Annual Report

Copernicus Science Centre — 2024

Strategic goals

S1. To offer a memorable, inspiring and friendly experience to more than one million visitors annually. 6

To provide visitors with comfortable visiting conditions, top-quality exhibits, interesting shows at a high-tech planetarium and engaging activities.

To reach out to local communities across Poland, with Copernicus exhibits and shows.

S2. To foster cognitive independence and collaborative skills. 27

To promote dialogue, with diverse participants, about challenges that lie at the intersection of science and society.

To create and disseminate solutions that transform education.

To develop networks of learning communities.

S3. To increase the participation of underrepresented individuals and groups in Copernicus programmes. 62

To remove barriers and include people at risk of social exclusion into the programme activities.

To build an inclusive organizational culture.

To make Copernicus a green cultural institution. 71

To reduce the carbon footprint of our operations.

To apply the “3R” principle.

To create a biodiversity park and make our environs greener.

S5. To ensure Copernicus financial stability and partnerships. 77

To raise revenue to ensure operations and growth.

To build partnerships that contribute to the Copernicus vision.

S6. To create a friendly and efficient organization. 82

To streamline operations and ensure better internal cooperation.

To ensure job satisfaction among the team.

Vision

People shape a world that is friendly to them and to nature, by developing and applying science.

Mission

We inspire people to experiment, understand the world, and take responsible action.

Values

We value science, integrity, openness, co-operation, care for the environment.i dbałość o środowisko.

Executive summary

In 2024, the Copernicus Science Centre achieved what we consider a remarkable success: we welcomed over a million visitors despite significant challenges such as the temporary closure of exhibitions for air conditioning renovations and the extended closure of the Planetarium (until spring 2025). The Exhibitions received 727,033 visitors, the Planetarium hosted 205,330, and special events were attended by 115,832 people. These numbers serve to confirm that we manage to deliver unforgettable and inspiring experiences that attract diverse audiences.

A key factor in this success is our unwavering commitment to quality and innovation. New additions, such as the humanoid robot Ameca, the robotic dog Spot, and the temporary exhibition “Poisons: Nature’s Superpowers”, drew in both new and repeat visitors. The renovation of the air conditioning and ventilation systems in our main building improved visitor comfort. We also modernized the cloakrooms and began transitioning to energy-efficient lighting.

We continuously prioritize the comfort and satisfaction of our visitors. Their satisfaction remains exceptionally high, with 95.9% of exhibition visitors and 98.4% of Planetarium guests rating their visits positively. Recommendation rates of 76% and 86.6%, respectively, confirm our reputation as a valued institution. We thank everyone who supports us – both in person and locally.

Our mission is to reach out to everyone, including those who cannot visit Copernicus in person. Through the “Science for You” program, we reached over 61,063 students from small towns across Poland with mobile exhibitions such as the ScienceBus, PlanetBus, and the “For Math’s Sake!” exhibition. The SOWA initiative (Zones for Discovery, Imagination, and Activity) is a partnership program that enables local institutions to enhance their offerings with our curated exhibitions and activities that encourage independent exploration. In 2024, we opened up nine new SOWA Zones, bringing the total to 41 across the country. Each offers a set of hands-on exhibits, a tinkering space, and participation in educational programs.

We work hard to foster dialogue about the challenges emerging at the intersection of science and society, engaging diverse participants. In collaboration with scientists, we create innovative educational solutions and organize our flagship events. The Science Picnic, Europe's largest outdoor science event, attracted 36 022 participants in 2024, offering interactive shows, experiments, and workshops for various age groups. The Przemiany Festival, in turn, showcased modern and traditional materials with potential for building a sustainable future, highlighting their role in protecting the planet.

In 2024, we introduced the inaugural "Revolutions" award, recognizing innovative educational projects. Its goal is to ignite discussion on education's role in addressing the rapid social and technological changes of our time. Out of 366 submissions, two winning initiatives were selected for their particularly inspiring approaches to education, pushing the boundaries of conventional educational practices.

We continued to develop our flagship programs – Young Explorer Clubs, SOWA Zones, and ESERO Space Education – promoting learning through experimentation and collaboration. As part of the "School with Technology „ project, we created innovative lesson plans using mobile devices, integrating technology into teaching various subjects. Copernicus is also involved in international projects such as Road-STEAMer (promoting STEAM education across Europe) and DigiPatch, which explores the dynamics of virtual micro-communities. The "Lay Out, Let Out" conference focused attention on the well-being of educational communities, bringing together practitioners and researchers.

We redoubled our efforts to ensure broader accessibility and inclusivity, striving to cater to diverse audiences. In 2024, we focused on individuals with hearing disabilities. Polish Sign Language interpreters were present at major events, with information about them being regularly shared through a special newsletter. The "Quiet Hours" program for people with sensory sensitivities was continued. Through the "Together for a Better Future" initiative, involving Polish and Ukrainian children and their families, we held workshops, picnics, and research projects. We also continued building an inclusive organizational culture internally, organizing workshops on empathetic communication, supporting employees with disabilities, and forming an informal team for promoting inclusive language.

We working hard towards attaining climate neutrality. In 2024, we prioritized modernizing our air conditioning and ventilation systems and began replacing traditional lighting with energy-efficient LEDs, reducing energy consumption.

Satisfaction rates

Exhibitions	Planetarium
95.9%	98.4%

Recommendation rate

Exhibitions	Planetarium
76%	86.6%

In a new initiative, we began designing new eco-exhibits using recycled materials. Participants in workshops at our “Thinkatorium” makerspace and “Edufactory” fablab used reclaimed materials to create everyday items, giving a second life to repurposed materials. Wherever possible, we have replaced printed information with digital alternatives.

We are working on establishing a Biodiversity Park, a space for observing nature and educational activities. Greenery was also introduced into the building’s interior, enhancing visitor comfort and symbolically emphasizing the institution’s ecological values. Together, these efforts reflect a comprehensive approach to building a “Green Copernicus”.

We strive for greater financial stability by leveraging diverse revenue sources and fostering partnerships. Despite a decline in ticket revenue due to the necessary renovations, we nevertheless achieved our planned budget target in 2024, with total operating revenue reaching over PLN 107 million. We also secured funding for future initiatives. Thanks to multi-year project grants (e.g., SOWA and “Science for You”) and sponsorship agreements, guaranteed revenue for 2025 exceeds PLN 21 million.

In 2024, we surveyed our partners regarding their experiences working with us. All expressed satisfaction, particularly praising the quality of service and the pursuit of joint educational activities.

Ambitious goals require a committed team. We strive to create a friendly and efficient organization, focusing on team integration, technological improvements, and staff development. The implementation of an Electronic Document Management system has improved document flow, data security, and work efficiency. Regular team meetings and the new “Ear of Copernicus” podcast for internal staff foster relationships and knowledge-sharing. We organize training, onboarding for new employees, and activities to boost team engagement. In 2024, we piloted an Employee Initiative Program, encouraging creative integration projects. Salaries increased by 7%, and an enhanced benefits package (newly including the Multilife platform) improved employee satisfaction by 0.78 points on a 5-point scale, according to the “Engagement Barometer” survey.

We offer a memorable, inspiring and friendly experience to more than one million visitors annually.

The Copernicus Science Centre's strength lies in the authenticity of the experiences we offer, the quality of our exhibits, our relentless drive for improvement, and our pursuit of innovative solutions. These qualities have built our strong brand, making us a respected and recognized institution across Poland and abroad. We focus on delivering top-quality exhibitions and shows, ensuring visitor comfort, and fostering effective, friendly communication. Our programming is designed with families and school groups, as well as young people and seniors in mind.

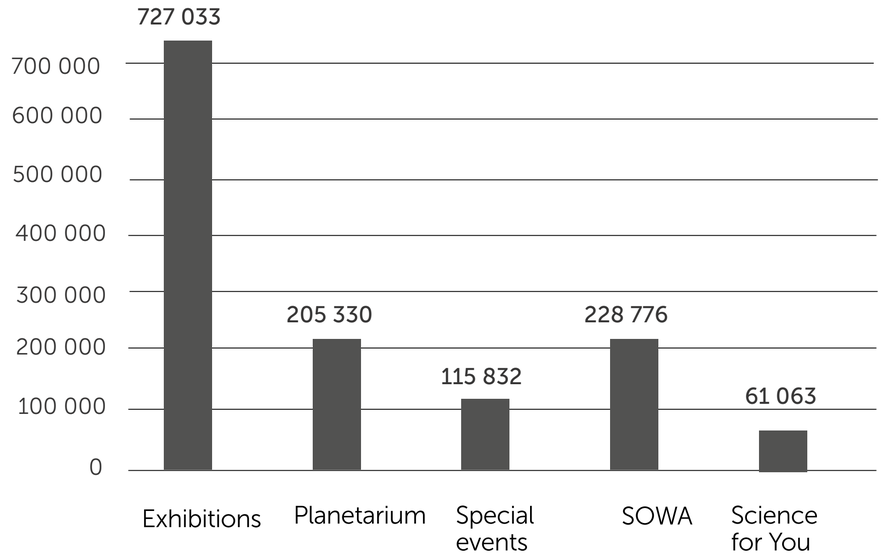
In 2024, a total of 1,048,195 visitors came to Copernicus. The Exhibitions welcomed 727,033 visitors, while the Planetarium hosted 205,330 guests. Additionally, 115,832 people participated in special events such as the Przemiany Festival, "After Hours" Evenings for Adults, and various happenings at the conference centre. Considering the temporary closure of the exhibitions due to HVAC renovations and the Planetarium's extended closure until April 2025, these attendance figures should be recognized as excellent. We sincerely thank all our visitors for their continued support!

Visitor attendance

1 048 195

Exhibitions	Planetarium	Special events
727 033	205 330	115 832

Not only were our Exhibitions and Planetarium highly popular in 2024, but our outreach activities also attracted significant interest – particularly through the SOWA network (see p. 24 and 60) "Science for You" program (see p. 26)



Our Visitors

In 2024, the demographic profile of our visitors remained largely unchanged. Our visitor base continued to be predominantly comprised by female visitors, individuals with higher education, and those under 45 years old. Similarly, the age distribution of individual visitors to the Exhibitions showed no significant change compared to previous years.

To better tailor our offerings to the public's needs, we regularly gather feedback on visitor satisfaction, accessibility, opening hours, and how well attractions and events meet the needs of various groups. The insights so collected help us better understand our audience.

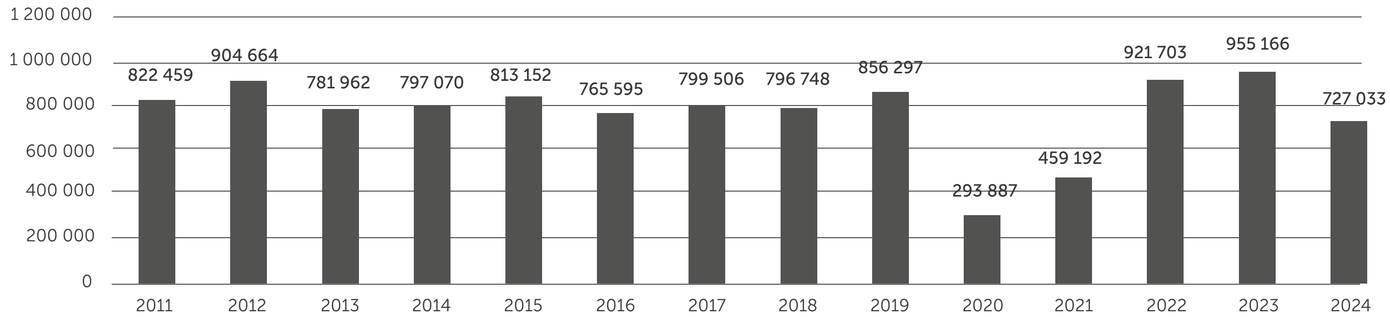
Visitor satisfaction has consistently remained high over the years. In 2024, 95.9% of survey respondents reported being "very satisfied" or "rather satisfied" with their visit to the Exhibitions, while 98.4% shared similar sentiments about the Planetarium. Satisfied visitors are eager to recommend us to others, with recommendation rates reaching 76% for the Exhibitions and 86.6% for the Planetarium.

Collaboration with Teachers

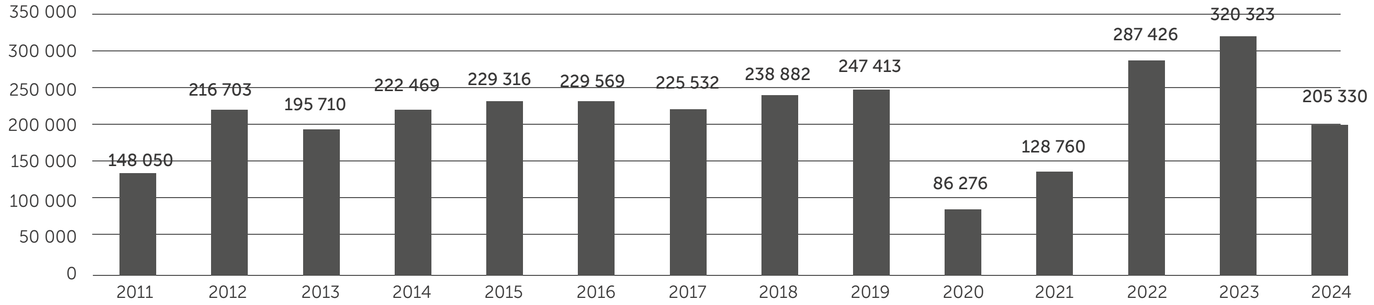
Through our dedicated teacher hotline, we assisted 560 educators in organizing trips to Copernicus. Using a simple form, teachers can schedule a call with us for a specific day and time. We then call them back to help book tickets. This support is especially valuable for teachers from Warsaw, who often organize trips independently, without the help of travel agencies. Unfortunately, due to renovations, we could not participate in the Education Ministry's "Travelling with Class" program, which provides funding for school trips.

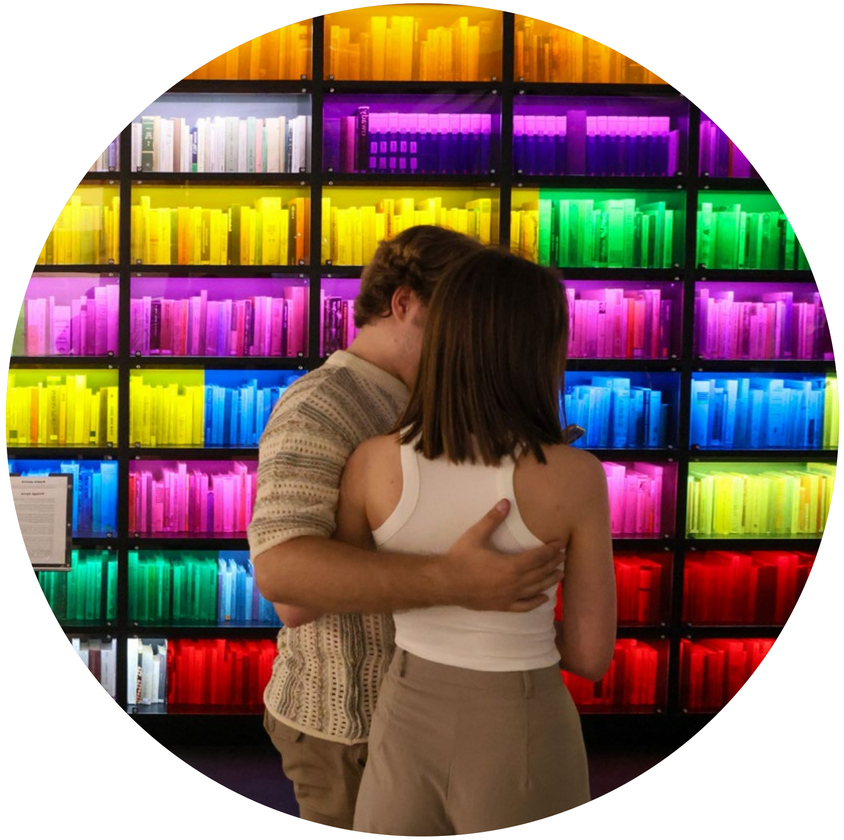
To compensate for the closure of the Exhibitions and Planetarium, we organized free educational activities for Warsaw students at the Copernican Revolution Lab. Additionally, we invited teachers to join a special consultation panel where they reviewed our programme proposals and helped tailor our offerings to school needs (more on p. 51).

Visitor attendance in Copernicus from 2011 to 2024



Visitor attendance in Planetarium from 2011 to 2024





Senior Citizens

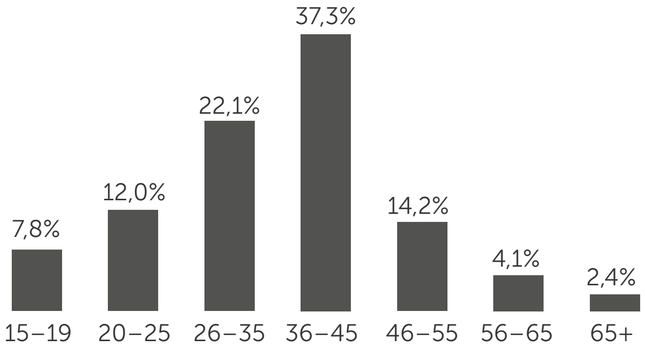
We plan to address more of our activities toward seniors. In 2024, we got to know this group and their needs better. Through shows and workshops held at various institutions, we assessed which activities resonated most with them, conducted qualitative research, and held discussions to deepen our understanding (more on p 70).

Visitors' Gender

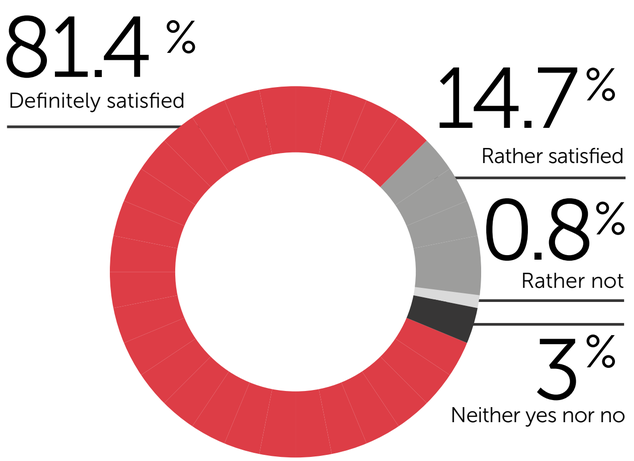
62% women

32% men

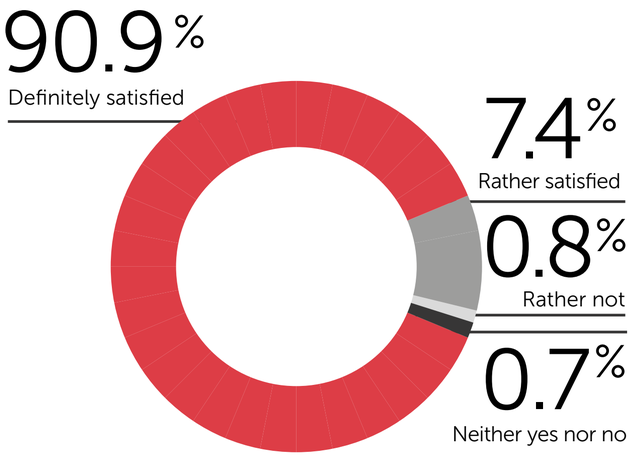
Wiek zwiedzających



Are you generally satisfied with your visit to the Copernicus Science Center?



Are you generally satisfied with your visit to the Planetarium?



We provide visitors with comfortable visiting conditions, top-quality exhibits, interesting shows at a high-tech planetarium and engaging activities.

HVAC Renovation

After thirteen years, our air conditioning and air conditioning (HVAC) systems were no longer functioning efficiently, becoming particularly burdensome during the summer months. This made a comprehensive overhaul of both systems essential. The complex renovation, which required closing Copernicus to visitors, began in early September 2024. Work on the Exhibitions was completed by November 15, whereas renovations at the Planetarium are expected to finish by spring 2025.

During the closure, we also undertook additional projects to enhance visitor comfort. We replaced outdated floor boxes in the exhibition areas and damaged furniture in the laboratories. The cloakroom was redesigned to include more free-standing hangers, which are preferred by individual visitors. A dedicated area was created for storing strollers and larger luggage that does not fit in lockers. The group cloakroom was also expanded, significantly improving its functionality. Other notable changes included replacing old lighting fixtures with energy-efficient alternatives and beginning the green transformation of Copernicus. The building now features lush, plant-filled spaces (more details on p. 80).

Key Renovation Aspects

- installing four VRF air conditioners to enhance cooling efficiency during peak heat periods.
- cleaning ventilation units and ducts, as well as replacing malfunctioning components.
- modernizing automation systems in existing ventilation units and air-conditioning fan coil units, along with integrating new equipment into the Building Management System (BMS) and configuring it.
- resolving conflicts between sprinkler systems and other installations that restricted equipment access or airflow inlets and outlets.

The Planetarium reimagined

The ongoing renovations at the Planetarium include a major transformation of our own “indoor sky”. We’ve upgraded the dome projectors to significantly brighter models. The previous projectors had a maximum brightness of 5,000 lumens, while the new ones reach 10,000 lumens, enabling visitors to experience a much wider range of colours during screenings. The visuals will also be smoother, thanks to faster computers, and the new show software will allow us to create highly realistic cosmic simulations. Visitors will be able to witness 3D meteor showers, comets, weather phenomena (such as snow, rain, and clouds) based on real-time meteorological data, and animated effects related to black holes.

The sound system is also being upgraded, as will certainly be appreciated by music-lovers attending our “Concerts Under the Stars”. The audio system is now fully digital and includes advanced tools for noise reduction. We’ve also increased the number of audio channels to support additional sound sources, such as musical instruments or simultaneous translations.

Another feature enhancing the unique atmosphere of the Planetarium is the new dome-edge light sources, known as “covelights”. These upgraded lights can now create colourful effects during science shows and concerts, adding an extra layer of immersion.

Program Activities During Renovations

Experimenting and engaging with our visitors is at the very heart of what we do. Since visitors couldn't come to us during the building downtime, we decided to bring our activities to them. In September and October, we brought a variety of programs to every district in Warsaw.

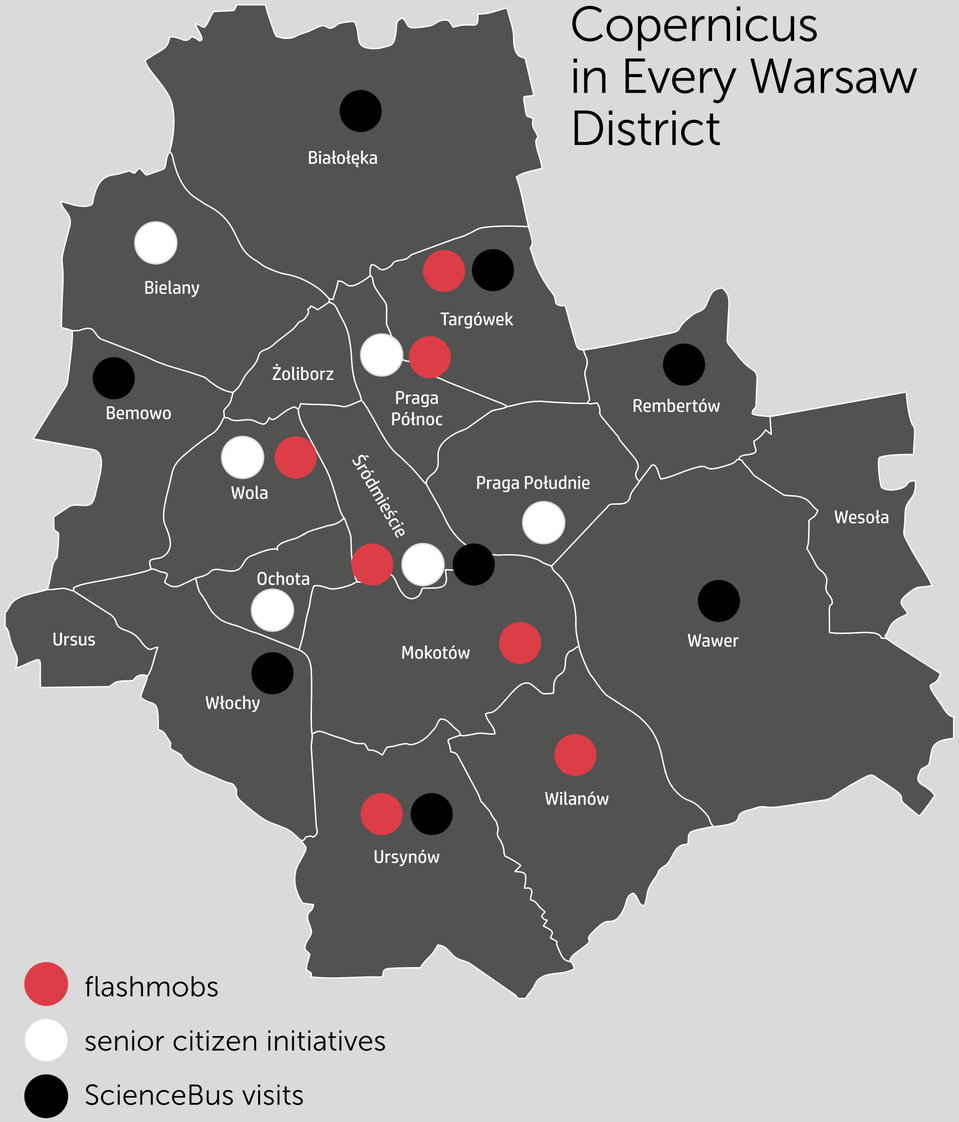
We packed up experiment kits and sound equipment and set out to energize public spaces. Flash mobs featuring quick, interactive experiments captured people's attention – we played "base balloons" and explored surface tension using an inverted glass. Information about our appearances was shared on social media. We visited 11 locations, including the Vistula boulevards (in our home Powiśle district), Hoover Square, Five Corners Square, the Copernicus Monument (Śródmieście), Bródno Park (Targówek), the park near Bażantarnia (Ursynów), Wola Park (Wola), Jordanowski Park (Mokotów), Koneser (Praga Północ), Wesolandia (Wesoła), and near the Sobieski's Mace Sculpture (Wilanów). Everywhere we went, we received a warm welcome, especially from parents.

Whenever the weather allowed, we spontaneously set up workshops on the Vistula boulevards, including "Copernicus on Wheels", "Microworld", "Bubble Madness", and "Fullerenes". We also explored which of our activities most resonated with senior citizens (more on p. 70).

We participated in the Senior Olympics (Bielany), visited the "Emeryt" Foundation (Wola), the Social Welfare Center (Praga Północ), and Seniorwizacja (Śródmieście). We also went to the "Z Ochotą" Day Care Home (Ochota) and attended the academic year inauguration at the University of the Third Age (Gocław), where our "Explorers" show was watched by 400 people.

Our traveling exhibitions, "For Math's Sake!" and the PlanetBus, are usually out on the road, off visiting small towns across Poland as part of the "Science for You" project (more on p. 26). This fall, however, they stopped at 18 schools in Warsaw, including locations in the Rembertów, Włochy, Wawer, Białołęka, Śródmieście, Wola, Targówek, Bemowo, and Ursynów districts.

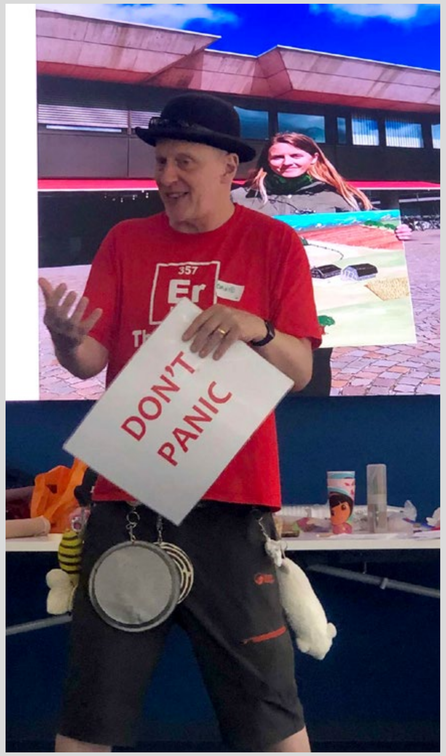
During the two-month closure, our rooftop garden remained open. From October 11–13, the Przemiany Festival took place in the conference centre of the otherwise closed Copernicus Science Centre, under the theme: "What Will We Build the Future Out Of?" (more on p. 29).



Flashmob in Bródno Park: A large crowd gathered to enjoy the event.

The flashmob team on the Vistula boulevards.

The "Inverted Glass" is one of the experiments we performed with residents of Warsaw.



Practicing science busking skills with expert David Price.

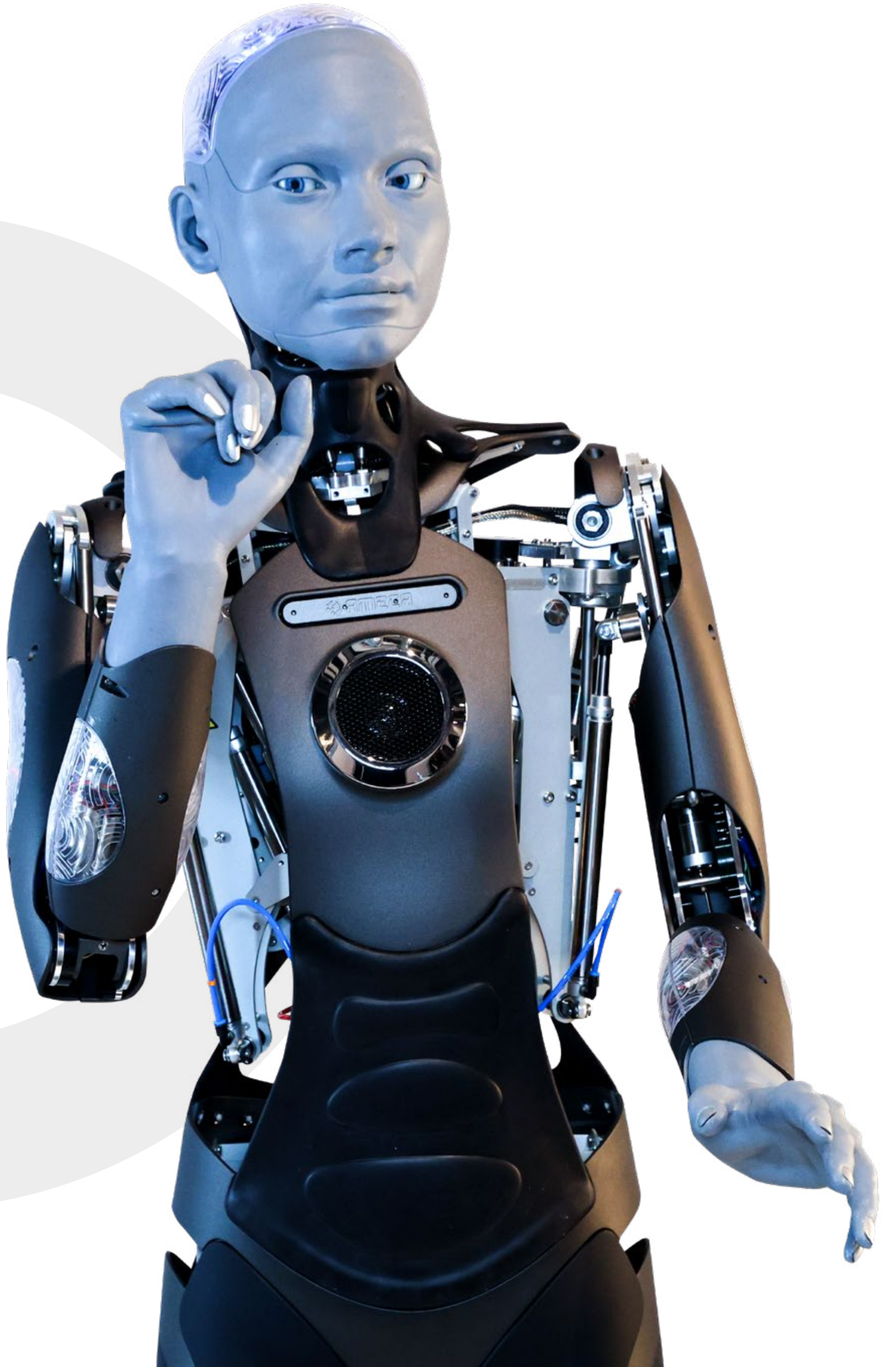
Free Classes for Schools

The Copernican Revolution Lab building hosted free educational classes for students of all grades, from primary to secondary schools. For younger students (grades 1–4), the “Thinkatorium” tinkering space offered popular construction kits, logic puzzles, and engineering challenges. Children could freely experiment or join thematic workshops like “Building Music”. Older students (grades 5–8 and secondary schools) combined science and art in the “EduFactory” fablab space, through activities such as cyanotype printing (more on p. 23). Students in grades 7–8 and secondary schools were the first to try out activities in our brand-new laboratories (more on p. 21). In total, we conducted 274 sessions: 148 in the Laboratories, 86 at the Thinkatorium, and 40 at the EduFactory, with a total of 4,281 participants.

Total sessions

274

Laboratories	Thinkatorium	EduFactory
148	86	40



Robot Family

A central focus of our activity is the continuous pursuit of quality, innovation, and introducing new experiences to our exhibitions. In 2024, our robotic family grew to include two new members. The venerable RoboThespian, the actors of the Robot Theatre, the robotic infant, the religious SANTo, and Nicolaus Copernicus himself (the patriarch of the family), in his robotic form, have now been joined by Ameca and the robotic dog Spot.

Ameca

Her name is Ameca. She stands 187 cm tall, with striking blue eyes and a bluish-gray complexion. She was "born" in Cornwall, at the headquarters of Engineered Arts, a company specializing in humanoid robots. Since March 8, 2024, Ameca has been working at Copernicus as the curator of "The Future is Today" exhibition. She communicates using GPT and is ready to engage in conversation with anyone curious to meet her.

Ameca looks like she stepped straight out of the future. She has a humanoid frame made of metal and plastic, with exposed mechanical components. She moves her torso and arms smoothly, glancing around like someone waiting for someone she knows. Her most captivating feature is her face – a silicone mask that is bluish but remarkably realistic and expressive. Ameca's subtle smile and searching gaze give the impression she's looking for someone in the crowd. When someone approaches and starts speaking, she notices them immediately and focuses her attention entirely on them. This enables a full interaction with one of the most advanced humanoid robots in the world.

Talking freely with a robot is an unforgettable experience, but it's just the beginning. To enhance the illusion of humanity, Ameca's mouth movements are perfectly synchronized with her words (better than most movie dubbing!). Her speech is also accompanied by realistic facial expressions, a groundbreaking innovation in robotics. While humans use about 70 muscles to create expressions, Ameca uses 27 actuators to replicate these movements. She can squint, blink, wrinkle her nose, smile, yawn, frown, appear sad, or even simulate fear. During conversations, she also gestures expressively, making her movements so subtle and lifelike that it's easy to believe she is conscious and showing genuine emotions..

Ameca's very first conversation partner was the Minister of Education.

Robotic dog

Weighing 32 kilograms, standing 70 cm at the withers, and sporting a yellow-and-black "coat", Spot the robotic dog moved into Copernicus in June! Created by the American company Boston Dynamics, Spot belongs to a "breed" of true celebrities whose incredible agility and mobility skills have captivated audiences online. Our Spot is named Sirius (Syriusz in Polish), a name chosen by our Instagram followers, inspired by the star Sirius and the character "Sirius Black" from the Harry Potter series.

Sirius sees the world through cameras that give him a full 360-degree field of vision. Sensors help him to map his surroundings, navigate obstacles, and even climb over them. These robotic "senses" allow him to run on uneven terrain – rocky paths, forested areas, slopes, and stairs. Sirius is controlled remotely, much like a drone or a video game character, with the operator following his route through the camera feed. Copernicus is the only place in the world where anyone can try this firsthand.

Spot is a hardworking robot. He can access hard-to-reach areas, such as collapsed buildings or narrow caves, patrol and map hazardous sites (like those with high radiation levels), and even conduct preliminary medical checks in cases of suspected infectious diseases. NASA has announced plans to send a Spot robot to Mars! Its mission will include helping establish a base and mapping out the terrain. Unlike the current Mars rover, Curiosity, which moves slowly and steadily on flat surfaces at just 0.14 km/h, Spot can travel at speeds of up to 5 km/h and handle more challenging terrain.

Sirius went out on his first walk on June 21, accompanied by Copernicus Director Robert Firmhofer and Warsaw Mayor Rafał Trzaskowski.

Poisons: Nature’s Superpowers

Spiders, snakes, scorpions… Our temporary exhibition is teeming with life! Visitors can take a closer look at representatives of 30 species of venomous animals and learn about their extraordinary abilities and habits. The exhibition “Poisons: Nature’s Superpowers” was brought to us by the Spanish team from Nabau Projects. It opened on 15 November 2024 and will remain at Copernicus until the end of September 2025.

Breaking with our usual hands-on practice, visitors cannot touch anything at this exhibition. This time, it’s all about observation – and there’s plenty to observe. Many of these creatures are rarely seen in daily life. They exhibit amazing colours, body structures, and camouflage abilities. The exhibition provides insights into their habitats and behaviours, helping visitors understand how to avoid risky encounters. The animals on display live in terrariums that are safe for both them and our guests, allowing for up-close observations.

Venom serves animals as a tool to scare off predators, defend themselves from attacks, or fight rivals. However, venom doesn’t only pose a threat to human life – it can also save it. Scientists are studying various toxins to uncover their medical potential. Substances that block the nervous system are used in painkillers, whereas compounds that thin the blood are applied in cardiology.

To date, around a thousand animal toxins have been tested for medical applications, and drugs containing them have reached the market. It is estimated that there are millions more substances waiting to be discovered. Unfortunately, as species disappear species, we are losing more and more potential sources of venom and with them the opportunity to discover new therapies based on as yet unknown toxins. This is another reason to look at venomous animals with more sympathy and care, and to protect them.

At the exhibition: “Poisons. Nature’s superpowers”.

Venomous Pharmacists from the Exhibition

The Cottonmouth, or Water Moccasin
In the 1960s, Hugh Alistair Reid discovered that one of the toxins in cottonmouth venom has anticoagulant properties, and so proposed using it to treat deep vein thrombosis. A drug containing this protein, called Arvin, was approved for use in 1968. It was later replaced by other anticoagulants derived from snake venom.

The Fer-de-Lance
The venom of the fer-de-lance, a Brazilian snake, was the starting point for a group of drugs widely used today to treat hypertension. It all began with observations of banana plantation workers who fainted after being bitten by this snake due to a sudden drop in blood pressure. Scientists isolated the substance responsible for this effect, modified it at the molecular level, and synthesized it. After clinical trials, the final version was approved in 1975 as a medication for hypertension called Captopril.

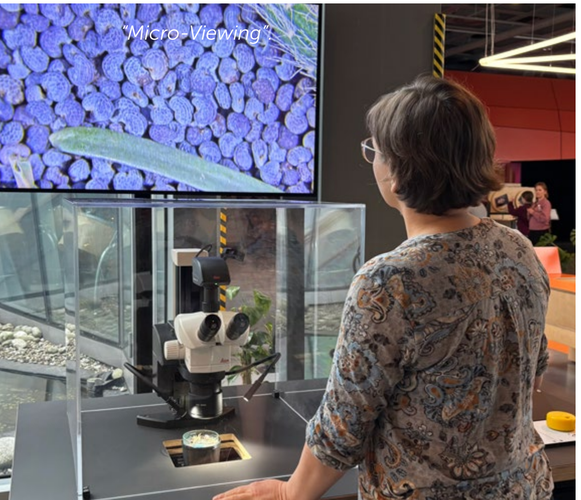
The Gila Monster
This lizard, found in the deserts of Arizona, feeds only three times a year, yet its blood sugar levels remain remarkably stable. In 1992, endocrinologist John Eng isolated a compound from the venom in its saliva that regulates blood sugar and suppresses appetite. Exenatide works like a natural hormone: it stimulates cells to handle high blood sugar levels but remains inactive when blood sugar is normal. It helps people with type 2 diabetes produce insulin and maintain a healthy weight.

Tarantula
The venom of tarantulas from the genus Poecilotheria contains peptides that affect the nervous system. Some of its toxins are being studied for their potential as pain relievers, as they can target pain receptors. These compounds could lead to the development of new painkillers that are more specific and less addictive than traditional medications.

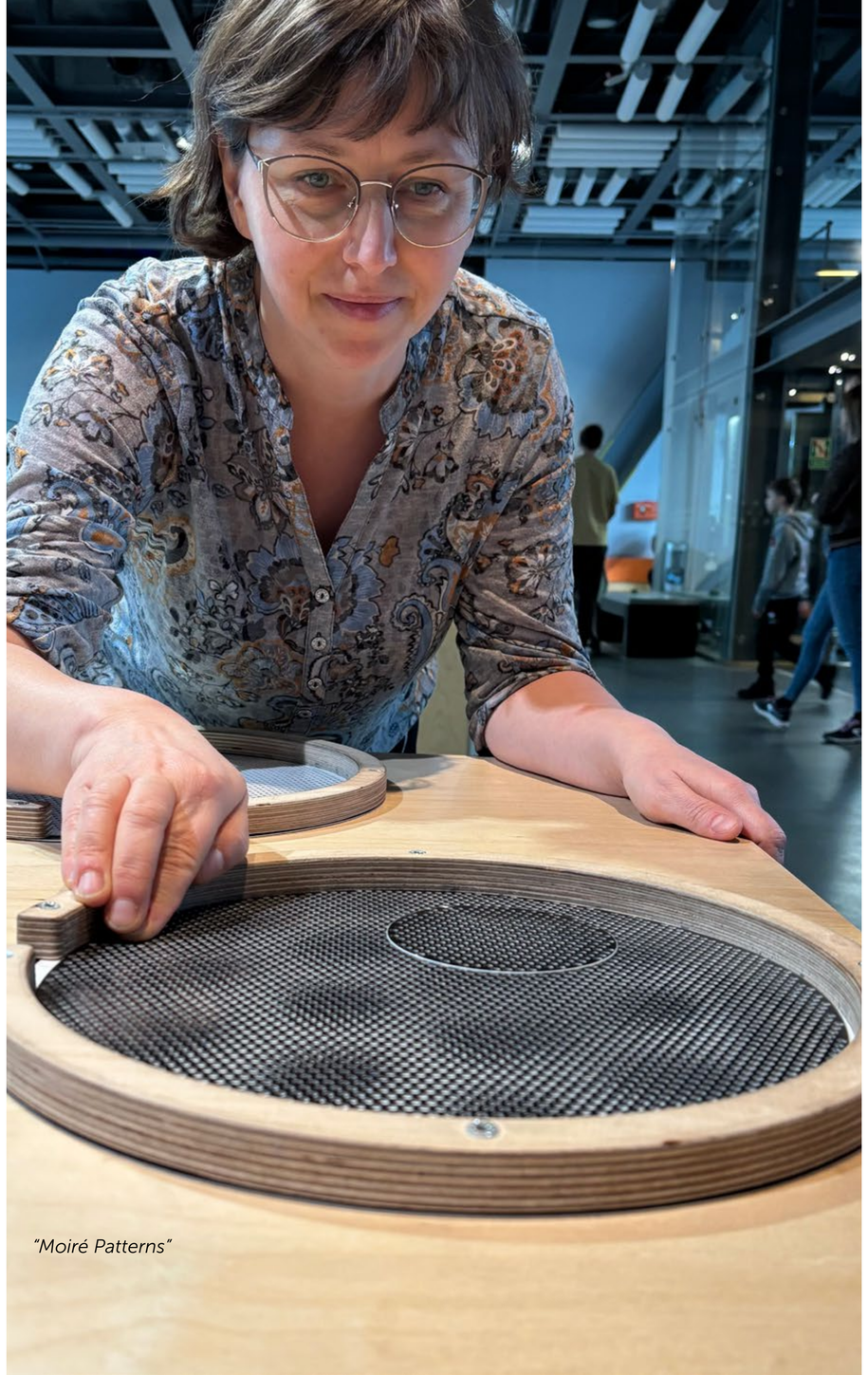
Along with the venomous animals, two of their caretakers, Isaac and David, have moved to Warsaw. They'll stay with us until September 2025.

“Moiré Patterns”

“Perspective”



“Micro-Viewing”



“Moiré Patterns”

Next Exhibits in the Permanent Exhibitions

Exciting new exhibits have been added to the permanent exhibitions at Copernicus. Visitors can now explore the effects of thermal expansion and discover thermochromic materials – substances that change colour based on the temperature. They can also watch in real time as snowflakes, or ice crystals, form right before their eyes. At the “Moiré Patterns” exhibit, guests can observe the mesmerizing effect created when two regular patterns overlap slightly out of alignment. Visitors are also invited to help develop the “Perspective” exhibit by experimenting with its prototype and sharing their impressions and feedback.

New research stations have also been introduced in the Living Lab, a space where scientists showcase experimental exhibits, and visitors contribute valuable data to ongoing studies. Starting in November 2024, visitors can support the work of Professor Małgorzata Kossowska, who is researching social networks, their connections to broader society, and the sense of belonging experienced by their members.

Another fresh addition to the exhibitions is “Micro-Viewing”. Visitors can use a microscope to closely examine the “object of the day”, offering a glimpse into the hidden world of things usually too small to see with the naked eye.

While introducing new exhibits, we haven’t forgotten the old ones, which also require attention – repairs, modernization, or dedicated care. For instance, the “City of Ants” exhibit depends on daily deliveries of fresh evergreen leaves, sourced from blackberry and rose plants growing on the hill near Copernicus. Mealworms are fed bread and fruit, while a specially designed space nurtures new generations of water fleas, hydras, and fire-bellied toads, all of which have been breeding in the “Poisons: Nature’s Superpowers” exhibit.

Our concerts are well-enjoyed by both the audience and the artists.

New Under the Stars

Although the planetarium has been closed since August 19, 2024, we managed to introduce four new films into the repertoire before its closure. Two of the new films were created especially for younger audiences. “Grandpa and Zoe: Saving the World of Light” tells the story of a young girl determined to save the Solar System from a massive dust cloud while discovering the fascinating properties of light along the way. “Lucy and the Secret of Shooting Stars” is a sequel to the beloved “Polaris”. Children can once again join the cosmic adventures of two friends – a penguin and a bear – while gaining plenty of scientific knowledge presented in an engaging and accessible way.

For adults and teenagers, we also introduced two additional films. “Living Worlds” offers an inside look at the work of scientists searching for signs of life beyond Earth. “They’re Coming!” takes viewers on a journey through the Solar System, following asteroids and comets. The film also highlights advanced technologies that allow scientists to detect these small celestial bodies before they reach Earth.

As is traditional, the planetarium hosted short live shows titled “The Sky Over Warsaw”, exploring seasonal stargazing opportunities. Each show was enhanced with the latest astronomical discoveries and updates on space exploration. Evening programming was further enriched with “Straight from the Sky” discussions featuring scientists, as well as concerts and laser shows.

Concerts – invited performers

“Concerts Under the Stars”

Aleksandra Bobrowska
Aldona Nawrocka
Wojciech Świętoński
Monika Quinn
Koki Suetsugu
Amalgalis Duo
Tomasz Woźniak
Maria L. Gabryś-Heyke
Justyna Kreft
Adam Goździewski
Marcin Tadeusz Łukaszewski

The Jazz Orbit Series

Cosmic Silence
Witold Janiak

The Cosmic Live Electronic Series

Zuzanna Całka
Przemysław Rudź

The Supernova Series

Chrust

Special Concerts

New Year’s Concert:
Violinofonica

“Straight from the Sky” Lectures

Topics and experts

Relativistic Jets from Black Holes (Krzysztof Nalewajko, PhD, DSc)

What Guides Us from Orbit (Anna Świątek, PhD)

The EagleEye Mission – A Groundbreaking Polish Satellite (Jakub Bocheński, PhD)

Saving the Night (Andrzej Z. Kotarba, PhD, DSc)

Cosmic Radiation and Elementary Particles in the CREDO Project (Prof. Robert Kamiński)

Polish Rocket Technologies (Damian Kaniewski, MEng)

Aurora Season (Helena Ciechowska)

The Planet and Technologies in the Laboratories

Where should we teach classes about climate change? In the Biology Lab? The Chemistry Lab? Or perhaps the Physics Lab? The challenges humanity faces today are complex, requiring a multidisciplinary understanding. To address this, we decided to move beyond the traditional division of subject-specific labs. In 2024, the Biology and Chemistry Labs were merged into a single Planet Education Lab, while the Physics and Robotics Labs were combined into the New Technologies Education Lab.

This programmatic "fresh start" also led to a new model of collaboration with scientific institutions. Our main goal is to provide participants with hands-on experiences involving modern research topics, equipment, and methods. We strive to ensure that activities in the labs are inspired by real-world scientific projects and tap into their educational potential.

In 2024, we partnered with the Institute of Evolutionary Biology at the University of Warsaw. This collaboration allowed high school students (grades 10–12) to take part in "Genetic Mushroom Foraging", an activity developed as part of the international project "FunDive: Monitoring and Mapping Fungal Diversity for Conservation". Students sequenced and described the DNA of various fungi, such as Geastrum (earthstars) and Tulostoma (stalked puffballs). These sessions introduced students to molecular biology techniques and contributed to creating a European biodiversity map. Another partnership, with the Biological and Chemical Research Centre at the University of Warsaw, resulted in activities focused on microplastics in rivers and lakes. Participants investigated microplastic pollution in the Warsaw section of the Vistula River.

In September and October, while HVAC upgrades were underway in our main laboratories, we tested these new activities during free workshops at the Copernican Revolution Lab. By December, they became part of our regular programming. At the Planet Education Lab, school students had two topics to choose from. In the "Inner Army – It's in Your Blood" workshop, participants explored heart anatomy and blood composition by performing dissections, preparing and observing microscope slides, and testing the effectiveness of disinfectants. In the "Urine Tells the Truth" workshop, students became laboratory diagnosticians, conducting basic analyses of synthetic urine samples.

At the New Technology Education Lab, students could opt to go on a "Mission in Space": participants built their own LEGO Spike rovers and programmed them for a space exploration mission. In the "The Art of Flying: Lighter Than a Feather" workshop, in collaboration with the Łukasiewicz Institute of Aviation, students learned about aerodynamics by experimenting with air resistance and designing streamlined structures.

We ensure that classes in the Laboratories are inspired by scientific projects and use their educational potential.

School activities in the Laboratories are designed for grades 7–8 of primary schools and high school students. On weekends, the same spaces are open for all visitors to experiment free of charge. They can participate in shortened versions of the school workshops as well as explore additional topics. In December 2024, such visitors at the Planet Education Lab could analyse synthetic urine, study the structure of the human heart, experiment with stethoscopes, and observe Diabolical Stick Insects. The New Technology Education Lab offered opportunities to program robots, conduct aerodynamics experiments, and explore magnetic levitation to uncover the secrets of superconductivity. In 2024, we conducted 1,086 group sessions in the Laboratories.

Tinkering for younger kids

In 2024, at the Thinkatorium tinkering space, we continued offering the “Building Music” workshop for grades 1–3 of primary school, originally introduced in 2023. During the 45-minute session, children construct a musical machine designed to produce several different sounds, fostering their manual, analytical, and teamwork skills. They don’t start entirely from scratch – workstations are equipped with the basic structures of various machines, such as the Playing Incline, Cardboard Tubes, Musical Carousel, and Magnetic Music Wall. The children enhance these machines by adding “sound elements”, which they first search for among recycled materials like cans, metal boxes, pieces of wood, cutlery, paper clips, metal sheets, rubber bands, and clips. At the end of the session, each group presents their machine and shares its story.

“I worked together with my group, and everyone liked me”, seven-year-old Kacper said after a session. His words sum up how the youngest participants experience the joy of collaboration.

In 2024, 274 workshops were held in the Thinkatorium for groups.

“I worked together with my group, and everyone liked me” – seven-year-old Kacper said after a session.

274

classes for groups in Thinkatorium

289

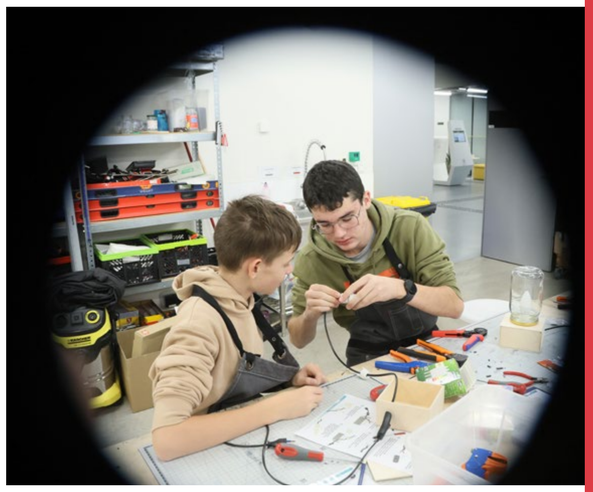
people at summer workshops in EduFactory

Summer Testing and New Workshops at the Edufactory

Our Edufactory is an educational fablab that combines hands-on tinkering with science and art. Workshop participants work with a variety of materials and technologies. During the summer, we ran workshops on making night lamps from jars and cyanotype photography, with a total of 289 participants. Starting in September, these workshops became available to students in grades 5–8. In the "Solar Photography" workshop, participants learned the cyanotype technique, also known as solar photography, which involves exposing paper coated with an iron salt emulsion to sunlight or UV light. The emulsion reacts to light, changing colour and, once fixed, creates a blue-and-white image. By placing various objects (e.g., leaves, flowers, fabric) on the light-sensitive paper, participants created monochrome prints.

In the "Light in a Jar" workshop, students created their own lamps using repurposed jars. They used basic tools (screwdrivers, drills, etc.) and worked with recycled materials such as old jars, plywood, wires, and light fittings. The workshop introduced them to working with wood, cutting and assembling electric cables, and the basics of electrical construction.

The Edufactory helps young people develop design skills while exploring artistic techniques. The workshops are designed for students in grades 5–8 and high school, encouraging them to tackle engineering and design challenges by experimenting, building, and testing out their own original ideas.



We provide local communities with exhibitions and activities.

The SOWA Initiative

The SOWA initiative is a partnership program that allows local institutions to enrich their offerings with an interactive exhibition and activities that encourage hands-on exploration of the world. Each of the SOWA “Zones of Discovery, Imagination, and Activity” include nearly 20 interactive exhibits plus a “Thinkatorium” workshop space for undertaking tinkering challenges. These small centres are being set up all over Poland (in towns with up to 150,000 inhabitants), on the premises of various existing cultural and science-educational institutions that list the popularisation of science, technology, education, art and culture as one of their statutory or programme objectives. They are intended to bolster the scientific capital of local young people, help them develop a sense of agency and acquire twenty-first-century skills.

In 2024, we opened 9 new SOWA zones, bringing the total up to 41! For each SOWA zone, we provide interactive exhibitions plus equipment for the makerspace workshop area – the “Thinkatorium”. We also offer consulting, training, and full-service support. Although we equip all of them with similar sets of exhibits, each SOWA zone takes on its own unique character due to the different activities conducted by its parent institution. Our experience shows that the chance to engage in independent experimentation is nicely complementary to the traditional activities of libraries, cultural centres, museums, and educational institutions.

In 2024, the local SOWA zones were visited by a total of 228,776 people.

The SOWA Team Helping Flood Victims

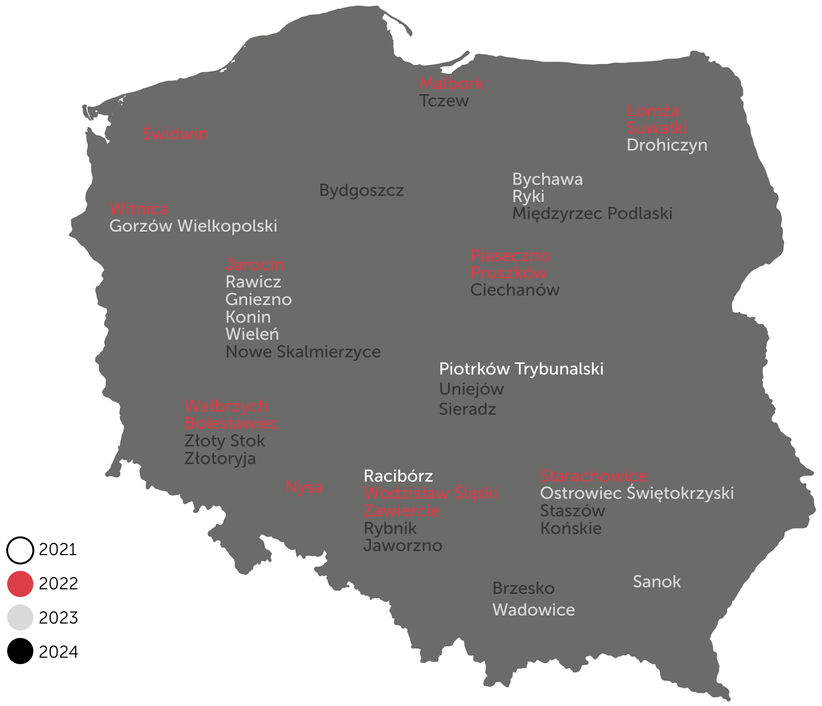
While installing exhibits in Złotoryja, the SOWA team assisted the local community in dealing with the aftermath of major flooding in the area. It turned out that our team is not only skilled at assembling exhibits but also adept at disassembling, cleaning, raking, scrubbing, and disposing of debris (some even helped move chickens to a newly prepared enclosure).

During this time, we were able to help elderly residents prepare for having one of the rooms in their facility renovated, and assisted the Sisters of St. Elizabeth in restoring a flooded basement to usability. Though a small contribution, all this added to the collective support from the Copernicus Science Centre community for those impacted by the flood.

Once a SOWA zone has opened, this does not mean the end of our cooperation. On the contrary, it's just the beginning. We at Copernicus are keen to have these institutions jointly organise events with us, to promote science and to conduct or support educational activities in schools in their regions. You can find out more about how we collaborate with the existing SOWA institutions on p. 60.

When working to expand our own Exhibitions, we have also not forgotten about the SOWA centers. In 2024, the centers in Ostrowiec Świętokrzyski, Starachowice, Staszów, Rybnik, Wadowice, and Piotrków Trybunalski received three new mathematical exhibits: "Build an Arch", "Stringographs", and "Tessellators".

The SOWA zones opened in the following years



The "SOWA – Zones of Discovery, Imagination and Activity' initiative is funded by a subsidy from the Polish Minister of Science, under "Agreement No. 1/CNK-SOWA/2021 of 2 March 2021 on the Launch of 50 SOWA Zones of Discovery, Imagination and Activity by the Copernicus Science Centre in the Years 2021–2028".

In Uniejów, the SOWA zone offers stunning views of Castle Park, the bridge over the Warta River, nearby vineyards, and thermal baths.

Złotoryja, a town famous for its extraordinary gold deposits that have attracted treasure hunters since the Middle Ages, is where the renowned "Aurelia" gold mine is located. This historic town also became home to a new SOWA zone in 2024.

The SOWA in Tczew is situated in the Art Factory, a space that a century ago was used to manufacture chamber pots, but now serves as a hub for art and culture.

The SOWA in Złoty Stok is uniquely housed in a former church. Visitors can admire the Gothic altar in the presbytery and take in breathtaking views of the town from the observation tower.

In Nowe Skalmierzyce, the SOWA zone is based in the Kolejarz Community Activity Center, the town's cultural hub. This vibrant space hosts a cinema with a long-standing tradition, as well as art, crafts, and theatre workshops, along with dance, music, and vocal studios.

Sieradz, the birthplace of Ary Sternfeld, one of the pioneers of astronautics, is home to a local SOWA zone where space-themed activities are sure to be featured in the near future.

In Międzyrzec Podlaski, the SOWA zone is located in the historic Potocki Palace, where visitors can also view an exhibition of sculptures by Henryk Burzec, explore the Es Gallery, and admire the palace interiors.

The SOWA in Ciechanów is housed in the Torus Science Park, adjacent to the city's iconic structure topped with a torus – a water equalization tank that has become a symbol of the city.

This computer game measures noise levels in schools and demonstrates their impact on health (Primary School No. 7 in Zduńska Wola).

The SmartCity Educational Monitoring Station setup allows air quality to be monitored using an environmentally smart column designed by students, which collects environmental data (Primary School No. 98 in Kraków).

This multifunctional nature science aid illustrates the process of photosynthesis and oxygen production by plants (Primary School No. 5 in Pyskowice).

This weather station enables students to conduct meteorological measurements (School Complex in Czernikowo).

Each of this set of five scientific research stations is dedicated to a different field of science (School and Preschool Complex in Pawłowice).

The “Science for You” programme

The “Science for You” programme allows us to reach nearly 66,000 school students in small towns and cities across the country with mobile exhibitions (the ScienceBus and the “For Math’s Sake!” exhibition) as well as a mobile planetarium (the PlanetBus). Its aim is to promote hands-on and engaging teaching methods, to pique students’ cognitive curiosity and interest in the development of science, and to encourage families to experiment together.

However, we don’t limit our visits to schools. We also reach community centres in rural areas, libraries, and other cultural institutions. In these settings, we engage with children’s caregivers and educators through “Let’s Discover It!” workshops. Each year, we also organize the “Science for You” Competition, in which teams of primary school students and their teachers work together to prototype educational tools. Additionally, we run the “Prototyping School” for educators and teachers, providing them with hands-on training and resources.

In 2024, we visited 177 towns where residents have limited access to science centres. The ScienceBus went on tour 59 times, the PlanetBus 65 times, and the “For Math’s Sake!” exhibition 53 times. A total of 61,063 people participated in our activities. With the objective of reducing CO2 emissions firmly in mind, we tried to stop at multiple locations during a single trip (more on p. 70).

The “Science for You” program is supported by a team of 27 educators who collaborate with us. Their responsibilities include the technical and substantive management of the mobile exhibitions and the mobile planetarium. They deliver and set up exhibitions at the target locations, guide visitors during their exploration, and lead presentations. In 2024, we organized a number of training sessions to enhance their skills and competencies. The “Let’s Discover It!” workshops show family members, teachers, educators, and animators how to support children during their experimentation, fostering a sense of agency, cognitive independence, curiosity, and autonomy. In 2024, we hed 40 workshops in 20 institutions, including schools, libraries, cultural centres, and SOWA zones. These sessions spanned 14 provinces, focusing on small towns far from science centres. Through engaging activities, we emphasized that sparking curiosity is more important than simply transferring knowledge. A total of 455 participants took part in these workshops, and we distributed 468 experiment kits containing experiment proposals, materials, and pedagogical tips to help guide children in discovering the world around them.
Each year, we organize a national “Science for You” competition for new educational tools, inviting teams of primary school students and teachers to participate. In 2024, 45 teams entered the competition. The 10 teams rated highest by the jury (a total of 75 participants) attended the weekend “Educational Tool from Scratch” workshops, designed to help them construct their competition entries. Five teams made it to the finals, where the winners received their awards during a festive final gala. The winning teams also showcased their educational tools to visitors at our exhibitions.

“Science for You,” a joint programme of the Polish Minister of Education and Science and the Copernicus Science Centre, is funded by a subsidy from the Minister of Education and Science based on the Agreement of October 23, 2023, No. MEiN/2023/DPI/3079. As part of the “Science for You” Programme, activities such as the “ScienceBus”, “PlanetBus”, “Oh Math!” EXHIBITION, and the 27th Science Picnic of Polish Radio and the Copernicus Science Centre were carried out in 2024.

Originally developed exhibits were also showcased by participants of the Prototyping Schools. The May session involved 20 teachers and educators who developed eight prototypes of educational tools (“Endless”, “Bokeh à la Carte”, “Magnetic Urchins”, “Presence”, “Biochemical Paradox”, “The Beginning”, “Find the Colourful Glimmer”, “The Consistency of Change”). After testing the exhibits with visitors, participants made improvements and later presented their creations at the Science Picnic of Polish Radio and the Copernicus Science Centre.
The September edition of the Prototyping School also resulted in eight prototypes: “The Game of Colours”, “Heat-Sensitive Forms”, “Lights and Shadows”, “Polarization Puppet Theatre”, “The River as a Current”, “Mountain of Colours”, “Magnetic Expressions”, and “WindowArt”. These prototypes were enthusiastically received by visitors, and their creators presented the exhibits with great passion during the Summer Prototyping Schools.
In 2024, we began work on a new mobile exhibition. The emerging concept incorporates innovative solutions, such as using existing school infrastructure (e.g., desks) instead of heavy crates, reducing weight and simplifying exhibit transportation. We prepared 3D visualizations, started producing exhibits and procuring materials, and developed prototypes of selected elements. The exhibition will be produced in three copies in 2025 and launched on tour in 2026. One of the highlights will be a bust of our robot Ameca, equipped with advanced algorithms for facial expressions and interaction, providing even more audiences with the opportunity to engage with cutting-edge technology.

Other Trips

In 2024, we visited 30 locations, including schools, cultural centres, and SOWA zones. We also hit the road as part of the Summer with Radio family picnics, bringing our “Attractive Molecules” workshops to Elbląg, Poddębice, Chorzów, Białystok, Tarnów, and Grudziądz. Our activities extended internationally as well. We participated in the Znanstival street science festival in Ljubljana (Slovenia), Children’s Day in Cork (Ireland), the BIG Event Conference 2024 in Cardiff (United Kingdom), the Beijing International Week for Science Literacy 2024 in Beijing (China), the Pop Science Festival in Brno (Czech Republic), and the ECSITE 2024 Conference in Ljubljana (Slovenia).

Festiwal w Drohiczynie

We foster cognitive independence and collaborative skills.

In a world overflowing with both true and false information, criss-crossed by conflicting narratives, where social media users often retreat into echo chambers of like-minded individuals and become resistant to opposing arguments, the ability to independently inquire, acquire and analyse information, draw one's own conclusions, and solve problems is increasingly valuable. However, independent thinking does not mean isolation. On the contrary, collaboration is an excellent way to learn and develop better solutions.

"Collaboration is a great learning method and a way to develop better solutions."

S2

We promote dialogue, with diverse participants, about challenges that lie at the intersection of science and society.

What Will We Build the Future Out Of? The Przemiany Festival

A dress made of roots. A stool from fish scales. A room crafted from flax. Paints derived from cabbage. A kimono made from wastewater. What materials will we be using 20 years from now? Scientists, engineers, designers, and artists continue to amaze us with new concepts and increasingly bold solutions. At the 2024 Przemiany Festival, visitors explored a wide range of materials and ideas aimed at securing the future of our planet. We showcased both innovative and traditional materials – experimental samples and finished products. Some were made possible by advancements in science and cutting-edge technologies, others were gifts from nature, and still others emerged from artistic exploration and the challenges of sustainable design.

A full spectrum of materials

In 2024, the Przemiany Festival featured not one but several exhibitions, offering a broad perspective on sustainable design and material innovation. The Future Material Lab from the Jan van Eyck Academie is an archive of ecological, non-toxic materials created through diverse creative practices, drawing on both advanced technologies and traditional crafts. At the Festival, visitors were able to explore a curated selection from the full collection, which is available online.

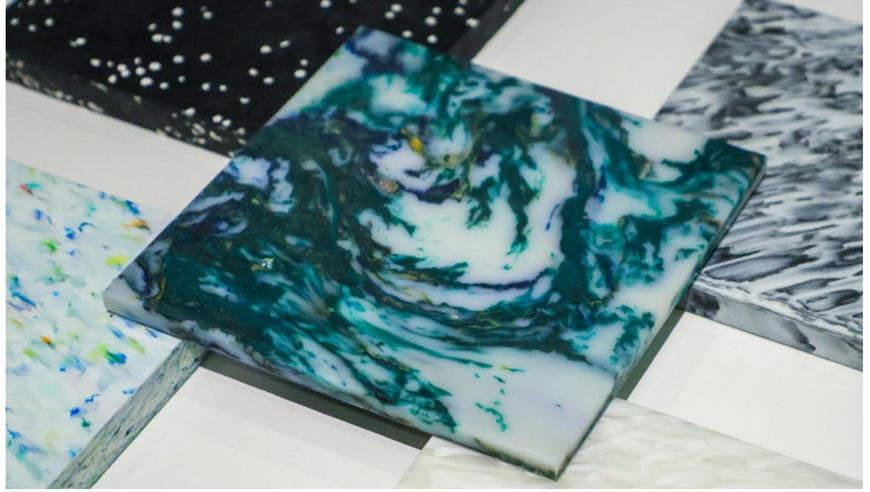
The Future Material Lab collection also included paints made from red cabbage, created by Polish artists Ola Ignasiak and Karolina Gębka. Together with Jaap Knevel, the founder of the materials bank, they engaged with festival-goers in a collaborative painting session.

A mat made of an aquatic endemic plant from Australia.

Jewels made of human tears

Gelatin and glycerin underwear.

The Wise Habit Library of Sustainable Materials showcases building materials, interior finishes, and furniture production supplies. Most of the materials come from recycled sources (materials recovered from demolition, food industry waste) or biological origins (e.g., mycelium).



Young designers from SWPS University shared their innovative ideas with Przemiany Festival attendees. Their projects included a neighbourhood climate shelter, a mobile shelter for pets, and functional objects made from recycled materials.

The exhibitions also featured works by experienced artists and designers, such as the CENTRALA multi-material house, where each room is constructed from a different material – wood, straw, or flax.

Nienke Hoogvliet – a stool made from fish skin, a kimono crafted from wastewater-derived fabric, and a jacket dyed with algae pigments

Matthew Gardiner, PhD, merges robotics, nature, and origami to create extraordinary installations, such as robotic flowers and even musical instruments.

The experimental stations were abuzz with activity throughout the Festival. Visitors explored the structure of polymers, the properties of metal alloys and bioplastics, and the principles of nanotechnology. Our laboratories also presented an exciting project: a dress made from kombucha.

A Delicate Balance

The festival began with a session featuring three special guests from the fields of science, design, and art. Designer Karol Murlak discussed the process of creating hydrogel from seaweed. Engineering Professor Urszula Stachewicz presented nanofibers inspired by the structure of polar bear fur and penguin feathers. Artist Julia Lohmann shared insights about marine organisms, which she sees as her muse.

Panel discussions brought together experts specializing in materials for medicine, industry, and fashion. Stefan Szyniszewski, PhD, an applied mechanics researcher, presented a material that cannot be cut, while materials engineer Jan Wróbel, PhD, showcased a radiation- and fire-resistant metal alloy. Both scientists shared their work during the panel titled “Extreme Durability”. Molecular biologist Rafał Lolo, PhD, and Prof. Wojciech Święszkowski, an expert in materials engineering, spoke about living drugs and innovative delivery methods. The concept of a closed-loop economy was explored by both a theoretician, Joanna Kulczycka, PhD, and a practitioner, Tomasz Ciamulski. Sustainable fashion was addressed by Monika Surowiec, an expert on upcycling, and Ewelina Antonowicz, a sustainability specialist in the fashion industry. The expert panels attracted significant interest, with discussions often continuing long after the official sessions ended. The festival debates encouraged active participation, requiring attendees to take a “for” or “against” stance on key issues. Participants weighed in on whether they preferred single-use or durable products and debated whether certain materials sourced from soil might be considered taboo.

An Ocean of Materials

The performance “Flows” drew a record-breaking audience, taking place within the interactive installation of the same name. Artur Grabarczyk presented an impressionistic depiction of the constant transformation experienced by people immersed in an “ocean of materials”.

The festival program also featured film screenings, DJ sets, and a pop-up café with a specially curated festival menu and workshops. In 2024, Przemiany attracted an audience of 4,800 people.

Performance “Flows” by Artur Grabarczyk.

Unbelievable!
The Science Picnic

Modern scientific discoveries are often so astonishing that they seem almost unbelievable! The world is far more complex and surprising than it might first appear, and what fascinates and delights us most are the phenomena that seem to defy common sense. Such is the nature of science – and such was the very essence of the offerings from over 100 exhibitors at the 2024 Science Picnic. The largest open-air science event in Europe brought together scientific institutions, universities, research institutes, museums, cultural organizations, education-focused foundations, and scientific societies from both Poland and abroad. The “Science Picnic of Polish Radio and the Copernicus Science Centre”, as it is officially known, is a family-friendly event, but there is truly something for everyone – enthusiasts and newcomers, the young and old, the scientifically curious and those just coming to discover a fascination for science.

Children in the world of experiments

A forest-themed zone was specially created for the youngest visitors, where they could peek into birdhouses, bat boxes, and beehives and learn how fungi communicate. Children crafted clay vessels using age-old methods, uncovered ancient animal species, tested whether a ball can levitate, and discovered if a tumbler toy can lie down. They had the chance to glaze their own gingerbread, paint pictures with air-purifying paints, and observe glowing vegetable leaves and chestnut bark. Young explorers built their own windmills, kaleidoscopes, rockets, and recycled sculptures.

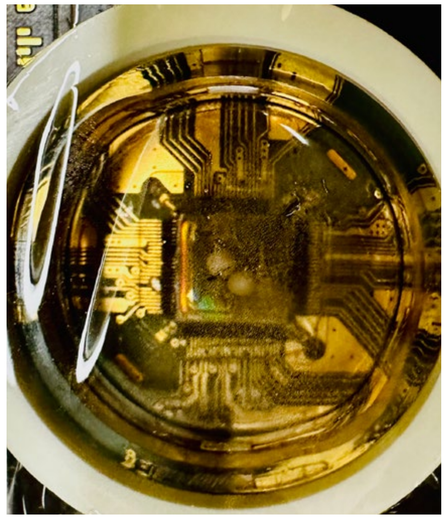
They learned to identify types of clouds, viewed the Sun through a special telescope, and found out how much they would weigh on different planets. Other activities included cooking up a “comet soup” and making a comet. A simulated firefighting station, where children could watch and participate in a mock fire-extinguishing operation, proved to be a crowd favourite.

Technology in the Service of Medicine

The Health Zone showcased innovative diagnostic and therapeutic methods for common societal diseases, such as heart conditions, strokes, and diabetes. Visitors could perform their own ECGs using remote devices, measure their blood pressure and sugar levels, and check the condition of their skin. They also had a chance to examine cutting-edge prosthetic limbs, plus a neuromodulation suit designed to restore independence to individuals with neurological disorders.

Empathy helps us understand the needs of others. Visitors at the 2024 event could don a special suit to experience the challenges often faced by the elderly, feel the weight of a pregnancy belly, or see the world from the perspective of individuals struggling with addiction.

One of the most remarkable attractions was the opportunity to see a human brain organoid – a cluster of neural cells that helps scientists study and understand the human brain. A similar organoid is on display in our exhibition “The Future is Today”.



Face-to-Face with Robots

Robots are a staple of the Science Picnic, and this year was certainly no exception. Visitors learned about designing, building, and programming robots. Among the highlights were a robot artist, a robotic pet, and several humanoid robots with whom guests could engage in conversation. Attendees controlled robots built by students for international robotics competitions, watched the Liquidator, a ball-launching robot, and cheered on battles between robotic competitors. Visitors also tested their skills against a robot in a game of checkers and guided another robot through an obstacle course. The real stars of the show included a Mars rover built by Polish engineers, the iconic R2D2 from Star Wars, and our robotic dog Sirius, who drew crowds of enthusiastic fans.

In the Kitchen and the Garden

What do apples have in common with getting a tan? How many subspecies of cabbage exist? How can silver nanoparticles be extracted from mint, oranges, and coffee? Is a bell pepper a fruit or a vegetable? How do fungi communicate? Plant and gardening enthusiasts found answers to these and many other questions at the 2024 Science Picnic. They learned to identify different types of soil, observed glowing chestnut bark and chlorophyll, explored the production of artificial seeds, and cloned chrysanthemums themselves. Kitchen enthusiasts compared freeze-dried foods with traditional ones, created their own bubble tea, and examined the effects of acids and sugar on teeth.

Young scientists in action
Not all children at the Picnic were visitors – some participated as exhibitors, presenting their own experiments to guests. This year, we hosted an impressive delegation of Young Explorer Clubs (YECs). Young Armenians introduced visitors to the world of holograms, while young Georgians demonstrated how to create a water-based speaker. Young Ukrainians helped visitors build periscopes, and Polish club members showcased a levitating pencil and a spinning tower made of coins.

The Picnic stage featured performances by some of the world's best science show presenters.

The Science Picnic drew an impressive 36,022 participants in 2024. As a family-friendly event, nearly half of the adult attendees brought children, and a third came with their partner. Around 50% of the children attending were primary school students from grades 1 to 6. Nine out of ten attendees were Warsaw residents, and the majority arrived at the stadium using public transportation. A quarter of the visitors arrived between 11 a.m. and noon, shortly after the event began, and spent an average of three hours exploring the exhibits. The main motivations for attending were a desire to learn about the latest scientific developments and an eagerness to spark a passion for science in their companions. These expectations were met, as 97.5% of attendees reported that they felt they had expanded their knowledge.

Satisfaction with the Science Picnic has remained consistently high over the years, and 2024 was again no exception. A remarkable 89.9% of attendees reported being satisfied with their experience, while only 5.2% said they were dissatisfied. Among children aged 10–14, satisfaction was even higher, reaching 93%. The event received high praise for its thematic focus, the layout of the booths, the quality of the experiments, and the choice of venue. Most attendees learned about the Picnic through word of mouth and the organizers' social media channels.

The 27th Science Picnic, which we organize in partnership with Polish Radio, was co-funded by the "Science for You" program of the Ministry of Science and the Copernicus Science Centre.

“After Hours” Evenings for Adults

The “After Hours” Evenings for Adults are monthly events that give adult visitors the opportunity to enjoy Copernicus Science Centre attractions at convenient hours, free from the company of children. These evenings feature not only our standard offerings but also thematic attractions, ensuring each edition is a unique experience.

The “After Hours” Evenings for Adults proved immensely popular in 2024. Tickets sold out as soon as they were made available – often before the program details were even announced. The majority of attendees (around half) were aged 26–35, with women outnumbering men. About 80% of participants had higher education, and a similar percentage came from Warsaw, particularly from the Śródmieście, Wola, and Praga Południe districts. Many attendees came with company – roughly half with their partner, and a third with friends.

The primary reasons for attending were the evening’s theme, the promise of an enjoyable time, and the chance to visit the Copernicus Science Centre without children around. The events were highly appreciated by attendees, with approximately 95% expressing satisfaction. The most praised attractions included the shows in the Planetarium and the High Voltage Theatre.

The Evenings for Adults were so well-received that the most frequent request we received was to extend their duration by at least an hour. While most participants attended only once, those who returned did so within three months, often because they hadn’t been able to experience all the attractions during their first visit. In total, 7,734 people participated in the Evenings for Adults in 2024.

January: Cosmic Apocalypse

February: Ars Erotica

March: Crime and Punishment

April: Mythbusters

May: The Tree of Life

June: A Matter of Great Weight

July: I, Robot

November: Schrödinger’s Cat

December: Gamechanger

Encounters with Experts

On weekends, “expert stations” pop up within our Exhibition space, providing visitors with opportunities to conduct additional experiments, engage directly with scientists, learn about ongoing research, and ask questions – especially those they might hesitate to ask in a more public forum. These sessions also benefit the experts, offering them a chance to refine and develop their science communication skills.

In 2024, we hosted 25 expert visits, with biology (10) and physics (5) being the most frequently explored subjects. Highlights included workshops on medical suturing, studying animal bones, controlling a Mars rover, and experimenting with a levitating train. We also welcomed representatives from less common fields, such as Orientalists, Esperanto language instructors, a dietitian, and a patent attorney.

The Mars rover of the Student Astronautical Circle of the Warsaw University of Technology.

Archaeozoologist Kamil Niemczak showed our visitors his collection of animal bones.

In November, we had the honour of hosting the astronaut Sławosz Uznański, PhD.

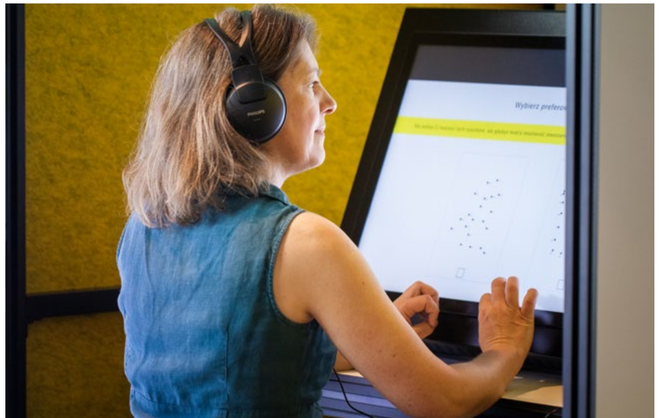
It was at Copernicus that he announced the goals, name, and logo of the first Polish technological and scientific mission to space. As the second Polish astronaut in history and an ESA project astronaut, Uznański will embark on his mission to the International Space Station (ISS) in spring 2025. During his 14-day stay aboard the ISS, he will conduct 13 experiments focusing on biotechnology, materials science, and human behaviour and reactions in space. Additionally, educational experiments proposed by students will be performed live during real-time connections with the ISS. At least one of these live streams will be hosted at Copernicus Science Centre.

Living Lab

The exhibition space at Copernicus is an excellent place to do research, as visitors from diverse backgrounds come here to experiment and learn new things. This gives scientists a chance to study how people learn, using data collected from exhibits in the Living Lab, and it gives guests the ability to contribute to advancing knowledge in the social sciences.

In October 2024, four Living Lab studies were completed. Prof. Dariusz Jemielniak and Anna Kovbasiuk from Kozminski University investigated why people fall for disinformation. Prof. Maciej Karwowski from the University of Wrocław analysed how artificial intelligence can support creativity. Visitors were invited to draw, and an AI model evaluated their work and provided immediate feedback. Prof. Tom Ormerod from the University of Sussex and Wendy Ross, PhD, from London Metropolitan University examined how people tackle complex problems that require creativity. Brenda Jansen, PhD, from the University of Amsterdam explored how children combine discovering new things with applying what they already know.

In November, the Living Lab welcomed new exhibits prepared by an international team as part of the DigiPatch project (more on p. 46). This time, visitors can participate in a study by sharing information about their activity on social media and online communities.



Young Girl Builders

We were delighted to host another edition of the "Young Girl Builders" workshops designed for girls. These sessions aim to show participants that careers in construction and engineering are fascinating, fulfilling, and not reserved exclusively for men. In 2024, we invited teenage girls (aged 13–15) to a workshop focused on building wind turbines. They explored how energy transformation works, learned how massive wind turbines are constructed and transported, and, most importantly, had a chance to build their own wind turbines by hand. The task proved highly engaging, inspiring the girls to reach new heights of creativity.

Builder-girls and their windmills

The workshops were conducted in collaboration with Erbud.

Dream Designers

The Dream Designers competition aims to develop STEAM (science, technology, engineering, art, and mathematics) skills, foster children's and teenagers' project-based abilities, encourage interest in engineering technologies, and raise awareness about pressing environmental issues.

In 2024, participants in the Dream Designers project created models, capable of flying and driving, to measure various environmental parameters. Teams were encouraged to promote construction and tinkering within their local communities. The creators of the 10 best designs received equipment kits, modelling materials, and funding to build prototypes.

Five teams won awards for their exceptional projects. The winning entries included the "Copper Rocket", a compressed-air rocket; rubber band-powered cars; a mobile pollution tester; and two vehicles produced using 3D printing – a hydraulically powered "ShadowScanner" and a wind-driven machine.

An Evening with Poland's Women Polar Researchers

On a December evening, we embarked on a polar journey in a warm and welcoming atmosphere, joined by an exceptional group of female experts. The evening began with a screening of the documentary film "Ant/Arctic Women", followed by a discussion with the film's protagonists – trailblazing female researchers in the Arctic and Antarctic regions. The discussion explored topics such as climate change and its impact on polar regions, the uniqueness of the Arctic and Antarctic, and the cutting-edge research conducted by our guest specialists. The panel also touched on the challenges faced by the first Polish female polar researchers and the tumultuous history and future of the Arctowski Research Station.

The auditorium at Copernicus was packed, and we were also joined remotely by audiences gathered in SOWA Zones in Ostrowiec Świętokrzyski, Gorzów Wielkopolski, Nysa, Pruszków, Świdwin, Międzyrzec Podlaski, Malbork, Bolesławiec, and Złotoryja.

We were proud to host

Prof. Maria Agata Olech –founder of the Polish Polar School of Botany and a globally renowned expert in lichenology. She has participated in numerous polar expeditions to the Arctic and Antarctic, including as a wintering mission leader.

Anna Krzyszowska Waitkus, PhD – specialist in polar and soil research. Over the course of 16 scientific expeditions, she has conducted groundbreaking studies on human impact in polar regions.

Dagmara Bożek – author of books on polar topics, science communicator, and polar expedition participant. Co-creator of the documentary film "Ant/Arctic Women".

Agnieszka Kruszewska – Deputy Director of the Institute of Biochemistry and Biophysics, Polish Academy of Sciences, managing the Henryk Arctowski Polish Antarctic Station.

Prof. Marcin Węsławski – Director of the Institute of Oceanology, Polish Academy of Sciences, oceanologist, and marine ecologist who has spent over 50 months on sea and polar expeditions.

We create and disseminate solutions that transform education.

The “Revolutions” Award

In 2024, for the first time we granted the “Revolutions” award for innovative educational initiatives, which we had established one year earlier, to mark the 550th anniversary of the birth of our patron, Nicolaus Copernicus. The name of the award refers to Copernicus’ discovery of the heliocentric structure of the Solar System, which not only touched off a revolution in astronomy but also initiated a profound change in thinking about the world and humankind’s place in it. Over 100 years ago, the American education reformer John Dewey called for a similar Copernican revolution in education, whereby “the child becomes the sun about which the appliances of education revolve”. Despite the passage of time, the goal he set has not yet been achieved.

We are aware of the many innovative educational projects taking place across Poland. While some gain widespread attention, others unfold more quietly. Our aim is to acknowledge these efforts, turning them into a source of inspiration for others. We plan to recognize and honour the creators of educational revolutions both small and large, whether they take place in schools or at home, in virtual spaces or the real world, involving children or adults, local or broader communities, across a wide range of topics or formats.

An impressive 366 initiatives were submitted for the first edition! The honorary jury, chaired by Robert Firmhofer, CEO of the Copernicus Science Centre, faced the challenging task of selecting 10 finalists – 5 in the national category and 5 in the local category – and ultimately naming the winners. The results were announced at the final gala on May 24, 2024.

Local Category Winner: The Educational Centre for Science and Technology in Wodzisław Śląski
In Wodzisław Śląski, the educational approach has been revolutionized. Local schools operate on a four-day week, dedicating the fifth day to fieldwork, projects, and hands-on activities at the Educational Centre for Science and Technology. This centre features multidisciplinary workshops and studios, including mechatronics, carpentry, model-making, sewing, ceramics and crafts, arts, cinema, and sensory-creative spaces. The initiative develops skills and competencies not covered in standard school curricula.

National Category Winner: The “Good Death Institute”
The Good Death Institute broke societal taboos by providing education on dying, death, and grief. Through training sessions, workshops, and meetings, it raises awareness about the dying process, the diversity of funeral rites and farewells, and ways to give and receive support during such times.

Special Prize Winner: Janusz Laska
Janusz Laska's groundbreaking initiative was the creation of the Young Explorer's Club (KMO) program, which is now overseen by the Copernicus Science Centre. The first club was founded back in 1998 in the town of Kłodzko. Between 2002 and 2005, the program was implemented by the Kłodzko Educational Society under the "Equal Opportunities" program of the Polish-American Freedom Foundation and the Polish Children and Youth Foundation. In 2009, the Polish-American Freedom Foundation decided that the program needed the support of a large educational institution in order to expand nationwide and internationally. The Copernicus Science Centre took on this role.

If one has enough patience and time, even impossible changes become possible. This is what The statuette symbolizes. At first glance, it seems impossible to position it so that it remains stable. However, after a few attempts and experiments, when success is finally achieved, the result is truly astonishing.

The winners received custom-designed statuettes created by the Copernicus Science Centre and cash prizes of 20,000 PLN. The Educational Centre for Science and Technology in Wodzisław Śląski used their prize money to establish a new music workshop, which opened in the fall of 2024.

Initiatives that made it to the final round

National Category

The Fact-Checking Academy (the Demagog Association):
Teaches skills for verifying information found online.

The House of Peaceful Youth (the OFF School Foundation):
Empowers young people to create lesson plans on social issues.

Dopamine (the "We Give Children Strength" Foundation):
A film exploring the mechanisms behind social media.

The Good Death Institute (the "Good Death Institute" Foundation):
Provides education on death, dying, and grief.

Forest Gang (Bartek Guentzel):
Nature camps for children.

Local Category

Studying the Physico-Chemical Properties of Piotrków Soil
(the "Purple Fumes" Student Science Club from SP No. 8 in Piotrków Trybunalski):
A nature-based research project.

Urban Laboratories (the "On the Spot" Foundation for Local Communities):
Encourages children to identify and solve local urban issues.

Educational Centre for Science and Technology (Extracurricular Activity Center No. 1 in Wodzisław Śląski): Interdisciplinary nature-focused workshops.

SzkoUA – Warsaw Ukrainian School (the Catholic Intelligentsia Club Association, Ukrainian House Foundation): A school offering classes in both Polish and Ukrainian.

3LAB Innovation Workshop (III High School in Gdynia):
A creative space merging art and science.

Student at the Centre

The “Student at the Centre – An Integrated Education Model for the Warsaw Metropolitan Area” initiative, developed in partnership with local governments in the Mazovia region, was intended to be implemented in approximately 80 Polish primary schools.

The primary goal of this project was to enhance the competencies, skills, and interests of over 12,000 students in ecological education, with a particular focus on raising awareness about climate change and its consequences. We proposed a hybrid educational project centred on the student and their competency development process. Participants were meant to begin by building knowledge through an online course, gain practical experience in our laboratories, exhibitions, and during field activities, and finally practice independent analysis of climate change issues within their immediate environment.

This innovative educational model would have provided students with firsthand experience in self-directed learning and the development of key competencies in addressing climate change. They would have acquired interdisciplinary knowledge (covering subjects such as mathematics, geography, chemistry, biology, and safety studies), draw on the resources of various institutions, and make use of modern technologies.
However, after a detailed analysis of project risks – including the lack of guarantees that schools would use the educational platform actively, and formal-legal challenges related to managing personal data – and following consultations with key partners, we decided to withdraw from applying for funding to implement this project.

DigiPatch – Moving from networked to patchworked society

An endless number of micro-groups are emerging online: parenting groups, sports fan clubs, hobbyist communities, diet enthusiasts, or residents of a specific street. A common feature of these small communities is that members often lose a sense of connection with others outside their group. As part of the international DigiPatch project, researchers from Jagiellonian University in Kraków and their partners are studying how activity and interactions within micro-groups affect feelings of loneliness, social isolation, and community bonds. A key focus of their research, which we support, is the impact of micro-group activities on the stability of social order and the functioning of public institutions.

In our LivingLab (more on p. 40), four interactive exhibits now allow visitors to share information about their online activities and membership in micro-groups. Data collected between November 2024 and April 2025 will be analysed by an international team of researchers led by Professor Małgorzata Kossowska. The team is investigating social networks, their connections to broader society, and the positive and negative aspects of group membership on feelings of belonging.

As part of the DigiPatch project team, we facilitate knowledge exchange – both among researchers and between the academic community and the public. To support researchers, we developed a knowledge map and library containing all collected materials and study results. We also participated in conferences, presenting on topics such as the three-way collaboration between researchers, science centres, and their visitors (ECSITE), ways to popularize the humanities (Interaction – Integration), and the dynamics of radicalization processes (Lay Out – Let Out).

Together with researchers, museum and science centre staff, and educators from various countries, we created a lesson plan titled "The Influence of Influencers on Young People's Attitudes". The lesson explores the mechanics of online echo-chambers and helps students develop critical thinking skills.

DigiPatch is part of CHANSE (Collaboration of Humanities and Social Sciences in Europe), a joint initiative by 27 research funding organizations from 24 countries. CHANSE's primary goal is to launch international collaboration projects focused on transformation and, in particular, the social and cultural dynamics of the digital age.

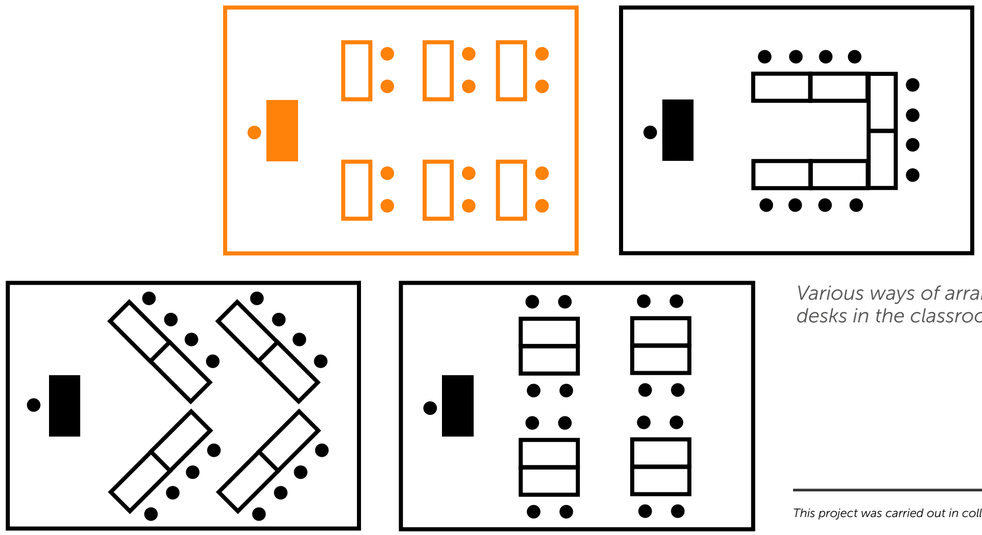
Road-STEAMer

Road-STEAMer is a consortium within the ECSITE network working on recommendations for effective ways to integrate STEAM (Science, Technology, Engineering, Arts, and Mathematics) approaches into education across European Union countries. The project aims to spark greater interest in the sciences by incorporating creative and artistic teaching methods. Along with other project participants, we strive to identify gaps in the educational policies of various EU countries, understand their educational needs, and explore how STEAM-based teaching can help address them. Our task in 2024 was to organize a dialogue session where experts from diverse fields related to education could share their experiences and discuss STEAM teaching methods they employ. The online meeting brought together 12 participants. During the session, recommendations were developed for selected Polish educational solutions. Participants emphasized the importance of integrating STEM topics with elements of art, as this approach helps dispel stereotypes about the difficulty of science subjects. They also highlighted the need to adapt curricula to meet labour market demands and ensure adequate professional development support for teachers.

The Classroom Space Matters

In 2024, we completed a project exploring educational spaces and their impact on learning. We examined how the layout and furnishings of classrooms affect lesson organization, student interactions, and emotions. Both students and teachers shared their visions of the ideal classroom, submitting hundreds of drawings, sketches, collages, and photos. Despite their differing perspectives, their ideas turned out to be remarkably similar.

At the Copernican Revolution Lab, we conducted experiments comparing traditional furniture to mobile furniture (lightweight pieces on wheels). Results showed that mobile furniture facilitates classroom change-ups (taking an average of just 2.5 minutes!) and can enhance the overall atmosphere during lessons. However, many teachers continue to opt for traditional desk arrangements, likely due to habit or lack of training.



Various ways of arranging desks in the classroom.

This project was carried out in collaboration with Moje Bambino.

Students who have a say in how their classrooms look feel a stronger connection to their learning environment. Teachers also observe that involving students in designing classrooms fosters engagement and a sense of responsibility.

The project underscored the importance of tailoring classroom spaces to the needs of both students and teachers. Insights from this research can guide the creation of more welcoming and effective learning environments.

How Do Students and Teachers Envision the Ideal Classroom?

Teachers Ideas:
Teachers shared insights about the classrooms they teach in. From over 150 submissions, we selected a few schools to visit. We observed lessons, spoke with teachers, and analysed how classroom spaces influence learning and student well-being. Many classrooms featured adaptable furniture arrangements for individual and group work.

Teachers favour clean, spacious classrooms with functional furniture, zones for group work and relaxation, and plenty of natural light. Teachers also believe students should be involved in designing the space.

Students want a neat, uncluttered classroom with friendly colours and well-maintained furniture. They envision zones for learning and relaxation, along with opportunities for personalization (stickers, posters). Flexibility in rearranging furniture is also a priority.

Student Ideas: Children demonstrated creativity in their designs, dreaming of outdoor summer classrooms, kitchenette corners, and relaxation areas equipped with smartphones.

School with Technology

In partnership with our Strategic Partner, Samsung, we are implementing the "School with Technology" project, which aims to integrate smartphones and tablets into formal and informal education in Polish schools.

Mobile devices function as portable laboratories and educational tools that students can simply pull out of their backpacks. These devices are approximately a thousand times faster and have about a million times more memory than the onboard computer used by astronauts during the Apollo mission! Equipped with features like a gyroscope, metal detector, compass, decibel meter, time-lapse camera, barometer, and altimeter, these sensors and their corresponding apps make lessons – whether in physics, biology, geography, or even Polish literature or history – significantly more engaging and interactive.

We asked teachers if they use mobile devices during their lessons and invited them to submit lesson plans incorporating such tools. Out of 232 entries, 12 finalists were selected to co-create a prototype educational kit centred around tablets. This effort began with a four-day "Hackathon" held at the Copernicus Science Centre, where participants learned the principles of prototyping educational activities. With support from a research team, they developed 11 innovative lesson plans.

All the lesson plans, along with necessary accessories and materials, will be put together as a comprehensive educational kit to be distributed to 100 Polish schools in 2025.

The "School with Technology" project is carried out in collaboration with Samsung. At Copernicus, the Copernican Revolution Lab – our educational R&D facility – is responsible for the research component and the creation of the educational kit.

Biology
A year-long outdoor observation series where students document seasonal changes in a local area, using mobile apps to identify plants, birds, and insects. Tablets are also used as microscopes with specialized attachments.

Career Counselling
An interactive escape room game exploring future professions and the skills needed for them, coupled with a discussion about whether AI and robots might replace human jobs.

Physics/Biology
Constructing a prism and exploring light refraction, with tablets used as lux meters to measure light intensity before and after dispersion, as well as to identify colours.

Physics
Building a mathematical pendulum with a neodymium magnet as the weight to examine the effect of mass on oscillation periods, using a tablet's magnetometer.

Physics
Creating a pulsar model and measuring its flash period with a tablet lux meter.

Biology
Learning about the circulatory system with augmented reality, where students can virtually hold and examine a heart. Tablets are also used as pulse meters.

Biology/Health
Investigating UV filters and testing how sunglasses and sunscreens absorb light using tablet lux meters.

Music
Listening to Beethoven's Ninth Symphony and recreating it using fruits and other objects as instruments via a tablet and MakeyMakey controller.

Biology
Exploring plant and animal cell structures through mixed reality applications.

History
A mixed reality escape room featuring challenges related to Polish scientists and their discoveries.

Polish Literature
A lesson on Stanisław Lem's collection of science fiction stories, The Cyberiad, where students create poems using neologisms, have them read aloud by a speech synthesizer, and compare their results to those generated by a language model like Microsoft Copilot.

Working With Ideas

In November, together with the Institute of Psychology, Polish Academy of Sciences, we organized a conference on “Artificial Intelligence and Modern Technologies in Social Science Research”. The event aimed to discuss the benefits and risks of using new technologies in social research, particularly in psychology. Participants presented their research findings through talks and poster sessions. They also attended a workshop titled “Working with Ideas”, where they developed concepts for research projects incorporating new technologies. Inspired by the conference lectures, visits to the LivingLab, and the “Future Is Now” exhibition, participants drafted innovative project frameworks merging psychology and AI. Notable ideas included using a specially trained GPT model as a mediator and employing social robots to support individuals experiencing loneliness.

Youth Expert Panel

The year 2024 was an exceptionally busy one for our young consultants, with 20 meetings held throughout the year. During these sessions, the panellists tested out prototypes, mathematical exhibits, themed workshops, projects related to renewable energy sources, “Young Girl Builders” activities, and laboratory lesson plans (such as those focusing on devil stick insects). During the latter, we analysed panellists’ engagement levels based on different teaching approaches and assessed which topics generated the most active participation. Their valuable feedback and constructive suggestions helped us refine our offerings.

The Youth Expert Panel not only enables us to create projects better tailored to the needs of our audience but also provides a rewarding experience for the participants. Michał (aged 14) reflected: “The biggest benefits were meeting new people and gaining a lot of knowledge about technology and ecology. These discussions also gave me a confidence boost”. Karolina (aged 16), in turn, stated: “I’m happy I could offer advice on planned exhibitions and projects. For me, it was a great break from the school routine”.

“The biggest benefits were meeting new people and gaining a lot of knowledge about technology and ecology. These discussions also gave me a confidence boost”. – Michał

Teacher Expert Panel

In 2024, we established an expert panel consisting of teachers to draw on their experience and expertise. Our goal was to gather their opinions on our educational offerings and adapt them to the real needs of schools. Much like our youth consultants, the teachers tested prototypes of our projects, exhibits, educational kits, and workshops. They also reviewed the workshops offered at the EduFactory makerspace, our new initiative for schools. Teachers deemed these workshops an excellent idea, providing opportunities to enhance the skills students acquire during art and technical education classes. Some also suggested that the EduFactory could serve as an appealing space for extracurricular activities.

The panel includes teachers from various educational levels – preschools, primary schools, and secondary schools. Meetings are held both in-person in Warsaw and online, making participation accessible to educators across the country. Panel members not only influence our educational offerings but also have the chance to enhance their professional skills and collaborate with other dedicated educators.

eyeTeach

At the end of 2024, we joined the EYE-TEACH project: Integrating AI and Eye-Tracking Technology for Enhanced Educational Practices, part of the Horizon Europe program. This initiative focuses on leveraging eye-tracking technology combined with advanced artificial intelligence to support teachers and enhance students' reading comprehension skills.

Together with partners from 11 countries, we aim to develop a pilot system that will enable teachers to observe how students learn during independent reading sessions. Teachers will be able to identify when students' attention drifts and pinpoint sections of the text that were found dull or unengaging.

Partners in the project: Finland: University of Turku (project coordinator), Belgium: University of Antwerp, Germany: Freie Universität Berlin, Spain: Universidad Autónoma de Madrid, Switzerland: University of Geneva, Netherlands: Utrecht University, Italy: University of Bologna, France: Université Paris Cité, Greece: Aristotle University of Thessaloniki, United Kingdom: University College London.

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Iłowiecka-Tańska, I. (2024). Centrum Nauki: To będzie laboratorium dla wszystkich rekonstrukcja założeń nowego typu instytucji wystawienniczej. Kultura i Społeczeństwo, 68(2), 143-161.

Iłowiecka-Tańska, I., & Potęga vel Żabik, K. (2024). Interaction With Exhibits: The Significance of Instrumentalization. Science Education.

Iłowiecka-Tańska, I., & Potęga vel Żabik, K. (2024). 13 How Visitors Tame Exhibits Using a design-based research method to understand visitors' performance. Besser ausstellen: Innovative Wege der Konzeption und Evaluation von Ausstellungen, 72, 217.

Zielińska, A., Lebuda, I., Gop, A., & Karwowski, M. (2024). Teachers as creative agents: How self-beliefs and self-regulation drive teachers' creative activity. Contemporary Educational Psychology, 77, 102267.

Sałkowska Marta (2024). „Wolność tutaj grozi tylko nabyciem doświadczenia". O dostępności Centrum Nauki Kopernik dla osób z niepełnosprawnością ["Freedom here only risks gaining experience" – On the Accessibility of the Copernicus Science Centre for People with Disabilities]. Zarządzanie w Kulturze, 25(3). www.ejournals.eu/czasopismo/zarzadzanie-w-kulturze/artykul/wolnosc-tutaj-grozi-tylko-nabyciem-doswiadczenia-o-dostepnosci-centrum-nauki-kopernik-dla-osob-z-niepelnosprawnoscia#TOP

Iłowiecka-Tańska, I., & Potęga vel Żabik, K. (2024). Czy Księżyc zrobiony jest z sera? Rozmowy zwiedzających Centrum Nauki z humanoidalnym robotem Mikołaj Kopernik [Is the Moon Made of Cheese? Conversations Between Visitors to the Science Centre and the Humanoid Robot Nicolaus Copernicus]. W S. Borowicz & J. Hobot-Marcinek (ed.), Technopaideia. Zaawansowane technologie w edukacji humanistycznej (p. 239). Kraków: Wydawnictwo Uniwersytetu Jagiellońskiego. ISBN: 978-83-233-5384-3.

Filipowicz, S., Iłowiecka-Tańska, I., Jachymek, K., Karwowski, M., Machnacz, E., Potęga vel Żabik, K., Skowrońska, K., Czyżewska, D., Kraszewski, W., Sałkowska, M., Sazanov, A., & Perłowska, D. (2024). Przestrzeń ma znaczenie: Raport badawczo-rozwojowy [Space Matters: An R&D Report]. Centrum Nauki Kopernik.

We develop networks of learning communities.

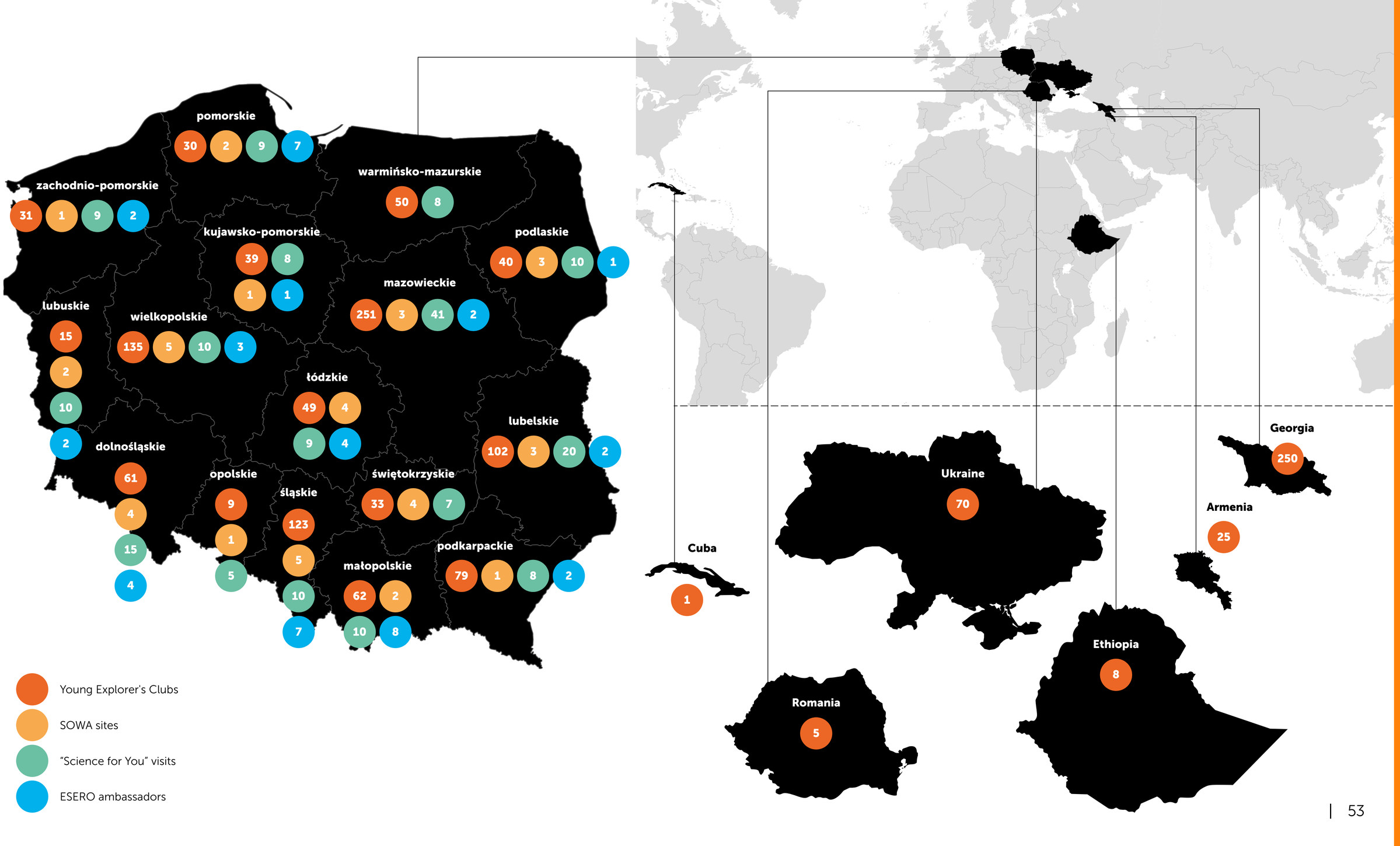
The quality of education is largely determined by competent and committed educators. Their capabilities increase when they join together in larger communities and collaborate through networks. By working collectively, they can extend their reach, adopt best practices, and avoid repeating past mistakes. We are actively fostering the growth of a number of networks and striving to interconnect them.

Within the Young Explorer Clubs (YEC) network, club members alongside their mentors engage in hands-on learning and exploration of the world. We are continuously facilitating the establishment of new clubs, both in Poland and internationally, and encouraging the existing ones to get to know one another and pursue joint projects. Further details about YECs can be found on p. 54.

The European Space Agency's ESERO programme (more on p. 62), includes national and global competitions, challenges and workshops designed to inspire young people to choose engineering- or science-related careers. ESERO ambassadors are educators working locally and collaboratively. Some of them run YEC clubs, others have participated in ESERO programme competitions or organize original science-popularisation programmes.

The SOWA network now comprises 41 small science centres (additional information on p. 24 i 60). These "Discovery, Imagination, and Activity Zones" (Polish abbreviation: SOWA) are integrated into existing facilities in towns with populations up to 350,000, such as museums, libraries, community centres, and schools. While some of these institutions have prior experience with hands-on experimentation and making-based activities, others are newcomers to this approach. The SOWA network provides local communities with access to Copernicus' educational programmes. The zones also collaborate on original initiatives that stretch across different regions.

The "Science for You" programme (more details on p. 26) links together all the points on the map of our networks and plays a crucial role in initiating new connections. Its initiatives like the ScienceBus, PlanetBus, and the "For Math's Sake!" exhibition reach the remotest areas of Poland, sparking scientific curiosity and a passion for experimentation among future members of our community.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Young Explorer's Clubs
SOWA sites
"Science for You" visits
ESERO ambassadors

Nasza pierwsza wizyta na Kubie.

The Young Explorer’s Clubs (YECs) international initiative

Young Explorer’s Clubs (YECs) are extracurricular educational activities for children and youth, focused on collaborative, hands-on exploration of the world through experimentation. Club members engage in hands-on experiments under the guidance of mentors, not only gaining knowledge but also honing their skills at communication, logical thinking, creativity, and teamwork. As of December 2024, the YEC network proudly encompasses 1,109 clubs throughout Poland plus an additional 359 internationally, including 25 in Armenia, 250 in Georgia, 70 in Ukraine, 5 in Romania, and 8 in Ethiopia. At the end of the year, the very first YEC was set up in Cuba!

By developing the Young Explorer’s Clubs (YEC) network, we bring together diverse learning communities: club members, mentors, and partners from Poland and abroad. We emphasize the sharing of experiences among participants, helping them engage with other Copernicus programmes. Our focus is on fostering proficiency, encouraging independent learning, and also facilitating learning from one another. We also actively support the development of skills among YEC coordinators, tutors, teachers, and other educators, as well as students.

Conquering the World

2024 has been a year of dynamic international growth for the YEC network. We initiated collaborations with partners in Moldova, Cuba, Kenya, and Israel, who are interested in establishing clubs in their respective countries.

In September, we visited Cuba, where we met with educators, lecturers, and teachers in Havana who expressed interest in joining the YEC program. Together, we experimented and discussed the opportunities and challenges of setting up clubs in Cuba. Unfortunately, the challenges are indeed significant. For example, sourcing materials for experiments is a major issue – Cuba faces shortages of almost everything, including basic items such as paper, glasses, modelling clay, and oil. In this regard, we are supported by the Polish embassy in Havana, which collaborates with UNICEF to provide schools with essential supplies. However, experimenting in the clubs will not be as free-form as we would like. Therefore, we need to develop activity scenarios based on very simple solutions.

Together with the HumanDoc Foundation, which supports the YECs’ international efforts, we invited the Moldovan InfoNet Foundation to the program. In 2025, InfoNet will assist us in establishing clubs in Moldova.

In 2024, we also established a team of Polish and international partners focused on developing the intercultural

aspects of the network's activities. With the support of the "Study Tours to Poland" program and the "Living Bridge" Foundation, we organized a seminar that brought together representatives from NGOs, government institutions, and universities from Georgia, Ukraine, Armenia, Moldova, Poland, and Israel. During the seminar, we worked on setting future directions for the network's development, learned effective methods for working in multicultural environments, and participated in a series of inspiring meetings with experts in education, diplomacy, and science.

In 2024, the YEC network adopted a new visual identity. The YEC logo is now available in multiple languages. Previously, each language version used a different font. Now, we have unified this to Noto Sans, a free typeface that supports numerous alphabets, ensuring consistency across all logos. We also expanded the range and variety of graphic elements, offering more design flexibility.

We completed our first international research project, "RustBusters". Over four months, 25 clubs from Mazovia (Poland) and Georgia explored the phenomenon of corrosion and tested various methods of protecting metals. Future projects will involve clubs from Ukraine and Armenia. „RustBusters" was co-funded by the RITA: Changes in the Region programme and carried out in collaboration with te YECs' Georgian partner, Ilia State University.

Together with our Georgian partners, we began work on the "STEM Concept for University Educational Programs Development" project, funded by the Competitive Innovation Fund (CIF). The project aims to develop innovative educational solutions for Georgian schools, including model lesson scenarios, educational kits, courses for future natural science teachers, and a mentoring program for young STEAM educators.

In May, a group of Georgian biologists – YEC mentors and members of BIO, an association of biology teachers from across Georgia – visited Copernicus, where they participated in workshops in our laboratories and met with experts. They also toured the Maria Skłodowska-Curie Museum in Warsaw.

The Copernicus brand is exceptionally strong in Georgia, Armenia, and Ukraine. Many teachers dream of visiting us in Warsaw at least once in their lifetime, and the emotions accompanying such visits are profound. For them, Poland is a symbol of successful transformation and of Europe.

KLUB MŁODEGO ODKRYWCY

YOUNG EXPLORERS' CLUB

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ახალგაზრდა მკვლევართა კლუბი

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КЛУБ МОЛОДОГО ВИНАХІДНИКА

CLUBUL TÂNĂRULUI EXPLORATOR

Collaboration is key

The growth and vitality of our network hinge on the dedication and initiatives of our regional YEC partners. These partners maintain close connections with their local clubs, energizing their activities and collaborating with mentors. Through our annual "YEC Regions" grant competition, partners have the opportunity to secure funding for their own projects, as well as to promote the YEC idea among local communities. In 2024, four institutions successfully obtained such grants, enabling them to organize a variety of activities that enriched the YEC community. Altogether, the initiatives organized by these distinguished partners engaged approximately 800 participants. The "Everyone Can Be an Explorer" picnic brought together seven clubs from the Kujawsko-Pomoskie region. The event included a competition with prizes, where every club member was declared a winner. In Kielce, the Young Researchers Meetings and a YEC Picnic resulted in the establishment of 19 new clubs in the Świętokrzyskie region. In Olsztyn, regional clubs organized a conference where children presented their own research projects, showcasing their creativity and scientific curiosity.

During the November YEC Forum, we announced the winners of the next edition of the "YEC Regions" grant competition. The laureates were: the Kazimierz Kordylewski Youth Astronomical Observatory in Niepołomice, the Kepler Science Centre – Venus Planetarium in Zielona Góra, the Craft, Dual Education, and Vocational Training Support Centre in Kalisz, and the Municipal Public Library in Piotrków Trybunalski.

Regional partners also prepared and conducted integrative activities as part of the "Together for a Better Future" program (more on p. 72).

Club mentor meet-ups

Club mentors from Poland and abroad are helped to develop their competences by means of webinars in the "YEC Academy" series, enabling them to share experiences and best practices. In the autumn of 2024, for instance, mentors analysed experiment scenarios used during club meetings, modifying and enhancing them with new elements to make them more engaging. In 2024, 10 webinars were held, with approximately 500 participants in total. Additionally, we organized 3 in-person workshops for 44 current and new club mentors. At the beginning of the school year, we also embarked on a tour as part of the "Start a Club in September" campaign, visiting Kielce, Bydgoszcz, Piotrków Trybunalski, Olsztyn, Chełm, Białystok, and Chorzów. In each city, we highlighted the benefits of joining the network and provided practical advice. Altogether, we met with 100 educators.

Regional YEC Partners

Poland:

- Olsztyn Teacher Training Centre
- ExploRes Knowledge Dissemination Association, Rzeszów
- Lodz University of Technology – Lodz Children's University
- State Academy of Applied Sciences in Chełm (formerly State Higher Vocational School in Chełm)
- Wrocław University of Science and Technology
- University of Białystok
- University of Silesia in Katowice
- Kazimierz Kordylewski Youth Astronomical Observatory, Niepołomice
- Kazimierz Wielki University, Bydgoszcz
- Craft, Dual Education, and Vocational Training Support Centre, Kalisz
- WSB Merito University
- Municipal Teacher Education Centre in Bydgoszcz (Tripartite Agreement with Kazimierz Wielki University in Bydgoszcz)
- Lublin Local Government Teacher Development Centere (three-way agreement with the State Academy of Applied Sciences in Chełm)
- Kepler Science Center – Venus Planetarium, Zielona Góra
- Zielona Góra Cultural Centre
- Pomeranian Teacher Education Centre, Gdańsk (three-way agreement with WSB Merito University)
- Świętokrzyskie Teacher Training Centre, Kielce
- Municipal Public Library, Piotrków Trybunalski (Tripartite Agreement with Lodz University of Technology – Lodz Children's University)
- West Pomeranian Teacher Development Centre, Szczecin

International

- Ilia State University, Tbilisi, Georgia
- Mekelle University, Mekelle, Ethiopia
- Ternopil Science Centre, Ukraine
- Lviv Open Lab, Lviv, Ukraine
- Jinishian Memorial Foundation, Yerevan, Armenia
- Scientifica Association, Cluj-Napoca, Romania
- Minor Academy of Sciences of Ukraine, Kyiv, Ukraine
- Office of the City Historian of Havana, Havana, Cuba

Soon to join

- Chișinău, Moldova
- Sparkpro, Kibbutz Gvat, Israel
- Fun & Education Global Network, Nairobi, Kenya

Thirteenth YEC Forum

Over 300 participants from 10 countries – Poland, Georgia, Ukraine, Armenia, Moldova, Romania, Ethiopia, Kenya, Israel, and Cuba – took part in the 13th International YEC Forum, held in November. The halls of Copernicus resounded with conversations in six languages! Inspiring educators, teachers, and community leaders gathered to motivate, teach, and share their experiences with one another.

The theme of the forum was "(F)All Together" – emphasizing that failures and mistakes can often be stepping stones to fascinating new discoveries. We discussed the role of mistakes in the learning process and the importance of creating a safe environment where making errors is not just accepted but encouraged. Mistakes can be analysed, leveraged, and even celebrated – without fear, shame, or a sense of failure. They are a crucial stage in the learning process and can lead to true discoveries and development – not only intellectual but also personal. The forum once again demonstrated that a "learning network" is more than just a concept – it is a tangible force that fosters belonging, joy, and pride in being part of it.

Club Members' Experiments

The most exciting and inspiring moments come from meeting with club members. Every year, we invite clubs to the Science Picnic of Polish Radio and the Copernicus Science Centre, which this time featured a strong international representation (more on p. 36). In total, 60 YEC participants attended the Picnic.

Ten clubs from primary schools and kindergartens in Warsaw and the surrounding areas (Piaseczno, Błonie, and Nowy Dwór Mazowiecki), along with their partner institutions, organized their own mechanics-themed picnic. Visitors built and tested rockets and other flying and floating objects, created toy spinning tops and roly-polies, and learned about the principles by which the various devices presented by the club members worked.

At the 3rd Science Picnic in Armenia, over 40 clubs participated, while the Lviv Festival welcomed 20 YEC clubs from across the city as well as children from 20 Lviv schools.

In March, the Kalisz Science Days took place, co-organized by the Craft, Dual Education, and Vocational Training Support Center in Kalisz, a YEC partner in the Wielkopolska region. Among the 80 exhibition booths, several were run by YEC club members, who showcased their creativity and ingenuity. For example, one student with diabetes from a technical school designed and built a portable insulin refrigerator, and another club member with special educational needs created a dexterity game.

"Together in the YEC"

In November, the University of Białystok hosted its first meeting for students of the University of the Third Age, focused on mathematics through experimentation. Using globes, oranges, Styrofoam balls, and plastic sphere models, the senior citizens constructed spherical shapes with spherical rulers and compasses. They also measured angles in spherical polygons with a spherical protractor, discovering a fascinating new field of knowledge. Future meetings are planned to delve into the works of great mathematicians, such as Fibonacci and Euler.

Young Explorer Club programme partners

Strategic partner

Polish-American Freedom Foundation

National partners

Polish National Children's Fund

German-Polish Youth Office

Good Education Foundation

Programme development partner abroad

HumanDoc Foundation

The “YEC Champions” competition is open to all the clubs. Candidates must submit one of their own activities that they believe was implemented in a truly masterful way. In 2024, 17 YEC clubs from 6 countries were awarded. Cash prizes of 2,000 PLN were granted to 5 Polish clubs, while mentors from Georgia, Ukraine, and Armenia received material prizes.

The jury paid special attention to the efforts of the entire YEC community in Ethiopia, which received an award for its resilience and unwavering commitment to education under the extreme conditions of the civil war. In devastated schools, without textbooks, teachers used the experience they had gained through YEC to engage children and youth in conducting simple experiments using available materials. These activities helped rebuild a sense of agency and provided a way to cope with the consequences of the war.

“We are in the midst of a deep crisis. However, this award brings us hope. Science is our hope for peace. It is the hope for future generations. We will continue to encourage our children to love science and to connect their future with it”, said Professor Merhawi Abreha Gebreyesus from Aksum University, receiving the prize during the award ceremony.

Young Explorer Clubs actively participate in our other educational projects. In 2024, out of the 10 teams that qualified for the „Dream Builders” competition (more on p. 41), 8 teams were from YEC clubs. These teams came from Jaworzno, Sosnowiec, Poznań, Wieleń, Lututów, Kraków, Koło, and Marcinkowice.
New YEC clubs are increasingly being established within SOWA centres (Zones of Discovery, Imagination, and Activity). Cities like Piotrków Trybunalski, Starachowice, Rybnik, Staszów, Wodzisław Śląski, Wieleń, and Piaseczno now boast their own clubs.

In addition to working with club members, mentors are also joining the ranks of the ESERO Space Education Ambassadors (more on p. 63). As you can see, our educational networks are increasingly intersecting, creating a rich and dynamic learning environment.

Winners of the “YEC Champions” competition

What were the YEC Champions up to?

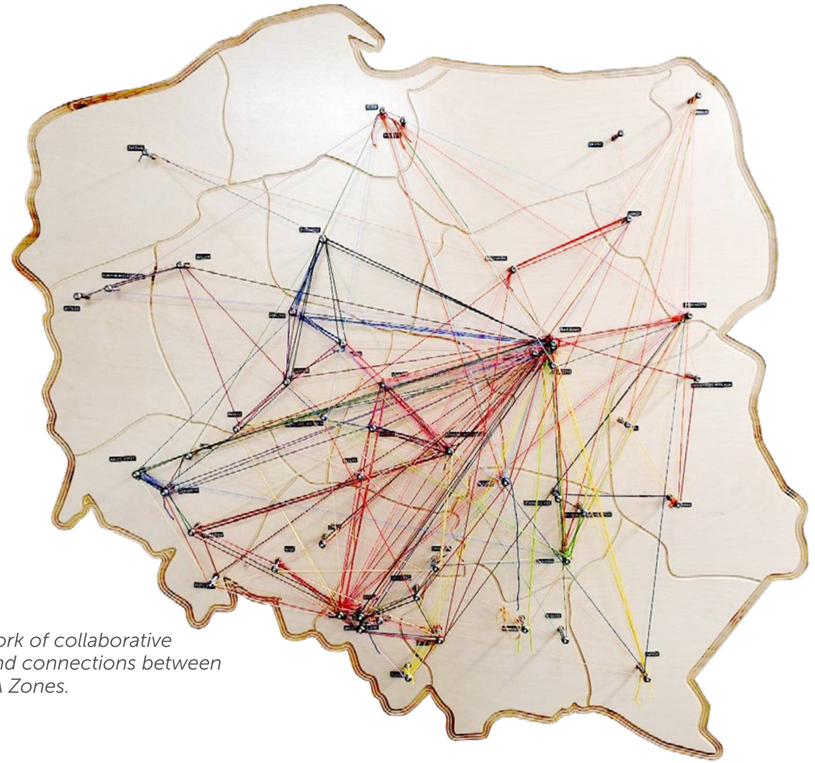
Berylowa YEC, Lublin
This club took care of the wildlife inhabiting the green areas around their school – hedgehogs, swifts, small birds, owls, squirrels, and bats. Club members installed nesting boxes, conducted field observations, and documented their efforts with photos and videos. Along the way, they sparked an interest in nature among younger children.

#laboratorium, Żyrardów
Students organized a “Science Night” at their school – an overnight event where they presented their projects and experimented with students from outside the club. Activities included exploring luminescence, building flashlights, and generating electricity using water, wind, and solar energy.

Scientific Skirmishes, Kraków
Club members created educational kits for younger students at their school. Each kit contained instructions and materials for conducting experiments on topics such as electrostatics, electricity, magnetism, vibrations and waves, and optics.

Exodus YEC, Zambrów
During a Polish-Ukrainian summer exchange, club members practiced collaboration within a multicultural group. As part of the “WE – Together for a Better Future” project, they organized a meeting of Polish and Ukrainian students. Together, they discussed Christmas traditions and dishes in different languages, translated a gingerbread recipe into Ukrainian, and then baked gingerbread cookies as a group.

Green Academy, Nowy Dwór Mazowiecki
As part of Children’s Day celebrations, club members ran workshops where participants used eco-friendly materials and recycled cans and bottles to create innovative constructions. They crafted plant-based artworks, insect hotels, feeder-paintings, and mechanical butterflies.



Network of collaborative ties and connections between SOWA Zones.

A workshop at the 3rd SOWA Forum.

The SOWA Network

The network of SOWA "Zones of Discovery, Imagination, and Activity" (details on p. 24) has grown to encompass 41 institutions, and there are plans to establish 9 more in the coming year. Beyond preparing exhibits, ordering furnishings, and completing educational kits for the upcoming SOWA zones, we are focused on building an integrated, engaged, and active community. We want the centres to collaborate with one another, as well as with Copernicus.

Within the Copernicus exhibition space, we conduct various additional activities, such as science demonstrations and workshops, which are also well-suited for smaller science centres. Many SOWA Zone staff members were unfamiliar with these types of activities, which led us to organize training sessions aimed at enhancing their skills in science communication techniques and standards. We visited Wodzisław Śląski, where educators from the SOWA Zones in Wadowice and Racibórz also joined the training. In Gorzów Wielkopolski, we worked with participants from Witnica and Wieleń, while in Bychawa, we trained explainers from Ryki. These workshops not only helped develop professional skills but also strengthened relationships between nearby Zones and fostered a greater sense of belonging to the broader network. We encourage SOWA Zones to incorporate "Copernicus on Wheels" experiments into their exhibitions. Starting with simple, quick, and visually impactful experiments requiring minimal equipment proved to be an ideal approach. We introduced these experiments to SOWA staff members from Konin, Gniezno, Jarocin, Rawicz, and Suwałki.

Family Workshops are one of our flagship formats, which has already proven successful in SOWA Zones. The idea of children and their caregivers experimenting together and seeking answers to intriguing questions has been warmly received across Poland. In 2024, we trained 12 institutions to conduct these workshops, including Racibórz, Drohiczyn, Bolesławiec, Rybnik, Wodzisław, Jaworzno, Ryki, Bychawa, Bydgoszcz, Gniezno, Wałbrzych, Nysa, and Jarocin. The workshops have already been added to the programs in SOWA Zones in Suwałki, Piaseczno, and Gorzów Wielkopolski.

Another format gaining popularity in SOWA Zones is gathering to observe the sky together. When we encouraged local SOWA staff to organize such events to observe the Perseid meteor shower peak, some reported that they felt a need to expand their astronomical knowledge. In 2024, therefore, we trained staff from the SOWA Zones in Łomża, Międzyrzec Podlaski, Wadowice, and Malbork to support such activities.

We encourage SOWA Zones to participate in our program conferences and special events. Guests from Rybnik, Piotrków Trybunalski, and Sanok attended the "Lay Out – Let Out" Conference (more on p. 64) In 2024, seven YEC clubs actively operated within SOWA Zones, located in Piotrków Trybunalski, Starachowice, Rybnik, Staszów, Wodzisław Śląski, Wieleń, and Piaseczno. These clubs engaged in special events and extracurricular initiatives. SOWA Zones in Suwałki, Piaseczno, Międzyrzec Podlaski, Bolesławiec, and Bydgoszcz organized intercultural workshops as part of the "Together for a Better Future" program (more on p. 72).

In October, we held the first-ever off-site meeting of our Programme Council at the SOWA Zone in Rybnik. Council members not only toured the Zone, located at the historic Ignacy Coal Mine, but also met with representatives from two other nearby Zones – Racibórz and Wodzisław Śląski.

“Science for You” at the SOWA Zones

ScienceBus
Nowe Skalmierzyce, Uniejów

PanetBus
Gorzów Wielkopolski, Witnica, Wieleń, Konin, Wadowice, Rybnik, Ryki, Piaseczno

the “For Math’s Sake” exhibition
Nysa, Starachowice, Świdwin, Wodzisław Śląski, Bydgoszcz, Drohiczyn

“Let’s Discover It!”
Bolesławiec, Wałbrzych, Ryki

In addition to providing training in the SOWA Zones, we engaged with local communities in 2024. We traveled to Piaseczno with the “Explorers” show, to Gorzów Wielkopolski with „The Mind Caught in the Act”, and to Racibórz with the 10=1010 workshop. Our mobile exhibitions and planetarium have become regular visitors to small science centers. As part of the “Science for You” program, we visited 19 of the SOWA locations.

The SOWA Zone in Drohiczyn hosted the “Festival of Discoveries”, bringing together SOWA Zones from Suwałki, Wadowice, Rybnik, Racibórz, Tczew, Starachowice, Nowe Skalmierzyce, and Zawiercie, as well as an ESERO Space Ambassador from Białystok and YEC representatives from Rybnik.

The event featured workshops, joint experiments, quizzes, and competitions, while we contributed with the „For Math’s Sake!” exhibition, cyanotype workshops, educational kits, YEC experiments, and science shows. The festival demonstrated that science can and should extend beyond institutional walls – not only in large cities but also in local communities. Inspired by the event, all the SOWA Zones now want to host similar festivals!

SOWA Zones also participated in our Polar Evening (more on p. 42). We live-streamed a meeting with female polar researchers to Zones in Ostrowiec Świętokrzyski, Gorzów Wielkopolski, Nysa, Pruszków, Świdwin, Międzyrzec Podlaski, Malbork, Bolesławiec, Bydgoszcz, and Złotoryja.

In December, the third SOWA Forum took place, bringing us all together at Copernicus for two days of inspiring activities and experience sharing. Participants engaged in prototyping new Thinkatorium boxes, attended training sessions on working with individuals with disabilities, and explored research-based questions. We designed activities for adult audiences and developed ideas for initiatives that extend beyond the physical spaces of SOWA Zones. We also exchanged knowledge about creating valuable social media content and integrating other Copernicus programs into SOWA activities. Once again, our guests proved that SOWA is not just a network of cooperating institutions but a vibrant community of passionate, creative, and energetic individuals.

Program ESERO

ESERO is an educational programme of the European Space Agency (ESA) that targets teachers and students at all educational levels. In Poland, the ESERO Polska Office is run by the Copernicus Science Centre. Our aim is to enhance the teaching of scientific subjects by integrating them with knowledge about space, thereby inspiring young people to pursue future careers in engineering and technology.

We organize regular competitions that allow children and young people to carry out their own engineering and research projects. At the same time, we work with teachers, encouraging them to incorporate space-related topics into their lessons.

The space sector is growing dynamically, creating tools that support crisis management, advance modern medicine, and develop quantum technologies. Although these tools are designed to address specific challenges of space missions, they may, in the coming years, find everyday applications here on Earth. During the „Space in Schools" event, we discussed future technological advancements that could benefit life on Earth with teachers. Participants learned about experiments they could incorporate into their lessons, such as those related to building space bases, astronaut training, satellite construction, and Earth observation from space. We also introduced them to the ESERO competitions and provided tips for astronomical observations to identify interesting objects in the night sky.

Alicja Trębińska-Stryjewska, PhD, from the Military University of Technology's Biomedical Engineering Centre shared details about the IMMUNE MULTIOMICS experiment, in which her team is studying how astronauts' immune systems adapt to conditions on the International Space Station (ISS). The event brought together 104 teachers, who also had the opportunity to establish connections with educators from across the country to collaborate on joint projects.

We believe that firsthand conversations with engineers, astrophysicists, programmers, or space medicine experts can inspire young people to discover new passions. As part of the "Lessons Out of This World" project, we connected professionals from the space sector with students from all over Poland. Teachers could select lesson topics and invite an expert for an online classroom meeting. Topics included repairs performed on the ISS and interpreting satellite images. Each lesson also provided an opportunity for open conversations about the work and experiences of the guest speakers. In 2024, around 95 "Lessons Out of This World" were held, reaching approximately 2,670 students.

Annual ESERO competitions for children and young people

CanSat – independently building space probe simulators and conducting scientific experiments with them.

Moon Camp – designing a moon base.

Climate Detectives – looking for solutions to local climate problems.

Astro Pi – creating software for microgravity research.

CanSats are carried into the air by a special rocket.

During the summer, 749 children from the Mazovia region participated in the “Space Adventure” program. This day of exciting activities at the Copernicus Science Centre and Planetarium included exploring the “The Future Is Today” exhibition, watching the film “Voyager: The Never-Ending Journey”, and participating in workshops where they became spacecraft designers. The “Space Adventure” program was primarily for children we invited from groups at risk of social exclusion (more on p. 70).

In 2024, together with a group of our Space Education Ambassadors, we developed a prototype educational kit as part of a grant from the “Empiria i Wiedza” Foundation. This process involved numerous meetings, workshops, training sessions, and experiments. The result was a portable kit for traveling educators, equipped with materials to conduct 15 experiments that integrate physics, mathematics, chemistry, biology, and technology, all under an overarching space theme. The kit also includes tools and accessories for experimentation, such as an infrared camera, microscope, chemical reagents, laboratory glassware, a plasma ball, as well as strings and clips. The kit is designed to accommodate lessons for 20 students, divided into four teams. The selected experiments can be conducted in any educational setting – be it in a classroom or during an outdoor event.

The ESERO Space Education Ambassador Program has been active for seven years, bringing together over 30 passionate and dedicated individuals. The program fosters not only collaboration but also friendships and a strong sense of belonging to the group. For example, when one ambassador organized World Space Week in Wrocław, nine others joined in to support the event. Another collaboration emerged between a YEC club at the SOWA Zone in Piotrków Trybunalski and a club in Rumia – which would likely not have formed without the ambassador program.

The program continues to be a source of inspiration, teamwork, and a shared commitment to advancing space education.

The Space Education Ambassadors program has been operating for seven years. It gathered over 30 committed and passionate people.

Eksperymenty ambasadorów.

The “Lay Out – Let Out” Conference

The results of the PISA 2022 survey (Programme for International Student Assessment) revealed a significant disparity between the academic performance of Polish students and indicators of their psychological well-being. This inspired us to address the topic of well-being within the education community during the annual “Lay Out – Let Out” Conference.

The conference focused on creating supportive environments for learning and teaching, as well as building strong communities, resilience, and mutual support using scientific knowledge and educational practice. The program included: sessions organized into 6 thematic blocks, 13 workshops, a discussion on the definition of a „“good life”, and a screening of the Oscar-winning documentary “The Last Workshop”, followed by a discussion on community building and rebuilding.

The conference was attended by 319 participants, 148 of whom declared in the registration form that it was their first time joining us. Women made up nearly 90% of attendees, which reflects the gender structure of the teaching profession in Poland (approximately 85% female). Nearly 90% of participants were from urban areas, with about half coming from cities with populations of up to 150,000. In terms of age, over 40% were aged 41–50, and 30% were over 51.

The majority of participants were primary school teachers (40%), followed by high school teachers (20%) and individuals from public institutions (11%).
The conference received very positive reviews: 79% of participants said they would recommend it, and on a 10-point scale, no one gave a rating below 6. The most highly rated session was the discussion following the screening of the film “The Last Workshop”, while among the workshops, the workshop titled “Good Meetings with Parents”, led by independent educational expert Ewa Radanowicz, received the highest praise. When asked for thematic suggestions for future conferences, participants mentioned topics such as new technologies, cyber threats, alternative and health education, and a review of global education systems and ideas.

327 people took part in the Conference

79% people would recommend this event to others

Sessions

A HEALTHY SPIRIT IN A HEALTHY BRAIN

- **When does the brain learn best?**
  Nikodem Krawczyk-Zieliński (Copernicus Science Centre)
- **Two heads are better than one – what social neuroscience tells us about the nature of social interactions**
  Agnieszka Pluta, PhD (Institute of Psychology, Polish Academy of Sciences)
- **Social behaviors in the autism spectrum – from model to practice**
  Ksenia Meyza, PhD (Nencki Institute)
- **Neurodidactics: Facts and myths**
  Małgorzata Chojak, PhD (Laboratory for Research on Neuroeducation, UMCS)

STRENGTH IN COMMUNITY

- **Intercultural community**
  Anna Polozhii (Copernicus Science Centre)
  Renata Tomczuk (Primary School in Huszlew)
- **What does it mean for a school to be LGBTQ+ friendly?**
  Dominik Kuc (GrowSPACE)
- **The school: a spectrum of inaccessibility**
  Jan Gawroński (Autism Team)
- **How does a sense of belonging work?**
  Karolina Małek, PhD (Faculty of Psychology, University of Warsaw)

A PORTRAIT OF THE EDUCATIONAL ENVIRONMENT

- **This youth today – who are they and how do we communicate with them?**
  Justyna Suchecka (TVN24.pl)
- **Parents in a postmodern world – between creation and adaptation**
  Anna Błasiak, PhD (Ignatianum University)
- **A collective portrait of teachers**
  Sylwia Żmijewska-Kwireg (Center for Civic Education)
- **Practices of community and collaboration**
  Ewa Radanowicz (Independent Educational Expert)

EXPANDING COMFORT ZONES

- **Agency – the secret ingredient of effective learning**
  Zuzanna Michalska, PhD (Copernicus Science Centre)
- **Who’s afraid of math?**
  Marcin Karpiński (School of Education, PAWF and University of Warsaw)
- **What’s next for homework?**
  Prof. Małgorzata Żytko (Faculty of Education, University of Warsaw)
- **An educational revolution: Doing things with our hands**
  Emilia Kopiec, PhD (Educational Center for Science and Technology, Wodzisław Śląski)

THE ARCHITECTURE OF WELL-BEING

- **Space matters – what works in a school classroom?**
  Szymon Filipowicz (Copernicus Science Centre)
- **Noise in schools**
  Marcin Zastawnik, PhD Eng. (Jan Długosz University in Częstochowa)
- **The school building as a tool**
  Maciej Siuda (Maciej Siuda Studio)
- **Nature around the school and well-being**
  Monika Jaworska (Kolumbus School)

CIVIC AGENCY

- **So, do they care or not? Social and electoral activity of young Poles**
  Mateusz Galica (Lata Dwudzieste)
- **The principles of peer mediation**
  Elżbieta Damm (Polish Mediators Association)
- **If we want democracy, civic education is essential**
  Olga Napiontek, PhD (Civis Polonus)
- **Elections that unite rather than divide – the story of School Participatory Budgets**
  Mateusz Wojcieszak and Bartłomiej Pękalak (Foundation Field of Dialogue)

An Award-Winning Educator in Action

During the session “An Educational Revolution: Doing Things with Our Hands”, Emilia Kopiec, PhD, a winner of the “Revolutions” Award, shared her story. She described how she led an educational revolution in Wodzisław Śląski, where she built the Educational Centre for Science and Technology from scratch, by her own efforts and determination. There, students’ dreams of a good school have become a reality.

We are increasing the participation of underrepresented individuals and groups in Copernicus programmes.

The Copernicus Science Centre's offerings are particularly attractive to families and school groups. While meeting the expectations of our regular audience remains a priority, our ambition is to reach out to new individuals and provide them with meaningful experiences. We are seeking ways to create programmes that appeal to older youth and young adults. We are also planning activities of interest to seniors and parents whose adult children have moved out. We take measures to include individuals at risk of social exclusion and work to remove barriers that make it difficult for people with special needs to participate in our activities. At the same time, we are working to increase the diversity of the Copernicus team.

We are working to remove barriers and include people at risk of social exclusion into the programme activities.

Removing Barriers

We strive to make our building and programmes as accessible as possible to everyone. Each year, we find that more can always be done. To achieve this, we implement and regularly update our “Accessibility Improvement Action Plan”, systematically removing additional barriers. For example, during the recent renovation of our ventilation and air conditioning systems, we marked all staircases used by visitors to comply with accessibility guidelines. The first and last step of each staircase has been painted in a contrasting colour to improve visibility and safety.

In 2024, we focused on improving the accessibility of our events for people with hearing impairments. Polish Sign Language (PJM) interpreters were invited to major events, including: lectures and expert meetings during the “After Hours” Evenings for Adults and the Przemiany Festival, stage shows at the Science Picnic, the “Revolutions” Award ceremony, the Polar Evening, the opening of the “Poisons: Nature’s Superpowers” exhibition, and the opening and closing sessions of the “Lay Out – Let Out” Conference. During the “Lay Out – Let Out” Conference, Polish Sign Language interpreters also assisted attendees in panel discussions upon request. On selected Thursdays, interpreters supported Deaf visitors on tours of our exhibitions. To ensure effective communication, all events offering interpreting into Polish Sign Language were announced to interested audiences through a special newsletter, which we send monthly to our Polish Sign Language subscriber group.

Our visit to the "Home in Łódź" Foundation

For visitors with sensory sensitivities, autism spectrum disorders, and older adults, we implemented the "Quiet Hours" program. Once a month, we turned off loud exhibits, devices emitting bright or strobe lights, and offered quieter presentations at the High Voltage Theatre. Additionally, during the "Show and Tell" Conference, we arranged a quiet room, replacing loud applause with the silent version.

As in previous years, we participated in the Festival of Culture Without Barriers. Due to ongoing renovations, we had to relocate workshops to the Copernican Revolution Lab. In keeping with the spirit of this space, festival guests engaged in construction, engineering, and logic challenges using specially prepared experimentation kits. Workshops were conducted in Polish with Polish Sign Language interpretation, ensuring that the activities were fully accessible to all participants.

As in previous years, we participated in the Festival of Culture Without Barriers. This year, the event coincided with the renovation of our main building, so we had to organize workshops in the Thinkatorium makerspace, which had been temporarily relocated to the Copernican Revolution Lab building. In keeping with the concept of this space, festival guests tackled construction, engineering, and logic challenges using prepared self-experimentation kits. The workshops were conducted in Polish – with Polish Sign Language (PJM) interpretation.

"It was a wonderful day! Thank you from the bottom of our hearts for organizing such an amazing adventure! We were amazed by you – you smile, help, and are absolutely fantastic! And of course, the exhibitions... everything is so interesting, there's something for everyone – regardless of intellectual ability. We admire your facilities for people with mobility and sensory limitations and your thoughtful approach to this topic. We were blown away. We talked about all of it extensively on our way back home. Big hugs!"

Letters like this demonstrate to us that our hard work does make a difference. We received it from "Aunt Marta", following a visit by Gabryś, Julia, Marcin, and Oliwka – ambassadors of the "Dom w Łodzi" Foundation. The children visited us in February 2024 and surprised us in May by awarding us the "Chmurka #pełniażycia" Accessibility Certificate, which recognizes places that are friendly to all children. We are proud of this recognition!

We are eager to share our experiences and gain new ones at conferences and meetings. Our Accessibility Officer led the session "Oops! Inclusion Goes Wrong..." during the ECSITE 2024 international conference in Ljubljana and conducted workshops on working with people with disabilities during the most recent SOWA Forum.

We continue to collaborate with organizations that support people with disabilities, including the Synapsis Foundation, JiM Foundation, and Foundation for Culture Without Barriers.

Including People at Risk of Social Exclusion

To combat exclusion, we provide free tickets for groups and tickets costing 5 PLN (less than 1.50 EUR) for individuals in difficult economic situations. We also aim to include individuals with lower social and educational capital in our activities.

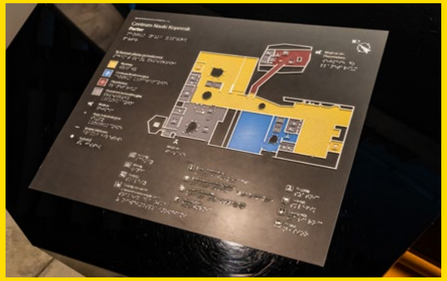
The Young Explorer's Club (YEC) programme has, from its inception, been effective at reaching people who are at risk of exclusion due to a variety of factors, such as living in small or very small towns, lack of financial resources (the activities are free), or lower academic performance (the programme is open to all). Increasingly, children with special educational needs are joining the clubs. They thrive in the club environment, where the rigid structure of traditional schooling is replaced by a more flexible approach – allowing them to move around, talk, and engage freely.

In 2024, regional partners made a special effort to invite club members with special educational needs, including those with intellectual disabilities or hearing impairments, to their events and science picnics. Such activities took place in Piotrków Trybunalski, Białystok, and Kalisz.
For three years, through the "Together for a Better Future" programme (more on p. 72), intensywnie działamy na rzecz integracji międzykulturowej. Do klubów dołączają dzieci z Ukrainy, Białorusi, Czeczenii, Romowie. Docieramy także do osób szczególnie zagrożonych wykluczeniem za granicą. Działalności KMO obejmuje tereny, na których toczą się obecnie konflikty wojenne (Ukraina) oraz będące w kryzysie wojennym (Etiopia).

Visit of representatives of the Culture Without Barriers Foundation in Copernicus and #hearing, hard of hearing people.

Accessibility at Copernicus

- The website www.kopernik.org.pl/en complies with WCAG standards.
- Tickets can be purchased via the migam.org app, and communication at ticket offices is available through the MIGAM service – both facilitating Polish Sign Language (PJM) communication.
- Information about our offerings and practical details can be found in Polish Sign Language in the "Exhibitions" and "Accessibility" sections of the website.
- Elevators, platforms, and restrooms are adapted to meet the needs of wheelchair users; ramps are available in front of the building; ticket counter no. 5 is adjusted to an accessible height; most exhibits are easily accessible; and the Planetarium's projection room has a designated wheelchair space.
- Tactile paths and attention fields are available in the entrance zones of the Exhibition and Planetarium buildings.
- Portable tactile maps are available at ticket offices and on stands in both buildings.
- Elevator buttons in both buildings are marked with Braille.
- Visitors may enter with an assistance dog.
- Magnifying glasses can be borrowed at ticket offices for use during visits.
- Selected exhibits include audio descriptions accessible by scanning a QR code.
- Selected films in the Planetarium feature audio descriptions and subtitles in three languages.
- Guides titled "Plan Your Visit to the Exhibitions" and "Plan Your Visit to the Planetarium" are available for individuals on the autism spectrum or with sensory sensitivities.
- There is a quiet room outside the Exhibitions area and quiet corners in the Planetarium for those who need a calm space.



In the “Dream Designers” competition (more on p. 41), our evaluations in 2024 considered more than the technical quality of participants’ models. We also assessed how teams engaged their communities in promoting hands-on making and constructing, especially in areas with limited access to STEAM education (e.g., community centres and social support institutions).

The ESERO Cosmic Adventure Summer Programme (more on p. 63) was also designed with children and youth at risk of social exclusion in mind. In 2024, participants included children with complex disabilities. We invited children from institutions in the social support sector, such as daycare centres, specialized daycare centres, and residential childcare facilities.

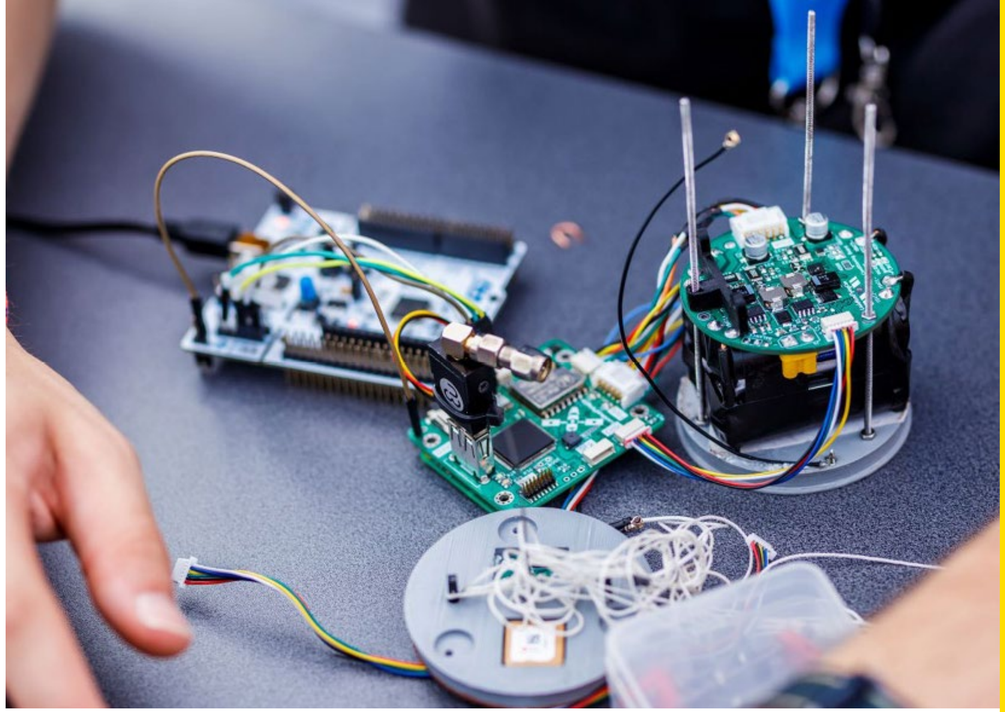
Many of the events, webinars, and workshops conducted by the ESERO team are held online, allowing educators, teachers, and students from across Poland – including those in small villages and rural areas – to participate. Children and teens can meet space-sector experts through initiatives like “Lessons Out of This World”, Moon Camp workshops, and Astro Pi, while teachers can join sessions such as “Coffee-Talks About Space” and webinars on incorporating space-related topics into school classes.

To make the CanSat competition more inclusive, we run the online Summer School for Space Education, where teachers are introduced to the Arduino Uno programming system for CanSats. At subsequent stages of the competition, training sessions are held for entire teams, helping to remove barriers such as limited access to centres offering scientific projects for students. These workshops also make it easier for inexperienced teams to build CanSats and program their experiments.

The ESERO Space Education Ambassadors collaborate with institutions working with children at risk of social or educational exclusion. For example, one ambassador partnered with the Society of Friends of Children to deliver workshops at all the community centres in Kraków. Another ambassador visited preschools in small towns and villages around Zielona Góra.

Seeking New Audiences

In 2024, we explored how interesting our programming activities are for senior citizens. We visited various locations – several day care centres, a University of the Third Age, an intergenerational club, and the Senior Olympics. We held conversations, conducted demonstrations and workshops, and observed reactions and levels of engagement.



“We may be old, but we don’t want to be infantilized” – this is a phrase to keep in mind when preparing activities for senior citizens. While we often saw them having fun like children, they also expected reliable and in-depth information about the phenomena they observed. Many seniors shared challenges related to their age, such as issues with vision, hearing, or motor skills. Tasks that required precise analysis of fingerprints (e.g., the “Fingerprinting” workshop), even with professional magnifying glasses, proved to be difficult. However, the topic itself was very well-received, and some participants expressed interest in joining a more advanced forensic workshop. The biggest advantage of the “Trendy Bee” workshop turned out to be its sensory elements – intense scents of beeswax, the opportunity to touch a block of wax, a honeycomb, and a hive frame. The session was met with great enthusiasm.

The “Explorers” show was presented to a very demanding audience – students of the University of the Third Age. The reception was mixed: some viewers found the show innovative, while others felt they were being treated “like children”. This is interesting because younger adult groups typically enjoy this presentation thoroughly. Similarly, the “Copernicus on Wheels” experiments were met with skepticism. While this format of quick, visually striking experiments usually serves as an excellent introduction to more complex activities, during the Senior Olympics it reminded many participants of “something for their grandchildren”. However, those who decided to engage ultimately did not regret it.

These experiences demonstrate how sensitive a group senior citizens can be. The most active among them expect scientifically challenging proposals and often perceive experimenting as childish and “not for them”. This may stem from the educational habits of their generation, as well as strong associations of the Copernicus Science Centre as a place for children. Senior citizens are a diverse group. Many are unable to travel to us independently, so activities must be arranged at their locations. However, it’s also important to consider active, mobile seniors who are eager to participate in cultural offerings in Warsaw. Although they have access to a wide range of free events, having to purchase a ticket is not a barrier for them. What holds them back from visiting Copernicus is the belief that there’s nothing here for them, that they won’t be able to get a ticket (perceiving the Centre as an inaccessible place with long lines), or that they have no one to go with (they fear visiting an institution alone, especially one without guides or visitor paths).

We discovered that information about our events (e.g., “After Hours” Evenings for Adults) does not reach seniors because they do not use social media. A significantly lower admission price or free tickets, tailored themes, and guided tours of the exhibitions could encourage them to visit Copernicus. The needs of this audience require further research, and we will also work on improving our communication with it.

While conducting workshops with senior citizens, we ended up meeting some experts!

One of the participants in a workshop about bees was a retired beekeeper who enriched the session with fascinating real-life stories. A former forensic technician joined a “Fingerprinting” workshop, sharing anecdotes and insights that surprised even our educators.

What do we already know about senior citizens’ needs?

- Alternative communication channels (not social media).
- Access to consolidated information about adult-focused programs.
- A paper guide for exhibits.
- A detailed activity schedule and a clear layout of the Exhibitions.
- Limited presence of children.
- Preferred activity hours: 10:00 AM – 4:00 PM.
- Sensory limitations (vision, hearing, mobility).
- Appreciated assistance from a guide to help navigate the space.
- Non-childish language.
- Peers (animators, scientists) are welcome.
- The need to be together, to integrate.

Together for a Better Future

"Together for a Better Future" is a nationwide programme that promotes multicultural integration through collaborative experimentation and hands-on making. It helps enhance educational opportunities and a sense of empowerment for children and youth while developing the skills of teachers and educators in the YEC and SOWA networks.

In 2024, we harnessed the integrative potential of experimenting and building to help Polish and Ukrainian children form friendships and explore each other's languages and cultures. The activities were held at SOWA Zones and Young Explorer Clubs (YECs). For many SOWA staff, this was their first time hosting Family Workshops. Our flagship format, adapted for a multicultural audience, brought together Polish and Ukrainian families. The sessions were well-received by both participants and facilitators – so much so that all the participating institutions decided to include Family Workshops in their regular programming. Some centres have already developed new, original scenarios, such as: "How is sound created?", "Where does the wind blow from?", "What pulls us to Earth?", "Why do stars shine?", "Has anyone seen a dinosaur?" The audience for these workshops is expanding to include people of other nationalities and ethnic groups.

The program also included support in the form of multicultural training and networking meetings, organized both in-person and online. YEC activities included club meetings, organizing local science outreach events, participating in picnics or science festivals hosted by other clubs, conducting educational projects, and other initiatives aimed at fostering mutual understanding and intercultural exchange, such as joint research outings and excursions.

Among other activities, club members studied air quality in various towns, learned about the structure and functions of the heart and lungs, and built machines and structures. While going to the swimming pool together, they learned about buoyancy and why we float on water. Others learned about the process of preparing and baking bread – from starting the sourdough, to observing how the loaves rise, to finally eating freshly baked slices together.

A key event was the "Together in YEC" meeting. The clubs "Seekers and Discoverers", "Trackers", and "Nature Explorers" came to Copernicus from the Mazovia region. Over 160 children and young people from Young Explorer Clubs presented the results of their research projects. There was a Leonardo da Vinci bridge, a Fröbel tower, a Rube Goldberg machine, and giant stick insects in various stages of development. The youngest club members (preschoolers) made snow out of baking soda and shaving foam, built a flashlight using a tongue depressor, and created markers for drawing on water.

Family Workshops Have Returned to Copernicus!
We organized workshops for Polish-Ukrainian groups, as well as one Polish-Roma group. Everyone had a great time working on one of the most popular scenarios: "Why Do Instruments Make Music?"

Including children with refugee experiences into the clubs helps break down barriers. For mentors, it builds intercultural competencies, and for children and youth, it fosters openness to diversity and cooperation. As one mentor said: "Our students are just children who ended up where they are against their will. They miss home and are searching for their place in the world".

The support program for YEC mentors also included specialist workshops for leaders, led by experts, aimed at exchanging experiences and deepening competencies in multicultural education. As part of the "Together for a Better Future" program, students and adults of Polish, Ukrainian, Latvian, Belarusian, Georgian, Chechen, Russian, French, Italian, and Roma origins experimented together.

The project is being implemented in partnership with the Deloitte Foundation and the United Nations Global Compact Network Poland donors who, like us, are committed to fostering intercultural integration in local communities.

1085 YEC club members who participated in the program, (262 from Ukraine).

274 Participants in events organized by the clubs.

3191 Participants in activities organized by regional YEC partners, (336 of nationalities other than Polish).

968 Participants in family workshops in SOWA Zones (181 of nationalities other than Polish).

In 2024, we developed two new language versions, Ukrainian and English, of Dominika Cieślikowska's guide "From a Multicultural to an Intercultural Classroom". The Polish version was created in 2023. All of them are available free of charge on www.kopernik.org.pl.

We are building an inclusive internal culture.

Sensitivity to the needs of others is also reflected in our organizational culture, which is focused on diversity and inclusion. We are creating an inclusive organizational culture by building a work environment where everyone, regardless of differences, has the opportunity to fully realize their potential. Thanks to our collaboration with the Centre for Vocational Counselling and Support for People with Intellectual Disabilities, our team includes three employees with special needs, who are supported by job coaches. Additionally, one of our animators receives assistance from a personal support worker for people with disabilities.

In response to feedback from a significant portion of our team, we organized a multi-phase workshop series titled "On the Path of Empathetic Communication", based on the principles of Nonviolent Communication (NVC). These workshops provided a safe and respectful space for dialogue and offered an opportunity for team members to get to know each other better.

In total, we dedicated 104 hours to this program! A total of 83 people from 16 departments participated, with 65 employees attending all three phases. Participants noted that the workshops increased their empathy, self-awareness, and openness to understanding different perspectives in communication with others.

An informal interdepartmental team focusing on the use of inclusive language was established, which shared its insights and ideas with management and the leadership team. The importance of this topic has been recognized, and it is now included in the 2025 strategy.

Grassroots initiatives within our team are not uncommon. We organize internal charity drives and participate in larger initiatives. In 2024, we joined a fundraising effort for flood victims organized by the City of Warsaw and contributed essential supplies to convoys supporting the Ukrainian city of Sumy.

We are making Copernicus a green cultural institution.

In line with our values, we are creating and implementing a plan to reduce the negative environmental impact of our activities. Our goal is to achieve climate neutrality and become a green leader among major cultural institutions. To support this effort, a specialist has joined our team to coordinate the green transformation process at Copernicus.

Our goal is to achieve climate neutrality and become a green leader among major cultural institutions.

S4

We are reducing the carbon footprint of our operations.

In 2024, we completed a renovation of the air conditioning and ventilation systems, which not only improved the comfort of visitors but also extended the lifespan of the equipment and reduced energy consumption costs at the Copernicus Science Centre. A comprehensive energy audit conducted in 2023 (covering buildings, installations, devices, and transportation) revealed that lighting is an area with above-average energy consumption at Copernicus. In 2024, we began replacing traditional light fixtures with energy-efficient LEDs. As part of this effort, we upgraded the lighting in the cloakrooms during a redesign of this space. Further work on revamping the lighting systems is planned for 2025. These improvements will reduce electricity demand and lower the building's operating costs.

Changes to the display methods used by exhibits equipped with monitors are also contributing to reducing the carbon footprint of the Copernicus Science Centre. An energy audit revealed significant power consumption by the "Shadow Theatre" exhibit – a large bright screen where black shadows of visitors standing in front of the camera would appear. Now, the screen is dark (without backlighting), and the shadows are white. This small change has not significantly affected the exhibit, yet has allowed us to save over 70% of the electricity consumed.

Renovated cloakroom

"Shadow Theater"

As part of the lighting replacement process, we also initiated the procedure for obtaining a “white certificate” of energy efficiency. After completing the lighting modernization, we will verify whether we have reduced energy consumption to the level required for certification.

To reduce CO_2 emissions, we prioritize public transportation whenever possible. We avoid situations where multiple people travel to the same location in separate cars, when they could travel together.

Our “Science for You” program (more on p. 26) involves traveling to small towns across the country. While planning out the routes, we have stiven to ensure that during a single trip, the ScienceBus, PlanetBus, the “For Math’s Sake!” exhibition, and the “Let’s Discover It” workshops could visit more than one location. Additionally, thanks to structural modifications to some exhibits, the ScienceBus exhibition was made 170 kg lighter, further reducing transport-related emissions. We also eliminated the printed version of the “Young Scientist’s Guides”, which aim to encourage students to continue experimenting and exploring their scientific curiosity independently. As of August 2024, these guides are sent to schools in digital form.

In 2024, we managed to conduct science-education training for staff from eight SOWA Zones during just three trips. Educators from nearby institutions gathered together to attend sessions in Wodzisław Śląski, Gorzów Wielkopolski, and Bychawa.

We are applying the “3R” principle.

In 2024, we began constructing exhibits according to the principles of eco-design, using recycled materials. Our exhibitions already feature one prototype entirely reflecting this new approach, as well as several exhibits partially created from secondary raw materials.

The areas where we use the largest quantities of consumable materials are the Thinkatorium makerspace (more on p. 22) and the EduFactory fablab (more on p. 23). The workshops held there are based on self-guided construction activities. We use materials left over from workshops and unsuitable for exhibit construction (such as plywood and wood scraps, cables, electronic accessories, fabrics), as well as surplus items and materials already in our inventory, purchased previously in bulk. Workshop participants can also bring their own materials from home, if available. Our goal is to eventually rely solely on reclaimed materials.

Recycled exhibits

“The Moiré Effect” – This exhibit was built using a trial batch of aluminium profiles that we once ordered to test set designs for the “The Future Is Now” exhibition. The perforated metal sheet comes from purchases made for a different version of this exhibit that was never created. The backlit panels were originally intended to be part of infographics.

“Moiré on a Tabletop” – The tabletop was made from parts of an exhibit originally designed for SOWA.

“Perspective” – The supporting structure is a repurposed housing unit from an exhibit once planned for the “The Future Is Now” exhibition.

“Thermal Traces” – The aluminium structure consists of profiles that were once part of a barrier surrounding the “Autonomous Car” exhibit.

The “Thinkatorium” makerspace

The „Perspective” exhibit

The “Moiré Effect” exhibit

Classes at the EduFactory

During the “Light in a Jar” workshop, participants create night lamps using jars and old cables. The bases are made from leftover plywood.

The cyanotype workshops lend a second life to old T-shirts and sweatshirts, decorating them with unique patterns.

The “As Good as New” workshop teaches participants how to sew and create their own drawstring backpacks using scrap materials (such as old bedding, curtains, or clothing).

Several years ago, we stopped ordering single-use promotional gadgets and distributed most of the previously accumulated items. Those that are reusable (e.g., pens, lanyards, name badges) are now used as multi-use accessories that can be borrowed during our events and conferences.

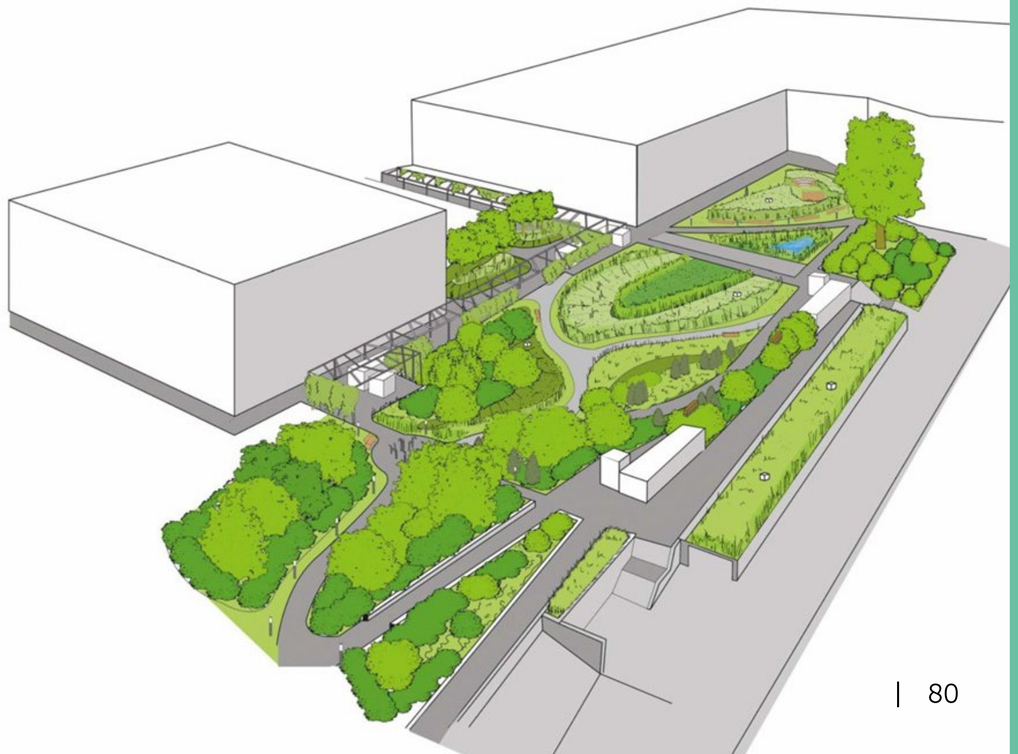
Wherever possible, we have replaced printed materials with digital ones. This includes maps for navigating the building, brochures and programs for events (e.g., the Science Picnic and Przemiany Festival), advertising flyers, schedules, and vouchers.

We are working to create a biodiversity park and make our environs greener.

We aim to return the area surrounding the Copernicus Science Centre to nature by creating a Biodiversity Park. Carefully selected plant species and terrain features, including small retention basins, will minimize human interference in the area. This small urban ecosystem will serve as a space for nature observation and educational activities.

In 2024, we established a team to prepare a grant application for the project, under funding initiative FENX.01.02-IW.01-001/24 organized by the National Fund for Environmental Protection and Water Management.

The metaphor of a “green Copernicus” found symbolic expression in the greening of our exhibitions. During the ventilation and air conditioning renovation, we introduced more than 20 plant species into the Science Centre. Green islands have appeared in the Agora and relaxation zones, featuring ivy, philodendrons, ferns, ficus plants, monsteras, fig trees, and spider plants.



We are working to ensure Copernicus financial stability and partnerships.

Our revenues are allocated in full to supporting our statutory activities. Their primary source is an operational subsidy from our Organizers, which covered 35% of the institution’s operating costs in 2024. Running daily operations and financing developmental investments require additional funding from other sources: ticket sales, the sale of products and services, fundraising, and targeted grants. Our goal is to achieve long-term financial stability. This will reduce dependence on individual funding sources and ensure the continuation of our programming, competitive employee salaries, high infrastructure standards, and investments in development.

S5

We are raising revenue to ensure operations and growth.

In 2024, we faced a significant budgetary challenge due to ongoing renovations, which required Copernicus to close temporarily and led to a decline in ticket revenue. Revenue from ticket sales therefore came in exceptionally low for the year, amounting to just over PLN 26 million (compared to PLN 31.7 million in 2023). Maintaining competitive wages remains a priority – over the past two years, has been significant pressure for salary increases in Warsaw. To ensure the quality of our operations, we continue to invest in our team and prioritize fair and competitive compensation. Despite these challenges, with additional support from our Organizers and the continued engagement of sponsors and partners, we successfully met our budgetary goal, achieving total revenue of over PLN 107 million to cover operating costs.

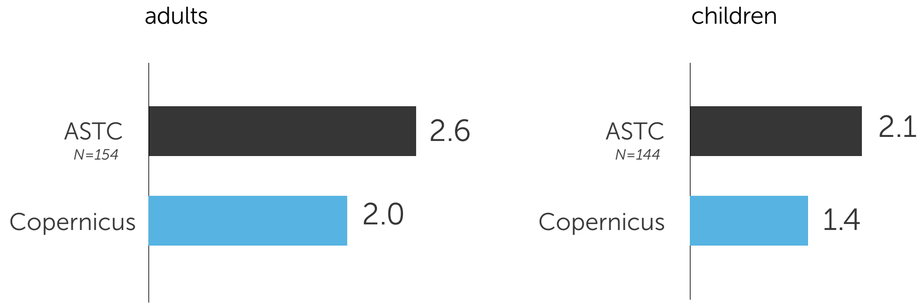
To enhance the institution's financial stability in the long term, we aim to sign contracts in advance for future years. This approach allows us to plan activities earlier and hence use resources more efficiently. In 2024, we secured sponsorship agreements, service contracts, and targeted grants that guarantee revenues of over PLN 21 million for 2025. These funds will supplement our operational subsidy.

International organizations representing science centres – ASTC (Association of Science and Technology Centres) and ECSITE (European Network Science Centres & Museums) – conduct joint statistical studies on areas such as ticket prices, attendance, employment, and finances.

In 2023, the survey was answered primarily by science centres and museums from the United States (56%) and Europe, including the Copernicus Science Centre. We analysed how our operations compare to other similar institutions. To provide a fair comparison, values provided in different currencies were converted using the average price of a Big Mac (ASTC and ECSITE countries: $5.69; Poland: $4.97). In this way, we applied a single symbolic currency – hamburgers – to all countries.

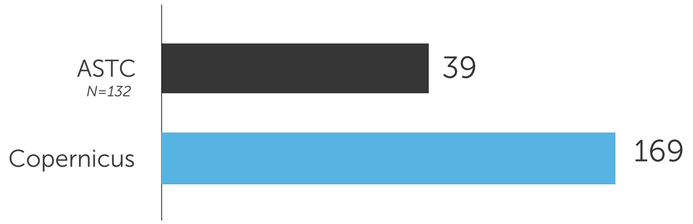
The price of tickets to the Copernicus Science Centre is nearly 20% below the average ticket price across institutions associated with the ASTC.

How many Big Macs can be purchased for the price of a single entrance ticket?



Our exhibition space is being used highly efficiently. The annual number of visitors per square meter of exhibition space is more than four times higher than the industry average!

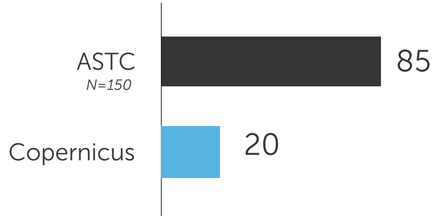
Average number of visitors per m^2 of exhibition space



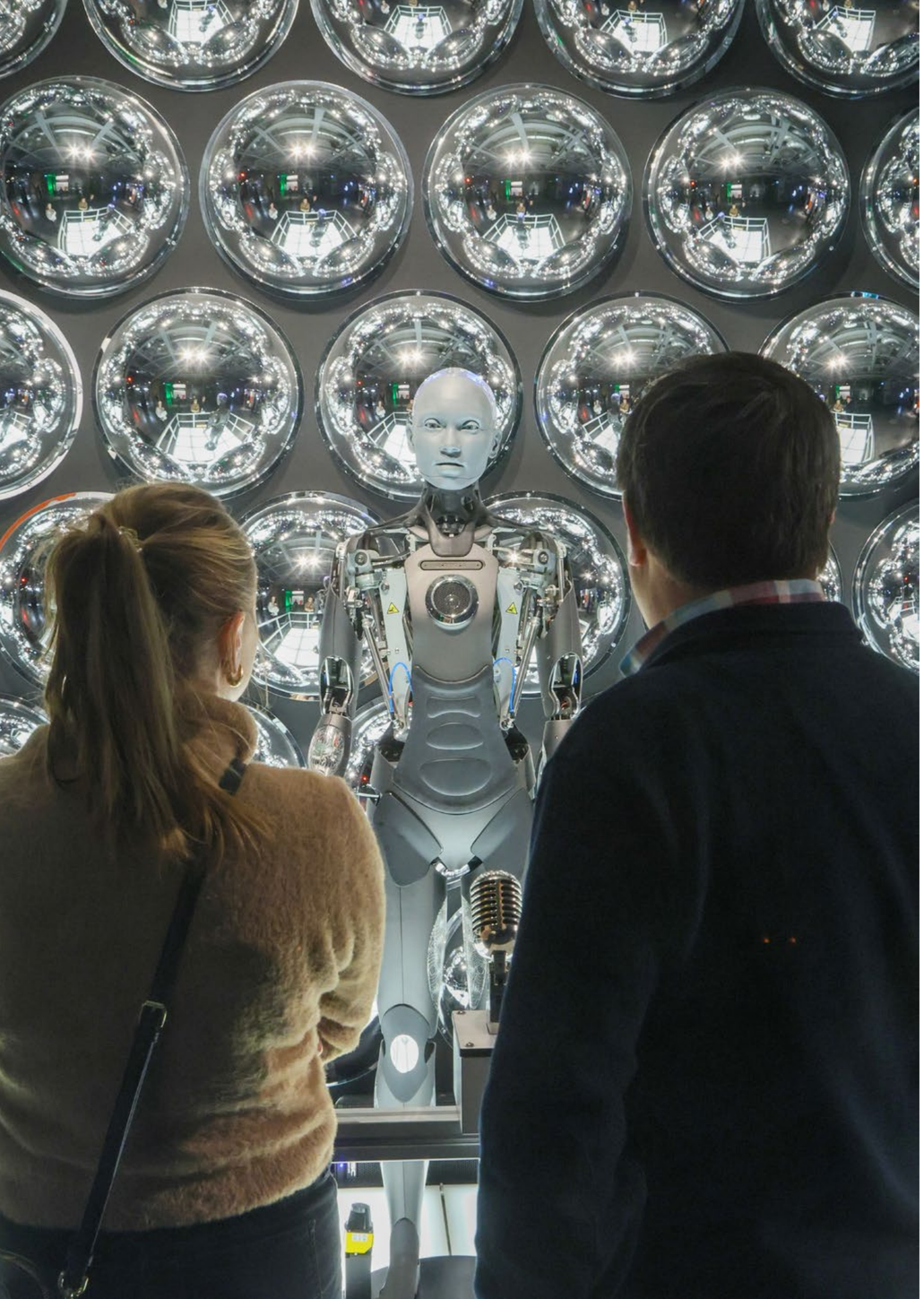
Compared to other institutions, we have a significantly higher number of employees per square meter of exhibition space. This is due to the enormous attendance at our (relatively small) exhibitions and the wide range of programming we conduct beyond exhibition access. We manage a conference centre, organize over 100 traveling exhibition trips annually, produce and install exhibitions at dozens of SOWA Zones, host educational and scientific events, and engage in research and development activities. Yet despite all this, the number of visitors per full-time equivalent (FTE) of staff is higher at Copernicus than at other institutions. If the comparison were limited to staff working exclusively on exhibitions, the disparity would be even greater.

The conclusion is that compared to science centres in North America and Europe, we run our operations very efficiently.

Exhibition space (in m^2) per full time equivalent (FTE)



Annual number of visitors per full time equivalent (FTE)



We are building partnerships that contribute to the Copernicus vision.

Many partners from the commercial sector have been with us since the very beginning of the Copernicus Science Centre. In 2024, Samsung Electronics Polska, Plus, and BASF decided to extend their cooperation with us for additional years. Newer partners, such as Moje Bambino and the Deloitte Foundation, also chose to continue their collaborative efforts with us.

Our network of partners also includes non-commercial organizations such as the Polish-American Freedom Foundation, Stocznia Foundation, United Nations Global Compact, Patronite, the Łukasiewicz Research Network – Institute of Aviation, and the Human Doc Foundation, with whom we implement projects that are well aligned with our strategic goals.

We strive to expand the scope of long-term collaborations. A successful sponsorship partnership with Samsung led, in 2024, to a new research and development project at the Copernican Revolution Lab. Since the beginning of the year, we have been working together on the "School with Technology" project, which focused on research and developing ideas for the smart use of mobile devices during school lessons (more on p. 49).

For the first time in Copernicus history, 2024 marked our success in selling exhibits, securing PLN 1.5 million in revenue for 2025. Twenty-two research stations, designed and manufactured by us, will be delivered to a newly established science centre in Georgia.

We also had our first experience with leasing space at the Copernican Revolution Lab. Since August, BioCloner Health, a company specializing in introducing modern technologies into medicine, has been conducting research in our bio-chemical laboratory. This partnership provided us with PLN 100,000 in funding and allowed us to achieve one of the Lab's strategic goals: increasing access to research and development infrastructure.

At the end of 2024, we asked our partners for feedback on our collaboration so far. All respondents expressed satisfaction with the partnership. The highest ratings were given to the quality of service, our openness to their needs, and the fulfilment of contractual terms. Nearly 90% of respondents stated that working with us supports their company's strategic goals, particularly those related to promotion and education. The most frequently cited reasons for collaboration were the opportunity to implement educational activities, Copernicus strong image, and the ease of reaching a wide audience. A smaller percentage of respondents appreciated opportunities for research and development activities (23.5%) or collaboration in the ESG sphere, which includes environmental protection, social responsibility, and corporate governance (around 6%).

Partners of the Copernicus Science Center

Strategic Partner and Suppporting Partners

Samsung Electronics Polska
Strategic Partner of the Copernicus Science Centre
Main Partner of the Copernican Revolution Lab
Exclusive Partner of the Robotic Theatre
Partner for Temporary Exhibitions
Partner for the series "After Hours: Evenings for Adults by Samsung"
Partner for the "School with Technology" project

PLUS
Supporting Partner
Exclusive Partner of the Bzzz! Exhibition for younger children

Partners for individual spaces

BASF
Exclusive Partner of the Chemistry Laboratory
Partner of the "Revolutions" Award

Łukasiewicz Research Network – Institute of Aviation
Partner of the New Technology Education Laboratory

Saint-Gobain
Investment Partner of the Copernican Revolution Lab

Partners for Special Projects

DELOITTE FOUNDATION
Partner of the "Together for a Better Future" project
UN Global Compact
Partner of the "Together for a Better Future" project
ERBUD
Partner of the "Young Girl Builders" project
ASTRA ZENECA
Partner of the "Przemiany" Festival
Boeing
Partner of the CanSat and Dream Designers projects
HumanDoc Foundation
Partner for the development of the YEC network abroad
Polish-American Freedom Foundation
Strategic Partner of the YEC Program
BOŚ Foundation
Partner of the YEC Researchers Program

Science Picnic Partners

Polish Ministry of the Climate and Environment
Polish Ministry of Development and Technology
National Centre for Research and Development
National Fund for Environmental Protection and Water Management
North

We creating a friendly and efficient organization.

Ambitious goals require a committed team of people who understand and share the Copernicus mission,, recognize the responsibilities tied to the public nature of the institution, enjoy good working conditions and tools, have an influence over their own work, and gain satisfaction from what they do. Our aim is for Copernicus to become a more efficient and welcoming institution in the coming years, with employees as our greatest ambassadors.

S6

We are streamlining operations and ensuring better internal cooperation.

In January 2024, we implemented an Electronic Document Management System (EZD RP), replacing the traditional paper-based system. All incoming and outgoing correspondence is now processed through EZD RP or other dedicated systems. Documents are electronically grouped, assigned, approved, and signed. EZD RP improves access to documentation, significantly increases information security (by protecting against unauthorized access), enhances team efficiency, and ensures transparency in task management. Paper-based procedures are now limited to exceptional cases.

Of course, formal systems are just tools. To truly collaborate effectively, people need to get to know each other. Strategic internal consultations conducted in 2023 revealed that our internal lack of familiarity with other departments and colleagues was hindering efficient work. In response, we organized regular team meetings, humorously dubbed "Mega Meet-ups" (*Wielkie Zebry*), as well as annual events to celebrate the institution's anniversaries and holidays. Key updates on our activities are shared via a weekly newsletter. We hired a person responsible for internal communication and began implementing initiatives aimed at improving staff-internal cooperation and job satisfaction.

We focused particularly on creating opportunities for everyone to get to know each other better and build mutual trust. We launched a pilot Employee Initiatives Program, allowing every staff member to propose ideas for recurring activities to share with colleagues who share similar interests. After a team-wide vote, five groups were selected. Their activities promote integration, the exchange of experiences, and align with our values: using second-hand materials (environmental care), sharing knowledge and learning (science), and fostering cross-departmental connections (collaboration).

Trainer Section

Developing training skills and sharing knowledge.

Board Game Club

Meeting after work to play games in a relaxed atmosphere.

Darts League

Still waiting for a champion!

Sewing Club

We've already sewn bags from second-hand materials.

Creativity Exercises

Making handmade crafts together.

In 2024, we also began creating a podcast, which the team named "The Ear of Copernicus" (*Ucho Kopernika*). It covers current topics, shares knowledge, and helps us get to know each other better. So far, we've recorded 8 episodes and have plans for more.

"The Ear of Copernicus" Podcast

37 guests from 15 departments

18 hours of recordings

219 listens of the first episode

Podcast Topics
Does Santa Claus Ride the ScienceBus?
Breakfast on the Grass
What's It Like to Be a Good Dad?
How to Shop Second-Hand?

We held a competition on institution-internal knowledge, where the prizes were "mini-internships" at other departments. One winner learned about the intricacies of working in the Finance Department, another joined the Operations and Technical Support Department during the busy renovation period, and the third faced the challenges of handling EU projects.

We are working to ensure job satisfaction among the team.

In 2024, salaries for the entire team increased by 7%. This allowed us to maintain competitive compensation compared to other employers in Warsaw. Our goal is to keep salaries within 80–120% of the median salary range for each position in Warsaw. Salary comparisons are based on an analysis of annual pay reports.

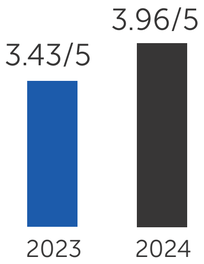
We have also begun adapting Copernicus to comply with the new EU Directive aimed at reducing pay gaps between men and women and ensuring greater fairness in the labour market. This project will be completed by the end of 2025.

Regular employee satisfaction surveys inspire changes that help improve job satisfaction. In 2024, 93% of the team expressed a sense of job stability, up from 2023. 86% agreed that Copernicus has a strong market position. 88% valued the ability to adjust their working hours to fit their personal circumstances. 79% felt they could count on their manager's support, and 83% believed they could freely express their opinions in their manager's presence. 86% of respondents identified with the institution's values, and an impressive 92% agreed that our work benefits the local community.

The overall engagement index in our team remains at a moderate level. This means that while most staff members enjoy their work and approach tasks with optimism, not everyone feels they are fully realizing their potential, and only some view their job as a central aspect of their life. At the same time, in the "Engagement Barometer" survey, 44 out of 62 aspects of working at Copernicus were rated the highest since we began the survey in 2021.

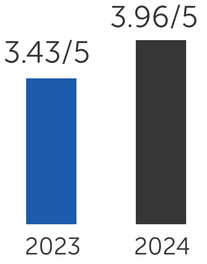
Attractiveness of additional benefits

↗ 0.59 p.



Trust between coworkers

↗ 0.53 p.



Acting in line with promoted values

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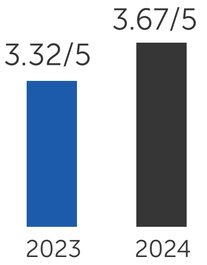

Effectiveness of official communication channels

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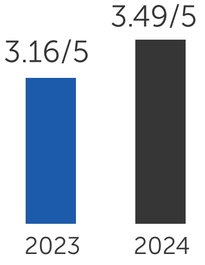


The largest increase in satisfaction was related to additional benefits. In 2024, we introduced a new employee benefit scheme: the Multilife wellbeing platform. This platform combines previously available resources such as Legimi, a development course platform, and a language learning app, with completely new offerings: consultations with psychologists, dieticians, and trainers; preventive health checkup packages; fitness courses; and 24/7 teleconsultations with a general practitioner. Multilife complemented our existing and well-liked Motivizer cafeteria system.

In 2024, 108 people participated in 20 individual training programs.

The most popular topics included Project Management, Time Management, Finance and Accounting, and Public Procurement. We also organized 21 group training sessions. Some of these, such as First Aid (98 participants), Empathic Communication (65 participants), and Voice Emission (22 participants), were held multiple times. Additionally, 15 team members received funding for foreign language courses, and 3 employees received subsidies for their studies.

There are still aspects of our work environment that require improvement. In 2024, the lowest-rated aspects included opportunities for career development within the organization (2.8/5), recognition of deserving employees (2.93/5), a motivating bonus system (2.95/5), and acknowledgment of achievements by management (2.95/5). The most significant drop in ratings was for “understanding the importance of one’s tasks,” which fell from 4.19/5 in 2023 to 4.05/5 in 2024.

Our Team

As of December 31, 2024, Copernicus employed 405 people, including 361 working full-time. The average age of employees institution-wide is 39 years. There are 33 employees under the age of 26. 309 employees have higher education, 6 post-secondary education, 49 secondary education, 21 vocational education, and 3 employees have primary or lower secondary education (data unavailable for 17 employees).

Program Council of the Copernicus Science Center

Prof. Aleksander Bursche, Faculty of Archaeology, University of Warsaw – Chairman of the Board

Hanna Wróblewska, Minister of Culture and National Heritage, former director of the Zachęta National Gallery of Art (2010–2021) – Deputy Chairwoman of the Board

Marjolein van Breemen, Director of the Naturalis Biodiversity Center in Leiden (Netherlands)

Catherine Franche, Executive Director of the European Network of Museums and Science Centres (ECSITE)

Agnieszka Jacobson-Cielecka, PhD, Dean of the Faculty of Design at SWPS University in Warsaw, Programme Director of the School of Form

prof. Dariusz Jemielniak, Vice-President of the Polish Academy of Sciences, Head of the MINDS Department at Kozminski University

Prof. Małgorzata Kossowska, Corresponding Member of the Polish Academy of Sciences, Head of the Department of Social Psychology, Institute of Psychology, Jagiellonian University

Maria Mach, President of the Polish Children's Fund

Prof. Szymon Malinowski, Founder and Editor of the Naukaoklimacie.pl website, Director of the Institute of Geophysics, Faculty of Physics, University of Warsaw

Mirella Panek-Owsiańska, Expert in CSR and social communication, Co-founder of the "Space for Girls" Foundation

Prof. Tomasz Sowiński, Institute of Physics, Polish Academy of Sciences

Barbara Streicher, PhD, Managing Director of the Austrian ScienceCenter-Netzwerk Association

Rosalia Vargas, President of the Portuguese National Agency for Scientific and Technological Culture "Ciência Viva" and Director of the Pavilion of Knowledge in Lisbon

Jędrzej Witkowski, PhD, President of the Board of the Center for Citizenship Education

Jakub Wygnański, President of the "Stocznia" Laboratory of Social Research and Innovation Foundation

dr Przemysław Wielowiejski, PhD, Retired academic lecturer, served as a director at the Copernicus Science Centre from 2006 to 2023

The Management of the Copernicus Science Centre

Robert Firmhofer – CEO

Irena Cieslińska – Programme Director

Joanna Kalinowska – Director for Development

Ewa Kloc – Administrative Director

Anna Lipińska – Deputy Programme Director for Visitor Experience

Ilona Iłowiecka-Tańska, PhD – Deputy Programme Director for Innovation

Katarzyna Młynek, PhD – Deputy Programme Director for Education and Science Communication

Barbara Juszczak – Deputy Administrative Director, Chief Accountant

The Copernicus Science Centre is a member of the following organizations

European Network of Science Centres & Museums (ECSITE) (Joanna Kalinowka, Director for Development at Copernicus, is a member of the ECSITE Conference Programme Council)

Association of Science and Technology Centers (ASTC) (Robert Firmhofer, Copernicus CEO, is secretary of the board, and Irena Cieślińska, Programme Director at Copernicus, is a member of the award committee)

SPiN Association (Robert Firmhofer is a member of the board)

European Science Engagement Association (EUSEA)

International Planetarium Society (IPS)

International Laser Display Association (ILDA)

EU ThinkTank

Polish Conference & Congress Association

Power of 4

Awards

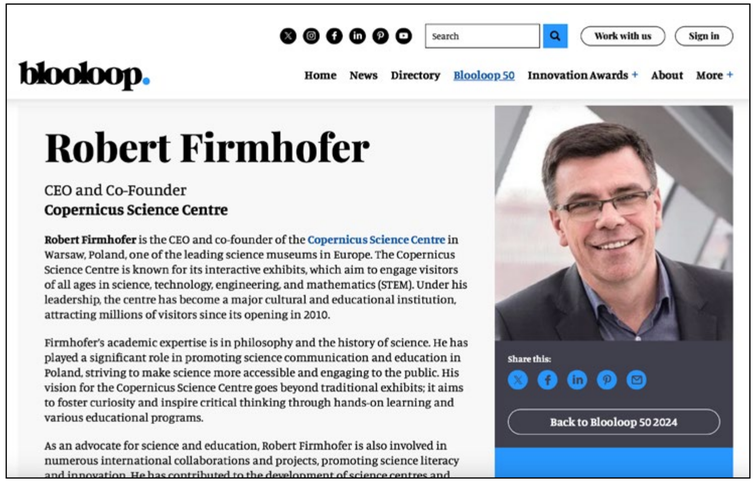
Copernicus as an “Investment of the Two Decades of Poland’s EU Membership”. We were recognized by the major Polish daily newspaper *Rzeczpospolita* as one of the 15 best Polish investments of the last two decades, carried out with co-financing from European funds.

Copernicus CEO Firmhofer was included on the list of the top 50 museum influencers (blooloop.com/museum/influencer/robert-firmhofer). This list features individuals from around the world who, through their innovation, passion, and creativity, significantly influence the development of cultural institutions and help shape the industry. *Blooloop* is a global news platform for the tourism industry.

The Mazovian Regional Tourism Organization awarded Copernicus the “Super Certificate” for the best tourist product in the region. This special award is given to entities that were previously certified, as we were in 2017.

The “Chmurka #pełniażycia” Accessibility Certificate was awarded to us by young ambassadors of the “Dom w Łodzi” Foundation, recognizing places that are welcoming to all children.

Our “Micro World” workshop received a jury distinction in the Słoneczniki 2024 competition for children-friendly initiatives, in the “Nature” category.



The Copernicus Science Centre is a cultural institution.

Its organisers are the Capital City of Warsaw, the Ministry of Science and Higher Education, Ministry of National Education.

Legal Basis

The Act of October 25, 1991, on Organizing and Conducting Cultural Activities (Journal of Laws of 2024, item 87),
The agreement of June 1, 2005, on establishing a joint cultural institution under the name "Copernicus Science Centre" (as amended),
The Statute of the Copernicus Science Centre, constituting Appendix No. 1 to the aforementioned agreement.

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Warszawa

Ministerstwo Edukacji Narodowej

Ministerstwo Nauki i Szkolnictwa Wyższego

Partner Strategiczny
Partner Wystawy Czasowej

SAMSUNG

Partner Wspierający

plus