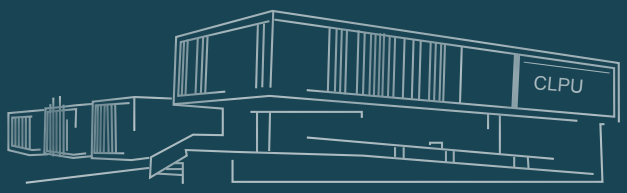

Document 3

Strategic Plan

2021 – 2024

CLPU

CENTRO DE LÁSERES PULSADOS

GOBIERNO DE ESPAÑA · MINISTERIO DE CIENCIA E INNOVACIÓN

Junta de Castilla y León

VNiVERSiDAD D SALAMANCA

Index

Strategic Plan (2021 – 2024)

1 Analysis of the Compliance with the Strategic Plan 2017-2020

The operation of an infrastructure, which not only has to maintain one of the top cutting-edge laser systems in the world but also to consistently keep abreast of its possible upgrades and updates to remain at the forefront of the research centers, is not an easy task. Furthermore, the technological complexity of some goals, the resources constraints (both material and human) and the unexpected pandemic situation started in 2020 have inevitably hindered the full completion of all the objectives. However, all these issues haven't precluded CLPU from making an outstanding effort and reach very significant milestones.

As a matter of fact, the strategic plan drawn up for the period 2017-2020 was translated into annual plans in which the intended objectives were distributed and whose achievement has been supervised by the Executive Commission on a yearly basis, according to the indicators laid down for the assessment. CLPU has successfully undergone the evaluation process in all cases.

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Additionally, the CLPU CACT[1] has periodically done the follow-up of the degree of accomplishment of the strategic plan, focusing in particular on the scientific aspects. Here we reproduce some of their conclusions:

- *The CACT is pleased with the progress which is documented in installations, publications, user reports, and in the successful integration in European networks (Laserlab in particular).*

- *The facility has an effective and cooperative leadership. The CLPU chair at the University of Salamanca has proven remarkably effective for the creation of an international network.*

- *The CACT welcomes the strategy of focusing on the unique capabilities of the Centre: The high-repetition rate of the Vega 2 and Vega 3 laser systems, and, at long term, the possibility to use two beams, either in two different target areas, or on the same experiment.*

- *Since the end of 2014, the CACT has observed a continuous progress, on all fronts.*

- *Taking into account the human, technical and financial capabilities of the CLPU, we consider this progress to be large, and going in a good direction. A very beneficial aspect is that, in helping the external users to carry out their proposed experiments, all the involved CLPU members learned a lot, about many different aspects of the setups and of the technical needs of the Center to perform each type of experiments.*

1 CACT ("Comité Asesor Científico Técnico", Scientific and Technical Advisory Committee)

This experience will be highly valuable for the forthcoming and future experiments.

- *In summary, decidedly the CLPU has completed all the necessary steps so far and heads in an excellent direction. The Centre is trying to reinforce and exploit its main unique capability, the high-repetition rate at high peak power. Therefore,* the CACT, unanimously, strongly recommends continuation of the Consortium beyond the end of the present contract (it ends in year 2020/21).

We might highlight the following, grouped by the four axes which formed the dorsal spine of the CLPU strategy, as a brief overview of the key milestones achieved during the period 2017-2020:

State-of-the-art facility

Strengthen the Center as a state-of-the-art facility in the field of ultra-short ultra-intense pulsed lasers, placing CLPU as a worldwide reference center of science and maintaining the singularity of its equipment.

- Guarantee the operation and reliability of the laser systems
- Enhance the functionality and capabilities of the existing laser systems
- Enhance the equipment, reliability and versatility of the target area and the experimental stations
- Improvement of the efficiency and safety of the experimental environment of the facility

- Conclusion of tests of the PW accelerator (VEGA-3), including operational tests at high energy (>40 J uncompressed infrared pulse) and first official shot on solid target.
- VEGA-2 & VEGA-3 fully operative: average focal intensity in the relativistic regime (10e18 - 10e21 W/cm2). Average energy VEGA-2 pre-compression > 6 J and VEGA-3 pre-compression > 40 J.
- Secondary sources offered to users: Installation of a proton source (between 1 and 20 MeV) using the TNSA mechanism, an electron source (hundreds of MeV) accelerated using LWFA and Betatron X-ray radiation source in the KeV range eventually offered together with a Kirkpatrick-Baez focusing mirror system.
- Integration of the Carrier-Envelope Phase Laser System (CEP) into VEGA to allow synchronized pump-probe experiments at 5 fs.
- Transfer of the X-ray station from M3 to M5 for calibration.
- Upgrades in VEGA laser bay: Installation of the Quanta Ray laser system, the reflection attenuator for the main amplifier of VEGA-2 and the prototype of the delay line for VEGA-2 and the beam dump in VEGA-2.
- Upgrades in VEGA target area: Installation & validation of the VEGA-3 beam transport and a system for the deviation of the PW laser beam to the metrology bench with an incorporated safety system; design and installation of an experimental chamber attached to the focalization chamber and a vacuum chamber for VEGA-3 experiments; installation & validation of a continuous liquid laser target system, an imaging plate scanning equipment, an ultrafast time/spectral domain light analysis device (Streak-Camera system), a set of low noise intensified and time-gated camera devices and an X-ray camera with extended sensor size.
- Upgrades in TA network and data processing system: Development of a prototype system for the shot control for remote triggering, acquisition of images at VEGA's repetition rate and storing of information; implementation of the electronic and vacuum layouts and of the vacuum control system for VEGA-2; design and implementation of the 1st phase of a joint platform for the harmonized operation of the automatic motors.
- Official authorization from the Spanish Nuclear Safety Council (CSN) for the regular operation of the IRA 2nd Category Radioactive Facility (VEGA-3) after carrying out its commissioning experiment, led by Prof. Dino Jaroszynski (University of Strathclyde) and for the production of neutrons from the VEGA-3 laser-plasma accelerator.

Open access

Optimize the use of our infrastructure offering open access for the scientific, technological and industrial communities, both national and international, whose proposals shall be impartially assessed and prioritized, according to excellence criteria and the societal challenges of Horizon 2020.

- Implementation of a competitive access system to the services and facilities of CLPU
- Increase the capacity of attraction of users to our facility
- Optimize access results and the user satisfaction

- Development and implementation of the Access Protocol, the rules of procedure of the Internal Committee and the Access Committee guidelines and rules and the time planning for VEGA calls for competitive access.
- Implementation of the e-learning platform for training of users and personnel and improvement of the web tool FARO for the management of the service applications.
- Experiments for the commissioning of VEGA-3
- Firsts Calls for competitive Access to VEGA:
  - CALL-1: 29 proposals submitted; 467 experimental sessions requested (versus 100 sessions offered)
  - CALL-2: 26 proposals submitted; 326 experimental sessions requested (versus 75 sessions offered)
  - CALL-3: 16 proposals submitted; 245 experimental sessions requested (versus 50 sessions offered)
- Evaluation and selection of the first experimental campaigns under competitive access:
  - CALL-1: 7 proposals approved (100 experimental sessions)
  - CALL-2: 10 proposals approved (120 experimental sessions, 45 more than initially offered in consideration of the interest and quality of the proposals submitted and the expected high impact from the results)
- Development of competitive experimental campaigns:
  - CALL-1: 7 experimental campaign (100 sessions)
  - CALL-2: 6.5 experimental campaigns (75 sessions). 3.5 campaigns postponed due to the pandemic COVID-19
- Development of another 50 sessions of non-competitive access (Strategic access)
- Promotion of VEGA within GELUR, the Spanish specialized group on ultrafast lasers with the support of the Royal Spanish Society of Physics
- Inclusion of VEGA as eligible user facility for transnational access funded within the projects Laserlab-Europe V and RADNEXT
- Identification of the interest of the community in dosimetry of radiation and neutrons and the use of high-power lasers for defense purposes and actions taken accordingly
- Studies to increase the experimental versatility of VEGA

Research

Contribute in bolstering the position of Spain as a world leader in ultrafast laser science, through top-quality cutting-edge scientific and technical research in our ground-breaking technology, the building of networks to share ideas and projects, the collaboration with other scientific and technological infrastructures and, as far as we are actually able, the attraction and retention of talent. CLPU also intends to become a tool through which the national scientific community will be granted access to major European facilities.

- Alignment of CLPU with the international mainstreams, particularly in relation to PW centers
- Strengthen the action lines aimed at attracting and retaining talent and establish the basis for an excellence research production in experimental science
- Foster the participation of CLPU in national and international networks with a scientific or technical basis

- Accession as full member in the Laserlab-Europe AISBL Consortium of European-level laser research infrastructures (RI)
- Organization of:
  - 13th edition of the Direct-Drive & Fast Ignition Workshop
  - Laserlab Europe NEILS workshop
  - Bilateral meeting between ELI-ALPS and Spanish research groups
  - 3th congress 'TARG3. Targetry for High Repetition Rate Laser-Sources'
  - Ultrafast Science and Technology Spain 2017 (USTS2017)
  - General Assembly of Laserlab Europe AISBL and European Project.
- Renovation of CLPU as a Consolidated Research Unit (Unidad de Investigación Consolidada) by the regional government (Junta de Castilla y León)
- Participation in projects and international collaborations: Staff exchanges of CLPU researchers at Prague Asterix System Laser – PALS (Czech Republic), GSI (Germany), CELIA (France) and Lawrence Livermore National Laboratory (US), HZDR (Germany), PALS (Czech Rep.) and LLC (Sweden).
- Application for an Innovative Training Networks (ITN) coordinated by CLPU: ULPHIA (Ultrafast Laser-Plasma Processes at High Intensities and Applications)
- More than 240 results (publications, books, posters, contributions to congresses, …)

Transfer of Knowledge

Enhance the cooperation in RDI between the public and the industrial sector, serving as connecting pipe that facilitates the transfer of knowledge to all stakeholders to boost regional and national innovation, and the increment of specialized training capacity in RDI that will directly benefit the industrial sector, as well as the society in general.

- Foster the resources and procedures to encourage the knowledge transfer created in the CLPU towards the industry
- Promote activities to let society know about the laser center and the laser technology possibilities
- Organize activities in the education field that allow the training and the promotion of scientific vocations

- Official opening of VEGA-3 by the King and Queen of Spain
- Visit of Pedro Duque, Ministry of Science, Innovation and Universities
- New visit of Prof. Gerard Mourou (former CACT member), first after his Nobel Prize in Physics 2018
- Consulting services and collaborations in R+D+I projects of the industrial sector (e.g. AVS, AERTEC Solutions, Escribano Mechanical & Engineering, S.L., INDRA, Natural Machines Inc., TECNOBIT, ELYTT Energy, S.L., among others)
- Promotion of CLPU at international events, such as Nuclear Photonics 2018 (Romania), Channeling 2018 (Italia) or LPhys18 (UK), TARG4 (Italy), EPS 2019 (Italy), IBER2019 (Portugal), PPLA 2019 (Italy), USUILS 2019 (Japan) or the 11th NLTE Code Comparison Workshop (Spain), among others
- Organization of courses and summer schools on plasma physics aimed at Physics, Mathematics and Engineering undergraduates:
  - Advance Course of Fundaments on Laser-Plasma Physics
  - Specialized course of Plasma Physics together with the University of Salamanca
  - 1st edition "Diagnostics techniques for Laser-Plasma experiments @HRR" of the Laser-Plasma Physics Summer School (LaPlaSS)
  - 2nd edition "Experimental methods for Laser-Plasma Physics" of the Laser-Plasma Physics Summer School (LaPlaSS)
  - 3rd edition "Experimental methods in High-Intensity Laser-Plasma processes" of the Laser-Plasma Physics Summer School (LaPlaSS)

Results of the analysis: They are satisfactory since the objectives of the annual plans have been reached in full.

2 Mission & Vision

This Strategic Plan starts up with the definition of CLPU mission, vision and values.

Mission

CLPU was born to be the Spanish facility at the forefront in the field of ultra-intense ultra-short pulsed lasers, which could meet the demand of the scientific, technological and industrial community to develop frontier research and projects, through a policy of competitive open access. The in-house scientific expertise would guarantee a cutting-edge top-quality service, working side by side with users from all over the world, while also pursuing its own experimental challenges.

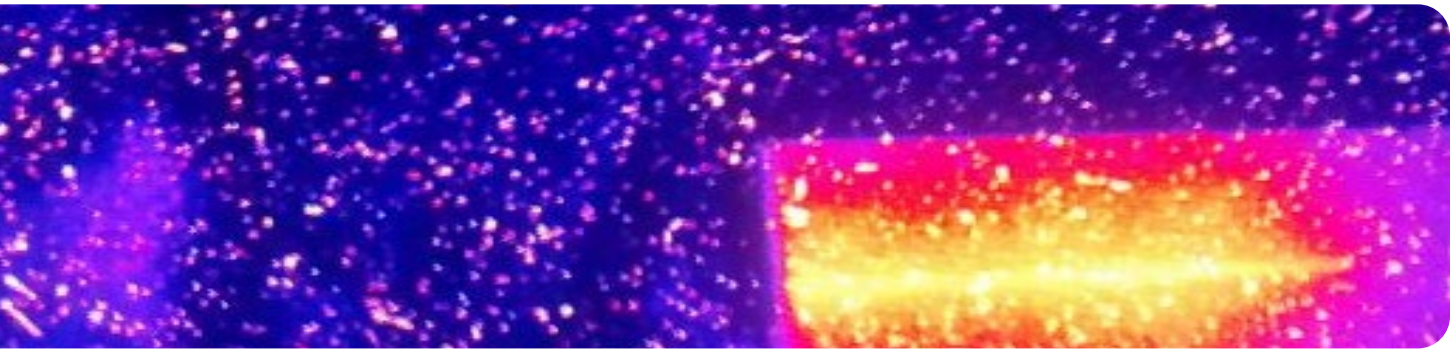
Vision

We intend to direct the future of the CLPU towards a resilient infrastructure of expertise, able to successfully address immediate challenges such as scientific and technological excellence, digital transformation, internationalization and sustainable development.

3 SWOT Analysis

The Ultra-short Ultra-intense Pulsed Lasers Center (CLPU) has assessed the internal position of the organization, identifying its main positive (Strengths) and negative (Weaknesses) aspects, to act directly on them, in order to either enhance/reinforce or eliminate them.

Besides, the center has analyzed its external environment and identified the factors that are likely to help (Opportunities) and hinder (Threats) its growth. Although these elements are beyond its capacity, they are taken into account for the design of strategies that allow to take advantage of them or to minimize their impact.



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- In the top 3 of operative PW laser facilities with high repetition rate
- Satisfaction and recognition from the users of the facility
- Highly qualified personnel for the operation of the laser system
- Stable permanence in the ICTS map as a single-site facility
- International positioning (LASERLAB-Europe, ICUIL, ELI CERN, …)
- Optimal relation RDI potential vs. costs of infrastructure
- Spanish leadership in Laser Radiological Protection

W

- Lack of a funding plan beyond 2021
- Difficulty in increasing beamtime offered for competitive access
- Shortage of human resources
- Restrictions on staff recruitment and difficulties in attraction & retention of talent
- High rate of temporary employment (almost 50%)
- AGE administrative burden over- dimensioned for small facilities
- Lack of funding to upgrade laser systems and target areas
- Start of technological obsolescence

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- Interest in laser technology in the defense and space sectors
- Thematic specialization of competitive Calls for Access
- Direct or indirect participation in programs & projects of the Recovery, Transformation and Resilience Plan
- Center in operation taken as a reference for large facilities under construction
- Accelerator technology based or combined with lasers
- Capacity of leadership of the Spanish laser community
- Reference point in theoretical and practical training in higher education

T

- Large installations of pulsed lasers in commissioning or under construction
- Lack of financing mechanisms for competitive access
- Lack of a robust scientific community in intense lasers at national/international level
- Excessive dependence on non-national suppliers
- Job offers with better conditions in other facilities
- Absence of Spanish representation in the Extreme Light Infrastructure (ELI)
- Economic and mobility restrictions due to COVID-19

4 Objectives

Every time we are faced with the task of setting out the objectives to which we will devote ourselves for the next four years, we keep in mind primarily the rationale behind the CLPU. That is, how to honor the purposes of the Center according to our Statutes.

We also pay close attention to the CACT when setting objectives and strategies, as, -through its periodic valuable reports and the priceless expertise of their members-,

bolsters the Center, by not only addressing our main shortcomings, but also by suggesting opportunities, chances and future upgrades to enhance the quality and scope of our services.

With all this as the starting point, we next focus on the priorities established by the national and European instruments to enhance and strengthen the R+D+I system. In our case, we analyze and take into consideration the Spanish Science, Technology and Innovation Strategy 2021-2027, the National Scientific and Technical Research and Innovation Plans, Horizon Europe (the research and innovation framework program running from 2021-2027) and the European Regional Development Fund 2021-2027. Besides, and given that the Community of Castilla y León is one of the shareholder of the Consortium, the strategic lines and execution priorities contained in the Regional Research and Innovation Strategy for an Intelligent Specialization (RIS3) come into play.

Finally, it is essential to point out that the deployment of this Strategic Plan depends entirely on the renewal of the Consortium Agreement, since the Agreement now in force will expire on December 31, 2021. Therefore, to achieve the objectives set out here, it is imperative to establish the budget framework of the Center.

4.1 Objectives Description

Based the global understanding of the significant strategic role of RDI for smart, sustainable and inclusive growth and the basic features of CLPU, the Center believes that the following should be our key goals for this four-year cycle:

OBJETIVE 1 Consolidation and expansion of the user facility

Offer **competitive access** to **state-of-the-art scientific and technological equipment**, expanding its functionalities within an innovative work environment that allows maximizing its use and an efficient performance of user teams.

OBJETIVE 2 Research and training to reinforce the user facility

Foster excellent science through **research**, generating knowledge that increases scientific and technological capacities for the development, attraction and retention of talent.

OBJETIVE 3 Knowledge and technology transfer

Actively participate in **innovative ecosystems** both geographical and sectoral, pointing out the value of the transfer of knowledge and the experience acquired in the field of intense lasers to improve the technological innovation of our industrial sector.

OBJETIVE 4 Generation of public information and outreach

Promote the **dissemination of knowledge and open science**, strengthening the incorporation of research and innovation into society through new models of governance based on transparency, ethics, integrity and equality.

4.2 Strategies

The strategies linked to each objective are the following:

O.1 OBJECTIVE: Consolidation and expansion of the user facility

O1.S1. STRATEGY. Keeping a unique and useful laser that users may trust

Reinforce the reliability and functionality of the VEGA laser system with an orientation towards the uniqueness and specialization of CLPU, mainly in the context of the existing high repetition rate PWs. A one hertz PW laser is a very delicate tool and users are waiting for the most stable parameters. Although VEGA is working in a quite good shape, our experience after several years of campaigns has shown a number of possible technical improvements that will have a clear interest for users.

O1.S2. STRATEGY. Upgrade of the VEGA laser system by 2025

In a globally developing scenario we need to upgrade the singularity of the VEGA laser performances, keeping the CLPU specialization of high repetition rate PW lasers. We plan to double its energy (60J) arriving to 2 PW (60J/30fs), but much more convenient, keeping the PW level at 60 fs (60J/60fs) to widen the possibilities for particle acceleration. In parallel to that, we plan to increase of the repetition rate to 5 Hz, to keep VEGA in the forefront of the world high repetition rate PW lasers. Specifications are for the power at the compressor exit and it is necessary to ensure the PW at the focal plane and, if possible, within the focal spot.

O1.S3. STRATEGY. New tools for high repetition rate operation during users' campaigns

The operation at the high repetition rate of VEGA needs an advance in some of the tools available to users, particularly targetry and diagnostics of the experiments. We have been developing in-house systems and adapting existing ones and now this has to be offered to users on a regular basis with dedicated setups. Also other techniques need to be standardized to allow high repetition rate operation in safe conditions.

O1.S4. STRATEGY. Permanent beam lines

Preparation of new secondary sources on a permanent basis to reinforce the optimization of the VEGA system and the synchronization. Up to now, the center has been working on the basis of temporary setups made "ad-hoc" for users. This has been quite enlightening for the commissioning phase, but for the next four years it is necessary to build a few permanent stations determined in basis of the users' demand and the in-house capabilities. For that it is important to build the external bunker adjacent to the existing one.

O1.S5. STRATEGY. Bridge to Europe and beyond

Consolidate CLPU at the international level (European and extra-European) through the collaboration with other infrastructures, particularly ELI (and also EuXFEL), through the participation in networks as Laserlab Europe (and through American colleagues in LasernetUS) and through international access-oriented projects as IMPULSE, RADNEXT, and others. All them with the objective of an increased visualization of the center and its quality as user facility. Collaboration with other ICTS of the Spanish Map, as well as with other relevant initiatives such as IFMIF-DONES and other accelerator facilities.

O1.S6. STRATEGY. Towards a distributed ICTS

CLPU is a single site facility. We propose to explore the convenience of converting CLPU into a distributed ICTS, i.e. a facility with multiple sites, being Salamanca the biggest one. Such distributed facility implies coordination with other ultrafast laser services in Spain that have shown a preliminary interest in offering part of their time to operate as a distributed facility. This will strength the community and will optimize human and material resources.

O1.S7. STRATEGY. Data and control

In conjunction with the high repetition rate strategy, data is a fundamental point. The strategy is to consider data from a general perspective from the laser, to the metrology and to the equipment brought by the users. Access to data after the experiment is important and after some embargo period (probably two years) data have to be open to the scientific community.

O.2. OBJETIVE. Research and training to reinforce the user facility

O2.S1. STRATEGY. Consolidation of a research unit

Consolidation of a research group around the facility with sufficient mass and quality to became a Spanish research group of excellence. Provide projection to the user facility and help define future strategies for the facility. This research unit should be located out of the user facility's premises but with a lot of exchange. There are multiple possibilities for that, even at the same Scientific Park of the University of Salamanca.

O2.S2. STRATEGY. New research applications

Study of new scientific and technical alternative possibilities of pulsed lasers. This will be a prospective task to expand the functional possibilities of intense pulsed lasers as accelerators, provided the achievement of a good beam transport and dosimetry. Explore the possibilities of extreme lasers in particle physics, particularly to explore some effects of the QED vacuum.

O2.S3. STRATEGY. Scientific and innovative talent attraction and consolidation

There is a permanent need to be attractive to relevant scientists in the international context. In addition to salary restrictions, there is a limitation of permanent contracts that has to be managed internally from the Spanish General Administration (AGE). But all this can be complemented with scientific tools that will increase the attraction of talent to Salamanca. It also plans the development of collaborative tools to exchange scientists.

O2.S4. STRATEGY. High level formation

Implication of laser science in undergraduate programs (as much as possible) and particularly involvement in graduate and master studies. Establishment of international links for master programs. Specialized training not only in laser and plasma physics but also in all aspects related to the facility as engineering, data management, radioprotection safety and also management of large facilities.

O.3. OBJETIVE. Knowledge and technology transfer

O3.S1. STRATEGY. Spanish laser applications ecosystem

Identify the Spanish technologies that can be relevant for CLPU, laser related or not. Active participation in industrial and technological ecosystems creating a stable platform for knowledge transfer. Play a leading role (due to our link with the Spanish General Administration) in collaboration with public partners in relation to laser technology.

O3.S2. STRATEGY. Innovation in strategic sectors

Identification of strategic sectors where CLPU can be relevant and that respond to needs of industry or society.

O3.S3. STRATEGY. Preparation of demonstrative laboratories

Keep experimental setups or small laboratories for actions (laser performances) related to effects which are unexpected or unknown to most of the domestic companies, in order to enhance their potential portfolio. The goal is to find conclusive evidences in support of novel applications of lasers, being the most unexpected the best. Preparation of ad-hoc labs or setups for proofs of concept requested by the productive fabric.

O3.S4. STRATEGY. Artificial Intelligence and big data as a global emerging technology

Pioneering work in application of artificial intelligence techniques, big data, automization, robotics, control and all those emerging technologies to the laser sector.

O3.S5. STRATEGY. Radiological protection

The aim is to continue to be the Spanish center of reference in radiological protection of infrared laser laboratories to assist the Spanish Nuclear Safety Council (CSN) in the accreditation of other laser accelerators that will be installed sooner or later.

O.4. OBJETIVE. Generation of public information and outreach

O4.S1. STRATEGY. Enhance the visibility of CLPU

Society must understand and benefit from the knowledge generated at CLPU with public funds. It is mandatory in the 21st Century to develop tools to convey clear, understandable and true information to the general public, whether local, regional or national, in accordance to the three institutions that constitute the CLPU Consortium.

O4.S2. STRATEGY. Increase the society scientific culture

Develop new strategies to reach society in collaboration with regional and national partners and using tools established for that purpose.

O4.S3. STRATEGY. Generate and apply new models of governance

Implementation of a transparency policy for society to be informed about the use of the public funds, and align the center with human values for this century.

4.3 General Actions for developing the strategies

O.1 OBJECTIVE: Consolidation and expansion of the user facility		
STRATEGY	**O1.S1 Keeping a unique and useful laser that users may trust**	
GENERAL ACTIONS	**START**	**END**
O1.S1.A1 Reinforce the reliability of the laser by an upgrade of the main VEGA oscillator capabilities.	2021	2022
O1.S1.A2 Upgrade the VEGA-2 main amplifier cryo-cooling to reduce vibrations and to keep remarkably high laser stability at 10 Hz over long periods.	2022	2023
O1.S1.A3 Improve the beam profile through the quality and distribution of pumping. Decrease the PW transverse inhomogeneities below 10 percent.	2022	2024
O1.S1.A4 Dynamic control of gratings to eliminate operational drifts during the users shift and pulse chirp control.	2022	2023
O1.S1.A5 Scheme for spatio-temporal/spectral metrology in order to reach the characterization of the beam after compression and on the focal plane.	2021	2023
O1.S1.A6 Keep and update statistics of working conditions in order to increase the reliability of the system and planning for spare parts at full repetition rate.	2021	2022
O1.S1.A7 Automation of the laser operation and increase of real-time remote-control tools.	2023	2024
O1.S1.A8 Feedback from users.	2022	2024
STRATEGY	**O1.S2 Upgrade of the VEGA laser system by 2025**	
GENERAL ACTIONS	**START**	**END**
O1.S2.A1 Synchronization sub picosecond between VEGA-2 and VEGA-3 lines, and development of transport lines compatible with that synchronization.	2022	2022
O1.S2.A2 Delivery of the uncompressed lines to experimental area, with transport lines compatible with sub-nanosecond synchronization.	2021	2024
O1.S2.A3 Upgrade the VEGA front end, in particular the XPW system to enhance the PW contrast for overdense target experiments. Allow a bypass.	2021	2024
O1.S2.A4 Duplicate the VEGA-3 pre-compression energy adding another set of pumping lasers, arriving to 250 J per shot pump energy available.	2023	2024
O1.S2.A5 Upgrade the pumping energy available to VEGA-2 arriving to 50 J per shot pump energy, allowing probe secondary sources by itself.	2022	2024
O1.S2.A6 Generate new control tools to distribute the pump power to the main amplifiers in order to enhance homogeneity and energy extraction.	2022	2024
O1.S2.A7 Design and construction of a second compressor able to allow 60J in 30fs.	2023	2024
STRATEGY	**O.1.S.3 New tools for high repetition rate operation during user campaigns**	
GENERAL ACTIONS	**START**	**END**
O1.S3.A1 Overdense targetry: Upgrade of the liquid jet continuous target. Upgrade of the ribbon-based continuous targets developed in house.	2021	2022
O1.S3.A2 Upgrade of the gas jet targets arriving to near critical densities. Generation of a new high pressure gas target developed in house.	2021	2022
O1.S3.A3 Development of new tools to allow extreme high repetition either in protection as sapphire shielding, or in cleaning the optical components	2022	2024
O1.S3.A4 Development of new metrology tools able to follow the high repetition rate of the laser in the line of the zigzag proton detector made at CLPU	2022	2024
O1.S3.A5 Reinforcement of the bunker/s to allow neutron production at high repetition rate.	2023	2024

O1.S3.A6 Development of tools for simultaneous operation of two experiments, one at each experimental area (internal and external).	2023	2024
O1.S3.A7 Upgrade of the radioprotection official license to be compatible with the new sources and with the simultaneous operation.	2021	2024
STRATEGY	**O1.S4 Permanent beam lines**	
GENERAL ACTIONS	**START**	**END**
O1.S4.A1 Design and construction of the external bunker and experimental area, (underground in front of the existing one) with high duty automation.	2021	2024
O1.S4.A2 Permanent line for TNSA proton acceleration (short focal) installed in the external bunker. Including transport, manipulation and diagnostics	2023	2024
O1.S4.A3 Permanent line for LWFA of electrons (long focal) also installed at the external bunker, with incorporation of new diagnostic tools.	2023	2024
O1.S4.A4 Permanent line for neutron laser production based on photo-reactions, using our laser generated X-rays, or on proton spallation	2023	2024
O1.S4.A5 Permanent line for WDM analysis with a synchronized pump probe configuration.	2023	2024
O1.S4.A6 Permanent line for uncompressed VEGA-3 propagation and study of long distance nonlineal effects in atmosphere.	2023	2024
STRATEGY	**O1.S5 Bridge to Europe and beyond**	
GENERAL ACTIONS	**START**	**END**
O1.S5.A1 Active participation in Laserlab Europe, particularly in the Transnational Access program due to its relevance within the European community.	2021	2024
O1.S5.A2 Reinforcement of the links to ELI, particularly to the DC and later to the ERIC. Development of user tools to be brought to the ELI pillars.	2021	2024
O1.S5.A3 Information and training of Spanish potential users of large facilities as ELI or also XFEL, as well as others. Proof-of-concept experiments	2021	2024
O1.S5.A4 Active participation in the development of the next generation of European lasers on the road to the exawatt laser, and its bottlenecks.	2023	2024
O1.S5.A5 Active participation in the development on the formation of the next generation of laser experts (technologists, engineers, scientists).	2021	2024
O1.S5.A6 Approximation to the national and European accelerator communities, in special to EuXFEL, ESS, and several synchrotrons, including ALBA.	2021	2024
O1.S5.A7 Development of tools for laser neutron (pulsed bunches) dosimetry in conjunction with the Spanish neutron experts' community.	2021	2024
STRATEGY	**O1.S6 Towards a distributed ICTS**	
GENERAL ACTIONS	**START**	**END**
O1.S6.A1 Organization of a specific workshop to present the possibilities of a distributed ICTS.	2021	2024
O1.S6.A2 Information and opportunities within the GELUR framework (The Spanish Group on Ultrafast Lasers) of the Spanish Royal Physical Society.	2022	2023
O1.S6.A3 Consolidation of the ultrafast-ultraintense community in Spain. Actions to enhance the access for young scientists to experiments.	2022	2022
O1.S6.A4 Preparation, where appropriate, of the documentation and agreements to submit the request of a distributed ICTS for the next revision of the strategic plan.	2023	2024
STRATEGY	**O1.S7 Data and control**	
GENERAL ACTIONS	**START**	**END**
O1.S7.A1 Computerized control of all the items involved in one experiment, including instrumentation brought by users and its standardization.	2021	2024
O1.S7.A2 Remote control to allow online participation of users.	2021	2024
O1.S7.A3 Data acquisition of the laser metrology and from the experiment diagnostics. Optimization of all the resources involved at each laser shot.	2021	2024
O1.S7.A4 Automatic data analysis and processing at a low level, from heterogeneous data sources. Data unification for useful Open Data.	2024	2024

O.2. OBJETIVE: Research and training to reinforce the user facility		
STRATEGY	**O2.S1 Consolidation of a research unit**	
GENERAL ACTIONS	**START**	**END**
O2.S1.A1 Maintenance of an excellence research unit at the Castilla y León regional level (Unidad de Investigación Consolidada, UIC-167).	2021	2024
O2.S1.A2 Increase the number of scientists to become excellence unit at national level	2022	2024
O2.S1.A3 Evolution of the CLPU chair at the University of Salamanca as the kernel of the exchange CLPU-University, and increasing of its funding.	2022	2024
O2.S1.A4 Coordination and enhancement of regional, national and international projects applications. Professional tools to prepare projects.	2021	2024
O2.S1.A5 Independent installations. Evolution towards an associated research institute in a site adjacent to the users facility.	2023	2024
STRATEGY	**O2.S2 New research applications**	
GENERAL ACTIONS	**START**	**END**
O2.S2.A1 Develop friendly-user tools in the framework of cell and small animal models for FLASH radiotherapy, using the permanent setups.	2021	2024
O2.S2.A2 Introduce PW lasers as a serious alternative to particle accelerators. Prospective within the most relevant communities of the Spanish map.	2022	2023
O2.S2.A3 Lasers as a tool to study new states of matter, plasmas, particularly WDM. Implications to other fields of interest to the Spanish community	2022	2024
O2.S2.A4 Prospective of applications on new fields with new communities as artwork conservation and historical and archeological materials.	2022	2024
O2.S2.A5 Applications for extreme radiation events in space and accelerators (RADNEXT, CERN) and nuclear emergencies, including defense.	2021	2023
O2.S2.A6 Lasers as a new tool to explore basic fundamental physics (violent accelerations, Thomson Scattering, QED frontier)	2022	2024
STRATEGY	**O2.S3 Scientific and innovative talent attraction and consolidation**	
GENERAL ACTIONS	**START**	**END**
O2.S3.A1 Dotation of several PhD grants for thesis related to the facility specific needs (detectors, codes, targets, …)	2021	2024
O2.S3.A2 Organization of international specialized training events within Laserlab, ELI, as well as other schemes.	2021	2024
O2.S3.A3 International stays program for the CLPU scientists and technologists to keep their formation to the highest possible level.	2021	2024
O2.S3.A4 Support the competitive access of CLPU scientists to our own system, as well as to other facilities.	2021	2024
O2.S3.A5 Enhance the scientific production in papers or meetings, as a way of professional international promotion.	2021	2024
STRATEGY	**O2.S4 High level formation**	
GENERAL ACTIONS	**START**	**END**
O2.S4.A1 Collaborate/organize university graduate programs specific in the scientific and technological aspects relevant for the facility.	2021	2024
O2.S4.A2 Participation in at least one international Master program on extreme lasers, possibly within a European framework.	2021	2024
O2.S4.A3 Offer grants for undergraduate and graduate exchange to enhance training of the local students in relation to such extreme lasers.	2023	2024
O2.S4.A4 Enhance publication ratios in Q1 and Q2 open access journals. Edition of scientific books.	2021	2024
O2.S4.A5 Fund a program of visiting scholars and professors to invite outstanding scientist to give a broad and cosmopolitan vision of the field.	2023	2024

O3 OBJECTIVE: Knowledge and technology transfer		
STRATEGY	**O3.S1 Spanish laser applications ecosystem**	
GENERAL ACTIONS	**START**	**END**
O3.S1.A1 Generation of a Knowledge and Technology Transfer Office at CLPU	2021	2024
O3.S1.A2 Actions to spread our knowledge to Spanish companies.	2021	2024
O3.S1.A3 Proactivity in finding external resources to develop industrial projects based on the technological strengths of the facility.	2021	2024
O3.S1.A4 Participation in technology focused events.	2021	2024
O3.S1.A5 Identification and collaboration with main public players in the national arena (CDTI, Ministerio de Defensa, INTA, CSN) and in the regional and local sector	2021	2024
STRATEGY	**O3.S2 Innovation in strategic sectors**	
GENERAL ACTIONS	**START**	**END**
O3.S2.A1 Biomedical. FLASH radiotherapy using lasers. Generation of a permanent irradiation setup and lab for tissue samples.	2021	2024
O3.S2.A2 Medical and veterinarian radiotracers using very short-lived isotopes using laser acceleration techniques.	2021	2024
O3.S2.A3 Space. Interest for ultrahigh dose rate simulators of extreme space weather conditions.	2021	2024
O3.S2.A4 Defense. Consulting for dual technologies. Ad-hoc studies of the applicability of the different kinds of lasers to the defense sector	2021	2024
O3.S2.A5 Exploration of the laser damage of materials according to the laser parameters and pulse duration.	2021	2024
O3.S2.A6 New techniques using laser accelerators for artwork analysis and conservation.	2021	2024
O3.S2.A7 Propagation of pulsed lasers in the atmosphere and possibilities of ultrafast lasers propagation in space	2021	2024
STRATEGY	**O3.S3 Preparation of demonstrative laboratories**	
GENERAL ACTIONS	**START**	**END**
O3.S3.A1 Prepare informative material to offer the technological capacities of CLPU	2021	2024
O3.S3.A2 Ultrafast laser ablation lab, including biological tissues ablation. Consulting for multiple lasers for the surgical medical community.	2021	2024
O3.S3.A3 Development of prototypes and demonstrators of different technologies.	2021	2023
O3.S3.A4 Nonlinear propagation and filamentation at short distances. Electrical discharge guiding.	2022	2024
O3.S3.A5 Novel measuring tools, particularly in the ultrashort ultraintense frontier. Broadband lasers meaning. Relations to other technologies (radar).	2022	2024
O3.S3.A6 Industrial open day.	2022	2024
STRATEGY	**O3.S4 Artificial Intelligence and big data as a global emerging technology**	
GENERAL ACTIONS	**START**	**END**
O3.S4.A1 Artificial Intelligence tools to facilitate the day to day operation of the main laser systems.	2021	2024
O3.S4.A2 Developing of robotic tools to accomplish certain activities in the experimental area during radioactive mode operation.	2022	2024
O3.S4.A3 Manipulation of big data. Storage, retrieval and public access of information.	2022	2024
STRATEGY	**O3.S5. Radiological protection**	
GENERAL ACTIONS	**START**	**END**
O3.S5.A1 Reconsideration of risks with an infrared laser in the context of ionizing radiation protection.	2021	2024

O3.S5.A2 Calculation of source term in novel scenarios. Development of tools that can be of general use for industrial applications.	2022	2024
O3.S5.A3 Laser safety and radioactive safety combined. Identification of points of conflict.	2021	2024
O3.S5.A4 Generation of huge, but very short-lived, electromagnetic pulses.	2022	2024
O3.S5.A5 Ultrafast dose rates. Detection of problems. Pulsed neutron dosimetry	2021	2024
O3.S5.A6 Laser and radiological safety as a global concept for future laser accelerators to be installed in Spain. Leading role of the Castilla León region in this subject.	2021	2024
O4 OBJECTIVE Generation of public information and outreach		
STRATEGY	**O4.S1 Enhance the visibility of CLPU**	
GENERAL ACTIONS	**START**	**END**
O4.S1.A1 Participation in social networks.	2021	2024
O4.S1.A2 Preparation of digital information to inform about the equipment, developments and results of the center.	2021	2024
O4.S1.A3 Collaborations with other international organizations to disseminate information about scientific and technical possibilities of existing and future laser facilities.	2021	2024
O4.S1.A4 Generation of interest towards lasers in elementary and secondary schools with laser and optical games and visual tricks	2021	2024
O4.S1.A5 Maintenance of a special dedication to handicapped persons.	2021	2024
O4.S1.A6 Generation of interest in senior citizens. Collaboration to the University of Experience.	2021	2024
O4.S1.A7 Prepare tools to enhance the possibility of finding patrons for the center based on the CLPU and USAL quality brands and societal applications.	2023	2024
STRATEGY	**O4.S2 Increase the society scientific culture**	
GENERAL ACTIONS	**START**	**START**
O4.S2.A1 Presentation of projects to FECYT (Spanish Foundation for Science and Technology.	2021	2024
O4.S2.A2 Progress in the establishment of an UCC+I (Unit of Scientific Culture and Innovation).	2021	2024
O4.S2.A3 Organization of programs on information about the center to provide scientific material to elementary and secondary schools.	2021	2024
O4.S2.A4 Programs to encourage scientific vocations.	2021	2024
O4.S2.A5 Promote collaborations within the framework of vocational education.	2021	2024
O4.S2.A6 Development of virtual reality tools as a clean way to see inside VEGA laser system and its target areas.	2021	2024
O4.S2.A7 Creation of a documentation center related to lasers and laser technology as well as other related technologies.	2021	2024
O4.S2.A8 Realization of an open day in relation to the International Day of Light.	2023	2024
O4.S2.A9 Organization of divulgate conferences and specialized workshops.	2021	2024
O4.S2.A10 Design and creation a permanent dissemination space.	2022	2024
STRATEGY	**O4.S3 Generate and apply new models of governance**	
GENERAL ACTIONS	**START**	**START**
O4.S3.A1 Apply transparency criteria in all procedures and activities of the center.	2021	2024
O4.S3.A2 Enhancement of the innovation in the working environment (digital transformation)	2021	2024
O4.S3.A3 Promote ethical codes of good conduct and gender equality. Avoid discrimination based on race, color, religion, and national origin.	2021	2024
O4.S3.A4 Active promotion of women in science and technology.	2021	2024
O4.S3.A5 Implement energy efficiency and sustainability.		

4.4 Resources

4.4.1 Human Resources

In order to facilitate the achievement of the objectives pursued, we envision an organizational structure based on four functional units working in an efficiently coordinated and transversal way:

- **Unique Infrastructure VEGA:**

Focused on guaranteeing the existence of a state-of-the-art laser system open to users and very prominent worldwide. In this unit, a core of scientists and technologists will be able to operate the laser and perform sophisticated laser-plasma experiments.

- **Research and Training Unit:**

Although strongly associated to the users' facility, this unit will perform the scientific and technological research and prospective needed to keep the facility alive and constantly upgrading. This is fundamental for the scientific and technical career of a large fraction of CLPU staff, as well as for the visibility of the center with publications and presentations. Also this is the framework for specialized training of students and new staff.

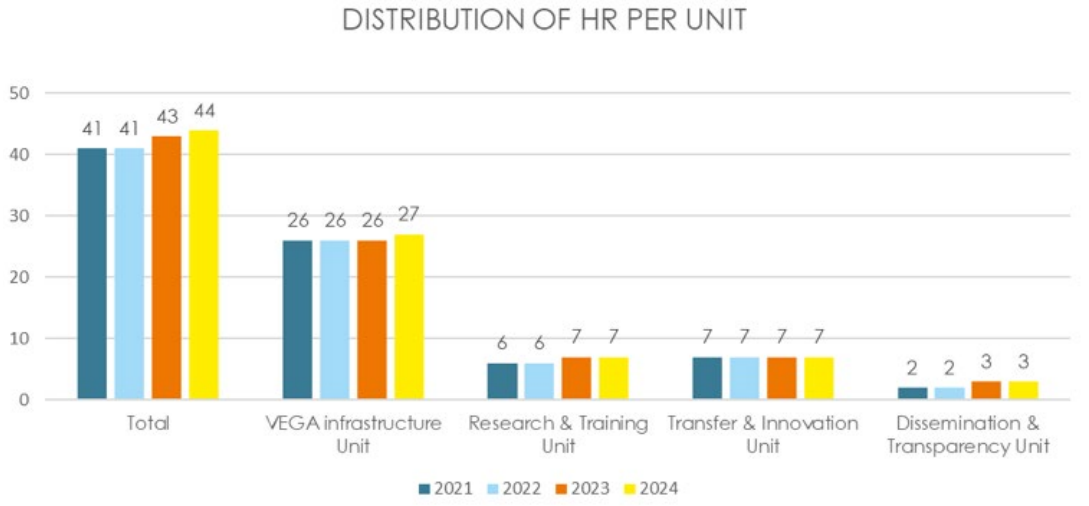
- **Transfer and Innovation Unit:**

Created to allow the flow of knowledge generated in the two functional units previously explained to the industry. The CLPU is the national benchmark in intense pulsed lasers technology, so this unit will develop the necessary actions to inform and transfer this technology efficiently to the national productive sector.

- **Dissemination and Transparency Unit:**

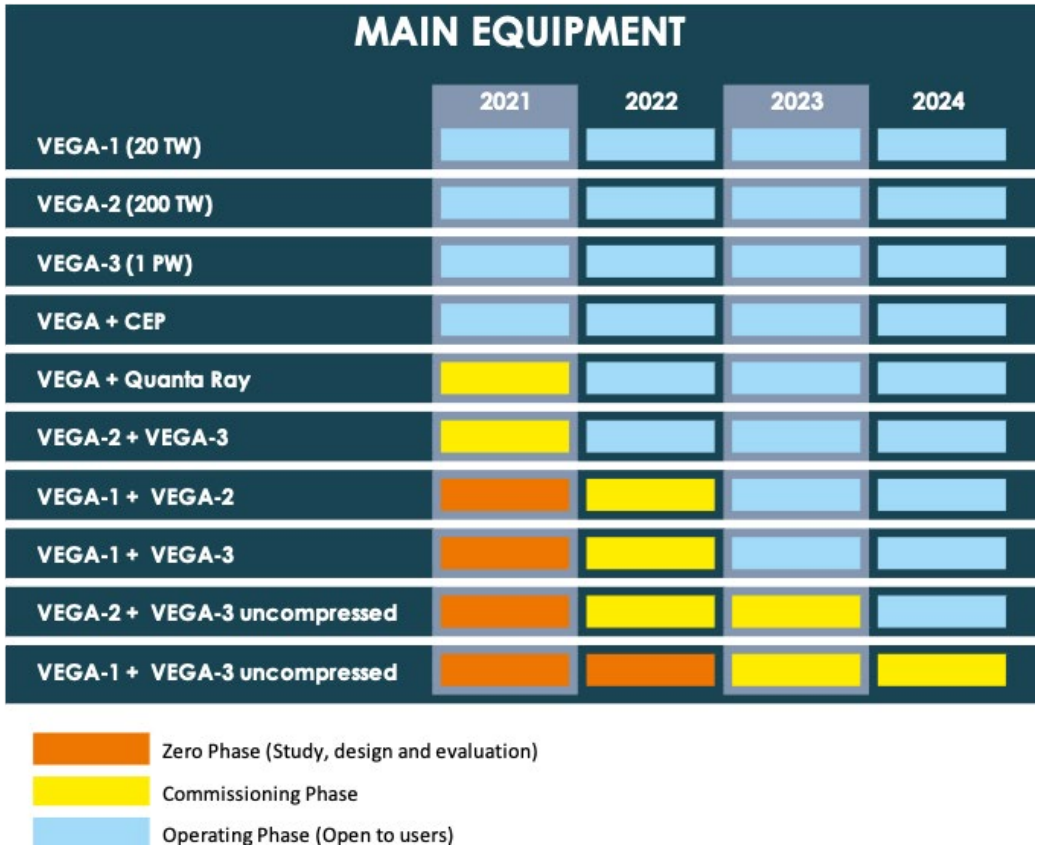
Society should be ultimately the beneficiary of the existence of public research centers and ICTSs. Therefore, access to information and transparency in management undoubtedly justify the existence of a minimum structure to make known the most relevant results and scientific and technological breakthroughs.

The following graph represents the average of structural staff. The staff will be completed with casual personnel around research and technological projects. In addition to these structural personnel, the University of Salamanca (USAL) has appointed two of its staff members to fill the positions of Director of the CLPU and Director of the CLPU Chair.



4.4.2 Material Resources

The unique infrastructure is VEGA but it is subject to different configurations and combinations between its phases or with other laser equipment, such as the Carrier Envelope Phase – CEP laser system or the Quanta Ray laser system.



4.4.3 Economic Resources

Thousand euros (k €)	2021	2022*	2023*	2024*
INCOME	**3055**	**3143**	**3267**	**3396**
Consortium Funds	2390	2900	2900	3050
Other Incomes	665	243	367	346
EXPENSES	**3055**	**3143**	**3267**	**3396**
Personnel	1778	1827	1906	1994
Running Expenses	1277	1316	1361	1402

* As of today the financing is not ensured. Pending of the signing of the renewal of the Consortium Agreement.

5 Chronogram & Monitoring

5.1 Chronogram

This Strategic Plan will be reviewed periodically by the competent bodies of CLPU, through several actions:

- **Approval of the Annual Budgets.** Annually the Rector Council (RC) approves the budget that will determine the resources at the disposal of the Center to programme activities and accomplish objectives.

- **Approval of the Annual Plan of Actions and Projects**. The RC approves the Plan of Actions and Projects to be implemented the following year.

- **Follow-up of the set of actions and indicators.** The Executive Platform will be in charge of gathering and assessing all the information regarding the degree of compliance with the previous year Plan.

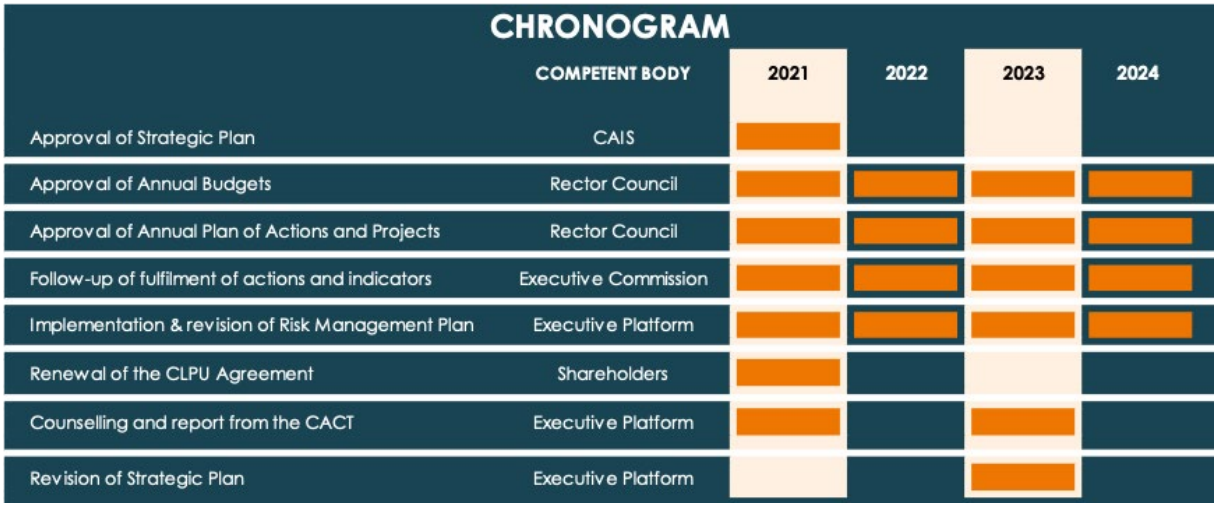
- **Implementation of the Risk Management Plan and decision on required adjustments**. The Executive Platform will response to any risk or contingency as soon as it would arise, implementing the foreseen mitigation strategies or taking any other appropriate measures to minimized the impact on the smooth functioning of the Center.

- **Renewal of the Collaboration Agreement signed by the three Consortium members for the creation of the CLPU.** According to Clause 12, the Agreement will remain in force until December 31, 2121

- **Counselling and report from the CACT**. The CACT advises on activities, programs and scientific plans that the Director submits to the EC. Additionally, the CACT prepares a four-year report on the future opportunities, prospects and capabilities of CLPU. This report is directly presented to the Rector Council to assist in the strategic orientation of the Center.

- **Comprehensive review of the Strategic Plan.** The Executive Platform shall check the degree of compliance of the objectives set at the Plan and analyse their validity or whether, on the contrary, new measures should be taken to place CLPU as a state-of-the-art facility for the scientific and technological research and development.

The chronogram will be as represented in the following diagram



5.2 Monitoring indicators

O.1. OBJETIVE: Consolidation and expansion of the user facility	
Indicator	Reference
Nr. of competitive access requests per Call	10 - 30
% of VEGA operative time offered in open (competitive) access	20 – 50%
Ratio of Nr. Sessions requested v. Nr. Sessions offered in competitive access	1,2 - 2
Ratio access (experimental campaigns) through competitive call v. non-competitive	1 - 2,5
Ratio access (sessions) through competitive call v. non-competitive	1 - 2,5
Nr. of participants in the research teams of experimental campaigns	3 - 10
Average number of institutions taking part per campaign	2 - 5
Average number of countries taking part per campaign	2 - 5
% of experimental campaigns with external financing	5 - 20%
Nr. of VEGA configurations offered	2 - 5
% of sessions completed related to the sessions granted	70 - 90%
% of users' satisfaction regarding the technological support	70 -90%
Annual number of operative hours of VEGA	600 h – 800 h
Annual number of shots in single shot mode	> 6000 shots
% of cancelled sessions due to laser malfunction	5 - 15%
Energy post-compressor (Joules) in VEGA-2	4 J - 6 J
Energy post-compressor (Joules) in VEGA-3	10 J - 30 J
Intensity at focus (Watt/Centimeter) in VEGA	1018 - 1021 W/Cm2
Reduction of beam inhomogeneity for VEGA-3	< 13%
Number of publications with acknowledges as a result of the access to CLPU facilities	1 - 3

O.2. OBJETIVE: Research and training to reinforce the user facility	
Indicator	Reference
Nr. of research projects in execution	2 - 8
Nr. of research projects with an in-house PI	2 - 4
% external funding through research projects vs. general budget	5 - 20%
Nr. of researchers in the UIC (Consolidated Research Unit)	10 - 15
% of members of the staff hired through projects	5 - 10%
Nr. of PhD working at CLPU	5 - 15
Nr. of training hours of scientific scope received by CLPU staff	150 - 300 h
Nr. of training hours on safety & risk prevention issues	100 h - 200 h
Nr. of staff in annual mobility programs	1 - 3
Total Nr. of publications from CLPU personnel	15 - 25
Ratio publications (papers, books, presentations, posters) Vs Nr. of CLPU researchers	1 - 3
Ratio publications (papers, books, presentations, posters) Vs Nr. of CLPU doctors	1 - 3
% of publications in journals positioned in the 1st and 2nd quartile in its thematic area	10 – 20%
% of Spanish researchers taking part in access proposals	5 - 10%
% of Spanish researchers taking part in experimental campaigns	3 – 5%
Nr. of proposals submitted by CLPU researchers to competitive access per call	1 - 2
Annual campaigns in other facilities	1 - 3
Nr. of internships offered to University students by CLPU	2 - 4
Nr. of educational programs in which CLPU takes part	1 - 5
Nr. of training hours of scientific scope provided by CLPU	50 - 200

O.3. OBJETIVE: Knowledge and technology transfer	
Indicator	Reference
Nr. of through development & innovation projects in execution	2 - 5
Number of through development & innovation projects with an in-house PI	1 - 3
% external funding through development & innovation projects vs. general budget	2 - 5%
Nr. of internships offered to vocational education students by CLPU	2 - 4
Nr. of technology transfer events in which CLPU takes part	3 - 5
Nr. of collaborations with the industrial sector	2 - 5
% of KT training hours in the annual training plan	2 - 5%
% of radiation protection incidents in relation to operation hours of VEGA in radioactive mode (or sessions of experimental campaigns)	0 - 2%
% of incidents with the Personal Safety System (PSS) in relation to sessions of experimental campaigns	0 - 5%
Nr. of operation hours of VEGA in radioactive mode	150 h – 300 h

O.4. OBJETIVE: Generation of public information and outreach	
Indicator	Reference
Nr. of outreach events	1 - 5
Nr. of participants in outreach events	100 - 300
% external funding through outreach projects vs. general budget	0 - 1 %
Annual increment of visits to the Center	1 - 2%
Annual increment of Nr. of web visitors	1 - 2%
Annual increment of Nr. of CLPU followers in social networks	1 - 2%
Nr. of activities per year in educational institutions	1 - 3
Annual increment of bits uploaded in the CLPU website	1 - 3

6 Risk Management Plan

There are several factors or threats, which, if materialized, could mean a major drawback for the accomplishment of the objectives set in this Strategic Plan. They have been summarized into seven main risks for the period 2021-2024 and we have analyzed the possible measures to minimize the severity of the consequences of such risk events if they occur.

Nº	Description	Failure motive	Level of impact	Likelihood	Monitoring	Mitigation
1	Funding of the Center	Lack of information on budgetary availability	High	Probable	▪ Budgetary control ▪ Negotiation between the Consortium partners ▪ Regional, national, European and international aids monitoring	▪ Management of budget surplus and external financing ▪ Renewal of the CLPU Consortium agreement
2	Impossibility of attracting and retaining scientific and technological staff	Restrictions on hiring in the public sector	High	Probable	▪ Evolution of the staff ▪ Percentage of the temporary workers	▪ Requests for authorization of temporary hiring ▪ Hiring through projects with external financing
		Restrictions on remuneration policies in the public sector	High	Probable	▪ Number of voluntary resignations ▪ Evolution of the average remunerations	▪ Prepare a Professional Career Plan ▪ Implementation of productivity incentives ▪ Specialized training ▪ Stays in other scientific and technological infrastructures
3	Difficulty for the expansion of the experimental area	Lack of space	High	Possible	▪ Percentage of beam time granted vs. requested ▪ Number of experimental campaigns executed	▪ Possibility of developing simultaneous campaigns ▪ Development of new experimental areas
		Lack of funding	High	Possible	▪ Budget availability for investments ▪ Percentage of execution of the investment plan	▪ Access to European funds (ERDF, NEXT Generation) ▪ Increase of financing for investments in the Consortium Agreement
4	Lack of in-house research	Lack of funding	High	Possible	▪ Projects developed ▪ Papers annually published by CLPU researchers ▪ Conferences given and posters submitted in congresses	▪ Joint research projects with external researchers ▪ Submission of research proposals for competitive access
		Brain drain	Medium	Possible	▪ Annual analysis of the evolution of staff	▪ Implementation of the EURAXESS initiative ▪ Establishment of an attractive training and career plan
5	Obsolescence of equipment	Lack of adaptation of the laser system to the avant-garde technology	Medium	Possible	▪ Regular analysis of the state of the art ▪ Surveillance of equipment operated in other cutting-edge laser infrastructures and their development plans	▪ Implementation of technological developments and upgrades ▪ In-house technical development ▪ Training of the technical division staff
6	Lack of a scientific laser community	Lack of Spanish participation in this type of European infrastructure	Medium	Possible	▪ Statistics of competitive access calls (institutions, countries, main researchers, topics) ▪ Spanish participation in competitive access calls ▪ Scientific publications as a result of the experimental campaigns	▪ Development of new secondary sources ▪ Organize and strengthen the national user community
		Repetition of competitive access requests	Medium	Possible		
		Same typology of experimental campaigns	Medium	Possible		
7	Competition from other facilities	Better access conditions in other infrastructures	Medium	Possible	▪ Map of operative laser installations ▪ Publication of calls for access to laser facilities	▪ Allocate project financing for accesses ▪ Provide a quality service
		Equipment more technologically advanced in other infrastructures	Medium	Possible		▪ Specialization in the configuration of the experimental area ▪ Development of in-house diagnoses and targets

Salamanca, March 10th, 2021.