



MINISTRY OF FOREIGN AFFAIRS AND TRADE OF HUNGARY DEPARTMENT FOR SPACE POLICY AND SPACE ACTIVITIES

Space has become an integral part of our everyday lives. Satellites and space infrastructure provide essential services in navigation, communication, finance, health care, agriculture, education and a number of other fields. The defence aspects of space underline the growing need to protect critical infrastructure. This information sheet provides an overview of Hungary's space policy and space activities with links to further information.

FROM THE BEGINNING TO PRESENT DAY

Hungarian achievements in space date back to *Zoltán Bay's* lunar experiment in 1946 that bounced radar signals off the surface of the Moon and created the fundamentals of radio-astronomy. Hungarian instruments have been used in spaceflights since the 1970s. The *Pille* dosimeter family was used on board the MIR and presently the International Space Station. Hungary's first astronaut *Bertalan Farkas* flew in 1980 and carried out scientific work on board the *Salyut-6* space station. The first Hungarian satellite, *Masat-1* completed its mission in 2012-2015. In 2019 the *SMOG-P* became the first Hungarian *PocketQube* satellite to study the ionosphere.



Bay's Lunar Antenna in 1946

INSTITUTIONAL BACKGROUND

Space policy and space activities have been managed and supervised by the Ministry of Foreign Affairs and Trade (MFAT) since 2018, under the Ministerial Commissioner for Space Activities, Dr Orsolya Ferencz. Building on the widespread diplomatic network and foreign trade activities of the MFAT, the Hungarian space sector has developed significantly over the past five years.

HUNGARY'S NATIONAL SPACE STRATEGY

Hungary adopted its first space strategy in 2021. The strategy sets the vision of Hungary to become a relevant player in space, deeply embedded in international cooperation. The Strategy defines three, mutually supportive strategic objectives:

1. Utilising space sector to stimulate innovation and contribute to the sustainable growth of the national economy.
2. Strengthening Hungary's international role, broadening its network, and creating framework and further opportunities for cooperation.
3. The creation of essential and conducive social and economic conditions to enhance the development of the space sector.



Hungary's Space Strategy

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INTERNATIONAL CONTEXT AND COOPERATION

Space is becoming more and more available to state and non-state actors and is getting more congested, contested, and competitive. Space must remain accessible to all humanity. Hungary is a state party to the **Outer Space Treaty** and other fundamental international space treaties, and strongly advocates the peaceful uses of outer space. Multilateral cooperation, especially within the **United Nations** remains essential in the global governance of space, promoting responsible behaviour, establishing mechanisms, setting standards and procedures, norms, codes of conduct and confidence-building measures for all existing and emerging space actors.

Space is a strategic area for the **European Union**. Hungary supports the recently published "*EU Strategy for Space Security and Defence for a stronger and more resilient European Union*". The EU's individual space programmes are aiming to achieve a more autonomous and resilient means in service provisions (Copernicus CSS) and in their progressive development (Galileo G2G). Space will be a focal area for Hungary when it assumes the rotating presidency of the Council of the European Union in the second half of 2024.

NATO has recognised space as a highly dynamic and rapidly evolving area, and a new operational domain. The 2022 Strategic Concept underlines the vital role of space for NATO's deterrence and defence posture. Hungary is part of the "Alliance Persistent Surveillance from Space (APSS)" initiative, launched in February 2023.

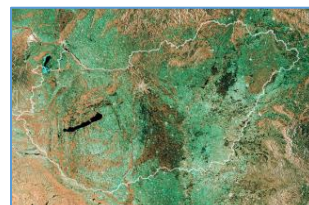
Hungary has signed 18 bilateral memoranda of understanding, mostly with ministries and space agencies, as well as leading space companies: **Axiom Space Inc.**, **Thales Alenia Space**, and **Virgin Galactic Holding**. Regional cooperation with the **Visegrád partners (V4)** is central to our efforts.

COOPERATION WITH THE EUROPEAN SPACE AGENCY (ESA)

Hungary has been a member of the **European Space Agency** since 2015 and an active contributor to ongoing programmes. Hungarian instruments are flying in the cis-lunar space, to the icy moons of Jupiter, and objects deep in the Solar System.

Hungary's contribution is increasing, now it is on a level of 22-25 million Euros. All this enables an increasing number of SMEs to be involved in the international space activity. Some examples of the Hungarian involvement in different ESA programmes are the *BepiColombo* mission to **Mercury**, the *Mars Sample Return* mission to **Mars**, the *JUICE* mission to **Jupiter**, the radiation measurement system onboard the ISS and the future **lunar Gateway** space station, the participation in the construction of the *Sentinel* satellites and in space telescopes, as well as *Galileo* navigational data and Earth Observation downstream applications.

A Business Incubation Centre for new SMEs operates in Budapest; there are 21 startups under incubation.



Radar image of Hungary made by Sentinel-1A satellite

THE "HUNGARIAN TO ORBIT" (HUNOR) ASTRONAUT PROGRAMME

Hungary launched its national astronaut programme in mid-2021 in close cooperation with **Axiom Space, Inc.** The objective is to send a national research astronaut on a 30-day mission to the International Space Station in late 2024 / early 2025. The entire programme draws USD 99 million from the state budget, including Hungarian R&D activities and science experiments to be conducted in space. The programme would create "space heritage" for the entire Hungarian space sector, which is essential for successful involvement in international value chains.



The official HUNOR Logo

More than 240 individual applications were received and evaluated in early 2022. During the selection process, lasting nearly 12 months, the list was narrowed down as applicants underwent a series of tests and examinations in close cooperation with ESA, NASA and Axiom Space, and in strict compliance with international standards. The ESA test centre in Hamburg, the Hungarian Centre for Energy Research, the Semmelweis University and the Hungarian Air Force all played a significant role in the process. In March 2023, four astronaut-candidates were selected for training. After further selection, one of them will join the crew of the SpaceX Dragon and fly to the International Space Station. During the 30-day mission the astronaut will carry out research and experiments, using equipment and instruments designed by Hungarian scientists and built by the Hungarian industry. Available research time will be offered to ESA and Hungary's international partners.

SPACE SECTOR IN HUNGARY – INDUSTRY & EDUCATION

The Hungarian space sector has been developing steadily, including private companies, scientific research institutes and universities. Major actors are listed in the **Hungarian Space Kaleidoscope**, an annual publication to foster business connections. These companies and entities represent a wide spectrum of research and technical sectors ranging from astrophysics through meteorology, space law and economy, from on-board data systems to telecommunication and advanced material sciences.

The **UNISPACE** training program, launched in September 2022, is a postgraduate specialist-training course representing four specialisations and main disciplines: natural sciences, engineering, medical and health sciences, and social sciences.

Its first semester attracted a great number of students and it will be restarting in autumn 2023.



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