

WE HELP  
EARTH  
BENEFIT FROM  
SPACE



In Summary 2018

# WORDS FROM THE CEO

## **A sustainable and responsible business**

The space industry continues to develop at a rapid pace. More affordable and advanced technology, both on the ground and in space itself, is paving the way for multiple new services and applications. Space is opening up and becoming increasingly accessible.

Society already relies heavily on space-based technology and services, which are essential in areas such as communications, navigation, land-use planning, meteorology, and forest management. Looking ahead, the importance of space will only increase. SSC is a key player in designing and building the space applications of the future and is well placed to develop and grow in this pivotal role.

## **Business operations**

SSC showed solid profitability in 2018 and is currently investing the cash flow generated to ensure further profitable growth going forward. During the year, we entered into several exciting new customer contracts and continued to expand. We added a new ground station in Si Racha, Thailand, to our global ground station network. We also established a subsidiary in the UK. These

are clear signs of SSC's determination to increase our service offering for both new and existing customers.

The development of Erange Space Center continues to provide added scope for supporting Swedish and international research and technology development. We are currently building a test facility at Erange, part-funded by the government, and are providing new capabilities in Europe to reinforce Erange's core role and position within the space industry.

## **SmallSat Express – the next step**

Building a launch facility for small satellites at Erange is one of SSC's most important projects for harnessing future opportunities and promoting European access to space. We see the establishment of a test facility as a first step towards our goal of providing Europe with a unique launch site.

## **Sustainable development concerns us all**

Through our global presence, vast experience and know-how, SSC has a unique possibility to contribute to the efforts made by governments and organizations worldwide towards a more sustainable planet. Already today, satellites provide a major part of the data used for environmental and climate research and this development will continue. In trying to understand our planet and what we can do to promote a sustainable future for us all, we need access to space.

Although space-based technology and space data is widely used for civilian purposes, which benefit both societies and the environment, there are also risks linked to the development. These risks include risk such as collisions in space and space debris. SSC is involved in a number of initiatives trying to find ways to approach these issues together with other stakeholders.

Another risk consists of potential misuse of space-based services. Space technology is today increasingly dual-use, as both civilian and military segments often use the same data and infrastructure. The problem is similar to that within the telecom and internet industry. SSC undertakes careful assessments in all our business in order to ensure that our services are not misused and to prevent business that could be questioned from an ethical point of view.

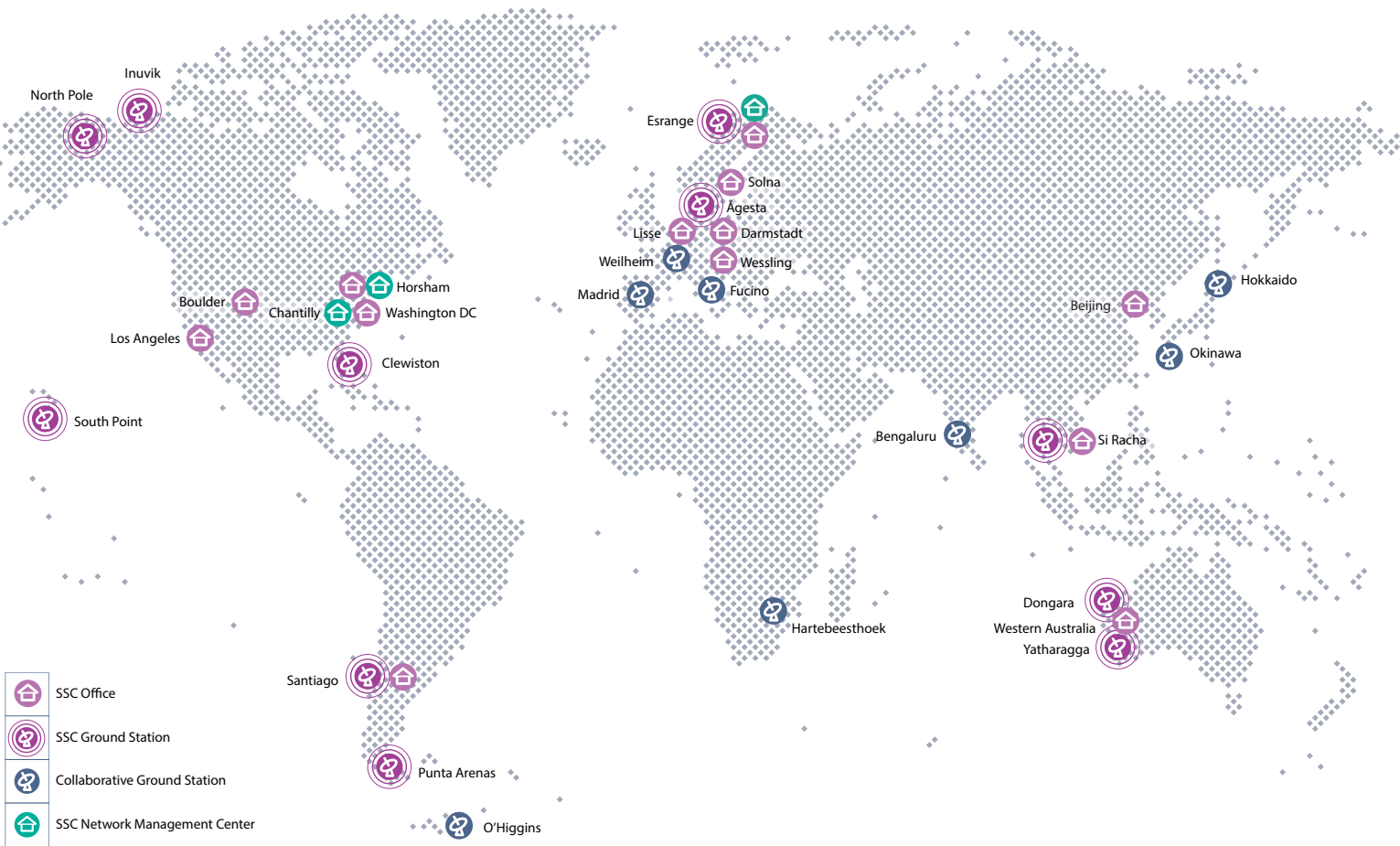
## **Bright future in an important industry**

As a supplier of advanced space services, we do our best to take advantage of all the opportunities that space provides. It is an inspiring role – and one, which drives our strategy and fills us with confidence about the future.



**STEFAN GARDEFJORD**  
*President & CEO*

## SSC GLOBAL PRESENCE



## SWEDISH SPACE CORPORATION

is a Swedish limited company, entirely owned by the Swedish state with headquarters in Solna, Sweden. At the end of 2018 SSC had 506 employees.

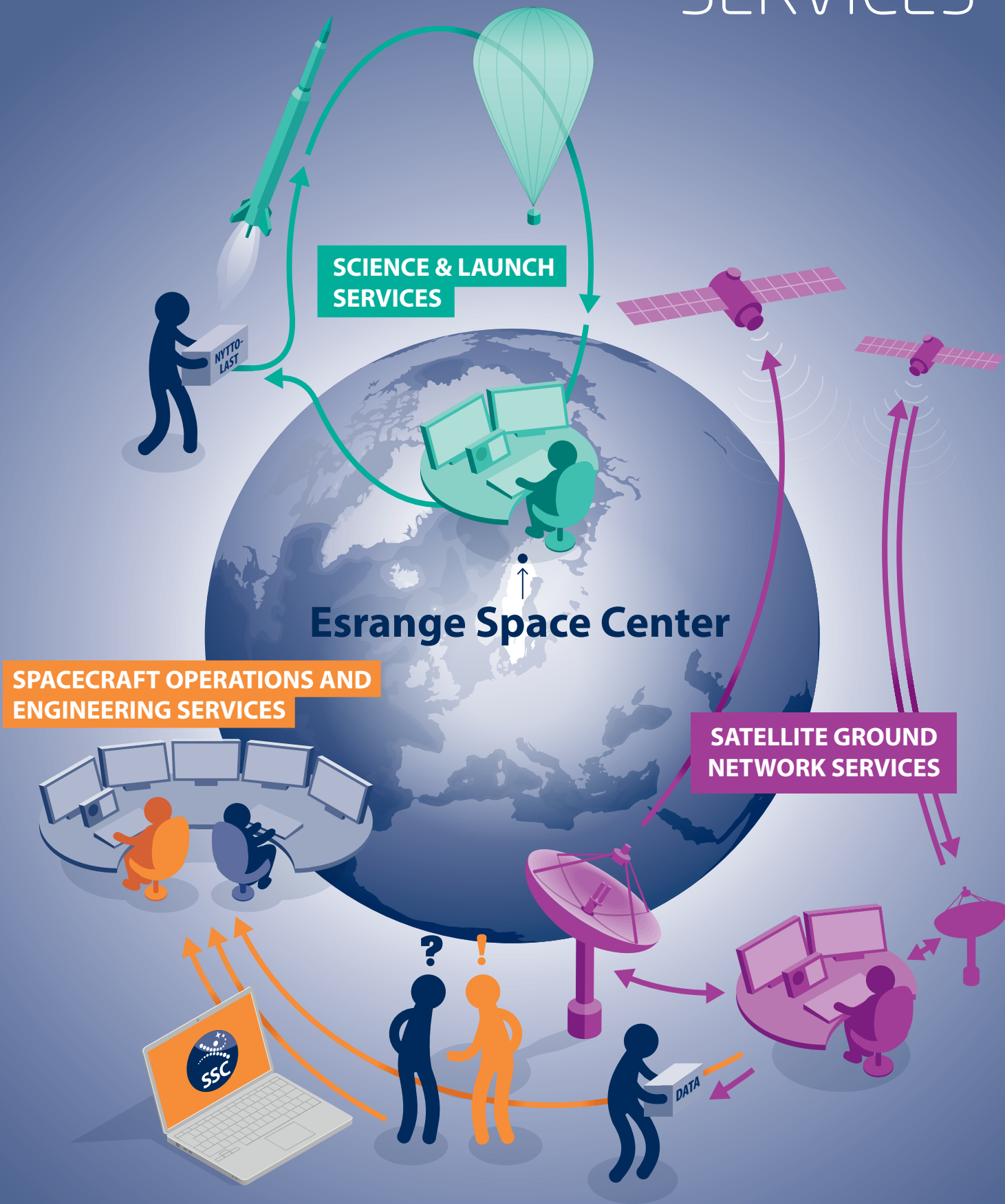
The Swedish Space Corporation (SSC) is a leading global provider of advanced space services with more than fifty years of experience.

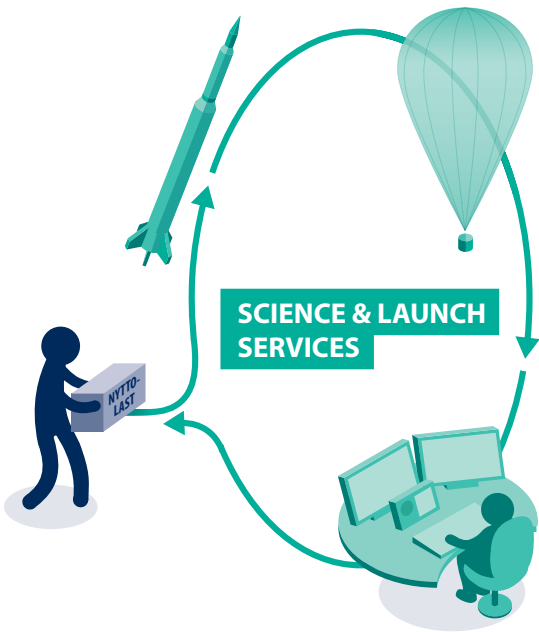
Since our start pioneering scientific rocket launches in northern Sweden, we have grown into a renowned, full-service supplier of state-of-the-art space engineering, satellite and launch services to commercial and institutional customers worldwide.

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 expertise to all phases of customer's space programs, a valuable asset ensuring competence and development.

# OUR SERVICES





## SCIENCE & LAUNCH SERVICES

### Rockets and balloons

The Science Services Division offers launch services of sounding rockets and stratospheric balloons with scientific or technical instruments for research and technological development. The launches are often carried out in collaboration with international customers. The Division also provides development of experiments and payloads.

### Esrange Space Center

Launches take place at Esrange Space Center, 45 km north of Kiruna. Esrange has an internationally unique standing as a civilian space base through its extensive infrastructure and access to a vast, unpopulated impact and recovery area for rockets and balloon flights.

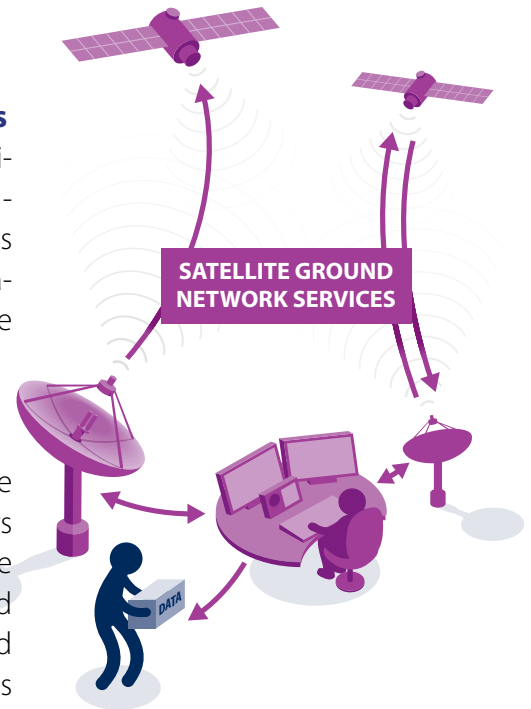
## SATELLITE GROUND NETWORK SERVICES

### One of the world's largest multi-mission ground station networks

The Satellite Management Services Division (SaMS) provides highly reliable and cost-effective services for on-orbit missions from an unparalleled network of worldwide locations. SSC's Ground Network comprises core SSC-owned stations and collaborative partner satellite stations strategically located around the world. In many cases, the ground stations are operated 24 hours per day, 365 days per year.

### A wide range of services

SaMS offers a complete portfolio of ground segment services for a wide variety of missions. SSC provides satellite owners and satellite operators with a wide range of services; from contracts where customers buy the entire service from SSC, and take advantage of SSC's infrastructure and services for satellite communication and satellite control, to so-called hosting services, where customers own their antennas and buy services from SSC.



## SPACECRAFT OPERATIONS AND ENGINEERING SERVICES



## SPACECRAFT OPERATIONS AND ENGINEERING SERVICES

### Advanced missions in the space industry

The Engineering Services Division provides engineering- and operations services to the international space market and support all project phases, from designing and testing through to launch and operations.

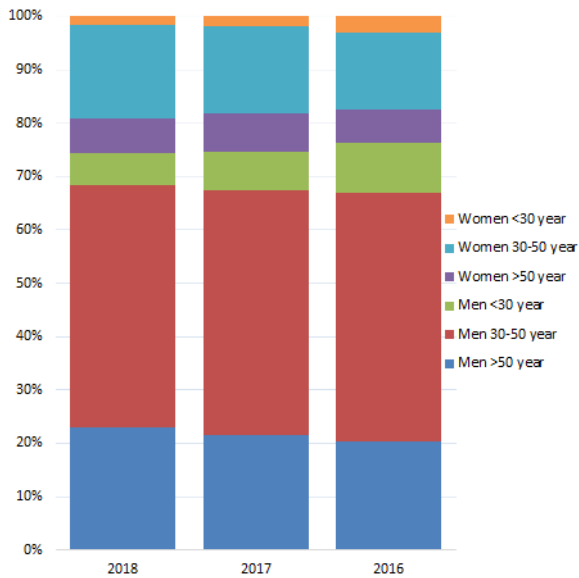
Covering the full mission range, SSC's expertise includes satellite operations and engineering, ground segment operations and engineering, space engineering and scientific services, simulations and training. The Division is predominantly active in Sweden, Germany, Netherlands, France and Spain.

### Core competence

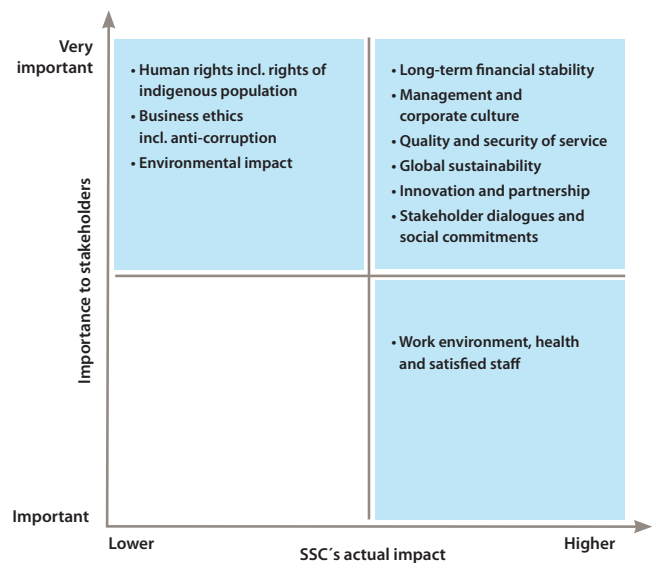
The Division's employees are in possession of specialist expertise in areas such as Earth observation, manned spaceflight, commercial telecommunications and navigation.

# SSC SHORT SUSTAINABILITY FACTS 2018

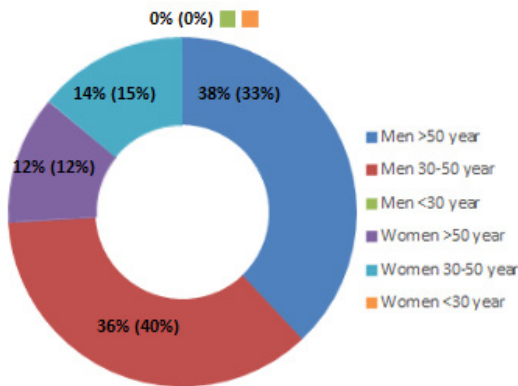
Employees by age and gender 2018



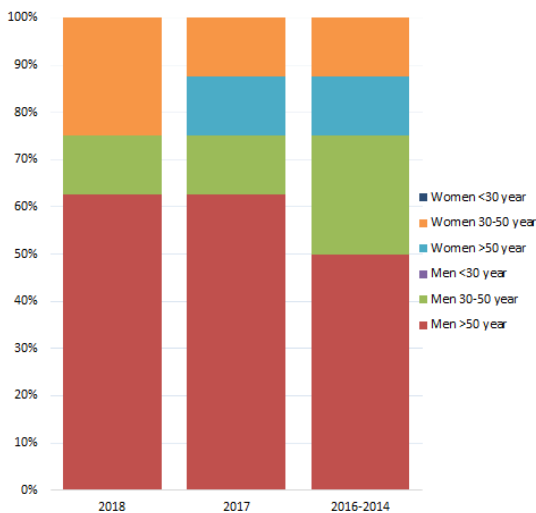
SSC's material sustainability areas in 2018



Managers by age and gender 2018



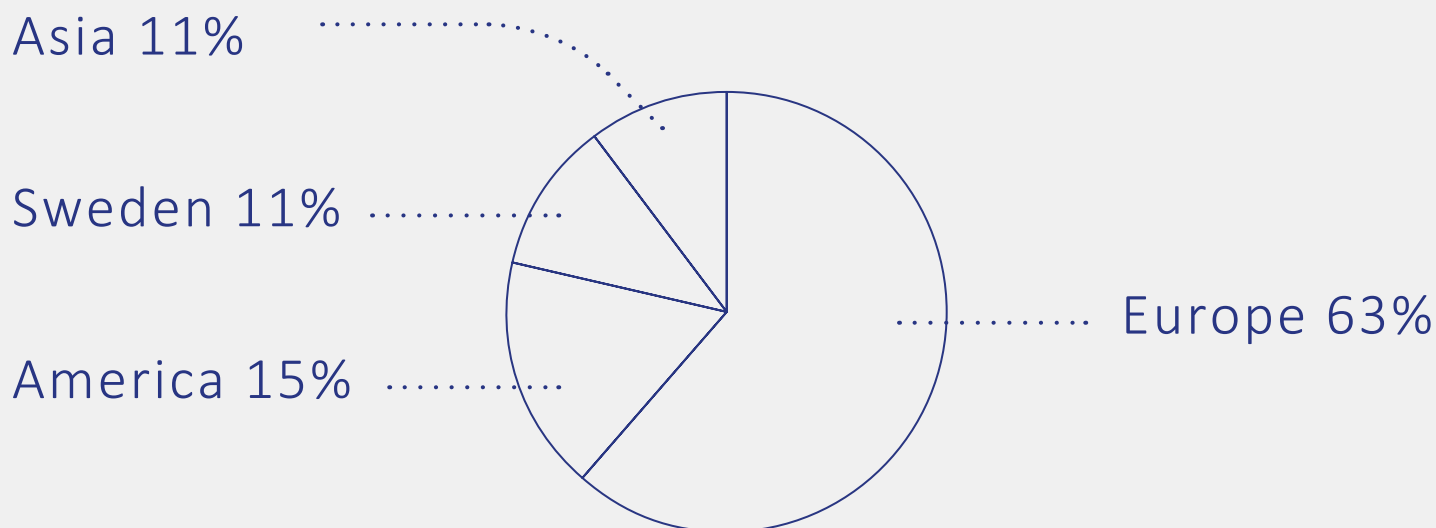
Executive Management by age and gender 2018



- 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.
- Environmental impact:** SSC want to reduce negative impacts on the environment with reference to the future development of Esrange.
- 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.
- 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.
- 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.

# SSC SHORT FINANCIAL FACTS 2018

## Revenues per region



## 2018 in summary

The operating profit and EBIT margin were, adjusted for the one-off effects of the divestment of a subsidiary 2017, on par with previous year.

The financial performance of Science Services division improved during the year when project activities returned to a higher level.

Engineering Services operating profit remained stable, while the profit in Satellite Management Services decreased slightly after an all-time high in 2017.

The number of employees increased. The increase was evenly distributed across the divisions.

## The financial development in brief

Amount in MSEK	2018	2017
Revenue	945	935
<b>Operating profit/loss</b>	<b>47</b>	<b>-14</b>
Operating profit, excl. the impact of divestments	47	49
Cash flow after investments	80	60

## Number of employees

Average number	2018	2017
Women	119	935
Men	359	350
<b>Total average number of employees</b>	<b>478</b>	<b>465</b>



01

*SSC is a leading global provider of advanced space services. The business is global and includes customers and missions from several parts of the world. Below are some examples of our missions in 2018.*

## **Support for four new satellites in the Galileo programme**

During 2018, SSC has provided support for four new satellites in the Galileo system. These are now in orbit and used in the system. Galileo is Europe's own global navigation satellite system, providing a highly accurate, guaranteed global positioning service under civilian control.

## **Balloon flight from Svalbard to northern Canada**

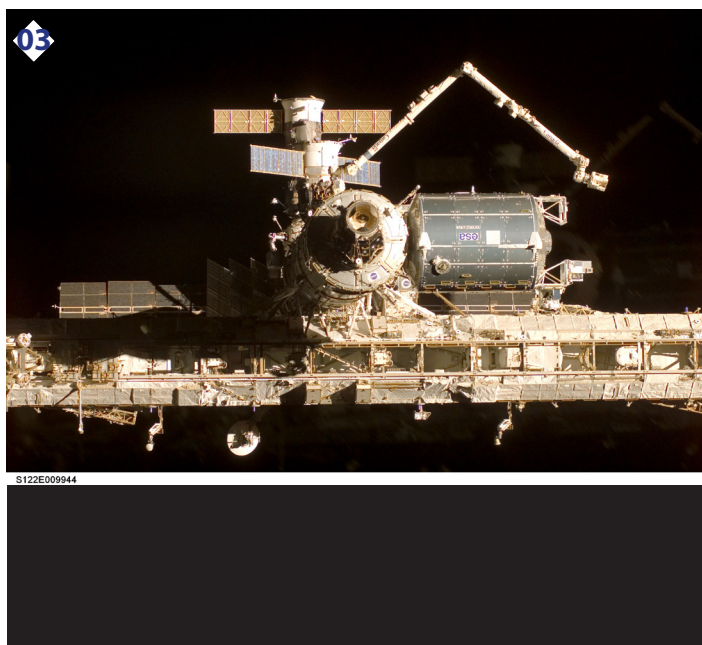
In July 2018, SSC released the Italian scientific balloon OLIMPO from Svalbard, Norway. The mission was a bit special because of the odd launch site our customer desired. Despite the special circumstances and the time pressure, our team from Esrange carried out the mission successfully. The balloon flew over the Atlantic Ocean and was recovered in Northern Canada a week later. The mission aims to learn more about the universe's early phase.



02

## **Continued support for Copernicus, the European Earth observation programme**

SSC has continued the support for ESA's Earth observation programme, Copernicus, during 2018. The programme is the most ambitious Earth observation programme so far and is run by the EU and the European Space Agency (ESA) together. ESA is developing the satellites named Sentinels, which provide us with information relating to the environment, to understand and mitigate climate change and to ensure civilian safety.



03

## **10 years of Columbus mission**

SSC celebrated, together with the entire space world, ten years of the Columbus mission. In 2008, the Shuttle Atlantis was launched with Europe's Columbus model on board, bound for the International Space Station, ISS. Since then, ESA's orbiting science lab has been used for several experiments, like growing plants and researching new metals. SSC is proud to have supported the ISS module with engineering services since the year 2000 with four teams still supporting from DLR in Germany.





### **New Ground Station in Thailand**

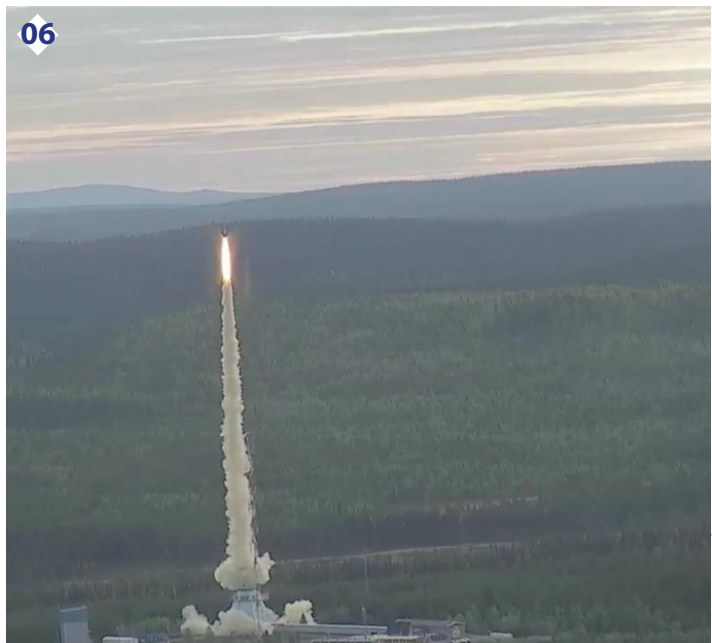
During November 2018, SSC established a new ground station in Thailand for data transfer to and from satellites. The establishment took place in cooperation with the Thai space agency GISTDA at Space Krenovation Park in Si Racha, southeastern Thailand. Thereby SSC's extensive global commercial network for satellite communications strengthened.

Through SSC's ground station network, many different actors and stakeholders can get quick access to important information. A good example is information used to observe important phenomena on Earth, such as sudden changes in the environment or the climate. The establishment is the biggest foreign investment in the Thai space industry so far.



### **Contract on support to the first private spacecraft to the moon**

In 2018, SSC received a contract to support the Israeli company Spacell whose spacecraft should reach the moon in 2019. Our service is all about communicating with the satellite after launch and make sure to direct it to the moon. After landing, the craft will send photos and video back to Earth. SSC will provide support to the craft via our global network of ground stations. It is the first private spacecraft to land on the moon and an example of how private/commercial entities move forward their positions in space.



### **Research in microgravity**

TEXUS is a sounding rocket program for microgravity research. Because gravity affects everything on Earth, it is an important issue in many fields of research in how different processes behave in the absence of gravity. The TEXUS program has the primary aim to investigate the properties and behavior of materials, chemicals and biological substances in a microgravity environment. The program started in 1977 and all rockets are launched from the Esrange Space Center.

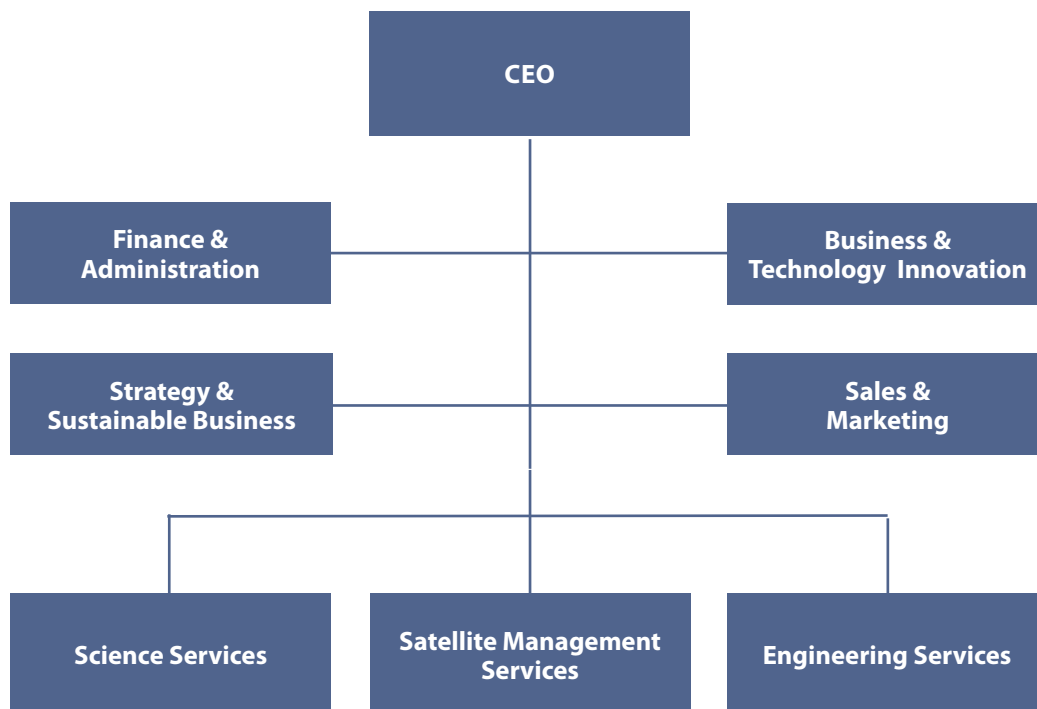
TEXUS 54 was launched on May 13 and TEXUS 55 on May 31, 2018.

04 Inauguration of SSC's Ground station in Thailand

05 Spacell spacecraft Photo: Spacell

06 Launch of TEXUS 55 from Esrange Space Center

# ORGANISATION



## EXECUTIVE COMMITTEE



**STEFAN GARDEFJORD**  
President & CEO



**ÅSE LAGERQVIST  
VON UTHMANN**  
Senior Vice President  
Finance & Administration



**LEIF ÖSTERBO**  
President  
Satellite Management Services



**NICK PRIBORSKY**  
President  
Engineering Services



**LENNART POROMAA**  
President  
Science Services



**STEFAN GUSTAFSSON**  
Senior Vice President  
Strategy & Sustainable Business



**JOHN STUART**  
Senior Vice President  
Sales & Marketing



**LINDA LYCKMAN**  
Senior Vice President  
Business &  
Technology Innovation

# HISTORY

- 
- 2017 ATS was transferred to FMV. ECAPS was divested to Bradford Engineering Inc.
- 
- 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.
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- 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.
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- 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.
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- 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.
- 
- 2004 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 Esrangle.
- 
- 1977 SSC's first microgravity experiment payload was flown on a sounding rocket.
- 
- 1974 The first balloon was launched from Esrangle.
- 
- 1972 SSC was founded by the Swedish government.
- 
- 1966 The first sounding rocket was launched from Esrangle.
-

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