What is ESA?

The European Space Agency (ESA), composed of 15 member states\(^1\), shapes the common vision of these members, defines the strategies needed to fulfil this vision, and develops collaborative projects and space ventures in all areas of space research and their applications.

About 90\% of ESA’s budget is spent on contracts with the European industry, mainly for research and development activities. In Europe, the space industry employs 40,000 people directly, and about 250,000 indirectly.

The companies involved in ESA’s activities fall mainly into two categories:

- Prime contractors, mainly acting as system integrators, and
- A wide range of companies, including subsidiaries of "primes", independent equipment suppliers, small system integrators, fully independent small and medium-sized enterprises (SMEs), R&D institutions, etc.

\(^1\) ESA Member States are: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom. Canada participates in a number of ESA programmes under a cooperation agreement.
What is an SME?

In order to be an SME, enterprises must meet all of the following three criteria:

- **Number of employees**: fewer than 250
- **An annual turnover** not exceeding 40 million Euros, or an annual balance sheet total not exceeding 27 million Euros
- **Independence**: less than 25% of the capital or the voting rights held by enterprises that are not themselves SMEs.

This definition has been revised by the Commission in order to reflect economic developments, but the new definition will only come into force from January 2005. If you are uncertain whether your company meets this definition, you can request the SME Annex Form from the SME Unit (E-mail: SME-UNIT@esa.int), and return the completed form to the same address. The SME Unit will study your data and provide you with an answer.

In reply, ESA has set up the **SME Initiative**, comprising a whole set of measures with the matching aims of enabling ESA and the European space industry to tap into the potential of leading SMEs, and open up opportunities for them to work more intensively with ESA and space contractors.

The **SME Initiative** strives to make the best possible use of the wealth of technologies and expertise that European SMEs can offer, for the benefit of the space sector as a whole. The innovation drive of this category of companies, their flexibility and their high degree of specialisation, make them invaluable partners for all space projects.

ESA strives to ensure that industry has fair and balanced access to its activities. ESA also strives to maintain the expertise needed to develop space programmes distributed in a complementary way between these categories. Ideas for action along these lines began to take shape in the course of preparation for the March 1997 ESA Council meeting at ministerial level. At that Council, the ministers called upon the Director General of ESA to reserve a special place for SMEs, to guarantee them a share in the Agency’s technological activities, and to facilitate their access to technical facilities and tools.

The brochure is illustrated with photographs taken on the premises of a group of European SMEs randomly selected in different European member states, and representing different areas of activity of the Agency: Bradford (NL), Cedrat (F), Inasmet (E), Media-Lario (I), vHS (D) and Verhaert (B).

ESA appreciates the cooperation of these SMEs and their management in showing their facilities, their developments and the expertise of their staff. This brochure provides the keys SMEs need to benefit from the measures being taken by ESA on their behalf, and welcomes them as partners in innovation.
This programme has also set up a "User Support Office (USO)" as a contact point for SMEs and start-ups wishing to work with ESA in the fast-moving satellite communications sector. The USO facilitates the access of new entrants to ESA's research and development in this field, helps them during the course of their projects, and provides assistance for subsequent market development. It also provides information and training on current SATCOM technologies. Document templates and software tools are also available to assist with project management. This USO liaises with the SME Unit of ESA, but an up-to-date portfolio of services and facilities offered by the USO is accessible online, at the following web address: www.telecom.esa.int.

In addition to the measures of the so-called "SME Initiative" further detailed in this brochure, most of the ESA programmes are open to the industrial policy elaborated within the Directorate of Industrial Matter and Technology Programmes (D/IMT) on behalf of SMEs, and are making an important effort to involve SMEs in their activities. To illustrate the endeavours of some of the Programmes, a few examples taken from their previous work plans are given below.

**Technology Research Programme (TRP)**
This programme makes a major contribution to ESA efforts on behalf of SMEs, and employs various means to fund activity proposals originating from SMEs:

- Through its Transfer of Technology Programme (TTP)
- By issuing specific Announcements of Opportunities regarding innovation, where part of the budget is reserved for SMEs
- By contributing to the LET-SME programme budget to foster the spin-in of technologies developed by SME.

**ARTES 5 Programme:**
This optional element of the Telecom and Navigation Programme is making an important contribution with its SATCOM initiative tailored to encourage SMEs and Start-ups, to develop and consolidate businesses in the field of telecom. A first call for ideas was issued in September 2001, and a second one in May 2002. Each of them resulted in a wealth of good proposals from SMEs.

**General Study Programme**
One of the elements of the Aurora programme, dedicated to European Options for Exploration Missions issued in 2002, was reserved for Nan-primes, with priority given to SMEs, and resulted in many proposals originating from SMEs.

To benefit from the efforts ESA directs towards SMEs, you are therefore invited to review the annual announcements of opportunities yourself:

- Make sure you are registered on the "List of SMEs working with ESA", which you can access via EMITS (see last page of this brochure for access to EMITS)
- Review EMITS on a regular basis, and reply to the Announcement of Opportunities (AOs) or Calls for Ideas published for your attention.

Calibrating the high-voltage converters of the COSIMA eXchange Model instrument in the cleanroom, Von Hoerner & Sulger (vH&S) GmbH - Germany

Discussing the wiring of the target manipulator unit of the COSIMA Engineering Verification Model instrument, Von Hoerner & Sulger (vH&S) GmbH - Germany

### ESA programmes’ efforts on behalf of SMEs

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Announcements of Opportunities for Innovation

As part of its Technology Research Programme, ESA regularly issues an Announcement of Opportunity calling for proposals on "Innovation", where a good part of the budget is reserved for proposals originating from SMEs.

Every year, a certain number of technical fields corresponding to the potential needs of ESA programmes are identified, and form the basis for the LET-SME or the "Innovation" dedicated Announcements of Opportunities (AOs).

Subject to selection after evaluation of your proposal, contracts worth up to a maximum of 200,000 Euros per study can be awarded for periods of 12 to 18 months.

How to enable your technologies to be spun into the space sector

- Make sure you are registered on the "List of SMEs working with ESA" which you can access via EMITS (see last page of this brochure for access to EMITS).
- Take every opportunity to reply to the Announcement of Opportunities (AOs) published by ESA for your attention. These AOs are normally published around June each year, but as this may vary, you are invited to review EMITS on a regular basis.
- Submit proposals in reply to these AOs, and for the technical fields specified.

CALLS TO BOOST LEADING-EDGE TECHNOLOGIES

LET-SME Programme:

An important part of the ESA SME Initiative helps SMEs that possess leading-edge technologies to spin them into ESA programmes, whenever these technologies have a potential use in space. For this purpose, a special programme called LET-SME (Leading-Edge Technology – Small & Medium-sized Enterprises) has been set up.

The LET-SME programme enables SMEs to develop and demonstrate the applicability of their technologies by providing funding for the following typical activities:

- Feasibility studies
- H/W and/or S/W adaptation and customisation for specific space applications
- Validation by testing and demonstrations, etc.

Another aim of LET-SME is to foster innovation through cooperation between SMEs and research organisations, and to encourage the spin-in of new space concepts, processes and technologies.
Special treatment for SMEs in ESA invitations to tender

To guarantee SMEs a share of its technology programmes, ESA applies a certain number of clauses in its procurement policy for some of its Research & Development (R&D) activities. These clauses numbered C1 to C4, all benefit SMEs, and are applied to activities issued in open competition, and concerning activities aimed at developing technology, equipment, components or instruments, and where expertise exists with Equipment Suppliers and/or SMEs. They are defined as follows:

C1: Activities Reserved to Non-Primes and SMEs

Only non-Primes2 (including SMEs) are invited to bid as main contractors for activities subject to C1. Participation of major primes is only possible as subcontractors, and provided:
* The technical expertise brought by the "major prime" is essential for the proposal; and
* The tasks assigned to such a "major prime" do not constitute the core activities of the proposed development, and the non-prime retains the key capabilities to develop and produce the equipment.

C2: Activities subject to Subcontracting Clause in favour of non-primes and SMEs

The purpose of this measure is to encourage enhanced industrial co-operation between the major primes and other companies since the technology inception phase. The activities subject to C2 are open to all potential bidders, but whenever a major system integrator makes a bid, he is required to team-up with other companies for an appropriate share of the work. In case offers of equivalent technical quality are received, preference will be given to those proposals containing a more relevant participation of non-primes, in terms of quality and quantity.

C3: Activities restricted to SMEs and R&D Organisations

The main purpose of this clause is to foster co-operation between SMEs and Research organisations, and is applied to technology activities where expertise is known to be available in these types of organisations. Clause C3 also aims to target innovation and the injection of new ideas and concepts into the space sector.

C4: Activities with Subcontracting Clause to SMEs only

This clause is equivalent to C2, but subcontracting is limited to SMEs. It applies to activities issued in open competition for some R&D activities which are selected for their leading nature. The aim of this clause is to encourage bidders to identify innovative SMEs capable of bringing an added value to the activity in question.

How to ensure your participation in ESA programmes

• Review EMITS ITTs regularly and identify activities subject to one of these clauses.
• Communicate your interest via EMITS in participating in the corresponding ITTs.
• Contact potential partners identified via EMITS.
• Respond to Invitations to tender announced via EMITS.

2 Non-primes are defined as all companies and organisations, with the exception of the major system level prime companies, namely Astrium, Alcatel & Alenia Spazio.
In addition to the efforts made by ESA under its Technology Transfer Programme (TTP), the SME Initiative acts as a lever and encourages other ESA Directorates to issue calls reserved to SMEs, dedicated to the spin-off and dissemination of technologies developed for space. For example, the Directorate of Earth Observation has recently issued Announcements of Opportunities calling for innovation and added value proposals, in order to foster applications and ground use of services and products developed for space.

Through the ESA training programme, SMEs can also be trained in industrialisation, marketing, and finance raising processes.

The SME Unit also funds different enabling actions to help SMEs elaborate proposals for the different European Commission Announcements of Opportunities such as the one for the CRAFT Programme, etc. The last action funded was the LOSTESC project, whose aim was to help European SMEs to raise the funds necessary for the validation of technologies they initially developed either for space or for aeronautics.

**Support for SMEs Diversification**

Diversification of activities obviates the risk of over-dependence on a single market or customer, and SMEs are encouraged to find new applications for the technologies they have developed for space, in order to broaden their market basis.

**How to explore new markets for your space technologies**

- Make sure you are registered as an SME with ESA.
- Regularly check the ESA Industry Portal for announcements.
- Check the Estec Conference Bureau Web for Training: http://www.estec.esa.nl/conferences
- Consult EMITS for ITTs where calls for proposals from SMEs are announced.
Training and Technical Assistance

To enable SMEs to participate in space activities and help them understand some of its specific requirements, ESA has set up a programme of training courses reserved for SMEs, and tailored to guide them through the complex maze of space technology and its administrative regulations.

Small and Medium-Sized Enterprises wishing to participate in space activities have to face a dual challenge: the highly complex technical requirements posed by space projects, as well as their contractual and administrative regulations. The technical complexity is due to the fact that space developments require special engineering procedures and careful selection of technologies to cope with space flight conditions and constraints.

The courses are given in English for groups of 25 to 30 persons, as lectures, case studies and practical exercises in different subjects. They are given at ESTEC, ESA’s technical centre in Noordwijk (the Netherlands), and are suited not only for SMEs working in the space sector - or interested in doing so - but also for those seeking to acquire expertise needed for the industrialisation processes.

The type and content of the Training Courses are defined and announced each year, depending on the needs and requests received from SMEs. Typical courses proposed by ESA so far are:

• Quality assurance
• Materials and Processes
• Payload Safety
• Configuration management
• Ways to Finance leading Projects
• Writing A Good Technical Proposal for an ESA ITT
• Software Engineering and ECSS (40 & 80)
• Space Component Engineering and Procurement

In addition to these Courses, SMEs may send requests for specific technical assistance to the SME UNIT, which will be given to their company by an ESA expert. The SMEs are invited to describe the problem or subject they need assistance with, and send it to the SME Unit. The request will be studied, and a reply will be given on whether or not assistance from an ESA expert is possible.

How to acquire expertise and skills, and become a full partner in the space sector

• Make sure you are registered as an SME with ESA to receive the training announcements.
• Regularly check the ESA Industry Portal for announcements.
• Check the Estec Conference Web for Training courses: [http://www.estec.esa.nl/conferences](http://www.estec.esa.nl/conferences)
• Define your needs in terms of training courses and forward them to the SME Unit.
• Define your needs in terms of technical assistance and forward them to the SME Unit.
Forums and Information Networks

Industry Space Days (ISDs)
A good network is central to a company’s success. Every two years, the European Space Agency organises its successful Industry Space Days (ISD). The event is an opportunity for SMEs and other space companies to have pre-planned meetings with a number of interlocutors (ten a day, on average), to discuss subjects of interest to them, attend conferences and workshops, and also to show their technologies to potential partners. During two (2) days, SMEs can establish valuable contacts with large contractors, ESA experts, and representatives of national space agencies. The ISDs are:

- An efficient way to establish new contacts: a small company has little opportunity to make new contacts. The ISDs guarantee SMEs many meetings, allowing them to present their skills and products to others, and give them the opportunity to build new business partnerships.

- An Agora for R&D and Innovation: due to the quality of the participants, the ISDs represent the best place to find leading technologies. They are the place where technology programmes and work opportunities for ESA and its major partners are presented, and where interested companies propose workshops on top technologies of interest to them.

- A Time Saving and an efficient Communication Tool: according to SMEs’ experience, the 2 days can represent the equivalent of four years of communication effort. An SME can make hundreds of contacts and have the opportunity for initiating co-operation, and obtaining information on many subjects. The concept of multi pre-arranged rendez-vous used by the ISD is new, modern, and fulfils the needs of all companies.

- A market for Technologies, Skills and Products: Companies have numerous opportunities to meet, present their products and skills, and to discuss their marketing perspectives.

The ISDs are the event an SME should not miss. In 2001, some 300 companies participated, totalling nearly 650 attendees, and resulted in more than 2000 pre-arranged meetings between the participants. They were also the occasion for some 30 Conferences, 12 Workshops, and a large technology exhibition.

How to establish new links and stay aware of new work opportunities
- Make sure you are registered as an SME with ESA to receive The ISD Invitations.
- Check the Estec Conference Web for the ISD: http://www.estec.esa.nl/conferences
- Register as soon as the ISDs are announced, and communicate your choice of meetings etc.
Access to ESA Facilities and Laboratories

As part of the ESA SME Initiative, ESA makes every effort to facilitate the access of SMEs to its facilities and laboratories in order to help them develop their technologies. For example, only the so-called “Marginal Costs” will be charged to SMEs (no overheads) for the activity they need.

The European Space Agency has around 30 laboratories and 10 specialised test facilities in the following main areas:

- Electronics
- Mechanical Engineering
- Heat Engineering
- Optics
- Testing and Validation

The descriptions of the available facilities, their technical specifications and capabilities, as well as the conditions of access are given under Estec Web site at: [http://www.estec.esa.nl/pr/facilities/](http://www.estec.esa.nl/pr/facilities/) for the test facilities, and at: [http://labs.esa.int/](http://labs.esa.int/) for the laboratories.

How to improve your standards and open doors to your technology

- Review the specification of the facilities and laboratories through the web sites quoted above.
- Contact the responsible person and ask for more details or a quotation.
EMITS: http://emits.esa.int/
EMITS (Electronic Mail Invitation to Tender System) is the ESA On-line information system about ESA procurements: it contains all the invitations to tender (ITTs) issued as competitive bids. Access to EMITS and to the details of ITTs requires a password. To obtain a password, apply for registration at the following address: IDHELP@esrin.esa.int

ESA Industry Portal:
http://www.esa.int/industry
The ESA Industry Portal is designed to give information on ESA and its various activities, as well as news and corporate data on subjects of interest to Industry. You will also find various databases where companies present their expertise and their products, and links to ESA Programmes or other organisations of interest to SMEs.

SME Co-ordination Unit
In case you need further clarification on one of the elements contained in this brochure, or you want to have your company registered in the ESA SME Directory "List of SMEs working with ESA", direct your query to ESA SME UNIT, or request the corresponding registration form through Email to: SME-UNIT@esa.int

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THE ESA SME INITIATIVE
SMALL AND MEDIUM-SIZED ENTERPRISES

The SME Initiative strives for the best possible use of the wealth of technologies and expertise that European SMEs can offer

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