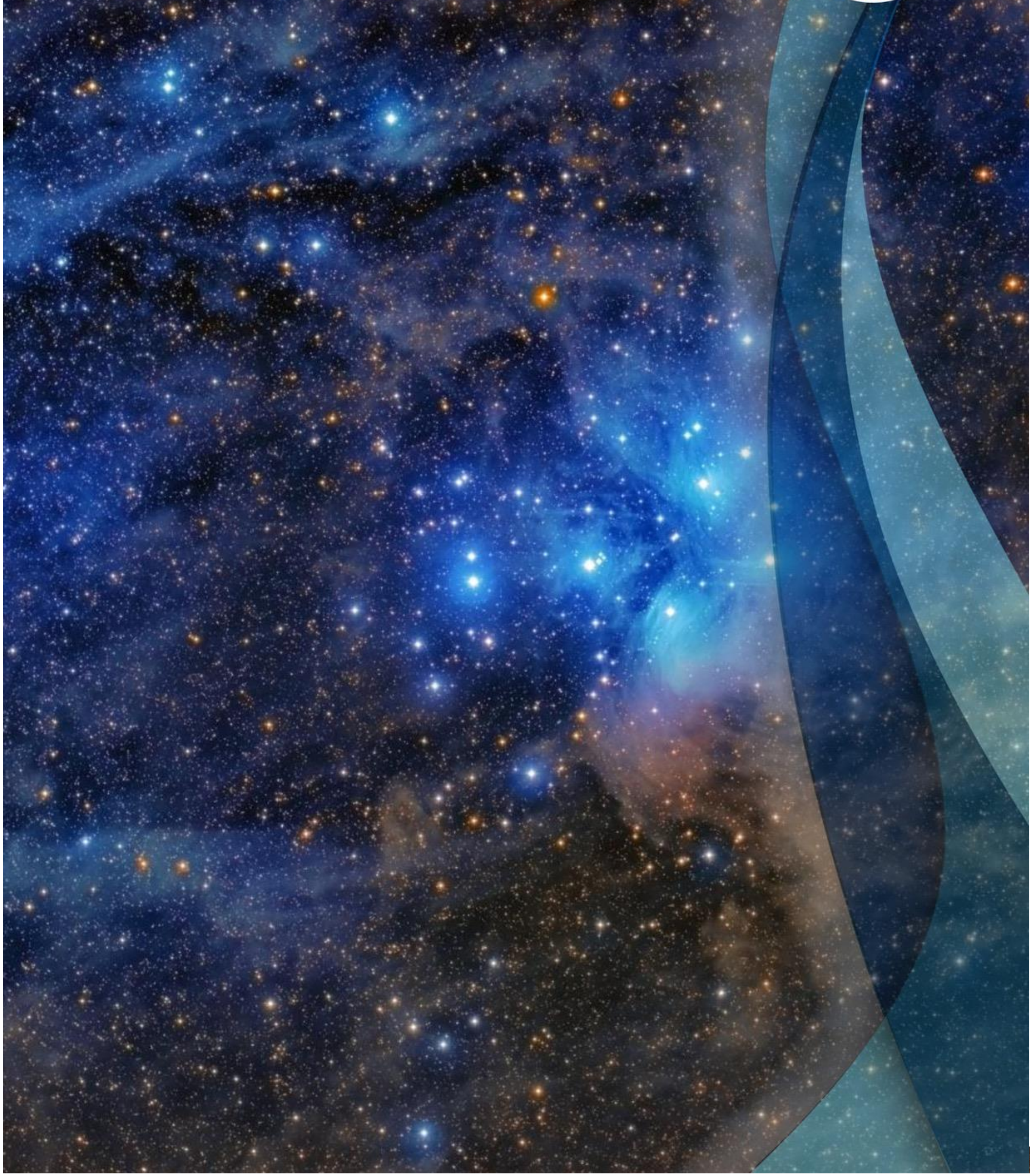
INSTITUTO DE ASTROFÍSICA DE CANARIAS

2026 - 2028 STRATEGIC PLAN



EXECUTIVE SUMMARY

The Instituto de Astrofísica de Canarias (IAC) is the largest astrophysics research center in Spain. Its vision for 2026–2028 focuses on achieving major advances in understanding the laws that govern the origin and evolution of diverse forms of matter and energy in the Universe, strengthening global leadership in Astrophysics and Space Sciences by driving groundbreaking scientific discoveries and technological innovations, strengthening the astronomical infrastructure of the Observatorios de Canarias (OCAN), training future generations, promoting the transfer of knowledge between the scientific community and society, and provide community service by handling the allocation of observing time for the astronomical community. The following **key goals** will support this vision over the next three years:

I. Research and Technological Excellence: IAC's Strategic Plan enables discovery by using major world-class facilities, advancing modelling and innovation in technologies for ground and space observatories, and generating new knowledge in key areas of astrophysics with an impact on fundamental physics.

The IAC scientific program addresses a wide range of problems from high- to low-energy phenomena, and from the Big Bang to black hole environments; the nature of dark matter; the genesis of cosmic and gamma-rays; the formation and evolution of galaxies, including the Milky Way and the Local Group; the life cycles of stars and interstellar matter; physics under strong gravity fields; the nature of solar magnetism and its influence on the Sun's heliosphere; and the detection and characterization of Earth-like planets in nearby stars. Over the next three years, the IAC will use and develop a large variety of cutting-edge ground- and space-based facilities and attract talented young/senior researchers to promote advances and breakthroughs in observational astronomy, physical modeling, computer simulations, and new technologies.

To accomplish excellence, the IAC will continue developing advanced telescopes (see Fig. 1) such as the Cherenkov Telescope Array Observatory (CTAO), the European Solar Telescope (EST), and the Small Exo-Life Finder (SELF). Similarly, we will develop and lead instrumentation for major ground-based observatories such as the Gran Telescopio Canarias (GTC) and the Extremely Large Telescopes (ELTs) and space observatories (PLATO, IACSAT, LITEBIRD, VIGIL). Over the next three years, technological activities will focus on high spectral resolution (HARPS3 for INT, CHORUS for GTC, ANDES for the European ELT), high spatial resolution (Adaptive Optics for GTC, EST, and SELF), optical and infrared 3D spectroscopy (e.g., HARMONI for the E-ELT), new opportunities in the radio spectrum (next-generation Event Horizon Telescope [ngEHT]), and novel intensity interferometric techniques combining the signals from multiple telescopes.

Figure 1. Key existing and future scientific and technological infrastructures linked to the IAC.

Over the next three years, the OCAN will continue to be a reference site for locating new telescopic facilities in the northern hemisphere, including the possibility of hosting the US-based Thirty Meter Telescope (TMT) International Observatory (TIO), with participation from Japan, Canada, and India.

Flagship projects for IACTEC, the new IAC technology initiative, are the Centre for Advanced Optical Systems (CSOA), the Microsatellite Payloads and the Optical Communications laboratories.

II. International Relevance: We aim to continue the promotion of a sustainable framework of international collaborations with top-class research centers worldwide. The OCAN encouraged international partnerships as a defining characteristic and strength of the IAC. Interaction with world-leading institutions and scientists stimulates top-quality research and has been a hallmark of IAC since its inception. The IAC continues to be present in the most relevant international consortia to address scientific challenges and develop advanced telescopes and astronomical instrumentation.

We contribute to the international relevance of Spanish astronomy by facilitating the access of the Spanish astronomical community to the time available at the facilities in our observatories, accessible via open, competitive calls by the Time Allocation Committee (TAC) managed by the IAC. Approximately, 5% of the observing time is also offered openly to the international community as part of the International Time Program (ITP). This is managed by the International Scientific Committee (CCI) of the Observatories, composed by the signatories of the Agreement on Cooperation in Astrophysics signed in La Palma on May 26th, 1979, including government representatives, and User Institutions presents at the OCAN. Additionally, access to IAC facilities via international collaborations enhances the competitiveness of Spanish science.

III. Advanced Training and Social Commitment: Based on a world-class, unique long-term partnership with the University of La Laguna (ULL), IAC develops a very intense training program for graduate students from all over the world, leading to about 50 new PhDs over the next three years. IAC hires dozens of new post-docs and engineers annually and organizes the well-known "Canary Islands Winter School of Astrophysics". Moreover, IAC fosters its Social Commitment by (1) promoting the dissemination of science and public awareness; (2) exploiting its technological capabilities in terms of socio-economic development; and (3) providing high-level training through vocational internships in communication, general administration, project management, and technical training, among others.

Positioning the IAC for Sustainable Growth

The IAC faces remarkable opportunities: research infrastructures that will be installed in its Observatories; instrumentation projects for current and future telescopes, etc. Taking advantage of these opportunities requires strong and timely political and economic support, increased flexibility in public procedures, an improved capacity to recruit worldwide specialists, and a higher number of scientific high-impact projects - among other key aspects. Furthermore, IAC aims to develop its active technology transfer program in close collaboration with industry to deliver new instrumentation, ground-based telescopes and payloads for small satellites enabling a broader socio-economic impact.

A budgetary plan has been proposed to secure stable internal funding of at least €21 million per year from Public Administration sources, with a gradual increase projected over the following two years. External funding, obtained through competitive calls, currently amounts to approximately €15 million per year for the IAC's Research and Technology Programs. The current plan aims to maintain this level of external funding throughout the 2026-2028 period.

In 2024, IAC's personnel, including affiliated scientists, reaches 552 individuals (see Fig. 2). Approximately 275 positions are dedicated to research activities (including permanent researchers, postdoctoral fellows, and PhD students), and 175 to senior engineering positions (both permanent and temporary). The remaining staff provide technical and administrative support.

Figure 2. Members of the IAC community.

It has become clear that in past years, the growth of IAC personnel has been concentrated in research and engineering roles, while support positions have remained in similar numbers, leading to a degradation of the service provided. Adopting new approaches, personnel policies, and hiring patterns is critical to addressing this imbalance and is an integral part of this Strategic Plan.

The IAC will incorporate new permanent research positions as the existing Ramon y Cajal cadre requires. The number of new permanent engineering contracts, to support the development of new instrumentation (GTC, ELTs, and others), large telescopes (CTA, EST, etc.), and advanced technology programs, will depend on the success of funding proposals corresponding to these initiatives. IAC plans to make a dedicated effort to increase the number of permanent administrative and technical support positions as demanded by the number of research projects and technology developments.

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1. INSTITUTO DE ASTROFÍSICA DE CANARIAS

1.1. Mission, vision and objectives

The Instituto de Astrofísica de Canarias (IAC) is a public research Consortium formed by the General Administration of the Spanish State (represented by the Ministry of Science, Innovation, and Universities), the Canary Islands Regional Government, the University of La Laguna, and the Spanish National Research Council (CSIC)

Vision

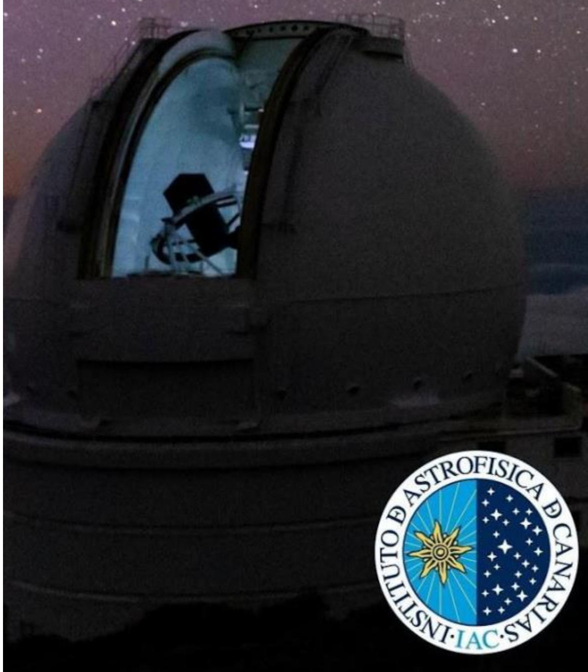
To enable discovery and breakthroughs in astrophysical research and technologies by fully leveraging the exceptional skies of the Canary Islands.

Mission

IAC brings together a highly skilled workforce that leads and operates world-class astronomical observatories, performs outstanding research, pursues technological innovation, trains future generations, and transmits the benefits of science to society.

Core Values

Our core values guide how we fulfill IAC´s mission. They define the culture we cultivate and the standards to which we hold ourselves accountable:



- **Scientific Excellence:** We are committed to the highest standards of research and innovation in astrophysics, driving knowledge forward.
- **Professional Integrity:** We uphold honesty, accountability, and transparency in all aspects of our scientific and institutional work.
- **Service to the Spanish Astronomical Community:** We continue sharing access to world-class facilities with the broader Spanish astronomical community.
- **Service to Society:** We actively engage with the public, educators, and policymakers to share scientific knowledge and inspire curiosity about the Universe.
- **Training and mentoring of Younger Generations:** To equip them with the skills, knowledge, and inspiration to become the next leaders in scientific research.
- **Respect:** We cultivate an inclusive and equitable environment where every voice is heard and valued, recognizing diversity as a strength of our community.
- **Safety and Responsibility:** We place the safety, health, and well-being of all personnel, collaborators, and visitors at the core of our operations.
- **Stewardship of the Sky and Environment:** We are responsible custodians of the dark skies, natural ecosystems, and long-term environmental sustainability of our astronomical sites

1.2. Overview

The IAC is a public research Consortium formed by the General Administration of the Spanish State (represented by the Ministry of Science, Innovation and Universities, MICIU), the Canary Islands Regional Government, the University of La Laguna (ULL) and the Spanish National Research Council (CSIC). The IAC manages two large Observatories on the islands of La Palma (Observatorio del Roque de los Muchachos, ORM) and Tenerife (Observatorio del Teide, OT), hosting 47 facilities from 114 institutions involving 25 countries being on par with the best international astronomical observatories of the world and alongside with those of the European Southern Observatory (ESO), they are the only ones that cover most of the electromagnetic spectrum, from radio waves to very high-energy gamma rays. Through the Time Allocation Committees (TAC), IAC makes available a wealth of observing time to the benefit of the Spanish astronomical community.

The IAC is governed by a Council (Consejo Rector) that is Chaired by the Minister of Science, Innovation and Universities and made up by representatives of the national and regional bodies which constitute the IAC. The Director of the IAC reports to the Board, and is assisted by a Steering Committee formed by the Deputy Director, the IAC's General Administrator, the Heads of the Research, Graduate Studies and Technology Divisions, the Head of the UC3 and the Responsible of the Observatories. The following organizational chart shows the governance structure at the IAC (see Fig. 3)

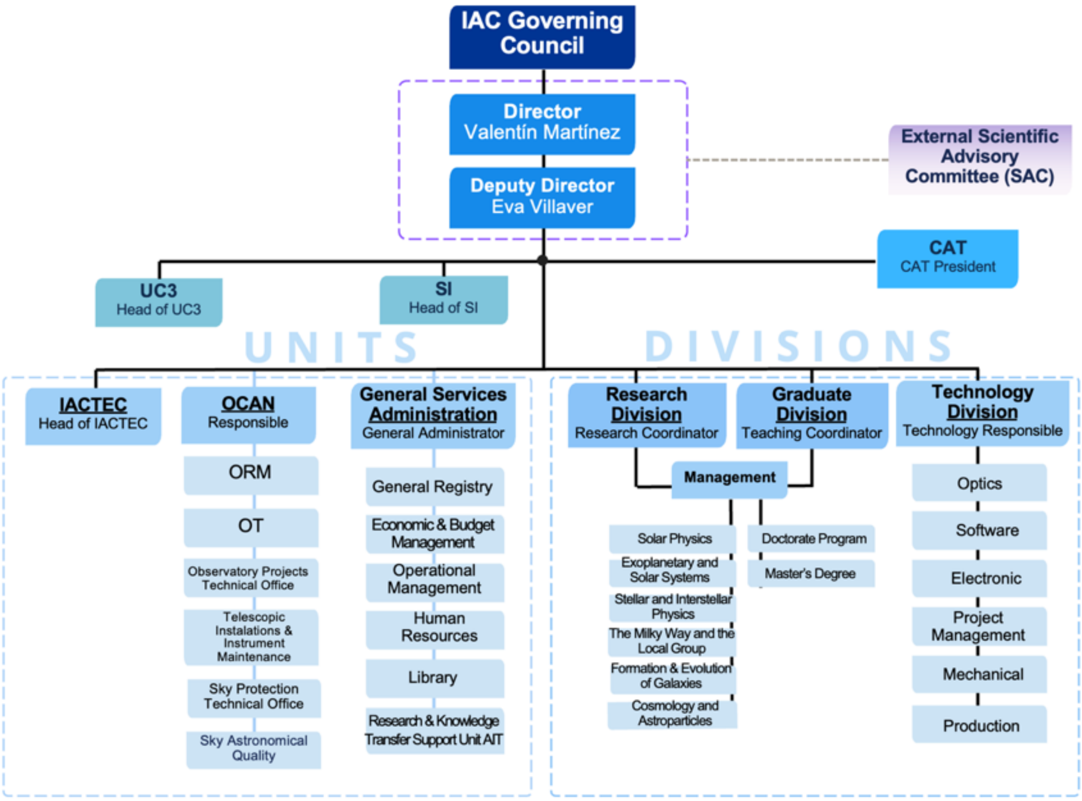


Figure 3: IAC's Governance structure (Organizational Chart)

The IAC hosts, operates, and participates in several Special Facilities for Science and Technology (ICTS, Instalaciones Científicas y Tecnológicas Singulares):

1. The Observatorios de Canarias (OCAN) on Tenerife and La Palma islands, where 47 telescopes and telescopic installations run by institutions from a large number of countries.

2. The 10.4 m GTC in La Palma, an ICTS itself, is the largest optical and IR telescope in the world, developed under the auspices of IAC. Under the Law of Science, the GTC is a Spanish Scientific Infrastructure to be transferred to the IAC.
3. A node of the National Supercomputer Centre, the third ICTS, is hosted at the IAC.

There is a well-consolidated Research Division including IAC Postgraduate students that do their research within the Research Division but are formally part of the IACs Graduate Studies Division and the Astronomy Department of the University of La Laguna. Researchers are organized into six principal scientific areas: Solar Physics; Exoplanets and Solar System; Physics of the Stars and Interstellar Medium; Milky Way and the Local Group of Galaxies; Formation and Evolution of Galaxies; and High Energy Astrophysics and Cosmology. IAC researchers are routinely awarded access to major astronomical facilities in the world (GTC, VLT, HST, JWST, ALMA, etc.) and obtain competitive funding to carry out research and develop state of the art instrumentation for ground and space-based telescopes. A significant fraction (>40%) of the IAC budget is obtained from competitive funding sources.

The IAC is well integrated in the international community, participating in the majority of the main astrophysical projects and consortia, as well as in the corresponding forums on Research and Technology Development (RTD) policies, in close relationship with national and international funding agencies and public bodies. The current scientific production, of more than one paper per day published in international peer reviewed journals with high impact factor, matches the production of other world-leading institutes of similar sizes, and often with higher funding level.

Within the Canary Islands, the IAC benefits from broad-based public and political support, reflecting its recognized scientific and societal value. In fact, astrophysics has been one of the main top priorities identified by the Canary Islands Research and Innovation Strategy for Smart Specialization (RIS3).

1.2.1. Human Resources

The number of persons directly employed by the IAC (see Fig. 4) for research activities, technical and administrative support was 485 in 2024. Including affiliated staff, the total number of IAC members was 552 in 2024, as presented in the following diagram.

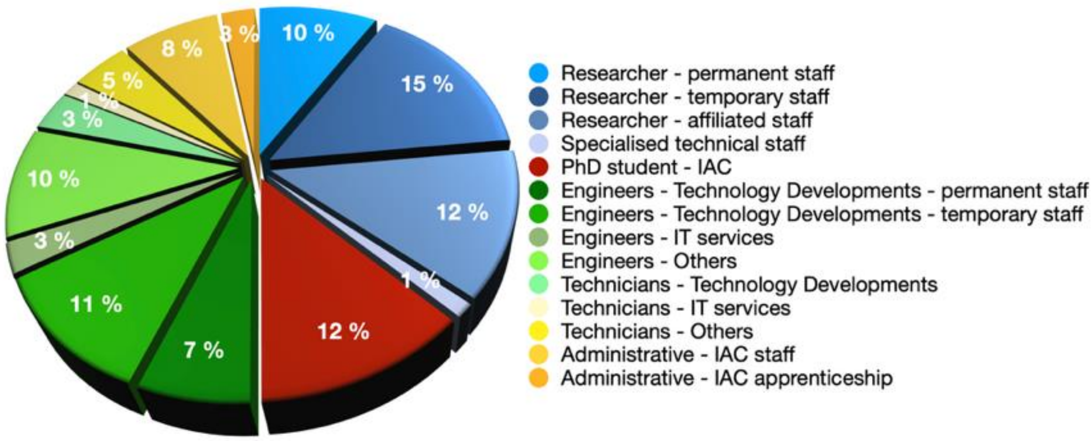


Figure 4: Affiliated staff included staff from the Canary Government (n=1), the University of La Laguna (n=43), the Isaac Newton Group (n=5), the Telescopio Nazionale Galileo (n=4), the Gran Telescopio Canarias (n=9), the MAGIC collaboration (n=1), the European Southern Observatory (n=1), the University of Tokyo (n=2), the Spanish National Research Council (CSIC, n=3), RIKEN (n=1), the University of Sheffield (n=1), the Osservatorio di Roma (n=1), and the National Autonomous University of Mexico (UNAM, n=1).

Evolution of IAC's Human Resources 2021 – 2024

Group	Profile		2021			2022			2023			2024		
			M	F	T	M	F	T	M	F	T	M	F	T
Researchers	Researcher - permanent staff		35	10	**45**	36	10	**46**	38	12	**50**	40	12	**52**
	Researcher – Art. 23 bis LC contract		0	0	**0**	10	6	**16**	23	9	**32**	30	16	**46**
	Researcher - temporary staff		56	24	**80**	44	25	**69**	23	14	**37**	12	6	**18**
	Researcher - ULL &CSIC & Gob. Canarias staff		48	5	**53**	49	7	**56**	49	11	**60**	54	13	**67**
	Specialised Technical staff		1	1	**2**	4	2	**6**	4	2	**6**	4	2	**6**
PhD	PhD students - IAC		28	24	**52**	28	26	**54**	32	19	**51**	31	25	**56**
Technical staff (including Project Managers)	Engineers - Technology Developments - permanent staff	Engineers	28	15	**43**	26	15	**41**	25	13	**38**	28	13	**41**
	Engineers – Technology Developments - Art. 23 bis LC contract		0	0	**0**	0	1	**1**	10	6	**16**	17	7	**24**
	Engineers - Technology Developments - temporary contracts		52	18	**70**	58	16	**74**	35	12	**47**	26	11	**37**
	Engineers - IT services		10	3	**13**	10	2	**12**	9	3	**12**	10	2	**12**
	Engineers - others		8	10	**18**	7	9	**16**	8	9	**17**	8	9	**17**
	Engineers – others - Art. 23 bis LC contract		0	0	**0**	0	0	**0**	2	4	**6**	3	5	**8**
	Engineers – others - temporary contracts		4	4	**8**	3	5	**8**	0	3	**3**	0	1	**1**
	Technicians - Technology Developments	Technicians	11	0	**11**	11	0	**11**	11	0	**11**	11	0	**11**
	Technicians – Technology Developments- temporary contracts		1	0	**1**	1	0	**1**	10	0	**10**	11	0	**11**
	Technicians - IT services		7	2	**9**	7	2	**9**	7	2	**9**	7	2	**9**
	Technicians - others		21	0	**21**	22	0	**22**	20	0	**20**	21	0	**21**
	Technicians – others - Art. 23 bis LC contract		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
	Technicians – others - temporary contracts		8	3	**11**	5	2	**7**	2	3	**5**	3	0	**3**
Administration	Administrative - IAC staff		12	27	**39**	12	26	**38**	10	26	**36**	10	25	**35**
	Administrative– Art. 23 bis LC contract		0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
	Administrative– temporary contracts		2	3	**5**	1	7	**8**	1	7	**8**	2	3	**5**
	Administrative - IAC apprenticeship contracts		2	7	**9**	2	7	**9**	3	7	**10**	2	3	**5**
			M	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**	**M**	**F**	**T**
	TOTAL		**334**	**156**	**490**	**336**	**168**	**504**	**322**	**162**	**484**	**330**	**155**	**485 (*)**

(*) IAC-affiliated personnel are not included in this table; they add another 67 people.

Table 1: Distribution of IAC's Human Resources

The percentage of temporary contracts vs. permanent positions at the IAC has been significantly reduced due to the introduction of non-temporary contracts for scientific and technical activities linked to research lines financed entirely by external funds.

IAC staff: Temporary vs. permanent positions. 2021 - 2025

Type of recruitment	2021	2022	2023	2024	2025
% temporary pos.	*54,92%*	*51,79%*	*40,84%*	*33,25%*	*28,74%*

The current staff composition at the IAC shows a ratio of approximately 1:1,07:0,24 (researchers:technical:management/administrative). This ratio has remained broadly stable over the period 2020 – 2024 for management staff and has slightly improved for technical staff:

Ratio vs. researchers	2021	2022	2023	2024	2025
Technical staff	1,14	1,05	1,05	1,04	1,07
Management and administration staff	0,29	0,28	0,29	0,25	0,24

However, given the IAC's dual mission, combining frontline scientific research, advanced technological development, and the operation of major observational infrastructures, maintaining adequate levels of technical and management personnel is critical to ensure long-term efficiency and sustainability.

The experience of major European research organizations (e.g. ESO, CERN, ESA) indicates that institutions operating large scientific infrastructures typically sustain a proportionally larger technical and engineering component and a robust, professional management structure to support complex project portfolios and compliance obligations. Therefore, it is considered necessary reinforcing both the technical support and administrative capacities of the IAC in the coming years. Such reinforcement will be focused on operational resilience and institutional efficiency. Specific goals will be proposed in the Strategic Plan to gradually strengthen these two components, ensuring balanced growth aligned with the IAC's scientific and technological objectives.

Concerning gender issues, distribution by age, and distribution of IAC staff (directly under IAC contracts) per category, the situation as of 31st December 2024 is the following (not including affiliated staff):

Gender (%)		
Category	**Men (%)**	**Female (%)**
Researchers	74,87	25,13
PhD students	55,36	44,64
Technical staff	72,82	27,18
Administration	34,04	65,96
Total	**67,84**	**32,16**

This scenario demonstrates the need for proactive policies to achieve a more satisfactory gender balance for technical staff and researchers.

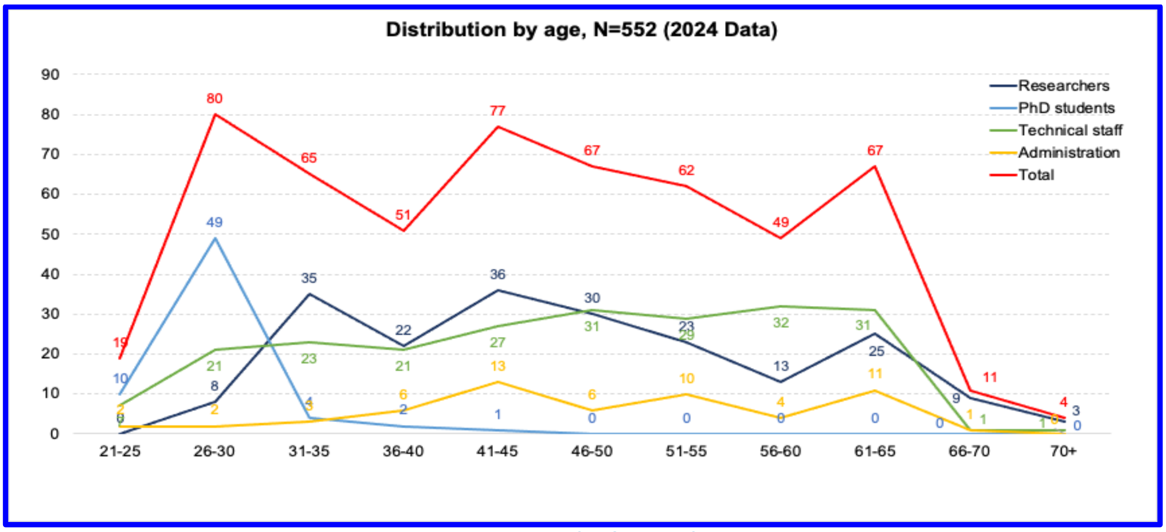


Figure 5: Distribution of IAC's workforce by age

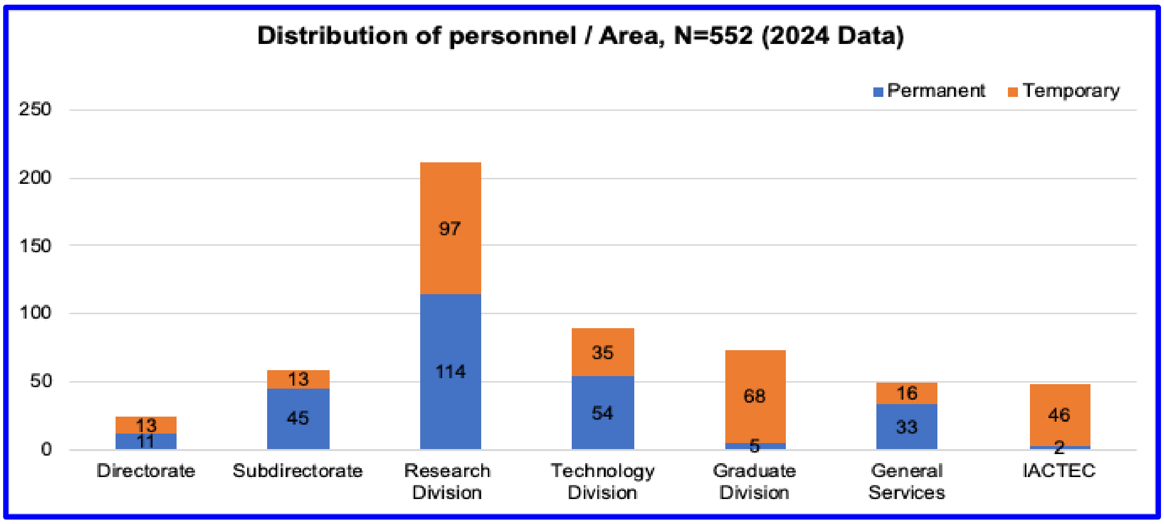


Figure 6: Distribution of IAC's workforce by Area

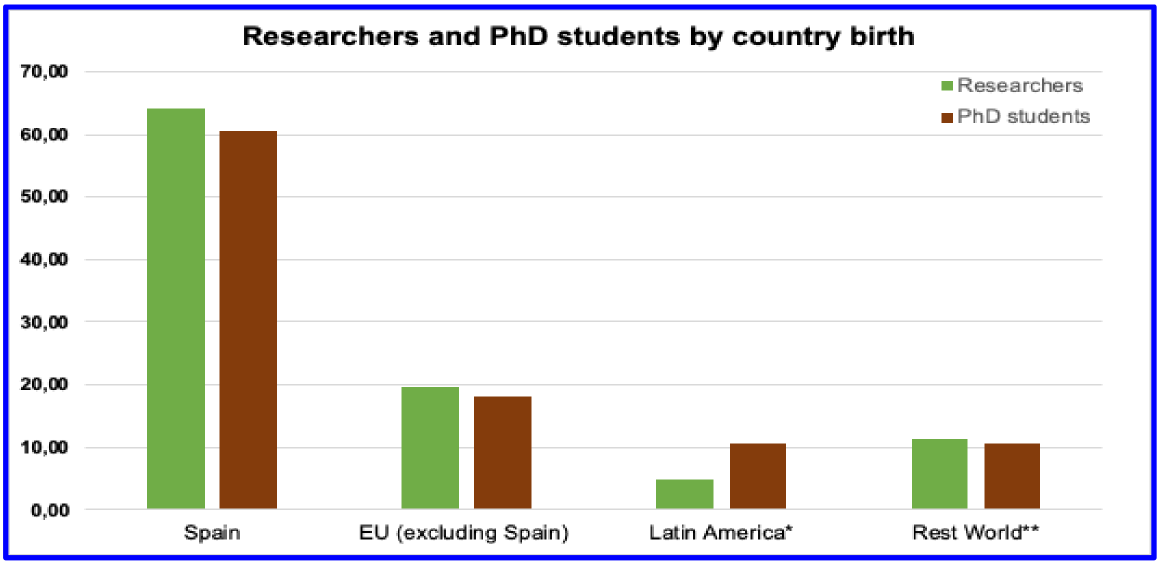


Figure 7: Distribution of IAC's researchers and PhD students

*Researchers: Brazil (n=2), Colombia (n=2), Mexico (n=2), Chile (n=2), Argentina (n=1), and Cuba (n=1); **PhD students**: Brazil (n=2), Colombia (n=1), Ecuador (n=1), Mexico (n=1), Bolivia (n=1), and Argentina (n=1)

Researchers: India (n=7), UK (n=5), Japan (n=2), Ukraine (n=2), USA (n=2), China (n=1), Iran (n=1), Morocco (n=1), Serbia and Montenegro (n=1), and Russia (n=1); **PhD students**: Iran (n=2), Norway (N=1), USA (n=1), Vietnam (n=1), Ukraine (n=1), and China (n=1)

1.2.2. Research Division

IAC Researchers represent approximately 25-30% of the Spanish astronomical community. At present, there are 79 permanent staff, 72 research fellows and postdocs and 61 Postgraduate (PhD) students working on six major scientific areas: Solar Physics; Exoplanets and Solar System; Physics of the Stars and Interstellar Medium; Milky Way and the Local Group, Formation and Evolution of Galaxies; and Astroparticle Physics and Cosmology.

This Division is coordinated by the Head of Research (Coordinador de Investigación), an IAC staff member appointed for a period of 2 to 4 years who forms part of the IAC's directorate (Steering Committee or Comité de Dirección) and who is selected by direct voting of the researchers from the list of candidates interested in the position. Lately, only one or two candidates have run for the job.

The Research program is implemented through a **coherent set of activities** with the common goal of excellence at the international level, primarily using observational techniques, exploiting not just the facilities at the IAC observatories but also, and increasingly so, those available in the context of the international collaborations where Spain participates, in particular with the European Southern Observatory (ESO) and the European Space Agency (ESA). In this regard, IAC researchers are routinely awarded access to major astronomical ground-based (VLT, Keck, GTC, CTA, ALMA, DESI) and space (HST, JWST, Euclid, Cheops, Solar Orbiter) facilities and obtain competitive funding to carry out research and develop state of the art instrumentation for ground and space based telescopes.

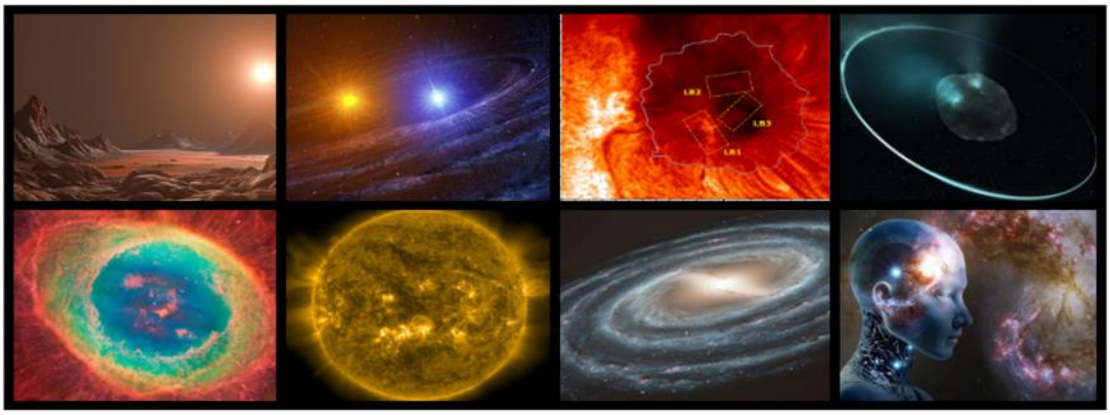


Figure 8. Illustrative scientific themes within the IAC's research portfolio.

Recent scientific Breakthroughs

A variety of scientific breakthroughs have been achieved by IAC researchers during the last few years. We highlight: (a) mapping of the sun's magnetic field from the photosphere to the corona, understanding the presence of stationary waves in sunspots, and unravelling coronal and chromospheric bright points, (b) characterization of Earth-sized planets and multiplanetary systems, and detection of sub-Earths orbiting the closest stars to our Sun, (c) detection and characterization of icy trans-neptunian objects, and discovery of interstellar objects in our solar system, (d) origin of blue supergiant stars and first empirical identification of binary interaction products in large massive star populations, (e) temperature fluctuations shaping chemical abundances of HII regions, (f) revealing the mystery of fullerenes in space, (g) detecting and charactering winds around stellar black holes and neutron stars in X-ray binary systems (h) binary origin of near-pristine stars of the Galactic halo, (i) supermassive black holes modulating star formation in satellite galaxies, and galaxy growths through observation of supermassive black holes, (j) detailed reconstruction of the Milky Way star formation history, (k) baryonic properties and merging history of nearby galaxies, (l) dark matter content around ultra-diffuse galaxies and size measurement of dark matter halos, (m) new clues on gamma ray bursts and fast radio bursts, and detection of the most distant quasar at extremely high energies, (n) CMB polarization experiments searching for gravitational wave inflationary signals.

Solar Physics

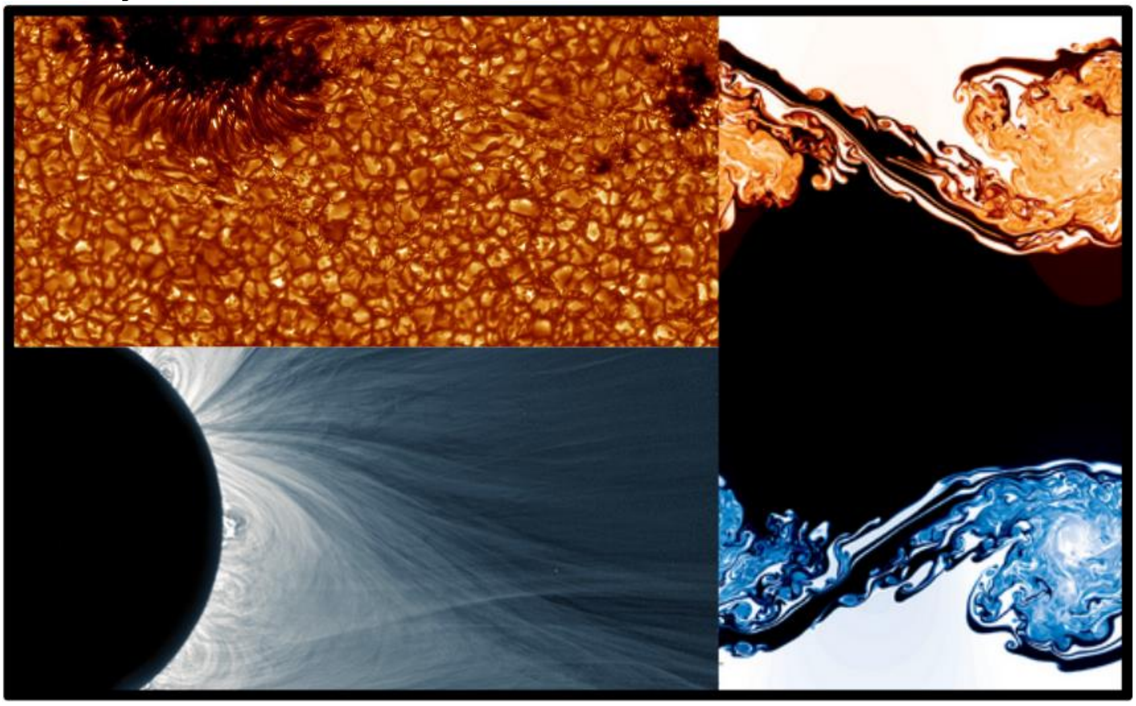


Figure 9. Images related to research outcomes in the Solar Physics line.

The Solar Physics group is a leading team in the study of the Sun's magnetic and dynamic structure. They contribute to major international projects such as the EST, the ESA's Solar Orbiter, the SUNRISE 1m aperture arctic balloon, and the Chromospheric Lyman-Alpha Spectro-Polarimeter (CLASP) mission. The last two missions include participation by European institutions, NASA, the Japan Aerospace Exploration Agency (JAXA), and the IAC. They are regular users of the German GREGOR telescope at the OT and the SST at the ORM. The Solar group also coordinates the SOLARNET network.

Their expertise includes developing polarimetric instruments, such as the Tenerife Infrared Polarimeter (TIP), the Imaging Magnetograph eXperiment (IMaX) for the Sunrise observatory, the GREGOR Infrared Spectrograph (GRIS), EST, and Solar Orbiter, alongside with diagnostic techniques for magnetized plasmas and three-dimensional (3D) radiation magnetohydrodynamic (MHD) modelling. In the last years, the group developed realistic one-dimensional (1D) to 3D models using high-performance computing, forward-modelled polarization to bridge theory and observations, created diagnostic and Bayesian inversion methods, and supported various space missions, notably modelling ultraviolet (UV) spectropolarimetry for CLASP2 to study upper chromospheric magnetism. Their research also forges links between solar and stellar physics. The group has a consolidated international leadership in instrumentation, numerical modelling, and spectropolarimetric plasma diagnostics.

Exoplanetary Systems and Solar System

Figure 10. Images related to research outcomes in the Exoplanetary Systems and Solar System line.

The Exoplanetary systems and Solar System group is focused on studying the diversity of exoplanets, aiming to detect Earth-like planets orbiting nearby stars within the habitable zones, and to study physical and compositional properties of small bodies of the Solar System. They have been using ultra-stable spectrographs (ESPRESSO, CARMENES, HARPS-S/-N, NIRPS), and high precision photometric ground-based facilities (LCOGT, MuSCAT2, SPECULOOS, HIPERCAM) and satellites (CHEOPS, TESS) to characterize planetary systems. Primary goals are the discovery of Earth-like planets in the habitable zones by means of radial velocity searches down to 10 cm/s, and the discovery (using ATLAS-Teide, NEOMIR) and characterization (using JWST, Hera, MMX) of small bodies of the Solar System.

Atmospheric studies using ESPRESSO, CARMENES, HARPS-N, and the James Webb Space Telescope (JWST) have detected key species across hot Jupiters and super-Earths, supporting preparation for the PLATO mission, and in preparation to detect biosignatures using ANDES at the Extremely Large Telescope (ELT).

The group is developing the GTCAO-LGS adaptive optics system for the GTC, enabling direct imaging and spectroscopic analysis of young giant planets. They also examine the atmospheres of planet-hosting stars, including metal-rich white dwarfs, providing insights into accreted planetary and asteroid material. Solar System research has focused on Near Earth Asteroids (NEAs) relevant to planetary defense (Hera, DART) and exploration missions (OSIRIS-REx, Hayabusa2).

The group has been involved in building key instrumentation such as ESPRESSO (co-led instrument for the VLT), CARMENES and NIRPS, and is currently involved in the developments of HARPS3 for the 2.5m-INT and ANDES for the 39m-ELT, and is contributing to CHORUS for the 10.4m-GTC, and to PLATO and ARIEL satellites.

Stellar and Interstellar Physics

Figure 11. Images related to research outcomes in the Stellar and Interstellar Physics line.

The Stellar and Interstellar Physics research group is performing pioneering studies of all types of stars, covering the whole range of masses and evolutionary stages, and their interaction with interstellar and circumstellar material along their lifetimes. They have made significant progress in constraining the evolution of compact binaries, formation of black holes and neutron stars, and accretion and outflow processes in interacting systems.

It has produced the first comprehensive empirical characterization of the physical properties of Galactic massive stars across their main sequence phase of evolution using large spectroscopic surveys (e.g. IACOB) and data from space missions like TESS and Gaia.

Extremely metal-poor stars have been identified through mining extensive photometric and spectroscopic datasets (e.g. SDSS, LAMOST, DESI). The group has also contributed to understanding nanocarbon formation and survival in evolved stars and molecular clouds via interdisciplinary approaches combining astronomy, astrochemistry, materials science, and quantum chemistry.

Researchers from the group have clarified connections between integrated spectra of HII regions and their resolved structures, as well as the evolution of planetary nebulae following common-envelope phases, using photometric and spectroscopic time series and two-dimensional spectroscopy.

Leveraging the data analysis tools and stellar modelling grid developed by the group, asteroseismic investigations enabled a more precise characterization of solar-like stars (including binaries and planet hosts), using Kepler, K2, TESS, and SONG. In parallel, the group has pioneered studies of stellar rotation and magnetic activity evolution, providing new insights into angular momentum transport and the physical mechanisms driving stellar magnetism.

Additionally, the group has searched for and characterized ultracool dwarfs and substellar objects using transit, radial velocity, and direct imaging methods with Euclid and Gaia data, refining formation and evolution models.

The Milky Way and the Local Group

Figure 12. Images related to research outcomes in The Milky Way and the Local Group line.

Research into the Milky Way and Local Group galaxies is focused on understanding their morphology, structure, chemistry, kinematics, dynamics, star formation history and dark matter content using large datasets and cosmological hydrodynamical simulations. Time-resolved star formation histories for the Galactic thin and thick disks, bulge, halo, the Magellanic Clouds, and other Local Group galaxies have been derived using Gaia, ground-based imaging, and HST data. Stellar populations near the Galactic centre have been probed with EMIR and MIRADAS spectroscopy.

Kinematic and chemical properties of dwarf galaxies, and their dark matter halos, have been constrained using Gaia and spectroscopic surveys. The presence of multiple stellar populations in globular clusters has been studied through color-magnitude diagrams and integrated spectroscopy across Milky Way satellites and external galaxies. Local Group galaxies serve as bridges linking resolved stellar population studies to the early Universe and the epoch of reionization, while preparatory work continues for future resolved population studies with HARMONI at ELT.

This research line leverages cutting-edge datasets like Gaia, SDSS, DESI, Euclid, Rubin and Roman Observatories, WEAVE, and 4MOST. The group has also developed and validated semi-empirical spectral libraries and stellar population synthesis models using observations of local stars, HII regions, planetary nebulae, and nearby systems.

Formation and Evolution of Galaxies

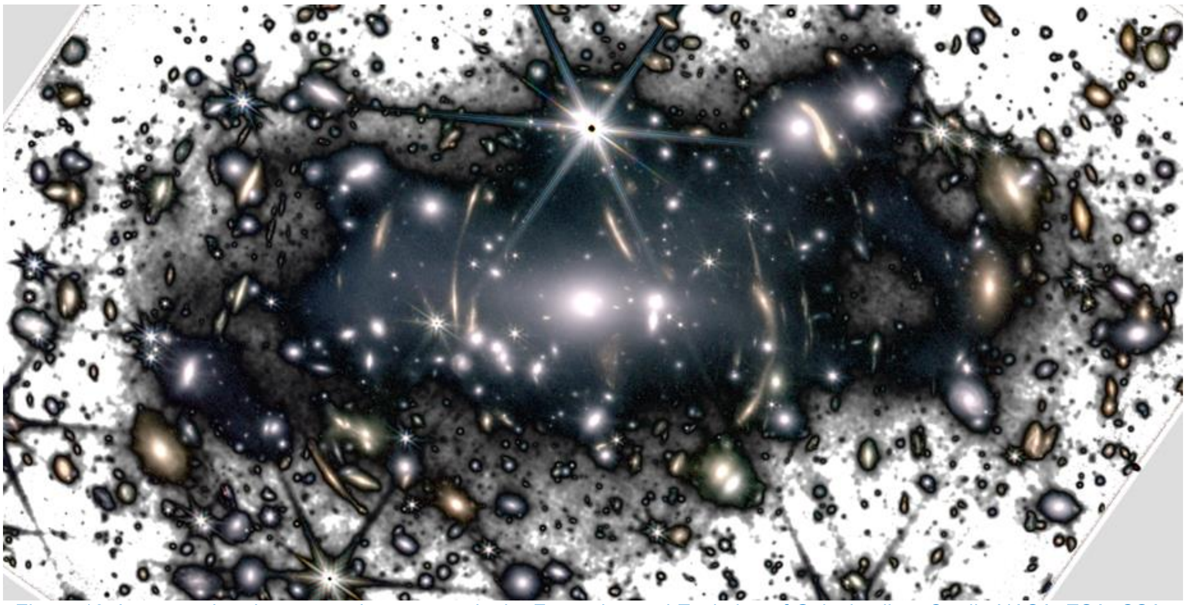


Figure 13. Images related to research outcomes in the Formation and Evolution of Galaxies line. Credit: NASA, ESA, CSA, STScI and M. Montes

The Formation and Evolution of Galaxies group investigates the fundamental physical processes driving the assembly and transformation of galaxies across cosmic history. Its research encompasses gas accretion, feedback from supernovae and active galactic nuclei, star formation, chemical enrichment, and mergers—key mechanisms that regulate the buildup of stellar mass and the structural evolution of galaxies. The group aims to establish a coherent framework linking galaxy growth, environment, and the influence of supermassive black holes.

A major focus lies in characterizing the interstellar and circumgalactic medium of galaxies across a wide range of redshifts, to understand how gas inflows and outflows sustain or quench star formation. This work leverages world-class observing facilities such as the GTC, ALMA, and JWST, in combination with complementary space- and ground-based observatories spanning the ultraviolet to the radio. The group also applies in-house developed techniques for detecting ultra-faint sources, enabling novel studies of dark matter distributions via gravitational lensing and investigations of the formation and evolution of ultra-diffuse and low-surface-brightness galaxies.

In parallel, the group develops advanced modelling and analysis tools, including stellar population synthesis codes, spectral fitting techniques, and data-driven approaches to interpret large observational datasets. It plays an active role in the design and exploitation of next-generation extragalactic surveys, such as LSST, Euclid, WEAVE and 4MOST, developing robust pipelines for data calibration, galaxy classification, and parameter inference. Machine learning and statistical inference methods are increasingly integrated into these efforts, enhancing the group's capacity to extract physical insight from complex, large-scale data.

Strategically, this line of research contributes directly to several institutional priorities, including the development of next-generation analysis tools and theoretical models, participation in major international collaborations, and the scientific exploitation of flagship observatories hosted at the OCAN. Through these initiatives, the group aims to advance a comprehensive understanding of how galaxies form, evolve, and interact within the cosmic web.

Cosmology and Astroparticles

The Cosmology and Astroparticles group focuses on studies of high-energy phenomena using gamma-ray signatures, on investigations of the cosmic microwave background and on fundamental physics explored through the combination of astrophysical and cosmological information.

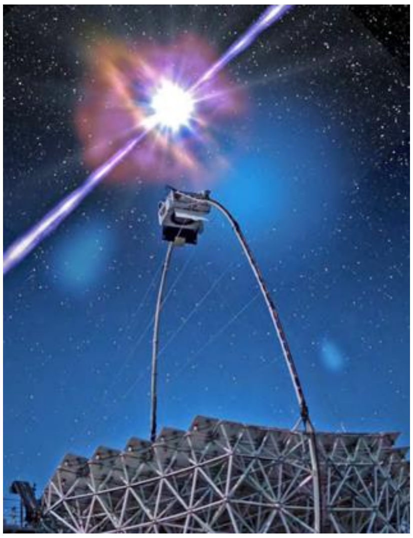


Figure 14. Visual representation of high-energy gamma-ray detection.

The group has advanced studies of cosmic-ray and gamma-ray sources using data from the Alpha Magnetic Spectrometer (AMS) aboard the International Space Station (ISS) and the MAGIC telescopes. These investigations cover cosmic-ray origin, propagation, and chemical composition in extreme environments like supernova remnants and pulsars. Indirect dark matter searches and studies of high-redshift cosmic-ray nuclei are ongoing, alongside preparatory work for TeV gamma-ray astronomy with the Cherenkov Telescope Array Observatory (CTAO), including commissioning and first results of Large Size Telescopes (LST) at Roque de los Muchachos Observatory. The group is also participating in the ASTRI suite at Teide Observatory and contributes to multimessenger astronomy through rapid follow-up of astrophysical transients. On the theory side, it explores fundamental physics through the combined analysis of astrophysical observations, laboratory data and cosmological measurements, in particular: (1) high-energy astrophysics, (2) radio-wave probes and (3) galactic and dynamical investigations of dark matter and intermediate-mass black hole properties. The work here focuses on addressing open questions in the standard models of particle physics and cosmology, in particular the nature of the dark universe and the matter-antimatter asymmetry.

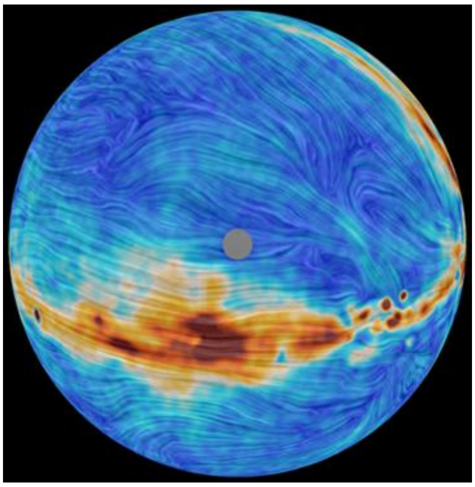


Figure 15. Full-sky map of Galactic foregrounds relevant to CMB research.

The group has set tight constraints on the main parameters of the ΛCDM model and its extensions and has performed studies of the early Universe and primordial gravitational waves through cosmic microwave background (CMB) anisotropy studies using QUIJOTE, GroundBIRD, KISS and Planck. Preparatory work has been carried out to further improve these constraints via more sensitive measurements of the CMB polarization anisotropies and of the CMB spectrum using new ground-based instrumentation at the Teide Observatory (TMS, LSPE-Strip, NGI), Atacama (ELFS-SA and Simons Observatory) and future space missions (LiteBIRD and FOSSIL).

In parallel, extensive contributions have been made toward understanding dark energy, neutrino mass, and fundamental constants using spectroscopic surveys (eBOSS, DESI, WEAVE, EUCLID, eROSITA, J-PAS). Refinements to baryon acoustic oscillation (BAO) and redshift-space distortion measurements have been achieved through BAO reconstruction and cosmic void analysis. The cosmic web near galaxy clusters has been mapped using J-PAS and eROSITA. Further constraints on the ΛCDM model have been derived via the Integrated Sachs–Wolfe effect, and on ultra-light bosonic particles such as axions and dark photons through stellar evolution and CMB polarization data.

Main research performance indicators

The last 10 years of research activity has generated a positive trend in production of research articles, strongly correlated with the articles published in Q1 journals (see figure below).

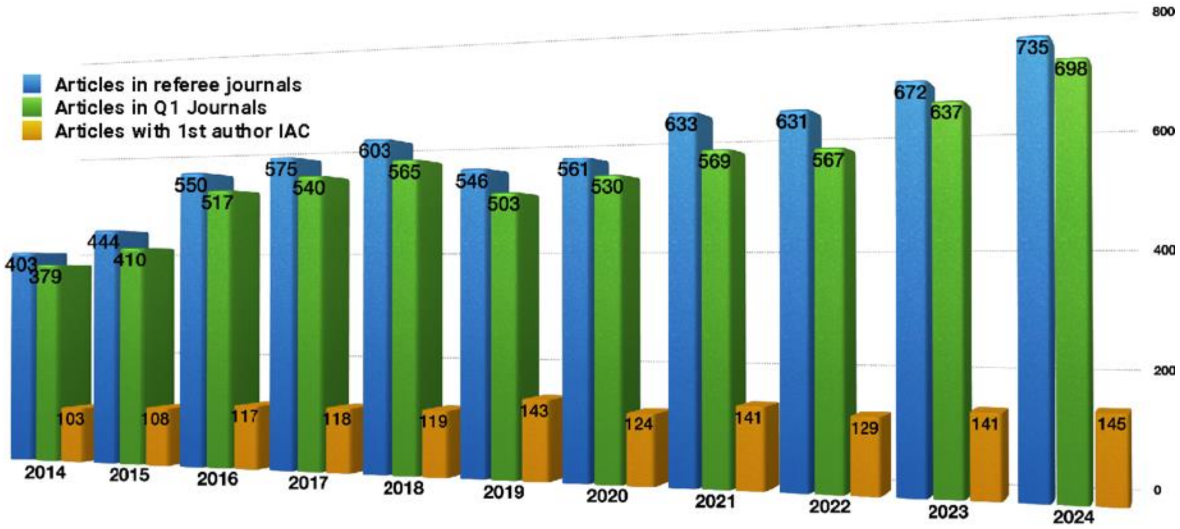


Figure 16: Number of articles per year published in total (blue), in the top rank (Q1) Journals in Astrophysics (green), and total number of papers led by IAC staff (yellow). Source: Journal Citation Reports (JCR)

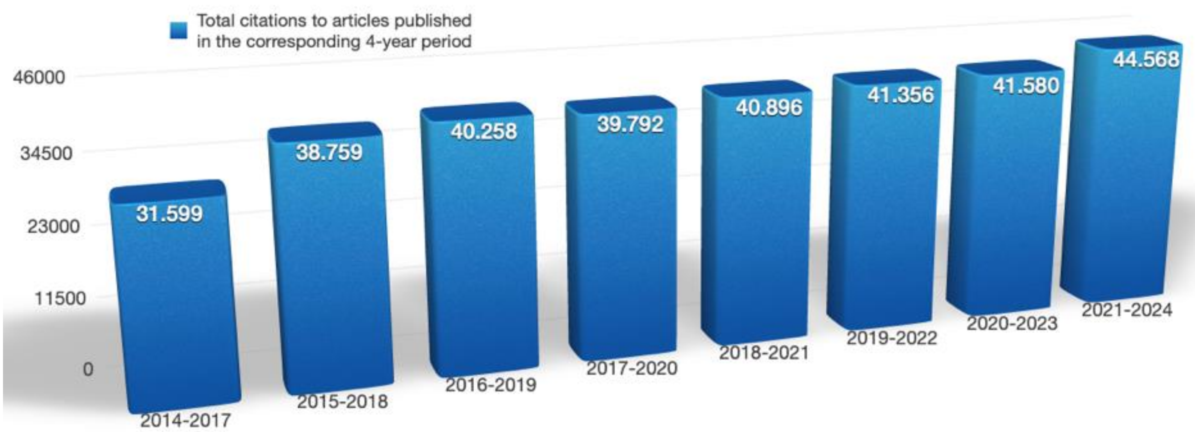


Figure 17: Total number of citations during a given 4-year period received by articles published in the same period.

SCIENTIFIC PRODUCTION: Nº of citations per IAC article

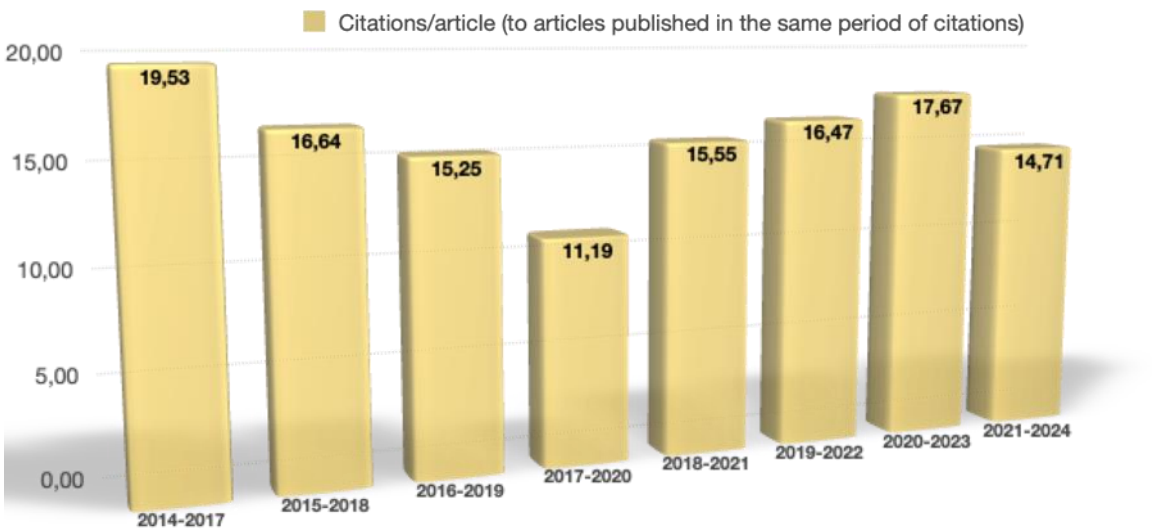


Figure 18: Average number of citations per article published during the last decade. This metric is calculated for other 4-year periods backwards in time to assess its evolution: We find a 63,3% increment of this ratio in period 2017-20 with respect period 2020-23.

IMPACT FACTOR

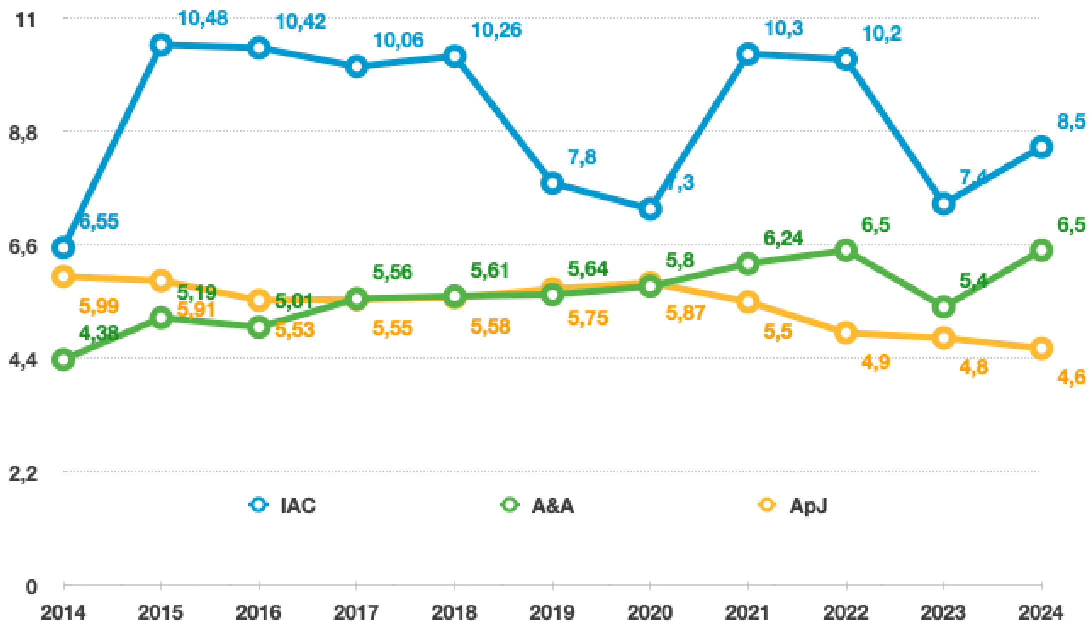


Figure 19: Impact Factor of the IAC's scientific production. The Impact Factor during the last 10 years has been over 4 with a remarkable increment in the period 2021-2022. For comparison, the Impact Factor of two reference journals in the field of Astrophysics (Astrophysical Journal and Astronomy and Astrophysics) has been in both cases lower than the corresponding for the IAC in the same year for the last 10 years

1.2.3. Technology Division

Figure 20. Adaptive optics system installed on the Nasmyth platform of the GTC.

The aim of the Technology Division is the development of astrophysical instrumentation projects that are promoted by the Research Division. To this aim the IAC's Technology Division has the appropriate equipment, facilities and highly skilled personnel, enabling it to build much of the instrumentation for astrophysics in-house. The expertise of the Division includes the following capabilities:

- Optical system design, integration and testing
- Mechanical and opto-mechanical system design and development
- Cryogenic and vacuum system design and development
- Precision mechanics manufacturing
- Adaptive optics
- Control systems
- Detector characterization
- Project management & Systems engineering
- Electronic systems
- Software design and development
- Laser communications
- Fibre optics

The Division is organized in five engineering departments, each one directed by a Head of Department: Project Management, Optics, Mechanics, Electronics, and Software. The Optics Department manages the Optics laboratory and the Optics Manufacturing Centre, with cutting, polishing and coating facilities. The Electronics Department manages the Electronic Design laboratory, with Integrated Circuits and Microwave Circuits sections, the Mechanisms Control laboratory, the LISA (Detectors Characterization) laboratory, and the Electronic Workshop. The Mechanics Department manages the Mechanical and Cryogenic Integration laboratory, the Additive Manufacturing laboratory, the Metrology laboratory, the Technical Drawing Office and the Mechanical Workshop. The Project Management Department manages the Assembly, Integration and Verification Plant. The Software Department is also in charge of the Instruments Control Software Archive. The Division is directed by the Head of Instrumentation, an experienced staff engineer who forms part of the IAC's directorate (Steering Committee - CD).

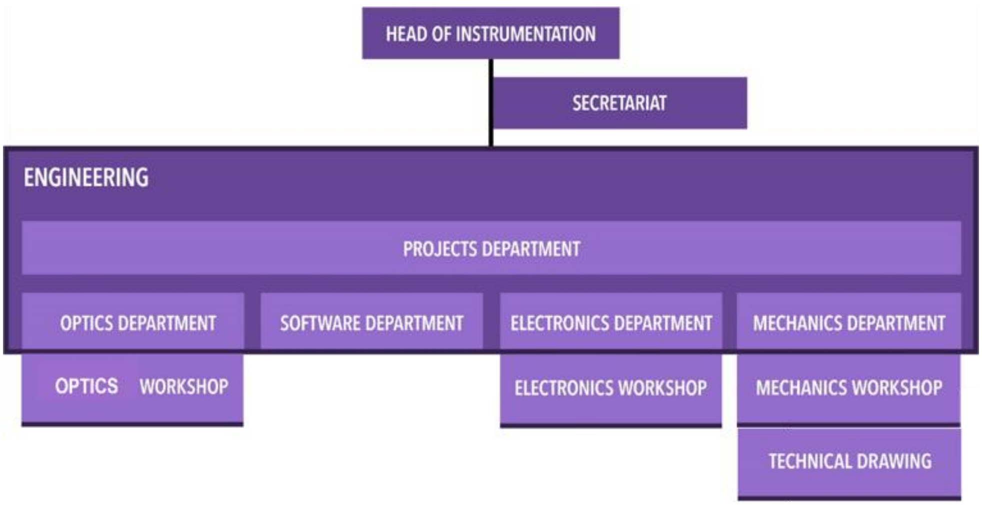


Figure 21: Schematic view of the organisational structure of the IAC Instrumentation Division. The main activity of the division is the development of instruments promoted by the researchers on the Research Division to support the Astrophysics science at the IAC

The Division works in a matrix configuration, teams of engineers from the different departments are organized around a project manager to accomplish the projects. The Head of the Division, assisted by the heads of the Departments, assigns the IAC's resources available and proposes to the PIs the required additional staff recruitment to properly accomplish the instrumental projects. The Head of the Division, assisted by the Instrumentation Commission oversees the projects. This commission includes three researchers from the Research Division who lead instrument developments and two heads of departments of the Instrumentation Division. The Head of the division regularly informs the IAC Director of the evolution of the projects, resources allocations, and new project proposals.

Currently, the Division is involved in 20 projects of quite different scope. The activity of the Division is focused on the participation in large and international projects through consortia with different international institutions. Among the present projects under development are instruments for GTC, EST, E-ELT (Chile), INT, QUIJOTE, as well as for several space projects. These instruments work at visible, infrared and microwave wavelengths.

In 2024, the IAC's Technology Division involved 86 professionals, of which 70% are engineers, 28% technical staff, and 2% coordination and administrative personnel. The team dedicated a total of 74,000 engineering hours, representing an 8% increase compared to 2023. About 84% of the total working time was allocated to instrumentation and development projects, 13% to management and support services, and 3% to training activities, while 16 students were hosted for research and technical training.

During 2025, 5 large projects concentrated ~73% of the engineering resources (GTCAO-LGS-GRANCAIN, EST-MCAO-EMBER, HARMONI, CSOA-Optics Manufacturing Centre, and QUIJOTE). Other 15 smaller projects required about 20% of the engineering resources, 10 of them being developed through international consortia too. The participation in consortia provides many benefits to our engineers and researchers from many international exchanges.

Part of the engineering time is dedicated to activities such as organization and management, training or services. Organization and management include the managing of the departments, the time dedicated to the laboratories and its equipment, the technology demonstrator projects, and the participation in several committees or transversal activities of the IAC in general, including support to IACTEC activities. Under services, we include the support to the Instrumental Maintenance for OCAN group and small periods of time devoted to technical advice to other projects, departments or scientists.

It has become evident that the IAC has far too many projects in the Technology Division. In 2025, the Scientific Advisory Committee (SAC) of the IAC recommended a prioritization of the portfolio of all projects existing at the institution. The recommendation includes tracking of the real vs initially estimated costs and resources, as well as of the current vs initial schedule plan for implementations. These criteria will be used to establish the required prioritization and, in some cases, closeout of some projects.

1.2.4. Studies Division

The Graduate Studies Division (GSD) at the IAC collaborates with the Department of Astrophysics (DA) at the ULL in the organization and coordination of all activities on astrophysical lecturing, including undergraduate and graduate (Master's and PhD) degrees. Every year, 15-20 IAC researchers obtain the *venia docendi* from the ULL to collaborate in these educational efforts. These activities include the access and use of observing facilities at the OT and ORM telescopes.

The ULL & IAC's GSD has, over the years, been a cradle of astrophysicists now working all over the world.

The Graduate Studies Commission (GSC), formed by eight staff or postdoctoral members of the IAC, advises the Head of Graduate Studies (who is also the Director of ULL's DA) and oversees the international PhD student selection processes. A PhD student is regularly invited to attend the meetings of the GSC.

The IAC devotes an important part of its fu of a PhD thesis as a full-time work. A present, there are 63 PhD students from 19 countries under contract at the IAC, 41% of them non-Spanish nationals. Women represent 43% of IAC's PhD students, reflecting a relatively satisfactory gender balance situation in early-career research training.

PhD Students at IAC (2025). Total: 63

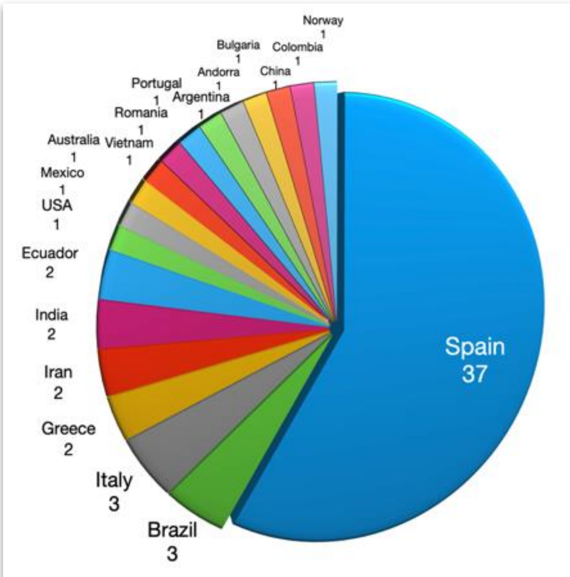


Figure 22. Distribution of PhD students at IAC by nationality.

The GSD organizes and coordinates the IAC training and research activities under the framework of the IAC's Predoctoral Program, working together with the Astrophysics Department and the Doctorate and Postgraduate School of the ULL to manage the completion of Doctoral Thesis on Astrophysics.

The IAC maintains a long-term agreement with the ULL according to which the faculty members of its Department of Astrophysics are full research members of the IAC and, in turn, the researchers of the IAC holding a PhD are formal members of the Department of Astrophysics. This has strong benefits for the PhD program at the IAC since the PhD degrees are granted by the ULL and the research is fully done at the IAC. Between 10 and 15 new PhD thesis are completed every year at the IAC. All IAC researchers sign their scientific production with dual affiliation: IAC and ULL.

Moreover, the IAC coordinates a series of activities addressed to IAC's Graduate students and the PhD international astronomy student community. The aim of these initiatives is to provide high-level training, as well as to foster collaboration between students and scientists. Among others, there are two main activities managed by the IAC:

- Canary Islands Winter School: It is an international school of Astrophysics organized yearly. It runs for two weeks and is aimed at PhD students and recently qualified Doctors in Astrophysics. 35 editions have been held.

- Summer Scholarship Program: With these scholarships, the IAC provides an opportunity every year for 10-15 graduate students to gain an introduction to astrophysical research and technological development processes for instrumentation.

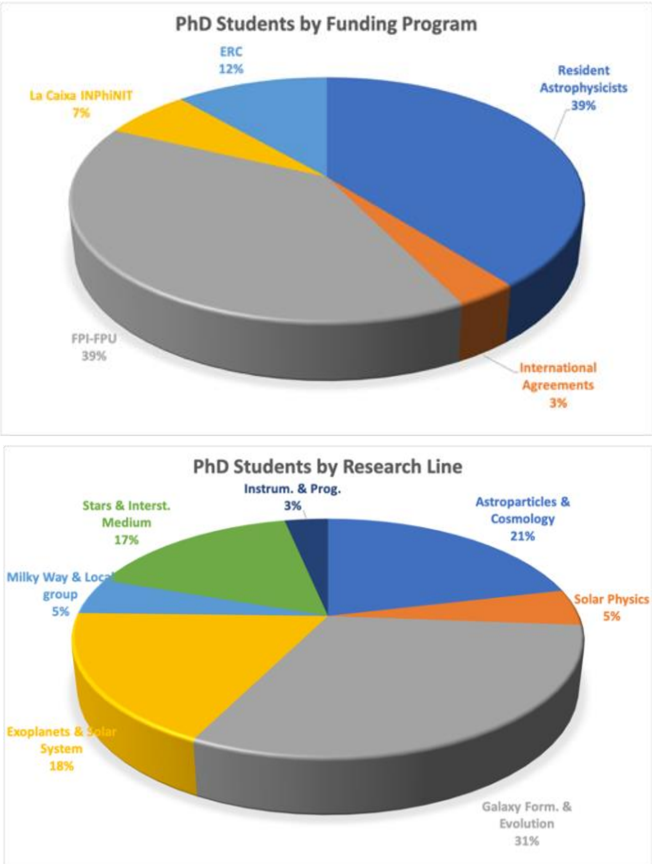


Figure 23. Distribution of PhD students by funding programme and research line.

Students access IAC's Predoctoral Program throughout different fellowships: Fellowships for Resident Astrophysicists offered by the IAC, Fellowships of the La Caixa Foundation (currently InPhinit Program), Fellowships for the Training of Research Personnel (granted by the MICIU - FPI Fellowships), granted to projects of IAC researchers approved at national levels, as well as UE Fellowships offered by IAC through UE funded research projects and educational networks. Additionally, International Fellowships are offered to carry out doctoral studies in Germany, England, Italy or Spain under the framework of the Third Level Agreements signed between the IAC and the institutions present at the Canary Islands Observatories. The following chart summarizes the main features of the Division:

The included charts show the number of applications to the Astrofísicos Residentes Program of the IAC (six positions are awarded yearly) and the number of doctoral theses defended at the IAC in the last 11 years, with an average over 13 per year. The Astrophysics Doctorate Program of the ULL has earned the Quality Award of the Spanish Ministry for Education and Culture

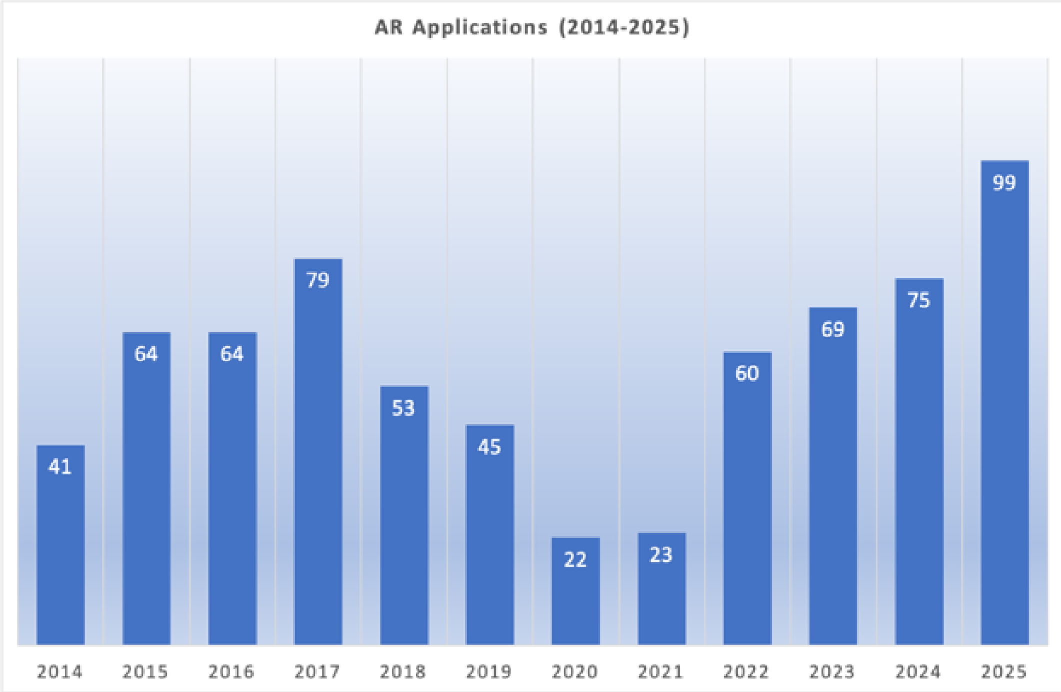


Figure 24. Applications to the IAC Resident Astrophysicist PhD programme (2014–2025).

Figure 25. PhD theses defended at the IAC (2014–2024).

The IAC also supports the external training program and end-of-degree projects offered in the different degree studies of the ULL (Physics, Mathematics or Engineering) and every year, new Spanish and foreign universities are signing collaboration agreements to participate within this activity.

During the timeframe of this Strategic Plan, IAC will collaborate with the Cabildo de La Palma and the ULL in the creation of a new master degree that concentrates in technologies for astrophysical research and other applications. This master degree will be located somewhere on the island of La Palma. Similar discussions are taking place with the Cabildo de Tenerife for the implementation of a curriculum in space technologies, this time benefiting from the newly created Space department at IACTEC. It will also strengthen the links to the ULL through a new collaboration agreement that foreseen more benefits for both partners.

1.2.5. Canary Islands Observatories (OCAN)

Figure 26. Panoramic view of the MAGIC and LST telescopes of the CTA-North site

The excellent astronomical quality of the sky over the Canary Islands, comprehensively characterized and protected by law, makes the OCAN (the OT at Tenerife and the ORM at La Palma), an 'astronomical reserve' that has been open to the international scientific community since 1979, in accordance with the International Agreements for Cooperation in Astrophysics. These Observatories, located 2400 m above sea level, are one of the most productive and lowest cost astrophysical resource in the world. The Observatories have attracted, over the last 40 years, 114 institutions of 25 countries to install their telescopes and instruments. This fact is a clear demonstration of the advantageous conditions offered by the hosting institution.

The OCAN are the most important collection of observational facilities for optical and infrared astrophysics within the European Union. Other experiments for high-energy astrophysics and the study of the cosmic microwave background complete the battery of facilities available. The Observatories host first-class telescopes, such as the 10.4m Gran Telescopio CANARIAS (GTC), the WHT and TNG at ORM and the solar GREGOR and THEMIS at the OT. The EST will be built at the ORM. The CTAO-North is finalizing the construction at the ORM of four Large Size Telescopes (LST) and is planning for building nine Medium Size Telescopes (MST). Nine ASTRI Cherenkov telescopes (Italy) are being deployed at the OT and a new antenna included in the next generation Event Horizon Telescope (ngEHT), the Tenerife EHT Antenna (TEA) has been approved by the CCI for its installation near the OT residencia. The estimated total investment at the OCAN (telescopes and infrastructures) from its origin is more than 800 million euros, and in the years to come it will be possible to triple this quantity if the TMT is finally built at ORM.

Different time allocation committees (TACs) award the telescope time available at each installation. Seventy-five per cent of this time is generally allocated to the communities of the countries or institutions that own and operate the telescope; 5% is allocated by the International Scientific Committee (CCI) for large international collaborations of the institutions present at the OCAN, and the remaining 20% is allocated to the Spanish astronomical community by a TAC managed by the IAC. This time is considered the main return earmarked for the host country under the Agreements on Cooperation in Astrophysics.

The CCI is a management structure allowing effective participation in the decision-making process from the User Institutions (UI) at the OT and ORM. The IAC is responsible for the provision of basic and advanced infrastructures to these international organizations, as well as for the management of the 20% Spanish time. The IAC also contributes greatly to the scientific exploitation and instrumental upgrades of these facilities and operates its own telescopes.

The Agreements on Cooperation in Astrophysics also include the exchange of information on scientific research in astrophysics; the exchange of scientists, experts and technical personnel; and the joint and coordinated implementation of programs of technological research. Researchers at the IAC, representing an important fraction of the Spanish astrophysical community, have benefited very significantly from this agreement, and fruitful and long-term international collaborations have been established within its framework.

In March 1992, a national law was passed for the Protection of the Astronomical Quality of both the Roque de Los Muchachos and the Teide Observatories. The IAC Sky Quality Protection Technical Office regulates the application of this law and provides advice to local authorities on compliance.

On February 10th, 2025, the updated Strategic Plan for the Canary Islands Observatories (OCAN) for the period 2025–2028 was officially submitted for evaluation by the Ministerial Advisory Committee. This new Strategic Plan (Annex 1) outlines an ambitious vision based on accumulated experience and an extensive network of international collaborations. It proposes 31 strategic actions, 17 of which are high-priority, and requests €30.26 million in funding, contingent on OCAN's approval in the ICTS Map. This approval was notified to IAC in late October 2025.Highlighted initiatives include the development and operation of major international telescopes, such as the Laser Guide Star system for GTC, support for the Northern Cherenkov Telescope Array Observatory (CTAO-N), the EST, a node of the future Event Horizon Telescope, technologies for the Exo-Life Finder (SELF) pathfinder, and IAClink, a pioneering facility for free-space optical communications research. The plan also envisages a novel intensity interferometer that combines several telescopes at the ORM (La Palma Quantum Interferometer, LPQI) intended to reach resolutions below mili-arsceconds.

The plan also proposes improvements in atmospheric characterization, particularly of the boundary layer, aiming to optimize scientific performance and address emerging environmental challenges. It includes modernization of infrastructures, enhanced energy sustainability, including the installation of photovoltaic parks, and the development of a dedicated astronomical data archive to ensure efficient and open data distribution from OCAN facilities.

Technological innovation is a central pillar of the plan, with new instruments (cameras, spectrographs, guiding systems) and upgrades to existing infrastructure to meet the demands of the next generation of scientific experiments. Beyond scientific and technological excellence, the plan emphasizes human capital development and social engagement, promoting talent attraction, specialized training, and strong public outreach and education activities.

With the approval of this Strategic Plan, the IAC aims to consolidate OCAN as a world-class scientific infrastructure, capable of combining technological leadership, international collaboration, and social responsibility to address the major challenges of astrophysics in the coming years.

1.2.6. General Service Management Unit

The General Services Management Unit (ASSGG) is responsible for the administrative, operational, human resources and library department. It is divided into four sub-units or departments, supported by the secretariat, which houses the IAC registration office. The activity of these departments, and consequently the service to be provided, is developed on four fundamental principles: (1) users' orientation; (2) process optimization; (3) resources' efficiency; and, transversely, (4) e-administration, adapting our processes and relations with internal and external users by using IT tools, in compliance with the *TIC Strategy* of the General Administration.

The budget executed every year by the IAC, and managed by this Unit, currently exceeds 40 million EUR, following a significant increase in recent years (see attached figure), partly related to the availability of the Plan de Recuperación, Transformación y Resiliencia (PRTR) funds.

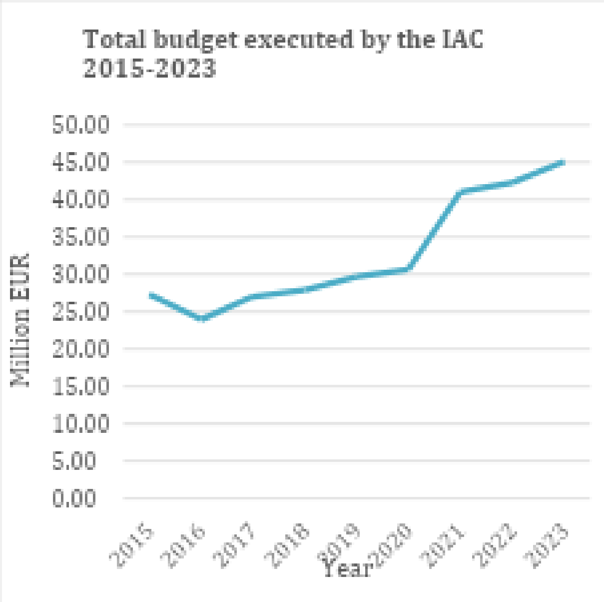


Figure 29. Total budget executed by the IAC (2015–2023)

This amount includes the internal core budget, provided by the IAC institutional members, as well as the external funding obtained under competitive calls. Every year around 6.000 invoices are processed, for an amount of more than 18 M€ (2024 figures); almost 7.000 payment orders are treated by the treasury department, for more than 40 M€; more than 1.300 travels for 1,1 M€; 880 new assets for 9,3 M€; 17 calls for tenders committing 11,4 M€; around 850 new acquisitions for 3,3 M€; and more than 280 entries or exists of goods from/to the Observatories.

Concerning external funds, more than 100 grants are justified every year. 170 formal requirements for further information or reports are yearly processed, and an average of 25 financial-technical audits are passed. More than 50 new proposals for funding are supported, of which half of them are usually approved for the amount of around 8 M€ on average.

From 5 to 10 minor or major infrastructure works are coordinated at the IAC HQ or at the Observatories every year, and almost 30 external services are contracted to the local companies (utilities, security, communications, cleaning, etc).

Selection and recruitment of new staff at the IAC, also responsibility of the ASSGG unit, is a major activity too. Every year more than 100 new positions are offered to recruit new researchers, technicians or administrative staff. The HHRR sub-unit also coordinates occupational risk prevention activities, social plan, gender issues and staff training.

This Unit provides also support to the IAC Directorate on the drafting and authorization process for signature of national and international agreements with third parties. Around 30 new relevant agreements are signed every year, related to the installation of new facilities at the observatories, development of new instruments or worldwide scientific collaborations.

The ASSGG unit also houses the library, to provide scientific information services to support the research and technological activity of the center. In addition, since 2019, this unit is also leading the Digital Transformation Plan for the IAC and other additional tasks related to document and archive management.

Finally, the Secretariat provides administrative support to all these units and departments, including the management of the Registration Office at the IAC, with more than 3,500 registered documents every year, and another 1,500 official documents sent.

As part of the efforts from the ASSGG unit, to conveniently support the IAC in the development of research activities, technology developments, training actions, public outreach and operation of the Observatories, we foresee a set of supporting actions planned to achieve significant improvements during the next years in some specific areas:

- To ensure a competitive labor structure, with a professional career, for researchers, technicians and administrative staff.
- To achieve a balanced distribution of our staff (researchers, technical and administrative staff).
- To implement an efficiently managed structure based on a project –oriented perspective, using performance indicators, and optimizing services provided to internal and external users.
- To achieve the digital transformation of all our processes for a better service, including the implementation of the digital workplace, as a necessary step to effective teleworking.
- To bridge with private sponsorship as a relevant source to finance our research by valuing our related assets (scientific tourism, public outreach, technology transfer to other sectors, etc).
- To continue our efforts to obtain significant external funds from competitive calls at national but, specially, at international level.

1.2.7. IACTEC

Figure 27. IACTEC: Panoramic view of the IAC's technology and innovation hub.

The IAC develops in-house a considerable part of the technology needed for astrophysical research activities. It has consequently acquired over time remarkable capacities in key areas of advanced instrumentation.

To exploit these long-standing capacities, involve the regional business sector and attract companies active in the sector of advanced instrumentation for astrophysics and space, the IAC has established IACTEC, a hub element which connects the IAC technological know-how with those companies. This hub includes several advanced laboratories dedicated to optical communications, satellite payloads, adaptive optics, opto-mechanics and precision optical systems. Such facilities give companies the possibility to test components, develop prototypes and explore new solutions in areas such as free space optical links, photonics, Earth observation sensors and high-quality optical manufacturing.

IACTEC is developing four main lines of RTD&I: Large Telescopes, Space, Optical manufacturing and Biomedical applications:

Large Telescopes: four projects are being developed in collaboration with international consortia. A total of 29 engineers (supported by external funding) are working for these projects under the supervision of 4 IAC permanent researchers. All these projects involve important contributions from international consortia made up by institutes distributed across more than 20 countries, and will be installed at the IAC Observatories:

- **CTAO-N** (Cherenkov Telescope Array Observatory), currently the world's existing largest network of telescopes (4 LST and 9 planned MST) for observing physical phenomena linked to the incidence of high-energy particles on Earth; under construction.
- **EST** (European Solar Telescope) the largest solar telescope in Europe and one of the two largest in the world; in the final design phase.
- **NRT** (New Robotic Telescope) the largest robotic telescope built to date in Europe, for the observation of phenomena that require high temporal resolution, in the conceptual design phase.
- **SELF** (Small Exo Life Finder), the pathfinder for an innovative telescope for high contrast imaging specialized in the detection of exoplanets; in the construction design phase.

Space: three projects are being developed by 13 engineers with the tutoring of 4 IAC permanent staff:

- Microsatellites: the development of small satellites for observations of the Earth and Space. The procurement of the cameras for the Canary Islands Constellation is a major activity in IACTEC's space department.

- Processing of Earth Observation Data: takes advantage of the synergies between the image processing techniques used in space and ground-based observatories.
- Optical Communications: to develop laser communication technologies between Earth and space. The flagship project of this department is the development of the IACLink facility at the OT.

Center for Advanced Optical Systems (CSOA), a very recently launched project that aims to create a large optical component manufacturing center in Tenerife, unique in Spain and competitive worldwide. The team developing CSOA is led by the Head of the Optics Departments of the IAC.

Technologies for Biomedicine, the one project here is being developed by 4 IAC technologists under the supervision of a principal investigator from University of Las Palmas de Gran Canaria (who is affiliated to IAC): based on image technologies widely used in astrophysics (infrared and microwave thermography), new diagnostic tools are explored to help the treatment of diseases of high incidence in the Canary Islands, such as diabetes.

IAC is creating specific laboratories for the last three technologies (Space, Biomedicine and Advanced Optical Systems), all of them with frontier capacities. To achieve this goal, 15 million euros were awarded for laboratory equipment at IACTEC, to be executed until the end of 2022 (allocation from the Spanish Recovery Plan by the Ministry for Science and Innovation).

IACTEC activities are also partially funded by Cabildo de Tenerife (island's government) through an Advanced Skills Training Program awarded to the IAC which provides 16 contracts for engineers (each of a 4-yr duration, last renewed in 2024).

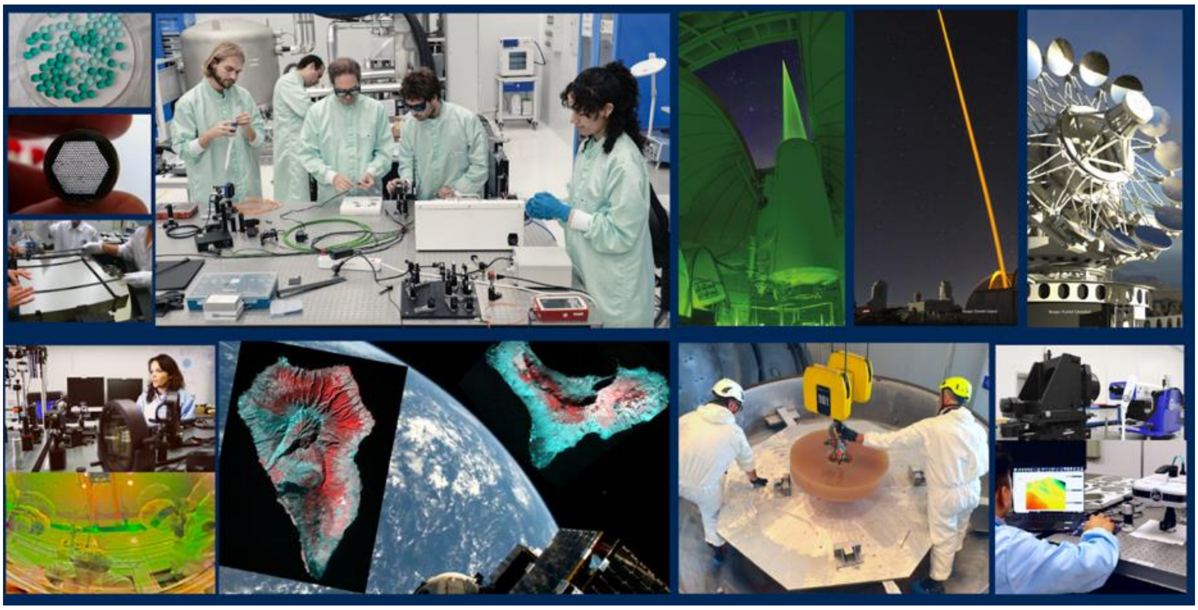


Figure 28. Overview of technological infrastructures and activities at IACTEC..

1.2.8. Science Communication and Outreach

The IAC has extensive experience in public outreach at all levels (from primary school to university). Open days, the publication of educational material, documentaries, exhibitions, radio programs, etc., are regular activities at the IAC. In fact, public outreach and education at different stages are also strategic objectives of this center, which has won numerous awards for its scientific information and public education campaigns.

The Scientific Culture and Communication Unit (UC3) is responsible for these activities. Currently, the permanent staff assigned to the UC3 consists of six people with the following professional profiles: the head of the unit (journalist), two astrophysicists and science communicators, a journalist, a designer and a part-time administrator. It also has three people on temporary contracts to support communication, outreach and education programs. Each year, UC3 also trains several people through curricular internships in collaboration with the ULL. It has an externally contracted astrophotography service.

Communicating our scientific knowledge and technological capabilities, especially to future generations, is a fundamental objective of the IAC. Each year, the IAC produces more than 120 press releases, conducts more than 50 interviews and responds to more than 350 requests from the media and production companies, featuring in more than 13,000 news items per year for an audience of more than 1.9 billion people[1]. Added to this is its presence on social media, with more than 3.2 million impressions per year from its nearly 1,200 posts. The IAC is devoting special efforts to monitoring astronomical events for public outreach and producing audiovisual products that explain the IAC's scientific research, its challenges and results, with the IAC POP (PrOgrama Popular) project[2], which includes face-to-face activities and audiovisual material to bring astronomy closer to the public.

A similar effort is devoted to the production of educational material and outreach activities for young students and the training of secondary school teachers from across Spain and other European countries, so that they can develop a dissemination plan in their regions with the aim of promoting scientific and technological vocations among young people. More than 20,000 people from different educational levels are introduced to astronomy through educational projects such as COSMOLAB or PETeR, and more than 100,000 people a year come into contact with this content through participation in mass events and fairs such as the TLP in Tenerife, the Phe Festival or various meetings organized by collaborating entities such as the Regional Government and Cabildos or town councils.

The IAC also collaborates in the supervision of the Tenerife Museum of Science and the Cosmos, and the Visitor Centre at Roque de los Muchachos, both visited by thousands of students and public of all ages every year. The UC3 coordinates, together with the Canary Islands Observatories, the promotion of these observatories with projects such as “Nuestros Alumnos y el ORM”, the Teide Observatory Open Days and the various activities that take place in these spaces. UC3 provides coverage and support for telescope inaugurations at the Canary Islands Observatories and special events such as those held for the 40th anniversary of the official inauguration of the IAC. In addition, through cross-disciplinary projects that combine astronomy with other disciplines and topics (literature, fashion, photography, music, theatre, etc.), UC3 tries out new strategies and resources for popularizing science every year to stimulate social interest in the universe.

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[1] Press clipping report 2024

[2] IAC POP is a project designed to bring astrophysical science closer to non-scientific environments and audiences, such as fairs, concerts, and technology events. It is complemented by outreach activities carried out on social media using an accessible and informal tone.

1.2.9. Research and Knowledge Transfer Support Unit

The support Unit for research and technology transfer (AIT) is a key unit within the IAC, supporting the institution's strategic development and external engagement. The AIT acts as a support unit for the management of activities related to R&D carried out across the different areas of the IAC. It also collaborates in promoting the center's scientific and technological capabilities, while fostering the transfer of technology to external stakeholders. As part of the IAC's Knowledge Transfer Office (OTC), formally recognized in May 2024, AIT plays a central role in linking research excellence with institutional collaboration, large scientific infrastructures, and socio-economic impact. It maintains active and collaborative engagement with funding agencies, R&D centers, companies, and other stakeholders involved in the activities, planning, and financing of R&D.

AIT activities, which are carried out under the guidance and supervision of the IAC's Directorate, encompass four core areas: project management support and external funding proposals' preparation, technology transfer, and external collaboration.

In the field of R&D project support, AIT helps in the identification, preparation, and submission of most competitive proposals to regional, national, and European programmes, including Horizon Europe and major EU structural funds. It also manages the lifecycle of institutional awarded projects, ensuring proper financial and administrative compliance. As an example in 2024, with the support and coordination of AIT (formerly OTAI), the IAC submitted 94 proposals for external R&D funding, totaling over €81 million. Of these, 34 proposals were successfully granted. Among the most significant contributions in 2024 were the management support to projects over €20 million in new research infrastructure and €22 million for advanced optical technologies at IACTEC, among many others.

AIT also supports the implementation and monitoring of institutional strategic plans, such as those for the IAC itself or the Canary Observatories (OCAN), designated as Singular Scientific and Technical Infrastructures (ICTS). Via the IAC's and the OCAN's strategic planning, it contributes to the long-term planning of infrastructure investments and to the development of high-level consortia and partnerships, supporting the IAC's leadership.

Regarding technology transfer, AIT oversees intellectual and industrial property rights (IPR), manages confidentiality agreements, promotes research valorization, and supports the creation of knowledge-based entities. It works closely with IACTEC, the IAC's innovation hub, to bridge the gap between science and industry, and to foster innovation in strategic areas such as space technologies, optics, and biomedical applications.

As part of the IAC's OTC structure, AIT supports the sustainability and the societal impacts of large research infrastructures like the GTC, CTAO-N, and EST among others.

Beyond these core activities, OTAI provides analytical and strategic support to the IAC's Directorate. This includes preparing institutional inputs and reports requested by funding agencies, policymakers, or partner institutions, as well as drafting position papers, technical analyses, and documentation required for decision-making at the Directorate level. Through this advisory role, OTAI contributes to aligning the IAC's institutional positioning with national and European science and innovation policies.

The AIT is under the IAC's General Services Management Unit (see 1.2.6).

1.2.10. Main Funding Sources

The IAC budget is made up from the contributions, provided by the Spanish National Administration and by the Canary Islands' Regional Government, and significantly complemented by external funding (an additional 100% on average during the last years), which is obtained mainly via competitive sources, agreements, bids and contracts. In 2024, the budget executed as the result of all these funds, was around 41,2 M€ (18,5 M€ internal funding and 22,8 M€ external funding).

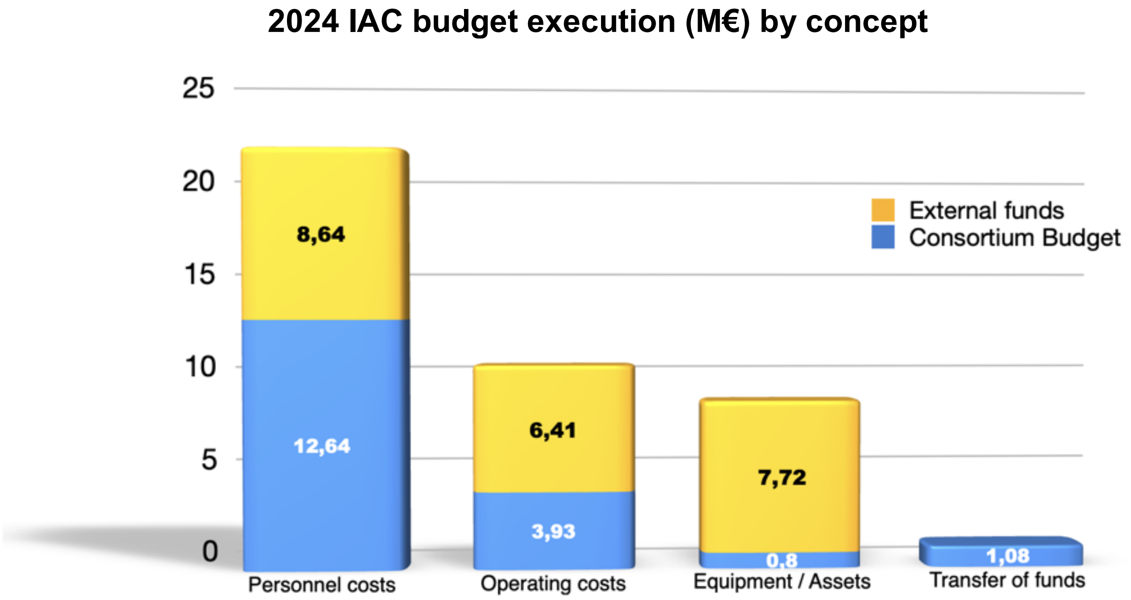

Figure 30. IAC budget execution by concept in 2024.

Consortium regular budget: State and Regional Administration Funding

1.2.10.a Ordinary contributions to the IAC budget by the State and the Autonomous Community:

The IAC's budget, provided by the consortium administrations, has remained stable in recent years, without significant increases over the past decade. On average, and as stipulated in the IAC's statutes, the General State Administration and the Autonomous Community of the Canary Islands contribute 70% and 30%, respectively, of our ordinary budget, which in recent years has amounted to around 16 million euros per year. With an expenditure budget currently exceeding 18 million euros, and with a significant increase forecast for the coming years, this difference has been covered since 2021 with carry forward funds.

In the most recent fiscal years, both the State and the Autonomous Community have made occasional but significant efforts to ensure the financial viability of the IAC and to support its operational expenses and investments. It is also worth highlighting the boost provided by the allocation, in 2021 and 2022, of funds from the PRTR , which, totaling 22 million euros, has made it possible to accelerate investment at the IAC.

In any case, for the coming years, it is necessary for these administrations to significantly increase their financial contributions.

Later in this document, we provide more detailed information on the expenditure plan for the period covered by this Strategic Plan, as well as the proposed strategy for allocating financial resources

1.2.10.b Competitive Funding Sources and funds for the operation of the Observatories

The IAC competes in national grant funding opportunities, as well as in international calls. The success rate varies significantly from one funding program to another, as well as depending on the activity (infrastructures, research, training, etc.). On average, during the last ten years, 30% of this external funding is obtained from EU funding programs, and 70% under national calls. About one new proposal for funding is prepared and submitted every week. More than half of them are approved, and around 10 million € per year (on average) are granted. Additionally, and in relation to the operations of the OCAN, another 2 M€ approximately are obtained in the framework of the International Agreement of Cooperation in Astrophysics and managed by the IAC every year to support operations at the observatories (also referred to as the Common Services).

The following chart, as an example, shows the split of these external funds during 2024 broken down by funding source / program.

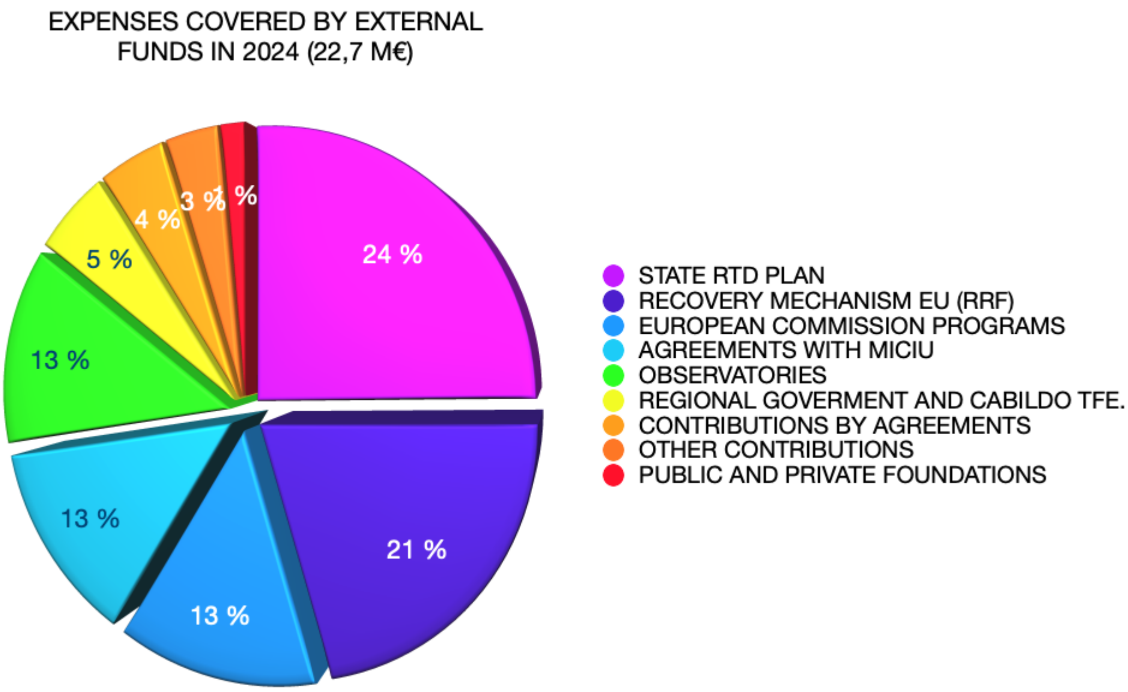

Figure 31. Distribution of expenses covered by external funds in 2024 (22.7 M€).

Around 38% of these external funds are provided to cover personnel costs, more than 28% to cover operating costs and the remaining is for new acquisitions and direct transfer of funds to partners.

1.2.10.c Private Sponsorship and the IAC Research Program

The IAC Sponsorship and Philanthropy Program, together with the “Amigos del IAC” initiative, provides a formal framework through which private entities, institutions and individuals can directly support the scientific, technological and outreach activities of the IAC. Through this program, the IAC channels voluntary contributions aimed at strengthening excellent research, promoting the training of young researchers and enhancing the scientific communication linked to the OCAN. These contributions complement public funding and enable society to take part in advancing our knowledge of the Universe.

At present, the program is primarily oriented towards offering citizens and organizations that value the IAC's scientific work the opportunity to contribute to the development of research projects, educational activities and outreach initiatives. The sponsorship and philanthropy modalities support strategic lines such as the consolidation of the Canary Islands Observatories, technological development in advanced instrumentation, and specialized training through doctoral programs and talent-development activities. Although the current number of sponsors remains modest, the program provides an active structure that ensures transparency, institutional recognition and sound management of all contributions received.

The Sponsorship and Philanthropy Program is conceived as a mechanism to bring science closer to society and encourage the participation of the private sector in the IAC's scientific ecosystem. Through this program, the Institute maintains an open and stable channel for entities and individuals wishing to contribute to the progress of Astrophysics and to the international projection of the Canary Islands Observatories, thereby reinforcing society's commitment to research and scientific culture.

Finally, private entities also contribute to the Research and Training Program of the IAC with a total of approximately 300 K€ per year. The most important contributors are:

- La Caixa and Fundación Cajacanarias: 250 K€ per year for the IAC PhD program
- Fundación Occident: 30 K€ per year for the IAC Visitors Program

1.2.11. International Dimension

International collaboration is one of IAC's defining characteristics and strengths, as a driver for ensuring world-class science and an enabler for broader socio-economic impacts. IAC is well integrated in the international community, participating in most of the main astrophysical projects and consortia and the related forums on RTD policies, in close relationship with national and international funding agencies and public bodies.

The majority of research articles produced by IAC, around 95%, are published with international co-authors. During the last decade, IAC has consolidated its international projection by attracting the construction of new major Research infrastructures (CTAO-N, ASTRI, EST, NRT, ngEHT) that contribute significantly to the achievement of the New European Research Area (ERA) and produce a ripple effect by stimulating other economic and social sectors.

1.2.11.a International scientific collaboration in astrophysics and space

More than 60 collaborative agreements are active with institutions that operate facilities at IAC's Observatories and with other international consortia, including the STFC (UK), INAF (IT), the NAAWO, CNRS (F), INAOE and UNAM; the Universities of Aarhus, Turku, Tokio, Oxford, Liverpool, Leuven and Moscow; the Kiepenheuer Institute for Solar Physics, Leibniz-Institut für Astrophysik Potsdam (IAG) and the Max Planck Institute for Solar System Research; Caltech and Univ. of California on the scientific searches for dark energy with e-BOSS (SDSS-IV); the Univ. of Cambridge and Manchester on Cosmology; and the Univ. of Geneva (world leaders in the field of exoplanets), where our tight collaboration is reinforced in the framework of ESPRESSO, CoRot and space missions CHEOPS and PLATO. IAC also participates in AMS, MAGIC, ASTRI and CTAO, major international astroparticle collaborations.

Other collaborations with international organizations and major consortia include:

- *European Southern Observatory* (ESO)
- *European Space Agency* (ESA)
- *Extremely Large Telescope* (E-ELT)
- *Optical and Infrared Coordination Network* (OPTICON)
- *European Association for Solar Telescopes* (EAST)
- *High-Resolution Solar Physics Network* (SOLARNET)
- SOLAR ORBITER & VIGIL
- SUNRISE
- EUCLID
- *Global Oscillation Network Group* (GONG)
- WEAVE
- CARMENES (CAHA)
- Transiting Exoplanet Survey Satellite (TESS)
- OSIRIS-Rex
- Hayabusa2
- Hera

IAC researchers have been involved in an extensive series of international research collaborations. These include large science teams participating in joint operations or development of facilities such as Herschel, and Planck satellites, the IMaX experiment for the SUNRISE balloon, and many instrument science teams for the GREGOR, VLT, ELT, and GTC. IAC leads some of these, but most importantly, those aiming at the scientific exploitation of the 10.4m GTC telescope on La Palma. In particular, IAC researchers are PIs of the instruments EMIR@GTC, TMS@QUIJOTE, OSIRIS@GTC, HORuS@GTC, GTCAO-LGS@GTC, GRIS@GREGOR, and Co-PIs of CLASP, ARIEL and Hayabusa2 missions, FRIDA@GTC, ESPRESSO@VLT, WEAVE@WHT, Muscat2@TCS and SONG. They are also members of the Steering Boards of the consortia of space missions CHEOPS and EUCLID, and scientific committees of SDSS, CARMENES, NIRPS, HARPS3, KESPRINT.

This multi-national collaboration is enriched because both the number of predoctoral and postdoctoral applicants for IAC research positions who are not Spanish nationals has slightly increased over the last years. In this sense, half of our new postdoctoral fellows are foreign nationals, 10% of them from non-EU countries. The same policies are enforced at the predoctoral level, and 43% of our PhD students are foreign nationals (28% from outside EU).

IAC's researchers receive competitive funding awarded by, among others, the European Research Council (ERC) that supports investigator-driven frontier research across all fields, based on scientific excellence. IAC has been funded by the EU over the past 25 years with more than 50 projects approved in diverse programs. The IAC is recognized as one of the Canary Islands Autonomous Community's key agents in the field of R&D with international projection.

A further boost to international cooperation is given by the strong Visitor programs run by IAC's Research Division. These include

1. *Colloquia*, our top-level seminar program, for which top international experts are invited to spend a week at IAC and give colloquia.
2. The Division's seminar program usually has two seminars per week on astrophysical research. Most speakers are from abroad, other institutions in Spain, or the IAC. The working language is usually English.
3. Workshops and conferences. Typically, two major international conferences and 4-5 workshops are organized by the Research Division every year.

4. IAC's well known Canary Islands Winter School of Astrophysics which has been running for more than thirty years.

IAC and its scientists play leading roles in many research and policy groups, boards, and committees, within Europe and elsewhere. On an individual level, many IAC researchers are members of international committees, e.g. on policy, time allocation, grants, or others, in many different countries. IAC's Deputy Director is, since late 2025, a member of ESA's Space Science Advisory Committee (SSAC), the Agency's highest scientific advisory body.

Within the OCAN, IAC has led the construction and operation of the GTC, the largest optical and near-infrared telescope in the world, including some of the first light instruments, in cooperation with Mexico and Florida University (USA); contributes as a major partner (50%) in the construction of the CTAO northern node; leads the EST and is a major partner for the New Robotic Telescope (NRT) and the Small Exo-Life Finder (SELF).

1.2.11.b EU funded projects: ERC, MSCA and Widening grants with IAC participation

Participation in European programs, particularly Horizon 2020 and Horizon Europe represents one of IAC's main strategies for strengthening scientific excellence. Through these programs, the IAC consolidates its position as the leading R&D agent in the Canary Islands with global projection.

The IAC currently leads four European Research Council (ERC) grants, three Advanced and one Starting, plus one Synergy Grant as partner institutions, reflecting the frontier quality and international leadership of its research teams. Beyond the ERC framework, the IAC actively participates in five Widening actions, including one Teaming for Excellence, two Twinning projects, one ERA Chair, and one COST Action, all of them coordinated by the IAC. These initiatives aim to strengthen excellence and capacity building in the European Research Area (ERA), positioning the IAC as a regional reference for research excellence and innovation in outermost regions.

In parallel, the IAC participates in several Marie Skłodowska-Curie Actions (MSCA), including one Doctoral Network, several Postdoctoral Fellowships, and a collaborative RISE/Staff Exchange project, promoting scientific mobility and transnational training. The IAC is also a partner in other European collaborative projects, including ORP, Atlast2 for Research Infrastructures, as well as RadioForegrounds Plus and OPTIMAS, funded under the European Defense Fund. Altogether, these projects have leveraged more than €35 million.

At institutional level, the EPIC-FINANCE project plays a key role in reinforcing the IAC's long-term capacity to participate and lead European R&I initiatives. Implemented by the AIT, and funded by the Spanish State Research Agency, EPIC-FINANCE supports the consolidation of internal structures for the identification, preparation and management of competitive European projects. Its strategic plan includes actions to enhance proposal quality, promote international partnerships, strengthen training for researchers and program managers, and boost institutional leadership in Horizon Europe.

As part of its commitment to strengthen European engagement, the IAC contributes actively to Spain's representation in the National Contact Point (NCP) network of the Widening Participation and Strengthening the ERA Program, reinforcing the IAC's leadership and visibility within Horizon Europe while promoting the integration of the Canary Islands into the ERA.

2. STRATEGIC ANALYSIS

2.1 SWOT ANALYSIS

Following established methodologies for strategic analysis, we conducted a thorough assessment of the IAC, which allowed us to identify and categorize key strengths, weaknesses, opportunities, and threats (SWOT) as outlined below.

STRENGTHS

- S.1. The operation of two exceptional observatories located on the summits of Tenerife and La Palma. Their skies are protected by law, making them a global asset.
- S.2. Internationally recognized synergistic research and technology programs that encompasses a wide range of critical areas in astrophysical research.
- S.3. Attraction of global collaborations in astrophysics and related fields.
- S.4. A sustainable funding model that includes contributions from both national and regional governments.
- S.5. A strong societal presence in the Canary Islands, positioning the IAC as a key research and technological reference in the region.
- S.6. Significant participation in competitive external funding projects.
- S.7. Access to leading astronomical telescopes, including GTC, ESO, ESA, and other research facilities.
- S.8. Established international agreements and collaborations.
- S.9. A sufficient critical mass of research staff necessary to maintain leadership in multiple fields.
- S.10.Unique partnerships with the ULL for undergraduate and graduate programs.
- S.11.Attractor of national and international highly qualified, early-career researchers.

WEAKNESSES

- W.1.Unbalanced growth in recent years leading to a significant shortfall in the number of administrative and service staff.
- W.2.Lack of flexibility in permanent staff appointments and promotions hampering effective gender balance policies.
- W.3.Lack of career development options for personnel other than scientific staff.
- W.4.Limited success in attracting highly prestigious international talent (e.g., European Research Council, ERC, grantees), partly due to the IAC's remote location and the relative weakness of the regional research and development (R&D) ecosystem, which affects long-term career prospects.
- W.5.Lack of robust internal incentive mechanisms to motivate high-performing researchers and technical staff in applying to highly competitive R&D programs.
- W.6.Outdated community access tools (e.g., the TAC) complicate the tracking of scientific productivity.
- W.7.An aging workforce at the IAC and the need for long-term stability in technical and administrative support staff.
- W.8.Insufficient investment needed for implementing an effective digital transformation plan, which is essential for optimizing key processes related to R&D.
- W.9.Challenges in effectively managing external, competitive funding complicating critical aspects of the OCAN such as implementing the use of renewable energies.
- W.10.Slow decision-making processes.

2.1 SWOT ANALYSIS

OPPORTUNITIES (External and represent a future asset)

- O.1. Continued interest from new medium and large Research Infrastructures.
- O.2. Astrophysics being a regional priority under local government policy.
- O.3. Local support for IACTEC, a new technology hub fostering connections with the private R&D sector.
- O.4. Synergies between ground-based and upcoming space-based missions and data, which present new possibilities.
- O.5. An effective national and international ecosystem for R&D grants that provides external funding and generates high-quality job opportunities.
- O.6. Pioneering efforts in High-Performance Computing at the regional level.
- O.7. Significant potential for applying Artificial Intelligence (AI) in astrophysics.
- O.8. Opportunities to become a key stakeholder in developing a sustainable, technology-based economy in the Canary Islands.

THREATS (External in origin and need monitoring)

- T.1. Base funding is below sustainable levels.
- T.2. Inadequate levels of investment in R&D at both national and international levels.
- T.3. Geographic distance from leading research centers in Europe.
- T.4. Complex and lengthy administrative procedures that hinder purchasing, formalizing agreements and pursuing an environmentally friendly use of resources.
- T.5. Absence of advanced technology partners in the region.
- T.6. Rigid, low salary employment conditions that are not competitive on an international level.
- T.7. Lack of financial support for active participation in the construction and operation of new major international research infrastructures and their planned instruments.
- T.8. Weakening of historical international partnerships.
- T.9. Growing number of satellite constellations impacting astronomical observations.

2.2 MEASURES TO ADDRESS WEAKNESSES AND THREATS

Below, we list the preventive measures IAC is implementing to address the weaknesses and threats that appear in parentheses.

A.1. Develop staffing plans adjusted to current needs.

- A multi-year plan to backfill positions prioritizing understaffed support areas. (W1)
- Strategize a multi-year plan for Ramón y Cajal (RyC) and Juan de la Cierva (JdlC) appointments with a gender diversity focus. (W2)
- Negotiate a new agreement for labor and non-civil servant positions at IAC. (W3)

A.2. Liaise with similar institutions to seek administrative simplifications.

- Engage with other Spanish research institutions to understand their processes and propose administrative simplifications where possible. (W9, W10, T4)
- Participate in ongoing conversations with the local government to propose sandbox policies that benefit R&D activities in general and astronomy in particular. (W9, W10, T4)

A.3. Leverage European Union (EU) and International Funding Opportunities.

- Increase the use of special EU funding programs for research and innovation in outermost regions. (T1, T2, T3)
- Establish internal policies for salary incentives for scientists requesting ERC grants. (W4, W5)

A.4. Raise Political and Public Awareness.

- Foster campaigns highlighting IAC's socio-economic impact and multiplier effects of investment in its infrastructures. (T1, T2)
- Work with regional, national, and international stakeholders to strengthen political commitment to sustainable funding. (T1, T2, T8)

A.5. Expand Observational Capabilities and Partnerships.

- Launch and strengthen initiatives for constructing new, cutting-edge facilities (e.g., CTAO, EST, ELF, NRT) ensuring IAC's managed OCAN remains a global leader in observational astronomy. (T7)
- Continuously upgrade existing telescopes and instruments to maintain competitiveness on a global scale. (T7)

A.6. Enhance Technological and Operational Capabilities.

- Strengthen IAC's technological expertise in advanced areas such as microelectronics, FPGAs, high spectral resolution, cryogenics, detector technology and readout electronics to meet OCAN's evolving needs. (T5, T7)
- Position OCAN as the premier site for major new telescopic installations (such as TMT), proactively securing necessary permits. (T7, T8)

A.7. International Promotion.

- Launch a global promotional campaign emphasizing OCAN's unique advantages (e.g., exceptional sky quality and state-of-the-art facilities). (T7, T8)
- Foster international collaborations to secure OCAN's involvement in initiatives that recognize the challenges posed by satellite constellations. (T9)

A.8. Recruitment and Talent Retention.

- Improve recruitment strategies to meet international standards, attracting both researchers and engineers. (T6)
- Promote new permanent positions for managers and technical specialists to strengthen support for IAC's activities. (W1, W7)

A.9. Productivity Monitoring and Digital Transformation.

- Implement a Key Performance Indicators (KPI)-based monitoring system to track and analyze OCAN's scientific productivity, enabling corrective measures for underperformance. (T8)
- Strategically anchor IAC's digital transformation, streamlining administrative processes and fostering operational efficiency, with completion targeted by 2028. (W6, W8)

A.10. Sustainability and Environmental Compliance.

- Develop sustainable practices to balance OCAN's operational needs with environmental restrictions and local community concerns. (W9)

A.11. Private Sector Collaboration and Long-Term Funding.

- Establish partnerships with industries in astronomy-related sectors (e.g., optics, robotics, AI) to foster co-development opportunities and enhance innovation. (T2, T5)

3. STRATEGIC PLAN 2026-2028

3.1. Strategic Goals and implementation Framework

This section describes the three major strategic goals IAC will pursue in the period 2026-2028, specifically:

I. **Research (**SGIa**)** and **Technological** (SGIb) excellence
II. International Leadership and Societal Impact
III. Talent, Organization and Transformation

After a description of the scope of each one of them and their corresponding implementation framework specific milestones are proposed when applicable.

3.1.1 SGIa. Research Excellence

Ia.1. Science Vision

The universe exhibits an extraordinary diversity of physical scales and structural hierarchy, from asteroids, individual stars and planetary systems to galaxies and the intricate cosmic web that links them. All of it can be viewed as a complex ecosystem where, within the framework of dark matter (DM) and astroparticle physics, matter condenses to form dust and molecules and grows into stars and planets, while stellar winds, outflows, and supernovae provide feedback that recycles mass and energy back into the surrounding interstellar medium enriching it in an evolving cosmological context. As one of the world's leading research institutions, the IAC conducts scientific work that addresses most of the fundamental questions in astrophysics, near and far, and covering almost all wavelengths and research areas.

We live extraordinary times with new breakthroughs expected around the corner. The strategic plan of the IAC for the next three years will focus on some of the most important problems in astrophysics where we have international leading roles: what is the nature of dark matter; the physics of inflation; how large scale structure is built in the universe; how galaxies, including the Milky Way have formed and evolved; how the global life cycle of stars affects the chemical evolution of the universe; whether life can form and evolve in other planets, and how magnetic fields connect the Sun and the heliosphere. We aim to launch a coordinated institutional effort to strengthen the research capabilities of the current research lines building **Synergies (S)** among them with specific **Science Goals (G)** to be accomplished during the 4-year period, and transversal actions **Transversal lines, (TL)** with specific **Milestones, (M)** to reinforce the international scientific and technological relevance of the IAC.

Ia.1.1. Strategic Synergies and scientific goals

Our future understanding of the universe at all scales is now relying on the use of ground- and space-based facilities (**TL4**), the development of instrumentation (**TL3**), the statistical power of large surveys of data and exquisite numerical simulations enabled by outstanding computational facilities (**TL2**), and the unstoppable emergence of artificial Intelligence (AI) (**TL1**). The IAC´s strategic plan relies on each of these four connected pillars **(TL1-TL4)**, building on them and using them transversely across all our four major synergies (**S**) in scientific objectives:

- **S1**: **The Sun and Star-planet interactions**. As a planet's story begins with its star, we will focus on the Sun to advance our understanding of the solar magnetic activity and its impact on the near-Earth environment. The characterization of exoplanets requires a detailed study of the physical processes at work in our nearest star—the Sun—as well as the mapping of small Solar System bodies such as asteroids, comets, and transitional or trans-Neptunian objects. These investigations provide critical insights into the factors that shape the structure and extent of planetary systems. Ultimately, they allow us to extrapolate how planetary environments are influenced by their host stars, recognizing that habitability is closely linked to stellar activity and variability.

- **S2: Stars and the interstellar medium (ISM).** All evolutionary aspects of the Universe rely on the physics governing the life cycle of stars, from massive to substellar, from early to late stages and associated compact remnants (white dwarfs [WD], neutron stars and black holes), ejecta (planetary nebula and supernova [SN] events), and the overarching impact of stellar multiplicity in this picture. As the Cosmos is a giant recycling bin where chemical enrichment is inevitable, nothing can be achieved if we do not account for the ISM, and some of the most complex circumstellar environments where life-bearing molecules can be produced, including water.

- **S3: Building structure in the Universe.** The hierarchical formation and evolution of galaxies—from dwarf systems to massive galaxies like our own MW, and up to galaxy clusters—requires dedicated efforts. Focusing on the study of structure formation across different scales, it aims to understand the imprints left on the properties of both gas and stellar components. It involves investigating how gas (re)cycles in the interstellar, circumgalactic, and intergalactic medium, considering the effect of SN and supermassive black holes, and tracing its evolution over cosmic time.

S4: Dark Matter. Determining the fundamental nature of non-baryonic DM, is one of the key long-standing questions in science. It has been identified as a priority in astrophysics and particle physics driving extensive observational and theoretical efforts worldwide and holding the potential for groundbreaking insights into the main constituents and physical laws of the Universe. The need of DM to explain astrophysical and cosmological observations suggests that either General Relativity is incomplete or that the current Standard Model of Particle Physics requires an extension.

DETAILED DESCRIPTION OF PROPOSED SYNERGIES

S1: A Planet Story begins with its Star

The Sun directly affects Earth's environment via space weather created by the magnetic connectivity between the two bodies. This is particularly relevant in the studies of exoplanets on stars further away, given that their habitability is strongly coupled to stellar activity. The Sun-Earth system offers our only opportunity to apply and create diagnostics of magnetic activity and apply it to other stars. Furthermore, characterization of stellar magnetic activity is important as it can hamper planet detection.

The expertise of the Solar Physics group will be used to maximize the scientific output from existing telescopic facilities, for the development of state-of-the-art instruments (GRIS, EMBER), novel simulation techniques, and diagnostics tools that incorporate new physics. The Solar group will inform the last stage of the design of the EST, a project of utmost importance for European solar physics, and will, **G1**, quantify the contribution of different physical processes to chromospheric and coronal heating related to magnetic fields, improving our understanding of the structure and dynamics of the solar corona. This will be done by combining observations at OCAN (GREGOR, SST), using new modelling and plasma diagnostic tools developed in-house such as the codes Mancha (multi-fluid MHD), PORTA (3D radiative transfer), and Hazel and HanleRT-Tenerife inversions.

At the IAC, we will, **G2**, expand our understanding of eruptive solar events, such as surges, UV bursts, spicules, jets and flares through realistic multi-dimensional modelling from the sub-photospheric layers to the corona. We will, **G3**, adopt a holistic approach to the investigation of the magnetism of the entire solar atmosphere combining the most advanced spectro-polarimetric observations from ground- (GREGOR, SST, DKIST), stratosphere (Sunrise3), and space-based (CLASP, Solar Orbiter, future MUSE) facilities.

Our solar system, other stars and planetary systems

A good characterization of the Sun is critical to understand the magnetic activity and seismology of stars with different stellar parameters and evolutionary stages (including solar analogs). Asteroseismology is key to constraining dynamo models. We will, **G4**, advance our knowledge of solar and stellar magnetism by analyzing spectroscopic and photometric observations of stars and by carrying out realistic 3D magneto-convection modelling of their subsurface and atmospheric layers, accounting for plasma partial ionization. This modelling requires fast-track access to HPC facilities (LaPalma cluster, Teide HPC).

The solar, stellar and exoplanet science groups at the IAC will work hand-in-hand to better understand the formation and evolution of exoplanetary systems. The characterization of planets requires a precise knowledge of the planet-host star's parameters (Teff, Fe/H, mass, radius, age). The analysis of spectroscopic data and of photometric time-series (transits, frequency-analysis for seismology) supplement each other, especially with regards to data from the upcoming PLATO space mission and the search for substellar companions around young stars with the Euclid mission.

The IAC will, **G5**, contribute to an overall understanding of planet formation and evolution by searching for and characterizing the physical properties of exoplanets and the timescales of formation, migration and evaporation. Special focus will be put on potentially habitable rocky planets, as well as debris material, in nearby and young (< 100 Myr) stars using transit and RV techniques (TESS, PLATO, ESPRESSO, HARPS-S-S3-N, CARMENES, NIRPS). We will, **G6**, carry out atmospheric characterization of transiting hot Jupiters and warm Neptunes with high- and low-resolution spectroscopy (JWST and ARIEL) and, **G7,** directly image exoplanets with high-resolution (GTCAO system and FRIDA).

Fundamental to astrobiology is the question of the origin of water and life on Earth and by extension to potentially habitable exoplanets. The formation of water rich asteroids and planets beyond the ice line and later inward migration can explain the existence of water in otherwise dry rocky planets and "water worlds" yielding the radius-period distribution of exoplanets. The IAC focus will be, **G8**, on the compositional characterization of primitive objects (asteroids, comets, satellites) with the GTC and the JWST to map water, carbon, and provide an organic compounds inventory. We will explore, **G9**, the role of near-Earth objects (NEOs) in the emergence of life, and the current risks they pose from a planetary defense perspective (follow-up and characterization of NEOs with OCAN, including ATLAS-Teide telescope and participation in ESA NEOMIR, Hera and RAMSES missions).

Besides asteroids, polluted WD and the rare debris disks formed around them are the only means we have of directly determining planetary composition. IAC researchers, **G10**, will study spectroscopic and photometric signatures of debris around or accreting onto WDs to characterize new sources, infer the chemistry of ancient planetary systems, and understand the physics fundamental processes, such as tidal forces.

S2: Stellar life cycle and the ISM

Astrochemistry has the power to be an interdisciplinary tool that covers most research areas at the IAC across different scales. Carbon, for example, plays a key role in the chemical evolution of the Universe, influences dust nucleation, matter recycling, and heating/cooling in space over cosmic times (e.g., the catalytic effects that specific carbon dust grains may have in enhancing the star formation at high red-shift could revolutionize our present understanding of galaxy formation and evolution).

We will, **G11,** address the carbon cycle using a multidisciplinary approach, including JWST data, organic chemistry synthesis, AI techniques for quantum-chemistry calculations, and laboratory experiments. We will, **G12**, use high spatial resolution capabilities (JWST, ALMA, IRAM, NOEMA, SKA, FRIDA, HARMONI) to understand how gas cycles across cosmic time, study the multiphase ISM, the transformation of gas into stars at the dawn of the Universe, how much material escapes from and cycles back to galaxies, and what drives these flows stellar winds, SN or Active Galactic Nuclei (AGN). As gas accretion is a ubiquitous phenomenon in astrophysics at all scales, from star and planet formation to binary systems, globular clusters, galactic centers, and the cosmic web, we will, **G13**, use dust as a tracer to map accretion filaments across various systems and scales using multi-wavelength observations and AI.

Binary stars everywhere

Observations imply that most stars exist in multiple systems, and in many cases will interact and alter each other's evolution dramatically via processes such as mass-transfer or common envelope evolution. We will use asteroseismology, **G14,** to understand the evolution of the internal structure and dynamics of the Sun and solar-like stars combining observations from SONG, PLATO and TESS and stellar models including binary interactions. We will focus on how binarity/multiplicity affects stellar evolution and its impact on the interpretation of stellar populations on the global scale. We will, **G15**, target massive stars and provide new constraints on the impact of binary interaction on their evolution by combining spectra from new and future large-scale surveys (IACOB, WEAVE, 4MOST), and the superb quality astrometric and photometric data delivered by TESS and Gaia.

We will, **G16**, provide tight observational constraints to compact binary evolution theories, and black hole and neutron star formation models by exploiting a significantly expanded catalogue of properly characterized black-hole binaries, cataclysmic variables, and ultra-compact binaries and study the role of post common-envelope evolution in planetary nebulae with integral field and multi-epoch spectroscopy.

With the discovery and characterization of new extremely metal-poor stars formed shortly after the Big Bang, we obtain reliable statistics on the dependence of stellar binary on metallicity. We will quantify its role on Galactic chemical evolution with spectroscopic surveys such as DESI, and the largest ground-based telescope facilities, in particular UVES and ESPRESSO on the VLT. We will, **G17**, study the IMF and the fragmentation of molecular clouds in the sub-stellar domain, considering the bias caused by unidentified binary and multiple systems with Euclid and JWST space missions.

S3: Resolved stellar populations, the MW and the Local Group

Several facilities which have a major Galactic archaeology/near-field cosmology focus will produce a large flow of data (Rubin Observatory, UNIONS, DESI, 4MOST, WEAVE, MOONS, Euclid), or deliver their final data releases (Gaia). The IAC is well positioned to produce important breakthroughs that will, **G18**, lead to the understanding of the formation and evolution of Local Group galaxies, particularly our own, through the study of the structure, star formation histories, chemical evolution and kinematics of stellar populations, and interpret these properties through modelling. Furthermore, IAC researchers will, **G19**, address the hierarchical formation of galaxies from the scale of the MW down to those of dwarf galaxies and assess the impact of interactions between galaxies through determination of their orbits and through the imprints left on the star formation histories.

The Local Group and its surroundings can and will be, **G20**, used as a stepping stone to study the distant and early Universe by understanding the physics and evolution of massive stars at low-metallicity, settling the abundance discrepancy and chemical composition patterns of ionized gas, improving the distance scale, paving the road for HARMONI resolved stellar population studies, and developing semi-empirical stellar spectra and populations models.

Building upon the E-MILES population models and fed with the BaSTI-IAC star evolution library (which can be improved via asteroseismology), as well as synthetic and empirical libraries developed in-house, we will, **G21** enable robust advancements in chemical evolution modelling and its integration with state-of-the-art numerical simulations, to be applied to the study of galaxy evolution, from the MW.

Galaxy Formation and Evolution

The IAC has implemented a solid research framework that addresses, from the smallest to the largest scales, how the properties of galaxies and cosmic structures change over time, with the goal of advancing our understanding of their co-evolution. We will do so, **G22**, by exploiting the privileged access to state-of-the-art surveys (WEAVE, Euclid, 4MOST, LSST) and world-class facilities (GTC, VLT, JWST, ALMA). By developing some of the most advanced tools to derive the morphological, kinematic, and stellar populations properties of galaxies, IAC researchers will **G23**, explore whether the star formation in galaxies is steady or violent, evaluate how it is affected by feedback from stars and supermassive black holes, and assess whether all the morpho-kinematic properties are compatible with predictions from numerical simulations. We will, **G24,** investigate the cosmic evolution of the Hubble sequence from ancient times to the local Universe using sophisticated AI techniques for galaxy classification applied to state-of-the-art observations and numerical simulations. We aim, **G25**, as well, to develop a new method to measure the Hubble constant with gravitationally lensed supernovae with multiple images and contribute to solve the Hubble tension.

S4: Dark matter, Cosmology and Astroparticles

We will target our understanding of the fundamental nature of DM by focusing on galaxies and (sub)haloes at the low end of the halo mass function. This is a particularly promising regime because it poses strong constraints on the nature of DM, the effects of baryonic feedback can be better controlled and tested with observations, and it provides lower astrophysical backgrounds for indirect detection signals. The IAC is ideally placed to have high impact in the field thanks to multidisciplinary expertise in observations and dynamical modelling, numerical simulations, gravitational lensing, and astroparticle physics. It will consolidate and expand IAC ongoing efforts such as the EU-funded UNDARK project and instrumental initiatives for the direct detection (DALI) or indirect detection of DM (AMS, CTAO, MAGIC, TMS). We will, **G26**, establish robustness of the small-scale problems of Lambda CDM through solid observational and theoretical determination of baryonic effects on the inference of DM halo properties, compare these predictions with those from alternative DM frameworks (self-interacting, fuzzy, warm), and carry out DM searches, **G27,** with world-leading sensitivity, reducing and improving the modelling of astrophysical systematics.

We will, **G28,** map the large-scale structure of the Universe to constrain fundamental physics. Precise measurements of the clustering of galaxies, the number counts of galaxy clusters, the redshift space distortions and the weak lensing effect using massive low-z surveys (Euclid, DESI, WEAVE, J-PAS), and their correlation with the Cosmic Microwave Background (CMB; via the integrated Sachs-Wolfe and the Sunyaev-Zeldovich secondary effects), will be used to set constraints on the dark energy equation of state, DM, modified gravity, neutrino masses and hierarchy, and the time variation of fundamental constants. We aim at performing a Full Bayesian Field Level Inference Cosmological analysis of galaxy surveys.

On the topic of physics of the early Universe and primordial gravitational waves with the CMB, we aim to, **G29**, improve the modelling of the Galactic synchrotron and anomalous microwave emissions, and study their correlations with thermal dust emission through the joint exploitation of data from our various experiments at the OT (QUIJOTE MFI2, TFGI, 90GHz camera, TMS, LSPE-Strip and GroundBIRD) and in the southern sky from Chile (ELFS-SA). We will, **G30**, derive constraints on the B-mode signal from inflationary gravitational waves in the CMB polarization with data from the CMB experiments at OT and Simons Observatory and will prepare scientifically to further improve these constraints with Litebird by 2035 and investigate the radio-synchrotron background with TMS, **G31**.

In astroparticles we will exploit the advantage of our world leading position with the CTAO, to focus on, **G32,** understanding of the origin, propagation mechanisms and chemical composition of cosmic rays and the production mechanisms and propagation of gamma rays in sources of extragalactic and Galactic nature using the AMS-02 experiment on board the International Space Station. We will, **G33**, study cosmic-rays and gamma ray sources via direct detection with AMS and indirect detection with Cherenkov telescopes and will, **G34**, continue the scientific exploitation of MAGIC and perform the first science with 4 LSTs and ASTRI.

Ia.1.2. Transversal Lines

ARTIFICIAL INTELLIGENCE (TL1)

The IAC hosts, generates, and utilizes a vast and diverse set of astrophysical data across its research lines, from observations to simulations. To face this data revolution, we created a group focused on AI for astrophysics, bringing together experts from solar physics to cosmology. Building on the successful foundation of this pioneering initiative in Spain, we will consolidate this effort and take it to the next level by establishing a transversal AI research line whose main purpose is to act as a service to all research at the IAC.

We envision improving deconvolution methods in speed and capabilities, making self-consistent 2D inversions of the solar atmosphere using neural fields, that include spatial and temporal correlations in the inferred parameters. We will also pursue the practical deployment of AI tools for the analysis of deep spectroscopic and imaging surveys (Euclid, JWST, DESI, ATLAS) and the data archive of the telescopes in the OCAN, in particular those produced by the ATLAS-Teide node. This will include a major effort to homogenize on a common scale the stellar parameters and abundances provided by major spectroscopic surveys to enhance their legacy value (e.g. Gaia-XP, WEAVE, Gaia-RVS, APOGEE). We will improve the development and calibration of simulation-based inference for different problems, from the exploration of resolved stellar populations of galaxies up to z~6 with JWST, to the detection of internal rotation using asteroseismology, to the discovery and characterization of exoplanets and near-Earth asteroids (NEAs). We will employ multi-modal self-supervised representations to boost the discovery potential of Euclid's deep field through outlier detection. Finally, we will explore ways to accelerate and improve image reconstruction and adaptive optics techniques.

Strong synergies will be created at the IAC such as integration and interpretation of astrophysical observations with fundamental physics via physics-informed ML, bridging studies of the solar magnetism or stellar evolution with the characterization of exoplanets, connection of galaxy evolution processes with large-scale structure formation and cosmology, and development of surrogate models to accelerate plasma and cosmological simulations.

This TL has the central milestone of building the multimodal IAC Foundational Model (IAC-FM). It aims to move beyond the current paradigm of developing specialized AI models for individual problems in a research center that works with very heterogeneous data, to create a core AI service accessible and adaptable for all research areas. This initiative can be considered as a path towards general and scalable AI for astronomy.

The primary goal is to build a large multimodal, multiscale, and multi-domain model, directly benefiting from the unique diversity of research lines existing at the IAC, capable of learning general representations of astrophysical objects and their properties (tokenization) from diverse data modalities, maximizing the utilization of our datasets, **M1**, the exploitation of more advanced AI algorithms and reducing the time to publication. A significant effort will be made to interpret the results obtained by AI, particularly regarding the importance of each input parameter, and to determine their specific applicability domain. We have already initiated collaborations with international AI initiatives and centers (MultiModalUniverse, Polymathic, Universe) to ensure its success. The general representations produced by the IAC-FM prototype (**M2**) can be later used for other downstream tasks, such as simulation-based Bayesian inference, unsupervised classification, and supervised regression, and will be made publicly available (**M3**).

We have the central milestone of building the multimodal AI IAC Foundational Model (FM), given the access to observations and models of different astrophysical objects at the IAC. A key aspect of this endeavor will be the active engagement of researchers from all IAC research lines. This domain expertise will be crucial in understanding the nuances of each data type and in defining appropriate tokenization strategies for photometry, spectroscopy, imaging, polarimetry, and associated metadata such as object descriptions and observation parameters. The IAC-FM will be made publicly available to the community, contributing to establish the IAC as a nationwide leading institute in AI for astrophysics.

To support the technical development and deployment of this foundational model, we will engage a freelance engineer with experience in large-scale data management, machine learning infrastructure, and software development.

COMPUTING AND DATA ARCHIVES (TL2)

CIELOS (Canary Islands data cEnter for astronomicaL Observations and Simulations) is a strategic initiative led by the IAC aimed at establishing a cutting-edge data center for the storage, processing, and dissemination of astronomical data. Designed as an open-access platform for both the scientific community and the public, CIELOS will serve as a central hub for data originating from the 20% Spanish allocated time at OCAN, numerical simulations led by IAC researchers, and data from international collaborations in which the IAC plays a leading role. It will enhance scientific discovery, collaboration, and outreach, while addressing the challenges presented by the increasing volume of data in modern astrophysics promoting open science.

CIELOS addresses the need of data management and processing and simulation storage by developing advanced tools for high-level data processing, archiving, and distribution. This includes not only reduced and calibrated images or spectra but also advanced data products ready for immediate scientific use. CIELOS will:

- M4: Create a dedicated data center at the IAC designed as a global platform.
- M5: Establish a specialized unit for data processing, and archiving.
- M6: Build a strategic coordination partnership with the Spanish Virtual Observatory (SVO) managed by the Centro de Astrobiología (CAB, CSIC-INTA) to ensure optimal data management and dissemination.
- Enable the scientific reuse of data, facilitate collaborations, and foster innovation through the integration of AI tools.
- Distribute science ready data delivered by specific facilities.

The unit will assist in the development and maintenance of data pipelines for IAC-owned telescopes (IAC80, TCS, GREGOR), instruments (HORuS, EMIR) and surveys (EUCLID, Rubin Observatory). These pipelines will be designed to support Big Data environments and incorporate AI-driven tools to handle the data deluge expected from upcoming instruments like GTC-AO+FRIDA, CHORUS, MIRADAS, and new surveys generating tens of terabytes per night. Future phases will incorporate additional IAC-led initiatives such as CTAO and the EST.

CIELOS aims to serve the international astrophysics community by making OCAN and IAC-generated data freely accessible and interoperable with other international datasets. By doing so, it ensures that the OCAN become key contributors to flagship astronomical surveys like Euclid, Rubin Observatory, DESI, JPAS, QUIJOTE, and WEAVE.

CIELOS will use computing servers, GPU optimization, and permanent engineering positions already in place at the IAC and will consolidate these resources into a coherent and strategic unit.

With dedicated computing servers, GPU optimization, and permanent engineering positions already in place at the IAC, CIELOS will consolidate these resources into a coherent and strategic unit. This will help attract further investment and cement the IAC’s leadership in data-intensive astronomy. Beyond general IT services, the IAC has a dedicated unit — the Research IT Support Service — composed of 5 permanent staff who provide technical support in areas such as web development, supercomputing, GPU usage, and AI tools. This team will manage CIELOS within the IAC and will ensure the retention of technical know-how generated by the project, supporting its long-term continuity and innovation.

3.1.2 SGIb. Technological Excellence

Ib.1. Observatory Development and Large-Scale Projects

During the 2026–2028 period, the IAC will reinforce the international leadership of the OCAN as one of Spain's most prominent Infraestructuras Científico-Técnicas Singulares (ICTS) and a unique site for global astrophysics[3]. The recent inclusion of the Observatorios de Canarias in the updated National ICTS Map 2025-2028 by the Spanish Ministry of Science, Innovation and Universities formally acknowledges their strategic importance for the national research system. In this context, the IAC's priority will be to further strengthen the scientific, technological, and institutional role of the observatories as world-class facilities that enable frontier research and foster major international collaborations.

The IAC will ensure the effective implementation of flagship projects such as the Cherenkov Telescope Array Observatory– Northern (CTAO-N), the EST, the Tenerife Event Horizon Telescope Antenna (TEA), and the Small ExoLife Finder (SELF) prototype, among others. These infrastructures exemplify the observatories' capacity to attract and host high-impact international investments, reinforcing their scientific excellence and competitiveness within the European Research Area. In parallel, the IAC maintains its engagement with the Thirty Meter Telescope (TMT) project, for which La Palma remains a scientifically and technically viable alternative site. The readiness of infrastructure and regulatory frameworks will allow the OCAN to remain at the forefront of opportunities to host future global observatories.

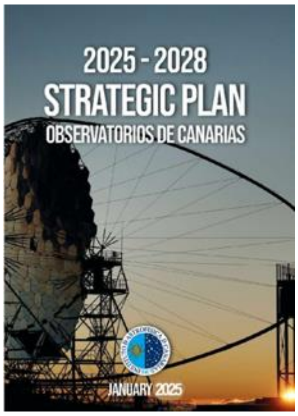

Figure 32. Cover of the 2025–2028 Strategic Plan for the OCAN

The IAC will also continue advancing adaptive optics and laser guide technologies, key to maintaining the observatories' competitiveness in high-resolution astronomy. In particular, the GTCAO-LGS adaptive optics system, developed for the GTC, represents a major step forward in enabling diffraction-limited imaging and precision spectroscopy for current and future instrumentation. The lessons learned from this development will guide the integration of Laser Guide Star (LGS) capabilities across other OCAN facilities, ensuring that the Canary Islands remain at the forefront of optical and infrared astronomy.


Figure 33. Sunset panoramic of the GTC.

[3] Annex 1 includes the new Strategic Plan 2025 2028 of the OCAN.

Moreover, the IAC will advance the modernization and digitalization of the observatories' infrastructures, with particular attention to data management, high-speed connectivity, and sustainable operations. The creation of a dedicated OCAN Data Centre will strengthen data processing and open-access services, while new initiatives in adaptive optics, free-space optical communications, and atmospheric characterization will sustain the observatories' technological edge.
The IAC continues to give high importance to protecting the environment and keeping the skies of the Canary Islands clean and dark for astronomy. The observatories will take new steps to protect this natural resource by installing solar panels to produce renewable energy, improving wastewater systems to reduce pollution, and increasing the monitoring of environmental conditions. These actions help the OCAN remain a model not only for excellent science but also for sustainability within Spain's ICTS Map 2025-2028.

Through its participation in the ICTS National Plan, Horizon Europe, and other international programs, the IAC will pursue new opportunities to expand the observatories' capabilities, secure long-term investment, and maintain their position among the world's leading astronomical facilities.

Ib.2. Instrumentation and Emerging Technologies

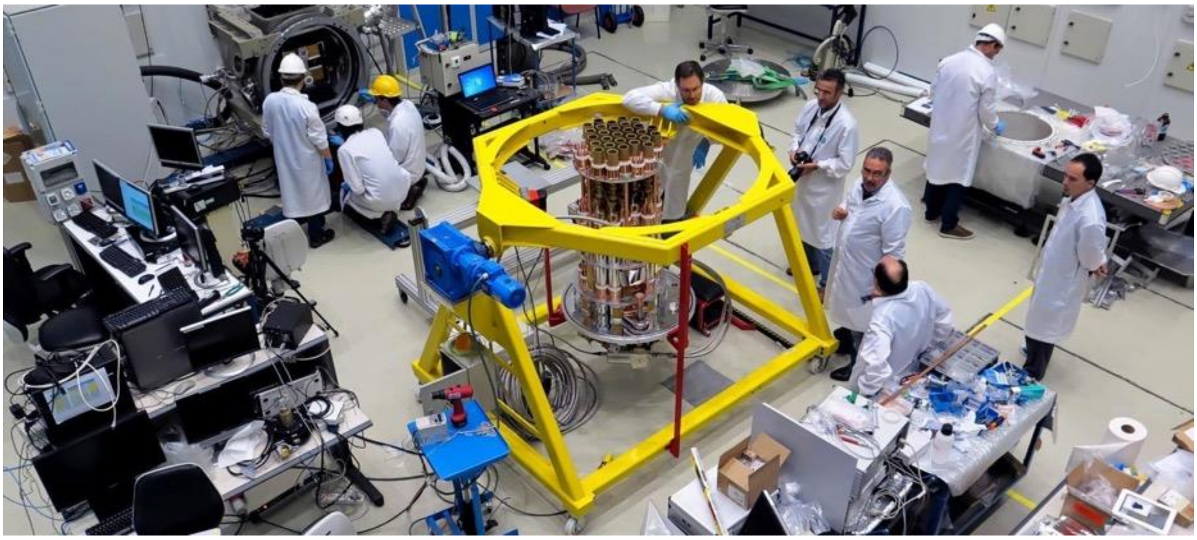

Figure 34. IAC engineering staff integrating a scientific instrument in the Assembly, Integration and Verification (AIV) Laboratory

The IAC gives strategic importance to the development of scientific instrumentation as a key element of its mission, both for the OCAN and for major international observatories. The Technology Division designs and builds optical and infrared cameras, low- and high-resolution spectrographs, cryogenic systems, multi-object spectrographs, fibre-optic assemblies and microwave instruments. Beyond their direct scientific use, these technologies generate capabilities and knowledge that can be applied to other technical domains.

The Division's engineering teams cover the full technological cycle: electronics, mechanics, software, optics and project management, supported by advanced laboratories for optical testing, detectors characterization, cryogenics, coatings and precision manufacturing. This comprehensive capability allows the IAC to design, integrate, verify and maintain complex instruments, while training technical staff and transferring technology to other sectors when appropriate. These capabilities have enabled the IAC to lead or contribute to key ground-based and space projects (e.g., OSIRIS@GTC, EMIR@GTC, ESPRESSO@VLT, QUIJOTE, GRIS@GREGOR, LST for CTAO-N, PLATO, NISP@Euclid, PHI@Solar Orbiter, PACS@Herschel, LFI@Planck). Recent years have seen important contributions to instruments and systems for world-class facilities, including adaptive optics for the Gran Telescopio Canarias (GTCAO and LGS), subsystems for HARMONI and ANDES at the ELT, the FRIDA and MIRADAS spectrographs for GTC, the HARPS3 for the INT, the WEAVE instrument at the WHT, and components for the EST and the QUIJOTE experiment. These projects demonstrate the capacity of the IAC to combine scientific excellence with technological leadership and to maintain long-term collaborations with leading international consortia.

New technological areas are now expanding the IAC's potential. The Centre for Advanced Optical Systems (CSOA) will enable the fabrication and testing of large and high-precision optical components, supported by new coating and metrology facilities. In parallel, developments in integrated photonics open new possibilities for compact optical systems, interferometry and adaptive optics applications. The IAC is also progressing in superconducting detectors (MKIDs) and cryogenic readout technologies, strengthening its position for future instrumentation in cosmology and faint-source detection. These lines are complemented by ongoing work in space technologies, optical communications and data systems, ensuring a coherent evolution from ground to space-based instrumentation.

During the next 3 years the IAC will continue to consolidate its engineering capabilities in electronics, optics, mechanics and software, reinforcing systems engineering and quality assurance to meet the growing complexity of large facilities. Moreover, instrumentation will have a major support as a strategic activity of the IAC.

Ib.3. Transversal Lines

TECHNOLOGY STRATEGY (TL3)

Building on the above mentioned capabilities, the IAC is involved in an extensive portfolio of instrumentation projects unique in the world, spanning from gamma rays to microwaves. In the infrared, three instruments for high angular resolution are under development: HARMONI@ELT, with full responsibility for its control electronics and cryogenic pre-optics; FRIDA@GTC, a multi-scale near-IR spectrograph with in-house development of control and detector data acquisition systems; and GRANCAIN@GTC, a near-IR camera covering JHK bands, with a diffraction-limited resolution in a 22x22 arcseconds field of view, led by the IAC. GTC has an ambitious next generation of instrument program that IAC plans to actively contribute. For solar physics, the IAC leads EMBER@EST, a near-IR spectropolarimeter using state-of-the-art image slicers for high-resolution mapping of the solar atmosphere. All these instruments will operate with AO correction, an area that also includes leadership in the development of the GTCAO and laser guide star (LGS) systems for the GTC, and multi-conjugated adaptive optics (MCAO) for the EST.

AO expertise is uniquely concentrated in Spain at the IAC. This singularity will be strengthened with the SO program (**M7**) by ensuring the preparation for the early science phase of the GTCAO+LGS encompasses multiple research lines. Examples of science cases for the GTCAO system include high-resolution imaging and spectroscopy of M31 (Andromeda), the sizes and structures of high-redshift galaxies, atmospheric characterization of directly imaged exoplanets, and high-resolution images and spectroscopy of gravitational lenses discovered with Euclid or JWST.

The IAC develops MUSOL to monitor the global solar magnetic field, key subsystems for ANDES@ELT, and contributes to HARPS3@INT as part of the Terra Hunting Experiment and DALI, a fully in-house cryogenic haloscope, for the detection of axion dark matter. At microwave frequencies, developments include TMS and two instruments for QUIJOTE: MFI2 and NGI. Further contributions are made to the international experiments GroundBIRD and LSPE-STRIP, hosted at the TO.

For space missions, contributions include the MEU-PSU power units for PLATO (ESA) and the cryogenic thermal control system for the LiteBIRD telescopes (JAXA). In parallel, the

MKIDs initiative develops superconducting detectors and their cryogenic data acquisition systems, while consolidating in-house capabilities in cryogenic and photonic validation.

The IAC also contributes to next-generation facilities, including the four LSTs of CTAO, the ASTRI telescopes, EST, and the future 13-m ngEHT antenna for global VLBI (TEA). These developments and future wide-field spectroscopic surveys like the wide-field spectroscopic telescope and existing surveys such as WEAVE ensure strong complementarity between IAC-led instrumentation and large international infrastructures.

The technical personnel available at the IAC for the multiple engineering projects is limited and they must resort to external funding opportunities to secure staff resources. However, there are often mismatches between the overlap of the different grants they use for their teams. This Strategic Plan allows a quite practical and flexible way to allocate engineers to various programs where personnel shortages appear, thus playing a crucial role in supporting the engineering teams that drive our ongoing (**M8**) and future instrumentation programs (**M9**). (see Ib.4).

How we complement the science done from Space

Instrumentation developed or led by the IAC plays a central role in complementing space science by providing the resolution, flexibility, and long-term monitoring that space missions cannot achieve alone. Instruments such as FRIDA, GRANCAIN, combined with GTCAO+LGS at the GTC, enable diffraction-limited imaging and spectroscopy for the follow-up of exoplanets, AGN, and galaxy-scale lenses detected by JWST, Euclid, TESS, and PLATO, while HARPS3, ANDES, and HARMONI extend the characterization of planetary systems, stellar populations, and galaxy dynamics to new limits in sensitivity and resolution. In solar physics, MUSOL and EMBER (EST) complement Solar Orbiter, SDO, or Hinode. QUIJOTE, TMS, and DALI support LiteBIRD. ATLAS-Teide work in synergy with the IAC-led IACSAT minisatellite and the NEOMIR mission, complements PLATO through dedicated photometric monitoring of bright nearby stars, and supports exoplanet and asteroid science together with HARPS3 and ANDES.

By combining the reach of space missions with the flexibility and resolution of ground-based facilities, the IAC instrumentation strategy enables a coordinated, multi-wavelength, and multi-messenger approach to astrophysics. It supports evolving scientific needs across the electromagnetic spectrum and maximizes the return of both space- and ground-based observatories.

OCAN AND COMMUNITY SERVICE (TL4)

Research infrastructures in the OCAN

The OCAN are among the world’s most productive and cost-effective astrophysical facilities, offering exceptional resources for Spanish science. Designated as an ICTS, OCAN are devoted to exploring the universe and protecting the Canary Islands’ skies, recognized as a national heritage. At OCAN, IAC integrates technological innovation, international collaboration, and a strong societal commitment, reinforcing its role as a cornerstone of global astronomy and a beacon of scientific excellence.

As of 2024, 47 installations from 114 international institutions from 25 countries are present at OCAN. To date, international investment has surpassed 800 million euros, with strong potential to double, delivering major global scientific impact and high returns for Spain’s research, development, and innovation ecosystem.

The IAC just presented a strategic plan of the OCAN for the 2025–2028 period that builds on the advanced expertise and international collaboration that have shaped IAC into a leader in global astronomy. It presents an ambitious vision centered on 31 strategic actions, 17 of which are deemed high priority. The plan includes a funding request of 30.26 million euros under the ICTS National Plan. Key telescope projects include LGS technologies for OCAN facilities, the CTAO, the EST, a node of the ngEHT, technologies for the ELF prototype, and IAClink, a dedicated facility for research and development in Free-Space Optical Communications.

OCAN and the TAC

The IAC will take the necessary steps to modernize the Spanish TAC with the implementation of new proposal submission tools (**M10**) and a double-blind peer review process (**M11**). The TAC committee, composed of qualified astrophysicists affiliated with national and international research institutions, oversees about 20% of Spain's observing time allocated under international cooperation agreements with the IAC. A double-blind peer review for both solar and nighttime TAC programs, where neither the reviewers nor the authors are identified, has proven effective in space observatories (e.g., JWST, HST, ESO), significantly increasing proposal success rates for Principal Investigators (PI) from underrepresented groups and early-career researchers, while reducing biases related to gender, nationality, and age.

We will also implement tools for tracking the data publishing process (**M12**), as a way of measuring the impact of the OCAN ICTS competitively accessed facilities run by the IAC. We will apply the same tools and review system to the 5% international time managed by the CCI. The Cooperation Agreement in Astrophysics, an International Treaty**,** was signed in 1979 grants decision-making through the CCI (meets twice a year). We have identified inefficiencies in some of the CCI's decision-making, partly due to limited technical support at the IAC. This strategic plan addresses that gap and will implement changes and add administrative support to streamline operational procedures.

Furthermore, we have taken concrete steps toward formalizing agreements (**M13**) with the Space Telescope Science Institute (STScI), which operates the HST, the JWST and soon the Roman telescope. These agreements, expected to be formalized in the next few years, would aim to allocate time for joint programs in which the primary science is driven by HST, JWST or Roman, but where multi-wavelength observations from a complementary auxiliary observatory are critical to achieving the scientific goals of the proposal. Such joint programs will increase the international visibility of the OCAN, of the science done in Spain and enable participation in high-impact publications, thereby enhancing the scientific impact of the Spanish ICTS in the international community.

OCAN and Multi-Messenger astronomy, M14. We aim to develop new tools to enhance the efficiency of multi-messenger and time-domain astronomy. Our observatories host world-leading instrumentation across a broad wavelength range (radio, optical, IR, gamma-ray) and diverse technical capabilities: wide fields of view for sources with large positional uncertainties (e.g., Gravitational Waves [GWs], neutrinos), and extensive photometric and spectroscopic follow-up capabilities. The GTC stands out for its unmatched capacity to follow up faint transients. This places our observatories in a unique position to deliver one of the most complete multi-wavelength ground-based coverages within the multi-messenger framework, building on IAC's experience with AMS data in coordination with Cherenkov telescopes, transient multi-wavelength follow-ups, and DM searches.

Protecting the skies for astronomical observations

The OCAN are the backbone of the IAC, forming the foundation of observational astronomy in Spain and enabling key international collaborations that have driven the growth of Spanish astronomy. Protecting and characterizing the skies over the Observatories remains a core, ongoing mission of the IAC.

International agreements promoted by the IAC enabled foreign infrastructures at OCAN and led to Spain's pioneering 1988 "Sky Law", regulation protecting OCAN from light, air, and flight pollution. Though it has inspired similar laws elsewhere, none match its national scope or legal strength.

A growing challenge for astronomy is the rise of satellite mega constellations. The IAC is actively leading global efforts to address this complex issue through the International Astronomical Union (IAU), the UN's Office for Outer Space Affairs (UNOOSA), and Committee on the Peaceful Uses of Outer Space (COPUOS), as part of Spain's official delegation.

Over the next three years, the IAC will implement the ambitious vision detailed in the strategic plan of the OCAN 2025-2028 centered on 31 strategic actions, 17 of which are deemed high priority. The plan includes a funding request of €30.26 million under the ICTS National Plan, which will support initiatives to enable high-impact science through the development and operation of cutting-edge international telescopes.

Within this transversal line of the Strategic Plan IAC will pursue to:

- Modernize the TAC at the OCAN, including the introduction of new proposal submission tools and the adoption of a double-blind process.
- Increase the service mode time offered to the Spanish community.
- Establish agreements with other observatories HST, JWST to allocate time for joint programs.
- Implement new tools to enhance the efficiency of multi-messenger and time-domain astronomy.
- Improve coordination among telescopes to optimize usage and reduce response times.
- Strengthen the ongoing synergies with Rubin Observatory and the Subaru-GTC agreement for large field of view counterpart searches.
- Strengthen the early science phase of the GTC AO suite.

These changes entail the need of additional and dedicated administrative support.

Ib.4. Ongoing and Future Telescopic Projects

This section describes the major telescopic projects existing at the IAC and that are at various stages of its definition or implementation. For each of them, we provide a Project Milestone that should occur during the timeframe of this Strategic Plan.

- Ib.4.1. Reinforcing 10.4m GTC as the Spanish flagship in visible and IR observational astronomy


Figure 35. GTC

The 10.4 m Gran Telescopio Canarias (GTC) is the world's largest optical-infrared telescope and the flagship of Spanish observational astronomy. This strategic action aims to reinforce its scientific leadership by maximizing available observing time and enhancing the quality of its data. It also seeks to complete and upgrade the telescope's original capabilities through the incorporation of new cutting-edge instruments. In parallel, the GTC will continue expanding its international partnerships to strengthen its global reach and financial sustainability.

During the next three years, the priority will be maximizing the quality of the GTC science data, commissioning and exploiting the new science instruments (GTCAO, FRIDA) and capabilities like the Laser Guide Start (LGS) system. IAC is competing to participate in the Multi-Conjugate AO (MCAO) system for GTC through a solicitation submitted in 2025

Design new instrumentation to provide simultaneous optical/IR multiwavelength coverage at medium spectral resolution. Increase the internationalization and improve the operations budget, exploiting the agreement with NAOC China Academy of Sciences that will provide a new ultra-stable high dispersion spectrograph for GTC (CHORUS).

Main project Milestone for the current Strategic Plan, M15: To offer in the GTC TAC the complete GTCAO system with the LGS and FRIDA in 2028. Prior to this achievement, partial availability of subsystems of GTCAO will allow scientific targets such as monitoring substellar companions via astrometry and determine their dynamical masses.

- Ib.4.2. European Solar Telescope (EST)

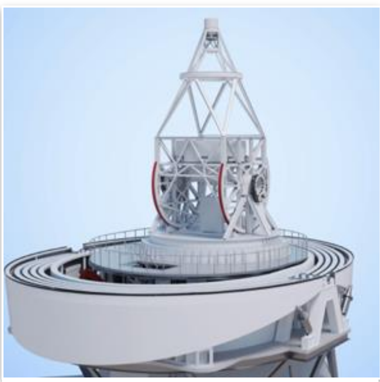
Figure 36. EST's structure

The EST will be the largest solar telescope in Europe, featuring a 4-meter primary mirror and the most advanced technologies available. Its goal is to provide the solar scientific community with an innovative tool to observe and understand the Sun. In the next 3 years the IAC will lead the preparatory work for the construction of the EST as well as instrumentation and systems projects, leveraging its expertise and accumulated knowledge over the years. A critical milestone is to present to the funding agencies a final Construction Plan in 2026. IAC will lead (1) the development of a spectrograph for EST that will operate in the near-infrared with an IFU-based on image slicers, (2) the development of the EST Multi-conjugate AO system and (3) the EST global Construction Project.

Main project Milestone for the current Strategic Plan, M16: Start construction of the EST a the ORM in 2028

- Ib.4.3. Cherenkov Telescope Array (CTA) and ASTRI

Figure 37. LST-1 (CTAO-N)

CTA comprises two sites, one in the northern hemisphere at the ORM, and one in the southern hemisphere near ESO's Paranal site in Chile. The CTA baseline array layout foresees the construction of 4 large-size telescopes (LST) and 9 mid-size telescopes (MST) at the ORM site. The CTAO design builds upon the experience gained with the successful current instruments, including the MAGIC telescopes currently in operation at ORM. The 4 LST are expected to be completed by end of 2026, and the first five MST by end of 2029. ASTRI is a set of 9 Cherenkov Telescopes to be deployed 2025-2026 by INAF at Teide Observatory, in collaboration with IAC.

The design and subsequent construction of the Operations Building should be finished by 2028.

Main project Milestone for the current Strategic Plan, M17: To deliver the four LSTs to the CTAO for their operations and to finish the construction of the first MST-3.

- Ib.4.4. Small Exo-Life Finder (SELF)

Figure 38. Artist´s impression of SELF

Lead the development and science exploitation of the 3.5m prototype for ELF (small-ELF) as a technology demonstrator of the 30-40m ExoLife Finder (ELF) telescope which aims to perform high-contrast imaging of exoplanets to enable the search for signs of life. Small-ELF will feature 15 mirrors of 0.5m in diameter,

each with a small, elliptical secondary mirror; mounted on a bicycle wheel support structure of 3.5m in diameter which will be lightweight. As a nulling interferometer it will produce high contrast imaging at sub-arcsecond scales.

A key innovation of SELF are 15 controllable 0.5m subapertures (=mirrors)

Main project Milestone for the current Strategic Plan, M18: First light of SELF. The scientific main objective of SELF is to directly image substellar companions with the 3.5-meter Small-ELF under development by the newly established IAC Laboratory for Innovation in Opto-Mechanics (LIOM).

- Ib.4.5. Next Generation Event Horizon Telescope (ngEHT) Antenna

Figure 39. ng EHT

Collaborate with the Smithsonian Astrophysical Observatory and the Instituto de Astrofísica de Andalucía on a new 13m antenna at the Observatorio del Teide. The ngEHT project aims to transform our understanding of black holes by capturing the movement of luminous matter as it spirals into the event horizon. The antenna will contribute to global Very Long Baseline Interferometry networks and operate independently for rapid response to cosmic events (gravitational waves, kilonovas, supernovae), ensuring swift follow-up observations. This initiative builds on the EHT Collaboration's success in producing the first-ever images of the horizons of the black holes SgrA* and M87.

Main project Milestone for the current Strategic Plan, M19: to start the groundwork for the facility in 2027.

- Ib.4.6. Cutting-edge technologies for high spectral resolution (ANDES, EMBER)

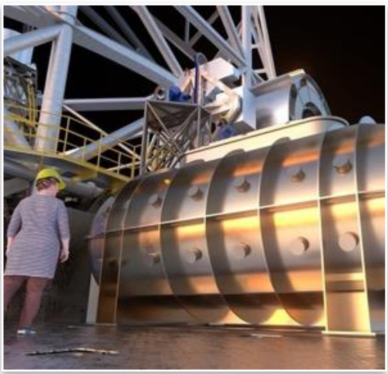

Figure 40. Artist's impression of the ANDES instrument for ELT.

The IAC will develop state-of-the-art high-spectral resolution instruments for large telescopes.

ANDES (ArmazoNes high Dispersion Echelle Spectrograph): IAC leads the Spanish contribution to the design and development of the ANDES instrument for the 39m-diameter Extremely Large Telescope (ELT, ESO, Chile), contributing with the design and development of the optomechanics of the UBV and RIZ spectral arms. From 2025 to 2027, the IAC will deliver the corresponding Final Design Review (FDR).

EMBER (EST SpectropolariMeter Based on mirror-slicEr in the Near-infraRed) is a near-IR integral field spectro-polarimeter based on image slicers that will provide the acquisition of two-dimensional maps along with the polarized spectra of each point in the solar surface. IAC leads this instrument with the goal of FDR by 2028.

Main project Milestone for the current Strategic Plan, M20: to carry out project's Preliminary Design Review (PDR)

- Ib.4.7. Cutting-edge technologies for high spatial resolution (AO for EST, GTC, ELF)

Figure 41. AO system at the AIV Laboratory. IAC's Headquarters

We will develop three major Adaptive Optics (AO) subsystems for large telescopes:

MCAO for EST. We have developed a MCAO bench for EST. During the next four years we will focus on: i) the study of MCAO performances; ii) Comparison of calibration strategies; iii) Implement an NCPA method; iV) Study the influence of spider and pupil rotation on the WFS measurements; v) Optimization of subpixel algorithms; vi) Characterization of AO correction on extended sources; vii) numerical simulations to evaluate the performance of the EST AO as well as the error budget of the system.

The GTC Adaptive Optics system. The objective is to equip the GTC with an AO System to correct the effect of atmospheric turbulence on the light coming from space, and to enable the exploitation of GTC's high spatial resolution capacities. The instrument is currently under technical commissioning at GTC. During the next 4 years, we will develop an artificial laser-guided star system (LGS) that will feed two new scientific instruments currently under development (GRANCAIN and FRIDA).

Small-ELF AO system. IAC in partnership with CNRS and Univ. of Georgia (USA) will develop and commission the AO system for Small-ELF including the use of photonic lanterns and new AI wavefront sensing algorithms.

Main project Milestone for the current Strategic Plan, M21: To offer in the GTC TAC the GTCAO system with NGS and FRIDA in year 2027 and with LGS in 2028.

- Ib.4.8. Laser communications with space (IAClink)

Figure 42. ESA laser communication experiment at the OT

Laser communications is key to achieve large data download rates for space observatories. It is a field closely related with the AO techniques IAC develops for compensating atmospheric turbulence. IAC aims to create a dedicated laboratory for space classical and quantum communications and reinforce current collaborations with European institutions (including ESA) and private companies. We aim to create the IAClink facility to develop a laser-based communication link between the observatories in Tenerife and La Palma. This facility will be used as a test-bench open to research groups in public centers and industry.

Main project Milestone for the current Strategic Plan, M22: To start the groundwork for the facility at the OT in 2027

- Ib.4.9. Cutting edge Optical/IR technologies (HARMONI, CSOA, LIOM)

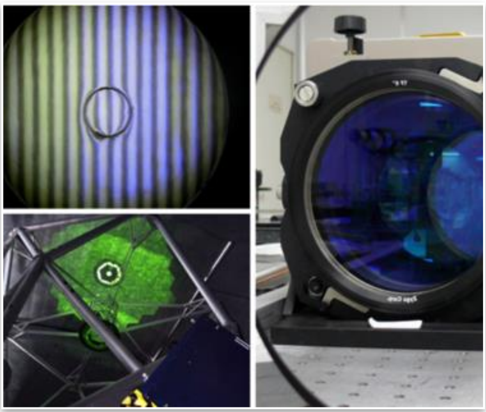

Figure 43. Optical components associated with the CSOA.

HARMONI: This first-light instrument for the 39m ELT will address a broad range of scientific goals, from the direct imaging and spectroscopy of exoplanets to the study of the properties of high-redshift galaxies. The Univ. of Oxford leads the consortium and the IAC is responsible for the instrument control system and the pre-optics of the spectrograph. The main milestone for the period 2025-2028 will be the completion of the Final Design of the full instrument.

CSOA: It is a unique infrastructure in Spain for the manufacturing of high-quality optical elements, including mirrors up to 1.5 m in diameter. This cutting-edge technology, able to meet today's astrophysical requirements, is highly demanded and is available to very few centres around the world.

CSOA will strengthen the participation of the IAC and the Spanish astrophysics community in the development of large telescopes and their instrumentation.

LIOM: this new Laboratory aims to create Innovative Optics (ultra-light mirrors), Mechanics (tensegrity), Integrated Photonics, and to develop new optical and mechanical technologies to incorporate into the next generation of extremely large telescopes, such as the ELF.

Main project Milestone for the current Strategic Plan, M23: to develop a business model for the CSOA in the context of the CELESTE program by 2027.

- Ib.4.10. Microwave technologies for CMB polarization and spectroscopy

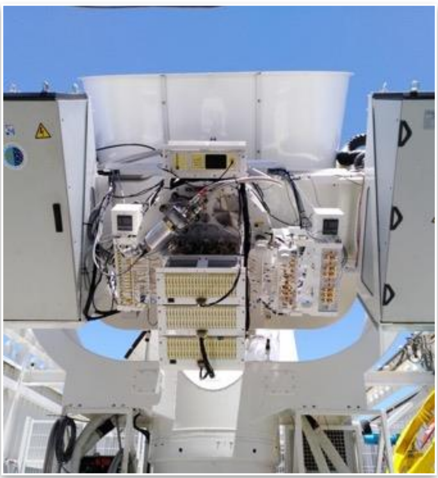

Figure 44. QUIJOTE Telescope. CMBLab at OT

The CMB group at the IAC leads the QUIJOTE and Tenerife Microwave Spectrometer experiments, which are part of the CMBLAB at Teide Observatory. QUIJOTE aims to characterise the polarization of the CMB and other physical processes, Galactic or extragalactic, emitting in the microwave.

The IAC will expand the development of new microwave technologies to consolidate our leadership in Cosmic Microwave Background studies by exploiting the two QUIJOTE telescopes and state of the art instruments for CMB polarization and spectroscopy. Moreover, to enlarge our international collaborations in CMB, with projects such as LSPE-STRIP (CNR, Milan), and GroundBIRD (Japanese Institute of Advanced Photonic RIKEN). Similarly, we intend to develop the Tenerife Microwave Spectrometer (TMS) and participate in new experiments to be installed at Simons Obs. in Chile.

Main project Milestone for the current Strategic Plan, M24: to publish the tender for the NGI (Ninety-GHz Instrument) in the first two years of this Strategic Plan.

- Ib.4.11. The 4-meter New Robotic Telescope (NRT)

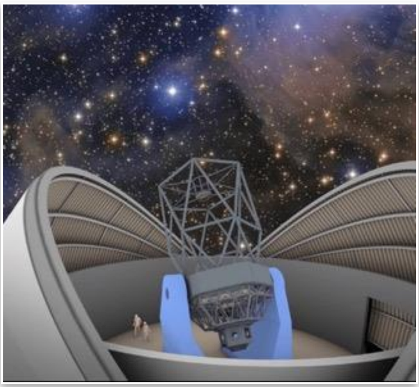
Figure 45. Artist's impresión of NRT

The NRT (New Robotic Telescope) is a project to design and build the world's largest robotic telescope: a 4-meter diameter segmented optical telescope that will operate completely autonomously to observe transient events that cannot be predicted and fade away in a short time.
It will provide imaging and spectroscopic capabilities to explore a wealth of night-sky transient targets. IAC will lead the manufacturing of the telescope optics and the telescope control software

The project requires important technological advances in the areas of optics, mechanics, electronics, and software, particularly the development of a robust, reliable, and efficient control system. The project plans to accomplish the design of the telescope and its instrumentation along next three years.

Main project Milestone for the current Strategic Plan, M25: to consolidate the consortium and make the project financially viable.

- Ib.4.12. Advanced Technical and Logistical support at the Observatories


Figure 46. Panoramic view of ORM

The IAC will promote collaboration with technological and industrial partners to identify the best infrastructure support, including the improvement of the internal fiber optic network within both observatories.

The installation of new fiber optic infrastructure will not only bolster the existing infrastructure but also provide additional capacity to support large-scale future scientific projects. These redundant connections will enable the observatories to maintain their leadership in international astronomy, facilitating the deployment of new instruments, advanced monitoring networks, and collaborative projects requiring low-latency, high-speed communications. This action will ensure redundant and highly reliable access to scientific facilities, minimizing the risk of disruptions that could compromise the operation of telescopes and other critical infrastructure.

Main project Milestone for the current Strategic Plan, M26: installation of new internal fiber optic redundancy infrastructure at OCAN by 2027.

- Ib.4.13. Space missions (PLATO, LiteBird, Dali, Vigil, IACSAT, Canary Islands Constellation)

Figure 47. Collage of space missions referenced in this section.

PLAnetary Transits and Oscillations of stars (PLATO) will study a large number of extrasolar planetary systems. The IAC will contribute the Flight Model (FM) and Flight Spare (FS) units of the Main Electronic Unit Power Supply (MEU-PSU) and provide support during unit-level integration and testing for the entire payload.

The satellite LITEBIRD for the study of the B-mode polarization and inflation from Cosmic Background Radiation Detection will search for the cosmic inflation in the primitive Universe by the detection of the CMB polarization signal across the full sky. The IAC contributes to this JAXA mission by providing the temperature monitoring system for the structure of the Medium and High-Frequency Telescopes (MHFT), as well as compensation for thermal effects on the focal plane caused by cosmic ray incidence and fluctuations in the sky background signal.

IACSAT-1 is a 22 cm space telescope that IAC is developing to achieve submillimag precision photometry in the visible and near-IR for Earth-like transiting planets in nearby stars and complement the PLATO mission. The engineering model is very advanced, and the goal is to produce the qualified and flight payload and platform models by 2027.

Main project Milestone for the current Strategic Plan, M27: to launch the first cubesat of the Canary Islands Constellation with a DRAGO-3 camera onboard.

3.1.3 SGII. International Leadership and Societal Impact

II.1. International Collaboration and ERA Integration

IAC researchers present research results in 30-40 international conferences every year and will organize 10 international workshops and conferences per year with at least 500 international attendees. The Colloquia and Seminars programs bring to the IAC another 100 international researchers per year.

New Research Infrastructures and collaborative opportunities

The OCAN are the most important assemblage of observational facilities for optical and infrared astrophysics within the territories of the European Union. IAC aims to generate new partnerships and launch the construction of new forefront facilities, such as CTAO-North and EST, contributing more than 25% to each project. The TMT (30m telescope) considers the ORM as an alternative option to the current baseline site in Hawaii. Its installation at ORM would bring extraordinary opportunities for scientific and collaborative research to the IAC and the Spanish community. Furthermore, IAC will actively participate in scientific consortia aimed to construct and exploit facilities on ground- and space-based observatories.

Planned milestone (M28a): Submission of the "OCAN ICTS Renewal Dossier 2029–2032" to the Spanish Ministry of Science, Innovation and Universities to be included in the ICTS Map 2029 -2032. (December 2028)

Participation in the European Union's Horizon Europe research framework program and ERA initiatives.

We will intensify our involvement in Horizon Europe's Pillar I - Excellent Science with the following key actions: IAC will boost the number of high-quality submitted proposals to the ERC and Marie-Curie Actions, enhancing our proposal development processes, and fostering an environment that encourages innovative research.

IAC will create a mechanism to offer salary incentives to those researchers that succeed in obtaining ERC grants aligned with similar practices at other research institutions in Spain

Planned milestone (M28b): Implement an internal "Horizon Europe Proposal Development Scheme" to support high-quality submissions across all IAC research areas. (June 2026)

Planned milestone (M28c): Establish and approve a formal salary-incentive scheme for IAC researchers awarded ERC grants (December 2026)

II.2. Knowledge Transfer and Technology Valorization

The IAC considers the transfer and valorization of scientific and technological knowledge a strategic pillar of its mission. Beyond advancing astrophysical research, the IAC contributes to social and economic progress by transforming scientific excellence into innovation and high-value technological solutions.

In 2024, the IAC was formally recognized by the Ministry of Science, Innovation and Universities as an Oficina de Transferencia de Conocimiento (OTC). This accreditation acknowledges the institutional maturity achieved through years of activity in knowledge valorization, combining the expertise of the AIT and the UC3. Together, these units ensure an integrated approach to the protection, exploitation, and dissemination of research results.

The IAC's OTC oversees a broad range of functions: protection of research outcomes through intellectual and industrial property rights; support in the preparation of RTD & innovation contracts and NDAs; promotion of collaborative research with public and private entities; support for the creation of knowledge-based entities such as spin-offs and start-ups; complemented by the UC3 role, fostering social and cultural dissemination of scientific results. This recognition also enables the IAC to access specific governmental and European funding dedicated to technology transfer, innovation, and science communication, reinforcing the Institute's capacity to bridge research and society.

Complementing these efforts, the IACTEC initiative serves as the IAC's technological collaboration space. Located at the Scientific and Technological Park of Tenerife, IACTEC promotes innovation in astrophysics, optics, space, and biomedical technologies while supporting the emergence of a knowledge-based industrial ecosystem in the Canary Islands. Over the next period, IACTEC will consolidate its core programs in Large Telescopes, Space Technologies, Optical communications with space and integrated photonics, among others.

IAC will continue developing mechanisms to strengthen its role as a driver of innovation and competitiveness, in close alignment with the Smart specialization strategies. The IAC's ambition for 2026-2028 is to consolidate an integrated innovation ecosystem that connects research, technology, and society, a framework in which the IAC not only generates world-class astrophysics but also translates its discoveries into solutions that foster sustainable development, technological sovereignty, and social engagement. Within this framework, the CELESTE project plays a central role as a space for cooperation with industry in the fields of Advanced Optical Systems and New Space. Developed with the support of ESA and CNRS, CELESTE aims to create a stable Centre of Excellence with autonomous legal structure that will allow more flexible and dynamic collaboration with the scientific industry. Its work includes setting up high tech laboratories, promoting training and staff exchange, and strengthening partnerships with international organizations. CELESTE will offer companies opportunities to collaborate on technologies such as new space optical payloads, quantum communication systems, integrated photonics, ultra precise optical elements and advanced coatings, helping them bring innovative ideas closer to real applications.

Planned milestone (M29a): Approval and implementation of three OTC internal procedures: (i) NDA signature workflow, (ii) R&D contract formation procedure, and (iii) IPR management, protection (including patents), and valorization protocol. (July 2026)

Planned milestone (M29b): Establishment of CELESTE's autonomous legal framework, enabling its operation as a Centre of Excellence with flexible collaboration mechanisms for industry and international partners. (December 2027)

The ESA-BIC Canary Islands

An ESA BIC (European Space Agency Business Incubation Centre) is a business incubator created by the European Space Agency to support startups that develop space-related technologies or that use space data and solutions for terrestrial applications. These centers offer a broad range of advantages, including initial seed funding, access to ESA experts and mentors, technical support for advancing the proposed technology, and business guidance aimed at accelerating company growth. They also provide an entry point into an international

network of partners, investors, and institutions connected to the space sector, greatly increasing visibility and collaboration opportunities for emerging companies.
. The ESA BIC initiative aims to attract talent, stimulate the creation and consolidation of technology-based companies, and position the Canary Islands as a strategic hub within the European space sector. The milestone for this strategic plan is to establish an ESA-BIC in Canary Island led by the IAC and with the IACTEC as its headquarters, together with other two nodes in Gran Canarias and Fuerteventura.

Planned milestone (M29c): Establishment of ESA-BIC Canary Islands. (December 2028)

II.3. Public Engagement and Scientific Culture

Public engagement and education will remain key priorities of our institution, cultivating widespread interest in the cosmos and the appreciation for astronomy and dark skies. Inspiring STEM careers and showcasing IAC's impact on scientific and technological advancement is especially relevant in an ultra-peripheric EU region that has an economy based in the tourism sector. The IAC aims to increase the visibility of its discoveries and technological advancements both within the scientific community and outside it, engaging industry, policymakers, and the public. Additionally, the IAC will ensure that its research datasets and scientific outcomes are accessible, adhering to Open-Access protocols and standards.

Public Outreach. The Strategic Plan achieved here will be broadcasted to the public in outreach and education programs for school students and teachers. This will be done via the activities of the IAC's UC3 where we channel social media, popular science publications, and educational programs to promote astronomy and data literacy among the public and school communities.

We will keep our commitment to run initiatives, which bring astronomy into primary and secondary schools across the Canary Islands and will strengthen IAC collaboration with the Museum of Science and the Cosmos in Tenerife. We also offer hands-on activities in schools, teacher training, including support for using robotic telescopes in school projects; audiovisual productions; printed editions, open days and guided visits to the OCAN; Workshops for Starlight Guides; participation in outreach initiatives such as the Astronomy and World Heritage (UNESCO), press releases and community management in the digital media of the IAC. A full communication plan will be adopted to promote the presence and dissemination of science in social media.

The IAC is leading a far-reaching collaborative initiative with the Canary Island government and Morocco for the 2027 total solar eclipse, using it as a platform for research, education, and public outreach. Inspired by the U.S.-based Citizen CATE experiments, the new NATE (North African Telescopic Eclipse) Experiment will involve a network of 10 telescope stations across Morocco and the Canary Islands, operated by citizen scientists, students, and educators. The 2026 total solar eclipse on mainland Spain will serve as an opportunity to provide the necessary training to the leaders of each of the stations.

Planned milestone (M30a): Adoption of a comprehensive IAC Communication & Public Engagement Plan covering social media, outreach activities, and educational programs. (December 2026)

Planned milestone (M30b): Complete training of NATE station leaders during the 2026 Spain total solar eclipse, enabling full deployment of the NATE network for the 2027 Morocco–Canaries total solar eclipse. (December 2026)

3.1.4 SGIII. Talent, Organization and Transformation

III.1. Talent Training, Attraction and Retention

The IAC supports the Recommendation of the EC 2005/251/EC of March 2005 on The European Charter for Researchers and The Code of Conduct for the Recruitment of Researchers. The IAC has been awarded the "HR Excellence in Research" recognition by the EU Commission. The plan for Human Resources Strategy for Researchers (HR4R) is open, transparent and merit-based recruitment (OTM-R) at the IAC.

The partnership between IAC and ULL: unparalleled worldwide

The IAC is strongly committed to keep training the next generation of researchers in Astrophysics and Instrumentation. In close collaboration with the Department of Astrophysics at the ULL, it supports undergraduate education in Physics and Mathematics and co-organizes the ULL Master in Astrophysics, which hosts over 60 students annually from Spain, Latin America, and the EU. The IAC also supports undergraduate and graduate training through internships and the annual Summer School, which offers 10–15 grants for early research and technology experience.

The PhD program is IAC's core training activity, run in partnership with ULL. Hosting 60–70 doctoral students and awarding around 15 PhDs annually, the program has produced over 400 PhDs during more than 50 years of collaboration, many of whom occupy relevant positions in astronomy worldwide. Between 2020 and 2024, 63 PhDs were awarded to students from 11 countries. Presently, 63 students from 20 different countries are carrying out PhD works at IAC, including 8 students from 6 countries funded by the ERC. The IAC organizes an international Winter School, bringing worldwide renowned scientists together with early-career researchers. With already 35 editions, many presently world leading astrophysicists have attended it.
Training objectives for predocs:

- Maintain existing programs as part of the collaboration with the ULL.
- Fund 12 new PhD projects aligned with IAC's scientific objectives, preferentially funded from the SO program under evaluation.
- Enrich the PhD program with activities focused on developing transversal skills.

Postdoctoral, and technical training

We offer post-docs and young engineers a vibrant research centre where they will perform cutting-edge research and technological work. IAC offers:

- Training in cutting-edge tools and standardized, high-quality data products that will streamline doctoral training and increase scientific productivity.
- AI tools to pursue a successful career in any STEM field.
- The possibility of hands-on work in IAC's technical projects spanning from the visible to the microwave spectrum.
- Hands-on experience with state-of-the-art instrumentation and real-time data collection.

- Access to national HPC resources. The IAC, through its La Palma node, is part of the Spanish Supercomputing Network (RES), and provides IAC researchers with direct access to the facility's computational power.

Recruiting research staff

During the next three years, we expect to incorporate Ramon y Cajal (RyC) fellows. A National Committee selects the RyC. All the fellows will collaborate closely with the permanent staff at IAC. Currently, IAC employs 10 RyC Fellows, 40% of whom are female and 40% foreign nationals. The RyC fellowships fulfil the role of tenure-track positions in other countries.

Managing gender imbalances

According to the IAU, women represent approximately 30% of the global astrophysics' community. We recognize the ongoing challenge of improving gender balance in astronomy and are committed to actively implementing policies that promote equity. Within this Strategic Plan, we are setting gender diversity targets for recruitment. Furthermore, we will actively promote female participation in decision-making bodies related to institutional governance, reflecting the IAC's long-term commitment to gender equality. Given that research staff at the IAC are primarily stabilized through the RyC fellowship program, we will give priority to applications that contribute to correcting gender imbalances within our staff.

The Gender Equality Commission of the IAC is the body in charge of advising and detecting the measures and necessary or convenient actions to actively integrate the principle of equality between women and men at the IAC. The IAC published the 4th Gender Equality Plan 2024-2028 and follow-up actions in November 2024.

Diversity and inclusion

The IAC is firmly committed to advance diversity and inclusion and has implemented several concrete measures. These include conducting all communications in both Spanish and English, requiring diverse hiring committees, and applying structured, bias-aware interview protocols. All hiring panels will receive mandatory training in unconscious bias and inclusive recruitment practices. We will track diversity metrics annually across all staff categories and use this data to inform policy adjustments. A mentoring program specifically supports early-career researchers from underrepresented groups, and flexible schedules are offered to promote work–life balance. Additionally, we provide an anonymous reporting mechanism for discrimination or harassment.

We will implement the double-blind peer review for all TAC calls to improve success rates for early-career and underrepresented PIs by reducing biases related to gender, nationality, and age. The milestone is to review the TAC procedures and implement the double-blind peer review for all TAC calls.

Planned milestone (M31a): Adoption of an updated IAC Training Framework integrating transversal-skills modules, AI-based research tools, and standardized data-products training for PhD students and postdoctoral fellows. (June 2027)

Planned milestone (M31b): Implementation of the institutional roadmap derived from the 4th Gender Equality Plan, including the establishment of updated procedures for gender-balanced decision-making bodies and inclusive career-progression pathways (December 2026)

Planned milestone (M31c): Achievement of measurable progress towards gender balance in IAC staff and governance, targeting at least 36% female representation in research staff and 40% in decision-making bodies, alongside the adoption of gender-balanced recruitment targets in all new hiring processes. Annual monitoring and public reporting of gender-disaggregated data will be implemented to track progress. (December 2028

III.2. Organizational Innovation and Digitalization

Organizational Innovation

The IAC will advance towards a consolidated organizational model focused on coordination, agility, and transversal collaboration. The objective is to simplify procedures and optimize workflows that limits operational efficiency. At the same time, the administrative personnel structure will be strengthened to provide adequate support to the increasing scientific and technological activity and to guarantee sustainable management capacity.

The IAC Directorate will reinforce its role in guiding and supervising these improvements, ensuring that management decisions remain aligned with strategic objectives and that resources are allocated effectively.

Synergies between the Research, Technology, Graduate Studies, and Observatories divisions will be further strengthened to promote integrated project management and shared accountability. The IAC's Processes Group will contribute to identify bottlenecks, propose practical solutions, and monitor the implementation of process improvements. Continuous improvement methodologies will be applied to ensure that organizational changes are consistent, measurable, and sustainable over time.

This modernization process seeks to guarantee an adequate balance between scientific excellence and administrative functionality. A more agile and coherent structure will enable the IAC to meet increasing external demands, support staff more effectively, and enhance the overall quality and timeliness of its management processes.

Planned milestone (M32a): Adoption and institutional implementation of the Digital Workplace Framework, including unified communication tools, collaborative platforms, and secure access protocols enabling real teleworking. (January 2027)

Planned milestone (M32b): Launch of an AI-based automation pilot for repetitive administrative tasks, focused on project monitoring and resource-planning support (December 2027)

Digital Transformation

Building upon the previous IAC Digital Transformation Action Plan, the next strategic period will focus on consolidating a fully digital, data-driven management model. Priority actions include the implementation of digital workplace, and the deployment of integrated digital document management systems. These developments will enhance interoperability, enable secure information flows, and support the shift towards real teleworking.

The IAC will continue refining internal software tools for procurement, project tracking, financial control, and human resources management, ensuring their full integration into the institutional workflow. Targeted training actions in e-administration and digital competencies will equip staff to use these tools effectively. The use of artificial intelligence will be explored to automate repetitive administrative tasks and improve decision support, particularly in project monitoring and resource planning.

IAC's Directorate will oversee the implementation and follow-up of the digital transformation roadmap, ensuring alignment with organizational needs and the institution's strategic objectives. The digitalization process aims not only to modernize technology, but to enhance communication, transparency, and efficiency across all areas of the IAC.

By 2028, the IAC aims to operate as a digitally mature, agile, and collaborative organization, capable of managing complex international projects with efficiency, supporting its staff through integrated tools, and maintaining the highest standards of accountability and institutional excellence.

Planned milestone (M32c): Approval and implementation of a Digital Competencies & e-Administration Training Plan aligned with the needs of administrative, technical, and research personnel. (December 2028)

III.3. Corporate Social Responsibility and Good Governance

The IAC will embed Corporate Social Responsibility into its core operations as a clear commitment to social, economic, and environmental advancement, encompassing various elements such as environmental conservation, where the IAC adheres to EU Taxonomy Regulation guidelines to mitigate climate change and protect the dark sky as a valuable scientific, cultural, and economic resource, and the promotion of social equality, advancing gender equality in the workplace. The IAC follows the European Charter for Researchers and received the "HR Excellence in Research" recognition by the EU.

As highlighted by "*Human Capital and Knowledge Management in competitive context: an application to the IAC as Centre of Excellence, Ref: PID2020-114550gb-i0*", the IAC exemplifies best practices in RTD & Innovation in the national ecosystem, particularly in fostering a culture of "coopetition", where cooperation and competition coexist productively.

The IAC drives economic growth and high-value job creation in the Canary Islands, complementing the tourism-based economy. On La Palma, observatories contribute around 5% of local GDP. By attracting skilled professionals and international collaborators, the IAC boosts the region's global visibility, promotes astro-tourism and education, and fosters innovation, training, and partnerships that support a more resilient, diversified economy
ORM and OT are multipurpose observational platforms open to the entire international scientific community. The ORM is in the municipality of Garafía, on the north-west side of the island of La Palma, on the rim of the Caldera de Taburiente National Park, and occupies a surface of 189 ha. The OT is in Izaña, within the Teide National Park, and covers 50 ha. These sites are in areas of outstanding natural value, close to National Parks, and are subject to a high level of environmental protection (Natura 2000 Network, National Park periphery, etc.). Environmental compatibility and protection must be ensured in both facilities during construction and in their operational phase. Knowledge of environmental regulations and their strict enforcement is an objective for the IAC, as they serve as a reference for the local community and the broader society. As part of this Strategic Plan, we will strive to ensure proper alignment with the evolving environmental regulations. This action will have two phases:

- Phase I: Regulatory compliance

    I.1. Understanding environmental regulations and the implied enforcements as they affect to today's OCAN
    I.2 Adapting to revised regulations
    I.3 Understanding the environmental regulations for new projects, tenders, and the definition of parameters for efficient and sustainable designs.

- Phase II: Global environmental diagnosis and monitoring of the OCAN

    II.1. Preparation of the initial study, scope, and targets
    II.2. Elaboration of the Environmental Monitoring Plan
    II.3. Updating the waste plan for ORM and OT, development of the recycling point's areas for temporary, and centralized management for the various institutions and facilities operating in the observatories.

The Environmental monitoring plan should be available by the end of this Strategic Plan and the cost of its implementation understood.

As the rest of society, astronomers are currently facing a paradigm change underpinned by the green transitions. The IAC will implement proactive measures to reduce its environmental footprint at the headquarters and the OCAN, while maximizing scientific impact.

The OCAN are located at altitudes where high solar incidence predominates with more than 90% of clear days. This energy source is available for self-consumption through the development of a photovoltaic park at both Observatories, on the roofs of some of our buildings and parking lots, with about 200 kW, easily implementable at each Observatory within this Strategic Plan. Increasing the surface area of the panels beyond today's levels will make the Residence and other buildings almost self-sufficient. This development will reduce the use of fossil fuels and traditional boilers,

Other internationally recognized astronomical Observatories have photovoltaic plants reaching the MW capacity. With the advent of new major facilities, some of which require on-site computational capabilities, the IAC will study the feasibility of implementing similar, large, photovoltaic resources during this Strategic Plan.

Planned milestone (M33a): Completion and approval of the OCAN Environmental Monitoring Plan, including scope definition, diagnostic study, monitoring protocols, and updated waste-management guidelines for ORM and OT. (September 2027)

Planned milestone (M33b): Preparation and approval of a Photovoltaic Deployment Roadmap for ORM and OT, defining locations, technical options, regulatory considerations, and steps toward implementing on-site solar generation for self-consumption. (May 2027)

3.2. Monitoring and Evaluation System

3.2.1. Performance Indicators (KPIs)

The following Key Performance Indicators (KPIs) have been defined to monitor the implementation of the IAC Strategic Plan and to assess the progress achieved in relation to its main strategic goals. These indicators cover the different dimensions of the IAC's mission, scientific excellence, technological development, talent training, institutional management, and societal impact, ensuring a comprehensive and balanced approach to performance evaluation.

Each KPI has been selected according to clear, measurable, and verifiable criteria, using reliable data sources and standardized monitoring procedures. The indicators not only allow continuous tracking of results and early identification of deviations but also enable benchmarking with leading research institutions at national and international levels.

To complement the system of indicators, the following figures illustrate the architecture of the IAC Strategic Plan. The transversal lines (TLs) and its milestones (M1-M14) reinforce the scientific areas, their synergies, and the specific scientific goals (G1–G34). Research-goal progress will be evaluated using measurable indicators such as submission of publications, data acquisition targets, presentation of results in international conferences, press releases, and adherence to the project timeline.

Each transversal line contributes to the scientific goals ensuring consistency between research, technology, data management, and institutional services. The timeline of milestones provides a clear framework for tracking progress and verifying achievements, while the main KPIs summarize the expected outcomes in terms of scientific productivity, collaboration, infrastructure development, and societal impact.

These visual schemes serve as the operational bridge between the Strategic Goals and the Monitoring and Evaluation System. They link the planned activities with measurable outcomes, enabling a unified approach to performance assessment across all IAC programs.

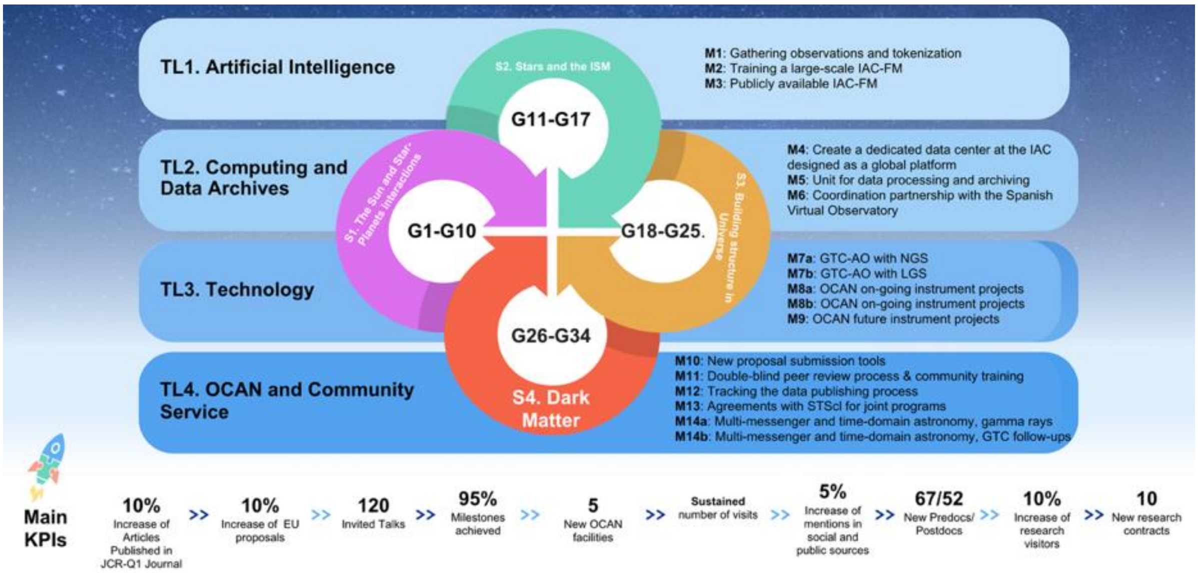

Figure 48. Schematic representation of strategic goals, milestones, and task linkages.

Timeline of Milestones linked to the proposed Transversal Lines:

Id	Work Package name	Date
1	**Transversal Line 1: Artificial Intelligence**	
2	Gathering observations and tokenization	
3	M1	08/09
4	Training a large-scale IAC-FM	
5	M2	06/09
6	Publicly available IAC-FM	
7	M3: Deliverable	05/09
8	**Transversal Line 2: Computing and Data Archive**	
9	Create a dedicated data center at IAC designed as a global platform	
10	M4: Deliverable	04/09
11	Unit for data processing and archiving	
12	M5	19/05
13	Coordination partnership with the Spanish Virtual Observatory	
14	M6	19/05
15	**Transversal Line 3: Technology**	
16	GTC-AO with NGS	
17	M7a: Deliverable	09/09
18	GTC-AO with LGS	
19	M7b: Deliverable	05/09
20	OCAN ongoing instrumental projects	
21	M8a	08/09
22	OCAN ongoing instrumental projects	
23	M8b	06/09
24	OCAN future instrumental projects	
25	M9	04/09
26	**Transversal Line 4: OCAN & Community Service**	
27	New proposal submission tools	
28	M10: Deliverable	25/03
29	Double-blind peer review process & community training	
30	M11	24/03
31	Tracking the data publishing process	
32	M12	08/09
33	Agreements with STScI for joint programs	
34	M13	09/09
35	Multi-messenger and time-domain astronomy, gamma rays	
36	M14a: Deliverable	08/09
37	Multi-messenger and time-domain astronomy, GTC follow-ups	
38	M14b: Deliverable	06/09

The table below includes the selected indicators with the expected outcomes:

<table>
<tr><th rowspan="2">Goals</th><th rowspan="2">Key Performance Indicators (KPIs)</th><th rowspan="2">Means of verification & Further Comments</th><th colspan="3">Relation to</th></tr>
<tr><th>Scientific Goals</th><th>TLs</th><th>Milestones</th></tr>
<tr><td>a) High impact scientific publications (SG Ia)</td><td>-Number of Articles Published in JCR-Q1 Journals
-Number of Research Outputs in International Collaborations with Leading Centers
-Number of International Scientific Conferences and Workshops Organized
-Number of Research Projects Supported by European Research and Innovation Frameworks (e.g., Horizon Europe)
-Number of Invited Talks and Keynote Speeches at Major Conferences
- Average the Impact Factor of the Scientific Production
-Scientific Milestones and Deliverables Related to the Research Program</td><td>The IAC is one of the most productive Research centers at national level. For the last decade we have consolidated a positive trend in research production with many collaborations from prestigious research centers around the world. We also keep an outstanding Impact Factor of our publications, comparable to other international renowned institutions in Universe Sciences</td><td>All (G1-G34)</td><td>All (TL1 – TL4)</td><td>M4-6
M10-14
M28b
M28c</td></tr>
<tr><td>b) Other outcomes with high scientific, societal or economic impact (patents and other forms of IPR, their transfer and exploitation; relation to the business sector and other stakeholders, etc.).</td><td>-Installation of new research infrastructure to Canary Island Observatories
-Number of High-tech Companies Attracted and Degree of Industrial Engagement (Measured by Collaborative Projects with Industry)
-Number of Patents Registered
-Publications in Open Access
-Training Programs Conducted for Secondary School Teachers, Science Journalists, and Other Professionals
-Visitors to the Canary Islands Observatories
-Number of Mentions in Media and Public Discourses
-Effectiveness of Research Outreach Programs (Measured by Audience Reach and Engagement)
-Improvement of the gender balance</td><td>To improve its research capacity building and to gain international visibility, the IAC will lead the organization of major international research events. Moreover, to assess the progress made in joint collaborations with private sector we will monitor NDAs and establishment of new firms at IACTEC to foster technology transfer, including the creation of spin-off or new firms by entrepreneurs related to IAC's capabilities.
Finally, the IAC will complement its outcomes to society with key events to reinforce the social perception and the educational potential</td><td>All (G1-G34)</td><td>All (TL1 – TL4)</td><td>M7-9
M15-M27
M28a
M29a
M29b
M30a
M30b</td></tr>
</table>

Goals	Key Performance Indicators (KPIs)	Means of verification & Further Comments	Relation to		
			Scientific Goals	TLs	Milestones
c) Talent attraction and retaining, predoctoral and postdoctoral training.	- Number of Talented New Young Researchers Attracted to the Centre (Predocs and Postdocs) -Number of International and National Visiting Researchers -Number of Schools organized for young researchers	Hot topics in astrophysics are dynamic and imply big challenges that must be supported by the most prominent researchers. We aim to give in-depth training to new generations of astrophysicists that will use the new tools in observations & data analysis, instrumentation and computer modelling. To this aim, we will strengthen the collaboration with international experts in specific fields of astrophysics by outgoing and incoming mobility.	**All (G1-G34)**	**All (TL1 – TL4)**	**M28c M31a M31b**
d) External sources of funding, either competitive or non-competitive, especially private funding, if appropriate.	- Number of Research Contracts with Industries or External Entities -Increased External Private Funding	The IAC will promote the signature of institutional agreements to attract new investments to the Observatories. The private sponsorship to RTD projects will be fostered through IACTEC and the IAC's Sponsorship program.	**All (G1-G34)**	**All (TL1 – TL4)**	**M29a M29b**

Indicator	Baseline	Source and date	Expected outcomes 2028	Means of verification	Relation with…		
					Scientific Goals	TLs	Milestones
Number of Articles Published in JCR-Q1 Journals	2471	WOS // 2021-2024	0% increase of the number of publications	The articles are referenced or quoted in key publications in the field. The outcome proposed can be verified in the Web of Science	All (G1-G34	All (TL1 – TL4)	
Number of Research Outputs in International Collaborations with Leading Centers	2231	WOS // 2021-2024	0% increase of the number of joint publications with internationally recognized centers of excellence in the period of 2026-2028		All (G1-G34	All (TL1 – TL4)	
Number of International Scientific Conferences and Workshops Organized	11 symposia/conferences 16 scientific workshops	IAC // 2021-2024	13 symposia/conferences 18 scientific workshops	*List of participants and speakers* Webpage * Scientific Program	All (G1-G34	All (TL1 – TL4)	M31a
Number of Research Projects Supported by European Research and Innovation Frameworks (e.g., Horizon Europe)	(25) proposals approved	IAC // 2021-2024	10% increase in the Nr of proposals approved in the next 4 years (Increasing 20% the Nr of prop. approved in EU and international programs: Horizon Europe, Interregional, 3rd countries programs, etc.)	List of projects submitted and awarded with reference to the funding body (Regional, national and international)	All (G1-G34	All (TL1 – TL4)	M28b M28c
Number of Invited Talks and Keynote Speeches at Major Conferences	100 invited talks	IAC // 2021-2024	90 invited talks in the period of 2026-2028	Documentary evidence	All (G1-G34	All (TL1 – TL4)	
Average the Impact Factor of the Scientific Production	9,1 average	WOS // 2021-2024	9,3 in the period of 2026-2028	Access to Clarivate Web of Science and Clarivate JCR	All (G1-G34	All (TL1 – TL4)	

Indicator	Baseline	Source and date	Expected outcomes 2028	Means of verification	Relation with…		
					Scientific Goals	TLs	Milestones
Installation of new research infrastructure to Canary Island Observatories	10	IAC // 2021-2024	5	Documentary evidence		All (TL1 – TL4)	M15-M27 M28a M33a M33b
Number of High-tech Companies Attracted and Degree of Industrial Engagement (Measured by Collaborative Projects with Industry)	4 High-tech companies attracted	IAC // 2021-2024	16 High-tech companies attracted	New collaboration space with industry (Labs, workshops, offices named IACTEC) Collaboration agreements signed			M29a M29b
Number of Patents Registered	2 patent registered	IAC // 2021-2024	3 patents registered	Nr of agreements with private entities, funding, scope and duration			M29a
Publications in Open Access	96% articles published in Open Access	WOS // 2021-2024	98% articles published in Open Access	Publication in open gold	All (G1-G34		
Training Programs conducted for School Teachers, Science Journalists, and Other Professionals	2.500 teachers trained (estimated reach: over 200.000 students)	IAC // 2021-2024	5 % increase of the number of teachers trained	Documentary evidence			M31a M31b M32b M32c
Visitors to the Canary Islands Observatories	350.000 visits	IAC // 2021-2024	Sustain number of visits	Documentary evidence			M30a
Number of Mentions in Media and Public Discourses	32,000 media news stories). 167,110 social media followers (across X, Facebook, Instagram,	IAC // 2021-2024	5% increase of the number of mentions in media and public discourses	Documentary evidence	All (G1-G34		M30a M30b

Indicator	Baseline	Source and date	Expected outcomes 2028	Means of verification	Relation with…		
					Scientific Goals	TLs	Milestones
	LinkedIn, and YouTube), with 7,216 posts, 13,558,189 impressions, and 499,283 react.						
Effectiveness of Research Outreach Programs (Measured by Audience Reach and Engagement)	Over 56,500 people with direct interaction	IAC // 2021-2024	10% increase of audience reach and engagement	Documentary evidence			M30a
Improvement of the gender balance	33% average	IAC // 2021-2024	10% of 33%	Documentary evidence			M31b
Number of Talented New Young Researchers Attracted to the Centre (PhD and Postdocs)	56 PhD students and 49 new Postdoc trainees	IAC // 2021-2024	67 new PhD students 52 new Postdocs	Documentary evidence	All (G1-G34		M31a
Number of International and National Visiting Researchers	59 visits (>3month)	IAC // 2021-2024	10% increase of the number of research visitors at IAC for over 3 months	Documentary evidence	All (G1-G34		
Number of Schools organised for young researchers	7 International Schools on Astrophysics	IAC // 2021-2024	7 International Schools on Astrophysics in the period of 2026-2028	The International Schools addressed to train postdocs and advanced PhD students	All (G1-G34		M31a
Number of Research Contracts with Industries or External Entities	6 contracts	IAC // 2021-2024	8 contracts in the period of 2026-2028	Documentary evidence			M29a
Increased External Private Funding	10 MEur private funding	IAC // 2021-2024	10% increase in private funding	Annual report on external funding executed			M29a M29b

3.2.2. Monitoring and Oversight

The governance of the Monitoring and Evaluation System is designed to ensure effective coordination, accountability, and institutional learning. The AIT, under the supervision of the IAC Directorate, will be responsible for coordinating the collection of KPI data from the different units, analyzing the information, compiling qualitative inputs, and preparing the periodic monitoring and evaluation reports. The AIT also supports the identification of risks, deviations, and corrective measures, ensuring consistency and traceability in the reporting process.

The IAC Directorate reviews the reports prepared by the AIT, validates achievements, and proposes preventive or corrective actions. Observatories' oversight is complemented by the International Scientific Committee (CCI), which ensures the participation of user institutions in the management of the OCAN, and by the Scientific Advisory Commission (SAC), formed by internationally recognized experts who periodically assess the implementation and results of the strategic plan. The IAC Governing Board (Consejo Rector), chaired by the Ministry of Science, Innovation and Universities, receives the reports validated by these bodies and endorses the main strategic conclusions and decisions derived from them.

3.2.3. Interim Reports

The Directorate will oversee the preparation of interim and final reports (see Annex 2 for more details), ensuring methodological consistency and the reliability of data collected from all relevant units. With the support of the AIT, four-monthly monitoring reports (at the end of May and September) will provide updated information on key performance indicators and progress on strategic actions, while annual reports will summarize achievements, identify deviations, and propose corrective or adaptive measures.

Annual evaluations by the SAC will assess progress in achieving strategic goals and specific milestones, identifying challenges, and highlighting areas of improvement. The conclusions will inform institutional decision-making and help maintain alignment between the IAC's strategic plan and its evolving scientific, technological, and societal context.

3.3. Resource Allocation and Spending Plan

Funding for the implementation of the IAC Strategic Plan for the period 2026–2028 comes primarily from two different sources: (1) ordinary contributions from our national and regional authorities, in the proportion of 70% and 30% respectively, to our IAC baseline budget for our annual operation; and (2) a very significant contribution for the development of our strategic projects and activities, obtained from external funding sources under a competitive framework:

1. The contribution from the Spanish National Administration (Administración General del Estado, AGE) and the Canary Islands' Regional Government (Comunidad Autonoma Canaria, CAC) mainly cover permanent personnel cost (approx. 13.5 M€/year) and running and service costs (approx. 5 M€/year for maintenance, operations and investments). In addition to these expenditure items, the IAC also manages Spain's contribution to projects and infrastructures such as ING, CTAO or EST; in the latter case, together with IAA-CSIC. These contributions represent approximately and additional 1 million euros in our budget.

   Our forecast, considering these current and future operating costs, as well as international commitments and the actions to be carried out under this Strategic Plan, is that the expenditure budget will reach 21 million euros in 2026 and 22 million euros in 2028.

2. External funding obtained under competitive calls, contracts, and other incomes, to carry out research and technology programs, as well as to train new researchers and technicians; around 4 M€/year on average during the last years (State Plan for Research, EU grants, Regional Gov. Research programs). Additionally, and related to the operation of the OCAN, an additional 2-3 M€/year are provided by the User Institutions and managed by the IAC. During the coming years, due to the participation of the IAC in some specific Large Institutional Projects (GTCAO, CTAO-N, EST, IACTEC) additional external funding of around 14-15 M€/year (average value from FEDER supported programs) is expected. So, the total level of External Funds managed by the IAC during the 2026-2028 period will be in the range of 20-21 M€/year, like the base funding.

This Strategic Plan uses base funding to maintain the international relevance of the IAC and the OCANs. Complementary, external, funding of a similar amount is required for a number of institutional projects aimed at advancing the importance of the OCAN in the coming decades.

3.3.1. Personnel

The following table summarizes the human resources plan for the coming four years.

Evolution and forecast of IAC's Human Resources 2021 – 2028

Group	Profile	2021	2022	2023	2024	2025	2026	2027	2028
Researchers	Researcher – permanent staff	45	46	50	52	51	51	56	58
	Researcher – Art. 23 bis LC contract	0	16	32	46	51	54	58	59
	Researchers – temporary contracts	80	69	37	18	11	8	4	3
	Researcher – ULL & CSIC staff	53	56	60	67	67	67	67	67
	Technical Specialists - Technicians	2	6	6	6	8	8	8	8
PhD students	PhD students - IAC	52	54	51	56	56	56	56	56
Technical staff	Engineers – Technology Developments – permanent staff	43	41	38	41	40	40	41	42
	Engineers – Technology Developments - Art. 23 bis LC contract	0	1	16	24	35	64	64	64
	Engineers – Technology Developments – temporary contracts	70	74	47	37	30	1	1	1
	Engineers – IT services	13	12	12	12	12	12	12	12
	Engineers - others	26	24	26	26	29	29	29	29
	Technicians – Technology Developments	12	12	21	22	20	21	21	21
	Technicians – IT services	9	9	9	9	10	10	10	10
	Technicians - others	32	29	25	24	25	31	33	35
Administration	Administrative– IAC staff	45	45	45	44	45	51	52	53
	Administrative– Art. 23 bis LC contract	0	0	0	0	3	5	7	9
	Administrative– temporary contracts	14	17	18	10	12	12	12	12
	TOTAL	490	504	484	485	491	520	531	539

Table 2: Historical distribution of IAC's Human Resource and estimate for the period 2026-2028.

These estimates for 2026–2028 consider a variety of staffing factors. These include retirements, the creation of new positions that require annual ministerial approval, the return of civil servants on leave, and provisions for new leadership roles. They also consider the planned hiring of entry-level tenure scientists through the Public Employment Offers of previous years. In addition, the projections include salary adjustments under the new Labor Agreement, dedicated funds for staff training, and an average Reposition Rate of 16 new positions per year for 2027 and 2028, with an estimated cost of approximately 25 – 50 k€ per position. These assumptions provide a comprehensive basis for estimating personnel-related expenditures over the period covered by the Strategic Plan.

Researchers: We expect to reach the number of 58 IAC permanent employed researchers, by the end of this new period of three years. This means a net increase of 7 researchers over the period, all of them are "Científicos Titulares de OPIs". Likewise, some temporary research contracts are expected to transition to open-ended contracts.

PhD students: In this new multi-year plan, we expect to have a similar number of PhD students as in previous ones.

Technical staff: Around 10-13 new permanent positions, for technicians, are needed during the new three-year period, to face the new challenging projects, as well as to strengthen our technical capabilities.

Administrative staff: As part of our objectives to reach a more balanced distribution of the IAC staff, and to strengthen our administrative units in support of the new large initiatives for the coming years, we propose to generate up to 8 new permanent positions during the period covered by this Strategic Plan, plus another 6 no-term positions during this same period. Additionally major initiatives will be required to bring administrative support to minimize the burden on the existing administrative unit.

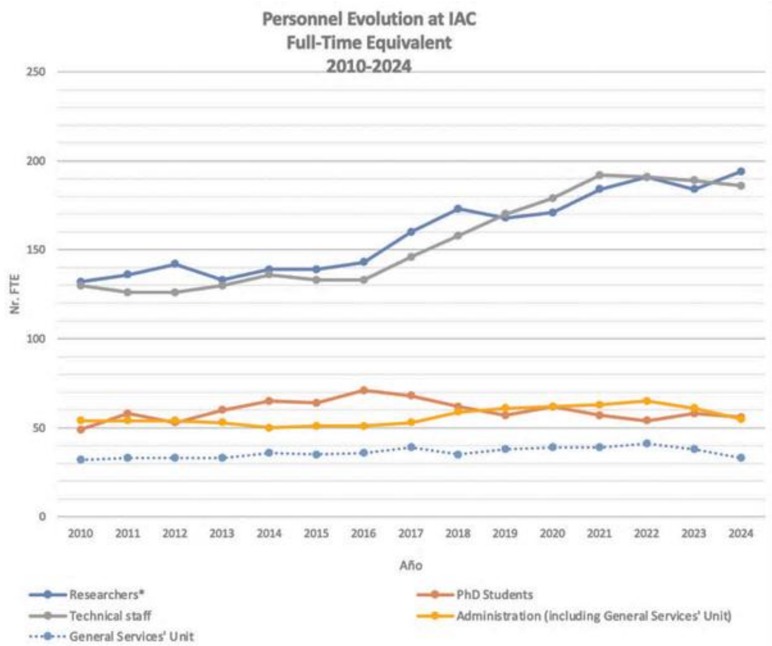

Figure 49. Personnel evolution at the IAC (FTE, 2010–2024)

As shown in the graphic above, the evolution of researchers and technical personnel has increased by 140 people during the period 2010-2024. By contrast, administrative support personnel stayed constant leading to an unbalanced growth and a degradation of the services provided to the institution. To correct this imbalance, the present Strategic Plan will concentrate a significant fraction of the Reposition Rate in strengthening the administrative unit. Similarly, we plan to obtain from the Ministry authorization to negotiate a new Labor Agreement that makes our administrative positions more attractive by increasing the salaries IAC offers to make them comparable to other administrations (ULL, Canary Islands' Government, etc.) that are currently more competitive.

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3.3.2. Spending Plan

The following Spending Plan indicates the funding (internal and external) required to support this Strategic Plan. By "Internal Funding" we refer to the base budget contributions made by the Spanish State and by the Canarian Regional Government. "External Funding" refers to the funds obtained from national and international competitive programs, associated to the International Agreements of the OCAN, and from our participation in **Large Institutional Projects** (GTC future enhancements, EST, CTAO, IACTEC, etc.). IAC works under the assumption that these projects can be undertaken only if funding from various agencies provide the required support either through their regular calls or dedicated opportunities. Financial estimates for these large projects are described in 3.3.3

BUDGETARY PLAN (K€)
Consortium members contributions (2010- 2028)

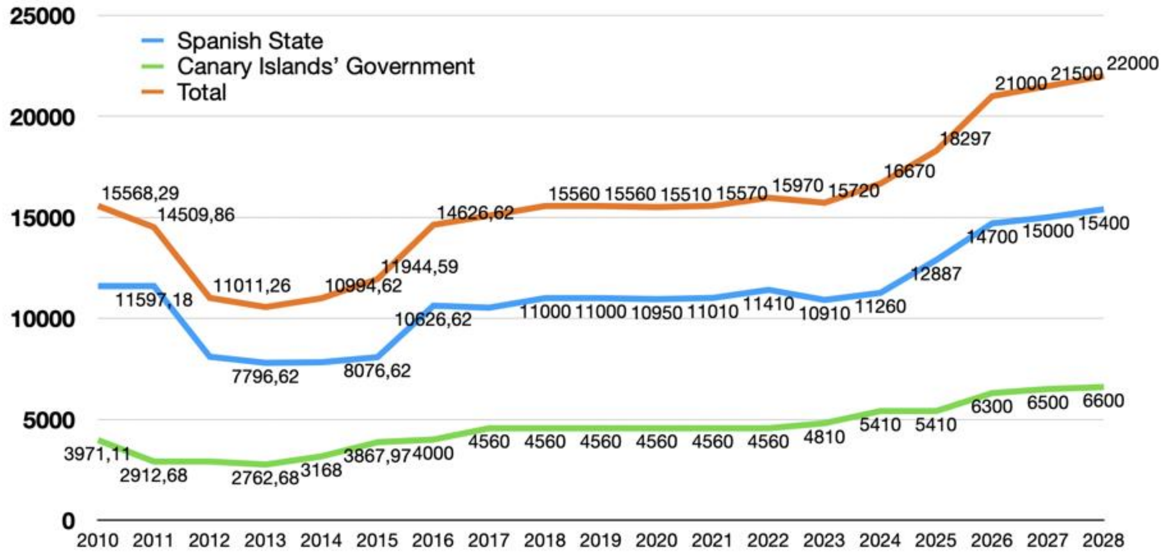

Figure 50. Consortium members' contributions to the IAC budget (2010–2028).

PROPOSED SPENDING PLAN 2026 -2028 (K€)

Year	**2026**	**2027**	**2028**
Spanish State	14.670	14.970	15.370
Canary Islands' Government	6.330	6.530	6.630
Total Income	**21.000**	**21.500**	**22.000**

DISTRIBUTION OF THE SPENDING PLAN 2026 -2028

Expenditure (K€)	**2026**	**2027**	**2028**
Personnel	14.250,00	14.705,00	15.105,00
Operations	4.490,00	4.590,00	4.690,00
Investments	1.040,00	1.040,00	1.040,00
Transfers (ING and CTA)	1.065,00	1.065,00	1.065,00
Financial	155,00	100,00	100,00
Total Expenditures	**21.000**	**21.500**	**22.000**

In preparing this multi-year budget by category, the following aspects have been primarily considered:

1. The significant increase in the personnel budget, mainly due to the addition of new staff through ongoing hiring processes (Public Employment Offers), a net 20% increase in the Reposition Rate relative to retirements, annual salary adjustments, and the allocation of funds to improve and make salaries more competitive, particularly for administrative and technical support staff.
2. The maintenance of basic, primarily structural, services and supplies necessary for the operation of our work centres and observatories, with minimal increases projected between 2026 and 2028, mainly reflecting expected inflation. .
3. The execution of investments at a pace aligned with our administrative capacity.
4. Ensuring contributions to other organizations related to Spain's participation in major projects and infrastructures.

3.3.2.1 Funding programs

The external funding to cover additional personnel and operational costs is sought through competitive opportunities at all levels and through other special programs that the IAC participates (e.g. RIS3, see below).

The most common Public Programs that support R&D activities at the IAC are:

- Spanish Science, Technology and Innovation Strategy (EECTI)
- Horizon Europe 2021 - 2027
- New Canary Islands' RIS3. 2021 – 2027.
- Other specific European funds like the European Regional Development Funds (ERDF, FEDER in Spanish) 2021-2027.

We provide an overview of these funding programs, and of how the activity of the IAC fits into them briefly below.

a) Spanish Science, Technology and Innovation Strategy (EECTI)

The Spanish Science, Technology and Innovation 2021-2027 Strategy (EECTI 2021-2027) is the basic instrument for consolidating and strengthening the Science, Technology and Innovation System over the next seven years.

The ECCTI 2021-27 is considered to facilitate the articulation of Spanish R&D policy within the policies of the European Union to make the best use of the synergies between the different programs. Following the principles of the EECTI, the Scientific, Technical and Innovation Research Plan (2024-2027) includes several multiannual subprograms in which the IAC has clear options to succeed as specified by the following considerations:

· **Subprograms on Talent Development and Employability (Training, Recruitment and Mobility)**: the proven track record of the IAC in training (thesis supervision, organization of international schools, seminars, master practices, agreements with other research centers and companies, etc.) and its technical and human resources provide a unique opportunity to researchers and engineers in their training phase. This privileged position serves as a benchmark of high scientific and technical level for the implementation of grants, actions and contracts provided by this Program. Moreover, the IAC has a strong structure to support and qualify all the researchers and technologists who join projects run by this center. The actions envisaged under the State Subprogram for the recruitment of young talents correspond well to IAC's wide experience, especially in recruiting doctors, technologists and managers. Finally, the IAC has a long tradition in international collaborations with the consequent mobility of our staff to ensure the maximum benefit from these transnational relations, as well as receiving numerous national and foreign researchers in our headquarters and observatories.

- **State Subprogram for Knowledge Generation:** The IAC has been actively involved in the implementation of fundamental research projects in the field of astrophysics, with more than one hundred projects approved in the national plans and access to other sources of regional and European funding, increasing substantially its number of awarded projects. The experience gained over the last decade has enabled many research groups at the IAC, now well positioned in large international consortiums as well as in leading emerging lines of research in collaboration with other outstanding international centers. Thus, the type of actions and projects considered under this subprogram are perfectly integrated with the IAC's strategy for development of astrophysics and related technologies in Spain.

- **State Subprogram for the Development of Emerging Technologies**: The expertise accumulated in leading technologies, thanks to our participation in projects such as GTC, and a variety of instruments for use in space, puts the IAC in an excellent position to prioritize the development of emerging technologies that may generate new products with high added value. IACTEC represents a solid first step to effectively transfer astrophysical technology to societal needs.

- **State Subprogram for Capacity Building:** With the renewed Severo Ochoa accreditation, it will be able to access a complementary funding source to support the implementation of this Strategic Plan during the 2026–2028 period. This accreditation would also enable the Institute to continue developing an outstanding Research Program and an internationally competitive Human Resources Program initiated in 2012.

- **State Subprogram for Research Infrastructures:** The OCAN are effective catalysts that contribute to the development of astrophysics and its related technologies in Spain. The OCAN strategic plan prepared by the IAC (see Annex 1) to maintain the international leadership of its Observatories is well aligned with the national priorities laid down by the Ministry of Science and Innovation. Among other activities the IAC is taking advantage of promoting actions for its participation in international organizations such as ESO, and for the construction and operation of major research infrastructures (EST, CTAO-N, and others) with a baseline location in our observatories.

b) Horizon Europe

At European level, Horizon Europe remains the main instrument to support research and innovation, with a budget of €95.5 billion (2021-2027). It builds upon previous Framework Programs and provides the IAC with multiple opportunities to strengthen its scientific excellence, technological leadership, and international cooperation.

The IAC has extensive experience in securing competitive European funding. It coordinated major projects such as the Preparatory Phase of the European Solar Telescope (PRE-EST) and the SOLARNET initiative, and has hosted ERC grantees, Marie Skłodowska-Curie researchers, and several training networks. Horizon Europe now represents the natural continuation of this trajectory, providing the framework to sustain and expand the actions foreseen in this Strategic Plan.

Pillar I. Excellent Science

Through the European Research Council (ERC) and Marie Skłodowska-Curie Actions (MSCA), the IAC will continue attracting top-level researchers and fostering international mobility and advanced training. These instruments are key to maintaining the Institute's position as a global reference in astrophysics. In the field of Research Infrastructures, the IAC will build on its strong record to reinforce European coordination and transnational access to facilities hosted at the Observatorios de Canarias, such as the GTC, CTAO-N, and EST.

Pillar II. Global Challenges and European Industrial Competitiveness

Under the "Digital, Industry and Space" cluster, the IAC contributes to addressing societal and technological challenges through its participation in space missions and data-driven projects. The IACTEC platform plays a central role in transferring astrophysical technology to applications in aerospace, optics, communications, and other sectors aligned with European missions.

Pillar III. Innovative Europe

The IAC's technology projects foster open innovation and close collaboration with industry during the design and development of complex instrumentation. Through IACTEC and its strong engagement with the private sector, the IAC is well positioned to benefit from opportunities under the European Innovation Council (EIC) and the Knowledge and Innovation Communities (KICs) of the European Institute of Innovation and Technology (EIT), supporting technology valorization and entrepreneurship.

Widening Participation and Spreading Excellence

The IAC is the leading R&D institution in the Canary Islands' outermost region. Horizon Europe's Widening actions (ERA Chairs, Teaming, Twinning) provide a key opportunity to consolidate this leadership, enhance collaborations with European partners and industry, and promote talent circulation and intersectoral mobility. The Institute already coordinates five projects funded under these Widening instruments, which reinforce its integration into the European Research Area and its role as a competitive international center of excellence.

Finally, there are other funding opportunities available to IAC's research staff, which will be mapped and followed closely to maximize the European routes available for the period coming years to strengthen our research strategy.

Looking ahead, the Institute will actively prepare for the transition to the Tenth European Framework Program (FP10), expected to begin after 2028. Building on its experience in Horizon Europe, the IAC aims to position itself early within FP10 priority areas related to astronomy, space science, advanced technologies, and digital transformation, ensuring continuity and growth in its participation in European R&I initiatives.

c) Canary Islands' RIS3. 2021 – 2027.

Apart from the H2020 Framework Program, the EC and the Member States/Regions have been actively working on the definition of the so-called 'National/Regional Research and Innovation Strategies for Smart Specialization' (RIS3 strategies).[4] The EC requested national and regional authorities across Europe to draw up their strategies so that the EU's Structural Funds can be used more efficiently and synergies between different EU, national and regional policies, as well as public and private investment, can be increased. The design and implementation of these strategies is a pre-condition for using the European Regional Development Funds (ERDF) to support RTD investments in that region/country.

The IAC has been participating in several meetings and consultations organized by our regional authorities to contribute to the definition of priorities and instruments for the RIS3 in the Canary Islands. According to the preliminary version of this strategy there will be a specific priority for Socio-economic valuation of R&D including specialization and strengthening of astrophysics and space, maritime sciences, biotechnology and biomedicine.

Astrophysics has been explicitly included since 2014 as one of the main strengths of the islands to which support and resources can be assigned. Regarding "smart leadership in tourism", the region will strengthen the competitiveness of this key economic sector by expanding and diversifying its portfolio of high-value tourist products, including new offerings linked to astronomical tourism. Astronomical tourism is one of the products mentioned in the document as being a fundamental, but hitherto insufficiently explored, complementary product to generate economic value for our region. Our research activities and first-class infrastructures at the OCAN are considered a highly valuable resource for touristic products.

However, it is under the area of priority on socio-economic valuation of R&D activities that astrophysics, and consequently the activity of the IAC, acquires a clear prominence. The RIS3 mentions astrophysics as the first and most consolidated R&D activity deserving special support in the program. Apart from a very detailed overview of the overall strategy to be followed for this priority, a set of actions is described that need to be implemented, especially regarding IAC activity. The RIS3 will contribute, among other things, towards:

- Attracting the best research infrastructures, such as EST, CTAO-M, NRT, and, potentially, astrophysical flagships like the TMT.
- Supporting research excellence, as well as the development of products of economic value for the regional economy (such as astrotourism).
- Supporting technology transfer to the socio-economic sector
- Internationalization of our research and technological activity.
- Training of highly specialized researchers and engineers, especially in the field of advanced instrumentation for astrophysics and related fields.

In parallel with the RIS3, the Government of the Canary Islands is currently implementing the Canary Islands Aerospace Strategy, which establishes a coordinated framework for the development of aerospace activities in the Archipelago. This initiative aims to position the Canary Islands as a reference hub for space technologies, satellite operations, Earth observation, and innovation in the New Space sector. The Institute will contribute its scientific and engineering capabilities to strengthen regional capacity in optics, communications, payload development, and small-satellite technologies. The Aerospace Strategy foresees the creation of synergies among research centers, universities, and the private sector, promoting technology transfer, entrepreneurship, and the attraction of new investments in high-tech industries linked to space and astrophysics.

[4] More info on RIS3 ampliada at: https://www.gobiernodecanarias.org/conocimiento/temas/innovacion/RIS3ampliada/

3.3.3. Large Institutional Projects

The projects listed in the table below are considered Large Institutional Projects at the IAC. We provide here the amount of funding needed at the IAC for the implementation of these projects. These financial figures are in addition to the baseline IAC budget described above and are shown separately because of their strong external dependency.

Project	Estimated Budget (keuro)			
	2026	2027	2028	Total
Cherenkov Telescope Array Observatory North (CTAO-N)	3,000	4,000	4,500	11,500
European Solar Telescope	2,000	5,350	3,500	10,850
CELESTE	3,000	4,000	5,000	12,000
Total	8,000	13,350	13,000	34,350

Additional funds above IAC baseline budget to undertake Large Institutional Projects at the IAC during the period 2026 - 2028. Amounts in k€.

The funding situation for the large projects planned for the 2026–2028 period varies significantly from one project to another. Rather than presenting a consolidated awarded share, the current status is better assessed on a case-by-case basis. While some projects already have secured funding, others are currently under evaluation or pending decision. A summary of the current situation is provided below:

- **CTAO-N**: A budget of 4.2 M€ has been approved by the Ministry of Science and Innovation (co-funded by the Canary Islands Regional Government, representing 15% of the total) to implement Phase II of the 4LST (2025-2027). In addition, a total budget of 15.7 M€ is foreseen for the 5MST, of which 8.415 M€ has been granted by MICIU and 7.27 M€ is currently under request (2026-2030).
- **EST**: The project has secured 1 M€ from the Canary Islands Regional Government, while the EST Foundation contributes an additional 1 M€ for the period 2026-2028. In parallel, a new FEDER proposal for the 2026-2030 period is under preparation/request, with an expected budget of approximately 10.85 M€ to support the next implementation phase.
- **CELESTE**: The project is funded by the European Commission, providing approximately 12 M€ for the period 2025-2030. This is complemented by contributions from the Cabildo de Tenerife and the Canary Islands Regional Government, each committing 1 M€/year over the same period.

3.3.3.1 Cherenkov Telescope Array Observatory North (CTAO-N)

The Cherenkov Telescope Array Observatory (CTAO) is the next generation ground-based observatory for gamma-ray astronomy at very-high energies. With more than 100 telescopes of three different size classes, CTAO will be the world's largest and most sensitive high-energy gamma-ray observatory. CTAO comprises two sites, the northern observatory (CTAO-North or CTAO-N) at the Roque de los Muchachos Observatory (ORM) of the IAC at La Palma, and the southern observatory (CTAO-South) near ESO's Paranal site in Chile, offering full-sky coverage and providing dramatic performance improvements with respect to current ground-based gamma-ray detectors.

Fig 50. Panoramic view of 4LST.

The CTAO baseline array layout foresees the construction of 4 Large Size Telescopes (LST) at each site (Fig 50). It also foresees the construction of 9 Medium Size Telescopes (MST) at the CTAO-N site and 15 MSTs at the CTAO-S site. The construction of the CTAO-N MSTs will start with a group of 5 telescopes, one of them designated as a pathfinder telescope, called MST-3. They will be constructed under the host agreement between IAC and CTAO.
The MSTs will cover the core energy range, from about 150 GeV to 5 TeV. The MST (Fig 51) is a modified version of the Davies-Cotton design. This design, which was originally created to collect solar radiation, has been used by the previous generation of Cherenkov telescopes HEGRA, H.E.S.S. and VERITAS. The MST will have 86 hexagonal-shaped mirrors that are aligned with an active mirror control assembly to create a uniform reflector of about 12 meters in diameter. A reflective surface of 88 m2 collects and focuses the Cherenkov light into the camera, where the light can be digitized and processed. Two NectarCAM design will be used for the MSTs at the CTAO-North site. The MST cameras will use Photomultiplier Tubes (PMTs) and have a large field of view of about 8 degrees, enabling observation of gamma-ray sources that may be concentrated in one area of the sky or widely spread apart.

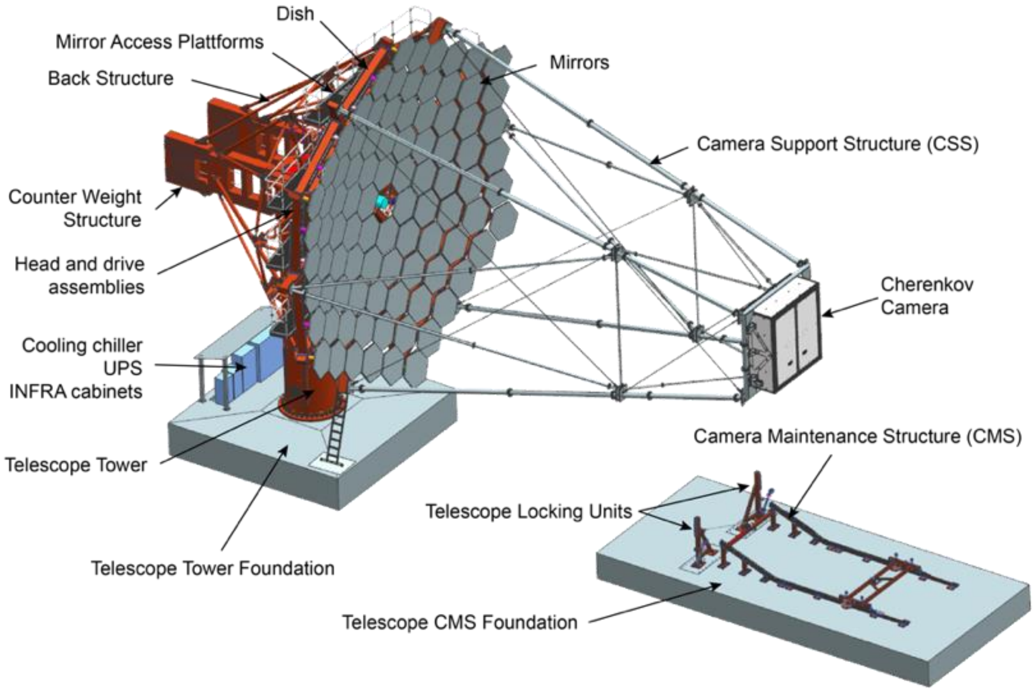

Fig 51. Full model of MST.

The contribution of the IAC to the construction is funded by a 5MST-CTA agreement with the MICIU, with a total budget of 8,415 M€, plus another complementary funding of 7.27 M€ to be funded by the MICIU. The construction of the MSTs at the ORM will start with a pathfinder telescope, called MST-3. The design of the civil works for the MST-3 has been completed, and the permits process were granted simultaneously with the LST-2, LST-3 and LST-4. The construction works of MST-3 should start in 2026 and finish by 2027. Procurement of the telescope subsystems should also start in 2027.

After the finalization of the construction and commissioning of the pathfinder MST, the construction of a set of four MSTs is expected to start soon after the validation of MST-3, with installation and commissioning ending in 2030. Once completed and commissioned, this set of five MSTs together with the four LSTs, will constitute the threshold configuration that should allow the development of key science projects with sufficient sensitivity. Once the array is transferred to CTAO, the facility will be offered to the Spanish TAC.

3.3.3.2 The European Solar Telescope

The European Solar Telescope (EST, Fig. 52) is aimed to be the worldwide leading 4,2-meter class instrument dedicated to study fundamental processes shaping magnetic activity of the sun, optimized for studies of the magnetic coupling between the deep photosphere and upper chromosphere. EST is led by the IAC and promoted by the European Association for Solar Telescopes (EAST), an organization that brings together 26 institutions spread across 18 European countries, aiming to ensure access of European solar astronomers to world-class high-resolution ground-based observing facilities.

Fig 52. The EST.

Contributing to maintaining Europe at the frontier of solar physics research, at the same time EST will mobilize European industry to fully participate in the technological challenges to be faced up in the next decade. The technical outcomes needed for EST will contribute to the attractiveness of the European Research Area by helping to provide a powerful solar facility to be accessed by the international community. Aware of the importance of collaborating with the industry to achieve common objectives of technology transfer between the IAC and the private sector and to increase, in the interest of science, the pool of European firms working on the technological challenges posed by the development of the next generation Large Telescopes, the IAC promotes and sings agreements with Spanish and European companies. The construction of EST in particular offers a unique opportunity in terms of technological development, as well as the possibility of creating industrial contracts to improve the Spanish competence in the design and manufacture of mechanical structures, large format optical elements, high speed detectors, precision scientific instrumentation or data management systems.

The project is currently working towards the construction phase. The preliminary design review of all subsystems of the telescope by external reviewers was successfully accomplished in 2025.

EST construction represents an investment of about 280 M€ for six years of construction period. The useful life of the EST is estimated at 30 years with an annual operation cost of 12 M€. For the next three years (2026-2028) main efforts will follow a phased implementation approach aimed at enabling the physical realization of the EST and its associated systems. The approach is structured around the progressive delivery of construction works, manufactured subsystems and operational infrastructure, ensuring a coherent transition towards full observatory deployment.

1. **Site Preparation and Construction enabling works**
   Execution of earthworks, soil stabilization and associated civil works at the Roque de los Muchachos Observatory, delivering a certified and construction-ready platform, together with the implementation of access infrastructure and enabling site conditions for telescope installation.
2. **Manufacturing and Integration of Telescope Subsystems**
   Fabrication, assembly, integration and verification of key opto-mechanical, structural and functional subsystems of the EST, resulting in tangible, inventoriable hardware ready for installation and operational use.
3. **Deployment of Telescope and Enclosure Control Systems**
   Development, implementation and validation of the telescope and enclosure control system, including its software and hardware infrastructure, and its interfaces with the observatory data systems, ensuring coordinated operation of all subsystems.
4. **Implementation of the Safety Control System**
   Development, integration and verification of the central safety network, including dedicated control hardware and software, ensuring the safe operation of the telescope and compliance with operational safety requirements.
5. **Development of the Adaptative Optics System**
   Development, manufacturing, integration and testing of the EST Adaptive Optics subsystems, supported by laboratory verification, end-to-end simulations and closed-loop testing, including the assessment of control architectures and real-time performance under representative operational conditions.
6. **Implementation of Instrumentation Hardware**
   Manufacturing and laboratory integration of the first instrumental modules associated with the EMBER Instrument, representing the initial deployment of EST scientific instrumentation within this operation."

Phase I would deliver a fully functional telescope, including single-conjugate adaptive optics and one scientific instrument (red channel). This phase would already enable a significant portion of the scientific program. The remaining subsystems and instruments will continue to be developed in parallel, but at a pace dependent on available funding. This means the project is not being downsized, but rather strategically staged.

The EST is currently progressing toward its formal establishment as a European research infrastructure through the ERIC (European Research Infrastructure Consortium) framework. The Board of Governmental Representatives (BGR), established in October 2025 and composed of Spain, the Czech Republic, and Slovakia, is actively coordinating the process. Work is ongoing to finalize the ERIC Statutes, which have already been submitted to the BGR and are expected to be agreed upon in the coming weeks.

3.3.3.3 CELESTE (Cutting-Edge Leap to Excellence in Space and Optics Technologies)

CELESTE (Cutting-Edge Leap to Excellence in Space and Optics Technologies) is a strategic initiative led by the IAC under the Horizon Europe Teaming program. Its overarching objective is to establish a self-sustained Centre of Excellence (CoE) in the Canary Islands, focused on Advanced Optical Systems and New Space technologies, leveraging the existing capabilities of IACTEC and strong international partnerships with the European Space Agency and Centre National de la Recherche Scientifique.

CELESTE builds upon a solid technological and scientific foundation already developed at IAC. The project integrates five complementary laboratories covering the full innovation value chain, from design and manufacturing to validation and technology transfer, including optical systems, satellite payloads, adaptive optics, integrated photonics, and quantum communications.

Significant progress has already been achieved in key areas:

- Development and successful deployment of infrared detectors and Earth observation cameras (e.g., DRAGO systems), including space-proven technologies.
- Establishment of unique experimental infrastructures such as IAClink, a real-environment optical communications testbed connecting Tenerife and La Palma.
- Advanced capabilities in adaptive optics, opto-mechanics, and precision optical manufacturing, positioning the Canary Islands as a competitive European hub in these domains.

At the same time, CELESTE is transitioning from a capability-building phase towards a structured implementation phase, aimed at consolidating its operational model, scaling technological developments, and preparing the creation of a dedicated legal entity (CELESTE Foundation) to ensure long-term sustainability.

CELESTE´s Strategic Investment Priorities (2026–2028)

Over the next three years, CELESTE will focus its investments on accelerating the maturation of key enabling technologies and reinforcing the foundations of the future Centre of Excellence. These priorities are structured around three main pillars:

1. Development and Validation of High-Impact Technologies

CELESTE will prioritize the development of two flagship technological systems:

- **Advanced Adaptive Optics System**:
  A next-generation system integrating artificial intelligence, photonics, and high-precision opto-mechanics to enable reliable optical and quantum communications with satellites. This system will be validated through integration with the SELF interferometric platform at the Teide Observatory.
- **Infrared Optical Payload for Microsatellites**:
  A space-qualified Ritchey–Chrétien optical system equipped with infrared detectors (500–1700 nm), designed for multiespectral Earth observation and New Space applications. The objective is to progress from engineering model to flight-ready system within the period 2026–2028.

These developments aim to position CELESTE at the forefront of European technological sovereignty in optical communications and space-based sensing.

2. Infrastructure and Laboratory Reinforcement

Investments will support the consolidation and expansion of CELESTE’s laboratory ecosystem, including the reinforcement of IACTEC’s advanced optical manufacturing and coating capabilities, Satellite payload integration and testing facilities, Optical and quantum communication infrastructures, and Adaptive optics experimental platforms.

This will enable CELESTE to operate as a fully integrated R&D and validation environment, accessible to both academic and industrial users, reducing European dependence on non-EU suppliers in critical technologies.

3. Talent, Knowledge Transfer and Ecosystem Building

A key priority is the recruitment of highly specialized personnel and the implementation of structured training and mobility programs in collaboration with ESA and CNRS. This includes:

- Annual recruitment of doctoral candidates and development of international MSc/PhD programs.
- Staff exchanges and advanced training programs with leading institutions.
- Strengthening collaboration with industry to facilitate technology transfer and commercialization.

The requested regional funding represents a critical step in the implementation of CELESTE, enabling the transition from technological readiness to operational deployment. With a total estimated investment of €12 million in 2026-2028, CELESTE will significantly enhance its capacity to deliver disruptive technologies, foster industrial innovation, and position the Canary Islands as a leading European hub in space and optical technologies.

Annex 1.
Observatorios de Canarias
Strategic Plan 2025-2028

Annex 2.
Monitoring of Indicators 2025-2028

Annex 3.
Acronym list

ACRONYM	DESCRIPTION
4MOST	4-metre Multi-Object Spectroscopic Telescope
AGE	Spanish National Administration
AGN	Active Galactic Nuclei
AI	Artificial Intelligence
ALMA	Atacama Large Millimeter/submillimeter Array
AMS	Alpha Magnetic Spectrometer
AMS-02	Alpha Magnetic Spectrometer – 02
ANDES	ArmazoNes high Dispersion Echelle Spectrograph
AO	Adaptive Optics
APOGEE	Apache Point Observatory Galactic Evolution Experiment
ARIEL	Atmospheric Remote-sensing Infrared Exoplanet Large-survey
ASSGG	General Services Management Unit
ASTRI	Astrofísica con Specchi a Tecnología Replicante Italiana
ATLAS-Teide	Asteroid Terrestrial Impact Last Alert System-Teide
Atlast2	Asteroid Terrestrial Impact Last Alert System-2
BAO	Baryon acoustic oscillation
BaSTI-IAC	A Bag of Stellar Tracks and Isochrones – IAC extension
BOSS	Baryon Oscillation Spectroscopic Survey
CAB	Centro de Astrobiología (INTA-CSIC)
CAC	Comunidad Autonoma Canaria
CAHA	Calar Alto Observatory
CARMENES	Calar Alto high-Resolution search for M dwarfs with Exoearths with Near-infrared and optical Échelle Spectrographs
CATE	Continental American Telescopic Eclipse
CCI	International Scientific Committee
CD	Critical Design
CDM	Cold Dark Matter
CELESTE	Cutting Edge Leap to Excellence in Space and Optics
CERN	European Organization for Nuclear Research
CHEOPS	CHaracterising ExOPlanet Satellite
CHORUS	Canary Hybrid Optical high-Resolution Ultra-stable Spectrograph
CIELOS	Enhancing the data archive and management of the OCAN
CLASP	Chromospheric Lyman-Alpha Spectro-Polarimeter
CMB	Cosmic Microwave Background
CMBLAB	Cosmic Microwave Background Laboratory
CNRS	Centre National de la Recherche Scientifique
COSMOLAB	Cosmology Laboratory
CSIC	Consejo Superior de Investigaciones Científicas
CSIC-INTA	Consejo Superior de Investigaciones Científicas-Instituto Nacional de Técnica Aeroespacial
CSOA	Centre for Advanced Optical Systems
CTA	Cherenkov Telescope Array
CTAO	Cherenkov Telescope Array Observatory
CTAO-N	Cherenkov Telescope Array Observatory North
CTAO-North	Cherenkov Telescope Array Observatory North
DALI	Dark-photons & Axion-Like particles Interferometer
DART	Double Asteroid Redirection Test
DESI	Dark Energy Spectroscopic Instrument

ACRONYM	DESCRIPTION
DKIST	Daniel K. Inouye Solar Telescope
DM	Dark matter
E-MILES	Extended Medium-resolution Isaac Newton Telescope Library of Empirical Spectra
EAST	European Association for Solar Telescopes
eBOSS	extended Baryon Oscillation Spectroscopic Survey
EECTI	Spanish Science, technology and Innovation Strategy
EHT	Event Horizon Telescope
EIT	European Institute of Innovation and Technology
ELF	Exo-Life Finder
ELT	Extremely Large Telescopes
EMBER	EST SpectropolariMeter Based on mirror-sclicEr in the Near-infraRed
EMIR	Espectrógrafo Multiobjeto InfraRojo
EPIC-FINANCE	International projection and European fundraising strategy for the IAC
ERA	European Research Area
ERC	European Research Council
ERDF	European Regional Development Funds
eROSITA	extended ROentgen Survey with an Imaging Telescope Array
ESA	European Space Agency
ESA BIC	European Space Agency Business Incubation Centre
ESO	European Southern Observatory
ESPRESSO	Echelle SPectrograph for Rocky Exoplanets and Stable Spectroscopic Observations
EST	European Solar Telescope
EU	European Union
FDR	Final Design Review
FEDER	Fondo Europeo de Desarrollo Regional
FM	Flight Model
FOSSIL	Far-infrared Observations of Star-forming Systems and Interstellar Lines
FP10	Tenth European Framework Programme
FPI	Formacion Personal Investigador
FRIDA	inFRared Imager and Dissector for Adaptive optics
GAIA	Global Astrometric Interferometer for Astrophysics
GDP	Gross Domestic Product
GONG	Global Oscillation Network Group
GRANCAIN	GRAN Telescopio Canarias CAmara INfrarroja
GRIS	GREFOR Infrared Spectrograph
GroundBIRD	Ground-based experiment for the precise observation of the polarization of the cosmic microwave background (CMB)
GSC	Graduate Studies Commission
GSD	Graduate Studies Division
GTC	Gran Telescopio Canarias
GTCAO	GTC Adaptive Optics
H2020	Horizon 2020
HARMONI	High Angular Resolution Monolithic Optical and Near-infrared Integral field spectrograph
HARPS-N	High Accuracy Radial velocity Planet Searcher-North
HARPS-S	High Accuracy Radial velocity Planet Searcher-South

ACRONYM	DESCRIPTION
HHRR	Human Resources
HIPERCAM	High-speed Photometry Camera
HORus	High Optical Resolution Spectrograph
HPC	High Performance Computing
HR	Human Resources
HR4R	Human resources Strategy for Researchers
HST	Hubble Space Telescope
IAA-CSIC	Instituto de Astrofísica de Andalucía-Consejo Superior de Investigaciones Científicas
IAC	Instituto de Astrofísica de Canarias
IAC-FM	IAC Foundational Model
IACSAT	IAC's satellite
IAU	International Astronomical Union
ICTS	Infraestructuras Científicas y Técnicas Singulares
IFU	Integral Field Unit
IMaX	Imaging Magenetograph eXperiment
INAF	Istituto Nazionale di Astrofisica
INAOE	Instituto Nacional de Astrofísica, Óptica y Electrónica
INT	Isaac Newton Telescope
IPR	Industrial Property Rights
IR	Infrared
IRAM	Institut de Radioastronomie Millimétrique
ISM	Interstellar medium
ISS	International Space Station
IT	Information Technology
ITP	International Time Programme
J-PAS	Javalambre Physics of the Accelerating Universe Survey
JAXA	Japan Aerospace Exploration Agency
JCR-Q1	Journal Citation Reports – Quartile 1
JdIC	Juan de la Cierva
JWST	James Webb Space Telescope
KECK	W. M. Keck Observatory
KIC	Knowledge and Innovation Community
KISS	KIDs Interferometer Spectrum Survey
KPI	Key Performance Indicator
LAMOST	Large Sky Area Multi-Object Fiber Spectroscopic Telescope
LCDM	Lambda-Cold Dark Matter
LCOGT	Las Cumbres Observatory Global Telescope
LGS	Laser Guide Star
LIOM	Laboratory for Innovation in Opto-Mechanics
LISA	Laboratorio de Imagen y Sensores para Astronomía
LITEBIRD	Light satellite for the study of B-mode polarization and Inflamation from cosmic brackground Radiation Detection
LSPE-Strip	Large-Scale Polarization Explorer – Survey TeneRIfe Polarimeter
LST	Large Size Telescope
M	Milestone
M87	Messier 87
MAGIC	Major Atmospheric Gamma Imaging Cherenkov telescope
MCAO	Multi-Conjugate Adaptive Optics

ACRONYM	DESCRIPTION
MEU-PSU	Main Electronics Unit Power Supply
MFI2	Multi-Frequency Instrument 2
MHD	Magnetohydrodynamic
MHFT	High-Frequency Telescopes
MICIU	The Ministry of Science, Innovation and Universities
MKID	Microwave Kinetic Inductance Detector
MOONS	Multi-Object Optical and Near-infrared Spectrograph
MSCA	Marie Sklodowska-Curie Actions
MST	Medium Size Telescope
MUSE	Multi Unit Spectroscopic Explorer
NASA	National Aeronautics and Space Administration
NATE	North African Telescope Eclipse
NCP	National Contact Point
NDA	non-disclosure agreement
NEA	near-Earth asteroids
NEO	near-Earth objects
ngEHT	next-generation Event Horizon Telescope
NRT	New Robotic Telescope
OCAN	Observatorios de Canarias
OPI	Organismo Público de Investigación
OPTICON	Optical Infrared Coordination Network for Astronomy
OPTIMAS	OPTIcal MilitAry Secure communications
ORM	Observatorio del Roque de los Muchachos
ORP	Opticon Radionet Pilot
OT	Observatorio del Teide
OTAI	Office for Institutional Actions and Knowledge Transfer
OTC	Knowledge Transfer Office
OTM-R	Open, transparend and merit-based recruitment
PDR	Preliminary Design Review
PETeR	Proyecto Educativo con Telescopios Robóticos
PhD	Predoctoral Students
PI	Principal investigator
PLATO	PLAnetary Transits and Oscillations of stars
PRE-EST	Preparatory Phase of the EST
QUIJOTE	Q-U-I JOint TEnerife CMB experiment
R&D	Research and Development
R&D&I	Research, Development and Innovation
RES	Spanish Supercomputing Network (RES)
RIS3	Regional Innovation Strategy for Smart Specialisation 3
RISE	Staff Exchanges - Marie Skłodowska-Curie Actions
RRF	Recovery Mechanism EU
RTD	Research and Technology Development
RyC	Ramón y Cajal
SAC	Scientific Advisroy Commission
SDO	Solar Dynamic Observatory
SDSS	Sloan Digital Sky Survey
SELF	Small Exo-Life Finder
SKA	Square Kilometer Array
SO	Severo Ochoa

ACRONYM	DESCRIPTION
SOLARNET	High-Resolution Solar Physics Network
SONG	Stellar Observations Network Group
SPECULOOS	Search for habitable Planets EClipsing Ultra-cOOl Stars
SST	Small-Sized Telescope
STEM	Science, Technology, Engineering and Mathematics
STFC	Science and Technology Facilities Council
STRIP	Survey TenerIfe Polarimeter
STScI	Space Telescope Science Institute
SUNRISE	The Sun Radio Interferometer Space Experiment
SVO	Spanish Virtual Observatory
SWOT	Strengths, weaknesses, opportunities, and threats
TAC	Time Allocation Committee
TCS	Telescope Carlos Sánczez
TEA	Tenerife Event Horizon Telescope Antenna
TESS	Transiting Exoplanet Survey Satellite
TFGI	Thirty and Forty Gigahertz Instrument
TIP	Tenerife Infrared Polarimeter
TL	Transversal line
TLP	Tenerife Lan Party
TMS	Tenerife Microwave Spectometer
TMT	Thirty Meter Telescope
TO	Teide Observatory
UC3	Scientific Culture and Communication Unit
UE	Unión Eruopea
UI	User Institutions
ULL	Universidad de La Laguna
UNAM	Universidad Nacional Autónoma de México
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNOOSA	UN's Office for Outer Space Affairs
USA	United State of America
VLBI	Very Long Baseline Interferometry
VLT	Very Large Telescope
WEAVE	WHT Enhanced Area Velocity Explorer
WHT	William Herschel Telescope
WOS	Web of Science