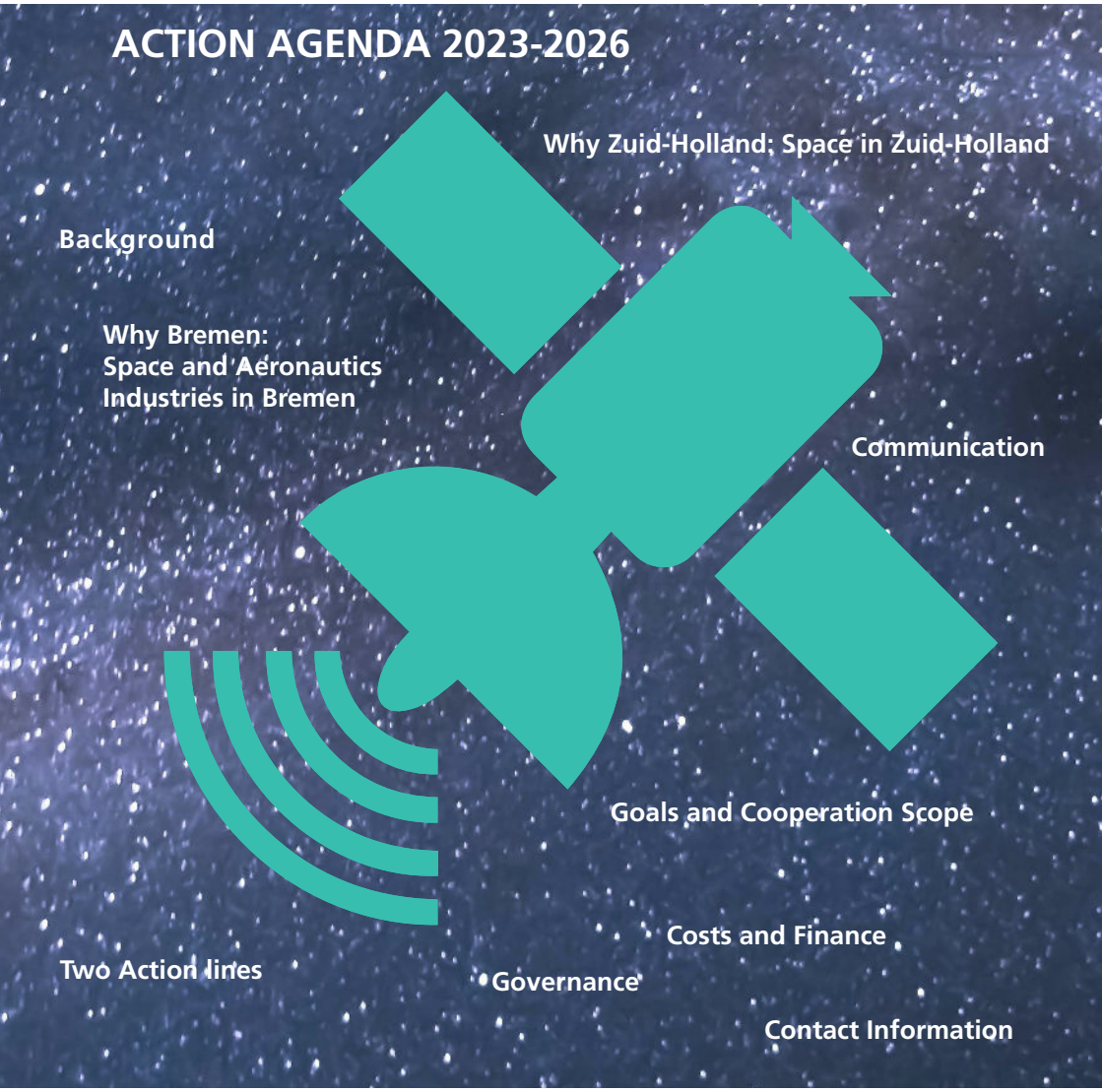
Cooperation in the Space Sector between Bremen and Zuid-Holland



AVIASPACE BREMEN

SPACENED

Free Hanseatic City of Bremen

provincie Zuid-Holland

Background

The space sectors and regional governments of Bremen and Zuid-Holland join forces to strengthen (aero)space in the Province of Zuid-Holland and the German Federal State of Bremen.
On 6 March 2019 Jeroen Rotteveel (Chairman of the board of SpaceNed), Jaap Smit (the King's Commissioner in the Province of Zuid-Holland), Martin Günthner (Senator in the State of Bremen) and Holger Oelze (CEO of Aviaspace) signed a Joint Declaration of Intent on further collaboration in the area of space.

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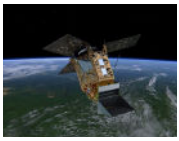
Bremen and Zuid-Holland are both European regions with a large concentration of industrial, research and scientific space activities. Germany and the Netherlands are both founding partners of ESA as well as of the European Union. Several industrial and Research & Development partnerships between space cluster actors in both regions already exist. On this strong basis, both regions intend to strengthen space industry and research collaboration.

In appendix 1 you can find an overview of the initial Action Agenda and its activities that took place in the period 2019-2022. During the Bremen Space Economic Mission to Zuid-Holland (18-20 May 2022), the four parties stated that they would like to continue the cooperation for the following years. This updated Action Agenda is the result.

The global space sector has undergone significant evolution in technological development, knowledge dissemination and size in recent years. Therefore, space industry and research facilities face common challenges. Bremen and Zuid-Holland have thus come to the following understanding of shared challenges:

- How to strengthen the existing space innovation ecosystem in both regions and broaden it by including new industrial and scientific actors;
- How to ramp up production rates in space industry, using new and smart manufacturing techniques like robotics, M2M-techniques, 3D printing, etc.;
- How to implement smart engineering techniques to reduce engineering costs and shorten the time to market of new products and services, using smart simulation and rapid prototyping;
- How to design and apply new light-weight materials and smart structures for (aero) space in order to reduce operational costs;
- How to reduce the carbon footprint and increase sustainability of the industry;
- How to further digitize the development and production;
- How to increase resilience of supply chain and production in face of major global uncertainties (Climate change, pandemic, conflicts etc.);
- How to enable space and satellite application start-ups to develop to scale ups.



Why Zuid-Holland: Space in Zuid-Holland

Over 80% of all space activities in the Netherlands take place within the Province of Zuid-Holland: the technical heart of the European Space Agency, ESTEC - European Space Research and Technology Centre - is located in Noordwijk, the country's largest space company is Airbus Defence & Space in Leiden and Europe's leading faculty of Aerospace Engineering is part of the University of Technology in Delft. NL Space Campus is currently being developed as the European hotspot for space activities with an active campusorganisation and with facilities including offices, a fab lab, meeting rooms, horeca, testing areas and development & production locations. In the region, vibrant commercial clusters exist around SmallSats, Free Space Optics and Earth Observation. A thriving Composites cluster, including research centres for both digital and large-part manufacturing, provide high end materials for the aerospace & space industries. The region is home to the complete chain of academic research & knowledge, first, second & third tier suppliers and end users. Some 25 organisations & institutes and over 75 companies are actively working in Zuid-Holland's space cluster, making it one of the most complete and dynamic space ecosystems in Europe.

Why Bremen: Space and Aeronautics Industries in Bremen

More than 140 enterprises and 20 science institutes power the aeronautics and space industries in Bremen. The order books are well filled. More than 12,000 employees in the industry generate revenues of more than 4 billion euros per year. Leading companies such as the Airbus Group, ArianeGroup, Rheinmetall Electronics, OHB, and their suppliers contribute significantly to this success. The companies' economic success is founded on their employees' excellent qualifications. To ensure that this situation can be maintained and further improved, Bremen invests heavily in future developments: interdisciplinary and intersectoral research and development strengthen the location and create synergy effects with other strong industries in Bremen. Cutting-edge research in the state of Bremen sustainably supports the industries in the fields of materials sciences and production technologies, space systems, remote sensing, bionics, robotics among others. Major products from Bremen are the wings of the Airbus aircraft, the Ariane upper stages and the satellite navigation system GALILEO. The ESA Business Incubation Centre (BIC) Northern Germany is one of the flagship projects for the aeronautics and space sector in Bremen. Our space incubator – part of the European Space Agency's (ESA) network of 29 centres across Europe – takes on startups from Bremen as well as from other federal states in Northern Germany.

The ECOMAT research and technology centre: Bremen's contribution to the key technology of lightweight construction

Goals and Cooperation Scope

Bremen and Zuid-Holland are both European regions with a large concentration of industrial, research and scientific space activities. The regions aim to strengthen space activities and face challenges collaboratively.

Main target groups
The main target groups for the joint activities within this Action Agenda are:
(1) Business representatives;
(with a focus on small and medium size businesses),
(2) Researchers and students;
(3) Startup entrepreneurs;
(4) Policy and decision makers.

Two Action lines

1. Actionline 1: Arrange Business to Business and Business to Knowledge networkmeetings during big international Space events

The space communities of Bremen and Zuid-Holland attend several international space events like the International Astronautical Congress (IAC), Space Tech Expo Europe, Industry Space Days at ESA/ ESTEC Noordwijk etc., during the year. The parties in this Action Agenda like to facilitate B2B and B2K network meetings between the space communities of Bremen and Zuid-Holland during these big events. We organize this in order to strengthen R&D and business cooperation. We expect to facilitate yearly a minimum of two of these networking events.

Referring to a common digital platform, hosted by the Federal State of Bremen, "Connecting Space Regions", we facilitate digital matchmakings for all stakeholders. Networking events are supported by the Enterprise Europe Network (EEN) helping SMEs to internationalize and innovate in both regions. EEN is the primary contact to facilitate business and networking events for the regional collaboration.

Explanatory box on Connecting Space Regions

Due to the Corona pandemic starting in 2020 physical trade shows and international events were cancelled or changed to a digital format. In this context, Bremen and Zuid-Holland engaged in a digital pilot event alongside the digital International Astronautical Congress 2020 (IAC). After positive feedback on this digital pilot event, Bremen approached Zuid-Holland in order to create the Connecting Space Regions event series.

The Connecting Space Regions event series focuses on current topics of high relevance to space industry and research. These topics were tied to the shared challenges and mutual themes of cooperation outlined in 2c. During events space industry and research representatives engaged directly with each other through (1) short presentations, (2) Q&A sessions and (3) digital B2B matchmaking. The B2B matchmaking was enabled through a digital community platform by EEN in 2021 and 2022.

Through the digital Connecting Space Regions event series we also actively connect our space sectors to other space regions within and outside Europe! Next to Bremen and Zuid-Holland, we have had speakers and participants from the following regions/countries: other German and Dutch regions, Italy, Poland, Finland, Sweden, Brazil and England.

2. Action line 2: (R&D) cooperation between space industry and knowledge institutes from Bremen/Zuid-Holland

With action line 2, we aim to stimulate concrete cooperation activities and projects based on the joint challenges and complementary strengths in both regions.

a. ESA BIC collaboration Bremen and Zuid-Holland

The ESA BICs in both regions have a history of strong research and development, paired with commercial expertise, not only in space-related topics. The many existing collaborations between partners in the regions and the recent change in attitude of ESA towards close collaborations between the individual ESA BICs set the theme for our ESA BIC collaboration. Specifically, we would like to:

- Improve startup access to technical partners available in the partner region;
- Promote each other's services;
- Encourage transregional collaborations;
- Continue building our ESA BIC Community Platform to connect both Noordwijk and Northern Germany ESA BICs.

The ESA BIC Community Platform aims at fostering the relationship between alumni, startups, brokers, ambassadors, and investors and is a vital step towards integrating the two BICs.

b. Collaboration between LDE with Bremen Research Institutes and companies

Knowledge institutions Leiden University, Delft University of Technology and Erasmus University also joined forces in the Netherlands in the field of space (they cooperate under the flag of LDE Space). LDE Space, knowledge institutes in Bremen and companies have the ambition to cooperate in the following way:

1. Cooperation in education between LDE and University of Bremen

There are ideas for cooperation in:

- Earth Observation Summer School collaboration;
  (organized by LDE together with NL Space Campus);
- Minor (3rd year semester program) collaboration;
- Student exchange.

2. Cooperation between LDE Space and ZARM Drop tower

Possible collaboration to promote microgravity research by offering students the opportunity to drop an experiment in weightlessness in the drop tower.

3. Collaboration between LDE Space and companies
(for example Airbus DS, ArianeGroup and OHB)
The LDE liaison from LDE Space is in regular contact with these companies to look at:

- Assignments from them for Joint Interdisciplinary Projects
(https://www.jointinterdisciplinaryproject.nl/)
Assignments have been running here for a few years and the goal is to intensify them;
- Assignments for Minors
(just started a new minor, 1 more should be added next year);
- Linking companies to appropriate knowledge departments within LDE.

c. Themes for mutual cooperation

Areas for main thematic emphases are:
(1) Earth Observation, Satellite Navigation & Communication (small satellites, instrumentation and application);
(2) Light-weight Materials, Structures and industry 4.0;
(3) Artificial Intelligence / Augmented & Virtual Reality (AR/VR).

During the Space Tech Expo (November 2022) we will organize round table discussions with companies and knowledge institutions from both regions to further explore and develop the cooperation activities. The aim is to build consortia around joint R&D-themes that will develop and implement joint projects and programs.

Explanatory Box on joint AR/VR pilot project Mixed Reality Extensions for Space Tech Procedures

In the first period of the action Agenda a pilot project between Bremen and Zuid-Holland was developed called: "DASCLab: Mixed Reality Extensions for Space Tech Procedures". DASCLab is the Digital Aeronautics and Space Collaboration Labs use case within the frame of GAIA-x. The project partners have a high interest to further develop this pilot project. Possible ways forward are co-operations within ESA and the EU for Mixed Reality and Model Based System Engineering (MBSE) as well as Mixed Reality and Assembly Integrate and Test (AIT).
In addition, there is a high interest of the NL parties to join the Bremen based project COOPERANTS, which is part of the European GAIA-X Initiative. The Dutch partners also want to investigate the need and possibilities for a NL based digital hub parallel to German hub (cooperants).

Explanatory Box on possible joint program Green light-weight cubesat for dike monitoring
ECOMAT and Delft University of Technology would like to initiate a joint program in cooperation with (sme) companies. The idea is to develop a testbed (for) exponential satellite based science (using) experimental robotic (and) AI compounded technology. This joint program will include all three theme's for mutual cooperation mentioned above. A joint program Green light-weight cubesat for dike monitoring trough the development of this testbed is aimed on speeding up innovation processes.
The pace of innovation is not fast enough, and bolder steps toward innovation are necessary Key areas must be targeted in order to combine a rapid turnaround with innovations that are exponentially scalable.

Governance

The working group that was formed during the initial Action Agenda will continue. The working group consists of representatives from the Free Hanseatic city of Bremen, Aviaspace Bremen, Province of Zuid-Holland and SpaceNed. The working group will meet regularly – bi-weekly (mostly digital, when possible also via in person meetings) in order to start up joint activities and to organize follow up in close cooperation with companies and knowledge institutes from both regions. Furthermore the working group also monitors, assess and will suggest updating the Action Agenda when necessary. The goal of the working group is to facilitate this bi-lateral innovation cooperation within the frame of the Action Agenda 2.0 cooperation in the space sector between Bremen and Zuid-Holland to achieve the goals of this Action Agenda and mutually beneficial outcomes for both sides.

Costs and Finance

The organizational costs associated with the activities listed under action line 1 are borne by Bremen region, Aviaspace, the Province of Zuid-Holland and SpaceNed.
Travel, subsistence and participation costs for events, fairs and trade missions are for the account of the participants.

Costs associated with the implementation of projects and other cooperation activities as described under action line 2 have their own method of (co)financing. Depending on the type of activity, the appropriate method for co-financing is considered (eg Horizon Europe or ESA, Interreg, or other specific national or regional instruments).

Communication

Common actions will be published on respective websites and social media channels of involved partners.

Appendix 1

Overview of activities that took place within the frame of the Action Agenda 2019-2022

2019/2020

- Networking drinks at IAC Washington (at the Bremen and NL Space booth), October 2019.
- Space Tech Expo Europe, November 2019:
  - o Launch of Action Agenda.
  - o Roundtable discussion on VR/AR with companies/institutes from Bremen and Zuid-Holland.
  - o Roundtable discussion on Lightweight materials with companies/institutes from Bremen and Zuid-Holland.
  - o Meet the Dutch (B2B Matchmaking hosted by EEN).

2021/2022

- September 2021 Start of joint pilotproject AR/VR (with cooperants and AVATAR partners) with cofinance by the regions of Bremen and Zuid-Holland.
- **Connecting Space Regions editions (2021/2022):**
  - o Digitization (May 2021), 120 participants.
  - o Hydrogen: from space to zero emission aviation and back to space (June 2021), 55 participants.
  - o Go Space: Small Pads, Small Launchers, Small Sats (September 2021), 90 participants.
  - o Business Breakfast Earth observation during Space Tech Expo Europe, November 2021, 70 participants.
  - o Searching for the key to green lightweight structures (March 2022), 55 participants.
- Space Tech Expo Europe, November 2021
  - o VIP Happy Hour reception Networking drinks 'Action Agenda: looking back and ahead' at Havanna Lounge, 120 participants.
  - o Rittersaal meeting of Dasclab cooperants and AVATAR during Space Tech Expo Europe.
- Economic Mission Bremen to Zuid-Holland (18-20 May 2022), see next pages for more info

Program
The Bremen Space
Economic Mission to Zuid-Holland
18. – 20.05.2022

Wednesday 18.05.2022

06:30 Departure Bus

12:30 Registration & Arrival of the Bremen Space Delegation at NL Space Campus and European Space Agency - (ESA - ESTEC) in Noordwijk

13:00 Lunch at ESA - ESTEC

14:00 Welcome by Torben Henriksen (Acting Director of Technology, Engineering & Quality and Acting Head of ESA ESTEC Establishment) Tour ESA - ESTEC including the Concurrent Design Facility, Test Center and Hertz Chamber

16:00 Transfer to Space Expo

16:30 Company presentations and networking with companies/ institutes from NL Space Campus with NL Space Campus Foundation, Liaison Officer Leiden Delft Erasmus Universities, several start-ups from SBIC, SCN AVATAR, Groundstation Dotspace and others

18:30 Transfer to Hotel

19:45 Meet in hotel lobby and walk to the restaurant

20:00 Delegation dinner at the Restaurant Stan Den Haag with the German Ambassador Dr. Cyrill Jean Nunn

Thursday 19.05.2022

08:15 Delegation meeting in hotel lobby ibis Den Haag City Centre

08:30 Transfer to Airbus Defence & Space NL

09:00 Welcome by Rob Postma (CEO) & Tour Airbus Defence & Space NL
Topics: Solar Arrays (at the location in Leiden) and Structures
(at the location in Oegstgeest)

12:00 Lunch with representatives of Airbus in Leiden

13:00 Transfer to Delft

13:30 TNO Space with a tour & company presentations by ISISPACE, Hyperion, T-Minus and others Topic: Satellite Communication, Earth Observation and Small Satellites

15:30 SAM|XL - Accelerator of innovation / Delft University of Technology
SAM|XL is a collaborative research centre for smart advanced manufacturing of lightweight structures

17:00 Transfer to Drinks & Dinner reception

17:30 Drinks & Dinner Reception with actors from the Dutch space cluster– Celebrate the Action agenda cooperation in the space sector between Bremen and Zuid-Holland Hosted by Aviaspace - Province of Zuid-Holland – SpaceNed - Free Hanseatic City of Bremen

18:00 Welcome Speeches by the Regional Ministers of Zuid-Holland – Meindert Stolk – and Bremen – Kristina Vogt
Networking dinner (walking dinner)

21:00 End of Drinks & Dinner Reception and walk to the bus

21:15 Transfer to Hotel ibis Den Haag City Centre

During the Economic mission,
a side visit was made to TU Delft Aerospace Engineering. Next to Regional Minister Kristina Vogt, Ariane Group, Airbus DS, University of Bremen, Aviaspace Bremen and the Ministry of Economic Affairs, Labour and Europe joined the visit. After a short introduction of Delft University of Technology and the Faculty of Aerospace Engineering in particular, a tour around the facilities was made. There was special attention to the Student Team AeroDelft, The Flying V and the flight simulator Simona. The second part of the program consisted of a visitto the Aerospace Innovation Hub, where 2 startups presented themselves.Especially the can do mentality of TU Delft impressed the visitors.

Friday 20.05.2022

07:30 Check-out and meeting in hotel lobby ibis Den Haag City Centre,

07:45 Transfer to Ypenburg Techpark

08:30 Business Breakfast with welcome words, short pitches by Enterprise Europe Network, InnovationQuarter & networking with other participants

10:00 Parallel workshops follow up on specific themes of the Action Agenda
1.Digitalisation: VR/AR for space engineering looking back and ahead
2.Lightweight Materials: follow up meeting on the theme Searching for the key to green lightweight structures

11:45 Company visits Technology Park Ypenburg: Airborne and GTM

12:30 Lunch at Technology Park Ypenburg
End of official program

13:00 Departure to Bremen

Aviaspace Bremen:

- Home - Aviaspace Bremen (aviaspace-bremen.de)
- Facebook: https://www.facebook.com/AviaSpaceBremende-1942414092674668/
- Twitter: https://twitter.com/Aviaspace_eV
- Instagram: https://www.instagram.com/aviaspace_bremen/?hl=de

SpaceNed:

- www.spacened.nl
- Linkedin: www.linkedin.com/company/spacened/

Province of Zuid-Holland

- www.pzh.nl
- Twitter: https://twitter.com/zuid_holland
- Linkedin: https://www.linkedin.com/company/provincie-zuid-holland

Contact Information

For further Information feel free to contact:

Barbara Cembella
Aviaspace Bremen +49 421 2208 275
Jannis Balke
Aviaspace Bremen+49 162 2519527
Ingrid Houthuysen
SpaceNed +31 152 787 477
Hessel Kokke SpaceNed + 31 6 1870 3838,
Renate Beausoleil Province of Zuid-Holland +31 6554 49079
Alexander Vorwerk Free Hanseatic City of Bremen, +49 421 361 8583

Left to right: Jeroen Rotteveel (Chairman of the board of SpaceNed), Kristina Vogt (Minister of Economic Affairs, German federal state of Bremen), Meindert Stolk (Regional Minister Economic Affairs and Innovation, Province of Zuid-Holland) and Holger Oelze (CEO of Aviaspace) on 19 May 2022 / Zuid-Holland.