

Opportunities For Industry To Take Part In Europe's Spaceport Activities

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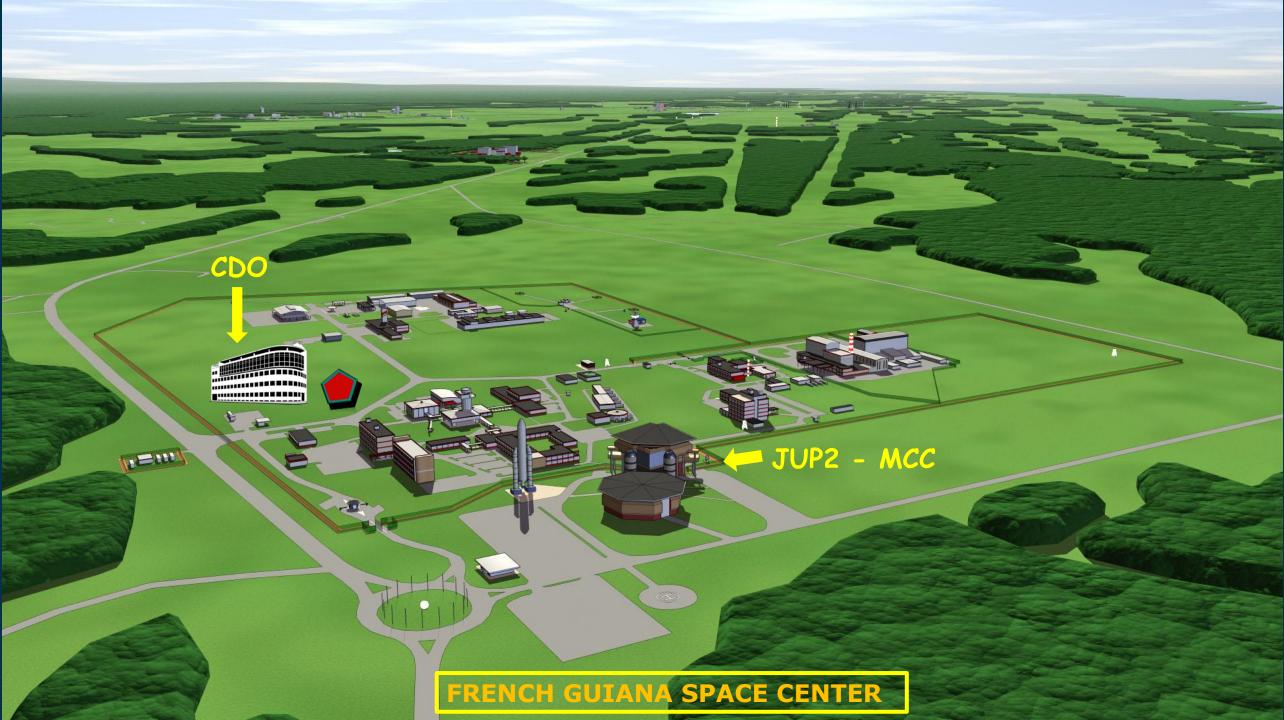
Introduction & Context: Centre Spatial Guyanais (CSG)



- The "Centre Spatial Guyanais", also known as **CSG**, is **Europe's Spaceport** and guarantees independent, reliable and competitive access to space for Europe. The Spaceport is in operation since 1968.
- The Spaceport is located very close to the equator in French Guyana, providing unparalleled advantages to facilitate launch and mission operations.
- Currently three launch vehicles are flown from the Spaceport:
 - Ariane 5
 - Vega
 - Soyuz
- The upcoming arrival of two new launch vehicles, Ariane 6 and Vega-C, will further increase performance and versatility of the Spaceport
- While those activities related to the preparation and management of launch operations are the most visible, none of it would be possible without the physical infrastructure that supports it.







Short Term Tendering Activities



Launch Range Renewal program currently ongoing tendering actions.

Activities	Status of the ITT process
20.CSGK.035 - Enhancement of the Spaceport 20kV network	Call for application stage is closed. Response to tender documents is under process
20.CSGK.034 - Renewal of the air cooling system at Payload processing facility EPCU S5	Call for application stage is closed. Response to tender documents is under process
20.CSGK.032 - Deployment of 5MWc Solar power field	Call for application stage is closed. Response to tender documents is under process
"Operations Centre IT systems I-CDO" project 20.CSGT.015 - Data-centers platform merged with following ITTs: 20.CSGT.019 - Operational Software evolution (CDO-BLA project) 20.CSGT.018 - Missions Operations Centre - remote management capacity on existing systems 20.CSGT.017 - Missions Operations Centre - network	Call for application stage under assessment by CNES
20.CSGT.003 - SNT project ("Socle Numérique Transverse")	Call for application stage under assessment by CNES
20.CSGT.008 - Renewal of the drinkable water network	Call for application stage is closed. Tender documents are under process

Mid Term Tendering Activities (1/2)



Core Launch Range Renewal program foreseen tendering actions.

Activities	Estimated ITT publication date
CLRR - Missions Operations Centre construction activities	
20.CSGT.021 CLRR - Missions Operations Centre construction - HVAC activities batch	1st semester of 2022
20.CSGT.020 CLRR - Missions Operations Centre construction - Energy activities batch	1st semester of 2022
20.CSGT.013 CLRR - Mission Operations Centre construction - Low current and security batch	1st semester of 2022
20.CSGT.012 CLRR - Mission Operations Centre construction - roads and miscellaneous networks batch	TBD
20.CSGT.011 CLRR - Mission Operations Centre construction -structural frame and building activities	4th quarter of 2021
20.CSGT.010 CLRR - Mission Operations Centre construction -Carpentry batch	1st semester of 2022
20.CSGT.016 CLRR - Missions Operations Centre - meteorological system	TBD
20.CSGT.006 CLRR - Power supply engines alternative	1st semester of 2022 (Proof of concept)
20.CSGT.007 CLRR - Refurbishment of the hot and chilled water supply network at the Technical Centre	1st quarter of 2022
20.CSGT.014 CLRR - Evolution of digital network infrastructure at CSG	TBD
20.CSGT.002 CLRR - Procurement of Optical Fibers for the digital network at CSG	TBD

Mid Term Tendering Activities (2/2)



Extraordinary Maintenance foreseen tendering actions.

Activities	Estimated ITT publication date
Optics and Video	
Digital Cameras	TBD
Meteo	
SAMM Wind Data Acquisition System	2nd quarter of 2022
THOR Thunderbolt Impact System	4th quarter of 2022
Telecommunication	
IP-based Telephone Network	TBD
Transmission on optical fiber STFO New Generation	3rd quarter of 2022
Manioc audio links system	3rd quarter of 2023
Localisation	
Renewal of TSAR neutralization station	3rd quarter of 2022
Technical Facilities	
Air conditioning regulation system	TBD
Low voltage distribution board	TBD
Payload Preparation	
S5 Payload Preparation Facility cranes	2nd quarter of 2022
Storage hall	2nd quarter of 2022
Safety Means	
Flight Safety Tools obsolescence treatment	3rd quarter of 2022

Long Term Foreseen Tendering Activities (1/2)



Mid/long term activities foreseen for industry wrt CSG Launch Range.

1. Industrial contracts for Launch Range exploitation

- Ordinary maintenance and operations
- See details on next slides

2. Potential Spaceport improvement measures under consideration

The following potential improvements & evolutions to enhance Europe's Spaceport are currently being considered, and which will require approval at the next ESA ministerial:

- Digitalisation
- Green implementation of the spaceport
- Energy

Long Term Foreseen Tendering Activities (2/2)



Industrial Contracts for exploitation (Ordinary Maintenance and Operations)

The list of industrial service contracts resulting from the competitive tendering process carried out in 2017 and in place during the period 2018-2022 (and extended for 1 year until 2023) is the following:

- Planning and coordination
- Safety and environment
- Regulatory controls
- Quality Assurance and RAMS, documentation and archive
- Optics and video
- Telecommunication and synchronisation
- Tracking and meteorology
- Neutralisation
- Telemetry
- Corporate informatics
- Chemical analysis laboratory
- Gas detection
- Physical tests laboratory:
 - Operations
 - Maintenance

- Payload processing facilities (EPCU)
- Individual protection equipment (EPI)
- Technical design office
- Security and safety systems
- Power supply
- Air conditioning
- Transportation
- Logistics
- Domain up-keeping
- Site surveillance and security
- Visits

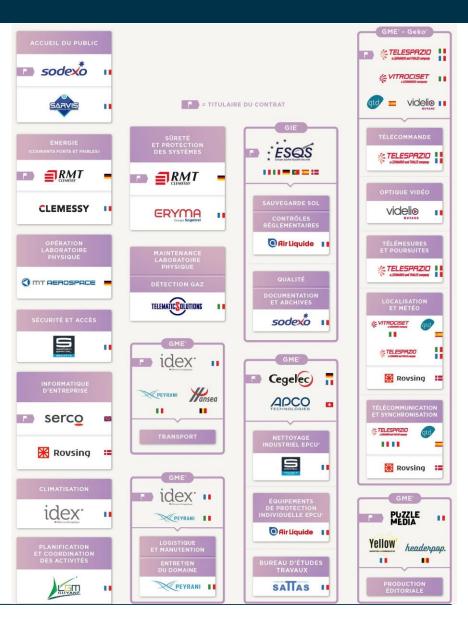
CSG Launch Range: Current Industrial Landscape



The current Launch Range operational & maintenance activities here (ordinary maintenance and operations) as well as the companies currently performing them can be found to the right.

Additionally this infographic may be found at:

https://centrespatialguyanais.cnes.fr/fr/centre-spatial-guyanais/acteurs/partenaires





Published IITT Details

Currently Published IITTs



Currently published IITTs for the industrial service contracts outlined in this presentation are listed here.

- 22.CSGT.014 Electronics, Electrotechnology, RF
- 22.CSGT.015 Energy, Air Conditioning, Water and Infrastructure maintenance
- 22.CSGT.016 Safety Security systems, Environment, Ground safety, Workplace safety
- 22.CSGT.018 Information technology Telecommunications/corporate IT, video
- 22.CSGT.019 Operational and Real Time IT
- **22.CSGT.020** Quality & RAMS (Reliability, Availability, Maintainability and Safety)
- 22.CSGT.021 CNES-CSG Logistics
- 22.CSGT.022 Operations Planning and Coordination
- 22.CSGT.023 Engineering Services
- 22.CSGT.024 Public Visits

These IITTs can be found on the esa-star tendering platform, located here: https://doing-business.sso.esa.int/

22.CSGT.014: Electronics, Electrotechnology, RF, Sensors



The "Electronic, Electrotechnology, RF, Sensors" activity is part of the operational and/or permanent functional tasks of the CNES/CSG. The chosen Contractor will provide the CNES/CSG with maintenance (preventive, corrective and ongoing) and operational services within the scope of the following resources:

The chosen contractor will provide technical office support to the CNES/CSG covering the entire scope of the contract, including in addition to the resources already mentioned, the Ascension (Atlantic), Natal (Brazil), Malindi (Kenya), St Hubert or Gatineau (Canada), New Norcia (Australia) and Santa Maria (Azores) tracking stations.

- 5 tracking RADARS installed in Kourou and St Jean du Maroni.
- 2 weather radars as well as meteorological parameter measurement facilities (weather stations, field mills, radiosonde stations) installed in Kourou.
- 2 remote launcher neutralisation stations including antennas TSAR station (a directional antenna and omnidirectional antennas), one installed at the CSG and the other transportable and installed in St Jean du Maroni.
- 4 launcher tracking stations including one in French Guiana at the CSG (with 2 antennas/tracking systems/TeleMetryMT receiving systems); one in St Jean du Maroni or St Georges de l'Oyapock in French Guiana (with 1 antenna/tracking system/TeleMetryMT receiving system transportable); one in Libreville, Gabon (with 1 antenna/tracking system/TeleMetryMT receiving system); and one in Bermuda (with one antenna/tracking system/MT receiving system).
- different mobile telemetry equipment (1 transportable and naval station stored in metropolitan France, 1 transportable antenna with its tracking system stored in Kourou, telemetry receiving kits, transportable and installed in foreign stations upon request).
- satellite tracking stations installed in French Guiana and in Libreville.

Within this framework, the contractor will be responsible for calibrating measuring devices at the sites at which their teams will be located.

The chosen contractor will provide level 1 technical support to the CNES/CSG on EGNOS navigation aid equipment installed in Kourou.

The chosen Contractor will provide the CNES/CSG with maintenance (preventive, corrective and ongoing) services for detection equipments and altitude and surface measurement systems.

The chosen Contractor will provide obsolescence management to the CNES/CSG but also ensure a technology watch for these systems. The chosen Contractor will also provide the CNES/CSG with technical and operational services (daily functional checks, weather forecasts, climatology, data extraction and analysis) using the measurement systems mentioned previously as well as data processing, archiving and diffusion systems. The chosen Contractor will be responsible for operating the radiosounding system.

22.CSGT.015: Industrial Site Maintenance



Energy, Air Conditioning and Domain Maintenance activities are part of a global support mission associated with the operational needs of the CSG and the operational activities of the launch base.

The main geographical areas concerned are the Technical Centre, the EPCUs, the external sites (Montagne des Pères, Montabo, Météo, Îles du Salut, Saint-Georges, Saint-Laurent, Diane, Site Galiléo, etc.), and the major networks (energy, water, roads, etc.).

The chosen Contractor will provide the CNES/CSG with maintenance (preventive, corrective and ongoing) and operational and engineering services within the scope of the following resources:

- Energy: HV/LV (CAT1) facilities and grids, 70 backup power generators (CAT2), 60 backup UPS (CAT3), lights, lifts, lightning protection, etc.
- Air conditioning: 17 cold/hot production plants, hydraulic and air distribution networks, 1600 items of interior equipment (air processing units, ventilators-convectors, etc.), 500 electrical/control cabinets, splits/windows, etc.
- Domain maintenance: 150 buildings (structures, facades, roofs, etc.), 300 km of road (roads, runways, car parks, signage, etc.), the entire city water system (80 km) and wastewater treatment facilities, etc.
- Administration and use of remote management data, as well as management of remote management interface architectures with technical production facilities.

22.CSGT.016: Environment, Ground Safety, Workplace Safety • esa



1) Environment and Ground Safety Activity

The "Security systems, Environment, Ground safety, Workplace safety" activity forms part of the operational and/or permanent functional tasks of the CNES/CSG. The Contractor's mission is carried out mainly in the CNES facilities at the CSG.

The mission consists of providing services intended to ensure the protection of people, property and the environment, in the frame of the overall mission of protection of people, property and the environment of CNES / CSG relating to ground activities. The main technical skills required are the following ones:

- Risk analysis of complex systems: pyrotechnic systems, solid and liquid propellant systems, mechanic / electric systems, etc.
- Risk analysis of hazardous activities: propellant tank filling and pressurization, handling payloads/launcher stages, dangerous goods / payload / launcher transportation, etc.
- Labor and environmental regulations, CSG rules and regulations.

2) Workplace Safety Activity

The incumbent entity will be able to carry out on site health and safety of work activities on site. The regulatory security controls will be carried out by an incumbent entity that has been approved by the Minister of labour or equivalent commissioned entity of the French Authority. It will have an expert knowledge of French regulations. They will advise the customer in particular on the use of means and facilities.

The Contract holder will be able to carry out certain health and safety of work activities on site, upon expert reports related to Health Safety Working Conditions.

The Contract holder will lead Safety awareness sessions (in French/English) particularly for hoisting devices and for mini gas supply networks.



22.CSGT.018: Information Technology, Telecommunications / Corporate IT video



Description of Support requirement for Telecommunication and Information Department. The "Telecommunication and Information" Department requires support for several activities:

- 1. Audio/photo/video Maintenance and operation of means to support launch campaigns.
- Video Shooting means (cameras, drones).
- Means of image processing and display.
- Videoconferencing and audio-visual means for meeting rooms.
- Archiving, digitisation and production management equipment for the service.
- Operational interphones.
- RF audio equipment.
- 2. Telecommunication and Networks This activity covers mainly the following systems.
- Internal IP networks and interface with Telecom operators.
- Alarm and maintenance networks, including IoT.
- Internal Telephone network.
- Time supply Intercontinental communications.
- Microwave links.

- 3. Specific computing.
- Support to all systems for computing activities (platform and administration).
- Space base centralised business software (development and maintenance).
- This support will take place as part of the launch operations and the routine activities.

22.CSGT.019: Operational And Real-Time IT



The "Operational and real-time IT" activity forms part of the operational and/or permanent functional tasks of the CNES/CSG.

The chosen Contractor will provide the CNES/CSG with maintenance (preventive, corrective and upgrade) and operational services within the scope of the following resources:

- A redundant real-time and off-line system for processing trajectography data.
- A computer system (Control Centre) allowing the performance and management of tests and operations.
- IT resources dedicated to Flight Safety activity.
- IT resources dedicated to Ground Safety activity.
- Resources for displaying trajectography.
- Weather forecasting tools.
- A software configuration management system.
- A range of test platforms.
- A system for real-time processing of launcher telemetry, installed at the CSG.
- A system for off-line processing of launcher telemetry, installed at the CSG.

The chosen Contractor will ensure the operational deployment of these resources during operations and during the qualification tests of base systems. The chosen Contractor will provide technical office support to the CNES/CSG in respect of the telemetry processing element in Toulouse.

22.CSGT.020: Quality & RAMS (Reliability, Availability, Maintainability and Safety)



The "Quality & RAMS" Department (Reliability, Availability, Maintainability and Safety) requires support for several activities:

- Quality assurance database management (anomalies, modification requests, product management) through a Product Lifecycle Management tool.
- Quality awareness and workshop organisation for Quality purposes (e.g. root cause analysis, functional risks analysis, FMEA, Project management).
- Quality and RAMS trainings for Guiana Space Centre staff.
- RAMS analysis dedicated to the Space Centre ground means.
- Update of the Space Centre RAMS performance data (based on failures), including RAMS tools.
- Quality assurance monitoring for CNES systems and processes.
- CNES/CSG documentation centre management.
- CNES/CSG archives centre management.
- Operational configuration management covering software and hardware on the launch base systems.

22.CSGT.021: CNES-CSG Logistics



The "CNES-CSG Logistics" activity is part of a global support mission linked to the operating needs of the CSG, and to the technical and operational activities of the Launch Base. It includes the organization, coordination, technical management, maintenance, technical and operational implementation of the means necessary for the functioning of CNES/CSG. The successful Contractor(s) will provide these services for CNES/CSG in the following scope:

- Centralized management of the General Warehouse and Reception, packaging, packing, internal CSG and inter-site delivery, handling, dispatch of conventional and secured freight (chargeur connu).
- Management of "Base" furniture (as opposed to "Non-Base" furniture) and Procurement, removal, installation, coordination, management of handling operations.
- Reception, distribution of mail letter and small handling operations on the CSG.
- Preparation, realization and management of customs transit files on site in relation with the CNES forwarding companies (excluding the operational activities of the Transport and RETT assistants).
- Handling of all types of materials and equipment.
- Coordination/management of shuttles to and from Félix-Eboué airport for guests, schoolchildren and VIPs during one-off CNES/CSG visits (interfaces with coach transporters, etc.) and daily visits for the general public.
- Coordination/management of CNES VIP direct transport and the provision and cleaning of cars.

The NATIONAL and INTERNATIONAL TRANSIT services cover operations related to the general functioning of CNES/CSG and to launches and are carried out within the framework

of the missions of the Launch Base. CNES/CSG entrusts the contractor (s) with the mission of organising and executing, or having executed, customs and multimodal transport operations in import and export between the various storage locations on the CNES/CSG site and the rest of the world (controlled and reactive transit network) via the maritime (Dégrad des Cannes, Pariacabo harbors in Kourou) and airport (Cayenne - Félix Éboué Airport) entry points in French Guiana.

The contractor (s) shall carry out all import and export customs formalities at the place of departure or destination as indirect Representative of CNES/CSG for customs clearance operations by receiving its instructions from the CNES/CSG TRANSIT office and shall ensure the advance of funds linked to the fees and taxes on goods.

In French Guiana, the contractor shall draw up monthly global declarations (DCG) integrating the calculation of duties, taxes and fees to be paid to the customs. It takes all steps with the competent authorities (port and airport authorities, DGTM, Prefecture, Gendarmerie, customs, etc.) to obtain the necessary authorisations for operations on public or private roads.

As the CNES/CSG has the "Chargeur Connu" approval, the Contractor must hold the status of Authorised Agent in French Guiana, Toulouse and the Paris airports" and must be authorised by the DGAC as an Authorised Agent for "Cargo Security". All types of miscellaneous or general cargo must be able to be transported individually or in groups; dangerous goods of different classes imported or exported in residual proportions or not by qualified, trained and authorised personnel.

22.CSGT.022: Operations Planning and Coordination



The Operations Planning and Coordination activity is a permanent task which plays a central role in the functioning of the CNES/CSG.

The planning system is interfaced with the office resources via communication networks, allowing users to make planning requests for their activities.

This task, through the Operations Coordination Office (also referred to as BCO), manages the joint activities carried out on the Launch Site. It enables planning of all the activities on the Site and in particular harmonisation of the maintenance activities (MCO: Maintenance in Operational Condition of the technical systems) with the operational activities relating to launch campaigns.

The technical management and system administration of the PLANISWARE software are not the responsibility of the contractor responsible for the Operations Planning and Coordination activity. They are provided on behalf of the CNES/CSG by the provider responsible for the corporate IT activity.

The activities to be planned and coordinated concern all the sites under the responsibility of the CNES, the EPCUs (acronym referring to the Payload Preparation Facilities), the technical centre and the remote operational resources. The planning process also sets the pace for the maintenance or upgrading of "major networks" (eg. NRJ, CLIM, Water).

The planning of activities for which CNES/CSG is responsible must be harmonised and optimised, taking into account the activities of other industrial operators on the Base.

In order to carry out its tasks, the Contractor is required to use the PLANISWARE planning software provided by CNES.

22.CSGT.023: Engineering Services



The on-site Engineering Services activity ("Bureau d'Etudes" in French also referred to as BET) is one of the permanent operational activities of CNES at the Guiana Space Centre.

Note 2: Engineering Services is the entry (delivery) point for descriptive technical documentation coming into the CSG (industrial plans and files).

It is responsible for global engineering support of the technical and operational activities of the launch base, linked to the operational needs of the CSG.

The Contractor must have the necessary skills to integrate new projects in the form of a digital model (BIM/SIG design) and to move towards using this database as a digital repository for configuration management.

- 1. Engineering Services task consisting in preparing the technical files necessary for upgrades to the technical installations entrusted to it.
- 2. project management for the performance and coordination of the work necessary for the implementation and qualification of upgrades.
- 3. topographical surveying and dimensional metrology.
- 4. management, updating (internal and external) and dissemination on request of the plans of the installations configuration-managed by the CNES/CSG.
- 5. archiving and making available on request the industrial files of projects whose operation is outsourced by the CNES.

Note 1: the work carried out within the framework of the above-mentioned services concerns the following technical specialities: energy (high and low voltage and lightning), mechanical engineering, fluids, infrastructure, air-conditioning (including the controllers and/or PLCs of the corresponding systems).

22.CSGT.024: Public Visits



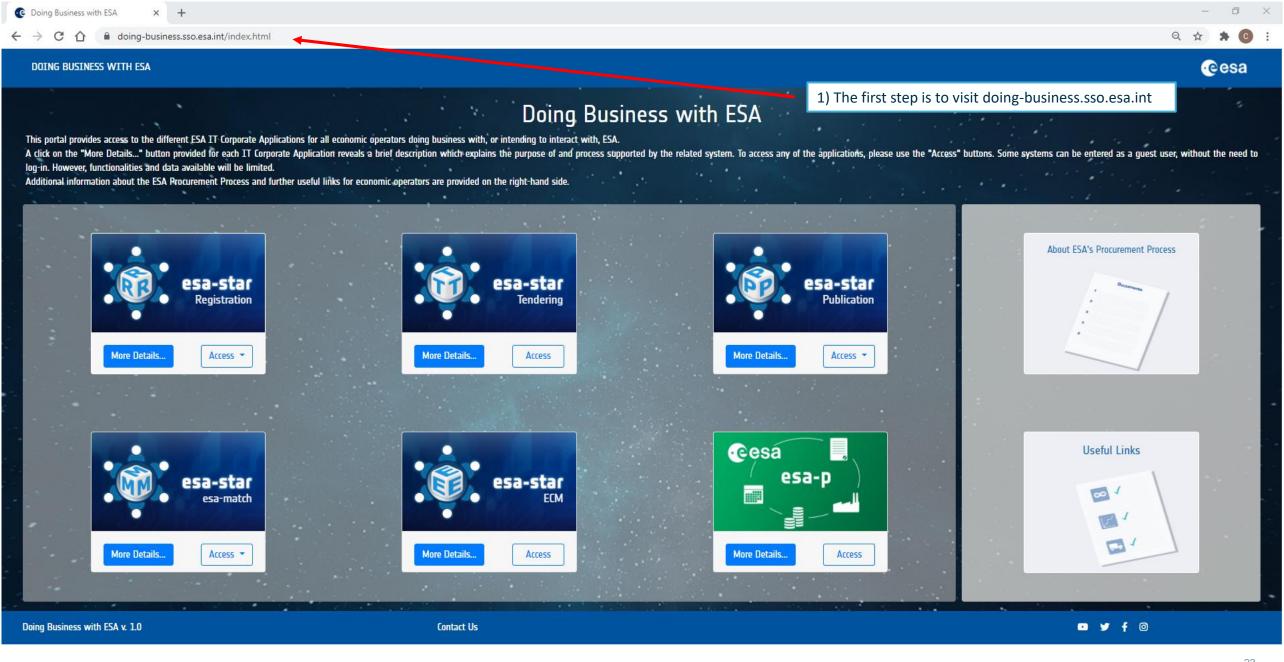
The "public visits" activity is a permanent outreach activity to foster direct contact with all types of visitors (VIPs, general public, school children, journalists) and plays a central role in promoting the image of the Guiana Space Centre, its teams and all those who work there.

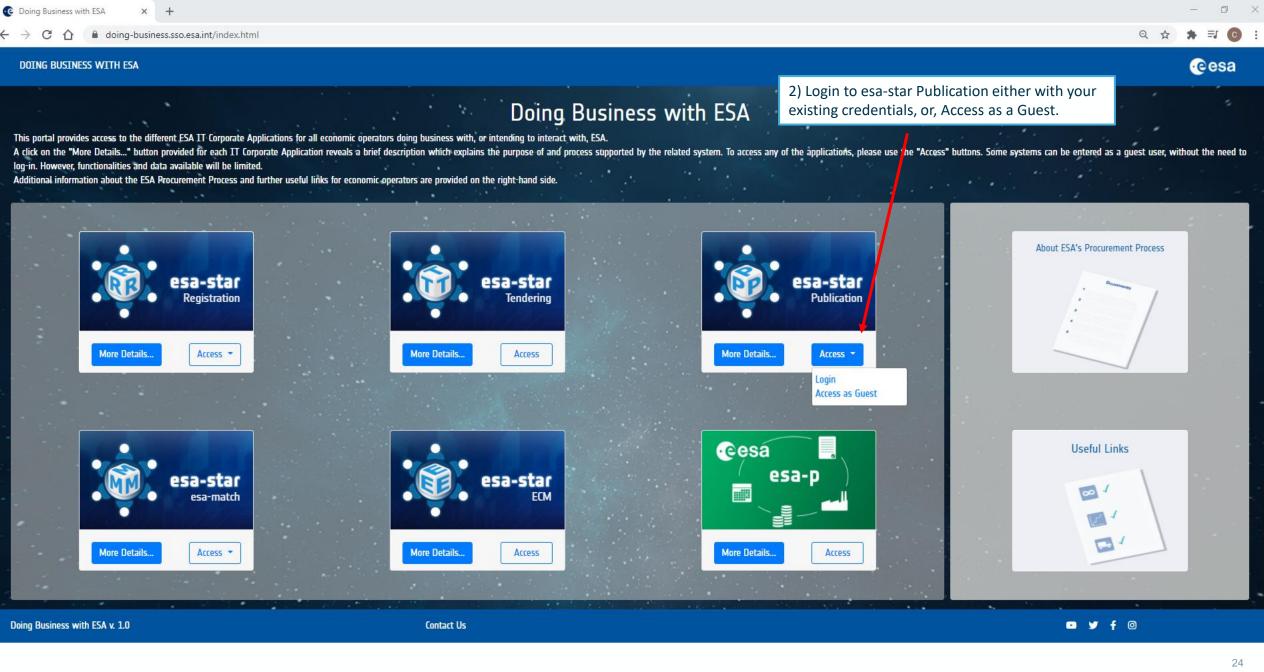
This activity takes place both inside and outside the CSG, in French Guiana. The successful contractor will provide services for CNES and ESA, including hosting and supervising the public, facilitating events and tours of the Space Museum and the Jupiter Control Centre, and operating and maintaining technical facilities:

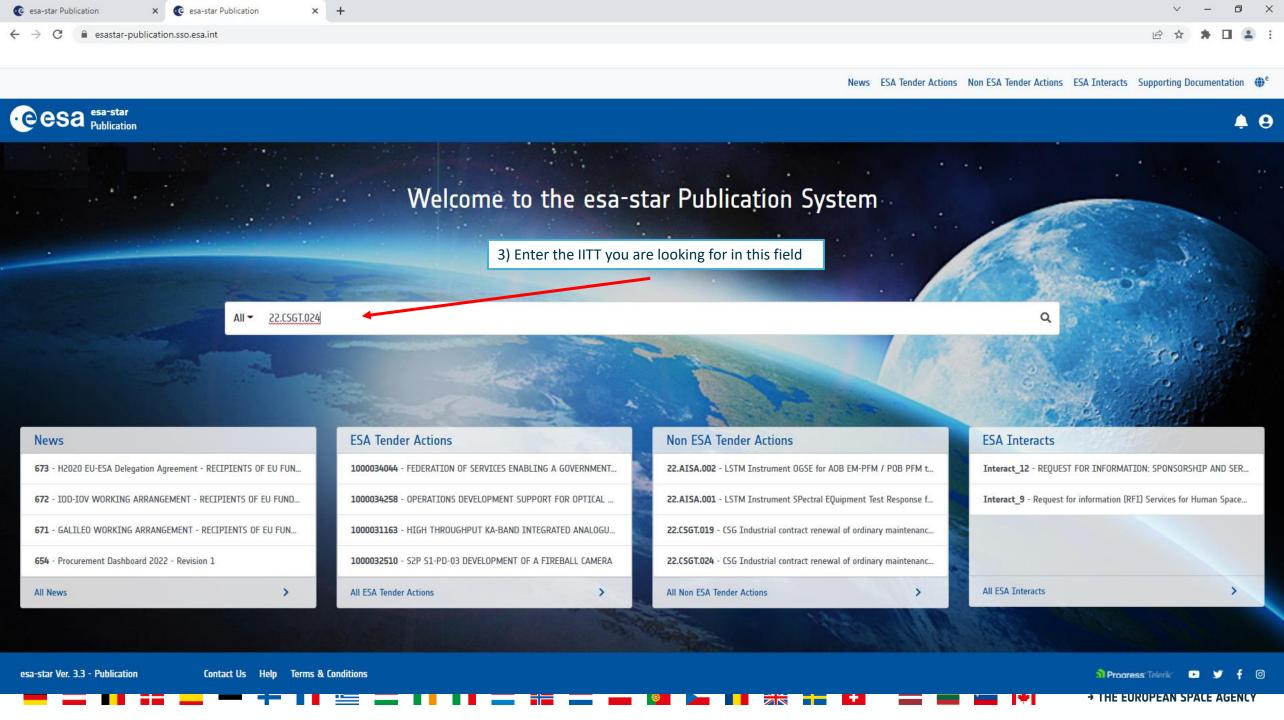
- Hosting and supervising visitors, and facilitating events during launches, whether on- or
 off-site, in the control room, the press centre and at external viewing sites, guided tours
 of the CSG facilities and trails.
- · Running the Space Museum.
- Managing visitor facilities at the Jupiter Control Centre.
- Operating, implementing and maintaining technical resources: video-wall system for live broadcasts and videos, system for remote broadcasting of video and editorial content on the CSG stand screens at Félix Eboué airport in Cayenne, and mediation and dissemination devices at the Space Museum and the Jupiter Control Centre.

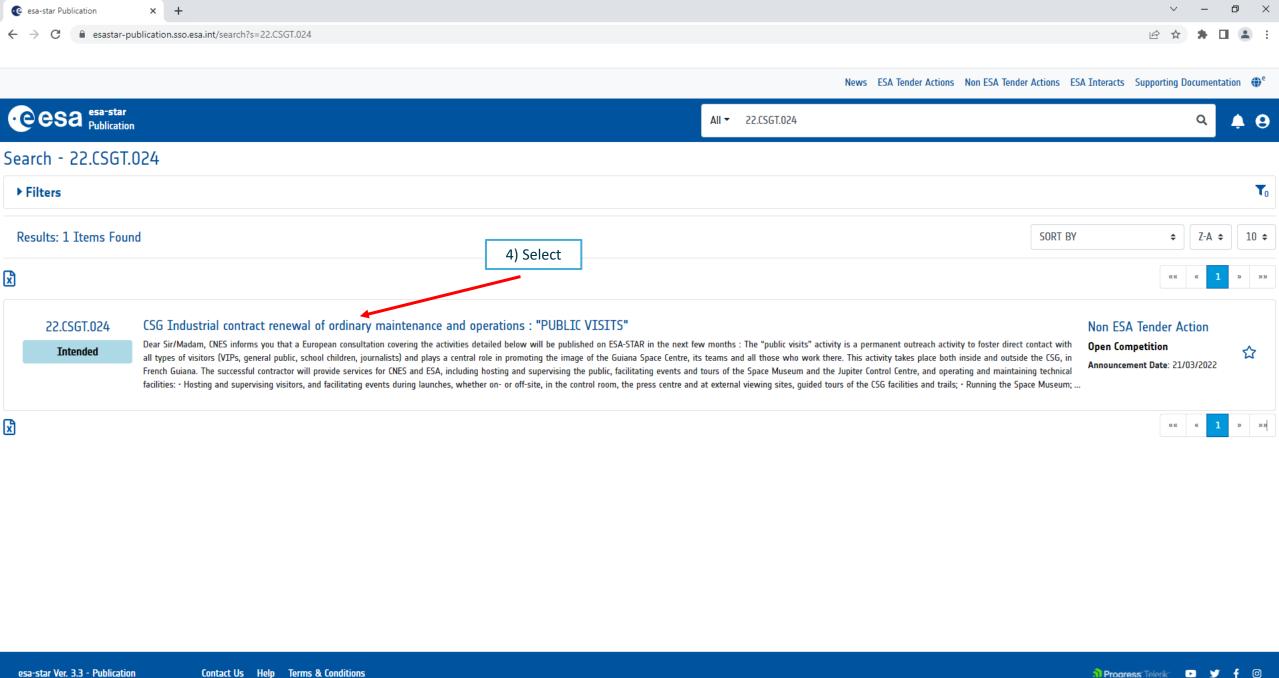


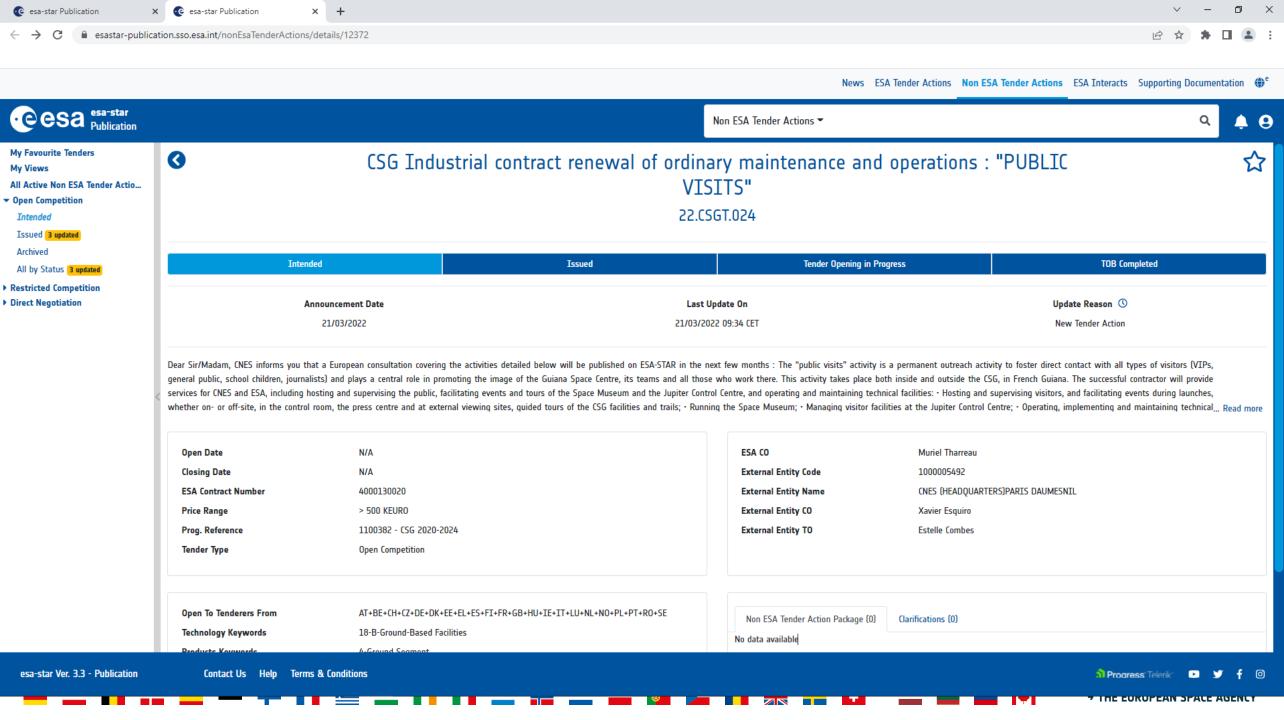
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Opportunities For Industry To Take Part In Europe's Spaceport Activities

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