TABLE OF ACHIEVED / PLANNED RESULTS

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

Indicators of achievement and or/performance as indicated in the project proposal	*In T1.1, the detailed description of the curricula/syllabus, the methodology divided by semester, and the instrumentation/equipment of the Latin-american Alliance for Capacity buildiNG in Advanced Physics (*LA-CoNGA physics*) proposal of eight Latin-American higher education institutions (HEI) using high-energy physics (HEP) and Complex System (CS) as a model. Also, in the analysis categories column the description of the syllabus, methodology, and instrumentation divided by HEIs.* *In T1.2, the detailed description of* LA-CoNGA physics *with its new online teaching technology tools, and a brief description of the* RedCLARA *and* CEVALE2ve *platforms, with their corresponding links.*

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
T1.1	Perform explorative open and closed surveys at each HEI and their quantitative and	15/01/2020	18/12/2020	All partner HEIs in Latin America, and via online meetings	Institutions	Analyzed categories	**Curricula/Syllabus** One year master program in: HEP (theory, phenomenology, experiment and data analysis). Complex system (theory, experiment and modelling/simulation). https://laconga.redclara.net/

	qualitative analysis				UIS	**Curricula/Syllabus** Master program in physics with emphasis in Optics and Condensed Matter. Recently, Cosmology, Relativistic and High Energy Astrophysics. Graduate profile: only research. **Methodology** Traditional teaching methods. Teaching staff and laboratories only from the HEI. Minimal training in data science or scientific instrumentation, with no expertise in experimental High Energy Physics (HEP) and Complex Systems (CS). **Instrumentation/equipment** The lack of state of the art instrumentation and data analysis tools	Graduate profile: thanks to the industrial partners, our graduates can follow research or professionalization. See for more details (Socios empresariales) in: https://laconga.redclara.net/quienes-somos/ **Methodology** The essence of the LA-CoNGA physics master program embedded in the master program of eight HEI is the e-learning platform and remote interactive teaching (synchronous and asynchronous). The syllabus is flexible and problem-solving-oriented, structured on modules for a one year master program and on the strengthening of cross-institutional relations among the target HEI's. Detail of the courses in https://laconga.redclara.net/courses/index.html **Semester A** During the first semester our program had three main axes: Theory, Scientific Instrumentation and Data Science. It also has two
					UAN	**Curricula/Syllabus** Master program in Physics engineering, Forensic physics, Biophysics and renewable energies. No master program specialized in HEP and CS at all. Graduate profile: only research. **Methodology**	

						Traditional face-to-face classes. Teaching staff and laboratories only from the HEI. Minimal training in data science or scientific instrumentation, with limited expertise in HEP. **Instrumentation/equipment** The lack of state of the art instrumentation and data analysis tools on HEP and CS.	specialized modules in Complex Systems and Particle Physics; and two transversal modules in Advanced Topics in Data Sciences, and Medical Physics. For details see (Semestre I-2021) in https://laconga.redclara.net/oferta-pedagogica/
					Yachay	**Curricula/Syllabus** Master program in physics with emphasis in Condensed Matter (material science). Recently incorporated researchers on General Relativity, Nuclear Physics, Cosmology, and Quantum Optics. No master program specialized in HEP and CS at all. Graduate profile: only research. **Methodology** Traditional teaching methods. Teaching staff from Higher Education Institution (HEI) and possibilities of incorporating specific and temporary national or international staff. Laboratories only from the HEI. **Instrumentation/equipment**	The exams and grades were based on problem solving in each subject every 2 weeks and with a final average. The teaching staff for this first semester was mainly from the LA CoNGA consortium: https://laconga.redclara.net/courses/intro/docentes.html **Semester B** In the second semester we had courses on special and edge cutting topics of: Cosmology and Astroparticles, Complex System, Physical Medicine and Scientific Reproducibility. For details see (Semestre II-2021) in

						No instrumentation on HEP and CS at all, however with the state of the art instrumentation in material science and other research fields at Yachay.	https://laconga.redclara.net/oferta-pedagogica/ In the following link you will find the pedagogical platform that details the development of the 15 classes of Astroparticles and Cosmology https://laconga.redclara.net/courses/astroparticulas-cosmologia/astroparticulas-cosmologia.html The pedagogical platform that details the development of the 16 classes of Complex System you will find in the following link https://laconga.redclara.net/courses/mecanica-estadistica/mecanica-estadistica.html In the following link you will find the pedagogical platform that details the development of the 15 classes of Physical Medicine https://laconga.redclara.net/courses/fisica-medica/fisica-medica.html The pedagogical platform that details the development of the 16 classes of Scientific Reproducibility you will find in the following link https://laconga.redclara.net/courses/
					USFQ	**Curricula/Syllabus** Master program in Physics recently approved with emphasis in Condensed Matter (material science) and General Relativity. No master program specialized in HEP and CS at all. Graduate profile: only research. **Methodology** Traditional teaching methods. Teaching staff and laboratories only from the HEI. **Instrumentation/equipment** No instrumentation on HEP and CS, however with instrumentation in material science.	
					USB	**Curricula/Syllabus** Master program in physics with emphasis in Condensed Matter(theory and experiment), HEP (theory), Complex Systems(theory, computation/simulation),	

						General relativity (theory), Optics and physics of laser (theory and experiment), Nuclear Physics (theory and experiment). Graduate profile: only research. **Methodology** Traditional face-to-face classes. Teaching staff only from the HEI. Laboratories from the HEI and others local research institutions. Minimal training in scientific instrumentation of HEP. Good training in CS. **Instrumentation/equipment** The lack of state of the art instrumentation and data analysis tools on HEP and in CS.	reproducibilidad-cientifica/reproducibilidad-cientifica.html Teaching staff from our inter-institutional consortium, as well as other world leading researcher guests to cover the edge cutting topics in HEP and CS. Teaching staff rom the consortium: https://laconga.redclara.net/courses/intro/docentes.html Invited guests in pages 3 and 4: https://laconga.redclara.net/wp-content/uploads/2021/08/Programa-academico-LA-CoNGA-physics.pdf Laboratories from the interconnected and remote access instrumentation laboratories in HEP and CS. Solid training in theoretical, experimental, data science and scientific instrumentation of HEP and CS, with very expertise in both areas. **Instrumentation/equipment** Modern and the state of the art instrumentation in HEP and CS: the modernization relied strongly on installed interconnected and remote
					UCV	**Curricula/Syllabus** Master program in Theoretical physics, Condensed Matter(theoretical and experimental), Relativistic Astrophysics (theory and observation), Complex Systems (theory and computation/simulation)	

						No master program specialized in experimental and phenomenological HEP. Graduate profile: only research. **Methodology** Traditional face-to-face classes. Teaching staff from the HEI with very limited possibilities of incorporating specific and temporary staff. Laboratories only from the HEI. Minimal training in data science or scientific instrumentation, with limited expertise in HEP and CS. **Instrumentation/equipment** Obsolete and not adequately covered the instrumentation on HEP and CS.	access scientific instrumentation and laboratories. A part of the equipment necessary to start the development of the interconnected with remote access lab resources within the LA-CoNGA physics program has already been received by most of HEI: UIS, UAN, YACHAY, USFQ, UNI and UNMSM, the PC Desktop DELL Workstation The National Instrument equipment for data acquisition by UIS, UAN and UNI (for more technical details see WP2). The HEP educational kit and other equipment from CAEN are in the are ordered but they have not arrived.
					UNI	**Curricula/Syllabus** Master program in Theoretical physics, Condensed Matter(theoretical and experimental), HEP (theory and Phenomenology), Nuclear Physics (physical medicine) and Computer Science.	

						No master program specialized in CS. Graduate profile: only research. **Methodology** Traditional face-to-face classes. Teaching staff only from the HEI. Laboratories from the HEI and local research institutions. Improved training in data analytics, and scientific instrumentation. Improved expertise in HEP. Minimal training and limited expertise in CS. **Instrumentation/equipment** Obsolete and not adequately covered the instrumentation on HEP and CS.	
					UNMSM	**Curricula/Syllabus** Master program with emphasis in Condensed Matter(theory and experiment), Nuclear Physics (theory and experiment, physical medicine), Geophysics (weather and teledetection) No master program specialized in HEP and CS.	

						Graduate profile: only research. **Methodology** Traditional teaching methods. Teaching staff from the HEI with very limited possibilities of incorporating specific and temporary staff. Laboratories from the HEI and other local research institutes. Minimal training in data science or scientific instrumentation, with limited expertise in HEP and CS. **Instrumentation/equipment** Obsolete and not adequately covered the instrumentation on HEP and CS.	
T1.2	preliminary investigation of the tools that currently exist in the Colaboratorio	01/01/2020	15/07/2021		**RedCLARA** RedCLARA is an international organization whose aim is to connect Latin American academic computer networks, with one of its tools, namely the Colaboratorio, which is an online platform specially developed to support the work of academic and scientific communities. This platform offers a wide range of services that enable communities to share and promote knowledge, organize joint activities, and communicate in real time, optimizing time and efforts in a private, secure environment for its users.		Detailed information about the RedCLARA online platform is here: https://www.redclara.net/index.php/es/

					CEVALE2ve CEVALE2ve is an initiative to strengthen didactic dissemination, academic training and research in HEP, initially created to connect the Venezuelan academic community, and then expanded to several Latin American countries, which brought together Venezuelan, Colombian, Peruvian and Mexican scientists immersed in international collaborations in HEP, detector development and computer science. These initiative tools include the use of e-learning, seminars and virtual courses. **LA-CoNGA physics** Since some members of RedClara and CEVALE2ve are part of the teaching staff of the LA-CoNGA physics project, we initially considered adapting our needs to the tools of the two collaborations. However, during the project's initial development, we ran into challenges, such as incorporating the Complex Systems into our project, the need for a dedicated e-learning platform, the fragile IT infrastructure, and non-reliable broadband connections in various HEIs, among many others. From this perspective, the tools of the two previous collaborations seemed "rigid", while our needs required "flexible" tools that can adapt to the needs of the eight HEIs and show our students a real work environment, which our industrial partners inspired. Once we understood that both alternatives were insufficient for our needs and faced previously mentioned new challenges, we decided to integrate our collaboration toolset, namely the LA-CoNGA physics. Thus, our team created a Virtual Research and Learning Community (VRLC), complemented by	For more information about the Centro Virtual de Altos Estudios de Altas Energías (CEVALE2ve) in: http://www.cevale2ve.org The complete information about LA-CoNGA physics is in: https://laconga.redclara.net/

					training opportunities at three leading European research centres, start-ups and technology companies in the Andes and Europe and support to career development from the US in HEP and CS. LA-CoNGA physics developed new modules for the Colaboratorio based on the needs of the partner countries HEIs, which includes tools to access open data from big HEP collaborations, live programming tools based on `jupyter` notebooks, tools for remote access to connected instrumentation labs across the partner countries HEIs. A work platform and tools of this type are being used for the first time in the HEIs of the partner countries and are available to all the HEIs, contributing to their modernization and accessibility.	For a complete set of tools, such as `Jupyter` notebooks, GitLab, GitHub and others here: http://universidad.ch/la-conga/suite/ (for detailed description of these tools see WP5)

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
					All WP1 TASKS FINISHED BY END 2020	

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

Changes for T1.1

The primary objective of LA-CoNGA physics proposal, following the tradition of HEP which has created vast virtual networks over more than half a century, was to replace the traditional face-to-face teaching by an innovative e-learning platform, laboratories from the HEI and local research institutions by an interconnected with remote access instrumentation laboratories, and teaching staff only from the HEI by the staff from an inter-institutional consortium. This project was visualized and organized in the first half of 2019, months before the appearance of COVID-19. This pandemic disease not only accelerated and confirmed the use of e-learning and remote interactive teaching in all levels of education, which now is a norm around the world, but also brought changes, challenges, and opportunities.

One of the first changes in our original project was to incorporate and new branch on the physics of Complex Systems(CS) into our project, to benefit from the presence of high-profile human resources and specialists in different edge-cutting research topics of this area and also because it is a topic of interdisciplinary interest in contemporary science and technology, which not only enriches but also extends our initial proposal on HEP. This research area was proposed by the LA-CoNGA physics consortium to the eight HEI and it was eagerly accepted because it offers the best techniques needed to attack interdisciplinary problems and it is led by Yachay tech and Toulouse University. The syllabus of the CS branch is organised as the HEP one, with three axes in Theory, Scientific Instrumentation and Data Science; the first course of the Theory axis is common to both HEP and CS branches. It is important to remark that the CS not only had a positive impact on the project and several partners increased their participation thanks to this filial, but also had been attractive to students.

The impact of COVID-19 and the general evolution of the project induced general changes in syllabus, methodology and instrumentation, in addition to the expected mobility for students. The initial proposal of a mobility scheme of 90 days for the most distinguished students was not possible, due to this unexpected global pandemic disease. Instead, these selected students will receive monetary compensation to dedicate exclusively to the development of research work for the internship. The development of this activity is virtual and remote between the students and the mentor/advisor/co-advisor with frequent online meetings for discussions and, at the end the written reports and 15 minute talk will be presented.

The positive impact of the LA-CoNGA physics program with its wide coverage and open access, namely, the first semester program with its three basic courses and its two specialized modules in Complex Systems and High-Energy Physics, and its two transversal modules in advanced topics, and the second semester with its special and cutting-edge topics of Cosmology and Astroparticles, Complex Systems, Medical Physics and Scientific Reproducibility, were attractive to many students from different HEIs beyond the selected students of the project from the eight countries.

Changes for T1.2

Before developing the LA-CoNGA physics learning platform, we revise the existing collaboration tools employed by one of our partners, RedCLARA and from previous experience, CEVALE2ve. RedCLARA uses an integration of several open tools mainly for videoconferencing and a document repository. CEVALE2ve uses the Google platform. We understood that both alternatives were insufficient for our needs and decided to integrate our collaboration toolset. Additionally, we considered that our students should be exposed to a professional environment similar to the one they will find when they graduate from our program.

Title and reference number of the work package (WP)	*WP2 Development: development and installation of tools*

Indicators of achievement and or/performance as indicated in the project proposal	**Count extensions developed for the e-learning platform. Verify they are working and satisfy the objectives* ** Count number of connected instrumentation labs installed in HEIs*

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
T2.1	e-learning platform for LA-CoNGA physics	05/2021	09/2021	All partner HEIs, in particular UIS	**e-learning platform:** a complete e-learning platform to host all the material needed for the courses has been created. This platform is hosted in the `RedCLARA` repository using `git` technology (`gitmilab`). It contains all the information needed by the students participating in the programme: syllabus of the course, class per class contents (videos, presentations and other materials), integration with `python`, `jupyter` notebooks, markdown and `git` repositories.	The LA-CoNGA physics courses website https://laconga.redclara.net/courses/index.html The LA-CoNGA physics `Mattermost` channels https://mattermost.redclara.net/la-conga-edu/channels/mi-introduccion-a-sistemas-de-medidas LA-CoNGA physics e-learning Platform can be found at and the video tutorials https://laconga.redclara.net/courses/tools/laconga_platform.html

T2.2	Connected instrumentation laboratories for LA-CoNGA physics	Jan/2021	Ongoing	All partner HEIs	**Remote access:** Each lab is equipped with a PC where all the instrumentation of the lab will be connected in order to implement remote access to lab resources. **Data acquisition and control system** : A virtual instrumentation suite (HW and SW) NI Elvis was purchased and installed at UNI Perú, UIS Colombia, UAN Colombia **Cosmic Ray Detector** : A Cosmic Ray Detector based on Escaramujo project has remote access to perform experiments included in Instrumentation Module **SIMP calibration environment**. A remote access instrumentation was deployed at UIS Colombia and included in the instrumentation module **HEP Educational Kit:** A complete set of instruments with control and data acquisition SW for Nuclear Physics and particle detection experiences. These kits have been purchased but presently they are in the factory line of production.	6 PCs purchased delivered and installed at LA HEIs (Partners in Venezuela have not had access to their equipment: difficulties finding providers adapting to Université de Paris purchase procedures). UIS, UAN, UNSM and UNI has ELVIS installed and operational in their labs UIS and USFQ have a Cosmic Ray Detector installed and operational UIS has a SIPM Calibration environment connected to the collaboration CAEN educational kits purchased. Delivery and installation pending Remote labs are described here: https://laconga.redclara.net/courses21a/modulo-instrumentacion/proyectos/proyectos.html
T2.3	Training guides for teaching and technical staff.	Dec/2020	Dec/2020	Online	Teaching staff was trained in `Markdown`, `git` and in the use of the e-learning platform	Staff training material can be found at https://laconga.redclara.net/courses21a/tools/tools.html

						https://laconga.redclara.net/courses/tools/mkdocs.html

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
T2.1	LA-CoNGA physics e-learning platform	08/2021	03/2022	All partner HEIs, in particular UIS	Maintenance and update of platform Revision of contents Integration of Lab remote access	http://universidad.ch/la-conga/suite/
T2.2	Connected instrumentation lab	11/2021	03/20212	All HEIs	Installation and set-up of CAEN educational kits Creating a remote interface to access to all equipment installed in labs	The CAEN kits have been purchased but are in the production line at the factory. We expect to install them on 2022
T2.3	Training guides for teaching and technical staff.	12/2021	03/2022	Online	Training on CAEN educational kits	The CAEN kits have been purchased but are in the production line at the factory. We expect to install them on 2022

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

1. Custom and shipment charges have increased the overall costs of Lab equipment (see WP3). Therefore a revision of the original list of equipment was performed. Consequently, the initial scope of the labs was changed, focusing the resources on having lab equipment for Instrumentation (introduction to electronics), Particle and radiation detection techniques and Nuclear imaging. The project scope's impact is reduced by adapting instruments and systems from other projects (Escaramujo and LAGO) and using them instead of the equipment included in the original plan.
2. An extensive search of low-cost equipment was also performed. For example, instead of stand-alone purchase instruments for the electronic test bench, an all-included (DAQ, Function Generator and Power Supply) from National Instruments (ELVIS III) was purchased for Colombia and Perú.
3. Unfortunately, in Ecuador, due to tax and other internal regulations, the cost of NI ElvisIII is too high (approx 8500EUR) to be considered as an alternative. Consequently, an Educational Test Bench with similar characteristics to ELVIS III from Keysight will be purchased instead.

4. The situation originating from the COVID-19 pandemic has impacted the speed of the purchasing process, creating delays. Thus, other activities like Escaramujo and LAGO particle detectors were performed to develop the remote-access interface and interconnection.
5. Changes in the internal organization of the coordination Institute (Université de Paris) also delayed the purchasing activities. However, as mentioned in 4, a rescheduling of activities has mitigated the impact on the project activities.

Title and reference number of the work package (WP)	*WP3: Training and education*

Indicators of achievement and or/performance as indicated in the project proposal	*Number of capacity building activities for both staff and students and these are closely monitored through learning agreements and compulsory feedback between sending/hosting institutions and the staff/students.*

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
T 3.1	Development and implementation of technical training courses for staff and technical groups using the input from WP2, either in person or through video conferencing system.	11/2020	12/2020	Online all LA institutions	Teaching staff was trained in Markdown, `git` and in the use of the e-learning platform (see T2.3)	Staff training material can be found at https://laconga.redclara.net/courses21a/tools/tools.html https://laconga.redclara.net/courses/tools/mkdocs.html
T 3.2	Design and implementation of the curricula for the HEP one year master/specialisation, with input from all partners and associated partners for content and format; reviewed by the EAC	18/01/2021	30/05/2021	All LA institutions	Development of the e-learning mini-modules with content related to the theoretical side: quantum field theory, particle and statistical physics as well as cutting-edge instrumentation and data analysis A 16 week course plan was implemented across all 8 Latin American institutes with 3 courses on: Theoretical Physics, Data Analysis and Instrumentation. The 3 courses were split	Around 100 online sessions were held between students in the 4 Latin American countries participating and tutors from Europe, the US and the region. 7 students from the 8 Latin American institutions finished all 3 courses: Theoretical

					into modules with different lecturers from Europe, the US and Latin America, each contributing in a specific area. All the courses descriptions, material and information can be found at: https://laconga.redclara.net/courses/intro/la-conga.html	physics, Data analysis and Instrumentation. 10 students from those institutions finished 1 or 2 of the courses. 11 other students from other institutions in the region finished at least one of the courses.
T3.3	Data challenges with data from CERN, PAO, LAGO installations. Non-academic data from industry associated partners will also be considered. These data challenges will require students to develop new algorithms or instruments to solve real problems.	18/01/2021	30/05/2021	All LA institutions	As part of the Data Analysis course, all students were required to finish a project involving real data either from a physics experiment or from industry. https://laconga.redclara.net/courses21a/modulo-datos/modulo-datos.html	12 projects, 26 students

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
T3.3	Data challenges with data from CERN, PAO, LAGO installations. Non-academic data from industry associated partners will also be considered. These data challenges will require students to develop new	Mar 2022	Mar 2022	All LA institutions	The main activity will be the hackathon planned for the first semester of 2022.	

	algorithms or instruments to solve real problems.					
T3.4	A mobility scheme between Latin-American countries and also with Europe with the support of our associated partners from academia and industry.	01/09/2021	30/11/2021	Remotely	Mobilities had to be postponed and the internships planned for the year will be done remotely.	
T3.5	A one week network-school (NS) will take place towards the end of the one-year master program where the students will have the opportunity of presenting their work but also we will have trainings specifically focused on CV, interviews and self-assessment, as well as specific trainings and keynote speeches highlighting their challenges and successes from the non-academic sector partners.	Dec 8/ 2021	Dec 10 2021	Remotely	The network school will be held online at the end of the first year (2021)	
T3.6	Update regularly the *e*-learning platform with the teaching/training material	Nov 2021	Dec 2021	Remotely	The courses of the first semester (2021) will be updated and reorganized to the new edition of 2022	

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

The pandemic has forced some changes in some dynamics in the project. Although the courses were always conceived with a heavy online component, the laboratory part was supposed to be in person. It had to be replaced by remote tutorials and demonstrations from a laboratory in Europe. Despite this situation, several remote instrumentation experiences were developed from the stakeholder infrastructure see https://laconga.redclara.net/courses21a/modulo-instrumentacion/proyectos/proyectos.html. Likewise, the internships will be held online rather than in person. The hackathon and school activities had to be postponed to later in the year. All changes were due to restrictions in the different institutes, but the program's objectives were met regardless of some of these changes in methodology.

The hackathon was rescaled with international funding. Now it is planned to occur starting 2022 with a broader audience.

Title and reference number of the work package (WP)	*WP4: Quality plan*

Indicators of achievement and or/performance as indicated in the project proposal	Online questionnaires for current/former students about quality of their training, staff surveys about teaching resources and facilities as well as inquiries towards the associated partners about the performance of the students during the mobility scheme. A full report will be prepared for the EB meetings to be hold every six months.The final report should provide information about the possibilities of expanding the use of e-learning techniques, the instrumentation labs and the mini-modules teaching techniques in other areas at the university; as well as the possibilities of alignment of the HEIs with the EU.

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
T4.1	Identify the settings for the evaluation: evaluation aims and objectives, evaluators and evaluation participants, evaluation data collection methods, performance of the planned evaluation and data analysis plan.	05/2020	12/2022	All HEIs, mainly UPS and UP	The aims of the evaluation concern the adequation of the curricula to the academic level of the students, the feasibility of the program by the staff, the ease of use by the staff and students of the implemented tools and the quality of students academic training. This evaluation is done through three different and complementary methods: 1. Different online surveys addressed to students, the academic and administrative staff and training courses advisors. 2. The attribution to each student participating in the project of a mentor with whom he/she can interact 3. The set up of an external advisory board	(see below)

					(see below for more details)	
T4.2	Implement internal quality assurance through surveys and its corresponding analysis.	01/2021	08/2021	All HEIs, mainly UPS and UP	The internal quality assurance was evaluated by three complementary means: 1. Online surveys addressed to students in which he students were asked to evaluate a. The quality of the dispensed lectures and their adequation to the level of the students b. The rhythm and the amount of work required c. The quality of the material and informatic facilities available to the students d. The easyfulnes for students to communicate with the staff and other students and to get information about the program. e. The student evaluation for the courses. f. The coherence of the panel of proposed courses. The results of the survey were analyzed by the staff during the weekly consortium meeting held on friday. 2. To each student involved in the program was associated as a mentor a member of the academic staff. The role of mentors is to help the students thorough their trajectory in LA-CoNGA physics with any problem or question that could arise concerning: a. The lectures, the interaction with the teachers, their capacity to follow the program, etc... b. Any question that could arise concerning the orientation, the choice of elective courses, etc…	A link to the surveys for students that was putted online: https://docs.google.com/forms/d/1JVjd6WyVNiKHha9egA52XHq_Hx74_LMpCkwcx5hY7b8 https://docs.google.com/forms/d/1JL_jqeLyXIe7iz-j6iftAx1-En_J1mbxHc8HSF51Jm0 An excel file with a list of students and associated mentors (not provided here in order to preserve students anonymity) A report made from the result of the survey for the students.

					Each mentor was asked to first contact by email the students she/he had to follow to propose them an interview by Skype or Zoom towards the middle of the first semester to make sure that the students could comment on any problem or difficulty they could have encountered. Any particular problem or question raised by a student is discussed by the staff during the weekly consortium meeting. 3. Online surveys addressed to the academic and technical staff. See also item 6 below. Among other topics to be developed below which are more related to the evaluation of the management of the project, this survey also covered the issues about : a. The adequation of the level of the students with the one of the courses b. The regularity in attendance and participation of the students	
T4.3	Implement and overview external quality assurance of the proposed curricula and the feasibility of its implementation..	01/2021	12/2022	All HEIs, mainly UPS, UP and UNMSM	The external quality assurance is implemented by two complementary means: 1. The setting of an external advisory board composed of very prestigious and internationally recognized scientists specialized in the area of high energy physics and complex systems. The members of this board are asked to evaluate the coherence and feasibility of the courses and the program as well as its pertinence to form young scientists in current scientific areas of great importance. The external advisory board can be found in this link: https://laconga.redclara.net/quienes-somos/	A link to the surveys for the training courses advisors to be putted online (survey not yet completed, see the section "Activities to be carried"**)**

					2. Setting up a survey to short term training courses advisors. Training courses advisors may be members of the academics staff or scientists external to the program. Their role is to tutorship the students during a short term training course to develop a scientific research or industrial activity. The continuous interaction of the advisor with the student allows her/him to get a very good insight of the quality of the education received by the student and its ability to integrate a PhD program or the job market in the high technology industry. The outcome of this survey is essential for the academic staff to make sure that the courses proposed in LA-CoNGA physics are well designed and calibrated to ensure to students the best opportunities in the follow up of their careers.	
T4.4	Overview and learning agreements and compulsory feedback for mobility activities in WP3	01/2021	12/2022	All HEIs, mainly UPS, UP and UAN	Mobility activities were deeply impacted by the actual pandemic situation (see below). Students that were supposed to travel for their training courses had to cancel their travel. We plan however to set up for the next year an online survey specifically addressing mobility activities, and in particular: 1. The easyfulness of settling in the host place 2. The quality of the working conditions 3. The interaction with the advisor in the host institution.	A survey addressing mobility activities (survey not yet completed, see the section "Activities to be carried"**)**
T4.5	Assessment of dissemination activities in WP5.	05/2020	08/2021	All HEIs, mainly UPS, UP, USB and UCV	The disseminations activities about the LA-CoNGA physics project are diverse: 1. First there is the web site of LA-CoNGA physics which give access to most of the informations relevant to the program, as for example:	Link to the LA-CoNGA physics web page https://laconga.redclara.net

					a. A presentation of the academic staff, some students, the academic offer, b. A web page for each lecture containing the pedagogical material required and produced during the lecture c. An access to a Youtube recording of the lectures and the LA-CoNGA physics seminars (se below) The architecture of the website has evolved according to the feedback from students, staff and external colleagues. 2. Another very important aspect of the LA-CoNGA physics project are the seminars, organized online and recorded in a Youtube channel. The seminars are held mostly (but not always) by scientists and their content are designed to be easily accessible by our young students. Their aim is not only to improve the scientific culture of the students and staff, but also to illustrate different professional trajectories of people that work, or have worked in scientific activities. The attendance by students to toose seminars is assessed in each session.	The list of LA-CoNGA physics seminars as well as their Youtube recording can be found in the link below: https://laconga.redclara.net
T4.6	project monitoring and evaluation of WP6.	01/2021	08/2021	All HEIs, mainly UPS and UP	The evaluation of the management and project monitoring was done with an online survey addressed to the academic and technical staff. Besides issues more related to specific pedagogical aspects that we already mentioned above in item 2, the survey also dealt with: a. The informatics and technical facilities b. The easyfulnes for members of the staff to get the required information and technical assistance. c. The global pedagogical coherence of the designed program.	A link to the surveys for the staff that was putted online https://docs.google.com/forms/d/1bgbHJJ5DUD7_DhmVGEMETdkOEk8iiwOUJcweqt-AZe0 A report made from the result of the survey for the staff.

					The outcome of this survey was analyzed during the weekly consortium meeting followed by some proposals from improvements.	

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
T4.3	Improving external quality assurance	09/2021	12/2022	All HEIs	As mentioned above, we plan to implement a survey to short term training courses advisors. Training courses advisors may be members of the academics staff or scientists external to the program. Their role is to tutorship the students during a short term training course to develop a scientific research or industrial activity. The continuous interaction of the advisor with the student allows her/him to get a very good insight of the quality of the education received by the student and its ability to integrate a PhD program or the job market in the high technology industry. The outcome of this survey is essential for the academic staff to make sure that the courses proposed in LA-CoNGA physics are well designed and calibrated to ensure to students the best opportunities in the follow up of their careers. This survey has to be done after the training courses are completed such that the advisors can have a precise idea of the skills and education level of the students. We also mentioned that mobility activities were deeply impacted by the actual pandemic situation (see below). Students that were supposed to travel for their training courses had to cancel their travel. We plan to set up for the	A survey for the training courses advisors to be putted online (survey not yet completed) A survey addressing mobility activities (survey not yet completed)

					next year an online survey specifically addressing mobility activities.	

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

One important issue that we decided to implement which was not contemplated in the initial presentation of the program was to designate to each student a mentor, as mentioned above. For many students the role of the mentor was extremely useful in many respects, as for example the choice between the high energy physics and complex systems specialties, or the right person to contact to get some technical or academic advice.

The other important change since the original proposal is due to the actual COVID-19 pandemics and is related to the mobility activities and scheme: for many students that were supposed to travel for their training courses, the on site advisory had to be replaced by long distance advisory. The effect of this long distance interaction between the student and the advisor is of course also an issue that has to be assessed in the survey to short term training courses advisors.

Title and reference number of the work package (WP)	*WP 5 DISSEMINATION and EXPLOITATION*

Indicators of achievement and or/performance as indicated in the project proposal	Policies for dissemination of results, repositories, etc.

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
T5.1	Communication and Dissemination Plan	03/2021	Ongoing	Online	Craft the Communication and Dissemination Plan: identifying the target groups,offline/online media outlets as well as defining the external events where LA-CoNGA physics will be presented by the partners.	Communication plan document: https://github.com/LA-CoNGA/WP5-Dissemination/blob/master/CommunicationPlan/0_document/propuesta-plan-com-laconga.pdf there are two other reports describing the comunication strategy https://docs.google.com/document/d/1f2YD6mKDEP8zzOqHOVeNpUYYdeGFX7aXKbOp9fkg0dE/edit (2020) and https://docs.google.com/document/d/1JtVw1omcp8QFsXZiMoH3Cy7eFj_tNrQyqLq3u6Bnuk0/edit (2021)
T5.2	LA-CoNGA physics website	01/2021	Ongoing	Online	Set up the official LA-CoNGA physics website, blogging and social media identities and keep them updated with outreach material for public use and members resources.	LA-CoNGA physics website https://laconga.redclara.net

T5.3	Outreach events	01/2021	Ongoing	Online	Organise multidisciplinary outreach events during LA-CoNGA physics activities such as the annual meetings and NS, identify existing outreach local/regional LACoNGA physics organized a round table for the promotion of the scientific infrastructure in Latin America. This activity took place at the CILAC Forum. This Forum for Latin America and the Caribbean attempts to establish itself as a platform for outlining common positions and aspirations for a scientific, technological, and innovation agenda supporting sustainable development whilst simultaneously giving the region a strong voice in the global scope of the World Science Forum. https://forocilac.org/what-is-cilac/ In the framework the Latin America IT Conferes (TICAL 2021) LA-CoNGA physics give a general talk about our project and a workshop how to use the LA-CoNGA physics e-learning platform to preserve and disseminate the outcome of small and medium size research groups. https://tical2021.redclara.net/tical2021/programa	Templates and slides used: https://github.com/LA-CoNGA/WP5-Dissemination/tree/master/Eventos CILAC 2021 promotion: https://www.youtube.com/watch?v=hB-CMequKXU https://www.iesalc.unesco.org/evento/ciencia-abierta-infraestructura-compartida-y-redes-de-colaboracion-el-reto-de-la-nueva-educacion-superior/ https://laconga.redclara.net/abrimos-dialogo-con-redes-de-colaboracion-en-educacion-superior https://www.renata.edu.co/eventbrite-event/sesion-tematica-la-conga-physics-en-cilac2021/ Documents for CILAC 2021 https://drive.google.com/drive/u/1/folders/15lo4gNhJ6Nq9iKjCYZazXJud-CAkW_tQ TICAL 2021 promotion: https://drive.google.com/drive/folders/1wAIdqUWKw0XhkszKBT4SzOr29hh6ebxK

						https://www.redclara.net/index.php/es/proyectos/en-ejecucion/la-conga-physics
T5.5	Internal dissemination	01/2021		Online	Internal dissemination of results and best practices within the network through consortium and training meetings, and the restricted area of the LA-CoNGA physics website	LA-CoNGA physics repository (public and private) (`gitmilab`): https://gitmilab.redclara.net/laconga/la-conga-courses-2021a https://gitmilab.redclara.net/laconga/la-conga-courses-2021b
T5.6	External dissemination	01/2021		Online	External consortium results dissemination to peers through the LA-CoNGA physics web site and `git` repository; promotion of the network role by making sure that LA-CoNGA physics is properly acknowledged in papers and conference reports.	Included in the Data Management plan (see T5.11)
T5.10	Gender equality	01/2021		Online	Active gender equality promotion and monitoring in outreach activities training of recruitment panels on gender issues. The project has been part of the GENERA initiative since 2020 Creation of the diversity officer and definition of its functions	Diversity plan document: https://github.com/LA-CoNGA/WP5-Dissemination/blob/master/DiversityPlan/LA_CoNGA_Plan_de_diversidad.pdf GENERA MoU document: https://github.com/LA-CoNGA/WP5-Dissemination/blob/master/DiversityPlan/GENERA/GENERA-Network_MoU_20210407_l.pdf
T5.11	Data Management Protection Plan	07/2021		Online	Data Management Protection Plan (DMPP) crafting, including Open Access and monitoring of its compliance.	DMPP document: https://github.com/LA-CoNGA/WP5-Dissemination/blob/master/DataManagementPlan/2021-04-21-LA-CoNGA-DMP.pdf

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
	Communication plan					
T5.7	Citizen Science	11/21			1. Development of citizen science projects with local schools.	We choose to replicate the experience of RACIMO which is a collaborative project that aims to train young people in Citizen, Open and Data Science by constructing weather stations based on open hardware.
T5.8	Double Master Degrees				1. Feasibility study to develop Double Master Degrees in HEP between the consortium partners, targeting the HEI staff and administration	Preliminary meetings of the teams in charge of preparing the inter-institutional agreements, MoU, etc.
T5.9	Sustainability Plan				1. Define the Sustainability Plan, a series of long - term actions to promote and maintain the collaboration between the partners, including outlines for future summer schools and a teacher alumni network.	Preparation of the future LA-CoNGA physics Alumni School
T5.4	Data challenges	10/2021	11/2021	online	1. Promotion and organisation of data challenges on data samples obtained from the scientific projects and non academic partners.	Program of the event Event promotion within and outside the LA-CoNGA physics network

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

Restrictions on mobility and ability to work in person due to the COVID-19 pandemic forced us to delay the start of some activities. In this case, the Data Challenges and the Citizen Science projects, which involve the work of young students in schools.
These activities were rescheduled to be addressed in the second semester of 2021.

Title and reference number of the work package (WP)	*WP6: Management*

Indicators of achievement and or/performance as indicated in the project proposal	*Consortium Agreement signature* *Project meetings, risk registry and conflict resolution* *Financial and general status report at each EB/AGM*

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
T6.1	Consortium Agreement preparation	01/2020	09/2020	All partners	The preparation of the Partnership Agreement (PA) text was originally intended to be performed prior to the Kick-Off Meeting. Due to the pandemic situation, the KoM was aborted, and instead replaced with a series of online meetings. The PA drafts were prepared and circulated for signature in the months preceding the 2020 Summer break. All signatures were obtained shortly after, with the exception of Universidad Central de Venezuela (UCV), for which the PA signature was further delayed due to internal difficulties (not related to our project).	D6.1 Signature of all Partnership Agreements: https://github.com/LA-CoNGA/OfficialDocuments/tree/master/PartnershipAgreements/Signed
T6.2	Financial administration of the network	04/2020	ongoing	All partners, but mainly UP	A Project Manager, 100% devoted to the project, was hired on 04/2020. The PM is in charge of executing and monitoring all aspects relevant to the financial management on the project. She follows up on budget transfers to the partner HEIs, on equipment purchases and deliveries, travel costs, and records all relevant tracks.	D6.2 (04/2020): hiring of a Project Manager (PM). D6.4 The PM presents a weekly status report at each Consortium Meeting ("news from the Coordination"), that includes updated financial reports with the most recent activities and news.
T6.3	Internal dissemination monitoring	01/2020	ongoing	All partners	In view of the pandemics, the originally foreseen organisation in terms of EB, AGM meetings was replaced	D6.3 Institution of risk registry, see T6.7

					with a permanent series of Consortium Meetings , held weekly since early 2020.	
T6.4	Coordination of research and training activities to accomplishment of all milestones and deliverables	01/2020	ongoing	All partners	In view of the pandemics, the originally foreseen organisation in terms of EB, AGM meetings was replaced with a permanent series of Consortium Meetings , held weekly since early 2020.	D6.4 Regular status reports on all activities are given at the weekly Consortium Meetings.
T6.5	Monitoring of the dissemination and communication activities	01/2020	ongoing	Mainly UP and UIS	An external communications team, based in Bucaramanga, Colombia, has been hired since xx/2020.	the "communitation task force" meets regularly (twice per month) with the communications team. Maintenance and feeding of the project's web page https://laconga.redclara.net and social networks: `@lacongaphysics` on twitter, facebook and instagram.
T6.6	coordination of all reports production, and corresponding evaluation	01/2020	ongoing	All partners	The Coordination Team (PM, PI, co-PI and deputy) meets at least twice per week and Status reports are presented at the weekly Consortium Meetings and summarized by the coordination team in the minutes.	https://indico.in2p3.fr/category/312/ https://github.com/LA-CoNGA/InformationMeetings/tree/master/ConsortiumMeetings
T6.7	risk monitoring and management with appropriate counter measures in case of need		ongoing	All partners	A Risk Registry log was opened in 2020. It is fed regularly with updated information, the issues are discussed in Consortium Meetings, and tasks are assigned in order to solve/mitigate them.	https://github.com/camachorein a/LA-CoNGA-Management/issues/14 https://docs.google.com/spreadsheets/d/1ISQ_naa8HI7rK83XPeZk1EnRm6BlTwrBvf4OHmdq9Wo

T6.8	communication with different committees	01/2021	ongoing	Mainly UP and UIS	The project has developed two main types of committees: - internal committees ("task forces") that report regularly in Consortium Meetings. Task forces usually include at least one member of the Coordination Team. Examples: the "instrumentation task force" evaluates material to be purchased and follows-up with the installation, commissioning and maintenance of the material ;the "syllabus task force" prepares and maintains the contents of the courses; the "communication task force" and so on. - an External Advisory Board (EAB), composed of six high-profile colleagues, and to which the Coordination reports two or three times per year. The EAB was nominated on 01/2021, communicates regularly with the Coordination Team, and hel a general meeting on 04/2021.	Agendas, minutes and material presented at various meetings: https://github.com/LA-CoNGA/InformationMeetings

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
T6.2 to T6.8	All tasks related to WP6	ongoing	01/2023	All partners	Regular Consortium Meetings, bilateral meetings with representatives from our partner's HEIs, reports to the EAB.	Agendas, minutes and material presented at these meetings.
D6.5	Final Report	01/2023	01/2023	AGM (location TBD)	We expect that the last series of meetings before the end of the project will finally be held with no mobility restrictions after the end of the pandemics.	D6.5 Final report during last AGM

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

In view of the pandemics, the originally foreseen monitoring and management organisation in terms of EB, AGM meetings was replaced with online meetings, except for some local meetings whenever in-presence was possible. These include:

- Coordination Meetings, held usually twice per week, with additional ad-hoc meetings whenever required.
- Consortium Meetings, held weekly since early 2020. Agendas for most meetings can be found here: https://indico.in2p3.fr/category/312/

- Additional dedicated bilateral or consortium-wide meetings with representatives of the partner HEis. In particular, a series of meetings with high-level representatives of each partner HEI was organised during late 2020/early 2021.

It was originally thought that the Consortium members themselves could take charge of the communication activities of the project. It shortly appeared that this crucial activity required to be dealt with by an efficient, professional team. An external communications team, based in Bucaramanga, Colombia, was consequently hired.