrade the system after project end, using own resources and depending on usage and obtained results.

The final situation is:
- PUC-Rio acquired the minimal configuration in July 2016 (see [URL03]);
- IFSC acquired the minimal configuration in March 2017 and later an additional Data Processing board and UPS power protection system (see [URL81]);
- UFSC acquired the minimal configuration in October 2016 and later an additional Data Processing board, additional Component boards for the switching matrix and an UPS power protection system (see [URL82]);
- UNR acquired the minimal configuration in February 2017 and later additional Component boards for the switching matrix and an UPS power protection system (see [URL09]);
- UNSE acquired the minimal configuration in May 2017 and later additional Component boards for the switching matrix (see [URL08]);

Teachers and students of the partner country institutions and their associated partners used the VISIR remote lab in teaching and learning activities. The Training Action 2 involved more than 100 teachers and the Training Action 3 involved approximately 200 teachers. The consortium compiled the data concerning the number of students that ***effectively*** *used VISIR during the project lifetime. At the present moment, more than 1500 students have used the VISIR remote lab in course activities. In order to maximise its use, the project consortium engaged a number of associated partners that will use the VISIR systems installed at the LA partners, without costs.*

Installation was performed with the assistance of a team from the BTH partner which has ample experience with VISIR system usage, installation and technical issues. Concerning the usage, all systems were fully operational by the project end and in active use in the partner institutions, fully integrated into the teaching environment and curricula.

4) Curriculum Development

For each of the courses developed (/updated) provide:

a) The title of the course;
b) Indicate if it has been updated (i.e. preexisting in the partner country institutions) or totally newly created. In case of updated courses, explain the new elements and estimate the percentage they represent in relation to the preexisting course;
c) The course volume (in ECTS);
d) The name of the degree/diploma it is part of;
e) The link to the university'(/ies') webpage where these courses are listed;
f) The teaching/training methodologies developed/adopted (incl. e.g. e-learning/training modalities, practical placements in enterprises, etc.);

g) The status of recognition/accreditation in each of the partner country institution concerned.

- If applicable, mention the courses that, compared to the application, have not been developed and give the reason;
- If the course(s) has(/-ve) not attracted the number of students planned, explain the reasons and the remediation measures put in place for the next student intakes.

All didactical implementations were developed on pre-existing courses in the partner institutions. The updated courses consisted on modifying the course curricula in order to use different resources in simultaneous: hands-on lab, simulations, remote lab (VISIR) and calculus. The main objective was to develop complementary experimental competences and consolidate theory and practice in electric and electronic topics. The percentage of this application in the 41 courses was estimated at 57%.
Since these partner institutions were in Brazil and Argentina, there are no ECTS applied.

The majority of degrees were from Electric/Electronic Engineering areas (40%), and the rest covering electric/electronic courses from several areas in Engineering (Computer, Civil, Mechanical, Chemical, and others).

The 41 courses have been updated, either reformulating its teaching methodology more aligned with developing an inquiry-based learning and/or providing students with extra resources to practice experimental work in and out of class. A more complete summary of each updated course is shown in Annex 1, which is available through [URL71].

5) Teaching and Training activities[1]

In accordance with the information provided in the tables on training mobility and on activities implemented, explain:

- the methodologies adopted by the partnership for informing, identifying and selecting the participants;
- how the project has contributed to improve the competences of staff in their field of expertise and their understanding of education policies, practices and systems;
- how the knowledge/skills gained by the participants has been used / disseminated at their home institutions and how the multiplier effect of the training has been ensured for the benefit of other staff;
- Provide examples of how these training activities have impacted the students' learning (if applicable)

The Project design included 3 Teachers Training Actions (TA) and 1 Technical Workshop in each Latin American Partner. The Teachers TA were delivered in three phases:
- TA1, before the didactical implementations, dedicated to the teachers' liaison to the Project in each Partner Institution. This TA1 objective, conducted in the KOM, was to share the European Partners experiences using VISIR and to highlight the most values of using this resource and also call for attention on the already identified problems.
- TA2 were conducted in each Latin American Partner and delivered by the correspondent European liaison. This TA was intended for a larger set of teachers, who were identified in each Institution as potential user VISIR in their classes.
- TA3 was designed to be held in one Associated Partner of each Latin American Partner. Its philosophy was the multiplier effect: local teachers who had already used it, would more easily

[1] Please note that this section **does not concern the mobility implemented for project management purposes**

deliverer those sections, contextualizing them for their constrains, motivating their colleagues (from their Institution and from their Associated Partner Institution) to their usage of VISIR. Unfortunately, due to some external factors (prolonged teachers' strike) this was not possible in PUC-Rio Associated Partner. In this Institution, this TA3 was delivered at PUC-Rio.

The Technical Workshops were also delivered in each Latin American Partner after the VISIR system arrived, and its purpose was different: this action meant to train the Technical staff that would be responsible for maintaining the VISIR system working and aiding teachers implementing the chosen circuits in VISIR.

In total, 274 teachers attended the TAs and 8 Technical staff attended the Technical Workshops.

In each training action a satisfaction questionnaire was delivered to assess their accomplishment. In general teachers were very satisfied with those sessions and their feedback allowed some improvements from one session to the next (such as the time allotted to the practice or the used language).

Students training was delivered by each teacher in class, and also using tutorial videos.

6) Governance reform

For Joint Projects:

- Were changes at institutional level introduced (establishment of units, new faculties, international relations offices, etc.)? If so, what is the statute of the new unit(s) within the institution(s) concerned? What kind of financial support and staffing arrangements will be provided in the future? Explain the place of these new units / offices / centers in the HEI's organogram and provide a link to the business plan;
- Did the project lead to reforms in university governance of the partner institutions (i.e. decision process, new procedures, autonomy, accountability)? If yes, please describe these reforms and the institutional support given by academic and local authorities (links to the updated documents, guidelines, etc.)

For Structural Projects:

- Please describe how the project has supported changes and contributed to the reforms implemented (if any) in the national higher education structure and system (i.e. establishment of representative bodies, associations, agencies for quality assurance, development of roadmaps for national reforms, national certification and qualification systems, etc.);
- Please explain how local authorities have been involved and to what extent their involvement has been supportive of the project;
- Explain how the project has introduced new management/organizational processes, practices, procedures and guidelines in partner country universities.

VISIR+ is a joint project addressing "curriculum development". It does not address the two other themes or priorities mentioned in the Capacity Building in Higher Education (CBHE) action, i.e. "Modernisation of governance, management and functioning of HEIs" and "Strengthening of relations between HEIs and the wider economic and social environment".

7) Links with society

- Explain how the project helped to strengthen the role of higher education institutions in society at large (contributing to the development of lifelong learning, addressing the knowledge triangle, establishing links with the labour market, etc.)?;

- Describe how these links have been institutionalised, how many agreements with non-academic stakeholders (industry, NGOs, SMEs, etc.) have been signed and how these will be maintained in the future;
- Provide examples for each institution/country and concrete indicators to measure the links established: how many internships have been provided to students in the framework of the project, how many employment events/fairs have been organized, etc.

As stated in the previous section, VISIR+ is a joint project addressing "curriculum development". It does not address the two other themes or priorities mentioned in the Capacity Building in Higher Education (CBHE) action, i.e. "Modernisation of governance, management and functioning of HEIs" and "Strengthening of relations between HEIs and the wider economic and social environment".

Nevertheless, one should mention the large dissemination effort made by the consortium regarding the use of innovative technology-enhanced teaching and learning tools (such as VISIR, i.e. a remote lab) and methodologies (i.e. the combined use of calculus, simulations, remote experiments, and hands-on) in Engineering Education. The innovative character of these tools and methodologies promoted a quite large number of news (TV and radio interviews, news in newspapers, etc.) that aimed at attracting youngsters to Engineering careers.

SECTION 3: QUALITY OF COOPERATION

1) Involvement of partners and stakeholders

Please describe:

- how less **experienced partners** have been involved and, if applicable, why some partners have been less (/not) involved;
- how partners will continue to cooperate in the future;
- how the European partners have contributed to the project and their added value;
- how and to what extent the Public Authorities (at national, regional or local level) from the partner countries have been involved in the project's implementation. Specify their role and the nature of their contribution;
- how and to what extent **students and other external stakeholders** have been involved in project management and/or implementation (testing, evaluation etc). Specify the type of stakeholders, their number, their role and the nature of their contribution.

Considering the previous engagement in International Cooperation projects, with English as the main communication language, both IFSC and ABENGE, in Brazil, and UNSE, in Argentina, were less experienced than other consortium partners. However, this has not prevented those partners to fully contribute to the project activities, as the consortium included European partners fluent in English plus the 2 other languages spoken in the project, i.e. Portuguese and Spanish. As a side note, UNSE made an effort to mitigate this difficulty by having two translators (EN-ES) accompanying the two technicians from BTH (Sweden), during their activities in Santiago del Estero, Argentina[2]*. Looking into the tables related to training and mobility one may also verify that UNSE was not able to engage the expected "*Number of students … who have attended courses developed in the framework of the project*". This number was set to 250 students in the project proposal. A possible explanation could be the combined effect of: (1) the later installation of the VISIR remote lab at UNSE (August 2017); (3) abnormal technical difficulties faced by the VISIR remote lab installed at UNED (Spain), who was paired with UNSE for the purpose of the planned TA2 and TA3; and (3), the lower number of students enrolled in courses that include experiments with electrical and electronic circuits. In spite of this, UNSE was the partner HEI who run more editions of TA3, in an attempt to counterbalance the 3rd previously mentioned drawback.*

Regarding partners' cooperation in the future:
- many individuals working for the VISIR+ project, both from EU and LA, are also members of the VISIR Special Interest Group, which forms a Community of Practice with regular collaborative work;
- the EU partners are already cooperating in the PILAR project, funded by the Erasmus+ Spanish Agency;
- some consortium partners are still cooperating, after the project end, in joint publications based on data collected during the project lifetime;
- the partner HEI will also continue their connections with CONFEDI and ABENGE, not only through the CLADI and COBENGE conferences, respectively, but also by being available to further dissemination activities related to VISIR and the associated teaching and learning methodology;
- the CYTED proposal also evidences the partners' will to continue cooperating;

Regarding the European partners' contribution to the project and their added value, besides the aspects already mentioned in the project proposal, an accidental yet providential aspect should be

[2] At this point, one could mention how the visit was exploited by the English teacher as an educational instance to learn the language (See [URL88])

mentioned: the delay in the installation process of the VISIR remote lab in the partner HEI did not cause a major delay in all subsequent project activities because those partners were able to use the VISIR remote labs available at the European partners. This meant TA2 could proceed normally, while TA3 already used the newly installed VISIR nodes in Argentina and Brazil. Furthermore, the synergies established with the PILAR project are a direct result of the European partners' effort.

Finally, there was an attempt to involve students in the project implementation, as a result of the Commission's feedback to the intermediate report. This involvement was mainly done in evaluation activities, in particular: (1) the internship at IPP of two students from IFSC, Matheus Varela and Leticia Coelho, who later presented their work at COBENGE2017 on differentiation aspects between simulations and (real) remote experiments done in VISIR; (2) Josiel Pereira's MSc thesis, supervised by João Bosco, from UFSC [URL78]; (3) Carlos Arguedas Matarrita's PhD thesis, supervised by Sonia Concari, from UNR [URL79]; and (4) the internship of Ignacio Evangelista, at IPP, on June 2017, with the support of a student grant from UNR.

2) Management of the grant

- Describe any challenge or difficulty encountered concerning the management of the grant (specific needs or constrains related to the Partner Country specificities, transfer of funds to partners, application of unit costs, reimbursement of costs, tendering procedure…).

The grant management procedures are fully described in the Partnership Agreements, and as agreed on these, each partner received 90% of its budget by the project end. This procedure (and support documents) was presented during the KOM and later discussed via e-mail, effectively allowing all partners to familiarize with the rules for managing the grant. In addition, the project coordinator shared the materials given during the Erasmus+ Capacity Building in Higher Education Project Representatives Meeting [URL80] held in Brussels, 27-28 January 2016. The consortium decided that all partners should receive a part of their budget as soon as possible after the coordinator got each instalment from the EU. The amounts of each transfer were adjusted to allow the partners with equipment purchases to get a larger percentage of the budget on the first instalment, to cope with the larger initial expenses. After the second instalment, and subsequent transfers to partners, each partner would have 90% of the planned budget.

Transfer of funds required some adjustment to each partner country bank system due to the different currencies and procedures (for instance, Argentina doesn't use the IBAN system), requiring several support documents to be provided to partners. Similarly, international purchases from partner countries required payments in different currencies and therefore variable procedure and exchange rates, depending on supplier and partner.

All non-personal expense documents were shared with the consortium in the project Dropbox folder as well as an excel file with the up-to-date expenses by partner and type of expense, in order for the entire consortium to follow the ongoing expenses and justifications. Each partner managed its own budget and provided the coordinator with the required documentation.

The main constraining aspects faced in the project emerged from the equipment acquisition process considering the nature of each partner (public, private, non-profit), applicable national legislation, (non-) existence of a local representative of the equipment manufacturer, fixed date for calculating the exchange ratio, etc. The major constraint was met by the public university partners in Brazil, which due to local legislation were required to purchase their equipment via a local Foundation in order to be able to import the equipment without paying taxes. The equipment acquisition procedure was therefore much demanding in time and effort as initially expected.

Unit costs proved adequate in perdiem rates and staff costs, but in terms of travel the amounts could be insufficient for some partner country institutions, that were required to use co-financing for this purpose. Institutions not located in central cities, like UNSE, located in Santiago del Estero, Argentina, faced additional problems with the fixed travel unit cost approach as the actual costs are generally larger due to less competitive fares and the larger number of connection flights.

SECTION 4: IMPACT AND SUSTAINABILITY

1) Impact

Describe the impact of the project:

- At institutional and individual level in each of the institutions in the partner country(/ies) and on individuals (students and staff members) participating in the project;
- At national or regional level in the partner country (/ies) (e.g. networking with other organisations, associations, institutions, etc.);
- On the reform of higher education in the partner country(/ies).

How do the institutions intend to measure the project's long term impact (example for the curriculum development tracing the student's employability after the project finished etc.)?

The project aimed at enhancing the teaching and learning methodologies applied in the specific subject of electrical and electronic circuits and, once validated, use the success cases to extend these methodologies to other subjects, within Engineering Education. At the end of the project, more than 30 courses have been updated with the combined use of calculus, simulations, remote experiments (based on the implemented VISIR remote lab), and hands-on. This has directly impacted 49 teachers and more than 1500 students, in the 2017 academic year in Latin America (LA). These numbers also account for implementations in associated partner HEI, thus supporting the impact at both regional and national level (e.g. networking with other organizations, associations, institutions, etc.).

The involvement of nation-wide organizations in Brazil (i.e. ABENGE) and Argentina (CONFEDI) has guaranteed the dissemination to a national level. The documented use of the VISIR remote lab by HEI not initially included in the project consortium (either as members or associated partners) is a clear evidence that the project has had an impact beyond its consortium level.

The dissemination done in forums like the Annual Conference of the Brazilian Association for Engineering Education (COBENGE 2016 and 2017 editions) and the 1st Latin American Engineering Conference (CLADI 2017), organized by CONFEDI, has promoted an impact at national level. In the specific case of Brazil, the participation of ABENGE in the VISIR+ project, has enabled a direct experience that impacted the recent elaboration of a document entitled "A Proposal for Curricular Guidelines for National Engineering Programs" [1], which directly affects all Engineering programs in Brazil.

The long-term impact will be measured in 3 directions:
*1 – the number of accesses to the VISIR remote lab. Presently the consortium is also working with big data analysis tools to create an automatic assessment mechanism plus a sort of recommender system able to automatically scaffold students' experiments done in VISIR. This direction also includes accesses by new associated partners, i.e. other HEIs willing to use the VISIR remote lab. For instance, IFSC has very recently signed a memorandum of understanding with the Regional University of Blumenau (*Fundação Universidade Regional Blumenau*, FURB), specifically mentioning the possibility for teachers and students from FURB to use the VISIR remote lab installed at IFSC.*
2 – the number of courses that adapt their curricula to the proposed teaching and learning methodology based on the combined use of calculus, simulations, remote experiments (done with the VISIR remote lab or other remote lab, depending on the study subject) and hands-on. The SQ is available for measuring the students' satisfaction and maybe adapted to other remote labs.
3 – the number of new remote labs installed in the partner HEIs.

2) Dissemination

- Explain the commitment taken by the partner country beneficiaries as regards dissemination and the concrete measures taken for ensuring the visibility of the project at all levels (i.e. department and faculty, institution, local, regional, national, international);
- List the material produced aimed at promoting the project and its results (i.e. leaflets, brochures, web site, banners, etc.);
- Provide the link to the project website;
- Explain if the website will continue to exist after the end of the project's eligibility period and how it will be maintained.

The 60 entries included in the table of achieved results, concerning WP4, do not list all the news, posts and other visibility actions taken by the consortium partners. These entries do, however, present a general idea of the concrete measures taken for ensuring the visibility of the project at local, regional, national, and international levels, i.e. the department and faculty, and institutional levels were not mentioned. The visibility actions made at these lower levels may be seen at the project website and one of the partners' websites devoted to the project, i.e. http://www2.isep.ipp.pt/visir/ and http://www.maxwell.vrac.puc-rio.br/VISIR/index.html, respectively.

The project consortium created one leaflet, two institutional websites, one project group in ResearchGate, several audio files (radio interviews), and videos (TV news, etc.) for promoting the project results. It also created one closed group in Facebook and another in WhatsApp, for internal communication purposes (social bonding).

The project website will be maintained by the project coordinator, as it is anchored in the institutional website (http://www2.isep.ipp.pt/visir/). The same applies to the project website developed by PUC-Rio (http://www.maxwell.vrac.puc-rio.br/VISIR/index.html).

3) Sustainability / exploitation of results

- Explain the role, commitment and concrete measures taken by the partner country beneficiaries to guarantee the sustainability of the project outcomes/results beyond the project's lifetime (specify the funding sources if known);
- Explain how you have achieved a multiplier effect of the project; how the results have been exploited beyond the immediate target group and transferred to other contexts (for example to the wider education system, local economy and society, other institutions, other regions, etc.);
- What measures have been taken to formalise or institutionalise links with local non-university partners?
- For joint projects: please explain if any measures have been put in place in order to enlarge the implementation of the project results/outcomes beyond consortium participants;
- For structural projects: please explain how the project results will be mainstreamed by the national authorities in the future and will support the definition, implementation and monitoring of reform policies

The sustainability dimension was secured from an early start and has already been mentioned in the project proposal application. The VISIR remote lab is in operation in the project coordinator site since September 2010, on a 24/7 access basis, without any interruptions. The same applies to the VISIR nodes at all the other programme HEI that are part of the consortium (BTH, UNED, CUAS, and UDeusto). This means the VISIR remote labs installed in the partner HEI will endure beyond the project's lifetime, with nearly zero maintenance costs.

Concerning multiplier effects, the consortium already planned this dimension in the project proposal phase by creating a network of associated partners (AP), where each partner HEI had to involve at least two AP HEI, during training actions 2 and 3. In particular, TA3 had to be delivered in the AP HEI by the partner HEI that had the VISIR remote lab installed. Furthermore, each partner HEI has to promote at least one implementation of the proposed teaching and learning methodology in one of its AP HEI. As it can be seen in Annex 1, only one partner HEI was unable to achieve this goal, whereas other partner HEIs clearly surpassed it. The recent acquisition of a VISIR remote lab by UNED-CR, the request for a matrix quotation by UTN (Argentina), the training workshop delivered at ITESM (Mexico), and the cooperation agreement signed between IFSC and FURB (explicitly referring the use of the VISIR@IFSC remote lab) constitute other multiplier effects.

On a different dimension, the project has also motivated further cooperation links among the consortium partners. For instance, one student from IFSC got an Ernst-Mach-Grant to go to CUAS to work on VISIR in the autumn semester 2017/2018, and students from UNR have submitted proposals for the Ernst-Mach-Grant 2018 (call ended March 2018). UNR is happy to inform that one of its students, Mr. Ignacio Evangelist, was selected for a grant and thus will work at CUAS, during 2018.

Links with non-university partners have also been reinforced through the participation of CONFEDI (Argentina) and ABENGE (Brazil) as project partners. The award of the ABENGE recognition medal for relevant services to the project coordinator, for its contribution to the internationalization of ABENGE, is an evidence of how much these links were reinforced.

Concerning the last requirement, i.e. "... explain if any measures have been put in place in order to enlarge the implementation of the project results/outcomes beyond consortium participants;"*, besides the aspects already mentioned in relation to the multiplier effects of the project, the consortium has promoted some actions in parallel with another project funded by the Erasmus+ programme, under Key Action "Cooperation for innovation and the exchange of good practices", Action type "Strategic Partnerships for higher education". These actions are explained in more detail in the following item "Unexpected outcomes/ spin-off effects".*

4) Unexpected outcomes/ spin-off effects

- Did the project's implementation produce any unexpected outcomes or spin-off effects, (either positive or negative) and/or opportunities that are being created beyond the specific objectives in particular, in relation to graduate employability and/or increased cooperation between university(/ies) and the non-academic sector (i.e. future cooperation between beneficiaries)? If yes, please describe them;
- if applicable describe any synergy established with other CBHE projects and other national /regional initiatives.

The VISIR+ project established a number of synergies in particular with:
- the project entitled "Platform Integration of Laboratories based on the Architecture of visiR" (PILAR), funded by the Erasmus+ Spanish Agency, under Key Action "Cooperation for innovation and the exchange of good practices", Action type "Strategic Partnerships for higher education", grant 2016-1-ES01-KA203-025327 [URL77]. PILAR aims to build a federation of VISIR remote labs in Europe. The possibility to extend this federation to Latin America, by aggregating the newly installed VISIR remote labs, at the partner HEI is immediate. There have been joint discussions about this possibility, in particular during international conferences like exp.at'17 and REV2018, where elements of the two projects were present.
- the "Programa Ingenieros", promoted by the Regional Government of Santa Fe, in Argentina, where UNR is located [URL72]. The discussions held in Rosario, during the project coordinator mission to CLADI2017 led to the identification of possible contributions from the UNR team working in the VISIR+ project.

SECTION 5: HORIZONTAL ISSUES

1) Previous recommendations/follow up

Explain how the recommendations given by the Agency (in the assessment of the Technical report, in the feedback from monitoring visits, in monitoring exchanges with the Agency, etc.) have been followed up, addressing each recommendation separately and highlighting steps and measures taken.

Concerning recommendations from the assessment of the Intermediate Technical report:

R: Provide more information about the added value of the project in Argentina.
A: The actions planned for and carried out at CLADI2017 plus the meeting between the project coordinator and the representative of the "Programa Ingenieros" of the regional government of Santa Fe, in Argentina [URL72], targeted this recommendation, in specific. The project officer also had the opportunity to verify this aspect, in situ, during her meeting with the Argentinean partners, in Buenos Aires (see Section 2, item 2).

R: Delay in the implementation of activities due to difficulties in the purchase and installation of the VISIR remote labs […].
A: The project consortium asked for a project extension of 6 months and managed to implement all activities by 100%. All VISIR remote labs are now installed, as described in the project proposal. The process of involving FEESC [URL72], in the case of the two public HEI in Brazil was crucial to unblock the situation. In the case of the two Argentinean partners, the delay was also impacted by the agenda of the two technical staff members of BTH who installed the VISIR remote lab (i.e. as the expected time window was lost, a new one had to be found, which served all parties).

R: […] provide additional information about the courses in which the system is used.
A: Please check Annex 1 [URL73].

R: […] develop further what is the perception of the students using the remote lab and if it contributes to reinforce students' autonomy. It will be also useful to know if the VISIR remote lab favours the student-centred approach as foreseen initially.
A: We devised two specific actions to address this recommendation: (1) two students from a partner HEI did an internship at the project coordinator site, to evaluate students' beliefs about the differences between simulations and remote experiments. Their work was presented in two conferences and also invited to a book chapter. These outputs are listed in the table of the achieved results; and, (2) a complete study about the use of VISIR in a student-centred approach, implemented at PUC-Rio, was submitted for publication in a top-ranked journal (Computers and Education) in mid-April [URL74]. Although the paper is still under evaluation, we invite the reader to check, in particular, conclusions 3 and 4 (pages 13-14 from [URL74]). Besides the study done at PUC-Rio (i.e. the first partner country HEI to have VISIR installed and incorporated into its courses), a 2nd paper is now under preparation, covering all the other didactical implementations.

R: […] recommend that students and other external stakeholders are further involved in the project management/implementation.
A: See previous answer concerning the involvement of students in the project implementation. In addition, the (remote) keynote presentation done at the annual meeting of the Argentinean Physics Teachers was meant to further involve this important stakeholder.

R: […] indicate […] the Brazilian and Argentinian institutions which expressed their interest in the VISIR system.
A: Mr. Kristian Nilsson, from BTH, reported the interest from representatives of Universidad Tecnológica Nacional (UTN), in Argentina. Representatives from the Federal Network of

Technological and Professional Education have also shown interest in replicating the VISIR+ project in their network with 3 Federal Institutes, acting as the partner HEI and the 3 Brazilian consortium members that participated in the VISIR+ project acting as the trainers. A new VISIR system was installed at UNED-CR (see changes reported for WP2 in the table of achieved results).

R: […] mention how the Ministries of Education in these two countries have taken into account the results achieved in the framework of the project.
A: Presently, this aspect is more advanced in Brazil, given the involvement of ABENGE and the presentation of the VISIR+ project to the Brazilian Secretary for Technological and Professional Education, at the Brazilian Ministry of Education (Mrs. Eline Nascimento). We expect to achieve a similar result in Argentina, in the short future, building upon the progressive use of the VISIR remote lab in the two partner HEI and in other institutions that have shown their interest during the EDUNINE 2018 edition, held last March at Buenos Aires.

2) Transversal issues
If applicable, describe how and to what extent the project addresses transversal (/cross-cutting) issues relevant for the EU and its partner countries (e.g. gender balance, sustainable development, unemployment, social cohesion, etc.).

*As previously mentioned in the Intermediate Technical report: "*The computer-mediated nature of a remote lab, such as VISIR, contributes to gender balance (there is no distinction, whatsoever, between genders) and to a sustainable development, i.e. increasing numbers of students are easily handled by the batch mode operation of this particular remote lab. Furthermore, VISIR supports both E-learning and Blended learning modalities, thus effectively contributing to the Brazilian and Argentinean realities, in terms of student population and country area (which combined together is larger than the whole area of Europe). This means VISIR facilitates the access to technology-enhanced educational tools, namely for acquiring and practising experimental skills, for students living in rural areas.".

A further comment was that students at PUC-Rio mentioned having benefitted from the remote accessibility to VISIR during a strike on public transportation means at Rio de Janeiro.

*Also, the evaluation done at this partner HEI, described in the manuscript submitted to the Computers and Education journal, refers: "*The greatest advantage of introducing a remote lab in a course is accessibility - students can *access from home/ from anywhere/ anytime*, allowing them to study and perform their tasks at their own pace (allowing them to repeat it as many times as they need).". *This conclusion (among others) is supported by evidence anonymously collected from the Students' Satisfaction questionnaires*.

3) Refugees
If applicable, describe how and to what extent the project addresses issues related to refugees, migration, internal displaced people.

Not Applicable.

4) Least Developed Countries and regions
If applicable, describe how the project has involved or disseminate the results toward institutions located in Least Developed Countries (LDC)[3] and / or in least developed regions in the same partner

[3] Least Developed Countries (LDC): https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/publication/ldc_list.pdf

country involved in the project. Provide information if there is any plan /strategy for the future to do so.

Not Applicable concerning LDC, as Argentina and Brazil are not included. Regarding least developed regions in Argentina, one of the partner HEI pertained to the Province of Santiago del Estero, which is considered the nation's region with the lowest per capita GDP.

5) Innovation

If applicable, describe to which extent the project has proved to be innovative and how do the project's results offer innovative and creative solutions to promote capacity building

An innovative, and most important, aspect of the project was the involvement of non-academic partners, such as ABENGE and CONFEDI, who proved their value as opinion-makers, able to influence the educational policies, and to engage the larger engineering education community, in Brazil and Argentina, respectively,

Another innovative aspect is the fact some teachers who attended the training actions have been able to use the VISIR remote lab in other subjects, i.e. other than the subject of electric and electronic circuits analysis, as described in the original project proposal. In fact, VISIR has been effectively used (proved through the appropriate use of the project's evaluation tools) in subjects like Applied Mathematics, Calculus, and Statistics. Furthermore, VISIR has also been used in other educational scenarios, for instance in a training course for employees of the Regional Energy Enterprise of Santa Fe, in Argentina [URL83]. This sustains the claim that the training actions delivered in the scope of the VISIR+ project were also meant to promote creativity and new didactical implementations, based on the use of the VISIR remote lab.

STATISTICS AND INDICATORS

This section aims to gather statistical data and indicators of performance <u>for the period covered by this reporting exercise</u>

PROJECT IMPLEMENTATION	
Type of equipment acquired:	**multiple choice question**
Books and pedagogic material	☐
Audio-visual equipment	☐
Computers and software	☒
Lab material	☒
Other	☐
For Curriculum Development projects	
courses updated (/developed/accredited) in line with Bologna principles.	6
number of new/updated courses **DEVELOPED**	
number of new/updated courses **RECOGNISED/ACCREDITED**	
number of updated courses **IMPLEMENTED**	41
Level of new/updated courses:	**multiple choice question**
Short cycle	☒
1st cycle (e.g. Bachelor)	☒

2st cycle (e.g. Master)	☐
3rd cycle (e.g. Doctoral)	☐
Vocational Education and Training	☒
Type of recognition:	**multiple choice question**
HEI degree	☒
National degree	☐
Multiple degree	☐
Joint Degree	☐
Volume (in ECTS) of new/updated courses	N/A
The new study programme includes:	**multiple choice question**
Placements/internships for students	☐
Career orientation service	☐
Career development measures	☐
Number of learners / trainees enrolled (per intake / course delivery)	1500 students / 49 teachers
Type of skills/competence developed:	**multiple choice question**
Transversal/behavioural skills	☐
Technical /academic /scientific / research skills	☒
Linguistic competences	☐

% of the new curriculum taught in foreign language of the total of new curriculum developed by the project	**N/A**
For Training/Mobility Activities	
number of partner country "HEIs' students" trained	> 1500
number of partner country "HEIs' academic staff" trained	> 270
number of partner country "HEIs' administrative staff" trained	N/A
number of partner country "non-HEI individuals" trained (priv. sector, NGOs, civil servants, etc.)	N/A
IMPACT AND SUSTAINABILITY	
Impact at individual level	
extent of attention given to **vulnerable groups**	2
Number of direct beneficiaries in the Partner country(ies) per year: **academic staff from HEIs**	> 135 (on average, per year)
Number of direct beneficiaries in the PCs (/year): **administrative staff from HEIs**	N/A
Number of direct beneficiaries in the PCs (/year): **HE students**	> 750 (on average, per year)
Number of direct beneficiaries in the PCs (/year): **non HE individuals**	N/A
Impact at institutional level	

extent of **impact at institutional level:** for instance new courses / strategies (policies, regulations) / services (units, centres)	3
Potential of project measures to contribute to new **national** cooperation activities in the **Partner countries** HEIs as a result of the project (Memorandum of Understanding /research projects / joint publications /participation in networks or associations etc.)	4
Potential of project to contribute to new **international** cooperation activities in the **Partner countries** HEIs as a result of the project (international agreements / Memorandum of Understanding /research projects / joint publications /participation in networks or associations, etc.)	4
Impact on the HE Sector	
Potential of project to contribute to new (/updated) **national or regional policies** /laws/ regulations in HE	4
Potential of project to contribute to the establishment (/ further development) of **external bodies** (/associations /agencies)	1
Potential of project to contribute to improve the **excellence/ competitiveness/attractiveness** of the Higher Education institutions	3

Innovative character of the planned results (i.e. the courses developed; the new tools, services, procedures delivered; the strategies implemented for reaching the target groups; etc.)	5
Impact on the society as a whole	
Potential of the project to pay particular attention to **least developed countries**	4
Potential of the project to engage Partner Countries HEIs in **new means of cooperation with employers** and **other stakeholders (e.g. NGOs, associations, etc.)**	1
measures contributing to **improving lifelong learning approaches** in the Partner Country HEIs	1
Sustainability	
institutional support for Partner Country HEIs to sustain project results	5
measures to collect **Sources of financial (/logistic) support** for sustaining the project results from:	**multiple choice question**
Partner HEIs	☐
Public authorities in Partner countries	☐
NGOs	☐
Private sector	☐
European Union	☐
Others	☒

QUALITY OF PARTNERSHIP & COOPERATION	
Involvement of students in the project implementation	3
Involvement of non-educational stakeholders in the project implementation	1
RELEVANCE in relation to project objectives	
To what extent the project contributes to the policy objectives of the Partner Countries	4
Project potential to promote EU's horizontal policies	**multiple choice question**
Agriculture, fisheries and foods	☐
Business	☐
Climate action	☐
Cross-cutting policies	☐
Culture, education and youth	☐
Economy, finance and tax	☐
Employment and social rights	☐
Energy and natural resources	☐
Environment, consumers and health	☐
External relations and foreign affairs	☐
Justice, home affairs and citizens' rights	☐
Regions and local development	☐
Science and technology	☒
Transport and travel	☐

SCALE:

1 ***not applicable***
2 ***to a very small extent***
3 ***to a small extent***
4 ***to a high extent***
5 ***to a very high extent***
6 ***totally accomplished***

Training and mobilities

(please note that this section DOES NOT INCLUDE data on students/staff mobilities covered by the Special Mobility Strand component)

Enter the code of the partner country concerned in the first lines and figures in the second and third:

Training of partner country staff and students

(Country of origin)

Number of academic staff from the partner country's Higher Education Institutions trained/retrained

Please indicate the number of teaching staff (professors, assistants with teaching tasks, etc.) trained and/or retrained to the date of the report submission
and the percentage this represents as compared to your objectives at the end of the project

	Country Code:BR, IFSC	*Country Code:BR, UFSC*	*Country Code:BR, PUC-Rio*	*Country Code: AR, UNR*	*Country Code:AR, UNSE*
Number Male	24	61	41	38	47
Number Female	1	39	9	10	4
% compared to objectives	125	500	250	240	255

Number of non-academic staff from the partner country's Higher Education Institutions trained/retrained

Please indicate the number University administrative staff (librarians, staff from the International Office, IT specialists, etc.) trained to the date of report submission
and the percentage this represents as compared to your objectives at the end of the project

	Country Code:BR, IFSC	*Country Code:BR, UFSC*	*Country Code:BR, PUC-Rio*	*Country Code: AR, UNR*	*Country Code:AR, UNSE*
Number Male	4	1	3	see [4]	see [3]
Number Female			1		
% compared to objectives	200	50	200		

Number of staff from the partner country's non Higher Education Institutions trained/retrained

Please indicate the number of staff of non HEI (enterprises, NGOs, Chambers of Commerce, Government, local administration, etc.) trained to the date of report submission:
and the percentage this represents as compared to your objectives at the end of the project

	Country Code:BR, IFSC	*Country Code:BR, UFSC*	*Country Code:BR, PUC-Rio*	*Country Code: AR, UNR*	*Country Code:AR, UNSE*
Number Male					
Number Female					
% compared to objectives					

Number of students from the partner countries who have attended programmes/courses developed in the framework of the project

Please indicate the number of students from the partner countries that have been trained and/or retrained in the programmes/courses developed by the project to the date of report submission:
and the percentage this represents as compared to your objectives at the end of the project

	Country Code:BR, IFSC	*Country Code:BR, UFSC*	*Country Code:BR, PUC-Rio*	*Country Code: AR, UNR*	*Country Code:AR, UNSE*
Number Male	-	-	-	-	-
Number Female[5]	246	410	563	365	29
% compared to objectives	98,4	164	225	146	11,6

[4] This partner had no technicians allocated to the lab. The training about the matrix configuration (technical workshop) was delivered to teachers who assumed that duty.
[5] Not possible to distinguish by gender due to privacy policies.

Academic/administrative Staff mobility

Number of partner country – programme country mobility flows of more than 1 week

Please indicate the number of partner country staff mobility flows from the partner country to the programme country to the date of report submission:
and the percentage this represents as compared to your objectives at the end of the project

(Country of origin)

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					
% compared to objectives					

Number of programme country - partner country mobility flows of more than 1 week

Please indicate the number of programme country staff mobility flows from the programme country to the partner country to the date of report submission:
and the percentage this represents as compared to your objectives at the end of the project

(Host country)

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					
% compared to objectives					

Number of partner country – partner country mobility flows of more than 1 week
Please indicate the number of staff mobility flows within the same partner country to the date of report submission:

and the percentage this represents as compared to your objectives at the end of the project

(Country of origin)

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					
% compared to objectives					

And between two different partner countries:

Number Male					
Number Female					
% compared to objectives					

and the percentage this represents as compared to your objectives at the end of the project

Student mobility

Number of partner country – programme country mobility flows of more than 2 weeks

Please indicate the number of partner country student mobility flows from the partner country to the programme country to the date of report submission:

and the percentage this represents as compared to your objectives at the end of the project

(Country of origin)

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					
% compared to objectives					

Number of programme country - partner country mobility flows of more than 2 weeks

Please indicate the number of programme country student mobility flows from the programme country to the partner country to the date of report submission:

and the percentage this represents as compared to your objectives at the end of the project

(Host country)

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					
% compared to objectives					

Number of partner country – partner country mobility flows of more than two weeks

Please indicate the number of student mobility flows within the same partner country to the date of report submission:

and the percentage this represents as compared to your objectives at the end of the project

(Country of origin)

	Country Code:	*Country Code:*	*Country Code:*	*Country Code:*	*Country Code:*
Number Male					
Number Female					
% compared to objectives					

And between two different partner countries:

Number Male					
Number Female					
% compared to objectives					

and the percentage this represents as compared to your objectives at the end of the project

TABLE OF ACHIEVED / PLANNED RESULTS

Title and reference number of the work package (WP)	*Preparation (WP1)*

Indicators of achievement and or/performance as indicated in the project proposal	*Attendance lists; Satisfaction Questionnaire (SQ) results; URL of installed VISIR systems;*

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
1.1	Training Action 1	2016-02-01	2016-02-02	BTH, Karlskrona, Sweden	A group composed by one element from each program country institution delivered training action 1 to two elements (teachers) from each partner country institution.	Attendance list [URL01] SQ results[7] Photos [URL02]
1.2	VISIR system installation	2016-08-29	2016-08-31	PUC-Rio, Rio de Janeiro, RJ, Brazil	Two elements from BTH installed the VISIR remote lab in the identified HEI from a partner country. Local configurations were done according to specific requests.	URL of the installed VISIR system [URL03] Photos [URL04]
1.3	Technical workshop	2016-09-01	2016-09-02	PUC-Rio, Rio de Janeiro, RJ, Brazil	Two elements from BTH conducted a local training workshop for technical staff (lab assistants, IT managers, and web administrators) about the VISIR system.	SQ results[8] Photos [URL04]
1.2	VISIR system installation	2016-12-12	2016-12-14	UFSC, Araranguá, SC, Brazil	Two elements from BTH installed the VISIR remote lab in the identified HEI from a partner country. Local configurations were done according to specific requests.	URL of the installed VISIR system [URL05] Photos and video [URL06]
1.3	Technical workshop	2016-12-15	2016-12-16	UFSC, Araranguá, SC, Brazil	Two elements from BTH conducted a local training workshop for technical staff (lab assistants, IT managers, and web administrators) about the VISIR system.	Attendance list [URL01] SQ results[3]
1.2	VISIR system installation	2017-05-15	2017-05-17	IFSC, Florianopolis, SC, Brazil	Two elements from BTH installed the VISIR remote lab in the identified HEI from a partner country. Local configurations were done according to specific requests.	URL of the installed VISIR system [URL07] Photos [URL06]

[7] Analysis presented in the paper published at REV2017, by Clara Viegas et al.
[8] A complete analysis of the SQ collected from all technical workshops (TW) is still underway [URL85]. The SQ used in the TW is available at [URL84].

1.3	Technical workshop	2017-05-18	2017-05-19	IFSC, Florianopolis, SC, Brazil	Two elements from BTH conducted a local training workshop for technical staff (lab assistants, IT managers, and web administrators) about the VISIR system.	Attendance list [URL01] SQ results[3] Photos [URL06]
1.2	VISIR system installation	2017-05-15	2017-05-17	UNSE, Santiago del Estero, Argentina	Two elements from BTH installed the VISIR remote lab in the identified HEI from a partner country. Local configurations were done according to specific requests.	URL of the installed VISIR system [URL08] Photos [URL06]
1.3	Technical workshop	2017-05-18	2017-05-19	UNSE, Santiago del Estero, Argentina	Two elements from BTH conducted a local training workshop for technical staff (lab assistants, IT managers, and web administrators) about the VISIR system.	Attendance list [URL01] SQ results[3] Photos [URL06]
1.2	VISIR system installation	2017-08-22	2017-05-24	UNR, Rosario, Argentina	Two elements from BTH installed the VISIR remote lab in the identified HEI from a partner country. Local configurations were done according to specific requests.	URL of the installed VISIR system [URL09] Photos [URL06]
1.3	Technical workshops	2017-08-25	2017-08-28	UNR, Rosario, Argentina	Two elements from BTH conducted a local training workshop for technical staff (lab assistants, IT managers, and web administrators) about the VISIR system.	Attendance list [URL01] SQ results[3] Photos [URL06]

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress

Changes that have occurred in this result since the original proposal:

Regarding the original proposal there were no changes concerning this result. The only aspect worth mentioning is the activities scheduling, i.e. in the original proposal the plan was to have all the five VISIR systems installed during Q1 of the project lifetime (from 2015.10 till 2016.03). However, due to bureaucratic problems faced during the equipment acquisition process and, afterwards, the availability of the BTH team elements, it was only possible to conclude the whole process in late August 2017. This means a 100% WP execution, but with a substantial delay that had no impact in the project execution because the partner countries HEI used the VISIR remote labs of their European partners, in the time between.

Title and reference number of the work package (WP)	*Development (WP2)*

Indicators of achievement and or/performance as indicated in the project proposal	*Attendance lists; Satisfaction Questionnaires (SQ); set of educational modules combining hands-on, simulation and remote experiments (done in VISIR); midterm development assessment; new training materials from enlarged VISIR facilitators group*

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
2.1	Training Action 2	2016-08-22	2016-08-23	UFSC, Araranguá, SC, Brazil	Training Action 2 for local staff and teachers using the VISIR@IPP system	Attendance list [URL01] SQ results[9] Training materials [URL10] Photos [URL06]
2.1	Training Action 2	2016-08-24	2018-08-25	IFSC, Florianopolis, SC, Brazil	Training Action 2 for local staff and teachers using the VISIR@IPP system	Attendance list [URL01] SQ results[4] Training materials [URL10] Photos [URL06]
2.1	Training Action 2	2016-09-05	2016-09-06	PUC-Rio, Rio de Janeiro, RJ, Brazil	Training Action 2 for local staff and teachers using the local installed VISIR system	Attendance list [URL01] SQ results[4] Training materials [URL10] Photos [URL06]
2.1	Training Action 2	2016-09-12	2016-09-16	UNSE, Santiago del Estero, Argentina	Training Action 2 for local staff and teachers using the VISIR@UNED system	Attendance list [URL01] SQ results[4] Training materials [URL10] Photos [URL06]
2.1	Training Action 2	2016-09-13	2016-09-15	UNR, Rosario, Argentina	Training Action 2 for local staff and teachers using VISIR@UDeusto system	Attendance list [URL01] SQ results[4] Training materials [URL10] Photos [URL06]
2.2 and	Educational Modules	2016-	2017-	PUC-Rio	Educational modules	[URL11] menu entry “Lab Remoto”.

[9] Analysis presented in the paper published at INTED2018, by Gustavo Alves et al.

2.5	Design and Delivery	01-20	10-30			Login: labremoto1; passw: fimpapo1
2.3	1st Midterm checkpoint	2016-10-19	2016-10-21	CISPEE, Vila Real (Portugal)	Evaluation of the development progress of the implementations	Attendance list [URL01] Presentations [URL12] Photos [URL06]
2.2 and 2.5	Educational Modules Design and Delivery	2016-01-20	2017-12-31	UFSC	Educational modules	Educational results including SQ results (from the SQ filled in by the students)[10]
2.2 and 2.5	Educational Modules Design and Delivery	2016-01-20	2017-12-31	IFSC	Educational modules	Educational results including SQ results (from the SQ filled in by the students)[5]
2.2 and 2.5	Educational Modules Design and Delivery	2016-01-20	2017-12-31	UNR	Educational modules	Educational results including SQ results (from the SQ filled in by the students)[5]
2.2 and 2.5	Educational Modules Design and Delivery	2016-01-20	2017-12-31	UNSE	Educational modules	Educational results including SQ results (from the SQ filled in by the students)[5]
2.4	Training Action 3	2016-11-18	2017-04-12	PUC-Rio, Rio de Janeiro, RJ, Brazil	Training Action 3 for teachers from the associated partners using the local installed VISIR system	Attendance list [URL01] SQ results[11] Photos [URL13] New training materials [URL14][12]
2.3	2nd Midterm checkpoint	2017-06-05	2017-06-08	exp.at'17, Faro, Portugal	Evaluation of the development progress of the implementations and of the training actions	Attendance list [URL01] Presentations [URL15] Photos [URL06]
2.4	Training Action 3	2017-09-11	2017-09-15	IFSC, Florianopolis,	Training Action 3 for teachers from the associated partners using the local installed	Attendance list [URL01] SQ results[6]

[10] The consortium is still gathering information from the didactical implementations done in the 2nd semester of the 2017 academic year (in LA). In total, more than 1000 students have used VISIR in combination with hands-on and simulations. A 1st paper analysing the implementations and the educational results from PUC-Rio has been submitted to the Computers & Education journal (https://www.journals.elsevier.com/computers-and-education/). A 2nd paper with a complete analysis of all didactical implementations is being prepared. In addition, a number of papers describing the didactical implementations at each LA HEI have already been published and presented in several conferences. All the implementations done are fully described at [URL86].

[11] Published at INTED2018.

[12] New training materials refer to presentations (e.g. PowerPoint files) and case studies related to the didactical implementations done at the LA HEIs and that have been used for the training actions done at the Associated Partners (AP). The provided URL gives access to these materials.

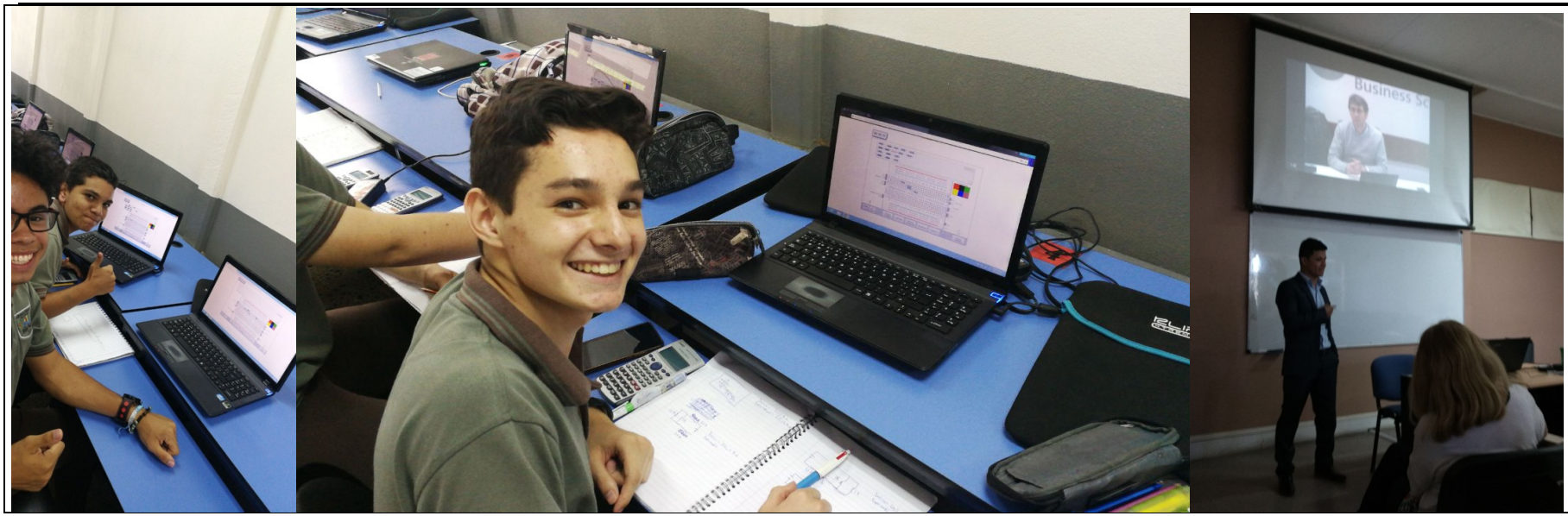
				SC, Brazil	VISIR system	Photos [URL06] New training materials [URL14]
2.4	Training Action 3	2017-09-11	2017-09-15	UFSC, Araranguá, SC Brazil	Training Action 3 for teachers from the associated partners using the local installed VISIR system	Attendance list [URL01] SQ results[6] Photos [URL06] New training materials [URL14]
2.4	Training Action 3	2017-09-18	2017-09-20	UNSE, Santiago del Estero, Argentina	Training Action 3 for teachers from the associated partners using the local installed VISIR system	Attendance list [URL01] SQ results[6] Photos [URL06] New training materials [URL14]
2.4	Training Action 3	2017-10-10	2017-10-12	UNR, Rosario, Argentina	Training Action 3 for teachers from the associated partners using the local installed VISIR system	Attendance list [URL01] SQ results[6] Photos [URL06] New training materials [URL14]

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress

Changes that have occurred in this result since the original proposal:

Regarding the original proposal there were some positive changes in two activities, i.e. Training Action 3 and Didactical Implementations. In some LA HEI, the partner repeated TA3 (whether for a new AP, or 1st delivering it at its own site and then repeating it at the AP site), in particular PUC-Rio, IFSC, and UNSE. This is verifiable through the attendance lists and photos taken during these events. Furthermore, some attendees of TA2 have used their training to run local seminars and workshops at their home institutions, e.g. Carlos Arguedas Matarrita, a PhD student of Dr. Sonia Concari, from UNR, has run a workshop at his home institution, the National Distance Education University (UNED) at Costa Rica (see photos below). Mr. Carlos has also included this experience on his PhD thesis, which he defended last December 2017. He has also published about this additional implementation at REDLAD2018. Some APs have also successfully used the VISIR remote lab after their training in TA2, as e.g. Instituto Politécnico Superior de Rosario, Argentina (http://www.ips.edu.ar).



Title and reference number of the work package (WP)	*Quality Plan (WP3)*

Indicators of achievement and or/performance as indicated in the project proposal	*Data collection plan; Implementation results; TA assessment results*

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
3.1	Data Collection definition and validation	2015-10-15	2016-06-09		Plan outlining the data collection strategy, tools and methodology that will be used throughout the project	Plan, tools and instructions available at [URL16]
3.2	Data Collection analysis and report	2016-06-09	2018-06-09		Analysis of the implementation results and impact. An aspect worth mentioning is that, with the current available data, the VISIR+ project has enabled 49 teachers and 1561	Series of internal reports, scientific papers, plus public presentations and keynotes

					students to use the proposed enquiry-based teaching and learning methodology comprising a combination of hands-on, simulations, and remote labs, e.g. VISIR.	about the didactical implementations results and its impact in the target courses / institutions [URL17].
3.3	Training Actions assessment	2016-02-10	2018-03-31		Assessment of Training Actions (TA) 1, 2, and 3, plus the technical and dissemination workshops (TW). An aspect worth mentioning is that, at the end of the project, more than 400 persons have attended these events (either as trainers or trainees).	Series of internal reports, scientific papers plus public presentations and keynotes about the SQ results concerning TA1, TA2, TA3, and TW [URL16], [URL17]

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress

Changes that have occurred in this result since the original proposal:

Two changes are worth noticing: (1) the Satisfaction Questionnaires were translated into Portuguese and Spanish in order to facilitate their completion by the TA attendees, in particular concerning the open question. This resulted in additional work for translating the answers into English for further analysis, categorization and publication; (2) although not initially planned, the assessment done has included the technical workshops, both those that occurred at each LA HEI and those that took place in events like COBENGE2017 and EDUNINE2018. Furthermore, it should be mentioned that: (1) besides the internal evaluation reports mentioned in 3.2 and 3.3, IRICE has produced and later shared with the consortium a series of 5 videos covering the 5 TA2; (2) the elements from ABENGE who participated in TA3 as observers and disseminators of the current policies for STEM education in Brazil have also produced an evaluation report of this activity, done at UFSC, IFSC, UNSE, and UNR (see [URL17]).

Title and reference number of the work package (WP)	*Dissemination & Exploitation (WP4)*

Indicators of achievement and or/performance as indicated in the project proposal	*Local dissemination events list; Publications in International conferences and journals; Exploitation plan*

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
4.1	Local Dissemination	2015-09-18	2015-09-18	Porto, Portugal	Present VISIR+ to a visiting group of Rectors from Brazilian Federal Institutes of Science and Technology.	PowerPoint slides (output). Photos [URL06]
4.1	Local Dissemination	2015-09-29	2015-09-29	Porto, Portugal	Present VISIR+ at the 2nd Forum on Internationalization and Mobility.	[URL18]
4.1	Local Dissemination	2015-10-15	2016-03-31	WWW	Project coordinator website plus Project partners' websites	[URL19], [URL20], [URL21], [URL22], [URL23]
4.1	Local Dissemination	2015-12-28	2015-12-28	Porto, Portugal	Present VISIR+ during the daily news of RTP3 (a Portuguese cable TV channel)	[URL24]
4.1	Local Dissemination	2016-02-02	2016-02-02	Karlskrona, Sweden	Disseminate project KOM	[URL25], [URL26], [URL27]
4.1	Local Dissemination	2016-06-16	2016-06-16	Aveiro, Portugal	Disseminate VISIR+ Project at the European University Foundation (EUF) OpenSpace 2016	[URL28]
4.1	Local Dissemination	2016-08-20	2016-09-15	WWW	Disseminate VISIR+ Training action 2	Project Partners' websites plus Photos [URL29-URL35]
4.1	Local Dissemination	2016-10-18	2016-10-21	WWW	Disseminate 1st Midterm checkpoint general meeting	Project Partners' websites [URL36]
4.1	Local Dissemination	2016-10-24	2016-10-24	Porto, Portugal	Present VISIR+ to a visiting group of Rectors from Brazilian Federal Institutes of Science and Technology and the Brazilian Ministry of Education.	[URL37] PowerPoint at [URL17]
4.1	Local Dissemination	2016-12-16	2016-12-16	WWW	VISIR remote lab installation at UFSC Technical workshop at UFSC	[URL38]
4.1	Local Dissemination	2017-04-04	2017-04-04	Porto, Portugal	Present VISIR+ to a visiting group from the Erasmus+ STINT project	PowerPoint at [URL17] Photos [URL06]

4.1	Local Dissemination	2017-05-26	2017-05-26	WWW	VISIR remote lab installation at UFSC Technical workshop at UFSC	[URL39]
4.1	Local Dissemination	2017-06-08	2017-06-08	WWW	News about ABGENGE's participation in the 2nd midterm checkpoint meeting of the VISIR+	[URL40]
4.1	Local Dissemination	2017-06-23	2017-06-23	Newspaper La Ciudad	Opinion article about the advantages of remote labs, referring the VISIR+ project implementation at UNR	[URL41]
4.1	Local Dissemination	2017-08	2017-08	UNSE's page at Facebook	News about the expected visit from the BTH team to install the new VISIR node at UNSE	[URL42]
4.1	Local Dissemination	2017-08	2017-08	UNSE's page at Facebook +	News about the VISIR remote lab installation at UNSE. There was a large press coverage to this activity including a radio interview with Johan Zackrisson and Kristian Nilsson, the two elements from BTH, plus a series of news at the local TV and local (regional) newspapers.	[URL43], [URL44]
4.1	Local Dissemination	2017-08	2017-08	UNR's webpage + IRICE's webpage	News about the VISIR remote lab installation at UNR. The two elements from the BTH team has also the opportunity to visit IRICE, another project consortium institution.	[URL45], [URL46]
4.1	Local Dissemination	2017-09-01	2017-09-30	WWW + TV and radio interviews + newspaper + videos	This was a very intensive month with a series of activities including: (1) TA3 delivered at IFSC, UFSC, and UNSE; (2) Project's coordinator visit to UNR and UNSE; (3) visit of ABENGE's President to UNSE; (4) Project coordinator's participation plus keynote at CLADI2017; and, (5) plenary session with an EU representative (Mrs. Lise Pate), papers, and a technical dissemination workshop at COBENGE2017. During COBENGE2017, the Management Board of ABENGE praised the Project coordinator contribution towards ABENGE's internationalization efforts.	[URL47], [URL48], [URL49], [URL50], [URL51], [URL06]
4.1	Local Dissemination	2017-10	2017-10	WWW	Ingvar Gustavsson, the creator and mentor of the VISIR remote lab passed away on October 2. Sadly, but inevitably, there were several public news referring his work, and, in association, the VISIR+ project.	[URL52]
4.1	Local Dissemination	2017-10-09	2017-10-13	Rosario, Argentina	TA3 delivered at UNR + Associated partners	[URL53]
4.1	Local Dissemination	2017-	2017-	Rosario,	Presentation of the VISIR Project at "*Jornadas de*	See photos at [URL06]

		10-30	10-30	Argentina	*Socialización de investigaciones*" at Educational Sciences School, UNR	
4.1	Local Dissemination	2017-10-31	2017-10-31	Buenos Aires, Argentina	Participation of the VISIR Argentinean partners at an Erasmus+ event (30 years of the Erasmus program) at Argentina	[URL54], [URL06]
4.1	Local Dissemination	2017-11-20	2017-11-20	Vienna, Austria	Participation of Prof. Andreas Pester, contact person of CUAS, in an Austrian Erasmus+ celebration event of the 30th anniversary of the Erasmus program.	[URL06]
4.1	Local Dissemination	2017-11-20	2017-11-23	João Pessoa, PR, Brazil (REDITEC'17)	Presentation of the VISIR+ project at the National Congress of the Brazilian Federal Institutes of Science and Technology	See project leaflet at [URL17] See photos at [URL06]
4.1	Local Dissemination	2018-03-05	2018-03-07	Porto, Portugal +	Final project meeting	[URL55], [URL56], [URL57]
4.1	Local Dissemination	2018-04-05	2018-04-05	Rosario, Argentina	Maria Isabel Pozzo's interview to Radio UNR – Programa ABC	[URL06], [URL58]
4.2	International Scientific Dissemination	2016-02-14	2016-02-24	Madrid, Spain (REV'16)	Run a workshop on VISIR, which included a presentation about the VISIR+ project, during the Remote Engineering and Virtual Instrumentation (REV) conference.	[URL59], [URL60]
4.2	International Scientific Dissemination	2016-04-11	N/D[13]	WWW	Disseminate VISIR+ in social research networks	[URL61]
4.2	International Scientific Dissemination	2016-06-21	2016-06-21	Seville, Spain (TAEE'16)	Present paper about collaborative activities between IFSC and IPP, within VISIR+ (use of VISIR@ISEP node in courses run at IFSC)	See paper 46 at [URL62] Powerpoint presentation
4.2	International Scientific Dissemination	2016-09-28	2016-09-28	Natal, Brazil (COBENGE'16)	Plenary keynote about VISIR+ at COBENGE2016	[URL63], see Powerpoint presentation at URL [17]
4.2	International Scientific Dissemination	2016-10-05	2016-10-05	E-mail	International Council for Open and Distance Education (ICDE) October Newsletter	[URL17]
4.2	International Scientific Dissemination	2016-10-19	2016-10-21	Vila Real, Portugal (CISPEE'16)	Present paper about VISIR+ at the 2nd International Conference of the Portuguese Society for Engineering Education. Awarded Conference **Best Paper**.	[URL64], see Powerpoint presentation at [URL17]
4.2	International Scientific	2016-	2016-	Rome, Italy,	Present a paper related to the VISIR+ project	See paper at [URL17]

[13] Not Defined

	Dissemination	10-19	10-21	EADTU'16		
4.2	International Scientific Dissemination	2017-01-01	2018-04-01		Write a chapter to a book edited by Springer with the best works presented at CISPEE'16	[URL76]
4.2	International Scientific Dissemination	2017-03-19	2017-03-20	New York, NY, USA (REV'17)	Present papers about the assessment of TA2, the TA2 delivered at UNR, and the VISIR+ goals, activities and expected results.	Photos [URL06] Papers [URL17]
4.2	International Scientific Dissemination	2017-04-26	2017-04-28	Athens, Greece (EDUCON'17)	Present paper about VISIR+	Papers [URL17]
4.2	International Scientific Dissemination	2017-05-08	2017-05-11	Araranguá, SC, Brazil (SITED'17)	Present the VISIR+ project at the I *Simpósio Ibero-Americano de Tecnologias Educacionais* (SITED), together with Vanderli Fava de Oliveira, President of ABENGE, and Javier García Zubía, contact person of UDeusto, a project consortium member. Included visits to SATC, IFSC – campus Tubarão, and UNISUL, associated partners of UFSC in the VISIR+ project.	Photos at [URL06] and PowerPoint presentation at [URL17]
4.2	International Scientific Dissemination	2017-05	2017-05	Journal	Paper published at the Revista Argentina de Inginiería, edited by CONFEDI.	Paper [URL17]
4.2	International Scientific Dissemination	2017-06-05	2017-06-08	Faro, Portugal, (exp.at'17)	Present 5 papers about the VISIR+ and its synergies with the PILAR project	Papers [URL17]
4.2	International Scientific Dissemination	2017-07-05	2017-07-05	Swansea, UK (SALT'17)	Presentation at the 9th Annual SALT Learning and Teaching Conference, by a teacher from UFSC.	[URL65]
4.2	International Scientific Dissemination	2017-07-13	2017-07-14	Leiria, Portugal (CNaPPES'17)	Present a paper related to the VISIR+ project.	See paper and PowerPoint presentation at [URL17]
4.2	International Scientific Dissemination	2017-08-25	2017-08-25	Rosario, Argentina (JCyT'17)	Presentation of the VISIR+ project at the *Jornadas de Ciencia y Tecnologia de la UNR*	See [URL17]
4.2	International Scientific Dissemination	2017-09-13	2017-09-15	Parana / Oro Verde, Argentina (CLADI'17)	Presentation of 5 papers related to the VISIR+ project at CLADI2017 plus keynote session by the Project coordinator.	See papers and keynote presentation at [URL17]
4.2	International Scientific	2017-	2017-	IGIP	Short news about the VISIR+ project. IGIP stands for the	[URL66]

	Dissemination	09-25	09-25	Newsletter	International Society for Engineering Pedagogy.	
4.2	International Scientific Dissemination	2017-09-25	2017-07-29	Joinville, SC, Brazil (COBENGE'17)	Presentation of 5 papers related to the VISIR+ project.	See papers at [URL17]
4.2	International Scientific Dissemination	2017-09-25	2017-09-27	Concordia, Entre Rios, Argentina (REF'XX)	Keynote session by Skype at the *Reunión Nacional de Educación en Física,* REFXX	See keynote presentation at [URL17]
4.2	International Scientific Dissemination	2017-10-18	2017-10-20	Cádiz, Spain (TEEM'17)	Presentation of a paper related to the VISIR+ project, written by two students from IFSC who did an internship at ISEP, from March till July 2017.	See paper at [URL17]
4.2	International Scientific Dissemination	2017-11-25	2017-11-25	Medellin, Colombia (CIID'17)	Presentation of a paper related to the VISIR+ project.	See paper at [URL17]
4.2	International Scientific Dissemination	2017-11-30	2017-12-01	Thessalonica, Greece (IMCL'17)	Presentation of a paper related to the VISIR+ project.	See paper and presentation at [URL17]
4.2	International Scientific Dissemination	2017-12-01	2017-12-31	Book	Write a chapter to a book edited by the Portuguese and Spanish chapters of the IEEE Education Society with the best papers presented in 2017 about the use of ICT in engineering education.	[URL67]
4.2	International Scientific Dissemination	2018-03-11	2018-03-14	Buenos Aires, Argentina (EDUNINE'17)	Presentation of 3 papers and a workshop related to the VISIR+ project.	See papers at [URL17]
4.2	International Scientific Dissemination	2018-03-15	2018-04-14	Journal	Submission of a paper to the Journal Computers & Education	Paper submitted [URL74]
4.3	Exploitation Strategy	2016-03-15	2016-03-15	Argentina	Dissemination of VISIR+ in Argentina. Invite representatives to attend Training Action 2.	[URL68], [URL69]
4.3	Exploitation Strategy	2017-09-25	2017-09-28	Joinville, SC, Brazil	Participation of an EU representative (Mrs. Lise Pate) at COBENGE2017, in a plenary session related to VISIR+	See photos at [URL06]
4.3	Exploitation Strategy	2018-	2018-		Preparation and submission of a proposal to the CYTED	Proposal submitted

		03-15	04-20		Program	
4.3	Exploitation Strategy	2017-01-01	2018-04-14		Synergies with the Erasmus+ PILAR project. Series of presentations at exp.at'17, REV'18, and EDUCON'18	See PowerPoint presentations at [URL17]
4.3	Exploitation Strategy	2018-04-20	2018-04-20	Video interview	Interview to the EULAC Focus project, about the impact of the VISIR+ project to the Scientific EU-LA Relations	[URL70]

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress
4.2	International Scientific dissemination	2018-06-20	2018-06-22	Tenerife, Islas Canarias	Present two papers about VISIR+ at the TAEE conference	Certificate of presentation + photos + PowerPoint presentation
4.2	International Scientific dissemination	2018-06-01	2018-08-31	JEE	Submit a paper with a complete analysis of all didactical implementations.	Paper submitted
4.3	Exploitation strategy	2018-06-01	2018-08-31	Brazil	Submit a proposal to the Brazilian Office of Professional and Technological Education (SETEC), Ministry of Education (MEC)[14] for spreading the VISIR remote lab to the Federal Network of Professional, Scientific, and Technological Education.	Proposal submitted

Changes that have occurred in this result since the original proposal:

The major aspect worth highlighting is the number of dissemination activities done by the consortium, which clearly surpasses what was planned in the original proposal. The participation of an EU representative at COBENGE2017 was also an important achievement, as it attracted the attention of Brazilian authorities[15] to the VISIR+ project and to the value of the associated enquiry-based teaching and learning methodology based on the combined use of hands-on, simulations and remote labs.

[14] http://portal.mec.gov.br/setec-secretaria-de-educacao-profissional-e-tecnologica

[15] e.g. the President of CNPq – the Brazilian governmental agency for Scientific and Technological Development, Prof. Mário Neto Borges, was among the audience that attended Mrs. Lise Pate presentation of the Erasmus+ program.

Title and reference number of the work package (WP)	*Management (WP5)*

Indicators of achievement and or/performance as indicated in the project proposal	*Management plan; Assessment of planned activities; Final report*

Activities carried out to date to achieve this result:

Activity N°	Activity Title	Start date	End date	Place	Description of the activity carried out	Specific and measurable indicators of achievement
5.1	Kick-off meeting	2016-02-01	2016-02-03	Karlskrona, Sweden	1st General meeting, meant to build the working group. Included the project management board meeting, with a Skype meeting with the Project Officer, Mrs. Eva Valle Casanova.	Attendance list. Meeting minutes. Photos [URL06]
5.2	Project monitoring	2015-10-15	2018-04-14	Webmeetings, plus Porto and Faro.	Project management board webmeetings (10-11-2015, 05-05-2016, 20-07-2016, 20-09-2016, 29-03-2017, 12-12-2017, and 15-02-2018) were held every 2-3 months, considering also presential meetings (KOM, 1st and 2nd midterm project meetings, and final meeting). The final project management board meeting included also a Skype connection with the Project Officer (Mrs. Eva Valle Casanova) and a staff element of the EACEA financial services (Mr. Luigi Saia).	Partnership agreements signed between the project coordinator and all individual project partners. Webmeeting minutes and video recordings. 1st and 2nd midterm project management board meeting minutes. Attendance lists. Intermediate and final reports.
5.3	Final meeting	2018-03-05	2018-03-08	Porto, Portugal	Final meeting with presentation of results achieved so far, plus plan for collecting all educational data. Exploitation plan, referring the synergies with the PILAR project, present to the whole consortium. Discuss contributions to and major guidelines of the final project report, including in particular the need to deliver all financial documents.	Meeting minutes. Attendance list. Photos [06]

Activities to be carried out to achieve this outcome (before the end of the project)

Activity N°	Activity Title	Start date	End date	Place	Description of the activity to be carried out	Specific and measurable indicators of progress

Changes that have occurred in this result since the original proposal:

Project amendment request for postponing the project final date by 6 months. This request was unanimously approved by the project management board, duly presented to and authorized by the EACEA.

[URL01] https://www.dropbox.com/sh/537adcozwxov1u5/AABJ7-1B73rtlfKl50JsBrVJa?dl=0.
[URL02] https://www.flickr.com/photos/139335580@N07/24957070335/in/feed-139314250-1455197339-1-72157664364025622
[URL03] https://www.maxwell.vrac.puc-rio.br/VISIR/index.html
[URL04] https://www.maxwell.vrac.puc-rio.br/VISIR/scrapbook6.html
[URL05] http://visir.rexlab.ufsc.br/index.php/en
[URL06] https://drive.google.com/open?id=19GAQvtdV4Jnoig6sl1_noYWojxRM6rQO
[URL07] https://visir.florianopolis.ifsc.edu.br/visir/index.php/pt
[URL08] https://visirlab.unse.edu.ar/index.php/en
[URL09] https://labremf4a.fceia.unr.edu.ar/#
[URL10] https://www.dropbox.com/sh/p5ssk23wuu02qz6/AABCcjzgDfMcnof3-pLujWUHa?dl=0
[URL11] http://www.maxwell.vrac.puc-rio.br/labremoto.php
[URL12] https://www.dropbox.com/sh/rue6pj8m14dwjdk/AAD99HXF8bGo5ii0Ed__f9YNa?dl=0
[URL13] https://www.maxwell.vrac.puc-rio.br/VISIR/scrapbook10.html
[URL14] https://www.dropbox.com/sh/p5ssk23wuu02qz6/AABCcjzgDfMcnof3-pLujWUHa?dl=0
[URL15] https://www.dropbox.com/sh/5eay9i7yhch71rj/AAByDDOfBzBUFR18pnAFJkxKa?dl=0
[URL16] https://www.dropbox.com/sh/1cddhy15pakzq0w/AABXrGT0WoUJBXjamWPNz_Mta?dl=0
[URL17] https://drive.google.com/open?id=1jvx0bvqbfRKWfIELdvctkAmOONazl3XB
[URL18] https://portal.ipp.pt/personnel/News.aspx?id=7996
[URL19] http://www2.isep.ipp.pt/visir/
[URL20] http://www.maxwell.vrac.puc-rio.br/VISIR/index.html
[URL21] http://weblab.deusto.es/website/projects.html?
[URL22] http://www.abenge.org.br/Figuras/programacao2017/Projeto%20Visir.pdf
[URL23] http://www.unse.edu.ar/index.php/unse-institucional/778-proyecto-erasmus-visir
[URL24] https://www.youtube.com/watch?v=bQjJkFjl8R0

[URL25] http://abenge.org.br/noticias/abenge-participa-de-projeto-de-cooperacao-internacional-erasmus-de-inovacao-e-intercambio-em-educacao-
[URL26] https://www.bth.se/eng/nyheter/conference-laboratory-work-internet/
[URL27] https://www.fh-kaernten.at/en/startpage/newsdetails/online-labs-for-brazil-and-argentina/
[URL28] http://os.uni-foundation.eu/program.php
[URL29] https://linkdigital.ifsc.edu.br/2016/09/02/36793/
[URL30] http://rexlab.ufsc.br/blog/2016/08/23/professores-participam-de-capacitacao-do-projeto-visir/
[URL31] https://web.fceia.unr.edu.ar/es/tramites-mesa-de-entradas/88-novedades/noticias-de-la-fceia/887-capacitación-en-el-marco-del-proyecto-erasmus-visir.html
[URL32] http://fce.unse.edu.ar/fceyt/es/content/se-dictará-taller-internacional-en-la-facultad
[URL33] https://ingenieria.deusto.es/cs/Satellite/ingenieria/es/facultad-ingenieria/agenda-ingenieria/capacitacion-en-el-marco-del-proyecto-erasmus-visir/noticia
[URL34] https://www.flickr.com/photos/142258874@N04/sets/72157669741705803/page3/
[URL35] http://noticias.sombrio.ifc.edu.br/visita-internacional/
[URL36] http://www.isep.ipp.pt/New/ViewNew/5111
[URL37] https://www.ipp.pt/noticias/comitiva-ministerial-do-brasil-mec-e-conif-visita-p-porto
[URL38] http://noticias.ufsc.br/2016/12/laboratorio-de-experimentacao-remota-recebe-professores-da-suecia/
[URL39] http://florianopolis.ifsc.edu.br/index.php?option=com_content&view=article&id=1763:equipamento-para-laboratorio-remoto-doado-pela-uniao-europeia-comeca-a-funcionar-no-camus-florianopolis&catid=44:noticias&Itemid=134
[URL40] http://www.abenge.org.br/documentos/Visir+.pdf
[URL41] https://www.lacapital.com.ar/la-ciudad/el-politecnico-forma-bochos-fisica-pero-no-logra-evitar-los-recortes-n1397165.html
[URL42] https://www.facebook.com/media/set/?set=a.688682141323275.1073742214.389558071235685&type=3
[URL43] https://www.facebook.com/UNSEoficial/posts/1757326747615429
[URL44] http://www.unse.edu.ar/index.php/unse-institucional/689-presentacion-del-laboratorio-remoto
[URL45] https://web.fceia.unr.edu.ar/es/noticias-fceia/1123-se-puso-en-marcha-el-laboratorio-remoto-visir-en-la-fceia.html
[URL46] https://www.rosario-conicet.gov.ar/ver-noticias/item/742-visita-de-investigadores-suecos-al-irice
[URL47] https://www.youtube.com/watch?v=3vocPKdNe-E&t=6s
[URL48] https://www.youtube.com/watch?v=ykpHa5M8yPY
[URL49] https://www.youtube.com/watch?v=Ina6isRgIbg
[URL50] http://noticias.ufsc.br/2017/09/laboratorio-de-experimentacao-remota-da-ufsc-promove-capacitacao-para-professores/
[URL51] http://www.abenge.org.br/documentos/Visir+.pdf
[URL52] https://rexlab.ufsc.br/2017/10/02/prof-dr-ingvar-gustavsson-morre-aos-74-anos-na-suecia/
[URL53] http://bitacoradeleonladia.blogspot.pt/2017/10/taller-de-capacitacion-proyecto-visir.html
[URL54] http://www.fundacioneurosur.net/reunion-de-los-proyectos-argentinos-de-erasmus-desarrollo-de-capacidades-en-el-ambito-de-la-educacion-superior/
[URL55] https://www.ipp.pt/noticias/chega-ao-fim-o-projeto-visir-coordenado-pelo-politecnico-do-porto
[URL56] https://www.youtube.com/watch?time_continue=2&v=VQvIFqpCyQ8
[URL57] https://www.youtube.com/watch?v=2BCNKvX_pmA
[URL58] https://www.youtube.com/watch?v=Y9xROrh__bA&t=368s
[URL59] https://www.flickr.com/photos/mmmcastro/albums/72157663425144194/page2/
[URL60] http://www.rev-conference.org/REV2016/program.php
[URL61] https://www.researchgate.net/project/VISIR
[URL62] http://www.taee2016.org/index.php/es/actas
[URL63] http://abenge.org.br/cobenge-2016/2015/programacao_9

[URL64] http://cispee2016.utad.pt/post_conference.html
[URL65] https://saltconference2017.wordpress.com/2017/06/26/the-use-of-remote-labs-to-contextualize-learning-and-teaching-in-engineering-mathematics/
[URL66] https://igip.online-engineering.net/newsletter/6cae6291dffa505e490036f5e9bacf477a157442
[URL67] http://romulo.det.uvigo.es/ticai/libros/2017/2017/Cap16.pdf
[URL68] http://www.confedi.org.ar/wp-content/uploads/2016/04/Convocatoria-Participación-ERASMUS-VISIR-CONFEDI-2016.pdf
[URL69] http://www.confedi.org.ar/erasmus-visir-convocatoria-abierta-hasta-el-15-de-abril/
[URL70] http://eulac-focus.net
[URL71] https://drive.google.com/open?id=17_bG2UQ_Nul2zl1wzWhpPOmjc2H1i_fT
[URL72] https://www.santafe.gov.ar/index.php/web/content/view/full/210388
[URL73] https://www.feesc.org.br/site/
[URL74] https://drive.google.com/open?id=1_19Ait-aTc1PdVwtu3WCTsiHtHTwPR6g
[URL75] http://www.abenge.org.br/file/PropostaDCNABENGEMEI_CNI.pdf
[URL76] https://link.springer.com/chapter/10.1007/978-981-10-8917-6_1
[URL77] http://www.ieec.uned.es/pilar-project/index.html?lng=en
[URL78] http://ppgtic.ufsc.br/2018/02/19/defesa-mestrado-josiel-pereira/
[URL79] http://bibliotecavirtual.unl.edu.ar:8080/tesis/handle/11185/1018
[URL80] http://eacea.ec.europa.eu/home/erasmus-plus/events/erasmus-plus-capacity-building-in-higher-education-project-representatives-meeting-2016_en
[URL81] https://visir.florianopolis.ifsc.edu.br/visir/index.php/pt
[URL82] https://rexlab.ufsc.br/en/visir/
[URL83] http://www.epe.santafe.gov.ar
[URL84] https://docs.google.com/forms/d/1FbPbOiCHcR8AGTo7pb_m073uMSXkL2l8ovH2MEOn9jk/viewform?edit_requested=true
[URL85] https://drive.google.com/drive/u/1/folders/1oNaTX3LIhsRZTcb7dYmcfxc0NFD9AzYV
[URL86] https://www.dropbox.com/sh/tq1dzbu0ndfda68/AADdMQYohM0UfAzEGlogCO_ha?dl=0
[URL87] https://lasi18.snola.es
[URL88] https://www.facebook.com/media/set/?set=a.691116351079854.1073742219.389558071235685&type=3