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1. Introduction

1.1 ESO, an intergovernmental organisation

ESO, the European Organisation for Astronomical Research in the Southern Hemisphere, or, with a shorter version of the name, the European Southern Observatory, is an intergovernmental science and technology organisation in astronomy, established under international public law in 1962. ESO currently has 16 Member States¹: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Poland, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. Australia is a Strategic Partner of ESO. Chile is the host state of the ESO Observatories, while the ESO Headquarters are hosted by Germany.

The Member States exercise their general oversight role via the ESO Council², which is the governing body of ESO. The financial oversight is conducted via the Finance Committee², which reports to Council. Additionally, the Member States via the Scientific Technical Committee² advise Council and the Director General³ (DG) on technical and scientific matters.

1.2 ESO's mission

ESO's overall mission is: i) to enable major scientific discoveries by constructing and operating powerful observational facilities that are beyond the capabilities of individual Member States and ii) to foster astronomical cooperation within its Member States.

For the implementation of the mission, ESO operates three unique world-class observing sites in the Atacama Desert region of Chile: the La Silla Paranal Observatory (LPO) includes the La Silla site telescopes⁴, the Paranal VLT/VLTI and VST/VISTA survey telescopes⁵, and the APEX⁶ telescope at the Chajnantor site, while the ALMA Observatory⁷, which is an international partnership, is also located at the Chajnantor site. The construction of the ELT⁸ at Armazones, next to Paranal, will add the largest optical/near-infrared telescope in the world.

¹ <http://www.eso.org/public/about-eso/memberstates/>

² <http://www.eso.org/public/about-eso/committees.html>

³ <http://www.eso.org/public/about-eso/dg-office/>

⁴ <http://www.eso.org/public/teles-instr/lasilla/>

⁵ <http://www.eso.org/public/teles-instr/paranal-observatory/>

⁶ <http://www.eso.org/public/teles-instr/apex/>

⁷ <http://www.eso.org/public/teles-instr/alma/>

⁸ <http://www.eso.org/public/teles-instr/elt/>



2. Management structure

2.1 Senior management

The DG, appointed by the ESO Council, leads the Organisation.

ESO's main organisational and operational units are the Directorates⁹, each led by a Director. Currently there are five Directorates at ESO: Directorate of Administration, Directorate of Engineering, Directorate of Operations, Directorate of Programmes, and the Directorate for Science.

The DG, together with the five Directors comprise the Directors' Team (DT), ESO's highest level management structure. The DT is responsible for defining the horizontal priorities of the Organisation, both in the mid- and long-term. This includes establishing the high-level goals and strategy of the organisation for Council approval and approving organisational level horizontal policies and procedures. The DT manages the internal control environment. It proposes potential new programmes to Council and structural changes that could affect the whole Organisation. The DT, when needed, ensures that the required documentation/approval processes are in place for Council and the auxiliary bodies (Finance Committee, Scientific Technical Committee, Observing Programmes Committee, Users Committee, etc) and, once approved, follows up on their implementation, as required.

2.2 Directorates

The Directorate of Administration (DoA) provides services and guidance in human resources, financial management, contracts and procurement, facility, logistics and transport, site safety responsibility in Garching and Santiago, and Enterprise Resources Planning services.

The Directorate of Engineering (DoE) provides engineering services and solutions for the design, manufacturing, installation, corrective maintenance, upgrade as well as support to the operation of telescopes, instruments and auxiliary equipment.

The Directorate of Operations (DoO) is responsible for all science operations-related activities including the preparation and execution of observing programmes, the operation of the ESO telescopes, the user support, and the delivery and curation of their data.

The Directorate of Programmes (DoP) is responsible for the management and delivery of the construction phase of ESO's projects and programmes, in close collaboration with DoE within ESO's matrix organization.

The Directorate for Science (DSC) is responsible for defining the scientific requirements and priorities for ESO's facilities, for providing a science environment suitable for staff astronomers, fellows and students and visitors from the Member States, and for the ESO Supernova.

⁹ <http://www.eso.org/public/archives/static/about-eso/organisation/public-organigram.pdf>



3. Directorate of Administration (DoA)

The ESO Directorate of Administration (DoA) organises ESO's administration in Garching and in Chile. The functions include human resources, financial management, contracts and procurement services, facility, logistics and transport, safety coordination, the ERP services, as well as the infrastructure in Chile and guesthouse operation. The Director of Administration provides support to the DG in external relations' activities and functions, and represents ESO in the ALMA Heads of Administration meetings, and in the CERN Pension Fund matters. The Office of the Director of Administration deals with arrangements for the Finance Committee meetings. Furthermore, the Director of Administration acts as the site safety responsible of the Garching and Santiago sites with the support of the site safety engineer.

The Director of Administration leads the DoA and reports to the DG.

DoA includes the following Departments and Offices :

- Administration Office
 - ERP
 - Safety
 - Insurances
- Contracts and Procurement Department
- Facility, Logistics, Transport Department
- Finance Department
- Human Resources Department
- Infrastructure Chile

3.1 Administration Office

The Administration Office comprises the following groups and tasks:

3.1.1 ERP

The ERP Team is responsible for the maintenance and update of the ERP system; implements new business processes as required and provides User support.

3.1.2 Safety

Safety at ESO Headquarters Garching, Vitacura and the Guesthouse covers all aspects of occupational health and safety, environmental protection, safety of equipment and installations as well as operational safety. The sustainable and continuous improvement process at the site is an integral management goal to ensure a safe and healthy work environment to everybody.



3.1.3 Insurances

The insurance officer develops ESO's insurance strategy, manages the insurance portfolio, controls the services of the insurance broker and provides advice and guidance on insurance matters to ESO's staff.

3.2 Contracts and Procurement Department (CP)

The Contracts and Procurement Department (CP) is responsible for executing procurement actions, and in this respect is the sole representative of the Organisation in all dealings with suppliers and contractors involving commercial matters. CP also plays an active role in procurement related upstream and downstream activities, including in the definition of efficient procurement strategies and in the monitoring of the procurements after the orders are placed/contracts are awarded. CP ensures that goods and services are procured in full compliance with ESO's policies, rules and procedures. CP operates in an integrated way between the unit in Garching and in Santiago. Within these functions, CP:

- Maintains an up to date suppliers' database and in this respect ensures adequate coordination with ESO's industrial liaison officers (nominated by each Member State) so as to further develop the pool of suppliers in the ESO Member States.
- Coordinates the timely preparation of all relevant documentation required for approval and procurement actions.

3.3 Facility, Logistics, Transport Department (FLT)

The objectives of FLT are to efficiently plan, construct, operate and maintain the ESO facilities, grounds and infrastructure at the Garching site, including the ESO Supernova.

In order to ensure that staff, students and visitors can work in a safe workplace, environmental considerations are integrated in the planning, modernisation and maintenance of all facilities at ESO Headquarters.

The Logistics team is in charge of transport and goods reception and coordinates shipments between Europe and Chile.

3.4 Finance Department (FIN)

The Finance Department (FIN) ensures that financial resources are used according to the applicable rules and regulations, and in line with the directions defined by ESO's governing bodies. The activities of FIN cover four main areas: budgeting & controlling, accounting (including payroll), invoice control and treasury. FIN operates in an integrated way between the units in Garching and in Santiago. Within the above responsibilities, FIN conducts the following activities:



- Budget preparation for approval by governing bodies, budget planning support to managers, and monitoring and coordination with the controllers,
- Financial planning for medium and long range, as well as cash flow planning,
- Cash management and general accounting services,
- Payroll accounting,
- Invoice control,
- Bank and treasury,
- Periodical Financial Statements,
- Financial analyses,
- Coordination with External Auditors.

3.5 Human Resources Department (HR)

Human Resources is responsible for ESO's employment relationship with its staff. This includes

- recruitment,
- contract formation,
- remuneration,
- pension,
- health,
- welfare and
- development

and all of the systems required to deliver a robust HR service to approximately 700 staff, fellows and students. Furthermore, the department encompasses the Human Resources strategy.

3.6 Infrastructure Chile

Infrastructure Chile is led by the Deputy Director of Administration. The department provides ESO's Vitacura site with facilities management services, including maintenance, renovation and safety monitoring, as well as the management and operations of the Santiago Guesthouse. Additionally, the department provides support for staff removals and coordination with the travel agency for staff travels, oversees car insurance for Chile, and organises social events in Vitacura. Import/export and customs clearances are also part of the duties of Infrastructure Chile.



4. Directorate of Engineering (DoE)

The Directorate of Engineering (DoE), provides engineering services and solutions for the design, manufacturing, installation, corrective maintenance, upgrade and support to the operation of telescopes, instruments and auxiliary equipment. It also provides consultancy and support to project design activities, as well as contract follow up including preparation of plans, specifications and budget estimates. The main partners of the Directorate of Engineering are the Directorate of Programmes, the Directorate of Operations and the Directorate for Science. In addition to engineering support, the DoE, through the ITS Department, also provides general IT (Information Technology) services to the whole organization.

The Director of Engineering leads the DoE and reports to the DG.

DoE is divided into eight organisational units:

- DoE Management Office
- Information Technology Department
- Control Software and Engineering Department
- Electronic Engineering Department
- Mechanical Engineering Department
- Optical Engineering Department
- Science Operation Software Department
- System Engineering Department

4.1 DoE Management Office

The DoE Management Office is in charge of a variety of management tasks, including line management and allocation of the manpower of the Directorate.

The Director of Engineering is responsible for the overall line management of the Directorate and for defining and implementing the DoE strategy. They also act as Chair of the IT Cyber Security Board. The DoE Executive Officer is responsible for defining and maintaining the ESO FTE allocation process. They also oversee its implementation in the DoE. Furthermore, they own the process for selecting engineering fellows and students. The office provides administrative support to all DoE Members of Personnel.

4.2 IT Department (IT)

IT is structured around three main groups:

- IT Chile



- IT Garching
- IT Project and Security

The IT Chile and IT Garching groups are responsible for the day-to-day IT operations and the delivery of the agreed upon services to the site customers.

The IT Project and Security Group is responsible for project management of IT projects, IT service quality, IT service catalogue, IT software asset management and life cycle management and the cyber security programme.

4.3 Control Software and Engineering Department (CSE)

As part of the project teams, members of the Control Software and Engineering (CSE) department in DoE are specifying, analyzing, designing, implementing, verifying and maintaining control systems and are responsible for the development of control software for (optical and radio-) telescopes and astronomical instruments over the full software lifecycle.

The CSE is divided into following groups:

- Instrument control software
- Infrastructure and integration
- Observatory control software
- Control Engineering
- Real Time Computing

4.4 Electronic Engineering Department (EE)

The Electronic Engineering Department is responsible for the definition, design and manufacturing of control electronic and detectors system/subsystem for telescopes and instruments as well for electrical compliance verification for all ESO projects. The department domain of expertise is quite large and covers from instrument and telescope control electronics/automation to detector system design, production qualification and test. Its mission is also to define the electrical and electronic standards at the organisation level and to enforce their use in all projects to minimise the impact of technology evolution and guaranty uniformity over systems.

The department is constituted by four groups:

- Telescope and Instrument Electronic Engineering
- Electrical Compliancy Engineering
- Electronic Developments, Lab facilities & Workshop
- Detector Systems



4.5 Mechanical Engineering Department (MEC)

The Mechanical Engineering Department provides support to all ESO projects. As part of the project teams the department members are responsible for the definition, design, analysis, procurement and initial assembly of mechanical, opto-mechanical, cryogenic and vacuum systems for advanced astronomical telescope and instrumentation systems for all ESO observatories.

In addition, the mechanical department is in charge of providing and maintaining ESO standards for Mechanical, Cryogenic and Analysis requirements. It provides software support for the in-house CAD Systems, FE programs and Hazard Analysis tool. Furthermore, MEC supplies organized documentation platforms for whole ESO, i.e. PDM System and CAD PDM System.

The Mechanical Engineering department is subdivided into three groups. The group structure is based on products and engineering competences.

- Instruments and Cryo Systems
- Structural Analysis
- Telescopes and Large Structures

4.6 Optical Engineering Department

The Optical Engineering Department provides support in the field of optics and photonics to all ESO projects. The technical expertise offered by the department includes the optical design, integration and testing of optical systems as well as photonics technologies and laser guide stars. The department supports projects in the field of system engineering and provides AIT managers for integration. In addition, it supports the observatory solving optical problems arising in systems in operation.

The department manages the optical and integration laboratories at ESO headquarters.

The Optical Engineering Department is split into two groups, reflecting the major activities:

- Laser & Photonics
- Telescope and Instrument Optics
- Optical Alignment and Metrology

4.7 Science Operation Software Department (SCS)

The Science Operation Software Department (SCS) is responsible for all science operation software for the end-to-end operations of ESO observatories, La Silla-Paranal, ALMA, and



ELT. Science operation software includes all components required for proposal submission, scheduling, execution, archiving, processing, visualization, and quality control of the observations. This software is used by operational teams within the organization for planning and running scientific operations, by scientific users in the community for the handling of observing proposals, the preparation of observations and the access and processing of observation data.

As part of the project teams, members of SCS are responsible for the design, implementation, maintenance, and support of science operation software for the end-to-end operations of the ESO observation systems (VLT, VLTI, Survey & La Silla Telescopes, ALMA, and ELT).

SCS is structured in three groups:

- Dataflow Infrastructure
- Pipeline Systems
- Software Engineering and Quality

The Dataflow Infrastructure Group is in charge of the preparation of observations and the handling of data and metadata. The Pipeline Systems Group is concerned with the prediction and the measurement of data quality, as well as the visualization and scientific processing of data. The Software Engineering and Quality Group provides the tools necessary to support the development process, the testing, the integration, and release of scientific operation software.

4.8 System Engineering Department

The System Engineering Department provides system engineering services to all ESO projects. All essential functions are covered, including requirement engineering, verification, disciplinary integration & technical coordination, system architectural design and system analysis. The Head of the department owns the engineering standards at ESO and is in charge of deciding on the recommendations made by the Engineering Standards Configuration Board.

The system engineering department is split into three groups and an office:

- Adaptive Optics Systems
- Instrument Systems
- Observatory Systems



5. Directorate of Operations (DoO)

The Directorate of Operations is responsible for all science operations-related activities including the preparation and execution of observing programmes, the operation of the La Silla Paranal Observatory (LPO), the ESO ALMA Support Centre (EASC), and the delivery and preservation of data. This involves user support, data flow management, operations technical support and the development and maintenance of a science archive as provided by the Data Management and Operations (DMO) Division. The Science Archive Facility (SAF) holds all the data obtained with ESO telescopes as well as highly processed, advanced products derived from them. The La Silla Paranal Observatory also provides support to the APEX project.

5.1 La Silla Paranal Observatory (LPO)

The La Silla Paranal Observatory (LPO) provides and operates some of the world's largest and most advanced observational facilities at three sites in Northern Chile. La Silla hosts the 3.6-m telescope, the New Technology Telescope (NTT), and a number of Hosted Telescope projects. Cerro Paranal is the home of the Very large Telescope, the VLT. APEX, the Atacama Pathfinder Experiment, is located on the high altitude site of Llano Chajnantor.

The Director of Operations acts as the Director of the LPO.

5.1.1 Paranal Departments and Groups

5.1.1.1 LPO Director's Office (X-LPO)

The LPO Director is responsible for setting the overall goals, priorities, and strategies within LPO for all operational aspects.

The LPO Director acts as the site safety responsible of LPO with the support of the LPO Safety Office (SAF).

The LPO Director acts as the Programme Manager for LPO Projects and interface to all external projects including the ELT and CTA projects with the support of the Project Coordination Office (PCO).

System Engineering functions for Paranal are provided by Paranal System Engineering (PSE) composed of the System Engineers and System Scientists.

The LPO Quality Office (LQO) provides support to the Director with quality management at LPO and runs the Change Control Board.

The LPO management team is composed of the Director, the Deputy Director and the department heads. The Deputy Director runs the LPO Director's Office which encompasses SAF, PCO, PSE, LQO, and secretarial support.



5.1.1.2 Paranal Science Operations (PSO)

Science Operations is responsible for the execution of all scheduled observations and the production of astronomical data of highest quality. The department is further charged to maintain, and whenever possible, to improve the scientific and operational performances of the Paranal telescopes and instruments. The PSO instrument scientists lead the Instrument Operations Teams (IOTs) of all VLT and VLTI instruments.

The Department is composed of two groups:

- Operations Support Astronomers
- Telescope and Instrument Operators

5.1.1.3 Paranal Maintenance, Support & Engineering (MSE)

MSE provides all technical maintenance services and engineering support to the operational systems of the Paranal site and guarantees their highest availability and performance. The operational systems include the telescopes and their systems and sub-systems including the scientific instruments. In addition, MSE supports the assembly, integration, verification and commissioning of new facilities and systems delivered to Paranal by other ESO Directorates. MSE further provides all warehouse services to Paranal and operates the power station. It is divided into six groups according to engineering disciplines:

- Systems and Optics
- Instrumentation
- Mechanics
- Electronics
- Software
- Support and Quality Assurance

5.1.1.4 Paranal Logistics & Facilities Management (PLF)

Logistics is in charge of all logistics aspects of the Paranal site. This includes transport, accommodation, catering, cleaning, building and road maintenance, security and other services.

5.1.2 La Silla Department (LSD)

LSD provides the technical operations, the maintenance and the day- and night-operations of the La Silla site including the ESO-operated telescopes and the hosted telescopes. LSD further deals with all logistics tasks related to the La Silla site.

The Head of the LSD is the La Silla site manager. At La Silla, there are working three groups:

- Day & Night Operations
- Technical Operations & Maintenance
- Logistics



5.1.3 APEX Department (LSA)

ESO is a 32% partner in the APEX partnership. ESO is responsible on behalf of the partnership for the operation and maintenance of its base station site at Sequitor near San Pedro de Atacama, the 12-m antenna site on Chajnantor at 5100 m altitude, and the science operation of the complete facility, as well as for all related logistics tasks.

The Head of the LSA is the APEX station manager who reports to the APEX Board on all operational matters and to the LPO Director on all staff-related and safety matters.

5.2 Data Management and Operations (DMO)

The Data Management and Operations (DMO) Division is responsible for the off-site operations and user support of the La Silla Paranal Observatory (LPO) in the framework of an integrated end-to-end system, maintaining the archive facility and its data holdings as a powerful resource, both scientific and operational.

DMO is structured as follows:

5.2.1 DMO Office

The Head of the DMO is responsible for setting the overall goals, priorities, and strategies for DMO within DoO, and acts as the programme manager for the VLT/VLTI and ELT dataflow and pipeline development programmes. The Office is supported by a data-flow systems project engineer and an end-to-end operations scientist who coordinate the development and implementation of all VLT/ELT data-flow system components with resources drawn from the engineering matrix.

Part of the ESO Data Management and Operations Division is the APEX Garching support group which provides user and science operations-oriented services to ESO APEX users as well as Project scientist related activities.

5.2.2 User Support Department (USD)

The main role of USD is to be the interface between the users of ESO facilities (in particular those who take advantage of Service Mode observations) and the Observatories.

The User Support Department (USD) is based at the ESO Headquarters in Garching. Its main activities consist in providing support to users of ESO facilities, in particular through the ESO Data Flow System. USD currently provides support for all the instruments available at the VLT and VLTI, as well as the Survey telescopes (Paranal), as well as for the surveys and open time observations on VISTA and VST. Its main activities are user-oriented services (proposal handling, helpdesk), Science Operations oriented services (link between the Observatory and the users) and general services (e.g. night astronomer tasks, instrumentation projects, Users Committee meetings).

The Department is composed of two groups:

- User Support Astronomers
- Operations Support



5.2.3 Back end Operations Department (BOD)

The main activities of BOD are:

- Operating ESO's Science Archive Facility as the access point for the scientific community to ESO's data, both raw and processed, and ensuring data and metadata integrity;
- Developing the Science Archive Facility as a science tool for archival exploitation of its holdings;
- Processing the raw science and calibration data collected at LPO's Paranal site with the dual goal of monitoring instrument performance and delivering processed data to the community;
- Providing scientific guidance to define and develop data reduction tools including the Reflex environment;
- Collecting highly processed data from Principal Investigators and making them available to the community at large through the Science Archive Facility.

The Department works in close collaboration with the Dataflow Infrastructure Department, the Instrument Science Department, the Paranal Science Operations Department and the Pipeline Systems Department and the as well as with the other Departments within DMO.

Raw data and, when applicable, data products from ESO facilities are stored in the ESO Science Archive Facility for further dissemination to the community. The Science Archive Facility is, in fact, the single access point to ESO's data (e.g. Visitor and Service Modes, proprietary and open access, etc.).

The Department is composed of four groups:

- Quality Control Group
- Science Data Products Group
- Archive Science Group
- Archive Content Handling Group

5.3 ESO ALMA Support Centre (EASC)

The ESO ALMA Support Centre is responsible for off-site operations and user support of ALMA. At the same time, it is the "face" of ALMA towards the scientific and technological community and institutes in ESO member states as well as towards the international ALMA partners (NRAO in North America, NAOJ in East Asia) during the ALMA operations phase.

EASC is divided into four departments.

5.3.1 ALMA Regional Centre (ARC)

The European ALMA Regional Centre (ARC) provides the interface between the ALMA project and the European science community. It supports its users mainly in the areas of proposal preparation, observation preparation, data reduction and data analysis.



Unlike its partner ARCs in North America and Japan, the European ARC is organized as a coordinated network of scientific support nodes distributed across Europe. The central node is located at ESO Headquarters in Garching and carries the responsibility for all the core ARC activities as well as the coordination of the additional science support provided by the regional nodes and centres of expertise.

The European ARC is the point of contact for European ALMA users from the moment of proposal submission to the actual distribution of calibrated data and subsequent analysis via the ALMA Helpdesk.

5.3.2 ALMA Technical Team (ATT)

ATT is responsible for specific hardware maintenance support and providing technical expertise to ALMA, including development and maintenance of technical documentation and manuals. ATT also manages hardware development projects and supports development studies, which are carried out with institutes in ESO Member States. ATT, as IET-EU, is part of the quadrilateral ALMA Integrated Engineering Team, and in agreement with the ALMA partners, ATT may execute “in kind” contributions to the on-site hardware maintenance activities, as part of the overall optimization of the execution of the ALMA programme.

5.3.3 ALMA Computing (ACT)

ACT is responsible for the development and maintenance of the ALMA software subsystems. In collaboration with similar sized groups at the other ALMA Executives and the JAO, ACT is part of the Integrated Computing Team (ICT). ACT maintains responsibility for the Computing subsystems that were developed in Europe during ALMA construction. The key areas of responsibility are Archive Services, Observing Preparation, Observatory Interfaces (supporting the full observing project workflow), Telescope Calibration and Automation & Testing. The ACT is in addition a major contributor to Data Processing software, namely CASA and Pipeline Heuristics. Apart from regular maintenance, all ALMA subsystems are still in active development to support growing and changing demands from the observatory. The ACT also contributes to ALMA Development projects.

5.3.4 ALMA Science Team (AST)

The ALMA Science Team is part of the quadrilateral Integrated Science Team of ALMA (IST-EU).

IST-EU has the responsibility of supporting the development of the science priorities for ALMA development, coordinating the ALMA Development Study programme in Europe, engaging the scientific and technological community in the ESO Member States.

The IST-EU supports the definition of the scientific requirements of ESO ALMA upgrade projects and monitors the compliance during execution. The IST-EU is responsible for the



definition and execution of commissioning and science verification activities for the ESO development projects and contributes to the ALMA EOC activities in Chile.

Members of the AST are the ALMA Programme Scientist, the Instrument and Commissioning Scientists: astronomers from the ESO Directorates of Operations and Science with specific ALMA/submm system, commissioning and science verification expertise.



6. Directorate of Programmes (DoP)

The DoP is responsible for the management and delivery of ESO's construction programmes and projects within ESO's matrix organization. The overall work is broken down into four programmes:

- ELT Construction Programme
- ELT New Technologies Programme
- Armazones Instrumentation Programme
- Paranal Instrumentation Programme
- Technology Development Programme

Each of these programmes has a Programme Manager who is accountable for the delivery of the programme to time, cost and quality, and has both the responsibility and the authority to set priorities for the work in their area. Within the programmes there are many projects.

DoP is divided into six organisational units:

6.1 Office of the Director for Programmes

The Director of Programmes has the overall responsibility for the successful delivery of the Programmes within the agreed specifications, budget and schedule, and is responsible for setting the overall priorities within and between the programmes, and the approval of projects.

6.2 ELT Programme Office

The ELT Programme Office is led by the ELT Programme Manager, who is responsible for the planning and delivery of the ELT Construction Programme including its first instruments. Dedicated personnel for programme engineering, telescope science, financial and budget control, quality and product assurance and archiving support the Office in order to ensure the central management of the activities of the ELT Work Packages. The overall ELT Programme additionally includes project managers from the PMD and DoE, the Programme Scientist from DSC, an AIV manager and ELT System Engineer from DoE, and is also supported by the Garching and LPO Safety Engineers. The ELT Programme Office is also responsible for the ELT New Technologies Programme.

6.3 Armazones Instrumentation Programme (AIP) Office

The AIP Office runs the AIP Programme, which is responsible for the construction and delivery of those ELT instruments that are not funded as part of the ELT construction programme. The AIP Office is led by the AIP Programme Manager, who coordinates the



work with external institutes, as well as the project managers and project scientists from DoP, DoE and DSC.

6.4 Paranal Instrumentation Programme (PIP) Office

The PIP Office runs the Paranal Instrumentation Programme that delivers new instruments and upgrades to the existing instruments of La Silla and Paranal, including the required modifications to the observatory infrastructure. The Office is led by a Programme Manager and is supported by a Programme Engineer who coordinates the technical work with the project managers and other personnel from DoP, DoE and DSC.

6.5 Technology Development Programme (TecDev) Office

The TecDev Programme aims to develop and secure key technologies which will maintain ESO's facilities at the cutting edge of astronomy and which will contribute to achieving ESO's mission. In practice, this means taking technologies which are at low levels of technology readiness and developing them to a level sufficient to be incorporated within new projects with manageable risk. The TecDev Programme also supports technology development for new ESO standards.

The Office is led by a Programme Manager, who is supported by a Technology Development Advisory Team to choose the projects to be supported.

6.6 Project Management Department (PMD)

Within the programmes of DoP, multiple projects are defined and implemented. These projects are led by project managers, who form the PMD.

The PMD aims to ensure that projects are implemented within the framework, plans and standards defined by the DoP programmes, and according to common standards and quality within all of the projects.

The Head of the PMD is the key project manager within the organisation who drives the culture, and set standards for project management, and works closely with the Programme Managers to ensure that their requirements are met and that the allocated staff is suited to the tasks ahead.



7. Directorate for Science (DSC)

The Directorate for Science (DSC) supports community science with ESO facilities, provides the scientific environment for the astronomers at ESO, and runs the ESO student and fellowship programmes.

DSC contains five departments and four Programme Scientists. The management of the Directorate comprises the Director, Deputy Director, the Department Heads and the Programme Scientists. The Director, together with the Programme Scientists, organises meetings of the Scientific Technical Committee and its subpanels.

7.1 Project Science

The Project Science Department (INS) contains scientists who interact closely with the Programme Scientists, the Programme Managers, and the Project Managers at the DoP and with the Project Engineers at the DoE. The Project Scientists are responsible for developing and maintaining the science requirements for the project, in full compatibility with the overall scientific goals of the respective programme. The tasks include:

- Developing the scientific cases and top-level requirements for the project and agreeing these with stakeholders;
- Monitoring and maintaining the predicted system scientific performance, by following all system and sub-system design processes and performance predictions;
- Ensuring the project includes all tasks and work required to be successful;
- Chairing of the Instrument or Project Science Team if one is appointed, and
- Supporting the Project Manager and Project Engineer in presenting the project to management.

7.2 Programme Scientists

There are four Programme Scientists at ESO corresponding to the Very Large Telescope (VLT), VLT Interferometer (VLTI), Atacama Large Millimeter/submillimeter Array (ALMA), and ESO Extremely Large Telescope (ELT) Programmes. The Programme Scientists are responsible for developing and maintaining a strategic science vision for the respective programme by:

- Providing the scientific leadership of the programme;
- Working with the Programme Manager in developing a long term plan for the programme;
- Developing and maintaining the science requirements of the programme;
- Preparing and ensuring the scientific top level requirements of the programme;



- Approval release of top level requirements for each project within the programme;
- Advising on the strategic scientific goals of the programme, and
- Consulting the scientific community and ESO DT in developing a scientific vision for the programme.

7.3 Observing Programmes Office (OPO)

ESO interacts with the community scientists for the observing programme definition, selection and scheduling of successful proposals via the Observing Programme Office (OPO). The OPO is charged with all activities related to the proposal handling:

- Preparation and release of the Call for Proposals;
- Organisation of the Observing Programmes Committee meetings twice per year;
- Keeping track and handling of the contractual obligations of ESO towards guaranteed observing time holders;
- Handling of the Director's Discretionary Time proposals;
- Management of ESO's contribution to on-going public surveys;
- Preparation of statistics concerning observing time to the ESO governing bodies, and
- Defines the specifications of an integrated proposal handling system, including the processes required for the ESO ELT.

7.4 Supernova

The ESO Supernova Planetarium & Visitor Centre is a cutting-edge astronomy centre for the public, located at the site of ESO Headquarters in Garching.

By sharing the fascinating world of astronomy, the ESO Supernova Planetarium & Visitor Centre aims to inspire coming generations to appreciate and understand the Universe around us. Comprising a digital planetarium and 2200 m² exhibition, the centre provides visitors with an immersive and interactive experience. The education programme engages teachers and K-12 students with learning experiences through enquiry-based workshops that cover a variety of aspects of astronomy and related engineering. Aiming to bring the public and school pupils closer to real science, the vast majority of the programmes of the ESO Supernova are delivered by active scientists and engineers. The centre strives to be accessible for a diverse audience.



7.5 Offices for Science

Two Offices for Science provide local support for the research activities of the ESO astronomers (about 80 Faculty astronomers) and of the fellows and students (35 Fellows and 30 Students), by:

- Organising colloquia, seminars and local research groups;
- Managing the budgetary resources for the science travel of all astronomical staff, fellows and students;
- Organising the ESO workshops;
- Managing and administering the ESO fellowship programme, other fellows, students and scientific visitors;
- Coordinating astronomers at ESO, including those in the other Directorates via the Vehicle of the Astronomers Faculty, such that they can provide expert advice to all ESO science programmes;
- Establishing close contacts and collaborations with the local astronomical communities (e.g. with International Max-Planck Research School, Excellence Cluster, TUM, LMU, ESO-Gobierno de Chile Comité Mixto, ESO-Chile Committee).

The ESO libraries are part of the respective Offices for Science and act as a science information centre at ESO and for its community. The librarians interact with scientists, engineers and management following the needs of the users and develop and maintain productivity measures for ESO's projects and facilities. The ESO Library cooperates with OPO and DoO/EASC for seamless import of information on observing programmes into the ESO Telescope Bibliography from relevant databases. The libraries work towards maximising coordination between the sites and foster collaboration among the astronomy librarians community at large.

In addition, the library runs the organisation-wide Information Repository, PDM.



8. Office of the Director General (ODG)

The ODG deals with various activities that are under the direct authority of the DG (i.e. not delegated to the Directors). The ODG includes three departments:

- Executive Office
- Department of Communication
- Internal Audit Office

8.1 Executive Office (ODG-X)

ODG-X provides support to the DG with their internal and external duties. ODG-X includes the following groups:

- Representation in Chile
- Legal and Institutional Affairs
- Corporate Policies & Risks Management

ODG-X also supports Council with the development and implementation of ESO's strategy when required and provides executive and secretarial support to the DG, Council, the DT, and other auxiliary bodies.

8.1.1 Representation in Chile (REP)

The REP represents ESO and the DG in interactions with the Chilean governmental, regional and local authorities, as well as with diplomatic missions in Chile. It coordinates the representation of ESO's political and legal interests in Chile and promotes ESO's positive relationship with Chile at all levels — government, research organisations, universities, and society at large.

8.1.2 Legal and Institutional Affairs (LIA)

The LIA advises and assists the DG with matters concerning the Organisation's institutional relations, protocol and diplomacy, defends ESO's legal interests and provides legal advice.

8.1.3 Corporate Policies & Risks Management (CPRM)

The CPRM deals with corporate risk management, personal data protection, data classification, various corporate policies, and intellectual property matters, including technology and knowledge protection and licensing.



8.2 Communication Department

The Communication Department (COMM) is responsible for making ESO a household science brand in the eyes of the scientific community, the Member States, the general public, media, educators and industrial partners. For that purpose, it publicises worldwide the excitement of astronomy and the success of ESO, of its facilities and of its staff, using all possible and constantly evolving communication technologies, channels and formats. It also proactively facilitates internal communication at ESO.

It consists of:

- Media Relations Team
- Internal Communication
- Communication Chile
- Editorial Team
- Web Team
- Outreach Activities

8.3 Internal Audit

Internal Audit carries out an independent, objective assurance and consulting activity designed to add value and improve the Organisation's operations and it is there to assist all levels of management in the Organisation. Another task is to support the external auditors. Although reporting to the DG, the Head of the Internal Audit also has a direct line to the Council President, in particular when dealing with audits affecting the DG or the ODG.



9. Inter-directorate structures

9.1 ESO Astronomers Faculty

Astronomers across the Organisation and from all Directorates make up the ESO Astronomers Faculty, which is tasked with discussing and advising on scientific, technical and operational issues, from the point of view of active astronomers' representative of those in ESO's Member States. The Astronomers Faculty elects a Faculty Chair in both Vitacura and Garching, for a period of 3-4 years, during which they take on the responsibility for leading the Offices for Science in Garching and Vitacura respectively. Additionally, the two Faculty Chairs become members of the SPC, together with four Faculty astronomers and the Director for Science. Ordinarily, the role of SPC Chair rotates between the two Faculty Chairs, at the discretion of the DG. The SPC evaluates the scientific credentials of astronomers, ensuring a minimum standard is achieved before an appointment is made into a position that requires research expertise, and before an indefinite appointment can be made.

The ESO Astronomy Faculty comprises astronomers with the title of Assistant Astronomer, Associate Astronomer and Full Astronomer as specified by the contract the staff holds with the organisation. Faculty astronomers are expected to actively pursue their personal research for up to 50% of their time. Candidates for Astronomy Faculty membership are evaluated by the SPC.

The Astronomy Faculty has the responsibility for developing collective views on major scientific, technical and operational issues confronting ESO. The competence of Faculty astronomers provides scientific judgement on matters pertaining to the scientific use of the ESO facilities and they should be encouraged to initiate, commission and supervise improvements for the benefit of all users. The astronomers also interact with the ESO user community to stimulate new and innovative scientific applications of instruments and telescopes.

9.2 ESO Safety Commission

Safety at ESO is overseen by a Safety Commission.

The ESO Safety Commission is chaired by the Director General. The Safety Commission is responsible for:

- Monitoring the evolution of the Safety Policy and standards and advising when a change in the ESO regulations or policies may be necessary.
- Co-ordinating between the sites to ensure a coherent set of standards and norms for the operations or manufacturing/procurement of goods/services.
- Formulating appropriate actions when deviations from the ESO policy occur at any site, or with respect to any other issues relating to Safety requiring attention.



The Commission comprises:

1. The Chair
2. The Site Safety Responsibles
3. Their respective Site Safety Engineers
4. Members of the ESO Management nominated by the Director General.

The ESO Safety Commission meets as required, but at least every semester to review the current status and activities, suggestions on Safety matters, incidents and accidents.

9.3 International Relations Team

The International Relations Team is a standing team established by the DG. Its role is to formulate ESO's policy in international relations, in line with the guidance set out by ESO Council. The International Relations Team organises and coordinates relations with Member States and their national science communities, as well as with prospective Member States or partners and international scientific organisations and represents ESO in various external bodies and boards.

9.4 Diversity and Inclusion Committee

The Diversity and Inclusion Committee provides advice to the ESO DG on how to advance diversity and inclusion at all levels within ESO. It develops and maintains a Diversity and Inclusion Plan for ESO, and reports on its implementation, recommending guidelines, policies, procedures or other actions to the DG, or to a Director or Head of Department when these fall within their direct responsibility. The Committee represents ESO in a variety of networks and international working groups that promote diversity and inclusivity.

It is the mission of the Diversity and Inclusion Committee to advance diversity and inclusion at all levels within ESO, by fostering a culture and atmosphere of mutual respect, that values performing employees from all backgrounds, gender and culture.

The Diversity and Inclusion Committee reports to the ESO Director General and works closely with the ESO management to promote and implement goals, policies and good practices pertaining to diversity. The committee integrates efforts from all ESO sites.

The committee provides support to all units involved in the Diversity and Inclusion Plan around the following three pillars:

- Inclusive and enabling work environment including diversity-aware communication
- Working conditions
- Hiring and career development processes

9.5 Environment Committee

The Environment Committee is created to serve as a platform of exchange and discussion on environmental topics, to raise awareness amongst staff members and to provide advice



to the ESO Director General on how to increase the environmental sustainability within ESO,

The main tasks of the Environment Committee are:

- After the evaluation of the current environmental footprint of ESO (all sites), to discuss, evaluate and develop approaches to improve the environmental sustainability of ESO activities while keeping operational requirements and budget constraints in mind,
- To propose appropriate measures of internal and external communication on environmental matters at ESO in order to raise awareness,
- To support the implementation of the approved suggestions to improve the environmental sustainability.

9.6 Ombuds

ESO's Ombuds is a designated neutral that provides independent, impartial and confidential assistance to all members of personnel for the informal resolution of work-related disputes.

The Ombuds services are guided by its Terms of Reference, the Staff Rules and Regulations, the Regulations for Local Staff Members in Chile and the Standards of Practice and Code of Ethics of the International Ombudsman Association, included in the following principles: Independence, impartiality, confidentiality and informality¹⁰.

While keeping strict confidentiality the Ombuds also provides feedback to the organization and makes informal recommendations to address systemic issues. The use of the Ombuds is a protected activity.

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¹⁰ <https://www.eso.org/intra/ombuds/operational-principles.html>