



We help Earth benefit from space

SUSTAINABILITY SUMMARY 2016

History

2016	Nanospace was divested to Gomspace.
2014	SSC acquired all shares in PrioraNet Canada, now SSC Space Canada, and is the full owner of the Inuvik Satellite station. SSC's Airborne Systems was divested to Sjöland & Thyselius.
2013	SSC implemented a new strategy and vision; to become the leading global provider of advanced space services.
2012	ECAPS signed its first commercial contract with the American company Skybox Imaging for the construction and manufacture of a complete green fuel propulsion system
2010	LSE Space acquired the Dutch engineering company Aurora Technology. The Prisma satellites, developed by SSC, were launched. HPGP and a micropropulsion system from NanoSpace were flown for the first time onboard Prisma.
2009	SSC acquired all shares of Universal Space Network. PrioraNet Canada, a joint venture between SSC and Blackbridge was established with a satellite station in Inuvik, Canada.
2008	SSC acquired Santiago Satellite Station from the University of Chile, Santiago.
2005	SSC acquired NanoSpace, a company that develops and markets miniaturized components and subsystems for space applications.
2003	SSC acquired the German space engineering company LSE Space. ESA's moon probe SMART-1, developed by SSC, was launched.
2001	SSC formed the company ECAPS for further development of HPGP. The scientific satellite Odin, developed by SSC, was launched.
2000	SSC acquired 10% of the shares in Universal Space Network. The establishment of what is to become one of the largest commercially available multi-mission ground station network, PrioraNet, begun.
1998	The scientific microsatellite Astrid-2, developed by SSC, was launched.
1996	The U.S. based company, Universal Space Network (USN), was founded by the third man to walk on the Moon, Pete Conrad. SSC started the development of HPGP (High Performance Green Propulsion).
1995	Aurora Technology was founded in the Netherlands.
1992	The scientific satellite Freja, developed by SSC, was launched.
1990	The German space engineering company LSE Space was established. ESA's satellite station in Salmijärvi was inaugurated. SSC has operated the station since then.
1986	Sweden's first scientific satellite, Viking was launched. SSC was the prime contractor.
1978	The Landsat satellite station was inaugurated at Esrange.
1977	SSC's first microgravity experiment payload was flown on a sounding rocket.
1974	The first balloon was launched from Esrange.
1972	SSC was founded by the Swedish government.
1966	The first sounding rocket was launched from Esrange.
1958	The first antenna was installed at Santiago Satellite Station to support NASA.



Figure showing SSC's global operations

SSC is a global company with employees and customers throughout the world. SSC is now represented in Sweden, Germany, the Netherlands, Spain, the USA, Canada, Chile, China and Australia.

SSC in brief

The Swedish Space Corporation (SSC) is a leading global provider of advanced space services with more than fifty years of experience. Since our start pioneering scientific rocket launches in northern Sweden, we have grown into a renowned, full-service supplier of state-of-the-art space engineering, satellite and launch services to commercial and institutional customers worldwide. Today, SSC focus on three core areas. Rocket and balloon launch services at Esrange Space Center, including development of experiment payloads. The ongoing upgrade of Esrange includes plans to launch small satellites. SSC operates one of the world's largest civilian

networks of ground-based satellite stations, providing reliable access to satellites in virtually any orbit. A new set of satellite services is implemented to meet new demands of more flexible, highly automated and cost-effective solutions. Our engineering services bring consulting expertise to all phases of customer's space programs, a valuable asset ensuring competence and development. The SSC group also includes development and production of environmental friendly space propulsion systems. SSC is a Swedish limited company, entirely owned by the Swedish state.

Financial facts 2016

(MSEK)	2016	2015	2014	2013	2012
Net Sales	991	989	842	863	840
Operating profit (EBIT)	14	5	31	29	26
Profit before tax	8	29	41	22	16
Investments	82	149	158	71	113
Equity	490	495	502	446	437

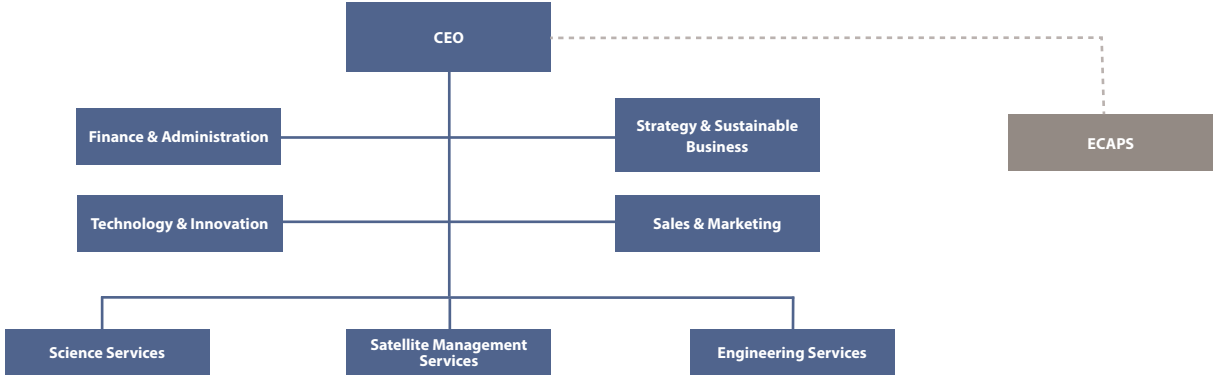
Employees 2016

	2016	2015	2014	2013	2012
Number of employees	536	498	533	577	602
Women	124	118	121	136	151
Men	412	380	412	441	451





Organization*



*Aerospace Test Systems (ATS) has been transferred to the Swedish defense as of 1 April 2017.

Executive committee



STEFAN GARDEFJORD
CEO



ÅSE LAGERQVIST
Finance & Administration



STEFAN GUSTAFSSON
Strategy & Sustainable Business



ANNA RATHSMANS
Technology & Innovation



JOHN STEWART
Sales & Marketing



LENNART POROMAA
Science Services



LEIF ÖSTERBO
Satellite Management Services



NICK PRIBORSKY
Engineering Services

SSC sustainability efforts 2016

The development of the space industry continues to accelerate. Together with rapid technological developments, the needs of mankind and society for space-based services open up new opportunities and place new demands on the space industry. Even today, space operations can already help solve crucial issues of the future such as those relating to climate change, peace, freedom, democracy and economic development. Space also contributes to research, not only about the Earth, but about space itself. The space industry creates global opportunities for innovation, competitiveness, jobs and growth and can thus contribute substantially to a more sustainable world. Space services are also regarded as important for following up and achieving the global sustainable development goals, defined in the Paris Agreement and Agenda 2030. Being a supplier of advanced space services to contribute to the realization of these positive opportunities is an inspiration to us and drives our strategic work forward.

The demand for advanced space services is increasing. New markets are opening up as applications enabled by space technology become part of our daily lives. They are also becoming part of society's most critical infrastructures such as internet access, telecommunications, country and environmental research as well as crisis management and preventing such crises from occurring. SSC is enthusiastic about this development and has in 2016 continued to make use of this positive development and at the same time make use of the opportunities it provide to our business. For SSC, the rapid developments also entail challenges. This is primarily an issue of being able to adapt operations to new services and new technologies, which requires both investments and new skills. At the same time, the company needs to continue with further development of the services that SSC is already delivering to its customers, which are increasingly contributing to important societal functions in progressively larger areas of the world. Demands for security are becoming higher and higher; it is

important to be able to deliver without interference or interruption. To balance all this is a challenge that will remain in the foreseeable future. In 2016, SSC has therefore continued its work on achieving long-term financial stability through increased sales, in parallel with efficiency measures and investments for the future.

By having a long-term focus on sustainable operations that can help further global efforts to solve crucial societal issues SSC can actively contribute to the positive development of our planet. This requires SSC to have its global operations based on a long-term strategy that leverage opportunities and manages risks. Sustainability has therefore been integrated into SSC's strategy and business processes.

The surrounding world and SSC's business operations

The demand for space-related services is growing throughout the world. In pace with continued miniaturization and digitalization, it is becoming increasingly cost-effective to make use of space for infrastructure and functions that are important for society. This development is rapid and currently primarily driven from the USA, but is also becoming stronger in Europe and China. All in all, this development means that more and more countries and actors see possibilities of space ventures at a reasonable cost. One example of this is that an increasing number of countries have launched, or plan to launch their own satellites. Another is a strong, innovative development of privately-owned constellations of satellites that deliver data to both institutional and commercial actors using space technology and new business models to create innovative services. This is opening up new markets and business segments, which places demands on SSC to leverage the opportunities and manage the entailed challenges and risks.

This development also entails the danger that applications are used in a non-desirable manner. When used wrongly, space



applications can be exploited in a way that violates human rights and threatens peace, freedom and democracy. A significantly higher volume of space-based infrastructure also increases the risks of space debris, which would negatively affect opportunities for all actors to make use of space. SSC is therefore committed to increasing transparency in the use of space; and in 2016 initial efforts have been made to promote concepts for space monitoring in collaboration with other global actors to ensure that our services are used in the right way. In 2016, several important business contracts have been signed which may be able to contribute substantially to the global development of our planet. These contracts consist of both research support and technological development and download of satellite data regarding for example weather, the environment, agriculture and physical planning as well as the management and prevention of humanitarian disasters. Examples of business contracts that SSC has conducted in 2016 are described in this summary.

Estrange heading for the future

2016 was the 50th anniversary of the Estrange Space Center. Efforts to further develop operations for the next fifty years have continued in close collaboration with customers and other stakeholders. Greater opportunities to support both Swedish and international research and technological development have been in focus, as well as the ability to deliver services via SSC's global network of ground-based satellite stations. An important part of this is to realize the ability to launch small satellites from Estrange. In close cooperation with the company's owner and with the Swedish National Space Board, an important step has been taken towards realising this, which would mean a considerable strengthening of SSC's range of services and thus its opportunities to further contribute to sustainable global development.

The path towards a sustainable business strategy

In parallel with its operative work, SSC has revised its strategy in order to keep pace with the rapid global development. This work included conducting a survey of SSC's capacity to contribute to the global sustainable development goals within the framework of Agenda 2030. It is clear that the company's space services can play a significant role in global efforts to achieve these goals. This has formed an important point of departure for the strategy and thus for the company's long-term development.

The aim of the revised strategy is to deal with the major changes in the market and the growing benefits that space services successively provide for the global community. In view of this, a new materiality analysis was undertaken in 2016, in which SSC's stakeholders, employees, management and Board of Directors participated. This work has contributed to a positive dialogue that has increased understanding of how further sustainability work should be pursued. The result of the analysis shows that the materiality areas that were previously defined and used in 2015, need to be somewhat revised.

SSC's Sustainable Business Analysis Model has been further developed and implementation has been successful, although not fully completed in all parts of the organization. In order to better understand the possibilities and risks, SSC has broadened and improved its stakeholder dialogue during the past year, both nationally and globally. The stakeholder dialogues that have

been conducted have shown great expectations for the development of Estrange. The development must be based on sustainable and climate-smart solutions and respond to new demands with regard to the supply of services. It is also clear that SSC needs to conduct business on all continents, across geographical boundaries. We are also expected to drive innovation forward by being a business partner that combines research and technological development with commercial development, to contribute to a better world. This now represents part of the company's material sustainability areas, towards which a policy principle has been initiated for next year. SSC has also implemented a complaint process where stakeholders that have views on SSC's activities can convey them to SSC. This supplements the previously implemented "whistleblower" mechanism, which is a way of reporting complaints anonymously.

New code of conduct

Rapid international developments place great demands on a code of conduct that reflects SSC's values and that provides guidance to employees and sheds light on SSC's basic values for business partners, customers and suppliers. In 2016, a new code of conduct was therefore introduced to clearly and transparently highlight SSC's position on such issues as business ethics, anti-corruption and human rights. This work has been broadly anchored in cooperation with the staff, management and Board of Directors. The code will be further implemented in 2017.

Continued development

SSC's sustainability efforts are being pursued in accordance with a five-year plan that was established in 2015. The plan is based on making sustainability a clear part of our business strategy. It is only when these issues are fully integrated into our daily business activities that we have achieved satisfactory quality in our sustainability efforts. This involves every member of staff and every part of our operations. In 2016 we have made great strides towards realizing our long-term objective.

The focus of the year was governed by goals that were based on the need for implementation of policies, procedures and the code of conduct. Rapid developments in the market required a revision of our policies based on the new materiality analysis. Some of the implementation goals have therefore not been achieved. This conscious choice also means that the implementation goals will have greater business relevance in 2017.

All in all, SSC is well on the way to realizing a genuinely sustainable strategy, with focus on substantially making use of the opportunities lying ahead. We have thus created better conditions for using our business activities to take advantage of the opportunities presented by space for growth while contributing to solving the global challenges facing mankind, on and around our planet together with our customers and business partners.

SSC - Highlights 2016

2016 has been a very exciting year for SSC. The inspiring changes in the space market have kept SSC focused on working with our customers developing continuous improvements of new capabilities and service solutions. As an example in April of 2016, SSC launched the SSC Infinity service, a new ground operations service that offers customers full flexibility for small satellites and constellations. One of the first companies to leverage the SSC Infinity service was Millennium Space Systems. SSC and Millennium Space Systems are teaming together on the first-ever ALTAIR launch to provide customization and rapid constellation production for Millennium's customers. The ALTAIR spacecraft is a high performance space system for LEO, GEO and deep space missions. ALTAIR uses the SSC Infinity services for launch and early orbit procedures as well as routine support.

2016 was also a historical milestone for SSC being the year Esrange Space Center celebrated its 50th anniversary. From Esrange, SSC provides launch services to the international scientific community, space agencies and commercial customers for scientific experiments and technical tests using sounding rockets and balloons.

In 2016, 10 sounding rockets and 15 balloons were launched from Esrange. Among those were a balloon-borne project for astronomy research; Polarized Gamma-ray Observer PoGo+, as well as a sounding rocket for atmospheric research; SPIDER/LEEWA-VES, both part of the Swedish national rocket and balloon program. These platforms are important tools for science and technology; however, in order to meet future needs of advanced space services, Esrange is undergoing a major upgrade and expansion. The new capabilities will include services for affordable and easy access to space such as SmallSat Express, a European launch capability for small satellites, tests of reusable vehicles as well as enabling technology tests for space exploration by means of re-entry and landing tests and robotic rover tests in an analogue Moon and Martian environment. In 2016, a report on the SmallSat Express initiative, ordered by the Swedish government, was delivered to the Swedish Space Minister with a

recommendation to proceed with the project. SSC was also awarded funding from the country administrative board of Norrbotten for analyses of launcher alternatives, flight safety and infrastructure at Esrange.

SSC continued to expand its network of ground-based satellite stations around the world. The expansion is driven by specific customer needs, strategic site selections as well as the market need for new, smaller and more cost-effective apertures. There is a continued high volume of LEOPs supported by SSC's ground-based satellite stations and the volume of routine operations continues to grow. The service quality is our highest priority and SSC is investing a lot of time and effort in streamlining the operational business model to be able to quickly adapt to new customer requirements. The market for Satellite management services are now being addressed through three dedicated market organizations; Americas, EMEA and APAC and they are using the common global ground-based satellite station infrastructure to deliver the services needed by the customers.

SSC brings high quality expertise to customer projects providing a wide range of engineering services. One of the highlights of 2016 for SSC's Engineering Services division was the successful bid for ESA's new frame contract for providing operations services at ESOC in Darmstadt, Germany. This will ensure that SSC continues to play a large role in ESA's major space programs. Additionally Engineering Services continued to support a number of ESA and DLR missions during the year including the launches of Galileo and Sentinel satellites. All in all, SSC is well on the way to realizing a genuinely sustainable strategy for profitable growth, with focus on substantially making use of the opportunities lying ahead. The focus is to use our business activities to take advantage of the opportunities presented by space for growth while contributing to solving the global challenges facing mankind, on and around our planet. All in close cooperation with our customers and business partners.



PoGo+ - Fundamental research about the origin of the universe.

In the summer of 2016, SSC performed a stratospheric balloon flight that lifted the Swedish-developed large polarimeter PoGo+ from the Esrange Space Center outside Kiruna. By sending up a balloon-borne instruments, researchers can collect data on neutron stars and the radiation that they emit. This time, polarization in high-frequency X-rays and low-frequency gamma radiation from the Crab pulsar and Cygnus X-1 was measured. By sending the

instrument to an altitude of approximately 40 km, measurements can be made without interference from the Earth's atmosphere. Through this research, our understanding increases of the origins and composition of the universe, but particularly of pulsars, which, like "beacons", emit flashes of x-rays. By using polarization, PoGo+ measures the pulsars in a new way, opening a new window into mankind's understanding of the universe. PoGo+ was launched from Esrange on 12 July and landed on Victoria Island in northern Canada on 18 July. Making observations from high up in the stratosphere with a balloon provides similar conditions as when making the same observations in orbit around the earth. The advantage of observing from the stratosphere is that it is more cost-effective and has less environmental impact. The balloon does not require any environmentally- or health-damaging hydrazine or similar propellant, which result in toxic emissions and damage during combustion and storage. Instruments and balloon systems can also be re-used which is not the case with today's launchers or satellites. In this way, advanced research can be conducted effectively and sustainably in the long-term.

n 2016, SSC has signed a contract with China Academy of Science regarding download data from earth observation satellites for research purposes. SSC's customer is the China Institute for Remote Sensing and Digital Earth (RADI) which is part of the China Academy of Science (CAS). The service is provided from Esrange, using an antenna that SSC established and which is reserved for support of the Chinese missions.

[illegible]

Weather and climate are linked throughout the world. What happens up in the atmosphere in one place affects what happens everywhere else on Earth. To understand climate and climate change, and to learn more about weather forecast models, it is important to understand more about these global dynamics.

SSC signed a contract in 2016 to be the ground station network provider for the NASA Earth Science Mission known as Cyclone Global Navigation Satellite System (CYGNSS). The CYGNSS mission will use eight micro-satellites to measure wind speeds over Earth's oceans, increasing the ability of scientists to understand and predict hurricanes. Each satellite will take information based on the signals from four GPS satellites. In other words the same GPS technology that helps people get to where they're going in a car will soon be used in space to impact hurricane forecasting. CYGNSS is taking a novel approach to calculate wind speeds that both reduces the mission's cost and gathers more data.

Copyright: Björn Johansson, SSC

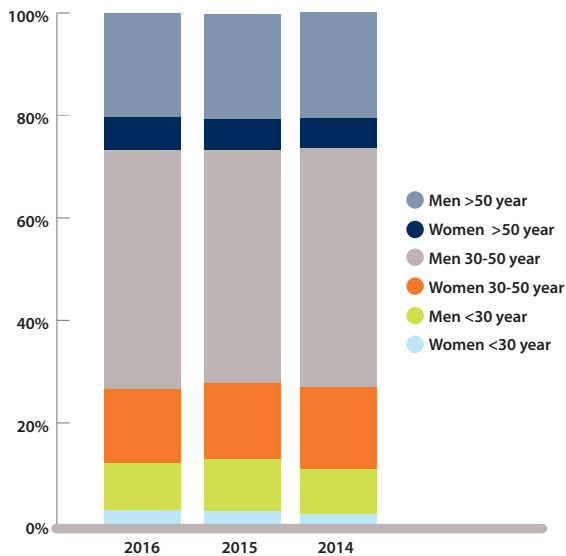
Copyright: Marcus Lindh, SSC

A horizontal timeline consisting of 30 dots. Three diamonds are placed at the 13th, 18th, and 29th positions from the left.

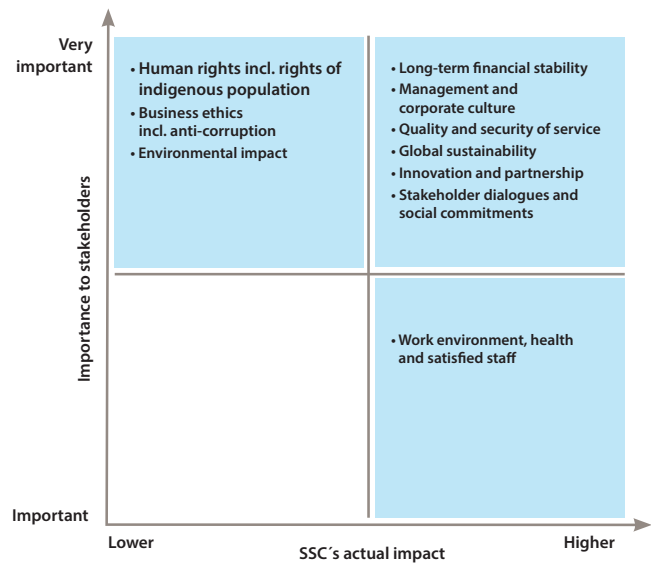
will result in a new image of wind speed over the entire tropics every few hours, compared to every few days for a single satellite. Another advantage – the CYGNSS orbit is designed to measure only in the tropics, where hurricanes are most often found. Traditional polar-orbiting weather satellites measure the whole globe because they are trying to capture all types of data. The focus on tropical activity means the CYGNSS instruments will be able to gather that much more useful data on weather systems exclusively found in the tropics. This data will be shared with NOAA and used to help emergency managers make decisions regarding extreme weather planning.

SSC - Short sustainability facts 2016

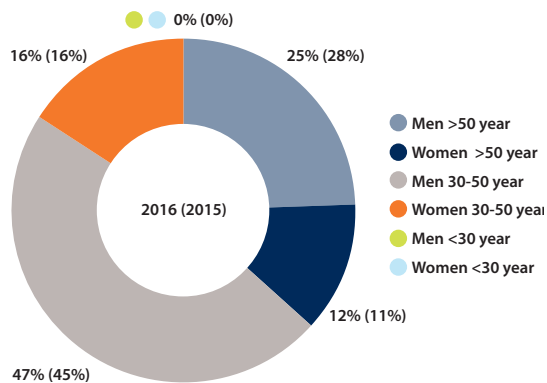
Employees by age and gender



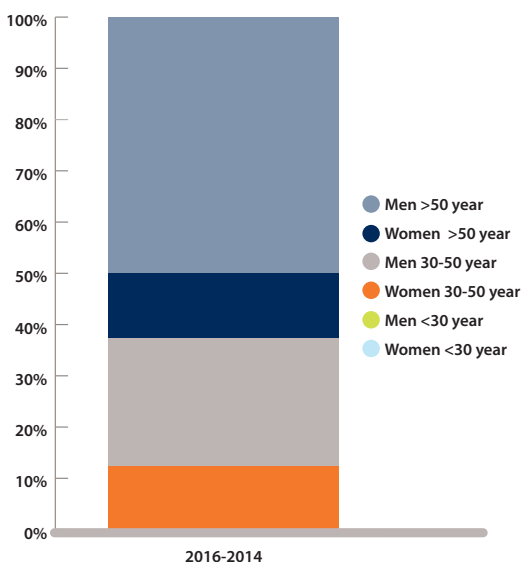
SSC's material sustainability areas 2016



Managers by age and gender 2016



Executive management by age and gender



- **Human rights including the rights of indigenous people:** SSC respects human rights including the rights of indigenous people.
- **Business ethics, including anti-corruption:** SSC demonstrates a high level of business ethics, which include a clear position on combatting corruption.
- **NEW! Environmental impact:** SSC want to reduce negative impacts on the environment with reference to the future development of Estringe.
- **Long-term financial stability:** SSC wants to ensure long-term financial sustainability in order to be part of the global space industry in the future as well.
- **NEW! Management and corporate culture:** SSC wants to build a company, based on courageous management and an inclusive corporate culture, based on equality and diversity.
- **Quality and security of service:** SSC wants to achieve a high level of customer satisfaction, by providing high standards and strong security in our deliveries of services.
- **Global sustainability:** SSC wants to contribute to the positive development of global sustainability.
- **NEW! Innovation and partnership:** SSC wants to create innovative technology and innovative business models, through partnerships.
- **Stakeholder dialogues and social commitments:** through stakeholder dialogues and involvement in society, SSC wants to increase society's understanding of space, research and technology and how we can use this to create a more sustainable society.
- **Work environment, health and satisfied staff:** SSC wants to have a safe and healthy work environment with satisfied staff.

EUROPE

SSC
P.O. Box 4207
SE-171 04 Solna
Sweden
Tel: +46 8 627 62 00

SSC
Estrange Space Center
P.O. Box 802
SE-981 28 Kiruna
Sweden
Tel: +46 980 72 000

SSC
Stockholm Teleport
Vidjavägen 15
SE-123 52 Farsta
Sweden
Tel: +46 8 447 35 70

SSC
LSE Space
Argelsrieder Feld 22
D-82234 Wessling
Germany
Tel: +49 8153 88 10 99 26

SSC
LSE Space
Robert-Bosch-Strasse 7
D-64293 Darmstadt
Germany
Tel: +49 6151 87 011 37

SSC
Aurora Technology
Crown Business Centre
Heereweg 345
2161 CA Lisse
The Netherlands
Tel: +31 252 532239

AMERICAS

SSC
417 Caredean Drive
Suite A
Horsham, PA 19044
USA
Tel: +1-215-328-9130

SSC
102 South Tejon Street
Suite 1100
Colorado Springs, CO 80903
USA
Tel: +1-719-578-3321

SSC
Autopista Los Libertadores Km 28,
Peldehue, Santiago
Chile
Tel: +56 2 2698 1702

ASIA PACIFIC

SSC
Western Australia Space Centre
North Depot Hill Road
Mingenew, WA 6522
Australia
Tel: +61 8 9929 1000

SSC China
Room 812, Shi Teng Business Hotel
82 Bei Yuan Road
ChaoYang District
Beijing 100101
China
Tel: +86 10 649 685 51



SSC provides advanced space services to commercial and institutional customers world-wide. Built on decades of experience, we offer proven expertise in space engineering, satellite management services and launch services for sounding rockets and balloons.

We help Earth benefit from space