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**Big Science
Business
Forum
2020**

BIG SCIENCE BUSINESS FORUM

Procurement Handbook

Getting started

When getting started as a supplier to the Big Science market a number of steps can be taken to initiate contact with Big Science organisations, monitor calls for tenders and establish collaborative platforms for bidding. This document provides an easy-to-read introduction to Big Science organisations and their procurement procedures, as well as some tips for SMEs and a review of existing initiatives to foster technology transfer. However, businesses and organisations wishing to engage are encouraged to additionally study the rules of the specific Big Science organisation on the organisation's website. This guide for existing or potential Big Science suppliers lists a number of important information on:

EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN).

EUROPEAN MOLECULAR BIOLOGY LABORATORY (EMBL).

EUROPEAN SPACE AGENCY (ESA).

EUROPEAN SOUTHERN OBSERVATORY (ESO).

EUROPEAN SYNCHROTRON RADIATION FACILITY (ESRF).

EUROPEAN SPALLATION SOURCE (ESS).

EUROPEAN X-RAY FREE ELECTRON LASER (EUROPEAN XFEL).

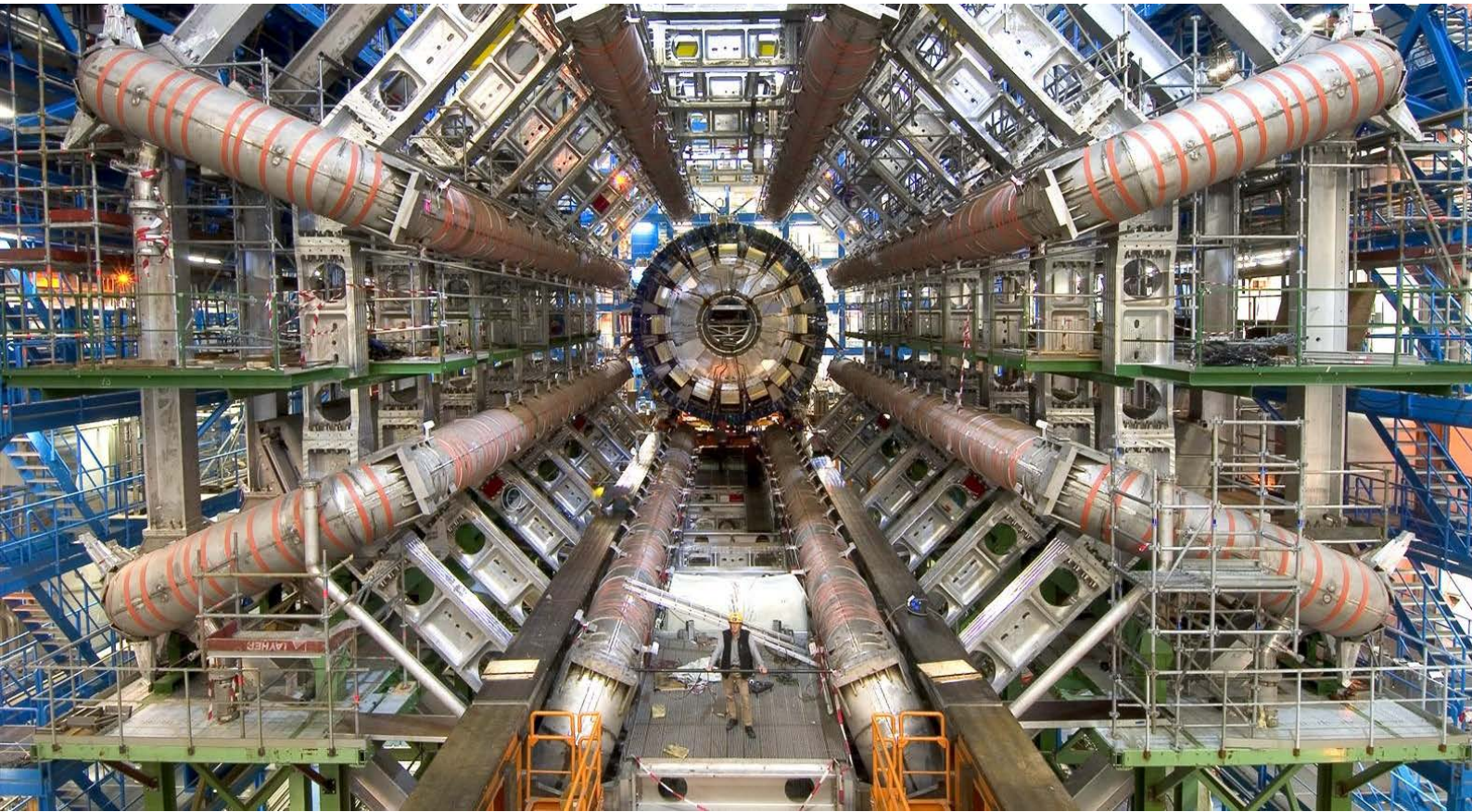
FACILITY FOR ANTIPROTON AND ION RESEARCH (FAIR)

FUSION FOR ENERGY (F4E).

INSTITUT LAUE-LANGEVIN (ILL)

SQUARE KILOMETRE ARRAY (SKA)

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Credit: CERN

European Organization for Nuclear Research (CERN)

ABOUT

CERN is one of the world's leading laboratories for particle physics. At CERN, physicists and engineers use the world's largest and most complex scientific instruments to study the fundamental particles and laws of the universe. In 2012, two experiments at CERN - ATLAS and CMS - announced the discovery of the elusive Higgs boson, until then the missing piece in the Standard Model, which encapsulates our best understanding of the behaviour of all fundamental particles in the universe. CERN has over 60 years' experience in delivering state-of-the-art particle accelerators, including the world's highest energy particle collider - the Large Hadron Collider (LHC) - and beam facilities from the lowest to the highest energies available, which enable research at the forefront of human knowledge. In normal running periods, the LHC operates for nine months out of every year, with a period during winter given over to maintenance and upgrades. Activity is currently underway to prepare for the "High Luminosity" upgrade, which will allow for a much higher rate of data collection than is currently possible, for which a longer shutdown is foreseen from 2024-2026.

To build its accelerators and detectors, CERN develops cutting-edge technology in various domains (e.g. superconductivity, microelectronics, cryogenics, big data and ultra-high vacuum) and almost half of its annual budget of 1.2 billion CHF returns to industry through procurement for a wide range of goods and services. The knowledge generated at CERN and the technological innovations driven by its scientific research have and still do contribute to other areas of society beyond high-energy physics, such as in medical applications, cultural heritage and aerospace applications. Indeed, CERN is an exemplary showcase of knowledge transfer: it gave the world the World Wide Web and has been a pioneer in other technologies.



PROCUREMENT

Budget 2020-2024

CERN foresees to spend 2,880 MCHF during the period 2020-2024. This is slightly more than CERN's long-run average annual procurement budget of 500 MCHF, driven primarily by procurement activity for the LHC's "High Luminosity" upgrade. Changes in the 2020 revision of the European Particle Physics Strategy may influence CERN's procurement budget and activities. Visit the [CERN Procurement Service website](#) for more info.

Market survey / Industrial policy

[Forthcoming market surveys and invitations to tender](#) are announced in the CERN Procurement Service website and any interested firm can register to receive the market survey documents upon their publication.

Industrial database

All firms are also encouraged to register on [CERN's supplier database](#) which CERN uses as a key source of information for preparing lists of firms to invite to its price enquiries and market surveys. When registering on the supplier database, firms indicate their domains of expertise by "[procurement code](#)", which allows CERN to match them with relevant opportunities. By registering on the supplier database, firms also create an account on CERN's e-procurement portal which will be used to send orders if they win business from the Organization.

Procurement portal

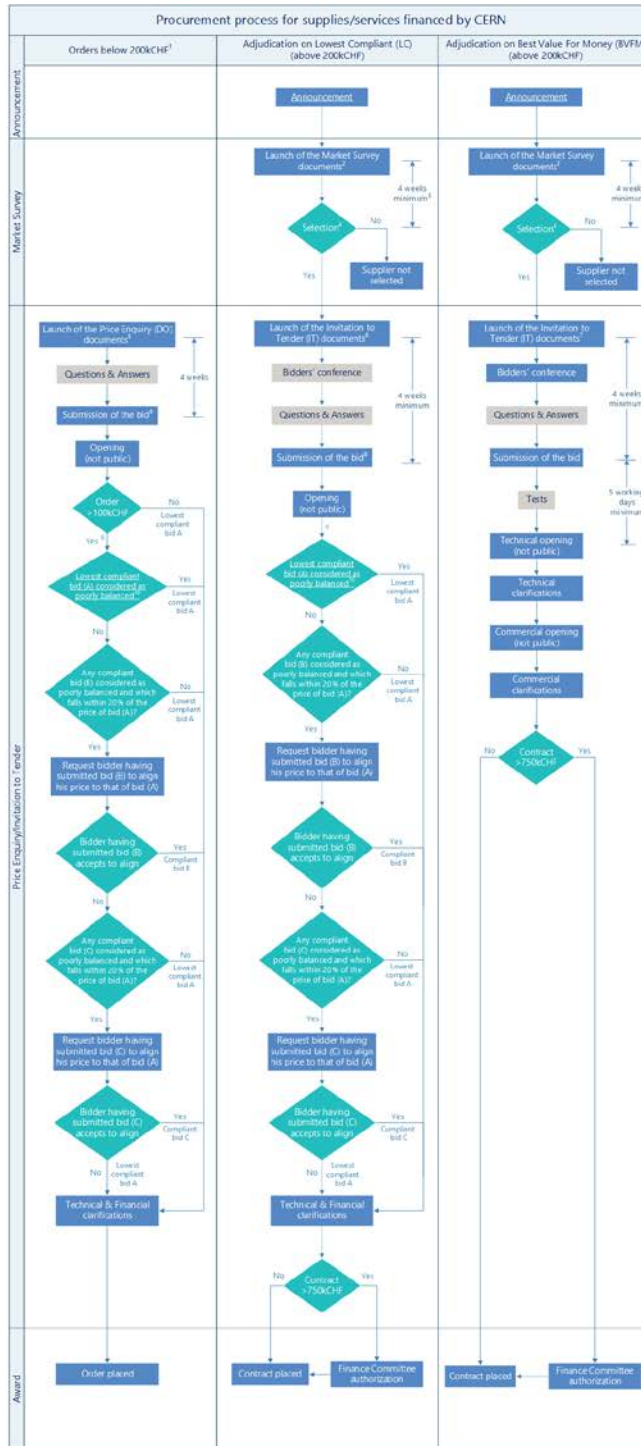
Tendering activities – that is, price enquiries, market surveys and invitations to tender – are managed on a separate [e-tendering platform](#). To access procurement documents and reply to price enquiries, market surveys and invitations to tender, firms are asked to register on the e-tendering platform.

Procurement process

As an intergovernmental organisation, CERN has established its own procurement rules which comply with the principles of transparency and impartiality while aiming to achieve a balanced industrial return for all its Member States.

Contracts are awarded following price enquiries or invitations to tender. Price enquiries are made for contracts with an anticipated value below 200'000 CHF, and are only open to a limited number of selected firms. Invitations to tender are made for contracts above 200'000 CHF and are issued to firms qualified and selected based on a preceding open market survey. Where CERN has recurring demand for the same goods or services, it may establish multi-year framework agreements, which are also awarded following price enquiries or invitations to tender. A summary of these procurement procedures is provided in Figure 1 as well as here.

Contracts for supplies are awarded to the firm whose bid complies with the country of origin requirements, the stated technical, financial and delivery requirements, and which offers the lowest price. However, for requirements exceeding 100'000 CHF, an alignment rule may apply which provides an advantage to a bidder if at least 60% of its supplies originate from poorly balanced Member States.



- Mandatory actions
- Optional actions
- ◆ Multiple cases
- | Duration between 2 steps

¹ A simplified procurement process applies for orders below 100kCHF.

² A Market Survey consists of 2 documents:
1) technical description
2) qualification questionnaire (to be returned)

³ Even if the submission date indicated on the documents has expired, firms can reply to the Market Survey as long as it is still advertised on the website.

⁴ If the estimated amount of the supply is below 750kCHF, up to 12 firms will be selected for the IT. If the estimated amount of the supply is above 750kCHF, up to 15 firms will be selected for the IT.

⁵ A DO consists of 3 documents:
1) technical specification
2) tender form (to be returned)
3) technical annex to the tender form (optional, up to 5 firms are usually invited to participate).

⁶ An IT consists of at least 3 documents:
1) technical specification and annexes
2) tender form (to be returned) and annexes
3) selection and adjudication criteria

⁷ An IT consists of at least 3 documents:
1) technical specification and annexes
2) tender form (to be returned)
3) evaluation questionnaire

⁸ Please foresee at least one hour to upload your bid into the e-tendering platform.
⁹ In case of splitting, please refer to the specifications.
¹⁰ A bid shall be considered as poorly balanced if the value of supplies/services originating from one or more poorly balanced Member States does not represent less than 90% and 40% respectively of the total amount of the contract.

[CERN procurement procedures](#) (credit: CERN)



Eligibility criteria

CERN's budget is financed by its Member States and therefore CERN price enquiries and invitations to tender are restricted to firms proposing goods and services originating in those Member States. CERN calculates the "balanced" status of a Member State by comparing its budgetary contributions to its industrial return through orders and contracts. A Member State is considered to be "well balanced" if its industrial return exceeds a certain target level, and "poorly balanced" otherwise. The list of "well balanced" and "poorly balanced" Member States can be checked [here](#). Certain mechanisms are built into CERN's Procurement Rules to help ensure a balanced industrial return for all its Member States.

In its capacity as Host Laboratory CERN also procures goods and services on behalf of collaborations running experiments on the CERN site. For these purchases, price enquiries and invitations to tender may be open to firms proposing goods and services originating in any member of the relevant experiment collaboration.

Evaluation criteria

Contracts for services are usually adjudicated on a Best-Value-for-Money basis taking into account the technical quality of the bid as well as the price. Criteria used to evaluate a bid's technical quality are stated in the invitation to tender, and typically include the profiles of key personnel performing services, the bidder's experience and proposed quality assurance plan, and the bidder's score in field tests held at the CERN site.

IPR policy

CERN contracts are subject to the General Conditions of CERN Contracts, available on the CERN Procurement Service website [here](#), where other conditions and rules can be found. These terms stipulate that intellectual property generated as a result of the contract belongs to CERN, but allow the supplier to use and commercialise the intellectual property subject to certain conditions.

Role of ILOs

CERN also works with a [network of Industrial Liaison Officers \(ILOs\)](#), who are appointed by CERN's Member States to facilitate the flow of communication between CERN and its suppliers. ILOs can provide advice on the opportunities available for doing business with CERN and the support available to firms in their local regions.

PROCUREMENT AREAS 2020-2024

The majority of CERN's procurement budget is composed of:

- Civil engineering, buildings and technical services, including cooling and ventilation equipment
- Electrical engineering and superconducting magnets
- Information technology, including computing systems, servers, software and network equipment
- Mechanical engineering and raw materials
- Electronics and radiofrequency
- Industrial services on the CERN site
- Cryogenic and vacuum equipment
- Particle and photon detectors

During the period 2020-2024, in addition to needs in all of the areas above, some large purchases will result from the [High Luminosity upgrades](#), notably in the areas of particle detectors, electronics, superconducting magnets, and data centre infrastructure.

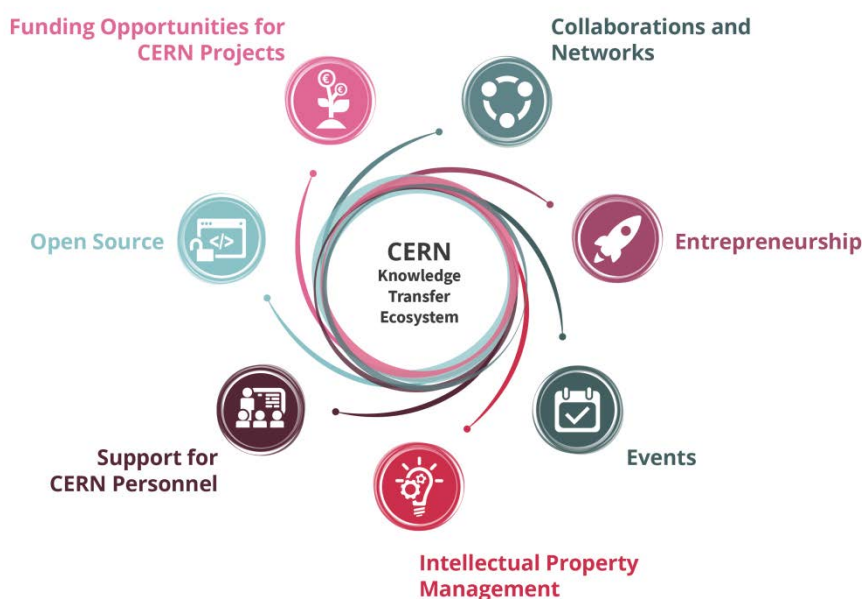
SMEs

Although CERN's Procurement Rules do not foresee special arrangements for SME involvement, a majority of CERN's suppliers are SMEs. CERN's needs are often very unique and complex, requiring flexibility on the part of its suppliers. CERN's suppliers are often asked to adapt their standard products and processes for the Organization's sometimes very particular requirements. Many CERN tendering activities also follow a long period of research and development. This can imply deliveries of relatively low volumes of prototypes over several years, before a development is mature enough to move into serial production. CERN finds that projects of this nature are often attractive and suitable to SMEs. Perhaps as a result, around 75% of CERN's suppliers have fewer than 250 employees.



TECHNOLOGY TRANSFER

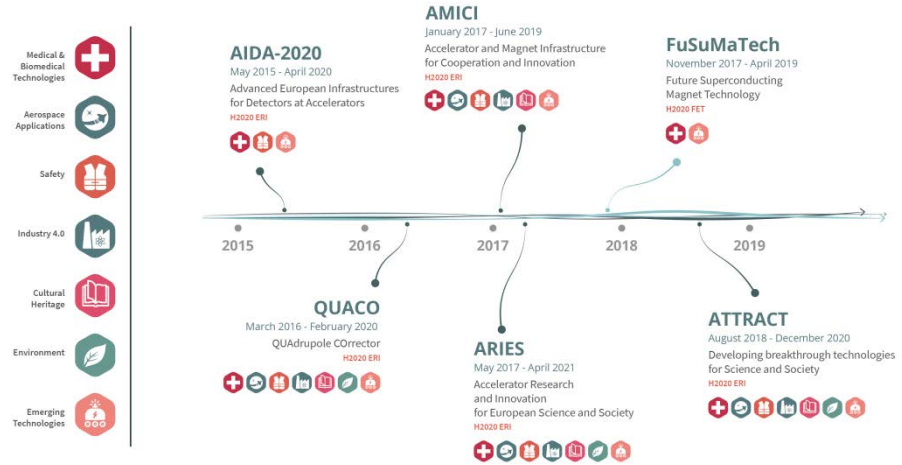
Fundamental scientific research is a driving force for technological advancements. In order to foster innovation, CERN actively invests in a wide variety of activities which can potentially lead to positive societal impact. CERN's Knowledge Transfer group plays an important role in this process, providing advice, support, training, networks and infrastructure to ease the transfer of the Organization's technology and know-how. These activities are conducted through the group's engagement with different actors of its ecosystem, including industry (large corporations, SMEs and start-ups), the CERN community, and academic partners in high-energy physics and other fields.



CERN's Knowledge Transfer ecosystem (credit: CERN).

The knowledge created by CERN's community has the potential to create impact by leading to innovation in fields beyond high-energy physics. The Organization encourages the creation of start-up companies, and offers support to CERN personnel and external entrepreneurs seeking to establish a business using technology and know-how from CERN. Currently, there are 28 start-ups and spin-offs based on CERN technologies or know-how, several of which have taken part in one of the Organization's Business Incubation Centres (BICs). The network counted nine BICs in 2019, are run by existing incubators and ecosystems and provides support for small businesses taking CERN expertise to the market.

CERN also participates in projects co-financed by the European Commission (EC). The projects contribute to strengthening existing collaborations, and creates new links with European universities, research institutes, laboratories, and industrial partners. In 2019, the Laboratory took part in six co-funded projects with a strong knowledge transfer component, corresponding to approximately 34.5 million EUR in EC co-funding, distributed amongst the participating institutes and companies.



CERN participation in EC co-funded projects: AIDA-2020, AMICI, FuSuMaTech, QUACO, ARIES and ATTRACT (credit: CERN).



Credit: EMBL

European Molecular Biology Laboratory (EMBL)

ABOUT

[The European Molecular Biology Laboratory \(EMBL\)](#) is Europe's life sciences research organization.

Established in 1974 as an intergovernmental organization, EMBL is supported by 27 Member States. It is led by the Director General.

- EMBL operates from six sites across Europe:
- Barcelona, Spain - Tissue biology and disease modelling
- Grenoble, France - Research and services for structural biology
- Hamburg, Germany - Research and services for structural biology
- Heidelberg, Germany – head office and main laboratory
- Hinxton, UK – European Bioinformatics Institute (EMBL-EBI)
- Rome, Italy - Epigenetics and neurobiology

EMBL's missions are to:

- Perform basic research in molecular biology
- Train scientists, students and visitors at all levels
- Offer vital services to scientists in the member states
- Develop new instruments and methods

- Actively engage in technology transfer
- Integrate European life science research

The largest part of EMBL funding comes from the governments of EMBL's member states. The global importance of our work is reflected in the fact that EMBL also attracts significant funds from external sources, including some beyond Europe.

EMBL Member States are Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Lithuania, Luxembourg, Malta, Montenegro, The Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

EMBL associate member states are Argentina and Australia.

Other major funders include the European Commission, the US National Institutes of Health (NIH), the Wellcome Trust, UK Research and Innovation (UKRI) and members of our Industry Programme.

PROCUREMENT

EMBL's Barcelona site is continuing to expand in size, with new research groups planned and an extension to the Mesoscopic Imaging Facility. At EMBL Hamburg and EMBL-EBI in Hinxton reorganization and/or expansion of the host campuses are planned or underway. Refurbishment of the EMBL sites at Grenoble and Rome is also at discussion phase.

In the coming five years EMBL will invest in light and electron microscopy, computing infrastructure for IT Services (compute, storage, connectivity, data security), beamline detectors and instrumentation.

One of EMBL's key projects is the 48 million EUR spend for the construction (incl. equipment and infrastructure) of a unique microscopy facility for the life sciences in Heidelberg. The center, set to open in 2021, will welcome visiting scientists from all over the world as well as industry partners. It will make new imaging technologies at EMBL available to foster a better understanding of the molecular basis of life and disease.

Budget 2020-2024

Based on an extrapolation of the average procurement budget of the past years, the total estimated procurement budget for the period 2020-2024 amounts to 390 million EUR.

EMBL operates on a five-year funding Scheme. The next Scheme is being prepared with Member States to run from 2022 to 2026. Any figures in this document are therefore only forecasts of expected spend.

Market survey / Industrial policy

EMBL's mission is to strive for scientific excellence in research and instrumentation. The procurement procedures have been shaped with the primary focus of enabling the successful carry-out of this mandate. EMBL member states fully support these procedures.

Juste retour is not an essential part of EMBL's operational model. The Life Science sector's technological demands, and the overall procurement volume and project timelines, are substantially different than some other international organizations. For example, most procurements are arranged with local distributors in the host countries mainly for practical reasons (service, maintenance, shipping costs...). EMBL does not include industry contracts into membership schemes.

Industrial database

There are strong links between EMBL and Industry. To facilitate the translation of basic research discoveries into practical applications and to make new technologies and instruments developed at EMBL available to the broader scientific community, EMBL collaborates with industry and small businesses in a variety of ways, ranging from strategic institutional programs to less formal project-based collaborations.

Examples include:

- The ATC Corporate Partnership Programme, which currently consists of 14 industry partners, contributes to advanced training at the Laboratory by supporting the development of innovative scientific events at the Advanced Training Centre (ATC) in Heidelberg through various initiatives.
- The EMBL-EBI Industry Programme is the main way by which bioinformatics service teams interact with corporate partners, with dedicated meetings and expert-level workshops on specific topics.
- EMBL Enterprise Management Technology Transfer GmbH (EMBLEM) works closely with industrial partners in the pharmaceutical, biotech, mechanical/electrical engineering and IT fields to jointly develop technologies originating at EMBL into marketable products.

Procurement portal

EMBL does not use a dedicated supplier portal. Companies do not have to register in a database prior to entering into a partnership with EMBL. The first point of contact for a company would usually be the Purchasing Department or in some occasions even the scientific unit directly. Suppliers are vetted for commercial and operational robustness prior to engaging in a contractual relationship.

Procurement opportunities are not currently announced online, however EMBL is developing a procurement webpage that will include relevant information for suppliers. EMBL's tendering procedures are selective and call for tenders are sent to selected suppliers.

Procurement modalities

As an intergovernmental organisation, EMBL is not subject to EU or public procurement procedures. EMBL has established its own procurement rules and regulations which mirror the key best practice principles of EU procurement.

Any acquisition of goods or services is made in accordance with the following rules:

- All purchases including a single item costing over 12,500 EUR shall be demonstrably competitive unless the purchase request justifies in writing non-competitive acquisition.
- Invitations to tender shall normally be limited to manufacturers and contractors located within the territories of member states, contracts shall be awarded to the firm whose tender is the lowest which satisfactorily complies with the technical and delivery requirements.
- In issuing invitations to tender and entering into contracts the Director General shall ensure that satisfactory conditions exist in relation to applicable law, performance and specification, delivery, price, guarantees, insurance, contractor's obligations, intellectual property and patent rights, arbitration and penalties for non-performance.
- Selective Criteria Based Procurement (CBP) potentially also combined with a final negotiation with the remaining successful bidders is the methodology used for purchasing goods or services exceeding 12,500 EUR where evaluation is not based on cost element alone and when the value and complexity of the purchase is important enough to warrant the additional procurement resource effort. The final negotiation has proven to be very efficient and very attractive for both EMBL and its partners, in particular for SMEs. It gives a very good insight of the EMBL environment and EMBL expectations to the bidder. In a face-to-face meeting, EMBL also gets a better overview of the suppliers' competencies and capacities for executing the specific work/providing the specific services required in the tender exercise.
- For all other less complex acquisitions over 12,500 EUR, the market will be, whenever feasible, sounded by requisitioning three quotations. Single source/sole supplier and/or unique technical feature/compatibility require the submission of a detailed written scientific justification. This justification shall be approved by the Purchase Department as stipulated in the EMBL financial regulations.

EMBL strives to minimize the bureaucracy and complexity in its procurement process, both to remain competitive in the Life Science market, and to be as attractive as possible for smaller and medium-sized firms.

Criteria Based Procurement (CBP) is applied on a discretionary basis for any complex, high value/risk procurement exceeding 12,500 EUR where the quality and/or service conditions are of high importance and where the evaluation is not based on cost element alone.

The Criteria Based Procurement (CBP) process is complimentary to and built on EMBL financial rules and regulations.

The CBP process has been developed considering the following key principles of EMBL procurement:

- EMBL has an agile and efficient procurement process in place regulated by the financial rules and regulations.
- EMBL purchases a diverse range of goods and services that vary dramatically in value, volume and complexity.
- EMBL has an obligation not just to Council but also to grant funding agencies and other bodies (as appropriate), to ensure that all purchases are demonstrably competitive and satisfactorily meet EMBL requirements.
- EMBL also has an obligation to ensure that all procurement is undertaken in a manner that is transparent, fair and free from conflict of interest.
- Budget holders have a vested interest in ensuring that they receive the goods and services they require in the most economical manner (best value for money).

The CBP process shall guarantee that these principles are correctly applied along the procurement process.

EMBL has a detailed internal CBP workflow which allows for the following steps to be invoked as necessary during the procurement process:

- Market Research and Supplier Shortlist – Used to establish a pre-defined list of providers to approach for bids during the call for tenders.
- Specification & Award Criteria – Detailed technical specifications are defined along with award criteria and their subsequent weightings for a scored evaluation. Scoring methodology and complexity to be adapted to the complexity of the respective tender exercise.
- Tender Clarification – The period during the open tender process where providers can seek further technical clarifications. Questions are anonymised and responses provided to all suppliers who have expressed an interest to bid.
- Evaluation – Bids are evaluated against the award criteria.
- Communication of tendering exercise outcome to bidders.

Eligibility criteria

Eligibility criteria are the following:

- **Location:** According to EMBL rules and regulations, EMBL should preferably enter into business with manufacturers, companies and contractors located within the territories of member states.
- **Financial aspects:** Financial stability, economic performance and reliability are considered.
- **Resources & competency:** The company should have the required man power resources for engaging in a project with EMBL. The company should bring evidence of the team competences.
- **Capacity:** The company should be in a position of executing a project within the deadlines (resources availability).
- **Past performances/References:** Supplier's customer base and business references shall be provided and will be counterchecked.

Industrial and georeturn are not an essential part of EMBL's operational model.

Evaluation criteria

When applying the Criteria Based Procurement methodology, EMBL will evaluate the bids using the Most Economically Advantageous Tender (MEAT) methodology ensuring they deliver the best value for money principle.

The award criteria applied for the evaluation will be specific to the requirement that is being tendered but would typically contain a split ratio of quality and price elements. The quality element can be broken down

into further sub criteria such as; team composition and expertise, past projects and references (non-exhaustive list) and overall costs. The requirements can also contain mandatory requirements that are evaluated on a pass/fail basis.

A standard scoring matrix with respective explanation for each score is used to assess the bidders' proposals in a consistent and transparent manner.

IPR policy

See Technology Transfer section.

Role of ILOs

EMBL member states do not appoint ILOs to facilitate the flow of communication and the interaction between EMBL and the industry. Nevertheless, EMBL is regularly contacted by its member states and provides statistics on its procurement activities.

**PROCUREMENT
AREAS
2020-2024**

EMBL main areas of procurement in the period 2020-2024 will be mainly focused in investing in state-of-the-art high and ultra-high resolution electron and light microscopy for the EMBL Imaging Centre that will open in 2021.

Other areas of investment mostly at the EMBL-EBI site in Hinxton will be dedicated to capital IT, licenses/software, outsource of services - such as data extraction.

SMEs

EMBL does not have specific rules and regulations, policies in place regarding SMEs. EMBL is proud of its slim, lean, efficient and transparent procurement process that is by its nature very attractive to SMEs.

**TECHNOLOGY
TRANSFER**

EMBL welcomes and encourages the commercialization of the results of research as one way of making the fruits of its work broadly available while maintaining its primary commitment to basic research. The Laboratory supports contacts with industry and provides appropriate incentives, advice and information on the protection and transfer of technology including software and instruments.

All applications for protective rights and agreements involving intellectual property (including consultancy agreements) have to be arranged through EMBL Enterprise Management Technology Transfer GmbH (EMBLEM), the commercial arm of the Laboratory.

EMBLEM was founded in 1999 in Heidelberg, Germany, as the exclusive technology transfer partner of the European Molecular Biology Laboratory (EMBL). Today EMBLEM manages a portfolio of more than 1000 inventions and over 450 patents/copyrights from EMBL-scientists, EMBL-alumni and third parties.

EMBL technologies span the life sciences in the broadest sense and include enabling technologies, molecular tools & assays, instruments & devices as well as software applications & databases.

EMBLEM provides a broad range of state-of-the art molecular biology services based on the experience and excellence of EMBL to third party academic and industrial partners. The services cover the fields of genomics, metabolomics, proteomics, protein expression & analysis, small compound screening, crystallization and crystal structure analysis, high-throughput monoclonal antibody generation, mouse transgenics and mouse phenotyping.

By working closely with industrial partners in the pharmaceutical, biotech, mechanical and electrical engineering, and IT fields, EMBLEM jointly develops EMBL technologies into marketable products.

EMBLEM performs all classical technology transfer tasks from identification and commercial development of life science technology, including patent and copyright protection of Intellectual Property and licensing of technologies to third parties.

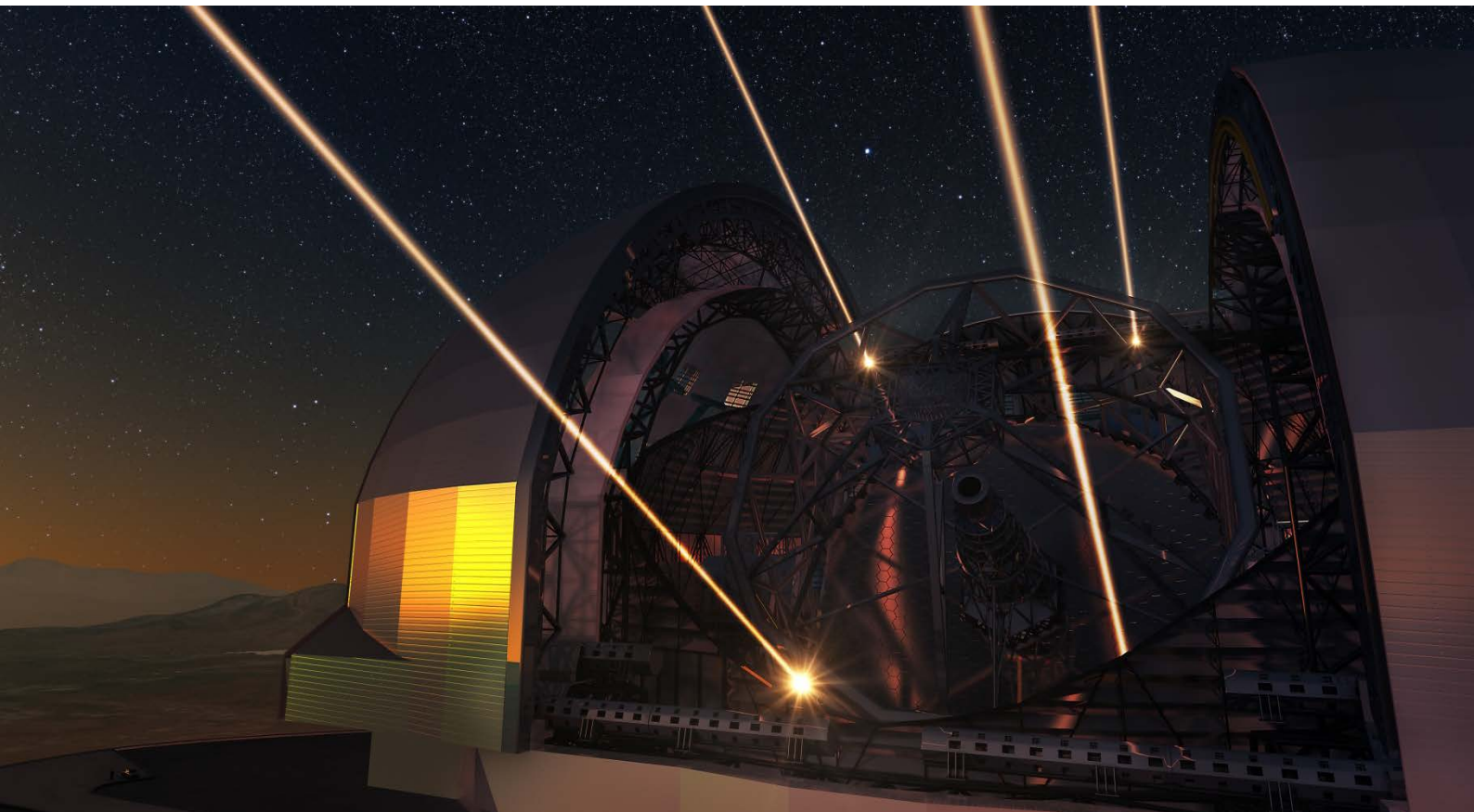
Furthermore, EMBLEM is contracting and developing collaborative research agreements as well as marketing and contracting of scientific consultancy services.

EMBLEM is also actively sourcing, structuring, advising, and setting-up EMBL spin-off companies.

EMBLEM activities aim at returning value to stakeholders including society at large.

EMBLEM promotes the commercial use of scientific results and innovations by fostering the exchange between researchers at EMBL and industry.

For general enquires on technology transfer please contact: info@embl-em.de.



Credit: ESO/L. Calçada/N. Risinge

European Southern Observatory (ESO)

ABOUT

ESO carries out an ambitious programme focused on the design, construction and operation of powerful ground-based observing facilities for astronomy to enable important scientific discoveries. ESO also plays a leading role in promoting and organising cooperation in astronomical research.

ESO operates three unique world-class observing sites in the Atacama Desert region of Chile: La Silla, Paranal and Chajnantor. Each year, more than 2000 proposals are submitted for the use of ESO telescopes, requesting between four and six times more observing time than is available. ESO is the most productive astronomical observatory in the world, which annually results in almost 1000 scientific papers based on ESO data.

ESO works with industry to carry out projects and to build instruments and telescopes, including the Extremely Large Telescope (ELT), the world's biggest optical telescope, which is under construction and will become a reality in the next decade. The material budget for the program is around 940 million EUR.

PROCUREMENT

Budget 2020-2024

The estimated procurement budget for ESO in the period 2020-2024 is 750 MEUR. This volume is built of some remaining procurements for the ELT construction, and operational cost to run the existing sites (La Silla Paranal Observatory, ALMA observatory and APEX). The latter will be the vast majority of this volume.



Market survey / Industrial policy

The policy of ESO is to use providers in its Member States and Host State Chile, so that the potential return to the national industries is one of the most attractive benefits of ESO membership besides the scientific ones.

Market survey is based on previous knowledge of potential suppliers, on companies being proactive in making themselves known to ESO through the channels that ESO provides for it (see Section 2.3), and through information provided by the Industrial Liaison Officers (see Section 2.11) about their national industrial capabilities.

ESO aims to achieve a distribution per member state country that is as fair as possible.

Industrial database

Interested companies from the ESO Member States and the Host State Chile can register to the [ESO supplier database](#).

During the registration the company is requested to select one or more categories in which they can provide goods and/or services. The supplier database is an important source to identify potential suppliers for each procurement and the main source for procurements below 150 kEUR.

Registered suppliers are requested to maintain their own data updated using the login data provided at the time of the registration.

Procurement portal

All procurements above 150 kEUR are published in advance on the [ESO forthcoming calls page](#).

Interested companies can also subscribe to an RSS feed in order to be automatically updated regarding new procurement opportunities.

Procurement modalities

All procurements at ESO above 1000 Euro are handled by the Contracts and Procurement Department. There are two different procurement procedures.

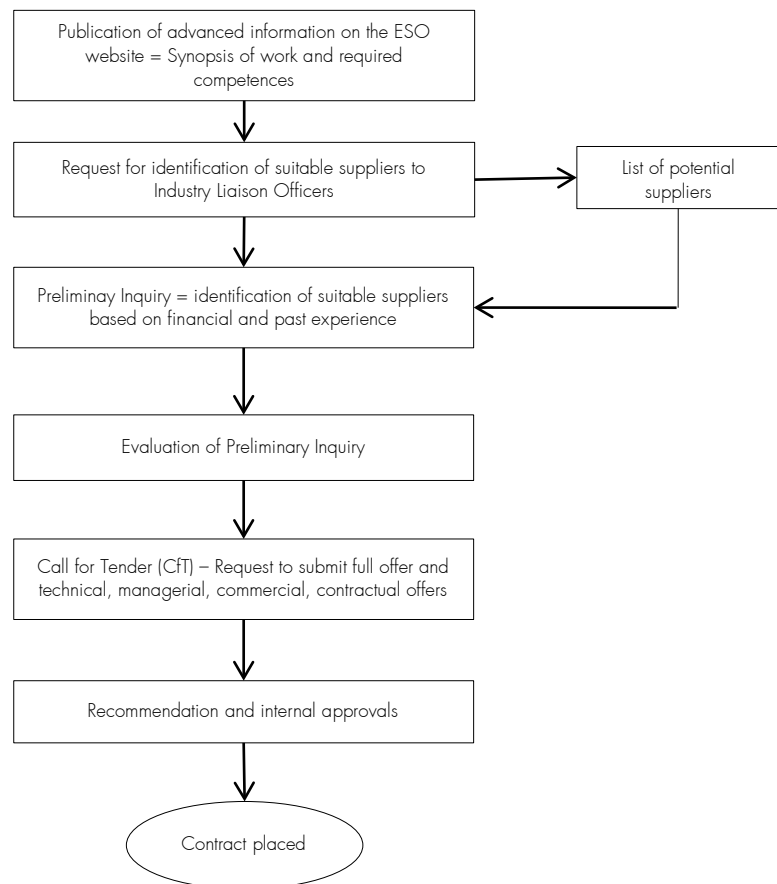
- The price inquiry procedure that is applied for all procurements below 150 kEUR and/or of a less complex nature. This procedure is characterised by the relatively short duration of the process (4-6 weeks) and the standardised contract based on the General conditions for Purchase Orders.
- The Call for Tender procedure (CFT) that is applied for all procurements above 150 kEUR and/or of a more complex nature. This procedure consists normally of two steps. The first step is the Preliminary Inquiry (PI) during which interested companies can qualify themselves for the forthcoming CFT. The qualification is based on compliance with requirements regarding financial strength and experience in the field of the procurement. The second step is the CFT during which the companies qualified through the PI are invited to submit an offer to provide the requested works or services.

In preparation of any procurement it can be decided to first follow a request for Information process. The aim of this process, that is form free, is to obtain as much market information as necessary in order for ESO to be able to define the best procurement strategy. During this phase there is also the opportunity for interested bidders to gather more information regarding the upcoming procurement that can be used to their own benefit.

Next to the competitive procurements and the RFI as described above, ESO has the possibility to do single source procurements in justified cases where a competition is not possible or not desirable.

Procurement process

A [schematic overview of the ESO procurement process](#) is the following:



ESO Procurement Process for procurements above 150 KEUR

Funding

In general, the construction of ESO facilities is funded from ESO's annual budget, which is approved by Council where the governments of the Member States are represented.

The instruments used by ESO in its telescopes are built by institutes in the ESO Member States. The institutes or the consortia of institutes provide all the required personnel power in exchange for observing nights on the ESO telescopes. The hardware needed for the construction of the instruments is procured by the institutes under their own procurement rules but the cost of the hardware is reimbursed by ESO.

Eligibility criteria

Besides some exceptional situations, like unavailability of certain goods and services in the ESO member States, only companies established in one of the ESO Member States are eligible to be invited to ESO procurements. Once a company is invited to a procurement the country of residence doesn't play a role anymore in the rest of the procurement process.

Evaluation criteria

ESO uses a so called "two envelope system" where the bidders are requested to submit two separate proposals, one containing the technical and managerial aspects and one containing the commercial/contractual aspects. Both proposals are evaluated separately against pre-defined evaluation criteria with a pre-defined scoring model. All offers that are evaluated technically/managerially and commercially compliant are eligible for contract award. Adjudication takes place based on the basis of the lowest priced compliant bid principle or the best value for money principle. Which principle is applicable is also pre-defined before release of the procurement.

The evaluation criteria as well as the adjudication principle that will be used for the evaluation of the offers are part of the documentation that is sent to the participants.



IPR policy

With regard to intellectual property (IP) ESO follows the principle that ESO owns what it pays for. This means that anything that is developed under a contract with ESO is owned by ESO. However ESO is willing to provide a non-exclusive license to industry for commercial use of the developed IP.

Role of ILOs

The ILOs play a key role in the identification of potential ESO suppliers. In close collaboration with the ILO's ESO aims to interest potential suppliers via industry days, conferences, seminars and visits to ESO and to companies.

The ILOs are informed once a year about the major upcoming procurements in order to allow them to allocate interested companies as early as possible. For every procurement in the ESO Member States over 150 kEUR the ILOs are requested to suggest up to 5 potential suppliers in their Member State.

Another role of the ILOs is to bring to the attention and discuss with of ESO general issues related to the procurement processes.

PROCUREMENT AREAS 2020-2024

In the period 2020 till 2024 ESO will spend around 750 Million EUR in contracts in Europe. The vast majority of this amount is already committed.

In this period still 90 Million EUR of contracts for the ELT will be placed in different areas. Next to these procurements there is regular spending in the different technical areas up to 2 Million EUR per area over the period 2020 – 2024.

SMEs

ESO has no specific rules regarding contracts with small and medium enterprises (SMEs). Each competition is equally open to companies of any size and each of the companies is treated in the same way. For every procurement there are specific experience and financial capability requirements that need to be met by the participating companies in order to be eligible.

TECHNOLOGY TRANSFER

Know-how developed for ESO before 2014 are owned and directly exploited by the industry that developed it. Regarding in-house developed know how, a limited number of patented know-how is available on favourable licensing conditions for interested companies: visit the [ESO know-how available for use](#) page on their website. For general enquires on technology transfer please contact techtransfer@eso.org.



Credit: ESA

European Space Agency (ESA)

ABOUT

ESA is Europe's comprehensive space agency, active across every area of the space sector; space science, human spaceflight, exploration, earth observation, space transportation, navigation, operations, technology, telecommunications and safety and security from space. ESA promotes a broad competitiveness of European space industries through its industrial policy. ESA also works in close cooperation with the EU and other European organisations as well as space organisations outside Europe. ESA is further increasingly active in stimulating the downstream market that follows from space developments and applications. ESA works with economic operators to carry out projects and activities in all areas mentioned.

PROCUREMENT

Budget 2020-2024

At the ESA Council at Ministerial level in 2019, ESA received endorsement of the most ambitious plan to date for the future of the Agency and the whole European space sector. The funding received for the comprehensive set of programmes approved at the mentioned Council amounts to 14.4 billion EURO. With this enormous success and subscribed funds, ESA's procurement budget is in the range of 5.5 billion EURO per year in the period.

Market survey / Industrial policy

Industrial policy and geographical distribution play an important role in ESA procurements¹. Laid down in the ESA Convention, the policy is designed to ensure that all Member States participate in an equitable manner, with regard to their financial contribution in implementing the European space programme.

¹https://www.esa.int/About_Us/Business_with_ESA/How_to_do/Industrial_policy_and_geographical_distribution

Specific measures for Small and Medium-sized Enterprises are in place to support SMEs and encourage their participation (see section 4. Below).

Industrial database

Registration in [esa-star](#)- ESA's System for Tendering and Registration, is mandatory for all entities wishing to do business with ESA.

SMEs are encouraged to claim their SME status during the registration process in order to benefit from the Agency's SME support measures. ESA applies the European Commission's SME definition, detailed in Commission Recommendation [2003/361/EC](#), as published in the Official Journal of the European Union L 124, p. 36 of 20 May 2003. The Agency grants the SME status only after verification of the data of the candidate companies.

Procurement portal

[ESA's Invitation to Tender System \(EMITS\)](#) is the official electronic system for handling its Invitations to Tender (ITT) and relevant information for ESA procurements. EMITS provides the list of forthcoming Intended Invitations to Tender (IITT), a list of current Invitations to Tender, ESA's standard administrative and technical reference documents and relevant information to industry as well as a link to the Industry Web Portal.

Tenders are submitted electronically to ESA through the [esa-star](#).

Procurement modalities

ESA procurements are as a rule subject to open competitive tendering with, in some justified exceptions, restricted competition or direct negotiations with economic operators from ESA Member States, Associated States and Cooperating States. ESA uses also permanent calls for proposals, open to initiative of companies willing to develop new technologies or space derived application services in partnership with ESA.

Open Space Innovation Platform (OSIP)

To source ideas from economic operators ESA has recently rolled out the [Open Space Innovation Platform \(OSIP\)](#) which is run through the Agency's Discovery & Preparation Programme. OSIP is a website that enables the submission of novel ideas for space technology and applications. It is not a procurement tool but a website that provides Discovery and other ESA programmes with a platform to find the best research and ideas to support. Selected ideas might lead to a business partnership which would then go through the regular ESA procurement process.

Procurement process

ESA's procurement process is governed by its Procurement Regulations and, as Annexes III and IV to these Regulations, the Tender Evaluation Manual and the General Tender Conditions. The General Clauses and Conditions for ESA contracts apply to contracts placed by ESA. Both documents can be found on [EMITS](#).

Funding

ESA activities fall into two categories – "mandatory" and "optional". "Mandatory programmes" are activities and projects carried out under the Space Science Programme and under the General Budget (including e.g. studies on future projects, technology research, shared technical investments). All Member States contribute to these programmes on a scale based on their Gross National Product. With respect to "optional programmes", Member States are free to decide whether they want to participate and with which level of involvement. Examples of "optional programmes" are earth observation, telecommunication, navigation and space transportation.

ESA's procurement contracts are nominally fully funded and result from open competitive procurements. However, contracts resulting from activities proposed by economic operators in response to open calls for proposals in certain programmes, are co-funded.

ESA has also, since recently, a grant like scheme available enabling the Agency to provide an initial support for innovation to economic operators, in particular to start-ups, SMEs, universities and research institutes within a limited scope of activities in the context of downstream business applications of space derived products or services.

In large programmes (e.g. satellites, space infrastructure development) the ITT gives geographical return targets, establishes boundaries for participation of the Large System Integrators and limits the share that may be allocated to the Prime contractor and his core team. These measures are put in place to ensure a broad participation of different categories of economic operators and a representation of all Member States.

Eligibility criteria

All economic operators are eligible to submit a tender to ESA provided they; 1) belong to an ESA Member State, Associate State or Cooperating State and 2) do not fall under any of the exclusion conditions laid down in Article 18 of the Procurement Regulations and 3) have registered as potential bidders in the esastar registration tool Concerning geographical return considerations and SME policies, see previous section Market Survey/Industrial Policy and SME section below.

Evaluation criteria

Tenders are evaluated against evaluation criteria that are published in the respective ITT and are weighted against pre-defined weighting factors also published in the ITT. The evaluation criteria are nominally five and include aspects such as a background and experience, understanding of requirements, proposed programme of work, management, costing and planning and compliance to the draft contract. The tender evaluation board recommends contract award based on the resulting average weighted marks, considering also the overall price and any industrial policy aspects applicable to the procurement.

IPR policy

ESA's rules regarding IPR are laid down in the General Clauses and Conditions for ESA contracts. The Agency's IPR regime can be summarised as follows:

- IPR developed under an ESA contract remain with the Contractor or Subcontractor (except operational software, open source and EU delegated programmes).
- IPR resulting from an ESA contract used for the Agency's own requirements are freely available to the Agency, Participating States, persons and bodies.

Role of ILOs

Not applicable for ESA.

PROCUREMENT AREAS 2020-2024

In the period ESA 2020-2024 foresees to place more than 1000 contracts per year spending the yearly procurement budget mentioned in the previous section. This involves procurements in all areas where ESA is active

SMEs

ESA actively encourages SMEs to get involved in its programmes and activities. The Agency has an established SME policy which is targeted both at newcomers to the space business who need general ESA support as well as at experienced SMEs who have a validated technology or product and have to insert themselves into industrial consortia to gain operational experience.

Support measures are being implemented by the Agency's SME Office. The Office manages the SME policy adopted by the Member States and coordinates its activities with other institutional actors such as the national space agencies.

General SME support

- **Training**
Dedicated [SME training courses](#) are organised on topics such as R&D proposal writing, Product Assurance and ECSS standardization.
- **SME helpdesk**
For information on support available to SMEs and for all matters related to the SME Initiative (payments, information on opportunities, name of experts, to share ideas, proposals), a dedicated SME helpdesk can be reached at: sme-office@esa.int

- **SME newsletter and portal**
The latest news on SME-related activities within ESA are available via the Agency's [SME Portal](#) and the [SME newsletter](#).
- **Events**
Every two years the Industry Space Days, ESA's main business-to-business event, are organised at ESA/ESTEC (Noordwijk, The Netherlands). The event is an opportunity for SMEs and other entities to meet and discuss prospective business with new contacts, attend presentations and workshops, and showcase technologies to new partners. The next ISD takes place on 16-17 September 2020 ([isd.esa.int](#)), featuring pre-scheduled B2B meetings, an exhibition and a conference section.

Procurement measures

To guarantee fair access to its programmes for all types of entities, ESA has developed a set of clauses, known as [C1-C4 clauses](#), which are applied to certain types of procurements:

- C(1): Activities in open competition, limited to the non-primers;
- C(2): Activities in open Competition, where a significant participation of non-primers is requested;
- C(3): Activities limited to SMEs & R&D organisations, preferably in co-operation;
- C(4): Activities in open competition, subject to the SME subcontracting clause.

The aim of the C1 and C3 clauses is to foster competitiveness of equipment suppliers and SMEs (for C1 Clause), and of SMEs and Research Institutes (for C3 Clause), in areas where the concerned organisations have recognised expertise and capabilities.

Procurements with these clauses can be found in the area of technology research activities and for the development of equipment components or instruments where SMEs and their partners have the necessary expertise and where favouring these entities would result in a more efficient use of funds. Procurements with C2 or C4 clauses are open to all economic operators but with encouragement of subcontracting to non-primers and SMEs. Procurements with the C1-C4 clauses applied can be found by using the [search function in EMITS](#) (log-in required).

Financial measures

To systematically ensure a neutral cash flow for Small and Medium-sized Enterprises, thus supporting their financial viability, ESA has introduced a 35% advance payment measure for SMEs.

Whenever an SME is involved in an activity, as Prime contractor or Subcontractor, it shall be entitled to a 35% advance payment irrespective of any cash disbursement needs at the beginning of its activities in the contract. The advance payment constitutes a debt of the contractor to the Agency until it has been offset against a subsequent milestone or milestones.

TECHNOLOGY TRANSFER

ESA is implementing a range of activities to support technology transfer through the [Technology Transfer and Patent Office \(TTPO\)](#) and the Innovation and Ventures Office (IVO).

Technology Transfer and Patent Office (TTPO)

The mission of the ESA Technology Transfer Programme is to prepare for the utilisation of space technologies outside the space domain in order to increase the competitiveness of the space industry and the return on public investment.

The TTPO supports the identification of space technologies answering to an earth need and facilitates and de-risks the technology transfer process by offering access to technical expertise, technologies (including ESA's patents) as well as required funding.

- **Identification of space technology/know-how**
The identification of space technology/know-how is a fundamental step in the technology transfer process. The TTPO gathers the information within ESA since it has direct access to the detailed technical information of the technologies. Access to detailed technical information is required not only because it provides a good insight of the final product/technology but also as it provides information on processes adopted to build the technology, as well as individual constituents of the technology itself, all being potential transfers.
- **Financing technology transfer demonstration activities**
The prime objective of the TT program is to select and finance technology transfer demonstration activities that will prove the relevance of the technology/know-how for ground applications as well as reduce the technical risk and confirm the market opportunity. The TTPO foresees the necessity to implement a three-phase approach to the technical and commercial de-risking:
 - **Feasibility studies** to boost identification of technology transfer leads from ESA's R&D contracts.
 - **Proof-of-concepts** to convince a customer that the space heritage meets their main functional and technical requirements by building a breadboard.
 - **Demonstrators** to convince a customer that the proposed technology is operationally suitable.
- **Technical support**
The TTPO also contributes to the diffusion of the space technology and knowledge, by providing technical support to (non-space) companies. Such companies try to integrate space technology in their commercial solutions or that are attempting to spin-in technology to space.
- **Patents portfolio**
The TTPO is responsible for the management and promotion of ESA's patents portfolio. ESA makes its intellectual property available on a freely-licensed basis to European space companies within its 22 Member States. For use by companies outside of ESA Member States, or for non-space applications, a different licensing model is in place, allowing the Agency to request royalties.

ESA's patent portfolio is available in an [online catalogue](#), to help promote their use. As one of the few agencies operating across all sectors of space, our portfolio ranges across subjects such as radio-frequency payloads and systems, structures and pyrotechnics, electromagnetic technologies and techniques, materials and processes, robotics, optics, electrical power and propulsion.

Innovation and Ventures Office

The Innovation and Ventures Office focuses in the support of new ventures and in the identification of non-space needs to provide space related solutions coming from the space community.

Business Incubation Centers

The [ESA BICs](#) are built around existing experienced incubation centers in the ESA Member States. Nowadays 21 centers are operational in 17 countries and from those centers ESA is supporting around 200 new space related start-ups every year. The ESA BICs provides an excellent opportunity for entrepreneurs and start-ups to turn their ideas and inventions into successful businesses in Europe. At the centres they are provided with:

- office space and logistics support
- technical support

- business assistance
- seed money and access to equity loan facilities
- access to inventors, VCs and other finance opportunities
- help to find partners and launch business internationally through the extensive ESA BIC network

Technology Brokers

A network of Technology Brokers has been created by the Agency to create added value for and strengthen European industry through the joint collaboration between a space organization and a non-space industry. Historically, this was in the scope of classical technology transfer: identifying a space technology with potential for spin-off, finding suitable recipients in the market place, and brokering a deal to enable the transfer to take place. In recent years a much more market led approach has been developed that focusses on assessing the needs of non-space industries and subsequently matching these with technologies, know-how, and other competencies developed throughout the entire European space industry in order to create space solutions.



Credit: ESRF

European Synchrotron Radiation Facility (ESRF)

ABOUT

[The European Synchrotron \(ESRF\)](#) is the world-leading source of synchrotron and a centre of excellence for fundamental and innovation-driven research for imaging and studying the structure of matter at the atomic and nanometric scale in many fields of research, including life sciences, materials science, chemistry and physics. The ESRF owes its success to the international co-operation of 22 partner nations. An on-going upgrade, the ESRF's Extremely Brilliant Source, ESRF-EBS, (150MEURO over 2015-2022) has been selected as a Landmark by the European Strategy Forum on Research Infrastructures (ESFRI) for the 2016 Roadmap and reiterated in the 2018 Roadmap, recognising the strategic importance of the ESRF's pioneering new-generation high-energy synchrotron. Centred on rebuilding the ESRF storage ring, with an ambitious instrumentation and data strategy, EBS will deliver from August 2020 unprecedented source brilliance and coherence (~100x), offering scientists and industrial partners a powerful new instrument to look even deeper into the structure of materials and living matter.

PROCUREMENT

Budget 2020-2024

The ESRF-EBS project consists of:

- The construction of a new storage ring producing an extremely brilliant source and for which the ESRF has successfully finalised the procurement in 2019;
- Over period 2020-2024, the ESRF will invest 59 MEURO for the construction of new beam-lines complemented by some refurbishments and for IT infrastructure and a detector programme.

Market survey / Industrial policy

The 59 MEURO investment offers opportunities for industry. As most of the instrumentation is cutting-edge, the ESRF thrives to engage on other possibilities to work with industry. The ESRF strongly believes that co-innovation provides the best way forward to strengthen European competitiveness.

Indeed, the ESRF participates in different programmes boosting European competitiveness and development and aiming at triggering innovation more widely and effectively.

Industrial database

The supplier database is maintained by the relevant Industrial Liaison Officers and suppliers are invited to contact them if they wish to be registered.

Procurement portal

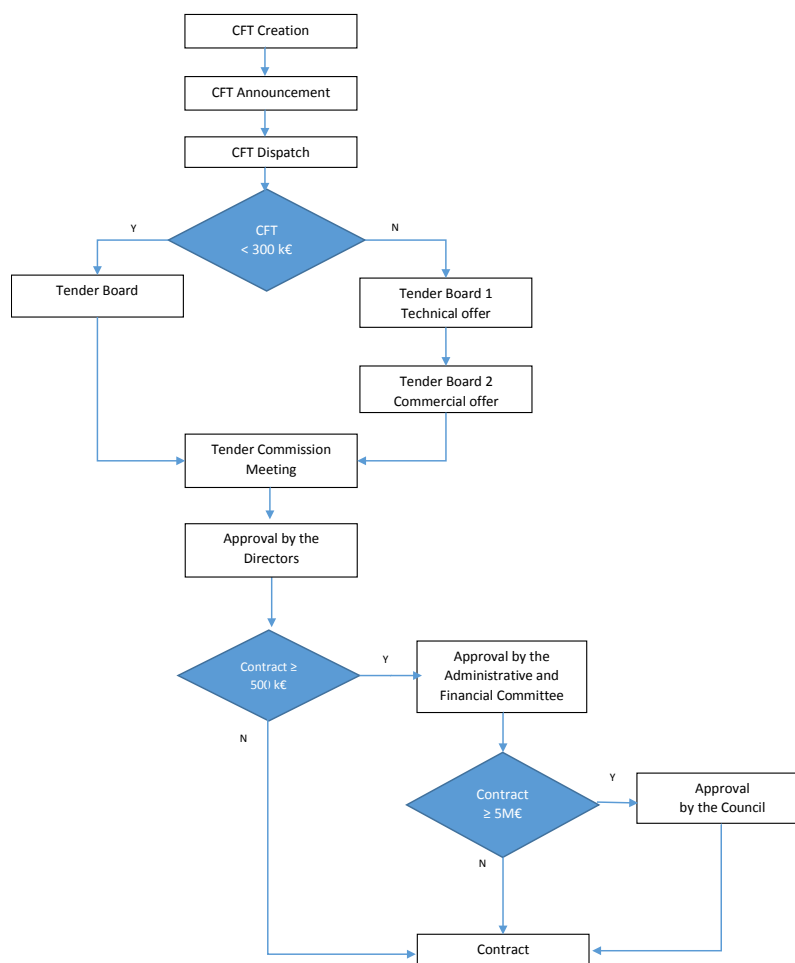
The ESRF calls for tender are not published on the ESRF website but only through its Industrial Liaison Officers, who can direct the call to relevant potential suppliers, who are then invited to bid. The invitation to participate to Calls for tender is done using an on-line tool that enables the ESRF and the suppliers to exchange documents.

Procurement modalities

The ESRF is not subject to the rules foreseen for the public sector concerning the announcement of tendering processes. The ESRF applies the rules approved by its Council of Administration (ESRF Financial Rules).

Procurement process

At ESRF, procurement above 50 kEURO are subject to Call for Tenders as described below:



ESRF Procurement Process for more than 50 kEURO

Funding

The ESRF is financed by cash contributions to the annual ESRF budget from its partner countries, with, in addition, some income from industrial activities and project-targeted funding from national and European grants. In-kind contributions do not apply.

Eligibility criteria

The assessment of a company to be eligible for a procurement at ESRF is based on its technical ability and experience to fulfil ESRF requirements. A formal pre-qualification exercise can be done for large procurements that require stringent and sensitive technical capabilities. In such case an in-depth analysis of technical and financial aspects is performed prior to the launch of the call for tender.

Evaluation criteria

For purchases exceeding 300 kEURO, a double envelope process applies, one for technical aspects and a second for commercial aspects. A matrix with a scoring system is defined on a case-by-case basis, according to the nature of the purchase, and is agreed prior to the opening of the offers. Usually the evaluation includes at minima the criteria for technical competencies, quality aspects, experience, delivery schedule, financial health, the price and the approval of ESRF contractual conditions. This matrix is used to rank the bidders and select the company.

At the ESRF, Contracts are awarded on a best-value-for-money principle.

Industrial return to ESRF partner countries is monitored and specific price alignment rules apply provided certain conditions are met.

IPR policy

At ESRF, as a general rule, all drawings and technical documents, specific material, parts or equipment acquired by the CONTRACTOR relating to the scope of execution of the related Contract, including any elements produced by the CONTRACTOR ("Technical Documents"), shall become the sole property of the ESRF. The CONTRACTOR shall not, without the written consent of the ESRF, reproduce, transmit or communicate such Technical Documents to a third party.

Drawings, data, technical documents, equipment, tools, know-how or any other technical information and intellectual property received by the CONTRACTOR from the ESRF ("ESRF Material") shall not, without the written consent of the ESRF, be used for any other purpose than for the execution of the Contract. In particular, ESRF Material may not, without the written consent of the ESRF, be used or copied, reproduced, transmitted or communicated to a third party.

Role of ILOs

The Industry Liaison Officers are appointed by the Member States. In their role of representatives of their corresponding national industry, ILOs shall provide support to the ESRF in transmitting information to potential suppliers about forthcoming Calls for tender with the objective to achieve a balanced industrial return and that the contract is properly fulfilled by the supplier in terms of technical and financial aspects.

PROCUREMENT AREAS 2020-2024

The procurement opportunities in the period 2020-2024 are estimated as follows (figures in millions of EUR):

	2020	2021	2022	2023	2024	□
Optics	2.3	2.2	1.7	1.3	0.5	8
Precision mechanics	6.9	3.0	2.6	1.5	3	17
IT infrastructure	3	2	2	2	2	11
Buildings					5	5
Infrastructure	2	2	1.5	2.5	1.5	9.5
Detectors	2	4	1.7	0.4	0.4	8.5

ESRF Procurement 2020-2024

SMEs

The ESRF has not carried out any specific adaptation of the procurement rules for SMEs. SMEs are invited to participate in Calls for tender based on their technical capabilities.

**TECHNOLOGY
TRANSFER**

Close to completing its “Extremely Brilliant Source” (EBS) upgrade – the first high-energy fourth generation synchrotron light source - the European Synchrotron Radiation Facility (ESRF), has developed a range of new technologies enabling the exacting parameters required for the success of such a high-performance light source facility. Examples of patented technology include special radio-frequency blades (or “fingers”) for assuring continuity across compact vacuum vessels and a high-reliability “hot swap” power supply system to maximise accelerator up time. There are many other high-performance technologies of value to new storage ring and X-ray beamline constructions.

The ESRF is a partner in the [ENRIITC](#) industrial liaison and contact officer network funded by Horizon 2020 and coordinated by the European Spallation Source. The work of this project, started on 1 January 2020, includes proactive outreach towards industry as instrumentation suppliers and as technology transfer, as well as industry as a user. ENRIITC will undoubtedly act as a conduit for technology transfer opportunities over the three-year life of the project.

Today, the ESRF has made in excess of 35 technology licenses since the start of its activity, and more are expected in the future. The technologies developed by the ESRF are open for technology transfer; instrumentation suppliers should not hesitate to contact ESRF at industry@esrf.eu, in particular if they spot a technology which could support their business.



Credit: ESS

European Spallation Source (ESS)

ABOUT

The [European Spallation Source](#) is a multi-disciplinary research facility based on the world's most powerful neutron source. The facility will enable scientific breakthroughs in research related to e.g. materials, energy, health and environment, in order to address some of the most important societal challenges of our time. It is expected to deliver first science in 2023 and reach its full specifications three years later, with 15 instruments online.

ESS is organised as a European Research Infrastructure Consortium (ERIC) with 13 member nations, including the host nations Sweden and Denmark. More than 500 employees from 54 nations are collaborating with institutions all over Europe to deliver the facility. The construction of the main facility in Lund, Sweden, started in 2014 with a budget of 1,843 billion EUR. Two years later, the Data Management and Software Centre opened in Copenhagen, Denmark.

PROCUREMENT

Budget 2020-2024

The ESS procurement budget is estimated to be 175 MEUR, covering all new procurements from the ESS cash budget in the period 2020-2024. This includes the procurements of all values i.e. from low-value procurement to high-value tenders published on the organisation's website.

Market survey / Industrial policy

ESS has no dedicated unit for Market Surveys. Market Surveys are conducted in the form of Requests For Information (RFI) in cooperation with the requesting project division on a case-by-case basis, if deemed

useful and needed for the case, and published in the ESS e-tendering tool and on the website.

The main objective of the ESS procurement rules is Value for Money and that is best achieved by open competition. ESS does not have any return principle, the ESS procurement rules have to follow the EU principles of transparency, non-discrimination and competition and based on that, all ESS tenders above a certain threshold (currently 50,000 EUR.-) are published in the ESS e-tendering tool and on the ESS website.

In order to promote the ESS tender opportunities and competition, ESS has an Industrial Liaison Offices (ILO) network with ILOs appointed by the 13 member states and 1 observer state.

Industrial database

ESS has an [e-tendering tool](#) that includes a supplier database. All interested companies are encouraged to [register](#) and to configure their profile to get notified about relevant tender opportunities.

Procurement portal

The ESS tender opportunities over a certain threshold (currently 50,000EUR-) are published in the [e-tendering tool](#) and on the [ESS website](#).

The e-tendering tool and website also contain a [list of planned procurements](#) for the coming 1-12 months, called Specific Advance Notices (SAN) and interested suppliers can register interest in those procedures. When such SAN is advancing to the tender phase, is changed or cancelled, all suppliers that have registered interest will receive an automatic notification.

Procurement modalities

In general, all procedures above a certain value (currently 50,000 EUR) are open and published and conducted in one of the following three forms: open procedure, restricted procedure, competitive procedure with negotiation. Under circumstances defined in Article 16 of the ESS-ERIC procurement rules, the organisation may negotiate directly and obtain offers from one or more suppliers. Also in those cases, the aim is to ensure competition, if possible. Procurements below the publishing threshold are conducted as Requests For Quotation (RFQ) whereby suppliers are invited directly to submit quotations.

Procurement process

The below table shows the current procurement thresholds and different types of procurement procedures at ESS. ESS is also conducting market surveys in the form of Requests For Information (RFI). RFIs at ESS are no formal procurement procedure, not used for supplier selection and purely used to conduct market research in the pre-tender phase.

Value Threshold	Publication	Procurement procedure	Minimum timing	Variations in Timing	Standstill Period
>200,000 EUR	Publication on ESS website. Other media depending on subject matter and value.	Open procedure	30 days	(+)- 5 days if not available by internet (-) 3 days if receipt of tenders electronically (-10) days if SAN published 30 days - 12 months in advance	10 days
		Restricted procedure	30 days + 30 days		
		Competitive procedure with negotiation, with or without initial tender	30 days		
50,000 - 200,000 EUR	Optional on ESS website	Request for Quotation with the involvement of ILOs			
25,000 – 50,000 EUR	Optional on ESS website.	Request For Quotation on website (optional) or directly to minimum 3 suppliers	-	-	-
<25,000 EUR	-	Request For Quotation or price comparison with limited competition	-	-	-
<300 EUR	-	Established ESS shop accounts for immediate needs	-	-	-

ESS Procurement Process

Minimum procedure applicable by value
Minimum timing does not include time required for preparation and evaluation
Transparency: publication of awarded contracts (>200K EUR) in e-tendering tool and on website

Funding

The ESS funding model is divided into cash contributions and In-Kind. The total ESS construction cost is 1.84 Billion EUR of which approximately 40.5% or 747.5 MEUR were expected to be delivered as In-Kind contributions by the ESS member states.

The cash contribution includes the civil construction that was tendered for in the initial project phase, resulting in an umbrella contract with Skanska with a value of approximately 750 MEUR.

The remaining part of the cash contributions of approximately 340 MEUR is handled via ESS procurement.

Eligibility criteria

ESS does not have a geo-return model or any return policy in their governance. The ESS-ERIC procurement rules have to follow the basic EU principles of transparency, non-discrimination and competition and the main objective is best-value-for-money.

Based on that, there is no restriction as to which countries tenderers can come from. Requirements regarding managerial, technical and financial capacity are defined in each procurement procedure on a case-by-case basis.

Evaluation criteria

The award criteria in ESS tender procedures is generally following the best-value-for-money principle and considers elements such as technical quality, lead time and price. The scores and weighting are determined for each procedure individually.

IPR policy

ESS is regularly not requiring ownership of IPRs but only a license for free use.

Role of ILOs

The ESS ILOs work as a link between ESS and their national industry. ESS and the ILOs collaborate to promote business opportunities at ESS and provide information regarding the ESS procurement process.

ESS and the ILOs also cooperate in areas such as development of the procurement rules, innovation etc.

PROCUREMENT AREAS 2020-2024

The largest accelerator and target work packages are already covered under In-Kind agreements and contracts awarded by ESS.

It is expected, that the procurement focus during 2020-2024 will shift towards the science / instrument area, installation and integration work as well as the areas related to ESS taking over the building site and the new Campus buildings (permanent offices, lab/workshop building, entrance/guard building).

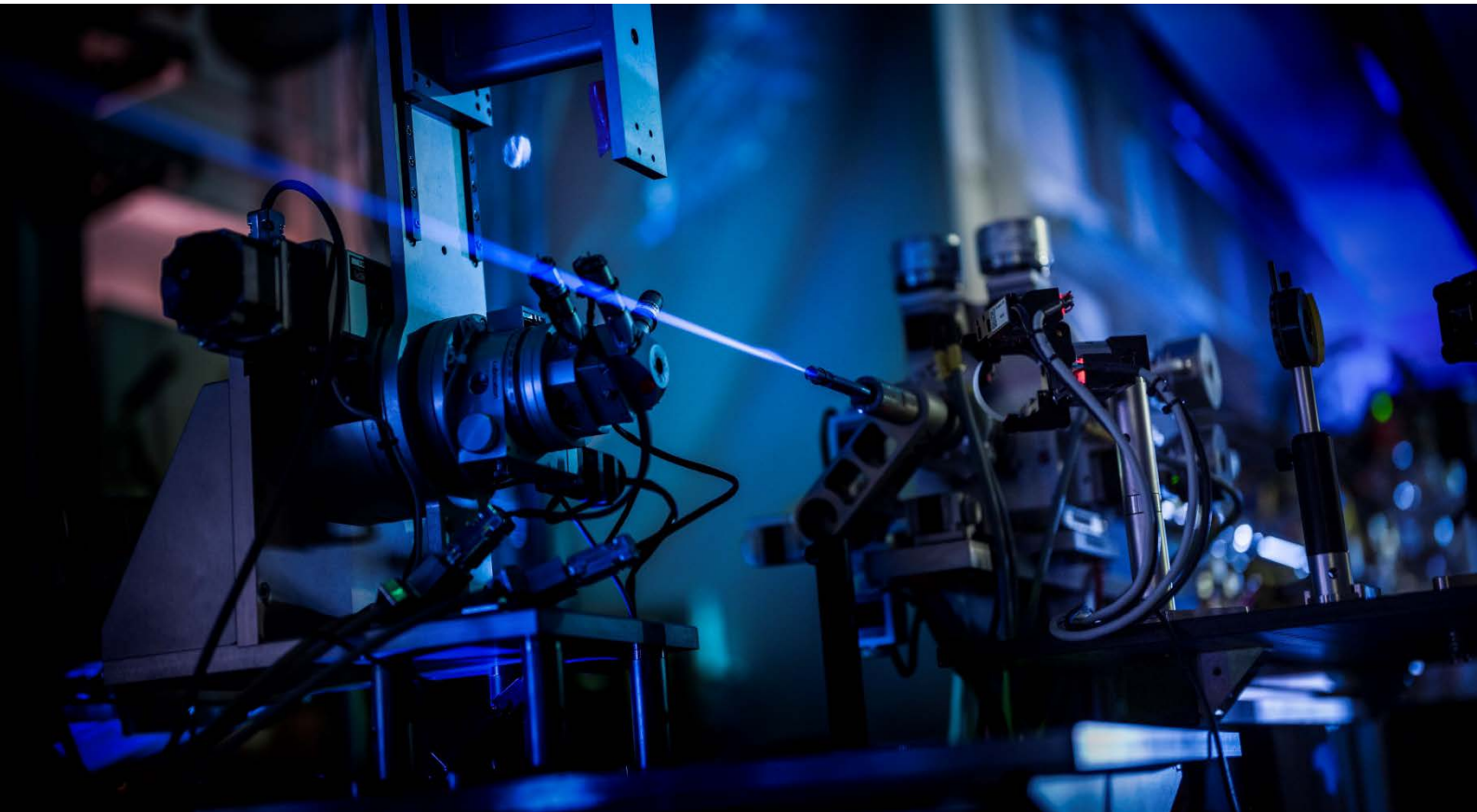
SMEs

The ESS-ERIC procurement rules permit to subdivide contracts into separate lots to facilitate market access opportunities for small and medium enterprises and to reduce the risk of over dependency on one supplier.

This is assessed and implemented on a case-by-case basis.

TECHNOLOGY TRANSFER

As one of the largest research infrastructure projects being built in Europe today, ESS offers a significant amount of innovation and technology transfer opportunities. To be able to fully leverage this potential, ESS Management adopted the ESS Policy for Innovation in 2017. In addition, a Technology Transfer Office was established to develop research findings for commercialisation, and support innovation culture within the Organisation. The office staff assists the entire Organisation in implementing the ESS Policy for Innovation. Its aim is to turn inventions into innovation by transferring skills, knowledge and technologies among research infrastructures, universities, and other institutions or organisations to industrial partners and society.



Credit: European XFEL/Jan Hosan

European X-ray Free Electron Laser (European XFEL)

ABOUT

The European XFEL is a research facility of superlatives. It generates ultrashort X-ray flashes—27 000 times per second and with a brilliance that is a billion times higher than that of the best conventional X-ray radiation sources. The world's largest X-ray laser is opening up completely new research opportunities for scientists and industrial users in areas of research that were previously inaccessible. Using the X-ray flashes of the European XFEL, scientists will be able to map the atomic details of viruses, decipher the molecular composition of cells, take three-dimensional images of the Nano-world, film chemical reactions, and study processes such as those occurring deep inside planets. At the European XFEL, international research groups can use complex experiment stations to perform their experiments for a few days or weeks. To generate the X-ray flashes, bunches of electrons are first accelerated to high energies and then directed through special arrangements of magnets (undulators). In the process, the particles emit radiation that is increasingly amplified until an extremely short and intense X-ray flash is finally created with properties similar to those of laser light. The European XFEL is located mainly in underground tunnels which can be accessed on three different sites. The 3.4 kilometer long facility runs from the DESY campus in Hamburg to the town of Schenefeld in Schleswig-Holstein. At the research campus in Schenefeld, teams of scientists from all over the world carry out experiments using the X-ray flashes. The company employs more than 300 people. At present, 12 countries are participating in the project: Denmark, France, Germany, Hungary, Italy, Poland, Russia, Slovakia, Spain, Sweden, Switzerland, and the United Kingdom. The European XFEL has been realized as a joint effort of many partners. The European XFEL GmbH cooperates closely with the research center DESY and other organizations worldwide. Construction started in early 2009; user operation began in September 2017. To construct and operate the European XFEL, international partners agreed on the foundation of an independent research organization – the European XFEL

GmbH, a non-profit limited liability company under German law.

PROCUREMENT

Budget 2020-2024

The procurement budget for period 2020 – 2024 is estimated to be 340 million EUR.

The campus is still growing and further developed, with additional user infrastructures such as a guest house, an additional office building and a visitor's center on the way. There are also two more tunnels (SASE 4 & 5) which are waiting to be equipped for future use.

Market survey / Industrial policy

When the European XFEL was founded, it was also decided by the shareholders that the European XFEL is subjected to the European and National Public Procurement law. European XFEL is therefore prohibited by these laws, to fulfill the policy of fair return to the shareholder countries in the procurement field. This decision was clearly established and supported to promote competition, avoiding predominant positions not related to the merit. For this reason, it is really important to promote actions, which help to increase the pool of companies that could be potential suppliers, in particular for the cutting-edge components. To further support this, the Industrial Liaison Office has been newly appointed by the management, assisting the procurement office and the scientist, to create an interest in the Big Science market industry, to become possible suppliers of cutting-edge components. A larger pool of potential suppliers leads to a higher participation and competition in calls for tender, which often results in better quality and best value for money. We also believe that a continuous monitoring of potential suppliers could support their development and specialization in their core competences, which is also beneficial for the companies themselves. The activities of the Industrial Liaison Office are strongly motivated by the innovations impact an ordinary procurement could trigger. The participation of industrial companies as suppliers of European XFEL during the construction and ramp up phase had in fact this kind of impact. The requirements for state-of-the-art and highly advanced components or services inspires the industry to develop new technologies, high-quality processes and new production strategies. The development is sustained by the acquisition of new production assets (technology) and by the hiring of additional personnel with advanced skills and competences. The supplier's participation in the Big Science Business program is often rewarded by an increase of business opportunities in new markets, even mass markets, due to the acquisition of new knowledge and competences. The ILO promotes and connects innovation-driven industries with the European XFEL for possible collaborations or future procurement actions.

Industrial database

XFEL has a solid supplier base generated by their ordering system and procurement also works closely together with the XFEL Industrial Liaison Officer, to receive new information of suppliers interested to do business with European XFEL. A supplier registration portal is planned for the near future.

Procurement portal

As mentioned before, the European XFEL is bound to apply the Public Procurement Law to all their procurements. To ensure this, all national tender for goods & services (with a value from 25,000 EUR to 221,000 EUR) will be announced on the XFEL homepage as well as the [Bundesanzeiger](#), a government platform to announce National tender. All tenders for goods and services exceeding the value of 221,000 EUR, must be published via the [Tenders Electronic Daily \(T.E.D.\)](#) platform, maintained by the European Commission. The same procedure, only with different thresholds, applies to all tenders for constructions, social services and concessions. European XFEL has fully integrated e-tendering in their processes, using the platform "Subreport" to process its tenders.

XFEL is using e-procurement for the ordering process, from requisition to order placement and goods receiving. The platform is called JAGGAER (formerly Pool4Tool).

Procurement modalities

European XFEL works with all the procedures the public procurement law permits, this includes open tenders, restricted tenders with or without call for competition, negotiated procedures with or without call for competition, framework contracts, grants, joint open tenders with other institutes etc.

Procurement process

Procurement processes at European XFEL GmbH follow the German national and European public tender rules, laws, and regulations. All calls for tender above the threshold for European wide tenders (thresholds 2019: > 221,000 EUR for goods and service and > 5,548,000 EUR for construction) are announced on the Tenders Electronic Daily (TED) website and all tenders considered national (below the value of 221.000 EUR) are announced on a national/federal website called Bundesanzeiger. All awarded tenders are also announced on the European XFEL website. The award of contracts/tenders follows the “Best-Value-for Money” practice. Some calls for tender related to the linear accelerator, operated by DESY, are administrated by DESY’s procurement group, in accordance to the operations agreement in place between DESY and European XFEL.

Funding

In general, the funding for all procurement actions at XFEL is part of the total annual Budget made available to XFEL by its shareholders. There is also a possibility to receive extra funds for specially funded projects, such as EUCALL or 3rd party funding via the industry or even other institutes. In Kind contributions took place during the construction phase of the XFEL, but have severely decreased to almost zero in the last few years.

Eligibility criteria

All businesses worldwide are eligible to participate in tenders published and executed by the European XFEL, once they fulfill the minimum requirements stated in the tender announcement, published via Tender Electronic Daily (T.E.D.), Bundesanzeiger, Subreport and the XFEL Homepage.

Evaluation criteria

The evaluation criteria’s depend strongly on the type of commodity to be purchased. In general, XFEL uses best value for money, which in many cases is also supported by additional criteria’s like expertise, references, excellence, environmental impacts, technical implementation, compatibility, managerial competencies, technical team, delivery time, added maintenance and more.

IPR policy

In general, European XFEL includes a clause regarding the protection of proprietary rights and licenses, as well as a confidentiality clause, in all its tender documents and contracts. In special cases, the XFEL legal department assists to look into the matter, to ensure that all propriety rights are taken into consideration and are protected.

The Industrial Liaison Office at XFEL assists with the coordination of the patenting process for inventions, both for licensing and the support to new start-up creations.

Role of ILOs

The XFEL Industrial Liaison Office establishes a network with other national Industrial Liaison Offices, to enlarge the possibility to access information about new technology, trends and competences that are coming out in the market. Regular meetings, regular information about upcoming tenders via the procurement group, as well as continuous contacts of the XFEL ILO, national Industrial Liaison Offices and other important stakeholders, also fostered by European programs, support the functionality of this network and help to achieve that goal.

PROCUREMENT AREAS 2020-2024

- Diagnostics, Detectors, Sensors, Optics and Instruments
- Big Data and Artificial Intelligence, User Interfaces
- Instrumentation & Control
- Superconducting Magnets
- Cryogenic technology, Vacuum and leak detection technologies
- Building & Construction
- Interior fittings of the guesthouse (furniture and other equipment’s)
- Interior fittings of the Visitors center (incl. Laboratories)

SMEs

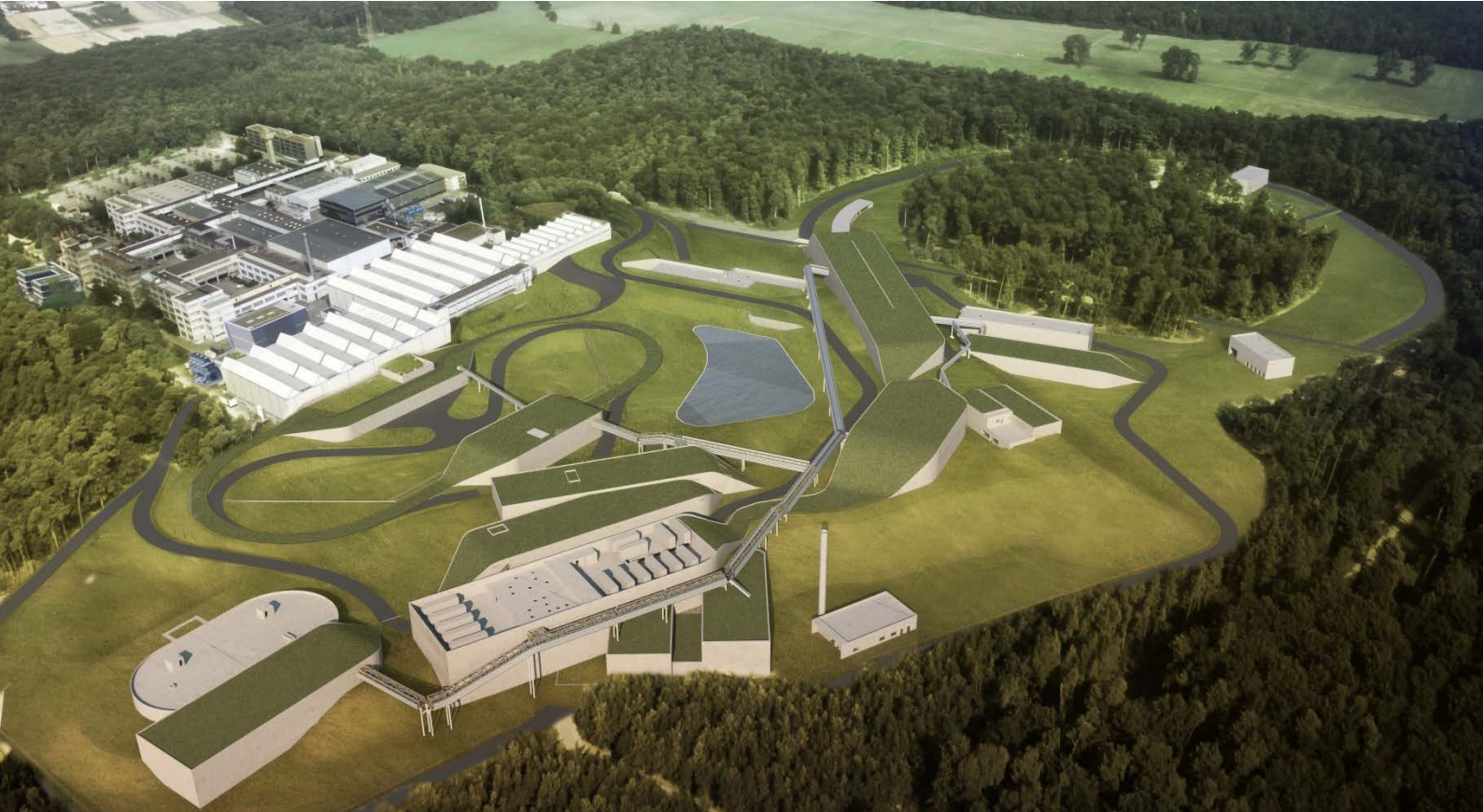
As the European XFEL is obliged to procure according to the European (GPA) and National Public Procurement laws, which highly encourages the involvement of SME’s in all procurements, it is part of our daily business to work with SME’s.

**TECHNOLOGY
TRANSFER**

European XFEL is the initiator of many user consortia and actively participates in many different international cooperations (for more details visit the [international cooperations page](#)). In 2011 a Call for Expressions of Interest in contributing to the European XFEL in the form of User Consortia was published. This call was published with an initial deadline to start a first evaluation, but is now open, allowing new proposals to be submitted at any time. A significant amount of consortia have been established so far (for more details visit the [user consortia page](#)) to mention a few:

- Integrated Biology Infrastructure Life-Science Facility at the European XFEL (XBI)
- Serial Femtosecond Crystallography (SFX)
- DataXpress
- Helmholtz International Beamline for Extreme Fields at the European XFEL (HIBEF)
- COMO
- Heisenberg Resonant Inelastic X-ray Scattering (h-RIXS)

XFEL is also actively participating in EU-Projects called OpenDreamKit, EUCALL, EOSCpilot, CREMLIN and CALIPSOplus and is an active member of the EIROforum.



Credit: FAIR

Facility for Antiproton and Ion Research (FAIR)

ABOUT

FAIR is the Facility for Antiproton and Ion Research in Europe, one of the largest research projects in the world being built at GSI Helmholtzzentrum für Schwerionenforschung GmbH in Darmstadt, Germany. Constructor is the Facility for Antiproton and Ion Research in Europe GmbH (FAIR GmbH). Shareholders alongside Germany are Finland, France, India, Poland, Romania, Russia, Sweden, and Slovenia. The United Kingdom is an associate partner; the Czech Republic is an aspirant partner. The project cost is over 2 billion Euro.

In giant planets, stars, and during stellar explosions and collisions, matter is subject to extreme conditions such as very high temperatures, pressures, and densities. FAIR will enable scientists to create such conditions in the laboratory. To do so, they will bombard small samples of matter with particles. These collisions will, for very short periods of time, create cosmic matter at the tiny impact points. The FAIR research is subdivided into the four experiment pillars: NUSTAR, CBM, PANDA, APPA.

FAIR will generate particle beams of a previously unparalleled intensity and quality. The variety of these particles will be unique: ions of all the natural elements in the periodic table, as well as antiprotons, can be accelerated. A key component of FAIR is a ring accelerator with a circumference of 1,100 meters. Connected to this is a complex system of storage rings and experimental stations. The existing GSI accelerators will serve as the first acceleration stage.

The FAIR particle accelerator facility in Darmstadt is one of the world's biggest and most complex construction projects for international cutting-edge research. On a site of approximately 20 hectares, unique buildings are being constructed in order to house and operate newly developed high-tech research facilities. This multinational and highly complex mega construction project has entailed the development of integrated construction workflow planning that closely coordinates building, civil and construction engineering, accelerator development and construction, and scientific experiments.

The FAIR project is being realised in international collaboration. International scientific and technical institutes of the shareholder countries and many more partner countries are cooperating.

Cutting-edge technologies and extremely innovative measuring methods and techniques are being developed for the unique FAIR particle accelerator facility. In order to create the facilities for acceleration and experiments, high-level scientists, engineers, and other experts are working in international partnership to advance new technological developments in many areas such as information and superconductor technology.

PROCUREMENT

Budget 2020-2024

Because FAIR is a German limited liability company (GmbH) all our tenders are published according to German procurement and state-aid law, which is commensurate with EU procurement law. Calls for tender are published on the German or European tender sites (depending on their estimated economic value). In other words, any bidder anywhere in the world can make a bid to supply FAIR.

Our procurement has three pillars:

1. Site and buildings, with a total value of more than 1 billion EURO (price point 2020).
2. Accelerator, with a total value of over 300 million EURO (price point 2020),
3. Experiment, of which most will be supplied via collaborations and not by FAIR.

Our in-kind partners have their own procurement profile, which is totally independent of GSI/FAIR and follows the national procurement rules of the relevant country. Below, we give the total in-kind commitment of each country. Some of this commitment will be tendered on the open market according to national rules, some produced by partners or shareholders in-house, without tendering. We are procuring over half of our accelerator components in kind from our shareholders. Our largest shareholder is GSI (Germany), whose calls for tender are openly published on the German or European tender sites (depending on their estimated economic value). The rest of our procurements are made on the open market by FAIR, again on the German or European tender sites (depending on their estimated economic value).

More than 300 million EURO of accelerator procurement will run on the open market in the next five years.

Market survey / Industrial policy

FAIR does not have a dedicated market intelligence unit. Instead, we rely on the following avenues, as well as our extensive market know how within the organisation:

Systematic market review prior to the launch of a tender

By means such as market research in the internet, exhibitions and scientific publications as well as meetings with potential bidders actively approaching the GSI procurement department.

Industry days at GSI

In order to strengthen interaction between FAIR and industry the technology transfer staff unit organizes regularly in house industrial exhibitions called 'Roadshow' on the FAIR campus.

The latest developments and technical solutions are brought to FAIR by companies of different branches and presented to the employees on site. The latest technologies and most innovative measuring methods and techniques are developed for our unique particle accelerator facility FAIR. For the realisation of the accelerator and experimental facilities, the supply of highly specialised components, some of which have been developed specifically for FAIR together with the manufacturers, is indispensable.

The Roadshow offers companies an exhibition space to present their latest developments and products at GSI. The presentation of the product portfolio will take place in form of an exhibition stand on the campus area.

Contact: roadshow@gsi.de

Market knowledge and contacts of GSI scientific experts and GSI/FAIR buyers

FAIR draws on the 50 years of experience of our German shareholder and host institute, GSI Helmholtz GmbH (Gesellschaft für Schwerionenforschung; Society for Heavy Ion Research). Our scientists and technicians each have their own professional network which they are careful to curate.

Market knowledge of FAIR shareholders

Our ten shareholders (see above) each cultivate their own network of potential suppliers, paying particular attention to the market in their own countries. In the case of a fractured or emerging market, our shareholders have facilitated the formation of consortia.

Industrial database

GSI and FAIR do not maintain a centralised industrial database, however within the Purchasing department a master bid list is maintained for major accelerator components.

Procurement portal

All calls for tender above 30,000 EURO total purchasing value by FAIR and GSI are published in our [Call for Tenders](#) section. National German calls for tender above 30,000 EURO are additionally published on the [Deutsches Vergabeportal](#). European calls for tender (over 214,000 EURO total purchasing value) are additionally published in the [Supplement to the Official Journal of the European Union TED \(Tenders Electronic Daily\)](#).

Procurement Modalities

FAIR and GSI use the tender procedures defined within German (national) and European Law. Which tender procedure is used for which procurement activities depends mainly on the procurement value.

As basis for the call for tender, we publish either publish functional specifications or built-to-print depending on the magnitude of development support needed from the supply base.

We perform the majority of tenders for complex components as "negotiation tenders," allowing preselection of capable bidders as well as technical reviews as well as intense negotiations during the purchasing process.

If the subject of the procurement activity is fully described and no technical or commercial reviews are needed, we will use the "open tendering procedure." In this case, we award based on capability and the submitted offers.

Procurement process

FAIR is subject to [Directive 2014/24/EU on public procurement](#).

Where our shareholders contribute in kind, they will often launch their own call for tender, according to their national procurement laws. Each country has its own modalities. Please check the procurement pages of the FAIR shareholder in your country: you are likely to find calls for FAIR technologies that are not immediately obviously such.

Country	Shareholder	Where to check for calls
Finland (in consortium with Sweden)	Vetenskapsrådet (Swedish Research Council)	www.vr.se/english.html
France	CEA and CNRS	www.marches-publics.gouv.fr
Germany	GSI GmbH	https://www.dtv.de/
India	Bose Institute	www.thetenders.com/All-India-Tenders/Agency/Tenders-Of-Bose-Institute/
Poland	Jagiellonian University	https://opentender.eu/pl/search/tender
Romania	Ministry of Research and Innovation	http://anap.gov.ro/web/
Russian Federation	Rosatom	http://zakupki.rosatom.ru/en/
Slovenia	Ministry of Education, Science and Sport	https://opentender.eu/si/search/tender
Sweden (in consortium with Finland)	Vetenskapsrådet (Swedish Research Council)	www.vr.se/english.html

FAIR shareholders and call websites

Funding

FAIR is funded by our shareholder countries with the following commitment:

Country	Commitment (%)
Finland	1.47 (together with Sweden)
France	2.65
Germany	69.07
India	3.53
Poland	2.33
Romania	1.16
Russia	17.45
Slovenia	1.18
Sweden	1.47 (together with Finland)
United Kingdom	Fixed sum in Euro + >0.5%

FAIR shareholder commitments

70 % to 80 % of accelerator components are contributed in kind; 40% by GSI as the host laboratory (Germany).

Counting GSI together with FAIR direct tender, over 300 MEURO worth of accelerator technology will be tendered on the open market between 2020 and 2024.

Eligibility criteria

As a German limited liability company, FAIR procurement is oriented according to the principles cited in the EU Treaty:

1. Competition
2. Transparency
3. Economically
4. Equal treatment
5. Non-discrimination
6. Proportionality
7. Mutual recognition
8. Fair play.

As such, there is no policy of geo-return.

Depending on the procurement volume and the risk associated with the procurement package, FAIR and GSI may demand certain eligibility criteria such as:

- Minimum annual turnover
- "European single procurement document (ESPD)" self-declaration form
- Proof of experience in the relevant market field by self-declaration
- Proof of availability of dedicated manufacturing equipment by self-declaration
- Proof of certificates, either related to quality, personnel or equipment by self-declaration

Where appropriate, we design our procurement packages in lots to allow better access for SMEs. We also encourage bids from consortia of SMEs.

Evaluation criteria

Application, bidding and award criteria are published along with the call for tenders. The specification of award criteria, their weighting (price vs. performance) and our method of evaluation are clearly documented in the initial tender documentation. Price weighting varies between 30% to 100%.

Typical performance criteria might include:

- Technical concept (e.g. technical solution, highlight of critical features incl. suggestions to solve, resource availability, qualification design & development)
- Manufacturing (e.g. availability of capacity, process flow, description of equipment and measurement devices, ...)
- Lead-time
- Quality assurance
- Serviceability

IPR policy

The FAIR intellectual property policy in a nutshell is the following:

- We ask for rights to a supplier's background only if and only as far as necessary for the project.
- Rights are shared between FAIR and the supplier for foreground generated within the procurement cooperation.
- Any exploitation FAIR makes of background and foreground is solely for non-commercial research.

Role of ILOs

At the time of going to press, FAIR's ILO network is undergoing a reorganisation, please check our website for the current ILO database. For us, an ILO is the person who is responsible for establishing and maintaining contact between FAIR/GSI and the businesses and institutions in their country/area. In FAIR/GSI context, this person is a single point of contact with respect to In-Kind, Technology Transfer and communication with regard to industry in their respective partner country.

FAIR ILOs:

- Disseminate information about FAIR's needs
- Identify key businesses in their area
- Perform market analyses in their area
- Engage industry to become involved in FAIR
- Assist communication between industry and FAIR
- Disseminate information about the scientific possibilities of collaboration with FAIR
- Identify the potential for spin-off, spin-out and licensing in their area
- Promote the industry of their area in the scientific world

ILOs are important to FAIR and GSI because they:

- Identify potential bidders and consortia that could supply FAIR. More bidders mean a healthier

market and better prices.

- Act as a communication channel between FAIR and industry in their country, and vice-versa.
- Play a key role in technology transfer of all kinds.
- Present FAIR in a positive light in their area of businesses.

**PROCUREMENT
AREAS
2020-2024**

Cutting-edge technologies and extremely innovative measuring methods and techniques are being developed for the FAIR particle accelerator. In order to create the facilities for acceleration and experiments, high-level scientists, engineers, and other experts are working in international partnership to advance new technological developments in many areas such as information and superconductor technology.

The table below gives the estimated German expenditure for the next four years, by technology branch (MEURO, rounded to the nearest MEURO).

Technology	Estimated expenditure (MEURO)
Complex building construction and its safety related systems	TBC
Cryogenics, vacuum and leak detection technologies	79
Diagnostics and detectors, sensors, optics and instruments	64
Electrical, power electronics, electromechanical and RF systems	101
High precision and large mechanical components	TBC
Instrumentation, control and CODAC	31
Superconductivity and superconducting magnets	9
Normally conducting magnets	48

German FAIR procurement 2020-2024

SMEs

FAIR and GSI are always interested in close cooperation with SMEs especially for joint development projects. Currently FAIR/GSI has numerous cooperations with SMEs in different fields of expertise as well as four ongoing national third-party funded innovation projects in the area of accelerator physics, detector development and biophysics. Contact: transfer@gsi.de

**TECHNOLOGY
TRANSFER**

Partnering with GSI and FAIR

We are adaptable and flexible in our partnerships with the economy:

- **Cooperations:** In many ways, new high-tech solutions are developed in collaboration with business partners.
- **Contract Research:** Scientific and technical expertise can be used in working on a company's particular problem formulation.
- **Commissioned Work:** Technical infrastructure can be used for industrial applications in accordance with a client's specific requirements.
- **Provision of Components / Electronics:** GSI is able to manufacture components, membranes and electronics with special features.
- **Beamtime:** GSI offers measurements for industrial projects.
- **IP Utilization Agreements:** GSI has a versatile IP portfolio in its fields of innovation.

Creation of value by GSI Intellectual Property

GSI makes its inventions and developments ("Intellectual Property", IP) also available for the use in industry:

- **IP License and Transfer Agreements:** The aim of every IP utilization agreement between GSI and a business partner is intended to be a win-win situation that enables every involved party to generate and extract sustainable values for itself.
- **Validation Projects:** The GSI Technology Transfer Department supports and coordinates funding applications for the validation of GSI developments in cooperation with businesses.



Credit: ITER Organization

Fusion for Energy (F4E)

ABOUT

Fusion for Energy (F4E) is the European Union's Joint Undertaking for ITER and the Development of Fusion Energy. The organisation was created under the Euratom Treaty by a decision of the Council of the EU. Its members are the 27 EU Member States, Switzerland and the European Commission.

F4E is responsible for providing Europe's in-kind and in-cash contribution to ITER, the world's largest scientific installation that aims to demonstrate fusion as a viable and sustainable source of energy. ITER brings together seven parties that represent half of the world's population – the EU, Russia, Japan, China, India, South Korea and the United States. The ITER assembly and operations are managed directly by an international organisation created for the purpose: the ITER International Organisation (ITER IO). F4E also supports international fusion research and development initiatives through the Broader Approach (BA) Agreement signed with Japan and in collaboration with the European fusion research community (Eurofusion), with the ultimate goal to reach the commercial exploitation of fusion energy. F4E works closely with industry and R&D organisations across Europe to design, manufacture and test technical components for fusion installations.

For the period of 2008-2020 (covering roughly 60% of the ITER construction activities), F4E has a budget of about 7 billion EUR for the European contribution to the ITER and BA projects. For the period of 2021-2027 F4E foresees a budget of about 6 billion EUR.

F4E is located in Barcelona (Spain) and has offices at the ITER site in Cadarache (France), in Garching (Germany) and Rokkasho (Japan).



PROCUREMENT

Budget 2020-2024

Year	Procurement Budget Forecast F4E (MEUR)
2020	615
2021	860
2022	577
2023	903
2024	658
TOTAL	3612

F4E Procurement volume for 2020-2024

Market survey / Industrial policy

ITER is the biggest international research partnership in the field of energy and can only be achieved in collaboration with industry, SMEs and research organisations. They are the backbone of this project. Getting the business sector on board and finding the best possible way to work together is high on the project agenda. [F4E's Industrial Policy](#) pursues this ambition through three main objectives²:

- Deliver the European contributions to ITER and the Broader Approach making best use of the industrial and research potential and capabilities of all F4E members.
- Broaden the European industrial base for fusion technology and ensure a strong and competitive European industrial participation in the future fusion market;
- Foster European innovation and competitiveness in key emerging technologies

F4E's Industrial Policy applies through its day-to-day operations and procurement activities. To make good use of the full the industrial and research potential of F4E members and ensure the widest possible participation of the industry, F4E has engaged in pro-active market intelligence strategy. The purpose of F4E's market analysis activities is twofold: engage market actors in our procurement activities and feed the internal decision-making process with a better insight of existing market conditions. The responsibility for carrying out these activities lies in F4E's Market Analysis Group (MAG).

MAG obtains information about the market conditions mostly through market surveys, information days, contacts with companies and exchanges with the Industrial Liaison Officers (ILOs, see section 2.11 for further information). The information gathered through these activities helps making F4E's procurement activities more efficient by translating its needs into procurement packages matching the capabilities of industrial partners.

Industrial database

F4E's Partner's Database offers the possibility for companies to register in F4E's Industry Portal and get updated information about business opportunities in their field of expertise. Companies shall provide a valid VAT or registration number and a working e-mail address to receive relevant information. Registration in the Partner's Database/Industry Portal only provides access to business opportunities and information; it is not a "pre-qualification" filter for engaging into calls for tender.

F4E intends to upgrade its partner's database during 2020. A general call for renewing the registration into our database will be launched during this year for companies to (re)register and select their field of expertise.

Procurement portal

[F4E's Industry Portal](#) constitutes the one-stop-shop for anyone willing to engage into business relations with F4E. The Industry Portal offers information about business opportunities, procurement modalities and key reference documents; it also hosts the partner's database and the e-procurement platform.

The information therein is not limited to the announcement of calls (which are as a rule also published

² Industrial Policy document: https://fusionforenergy.europa.eu/downloads/mediacorner/publications/reports/F4E_trifold_0809_light.pdf
Industrial Policy site: https://industryportal.f4e.europa.eu/IP_PAGES/About.aspx

in [TED](#) but includes also key reference documents such as the contract notice, specifications and technical annexes. Any new information related to a call for tender, e.g. corrigenda, changes in a deadline, etc. are also made public through the Industry Portal. Furthermore F4E uses the Industry Portal to announce Information Days, Market Surveys and for general information of interest to our procurement activities. The Industry Portal includes a dedicated area for the ILOs (Industrial Liaison Officers) allowing companies to identify the ILO corresponding to their country.

Since end-2018 the e-procurement tool embedded within our Industry Portal allows for the fully electronic submission of bids.

Procurement modalities

Procurement in Fusion for Energy follows the rules laid out by the European Commission in its General Financial Regulation³ with specific derogations, specified in F4E's Financial Regulation⁴. The legal basis ensures that the following principles are respected through all steps in a procurement procedure: transparency, equal treatment, widest competition, proportionality and sound financial management.

The following funding modalities are foreseen in F4E's Financial Regulations:

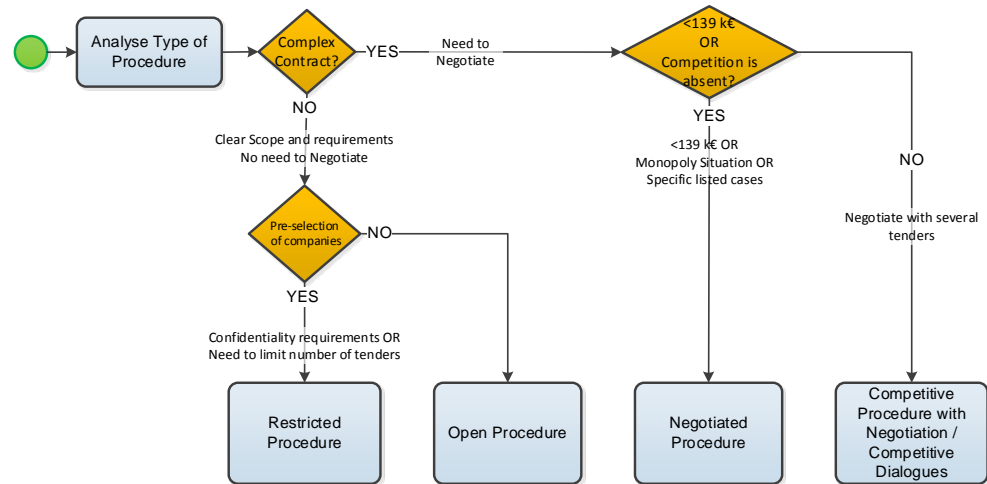
- 1) **Expert contracts:** F4E can sign contracts with individuals for the provision of technical expertise against a payment or a fix fee plus the reimbursement of travel costs.
- 2) **Grants:** F4E can award co-funding grants in order to contribute to a R&D project carried out by an external organisation, if that activity contributes to F4E's objectives. F4E pays direct financial contribution to cover portion of the costs incurred by the R&D actor. Grant agreements can be awarded directly or through Framework Partnership Agreements (covering long-term R&D activities spanning several years).
- 3) **Procurement:** the most common way of pursuing F4E's objectives is by launching competitive call for tenders to purchase products or services on commercial terms. Three different types of procurement contracts are awarded by F4E, depending on the type of purchase (service, supply or buildings) as well as the characteristics of the purchase (one-off, repetitive, long-term exploitation, development).
 - a. **Direct Contracts** are firm and self-sufficient, in that the contract is implemented without further formalities (the subject matter, remuneration and duration of performance of the contract are defined at the outset, as well as all other terms and conditions).
 - b. **Framework Contracts** stipulate the subject matter of the purchase, price lists, the legal setup, the duration etc, but other necessary elements of the contractual relationship are defined at a later stage, in one or more Specific Contract indicating e.g. the quantities or date of delivery. Framework contracts can be signed with one or more suppliers. F4E uses 3 types of framework contract: single-contractor, multiple-contractor with cascade and multiple-contractor with re-opening of competition.
 - c. **Innovation Partnerships** can be used in very specific cases, when F4E's objectives require a product, service or business model which does not yet exist on the market and needs to be developed specifically.

Based on the scope of the purchase (research, support services, manufacturing of prototypes, series production, etc.), the value, the complexity of the scope or whenever specific indications are identified through market analysis, F4E will use the most suitable tender procedure to select the most economically advantageous tender. F4E can use 5 different types of procurement procedure, which are described in more detail below: open procedure, restricted procedure, negotiated procedure, competitive procedure with negotiation, competitive dialogue procedure.

³ REGULATION (EU, Euratom) 2018/1046 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 July 2018 on the financial rules applicable to the general budget of the Union (GFR)

⁴ Financial Regulation for Fusion for Energy adopted by Governing Board decision of 10/12/2019 and entering into force on 01/01/2020 - (F4E FR)

The strategy behind the choice of one procedure or another can be summarized as per the chart below:



F4E Procurement modalities

The procedures most often used by F4E are the 'Open procedure' and 'Competitive procedure with negotiations'. The latter is used when the complexity of the tasks or the risks attached to the subject matter of the contract are high.

Procurement process

After a phase of pre-procurement activities aiming at further defining the boundaries and the conditions of the procurement procedure (market situation, available technologies, risks, dissemination of the business opportunities), the below sequence of steps is applicable according to each type of procedure:



F4E Procurement steps for each type of procedure

When required, depending of the type of procedure, a selection of companies is made based on technical and financial capacity. Only the companies complying with a minimum capability are invited to submit an offer.

The offers submitted shall in general address the way in which the company(s) will implement the tasks described by F4E in the Technical Specifications. The Tender Specifications include all the additional specific requests and conditions which must be covered by an offer to be considered for award. Depending on the strategy, contracts will be awarded either to the cheapest offer (in simple cases) or to the offer presenting the best value for money (a combination between the quality of the proposal and the price offered, where necessary complemented by negotiations)

Elegibility criteria

Participation to F4E's calls for tenders is open as a rule to economic operators from F4E Member States (EU27 + CH). In special justified cases the participation can be opened worldwide (e.g. when insufficient competition is existing in the Member States). Subcontracting is not directly limited to F4E Member States, although specific requirements can introduce additional constraints in this respect.

The minimum capacity required from tenderers (in terms of technical expertise, facilities or financial stability) are defined for each call and are proportional to the scope and requirements of the contract. Procurement strategies are established to allow for maximum possible competition and to promote where possible participation of SMEs. In compliance with F4E's Industrial Policy objectives, procurement strategies promote the development of critical fusion technologies within companies registered in F4E Member States.

Evaluation criteria

The purpose of evaluation of tenders in F4E is to assess technical and financial offers to choose the most economically advantageous one. When award occurs to the offer with the best ratio quality vs price (the award method which is most used by F4E) the weighting between the price and the quality elements depends on the scope of the contract. As a rule F4E also sets minimum levels of quality below which offers are excluded.

In most cases F4E gives significant importance to the merit of the quality plan and the reliability of the proposed schedule, the methodology proposed for the manufacturing, identification of risks and their mitigation actions, the internal organisation of the bidding team (consortium and/or subcontractors).

IPR policy

[F4E's Intellectual Property \(IP\) policy](#) (more information in the following [document](#)) aims to make participation to fusion projects attractive to industry, beyond the pure commercial terms of the relevant contracts. The key tool of this approach is the principle of sharing knowledge and its potential benefits between the fusion research community and industry. F4E manages the ownership of IP rights within its contracts on a case by case basis, having regard to the nature of the contract and the potential interest for both F4E and the contractor of the generated IP.

Irrespective of who owns the results of a contract, F4E encourages the use of the resulting knowledge by its industrial partners through licensing. This is specifically the case for exploitation outside of the fusion field. F4E is promoting an active policy of use of IP results through its Technology Transfer programme (see section 5 for details).

F4E maintains guidelines for the management of IP within its contracts and in a dedicated section in the [Industry Portal](#).

Role of ILOs

F4E relies on a network of [Industrial Liaison Officers \(ILOs\)](#) from different European countries working to raise awareness regarding its opportunities and ways to get involved in the fusion projects. ILOs are directly nominated by F4E Member States. The full list of appointed ILOs is available at the following [link](#).

The ILOs mandate is the following:

- Raise awareness and transmit information to potential contractors about forthcoming calls to be published by F4E or ITER IO;
- Assist potential contractors in their understanding of F4E's requirements within the frame of the above-mentioned calls;
- Advise potential contractors, upon request, on technical, contractual and financial aspects of F4E's contracts;
- Foster the registration of potential contractors in the F4E databases;
- Act as actors to exchange information on matters related to F4E industrial policy;
- Encourage the long-term participation of industry to fusion projects in view of commercial exploitation.

F4E holds ad-hoc meetings with the ILO network three or four times a year. Additionally information days and seminars are planned throughout the year, to report on the roadmap of the different procurement packages and facilitate partnerships between companies.

**PROCUREMENT
AREAS
2021-2027**

Forecast 2021/2027	MEURO
Magnets	32
Main Vacuum Vessel	27
In Vessel (High Temperature) Components	567
Remote Handling	165
Cryogenics & Fusion Fuel Cycle	174
Radiofrequency Antennas & Plasma Engineering	131
Neutral Beam Injectors & Radiofrequency Power Supplies and Sources	179
Diagnostics	130
Site & Buildings	769
Technical Support Activities	82
Test Blanket Modules	72
Broader Approach Projects	210
IFMIF/DONES Project	100
TOTAL	2638

F4E procurement forecast for 2021-2027

Note: These figures are indicative and subject to the approval by the EU Budgetary Authority of the [Commission proposals on the next MFF 2021-2027](#).

SMEs

F4E fosters the participation of SMEs in its procurement activities and actively promotes the creation of consortia with the presence of SMEs as part of its pre-procurement activities. F4E's concern for SMEs is also reflected in its Industrial Policy implementation plan, which includes a number of measures aimed at facilitating their access to its procurement activities, e.g.:

- Share financial risks with contractors by reducing liabilities and guarantees where appropriate.
- Promote tender opportunities with value and risk suitable to direct SME participation.
- Reduce administrative burden for tenderers and contractors, e.g. through e-procurement and electronic management of contract modifications.

F4E's industrial policy brochure can be found at the following [link](#).

**TECHNOLOGY
TRANSFER**

F4E is strongly committed to implement a technology transfer strategy fostering the exploitation by industry of scientific, technological and systems engineering know-how produced in the development of fusion projects. Attainment of fusion power requires pushing the state of the art in several advanced technologies, which can then find applications far beyond the scope of fusion.

In November 2019 F4E signed a framework agreement with a consortium of brokers, with the objective to implement a pro-active Technology Transfer Program by promoting F4E's technology portfolio to industry.

Further information about F4E's technology transfer activities can be found at [F4E's Industry Portal](#).



Credit: Cedrine Tresca

The Institut Laue-Langevin (ILL)

ABOUT

[The Institut Laue-Langevin \(ILL\)](#) is an international research centre at the leading edge of neutron science and technology, it operates the most intense neutron sources in the world. Since 2007 the ILL has spent EUR 93 million in an ambitious programme to ensure its instruments and nuclear facilities continue to address the challenges of the new millennium.

The ILL operates the most intense neutron source in the world, a 58.3 MW nuclear reactor designed for high neutron flux. This source supplies neutrons to 40 state-of-the-art scientific instruments capable of probing the microscopic structure and dynamics of materials at molecular, atomic and nuclear level. Some 2000 scientists from 40 different countries come to the ILL every year to use its instruments and benefit from its long experience as a service Institute.

PROCUREMENT

Budget 2020-2024

Between 2018 and 2026 a further 77 million EUR are to be invested in the ILL's "Endurance" and "Key Reactor Components" programmes, guaranteeing that the Institute will maintain its world-leading position for another decade at least.

Endurance programme

The Endurance programme launched in 2015 progresses within two phases: Phase I & II. The remaining

cost assumptions for Endurance Phase I amount 8 MEUR and the cost assumptions for Endurance Phase II amount to almost 36 MEUR.

In order to complete the Endurance programme by 2023, there are still almost 40 MEUR to be spent within the 5 years from 2020 to 2024.

Key Reactor Components

The Key Reactor Components are mainly mechanical parts for the reactor, sources, safety upgrades, studies and calculations etc. They are set at an average of 4.2 MEUR spent per Year over the period 2020-2029.

A specific project for the **Reinforcement of Physical Protection (RPP)** is progressing with the construction of building who began at the end of 2019. The second phase of the project represents an estimated spent of 7 MEUR until 2023.

Market survey / Industrial policy

The Institut Max von Laue-Paul Langevin (ILL) provides industrial users with privileged access to a very broad and world-leading array of highly specialised neutron instruments, supported by the expertise of experienced scientific and technical staff. You can see all the contacts on the [ILL internet website](#).

Industrial database

As of Today, there is no dedicated supplier portal and/or database. By January 2021 we will implement an E-Bidding platform where companies should be registered.

Procurement modalities

The ILL purchases equipment and services in compliance with its procurement rules.

ILL's procurement procedures are selective and its invitations to tender and price enquiry documents are designed to guarantee fair competition. Contracts and orders will be awarded to the firm whose bid meets the technical, financial and delivery requirements and represents the best value for money.

It is the Purchasing Service's main mission to manage the ILL's business with its suppliers, ensuring that its contracts and purchasing procedures guarantee both quality and overall compliance

All the information regarding the procurement modalities, process, choice criteria's can be seen on the [internet website](#).

Procurement process

Until Mid-2021, the main opportunities are communicated through the ILL ILO's. The ILL is currently developing an E-procurement platform and we plan to publish, in respect to our purchasing rules, part of our future opportunities through our internet website after mid-2021.

IPR policy

In the aim of the Industrial R&D at the ILL, we offer different modes of access depending on the level of confidentiality the industrial client requires.

For more information please refer to [working together](#) section of our webpage.

Role of ILOs

Industrial Liaison are appointed by ILL's Member States to facilitate the flow of communication between ILL and its suppliers. ILO's can provide advice on the opportunities available for doing business with ILL and they have access to all the available call to tenders. They are the main entry point for doing business with the ILL.

PROCUREMENT AREAS 2020-2024

The main areas of procurement for the next 5 years are:

In regard to our project **Reinforcement of Physical Protection (RPP)**:

- Complex civil construction, safety-important buildings
- Safety systems, Licensing and Protection of hazardous installations, access control, fire and gas detection

In regard to our **Endurance project**:

- High Precision: manufacturing and assembly
- Cryogenic technology
- Vacuum & Leak Detection Technologies
- Diagnostics, Detectors and Instruments
- Instrumentation & Control and CODAC

In regard to our project **Key Reactor Components**:

- Large mechanical components: manufacturing and assembly
- Vacuum & Leak Detection Technologies
- Electrical, Electromechanical

SMEs

We do not adapt our procurement rules to attract the SME as we are mainly working with SME.

TECHNOLOGY TRANSFER

The ILL has no specific department in charge of technology transfer. Nevertheless, on a case-by-case basis, depending on the opportunities, we develop small technology transfer projects.

As an example, ILL has developed specific Preamplifier for the electronic of the instruments in collaboration with an Italian supplier (CAEN Spa). This electronic is strictly linked to experiments or new facilities. We granted the supplier with a licence on the design of the preamplifier. Therefore, they were able to propose a solution for this specific Market.

A few example of collaborations are presented on the [internet website](#) (case studies):



Credit: SKA Organisation

Square Kilometre Array (SKA)

ABOUT

[The Square Kilometre Array](#), a next-generation radio telescope, will change the way humanity views the Universe. Building on 70 years of radio astronomy developments, astronomers and engineers are preparing to construct what will be the largest scientific instrument on the planet.

The SKA will be built in Australia and South Africa by a global collaboration of nations, but with a significant and growing European core.

PROCUREMENT

Budget 2020-2024

Construction is planned to start in 2021. Over the period 2021-2024, SKA plans to commit around 600 MEURO for procurement across a number of categories including significant infrastructure in the two host countries.

Market survey / Industrial policy

All procurement activities undertaken by the SKA will be based on the core principles of fair work return for the contributing member nations, equality, transparency and competitiveness.

The SKA Observatory will engage with industry directly and via its own network of industrial liaison officers (ILO). The SKA ILO network will be given prior notice of all significant contract opportunities as part of the SKA's market survey strategy.

After the ILO network has been informed, all significant contract opportunities will be advertised on a

dedicated procurement web portal which will be launched in early 2021. Any specific tendering restrictions will be highlighted alongside each contract opportunity.

Industrial database

The SKA intends to pre-qualify all potential tenderers before they are invited to tender. The SKA will actively create and maintain a database of qualified suppliers and intends to carry out periodical monitoring and review of all active supplier performance.

Potential suppliers will be invited to register interest in all significant contract opportunities as part of the market survey process. Communications will primarily be through the ILO network.

Procurement modalities

A significant volume of work associated with the construction of SKA-1 has been pre-allocated to those member countries that are historically invested in the SKA project.

A consequence of these allocations is that a significant number of SKA-1 competitive tender opportunities will be restricted to suppliers from pre-defined SKA member countries.

Where tender opportunities are restricted in this manner it will be clearly noted on the SKA procurement web portal.

Further restrictions may be implemented as procurement proceeds, in order to adjust fair work return.

Procurement process

The SKA Observatory is an international organisation established by convention and external regulations, such as the European public sector procurement rules, do not apply. The SKA Observatory procurement process is typical of other similar organisations insofar as restricted competitive tendering is our preferred route to market.

The SKA intends to leverage competition within the constraints of fair work return. Contract opportunities will be promoted through the SKA ILO network and advertised on the SKA procurement web portal. All new suppliers wanting to tender will need to register and subsequently pre-qualify.

Funding

The construction of SKA-1 is funded by both cash and in-kind contributions by member countries. However, all members are required to provide a minimum contribution as cash.

There are defined work-packages that have been identified by our internal risk management process as being more suitable for delivery as in-kind contributions and others that have been identified as more suitable for delivered as cash contracts. At this stage our intention is to advertise only cash-contract opportunities on the SKA procurement web portal.

Member states will procure their in-kind contributions under their own rules and regulations with a few exceptions where the competition and subsequent contract management will be by the SKAO.

Eligibility criteria

The SKA Observatory is committed to the delivery of an appropriate industrial return on the investments being made by its member countries. The SKA Observatory has developed specific procurement strategies, methodologies and tools that should deliver on individual member's industrial aspirations for the SKA project.

Evaluation criteria

Subject to the overriding fair work return considerations, the SKA Observatory will make contract awards to suppliers that offer the 'most economically advantageous tender', i.e. best overall value for money.

Best value for money will be evaluated against various pre-defined criteria such as quality, price, total cost of ownership, lowest environmental impact etc. Evaluation criteria and weightings will always be specified within SKA tender documentation.

IPR policy

The SKA Observatory has an Intellectual Property Policy It can be summarised as follows:

Contributors to the development, construction and operations licence the necessary IP to the Observatory. Foreground IP developed in the course of the contribution is licenced freely, and background IP is licenced under pre-agreed terms, largely agreed during the design process.

There are special provisions which allow other contributors to obtain licences to Foreground IP.

Foreground and Background IP is protected in such a way as to allow procurement, construction and operations without unnecessary disclosure.

Role of ILOs

The SKA Observatory is reliant on its ILO network to generate interest from suppliers in working with the SKA Observatory and generate interest in specific contract opportunities.

PROCUREMENT AREAS 2020-2024

Procurement for SKA construction will start in 2021. Initial procurements will be in infrastructure, including buildings with specialist fitments such as RFI shielding. Later in the seven-year construction programme, large volume invitations to tender will be published in the areas of Detectors, Sensors and Instruments (A3); High Precision and Large Mechanical Components (C1); and Cryogenic and Vacuum technology (C3). Later, the necessary procurements for HPC (A4) will take place.

SMEs

The SKA Observatory encourages bids and proposals from SMEs and will make its tender processes SME friendly. There is not yet a formal policy on attributing special status to SMEs but this is under consideration. As with most research infrastructures, a significant proportion of SKAO procurement will be highly specialist and from markets where SMEs predominate.

TECHNOLOGY TRANSFER

Radio astronomy is well known for examples of technology transfer, Wi-Fi being a major example. Many of the member state stakeholders are motivated in their SKA participation by the prospects of technology transfer, and the Intellectual Property Policy alluded to above has provisions for this. Being early in the establishment of the SKA Observatory as an International organisation, the initiation of a technology transfer programme has not yet been timetabled.

Industry Liaison Officers and similar

An easy way to approach the Big Science organisations and obtain information about upcoming procurements is via Big Science Industry Liaison Officers (ILO) or similar (e.g. purchasing advisers). These are available in many countries and work with communicating the calls and procurement procedures on behalf of the Big Science organisations based on country membership.

- CERN: <http://procurement.web.cern.ch/en/who-to-contact-in-your-country>
- ESO: [https://www.eso.org/public/industry/cp/docs/ILO Contact_details.html](https://www.eso.org/public/industry/cp/docs/ILO>Contact_details.html)
- ESRF: <https://www.esrf.eu/Industry/contact-industrial-services>
- ESS: <https://europenspallationsource.se/ilo-partner-countries>
- European XFEL: https://www.xfel.eu/organization/industrial_liaison/index_eng.html
- FAIR: <https://fair-center.eu/fair-gmbh/in-kind-procurement/industry-liaison-officers.html>
- F4E: https://industryportal.f4e.europa.eu/ip_pages/ilocorner.aspx
- ILL: <https://www.ill.eu/neutrons-for-society/doing-business-with-the-ill/>
- SKA: <https://www.skatelescope.org/ska-industry/>