

News from

Europe's Spaceport



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Introduction

Since 1975, the availability of an operational launch base has been an essential component for Europe of its independent access to space. Since then, therefore, ESA's Member States have borne a significant part of the running costs and capital-investment expenditure for the Guiana Space Centre (CSG), Europe's spaceport. To this end, a series of agreements have been concluded between the French Government and ESA covering the utilisation and funding of the CNES/CSG facilities for ESA's launcher programmes – the so-called 'CSG Agreement' – and the installation at CSG of ESA's launch and associated facilities – the so-called 'ELA Agreement'.

The French Minister of Research and ESA's Director General signed the above two Agreements for the period 2002-2006 on 11 April 2002. These next five years will be very important for CSG because, during this period, Europe's spaceport will see construction of the launch facilities for the European small launcher, Vega. Moreover, if the ESA Council gives its approval at its December meeting, CSG will see also the construction of launch facilities for the Russian Soyuz launcher. It is therefore also conceivable that, one day, manned flights to the International Space Station might take place from CSG!

All of these new programmes will be developed and implemented in parallel with the current and future exploitation of

the Ariane-5 launcher from CSG. Between now and 2006, more powerful versions of Ariane-5, Europe's highly successful workhorse in the commercial launch sector, will be developed and exploited. During the same period, a new type of relationship is being established on the site between ESA, CNES and Arianespace.

All in all, then, over the next years Europe's spaceport will become more utilised and more densely populated, and altogether a richer place in technological terms. The foundations for these important evolutions are already being laid.

The Main Facilities

Europe's spaceport in French Guiana covers a total of 850 km² and has a 50 km coastline. The two main building complexes are:

- The CNES/CSG establishment: This is a French national space agency (CNES) facility devoted to the general coordination and support of the launching activities, with radars, telemetry antennas, telecommunications and meteorological facilities, laboratories, etc. It is complemented by ESA-owned facilities put at CNES's disposal for supporting the launch activities, such as the payload-preparation complexes (EPCU) and the down-range tracking stations.
- The ELA Ariane launch complex: This complex contains all of the ESA-developed facilities devoted to launcher preparation and integration and to

specific launch operations. They are exploited by the European launcher operator Arianespace, supported by diverse European industries. There are also other ELA-associated facilities, again mainly belonging to ESA, devoted to the manufacture of such launcher elements as the solid-propellant boosters, and to the production of liquid oxygen, helium and hydrogen (the latter being the property of Air Liquide, France).

The total value of the ESA assets at CSG, which help to make Europe's spaceport one of the most modern and most efficient launch bases in the World, is more than 1.6 billion Euro.

The Main Ariane Programme Entities

Each of the three main players in the Ariane programme – ESA, CNES and Arianespace – has a major presence at CSG.

ESA assures the overall direction of the launcher development programmes. It also develops the Ariane production and launch facilities and contributes significantly to the launch base's fixed costs. The ESA Office at CSG is responsible for managing the contract through which CNES's part of the launch base's fixed costs are funded (the CSG contract).

CNES, by delegation from ESA, is the prime contractor for the Ariane development programmes and for the construction of the facilities at CSG. It also co-ordinates the operations and the exploitation of the launch base and the payload preparation complexes, and is responsible for the safety and security of people and property at CSG.

When the development phases of its launcher programmes are completed, ESA makes available to Arianespace (or with the latter's agreement, to its suppliers), the production master files and facilities owned by the Agency, funded by the said development programmes, necessary for the commercial manufacture, marketing and launching of the operational launchers.

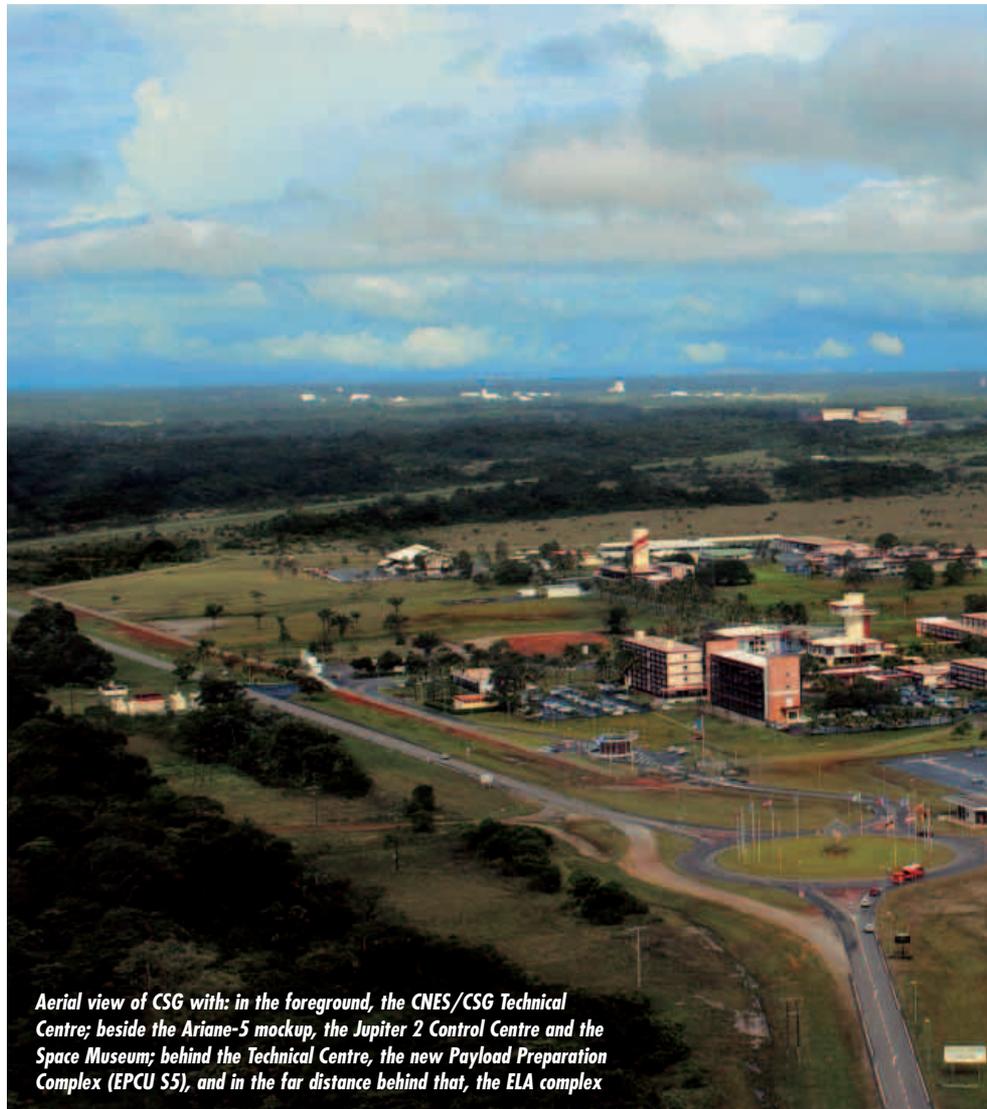
Arianespace fulfils three principal functions. Above all, it is responsible the commercialisation of European launcher services on the World market. It also manages the Ariane launcher production

programme. In French Guiana, it is in charge of final launcher integration, as well as launch operations.

There is also a substantial European industrial presence at CSG, through the many companies participating in the launcher test and integration activities, in the launch-site construction activities, and in the maintenance and exploitation of the

helium production), EuroPropulsion (Ariane-5 solid-propellant motor integration), and EADS-G (solid-booster stage integration). These CISG members, plus 28 other European industrial partners, form the UEBS (Launch Base Union of Employers).

One must add to this figure the many



launch base. The companies with a permanent presence at CSG fall into two groups. The first group, the Guiana Industrial Space Community (CISG), which also includes CNES and Arianespace, consists of: Regulus (Ariane-5 solid-propellant production), Air Liquide Spatial Guyane (liquid oxygen, hydrogen and

companies (mainly local) working as subcontractors to the CISG and UEBS members, and the European companies that visit CSG to undertake particular work packages (e.g. provision of telecommunication networks, software, fluid installations, civil works, etc), but who do not have permanent representation there.

The participation of all of these companies means that almost all ESA Member States are represented at CSG, thereby helping to reinforce its European character.

ESA's Importance in Launcher Production

ESA's involvement in launcher activities does not end when the launchers that have

the CNES/CSG systems and the associated ESA facilities exploited by CNES at the launch base, ESA, through a contract placed with CNES/CSG (the CSG Contract), funds a significant part (two-thirds) of the fixed costs of these facilities. The remaining third of the fixed costs is borne by France. This represents a funding by ESA of 423.2 MEuro, out of a total of

'Infrastructure Programme'. This involves 131 MEuro of ESA funding for the period 2002-2004. Although this programme is purely optional, most Member States are contributing to it, thereby underlining their awareness about the importance of placing European launcher industry on a level playing field with its competitors.

The above funding by the public sector (ESA and CNES) of a relevant part of the fixed costs of the launch base provides Arianespace, the European launcher operator, with conditions closer (although still not equal) to those enjoyed by their US competitors in launch operations activities.

The ESA Office in Kourou is responsible for the management of the CSG Contract, and is also the Agency's official representative in French Guiana.

Main Attributes of the CSG Contract

Signed in Kourou on 2 May 2002, this contract formalises the services to be provided by CNES/CSG to the ESA launcher programmes (with exploitation ensured by Arianespace), as well as the framework for the relations between ESA and CNES/CSG for the duration of the contract (2002-2006).

The new contract represents an important step forward compared to previous contracts in terms of greater visibility for Member States and improved efficiency, providing in particular:

- clarification and simplification: the funding envelope is clear and easy to trace
- cost reduction and improved efficiency: there will be a reduction of about 10% in the fixed costs for CNES activities at CSG from 2001 to 2006
- enhanced ESA control and involvement in the decision-making process: ESA will participate in all strategic CSG decisions, covering such areas as procurement policy, definition and implementation of the capital investment plan, industrial policy and the launch base's European image
- a guaranteed (by CNES/CSG) return coefficient of 0.9 to all ESA Member States: this means that industries in all ESA Member States should, by the end of 2006, have received contracts to the

been developed and qualified are transferred to Arianespace for exploitation. ESA continues to contribute to their production by, in particular, making sure that CSG is maintained in good operational order, by funding the CNES/CSG fixed costs and a part of the ELA fixed costs.

To ensure the operational availability of

617.4 MEuro for the period 2002-2006. All ESA Member States contribute to this funding according to a contribution key based on their Gross National Product and on their Ariane production activities return. In addition, ESA bears 56% of the fixed costs of the ELA (the launcher-specific complex), through the so-called



Roll-out of an Ariane-5 from the Final Assembly Building (BAF) to the Launch Zone, at ELA-3



value of at least 90% of the 'ideal' entitlement based on their country's financial contribution to the CNES/CSG fixed costs.

Despite the short time that has elapsed since the placing of the new contract, major progress has already been achieved in most of the domains that it covers, and particularly in terms of:

– *Europeanisation of personnel*

A target of 20 non-French European staff at CSG has been established (in addition to the Europeans working for the various industrial companies present on-site). To this end, the job opportunities at CSG published on the CNES web site have been cross-linked to the 'Job Opportunities' page on the ESA web site at <http://www.esa.int/hr/index.htm>.

– *Procurement policy*

ESA is playing an active role in establishing with CNES/CSG the procurement policy for CSG activities, whereby ESA supports CNES in opening up the launch base to European companies, commensurate with the funding received from their different countries of origin. Concrete results have already been obtained, with industry in Member States previously absent from the launch base getting relevant contracts (most recently, Portugal and Norway)

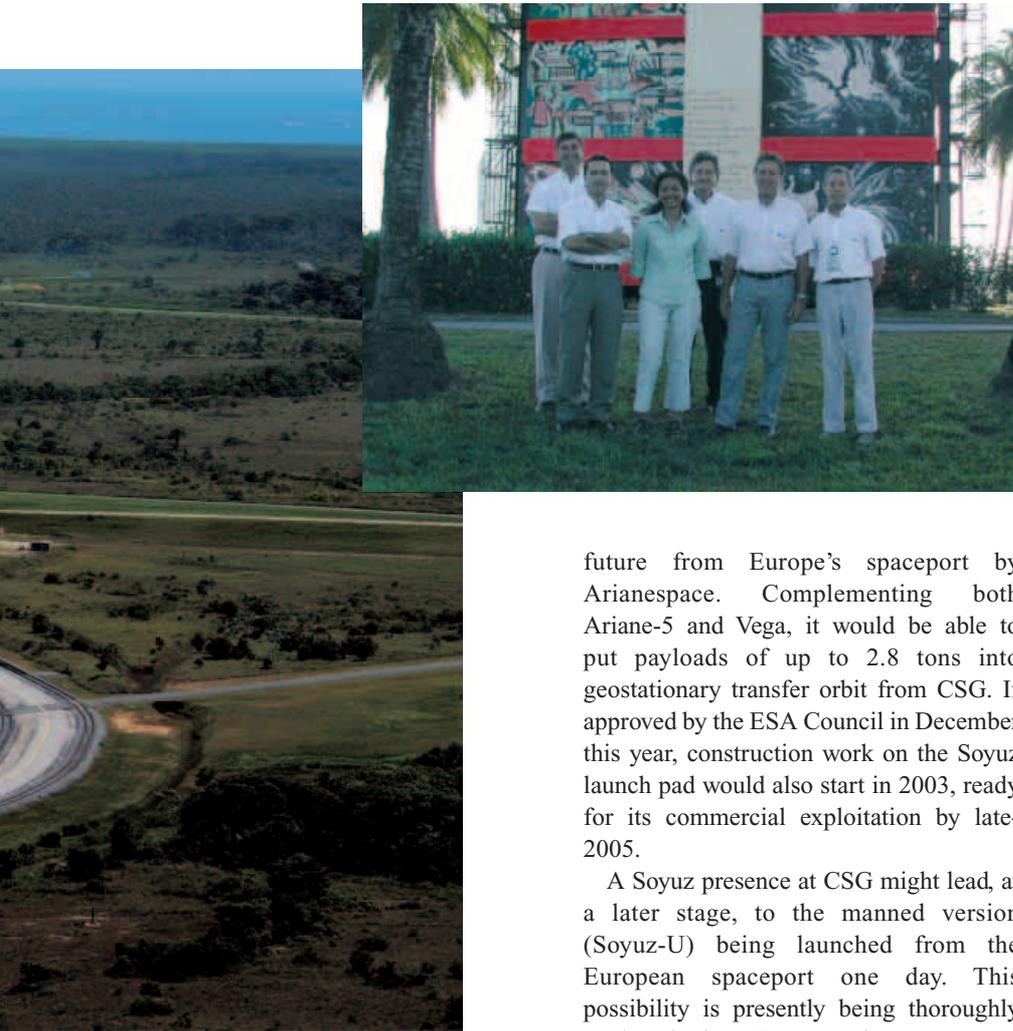
Wider dissemination of CNES/CSG Calls for Tender has been achieved by the systematic use of ESA's EMITS system (<http://emits.esa.int>), which is already well known and widely used by European space industry. This gives the latter immediate access to the business opportunities on offer at CSG.

– *Industrial policy*

To fulfil the obligation of ensuring satisfactory returns for all Member States in an efficient way, it is foreseen, whenever possible, to actively solicit specific industrial participation (particularly from countries with low contributions) to avoid excessive fragmentation of the industrial involvement.

Measures are being taken to gain maximum advantage from the synergies between the industrial activities within the CNES/CSG and other areas of the launch base, particularly the ELAs, which are also financed by ESA through the Infrastructure programme.

Measures are also being implemented to improve the European image of CSG and to make it better known to the general public and, in particular, the decision-makers in Europe.



The ESA Team at CSG

Conclusion

Since the start of the Ariane programmes, ESA has built many modern facilities at Europe's spaceport, involving financial investments totaling more than 1,6 billion Euros. CNES and Arianespace too have built a number of new facilities at CSG to support and coordinate the on-going launching activities. This fruitful cooperation between the two Agencies, as well as between ESA and Arianespace, has been the key to Europe's leading position today in the commercial launcher market. In CSG, Europe has developed and is maintaining one of the best-equipped and most efficient launch bases in the World, which is a key element of its independent access to space. The next five years will be extremely important for the base's long-term future, with the new programmes already decided (Vega) and to be decided (Soyuz) providing the prospect of an exciting new dimension. 

future from Europe's spaceport by Arianespace. Complementing both Ariane-5 and Vega, it would be able to put payloads of up to 2.8 tons into geostationary transfer orbit from CSG. If approved by the ESA Council in December this year, construction work on the Soyuz launch pad would also start in 2003, ready for its commercial exploitation by late-2005.

A Soyuz presence at CSG might lead, at a later stage, to the manned version (Soyuz-U) being launched from the European spaceport one day. This possibility is presently being thoroughly analysed by ESA and discussed with its Russian counterparts, in the context of Europe's interest in the International Space Station and its future evolution. A feasibility assessment is being made, which will be presented to Member States at the end of 2002.

With Vega and with the potential expansion plans using Soyuz still to be decided upon by Member States, Europe's spaceport could be, by 2006, an even more impressive and exciting launch base, with an array of launchers that would further increase its scope and volume of activities.

The New Programmes

Over the next five years, the scale and scope of CSG will change considerably, with the arrival of ESA's Vega launcher and the possible arrival of Soyuz.

Vega is the small European launcher intended to complement Ariane-5 by putting payloads of up to 1.5 tons into polar orbit at 700 km altitude as cost-effectively as possible. The coherence of the overall European launcher effort is demonstrated by the reuse for Vega of the launch pad built for the first Ariane launchers (ELA-1). The civil-engineering work on the new launch pad and launcher preparation facilities will start in 2003. Operational Vega flights, conducted by Arianespace, will take place from 2006 onwards.

The well-proven Russian Soyuz-ST launcher could also be launched in the

