COPERNICUS
SCIENCE CENTRE

2014

Cover photos: portraits of visitors to the Copernicus Science Centre on 06 August 2014, the day we welcomed our four-millionth guest

Our mission is to encourage personal engagement in discovering and understanding the world, as well as taking responsibility for the changes occurring around us.

In today's world, cultural institutions are trying to carve out a new role for themselves, evolving and changing together with society, and sometimes anticipating those changes. One of the greatest challenges involves communicating with participants in public life, have ceased to be passive recipients of the programmes offered by such institutions. Thanks to the Internet and social media, today every one of us can communicate with others, express our opinions, and create new content from any location and at any time. Public institutions need to be open to such activity and create a space that encourages dialogue, while at the same time not forgetting their own identity.

In our fourth year of activity, Copernicus Science Centre team began a process of changing and improving our exhibits. The motto for the opening of the Thinkatorium, a new workshop/exhibit space, was called "You think better than you think." Here visitors become creators, architects and discoverers. Working either independently or together with others, they try to cope with challenges that help them better realize the creative potential inherent in them. The "Captured Mind" travelling exhibit, which like the Thinkatorium gallery was developed entirely by our own Copernicus staff, gives audiences a chance to better understand how our brain works, and witness how it sometimes gets fooled by our senses. Science enables us to overcome the limitations nature has imposed upon us.

Overall, Copernicus offers first-hand encounters with science, in the very best sense. At the "Heavens of Copernicus" planetarium we watched the progress of the Rosetta mission in real time, linking up with the Mission Control Centre of the European Space Agency. We celebrated the 60th anniversary of CERN together with the organization's director-general, Rofl-Deiter Heuer. During the "Przemiany" festival we talked about how new technologies affect our privacy. The Science Picnic event, held at the National Stadium in Warsaw, made it possible for 120,000 audience members to meet face-to-face with scientists from Poland and more than a dozen countries around the world.

Copernicus's distinctive method of discovery and learning, which strives to inspire visitors and motivate them to explore new things for themselves, has prompted the development of educational efforts that now extend far beyond the institution's walls. Under the "Copernican Revolution" project, a concept has been developed for natural-science workshops at schools, where students learn through experimentation. The ESERO educational project was created by our planetarium as a branch of the European Space Agency's educational arm, helping the topic of space research find a place for itself in Polish schools, as an inspirational method of teaching natural sciences and mathematics.

What we do at Copernicus has not gone unnoticed. Among the numerous accolades we have received, it is appreciation from the public that pleases us most, as expressed in the number of visitors who came through our doors – 1,075,555 people in our fourth year of activity is an unprecedented figure in Europe – and in the opinions they expressed that Copernicus "expands understanding, arouses curiosity, and provides incredible experiences". More and more communities are forming around the Copernicus Science Centre – coming together on our social media, gathering to gaze up at the Perseids, joining forces to promote grass-roots educational improvement in the network of Young Explorer Clubs, or communicating their scientific passions via the FameLab competition.

We will continue to work in this direction with new and engaging exhibits, a nationwide educational programme, encounters with science and dialog with scientists. All this addressed to participants who form a community of active people, who are involved and committed, who take responsibility for themselves and their environment.

– Robert Firmhofer, Director

We create exhibits.

Open new galleries.

Bring in exhibitions from around the globe.

Organise workshops and lectures.

Create new shows and attractions at the planetarium.

Invite world-famous scientists.

We keep evolving. For you.

Over the last four years, we have welcomed 4,442,786 visitors.

Over a million guests each year is an extraordinary attendance rate, on a European scale. This great popularity of the Copernicus Science Centre is evocative of Polish society's great creativity and energy. It prompts us to look for confirmation that what we do makes sense – we crave to know that we are truly making a difference, despite various restrictions.

Copernicus has a well-defined audience. We analyse more than just our visitors' sociodemographic characteristics. By taking an interest in their passions and aspirations, we are able to identify and meet guests' needs while continuing to diversify and expand what we have to offer. We analyse our visitors' opinions and take their comments and views into careful consideration. We are proud that over the last four years we have been able to build a "brand" recognised by the vast majority of people in Poland (a national sample indicated recognition of 82.7%, while a Warsaw sample showed 96%).

Copernicus is open to a range of different audiences. We strive to provide the best possible conditions so that everyone can make the most of our building and everything the Centre has on offer. We dedicated 2014 to conducting our most extensive survey of how to be as accessible as possible to visitors with disabilities. We work closely with charitable foundations, associations and institutions supporting people with disabilities. Together with our partners (including the Educational Centre in Laski, the Synapsis Foundation, the Active Rehabilitation Foundation, the Vis Maior Foundation, the Audiodescription Foundation, the Polish Sign Language education foundation Edu PJM, the Opportunities for People with Visual Impairment Foundation, and the companies Altix and GuideSign), we have adapted our exhibitions for students with impaired vision and hearing, conducted extensive consultations resulting in the creation of audio descriptions accompanying films screened at the planetarium and a page on our website containing key information for people with disabilities, and prepared a guide for visitors on the autistic spectrum.

Our four-millionth guest visited Copernicus on 6 August. We commemorated the occasion together with our visitors: we set up a photobooth to create a great portrait of people fascinated by the world around them.

1,075,555 people visited the Copernicus Science Centre in 2014

797,162 attended exhibitions at the Copernicus Science Centre

222,469 visited the Heavens of Copernicus planetarium

Our visitors

Visitors by age

- **9.7%** – 0–6
- **29.3%** – 7–12
- **14.4%** – 13–16
- **7.2%** – 17–19
- **7.7%** – 20–25
- **11.9%** – 26–35
- **13.7%** – 36–45
- **3.7%** – 46–55
- **1.7%** – 56–65
- **0.7%** – over 65 years old

Education levels of our visitors

- **57%** – primary/middle school level (students in education)
- **0.7%** – vocational
- **0.8%** – college
- **10.5%** – secondary school
- **31%** – higher

Visitors' opinions
Poll among visitors over 15 years old

Are you generally pleased with your visit to the Copernicus Science Centre?

- **75.1%** – yes, definitely
- **22%** – yes
- **1.7%** – neither yes nor no
- **0.8%** – not really
- **0.5%** – definitely not

Visitors by region (individual guests)

- **30.3%** – Warsaw
- **10.1%** – Mazowsze (outside Warsaw)
- **56.7%** – other voivodeships
- **2.9%** – abroad

Visitors by region (organised groups, including school trips)

- **10%** – Warsaw
- **17.5%** – Mazowsze (outside Warsaw)
- **71.5%** – other voivodeships
- **1%** – abroad

We conducted a nationwide survey asking respondents to name attributes they associate with the Copernicus Science Centre brand.

Expands understanding
95.7%

Arouses curiosity
94.9%

For the whole family
91.4%

Something for kids
90.9%

Learning through play
90.4%

Incredible experiences
89.3%

For visitors of all ages
89.2%

Good fun
86.4%

Somewhere to keep coming back to
84.5%

Friendly atmosphere
84.2%

Knowledge
83.4%

Amazing exhibits
82.5%

Ingenuity
79.5%

Something different
77.4%

Searching
72.1%

Fun
70.2%

Expertise
68.3%

For older people
60.1%

Let's make one thing clear: we want everyone's visit to Copernicus to be a great experience and an adventure in discovery. We have created a space to instil a sense of worth and usefulness in all our visitors. It is also a place for unforgettable meetings and inspiring experiments. We strive to shake up intellectual routines and encourage people to build their own creativity.

We create exhibits which inspire the creative process. They empower visitors to discover the world, learn about laws of nature, and become enchanted with the beauty of our universe. They make guests feel the buzz experienced by explorers and inventors, and develop an understanding of the world and our very own natures.

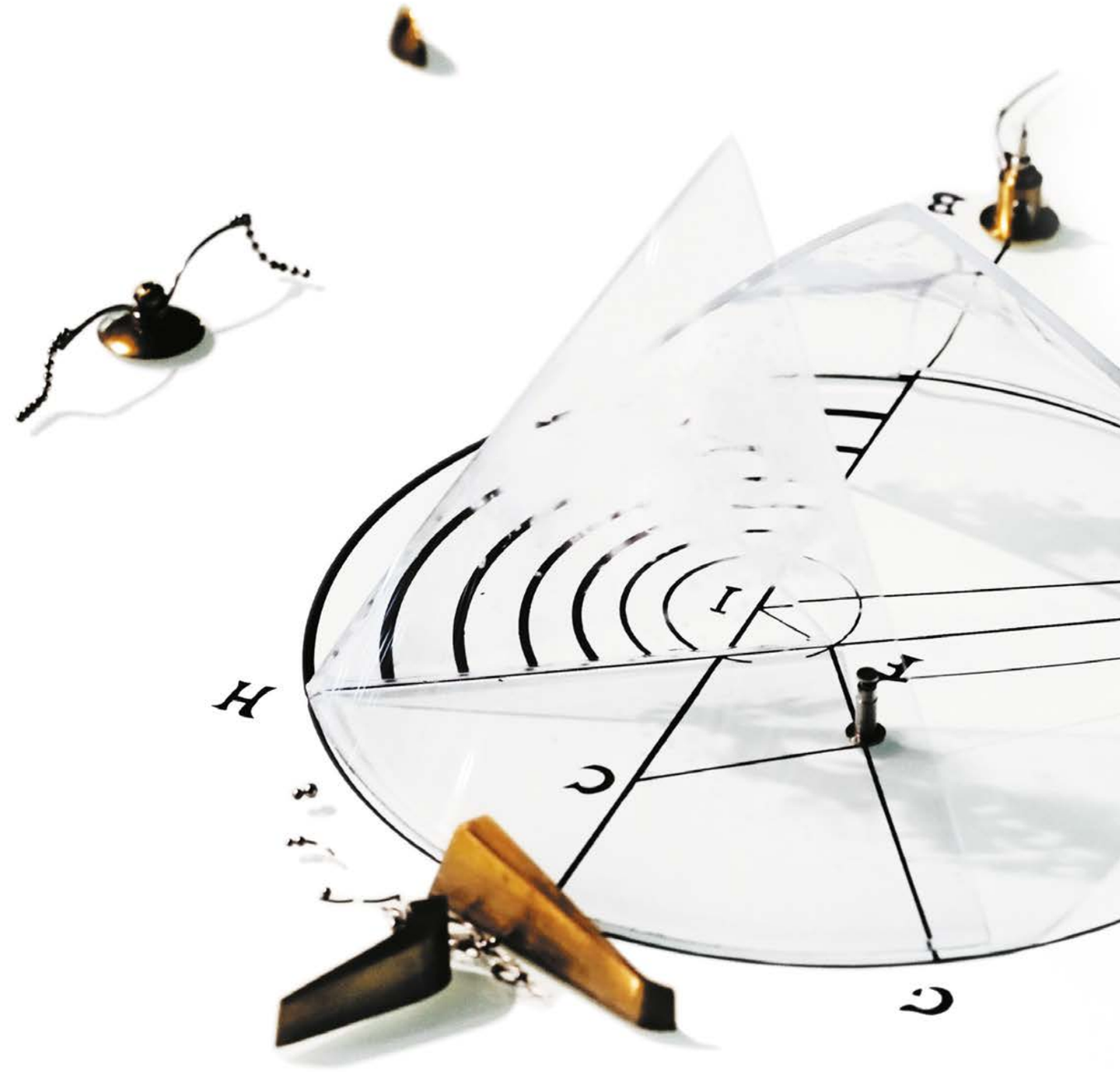
But our displays are far more than just unusual exhibits: we provide opportunities to meet scientists, host workshops and scientific demonstrations, encourage discussion, foster debate, ask questions, get visitors involved in creating new exhibitions and experiments, and learn from one another.

The exhibitions are like a living organism, continually evolving. New elements appear while existing ones are improved. We have changed the location of the Roots of Civilisation exhibition, thus gaining a larger and more prominent space for temporary exhibitions. It means our visitors can now explore the amazing world of **Microlife** invisible to the naked eye, at an exhibition brought in from Spain. In late summer, we opened our latest open-air exhibition: the Copernicus **roof garden**. We also inaugurated the **Thinkatorium** – a new permanent gallery focusing on innovation. These events are described in more detail later in this annual report.

Our institution continues to seek new solutions and never stops learning. In order to remain at the very top of our game, we are working closely with specialists from the Technorama science centre in Switzerland and the Exploratorium in the US. We have also initiated a unique programme of seminars for our employees aiming to help them improve their knowledge of neurobiology, didactics and teaching techniques to continue exceeding at creating new exhibitions.

Recently, we opened the doors to our galleries to virtual visitors from around the globe with the help of Google Street View. In doing so, we have joined the exclusive ranks of organisations such as the White House, the Metropolitan Museum of Art, and the Musée d'Orsay.

Our visitors have a direct influence on our exhibitions. The best example is the travelling exhibition Captured Mind, designed and created by Copernicus' specialists. Its components were tested by our visitors, and their opinions had a direct impact on the final format of the exhibition. **Captured Mind** continues to travel around Poland hand in hand with its elder sister – the travelling exhibition **Experiment!**, enjoying unabated popularity. In 2014, both exhibitions took a total of 60 trips to schools, public institutions, commercial companies, sponsors and shopping centres.



Pictured: Copernichaos – one of the exhibits from the art + science collection.

In 2014 our collection was expanded to include two art-based exhibits. **Aquaporin** by Jarosław Kozakiewicz is a fountain located near the main entrance, inspired by the appearance and activity of proteins that take part in the transport of water molecules. The other exhibit – **Eon** by Ksawery Kaliski – is a multilayered interactive installation brought to life by touch.

Captured Mind

Here is our latest "ambassador-at-large": a travelling exhibition created in its entirety by the Copernicus team. Is the world around us really how we perceive it? What happens when our senses present us with conflicting information? How do our brains interpret these signals? The exhibition sets traps for your mind and lets you catch it out as it plays clever tricks on you.

Our brain is able to select the most crucial information from the vast amounts of data it processes. However, it is more heavily influenced by emotions than you might realise. It guesses, contrives, searches for patterns, manipulates our memories. This exhibition encourages visitors to think about the limitations and constraints of our senses – our own innate research instruments. Real science starts when we realise that our senses cannot really be trusted, and that they can and do deceive us. We are largely able to overcome these difficulties using a mighty tool: our brain.

The exhibition includes 20 components designed and created over the course of 18 months by a team of scientists, designers, engineers and educators. An additional attraction accompanying the exhibition is a specially prepared scientific demonstration. The exhibition enjoys great popularity, and it was loaned 19 times between May and December 2014.

Before Captured Mind set off into the wide world, it spent a few days at Copernicus as one of the features of the Museum Night. The vernissage was held on 14 May.

Thinkatorium

They say that people once mocked Thomas Edison with the jibe, "Why do you keep testing all these new materials even though after thousands of experiments you still haven't found one that makes an efficient lightbulb? You're just wasting your time!" "But I have not failed," he would reply. "I've just found 10,000 ways that won't work, each bringing me a step closer to finding a solution."

Alongside the joy of discovery, revelations and flashes of inspiration, there are errors and downfalls, misleading hypotheses, disappointments and false hopes that are all an inseparable part of the learning process. Dr. Maciej Geller, the late director of the Warsaw Science Festival and member of the Copernicus Programme Board, was wont to say, "In science, critics of my views are my companions on the path towards finding the truth, rather than enemies whom I need to combat."

Much the same can be said for unsuccessful experiments. None of them truly count as a defeat; instead they all bring us closer to a greater knowledge and understanding. It's important to try, try and try again! After all, you can't say you won't go in the water until you can swim. Our latest gallery – the Thinkatorium – is a zone of free experimentation and creation.

Workshop tables are set up for visitors to take up challenges in engineering, science and logic using everyday objects such as drinking straws, paper, staples, marbles and rubber bands. There is a menu featuring tasks with different levels of difficulty; there is no time limit, no detailed instructions, and no defined solutions. The results depend purely on those conducting the experiments and their creativity, skills and patience. This way of stretching the imagination shows Thinkatorium's guests that they are able to think outside the box, exercise their persistence and determination, and learn to take up new challenges.

It's no accident that we have arranged the space to resemble a friendly café. The large, solid tables can be converted into smaller ones, depending on whether the experiment is to be conducted in a group or alone. We also hope that, in time, the Thinkatorium will become a place where visitors will bring their own experiments and puzzles they haven't been able to solve to share with others.

We opened the Thinkatorium on 18 September. Some of the first visitors included **Szymon Majewski** – presenter and satirist, **DJ Wika** – Poland's oldest radio DJ, **Tomasz Ciach** – inventor, **Adam Karcz** – constructor of Mars rovers, **Łukasz Jakóbiak** – vlogger, and **Katarzyna Rogowiec** – Paralympian.

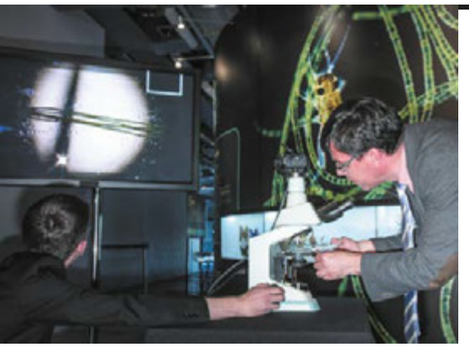
Microlife

Just as much as when the Centre's doors opened for the very first time, we still continue to offer our guests new, inspiring attractions. On the day of our fourth birthday, we opened our latest temporary exhibition in a new space specially arranged for the occasion. This time we wanted to present the beauty of a world which cannot be seen with the naked eye. We went all the way to Spain to bring back an exhibition showcasing organisms so tiny that a million of them would fit in the eye of a needle.

The millimetre-long flatworm is able to regenerate almost infinitely. The familiar fruitfly has the same gene inhibiting tumour growth as humans. The minuscule tardigrade or waterbear, measuring just five hundredths of a millimetre, can survive at temperatures from absolute zero to over 150 centigrade, in total vacuum, in sulphuric acid and pure carbon dioxide. Meet the superheroes inhabiting the mysterious microcosm! Our exhibition opens the doors to their fascinating universe.

Through unique photos and films taken using state-of-the-art microscopes, visitors learn about these tiny organisms magnified by a factor of 500, 1000, 2000 or as much as 10,000! They discover their myriad shapes and ways of moving, feeding and breeding in the mysterious microcosm. The exhibits allow visitors to select what they want to examine, including magnified samples of inanimate matter such as cork, fabric and paper. It also takes viewers through the history of microscopy, demonstrating early magnifying devices through to the latest state-of-the-art scanning microscopes. The evolution of scientific equipment and technologies has gone so far that we can now use our smartphones as portable microscopes.

The interdisciplinary exhibition combines themes of natural sciences and the arts, touching upon subjects as diverse as biology, chemistry, physics and photography and the latest methods of documenting microflora and microfauna. We have also prepared an educational kit for teachers and school groups. More on the workshops and lectures held as part of the exhibition on p. 70.



The opening of the exhibition was marked by a symbolic cutting of a ribbon. In this case, this was a microribbon of a spirogyra – a tiny filamentous green alga found in small freshwater reservoirs. While the actual cutting took place under a microscope, the attending guests were able to see it live on a screen. We hasten to add that no algae were harmed during the process! The microorganism survived unscathed, since cell division is how it proliferates naturally.

Exhibition creators:

Concept, design and production: Expografic

Author of photos presented at the exhibition: Ruben Duro

Duration:
5.11.2014–30.08.2015

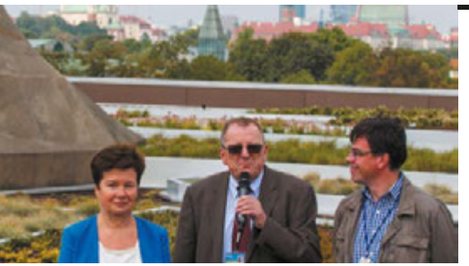
Roof garden – our sky-high experiment

Opened in late summer, the Copernicus roof garden is more than just an outdoor area with breathtaking views over Warsaw and our closest neighbour – the Vistula River. First and foremost, it's a biological experiment conducted in a space of 8,500 square metres. Our roof is subject to rather extreme conditions, so our building's green cap is made up of carefully selected plant species. Despite its proximity to the river, the garden is home to flora typical of mountain regions, as well as deserts, semi-deserts and sand dunes.

The garden is an artificially-created habitat highly exposed to sunlight and with no protection against wind. The kinds of plants usually found beside rivers would have no chance of survival, so we chose species genetically adapted to grow under low-water conditions. And so, visitors can admire mountain pines, stonecrops and yucca plants right in the heart of the city. The garden's architecture resembles a riverside landscape undergoing erosion with footpaths furrowing the soil like streams and rivulets. Notable features include craters and an uppermost point, somewhat resembling a volcano, from which the Foucault's pendulum is hung.

Symbiosis between nature and architecture

By opening our rooftop garden, we have joined the global movement of bringing greenery to the roofs, walls and terraces of cities. Gardens in urban spaces provide a dash of colour, soothing tired eyes and calming frayed nerves. Green roofs are fast becoming favourite places to rest, relax and take a stroll; they also attract birds and insects. And the Copernicus roof garden performs just such a function: our building was constructed within the bird protection zone **Natura 2000: Middle Vistula Valley**. For a time, it even became home to a duck, who made a nest there.



On 30 August, the official opening of the garden was held by **Hanna Gronkiewicz-Waltz** – Mayor of Warsaw, **Robert Firmhofer** – Director of the Copernicus Science Centre, and Prof. **Łukasz Turski** – Chairman of our Programme Board. We received 3,200 visitors during the first weekend, with additional attractions including guided tours with botanists, astronomical observations, and Urban Jungle workshops teaching participants to recognise local bird species.

Laboratories

Originally, the main intention of our laboratories was to host classes during school hours for groups, and at weekends for individual visitors. However, as our institution has grown, we have discovered that their purpose is far more significant, and it is key in the process of designing and implementing new projects. The laboratories have become our very own testing grounds for Copernicus' latest innovative solutions. Workshop lesson plans for teachers, After Hours sessions, classes for people on the autistic spectrum, testing of new exhibits – almost everything we offer visitors passes through our laboratories at some stage of preparation.

This year, students learned how soap is made, observed the structure of crystals, studied the principles behind pneumatic equipment, and discovered the secrets of the human brain. Weekend guests made their own cosmetics, built mechanical brushbots, and got to know more about carnivorous plants.

Laboratories were also involved in many other events held at Copernicus, including After Hours, Tesla Days, the teacher conference Show and Tell, sessions for foreign visitors held as part of our Eastern Projects, Museum Night, and the Astrobot competition. They also represented Copernicus at numerous events hosted by scientific circles, such as Biology Night (University of Warsaw), Brain Week (M. Nencki Institute of Experimental Biology, Polish Academy of Science), special sessions for students from the Academy of Fine Arts, Robomaticon (Warsaw University of Technology), and city events such Przetwory festival and City and Garden festival.

Our laboratories also conduct a range of activities supporting teachers. More on p. 64.

Chemistry laboratory:

5 lesson plans

4122 students

5032 individual visitors

Biology laboratory:

6 lesson plans

3738 students

4124 individual visitors

Physics laboratory:

5 lesson plans

3814 students

4503 individual visitors

Robotics workshop:

5 lesson plans

1993 students

3717 individual visitors

On 12 January, visitors to the Robotics laboratory met **humanoid NAO** robots designed to assist elderly people and those on the autistic spectrum. We also welcomed guests from the Synapsis Foundation, who told us more about autism and how it is treated, as well as presenting a sensory installation helping others understand how the world is perceived by people with autism.

To celebrate its third birthday, the Chemistry laboratory – together with its exclusive partner BASF – held Chemistry Days under the banner **We are chemistry: weekend with the elements**. Visitors learned what e-numbers found in food are all about, what can be made of black gold, and how to convert old paper into new. They also solved puzzles as part of the outdoor game "On the trail of chemistry". During the weekend of 18 and 19 October, we welcomed around 6,000 visitors.

A similar event (4 and 5 October) was held at the Physics laboratory under the banner **Low Temperature Weekend #ColdPhysics**. Together with the lab's exclusive partner Polskie LNG, we showed visitors what can be done with cryogenic liquids and other supercool substances. Guests also examined cosmic particles, and had an opportunity to draw using lightning!

The Heavens of Copernicus planetarium / visitors and opinions

THE HEAVENS OF COPERNICUS

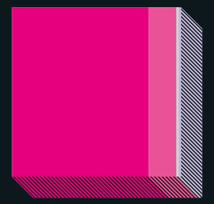
Visitors by age

- **8.3%** – 0–6
- **30.9%** – 7–12
- **12.9%** – 13–16
- **6.4%** – 17–19
- **3.3%** – 20–25
- **12.5%** – 26–35
- **17.4%** – 36–45
- **4.8%** – 46–55
- **2.5%** – 56–65
- **1.1%** – over 65 years old

222 469 guests visited the planetarium

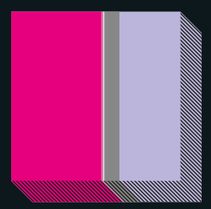
Are you generally pleased with your visit to the planetarium?

- **80.8%** – yes, definitely
- **16.9%** – yes
- **1.5%** – neither yes nor no
- **0.4%** – not really
- **0.4%** – definitely not



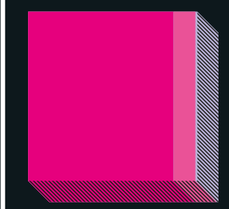
Education levels of our visitors

- **53.2%** – primary/middle school level (students in education)
- **1%** – vocational
- **0.7%** – college
- **8.8%** – secondary school
- **36.3%** – higher



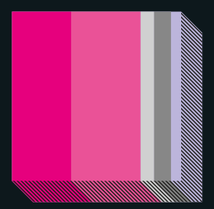
Would you recommend visiting the planetarium to your friends?

- **86%** – yes, definitely
- **12.9%** – yes
- **0.6%** – neither yes nor no
- **0.6%** – not really
- **0.1%** – definitely not



Following your visit to the planetarium, has your understanding of a branch of science increased?

- **35%** – yes, definitely
- **41%** – yes
- **8%** – neither yes nor no
- **10%** – not really
- **6%** – definitely not



Visitors' opinions (guests over 15 years old)

Focus on the Rosetta mission

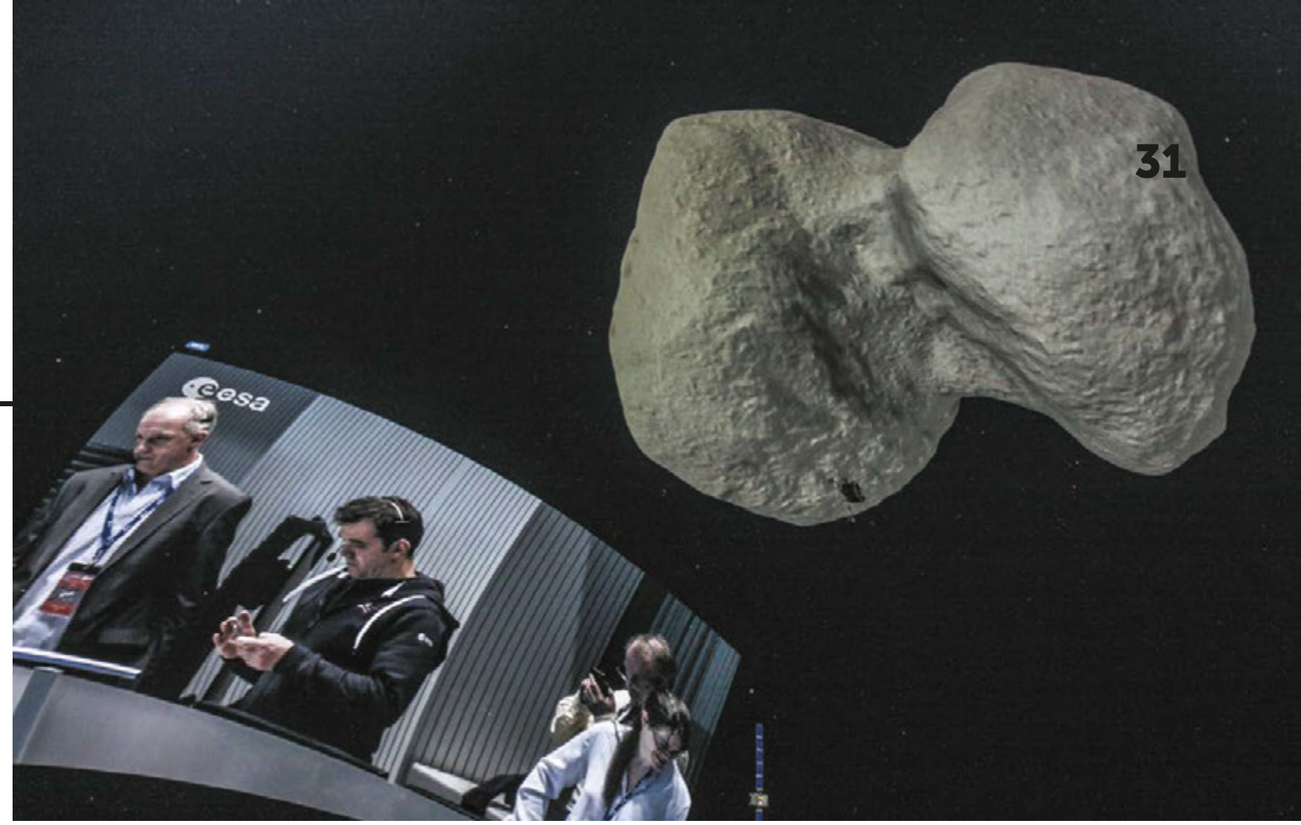
Until recently, comets have been some of the least studied objects in our Solar System. Between January – when the European Space Agency (ESA) stirred the Rosetta probe from hibernation – and November 2014 – when its lander was due to settle on a comet – our planetarium hosted events introducing this momentous event to the broader public.

The Heavens of Copernicus planetarium's focus on the Rosetta mission ranged from fascinating articles and interviews on our website, through meetings with scientists, to following the live transmission of the landing streamed from the European Space Agency's Control Room in the comfort of the planetarium.

The guest of the April screening "Straight from the Sky" (more about this monthly cycle on p. 35) was **Prof. Mark McCaughrean** – senior scientific advisor in ESA's Directorate of Science and Robotic Exploration, responsible for scientific communication of results of astronomical missions. Our guest talked about breakthrough space missions, in particular the Gaia and Rosetta probes.

In May, we hosted **Prof. Małgorzata Królikowska-Sołtan** from the PAS Space Research Centre; she explained the reasons why scientists are conducting this space mission which has already lasted over a decade. She also talked about Poland's input in this spectacular event. The comet was studied by the Polish probe MUPUS featuring a range of temperature and depth sensors attached to a penetrator hammered into the surface.

On 12 November, almost 100 people gathered at the planetarium to experience the historic moment when a device made by humankind landed on a comet for the very first time. Entry to the event was free with an invitation, which could be won in the game "Cosmic Maze" held at the planetarium and via the venue's Facebook page. We also provided other attractions alongside the transmission from ESA's Control Room in Darmstadt, including meetings with scientists from the PAS Space Research Centre and a discussion with Józef Dobrowolski – a 17-year-old student and lover of astronomy who won the international competition "Wake Up, Rosetta".



Dr. Jerzy Grygorczuk, Prof. Marek Banaszkiewicz

Rumour has it that you gentlemen are trying to hammer a nail into a comet...

Marek Banaszkiewicz: What's that? A nail? Did you hear that, Jerzy? He just called your achievement a nail!

Jerzy Grygorczuk: Typical! This nail, as you call it, comprises 190 mechanical parts, each made from the very finest materials and to the specifications required in space exploration.

Marek Banaszkiewicz: Gold plugs which can be used no more than five times. Titanium screws. Tubes made of a composite we acquired from the US, which arrived chilled in dry ice setting off a fire alarm at Frankfurt airport. Stainless steel ribbons made in Ukraine, which we later coated with kapton. And plenty of other components made by Polish companies following the highest requirements. We worked on the instrument for five years, and it spent the following decade aboard the Rosetta probe. Finally it will all come together – just as long as the probe is able to land.

Excerpt from an interview with Marek Banaszkiewicz and Jerzy Grygorczuk, constructors of the MUPUS device, PAS Space Research Centre. The interview was published on our website on 7 November as part of the cycle **"Stay tuned! What's new in science"**.

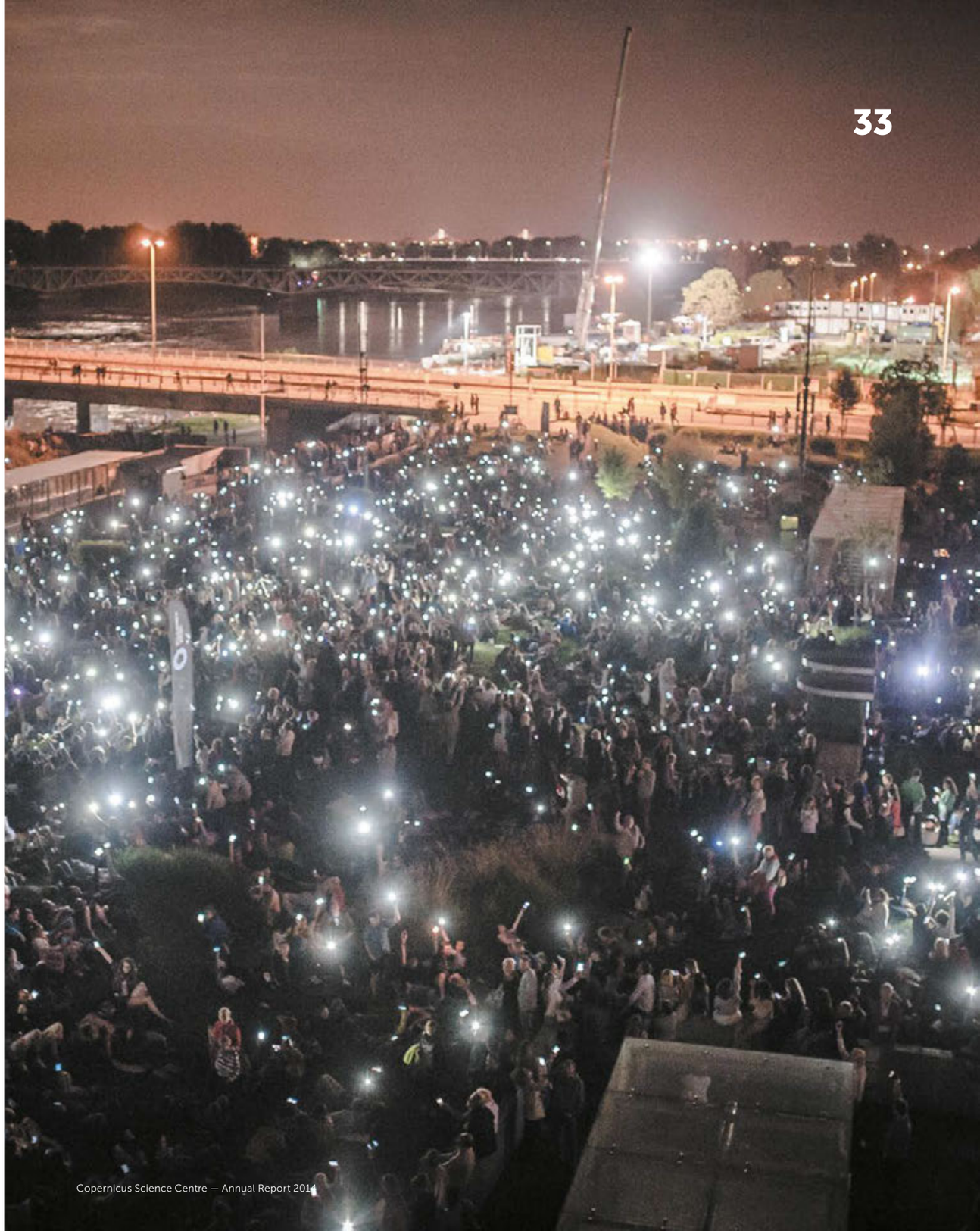
The Perseids: a Night of Shooting Stars

Our planetarium has been infecting Varsovians with a passion for astronomical observations. When we first invited the public to join us to watch a meteor shower, we never expected a crowd of 3,000. And last year we doubled the numbers to 6,000!

Thanks to close collaboration between several municipal entities, fans of astronomy were able to enjoy the spectacle in relative darkness. The Copernicus Science Centre building's illuminations were switched off, the city roadway authority made sure that the lights on Świętokrzyski Bridge, several other bridges in Warsaw and at the entry and exit points to the Wisłostrada tunnel were also temporarily off, and our neighbours from across the river – the National Stadium – also joined in. Perhaps one day we'll get the entire city to go dark for a single August night?

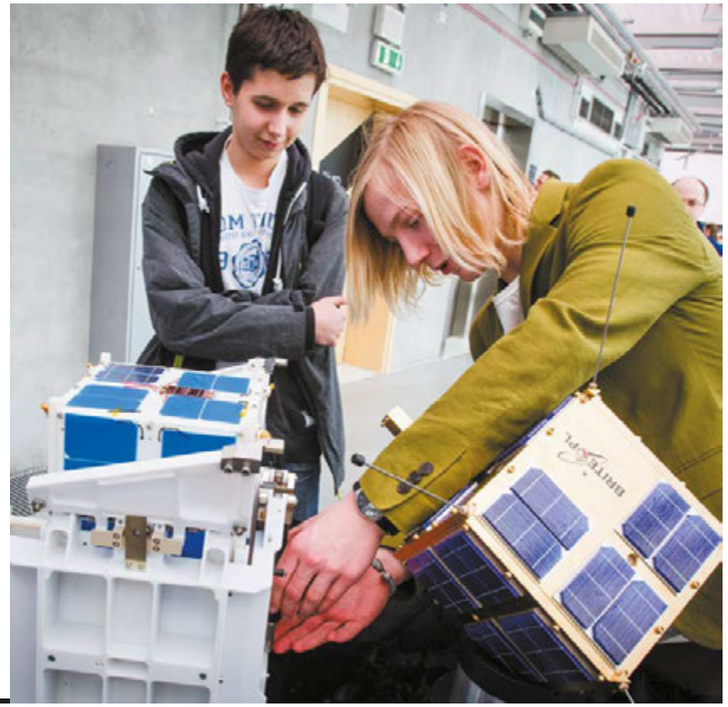
6,000 participants

The nighttime event held in the early hours of 13 August was hosted by Karol Wójcicki – a presenter at Heavens of Copernicus. Other attractions included a "space ship" running along the Vistula through the night, with Żegluga Stołeczna's cruises allowing astronomy fans to admire the Perseids from the top deck.



Working with scientists

We joined the European Space Agency in their celebrations of the 50th anniversary of European space exploration. Poland is a member of this prestigious international organisation, as well as being a player in the space-related business sector, which provides growing employment opportunities for engineers and specialists. The Copernicus Science Centre became a partner of ESA in its implementation of the **educational programme ESERO** aimed at teachers (more on p. 68). During the **ESA Day** (11 April), we organised numerous activities: visitors were able to see a mole-like drill used to study the Moon's surface, build a paper rocket, and view photos taken in space. We also presented many Mars rovers, and satellites made by students. The event was attended by around 1,100 people.



On 28 October, Prof. Lena Kolarska-Bobińska, Minister of Science and Higher Education, and Tim de Zeeuw, Director General at ESO, signed an agreement concerning Poland joining the European Southern Observatory. It was a momentous decision for Polish astronomers, providing them with access to state-of-the-art telescopes in the southern hemisphere, including the acclaimed very large telescopes. Additionally, Polish entrepreneurs will be able to bid for contracts for the construction of future instruments.

To celebrate Poland joining ESO, planetarium guests attended screenings of images taken from the observatory in Chile and learned more about the significance of the accession.

We are currently preparing for the **International Planetarium Society (IPS) conference**. This prestigious organisation, gathering 35 countries from around the globe, selected the Heavens of Copernicus planetarium as the host for its next meeting. 2016 will mark a double celebration, with the conference taking place on the fifth anniversary of our planetarium.

REVOLVE
IPS CONFERENCE
WARSAW 2016

In 2014, we hosted eight events as part of the cycle **"Straight from the Sky"** – meetings with acclaimed scientists from Poland and abroad combined with multimedia displays at the planetarium. The events were attended by almost 800 participants. Notable guests included:

Prof. Agnieszka Pollo presented one of ESO's major observation programmes (9 January)

Prof. Ewa Łokas revealed the secrets of the Local Group of galaxies nearest to Earth (6 February)

Dr. Natalia Zalewska discussed the mystery of water on Mars (6 March)

Prof. Mark McCaughrean from ESA (more on the lecture held on 11 April on p. 30)

Prof. Małgorzata Królikowska-Sołtan discussed the latest news from the Rosetta probe and the MUPUS instrument it carried, designed and constructed at the PAS Space Research Centre (more on p. 30)

Prof. Gerry Gilmore from the Institute of Astronomy in Cambridge, member of the Royal Society and scientific director of the Gaia mission, which he described to the audience gathered at the planetarium (11 September)

Tomasz Zawistowski talked about the BRITE-PL project he coordinates, through which Poland launched its first two scientific satellites into orbit: the BRITE PL1-Lem probe, and, more recently, the BRITE PL2-Heweliusz (2 October)

Dr. Michał Bejger discussed some of the most exotic objects known to astronomers: black holes and neutron stars (4 December)

Prof. Gerry Gilmore

Celebrations under the Heavens of Copernicus

Valentine's Day under the planetarium's starry dome is now so popular we celebrated the festival of love on 14 and 15 February. **The screening "Constellation: Love"** has been visually revamped and enhanced with new scenes. We took our viewers to the most romantic corners of the Milky Way, and searched the Solar System for heart-shaped features and objects. Participants were also able to see their own declarations of love presented during the screening.

Children's Day celebrations also extended throughout the weekend (31 May and 1 June) with a special repertoire. Kids participated in free workshops, where we constructed a model of the Moon using giant puzzles and built flying paper models.

On **St. Nicholas's Day** (6 December), we presented a special programme aimed especially at our youngest guests.

Our search for the **First Star** in the run-up to Christmas (22 December) has become an annual tradition. In spite of adverse weather, which meant we had to move our search to the inside of the building, we learned the story of the Bethlehem Star. Over a hot chocolate, we also talked about the forthcoming cosmic events for 2015.

Music at the planetarium

Our stellar music spectacles continue to enjoy great popularity. On Friday evenings, as part of the **"Concerts under the Stars"** cycle, the Heavens of Copernicus planetarium resounds with classical music. Once a month we also lift our audiences into a jazz orbit with **"Around Jazz"**. Concerts are accompanied by visualisations of the sky projected onto the planetarium's dome. Images of the farthest reaches of the Universe serve as inspiration for performers, improvising a live musical accompaniment. New this year (inaugurated on Children's Day) were interactive **concerts for kids**, held on selected Sunday afternoons. In 2014, we hosted 50 concerts as part of the "Concerts under the Stars" cycle, 12 "Jazz Orbit" concerts, and seven concerts for kids, with over 8,000 participants.

For fans of somewhat heavier sounds, we have the **"Dark Side of the Moon"** laser display, featuring tracks by the legendary Pink Floyd.

We have also taken over the honorary patronage over **"Harmonia mundi – sacra et profana"** – an interdisciplinary academic conference dedicated to the ties between music and the Cosmos, held in November.

Awards

Even though we only produced it last year, it has already swept up at all the most important fulldome film festivals in Europe, the US and Asia. In 2014, our film **"Dream to Fly"** received further accolades, this time in China and Korea. During the Macao International Fulldome Festival, accompanying the International Planetary Society (IPS 2014) conference in Beijing, the film was awarded first prize in the audience vote, as well as picking up the Best Visual Award. It also won the Gold Star at the International Fulldome Film Festival in Gwacheon in Korea.

In Las Vegas, we collected the first prize for **"Dark Side of the Moon"** in the "Planetarium" category, awarded by the International Laser Display Association (ILDA).

In 2014, the planetarium repertoire included 20 films and 16 projections.

Premieres of 2014:

Films:

The Journey to a Billion Suns,
Dark Star Adventure,
Astronaut 3D,
Back to the Moon

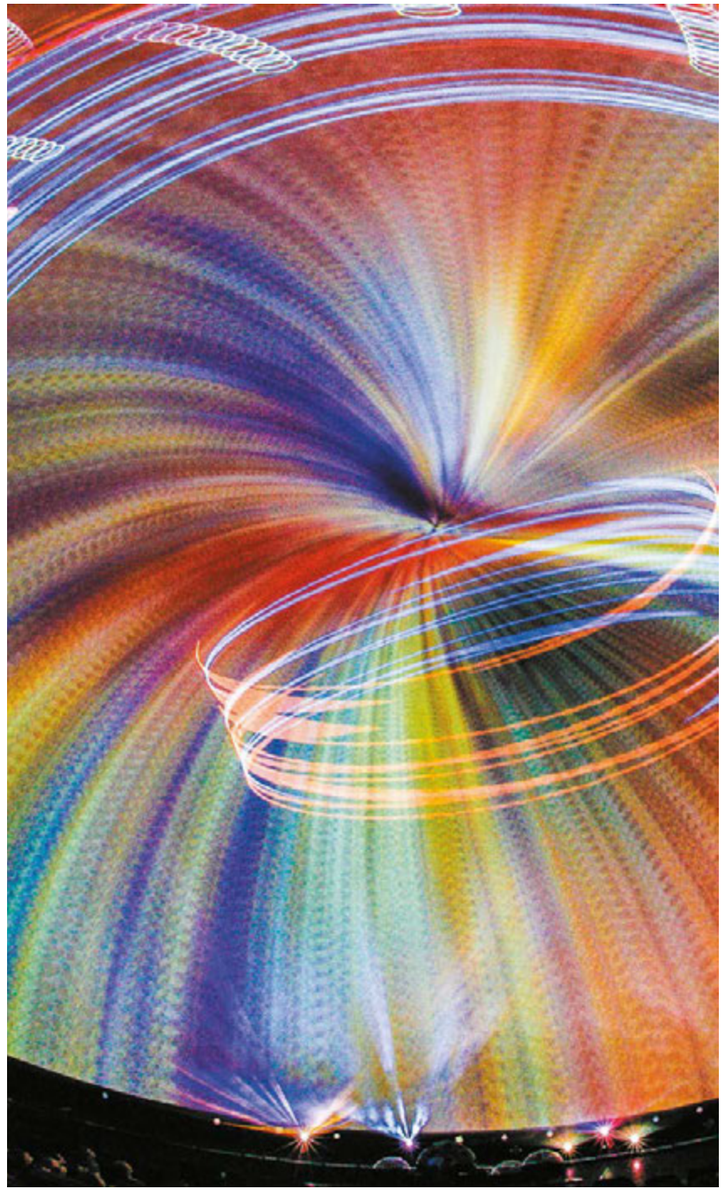
Seasonal demonstrations held live before screenings:

Earth's Satellites,
Heads Up!,
Defenders of the Earth,
Rogue Planet Earth,
Cosmic Picnic – special screening for Children's Day

Longer live presentations:

In the Darkness,
Odyssey Across the Sky,
Special screenings prepared for the monthly After Hours sessions

Most of the films and live screenings at the Heavens of Copernicus are also available in English. In 2014, we also acquired Russian versions of most of the films.



18th Science Picnic of Polish Radio and the Copernicus Science Centre

The Science Picnic has come of age! As fresh and inspiring as ever, this iconic event of innovative science communication continues to attract scores of participants: on 31 May, the National Stadium welcomed 120,000 visitors. The patronage over the 18th Science Picnic was taken over by the Representative of the European Commission in Poland.

How is it that, over the last 18 years, this event – originally held at the Market Square in Warsaw's New Town district – has grown into the largest outdoor science event in Europe, now held at Poland's National Stadium? It all started with an original, bold idea implemented in Europe for the first time. Researchers left their labs to meet and greet the public in city parks and squares, and to talk to them using everyday, clear language – and the formula proved to be attractive beyond all expectations. The Picnic's unique atmosphere makes it a one-of-a-kind event on a global scale. Visitors are hungry for knowledge, and discover a drive to ask questions and challenge scientific research and perceptions from a practical and ethical perspectives. The Picnic also presents the latest scientific and technological discoveries and achievements, and familiarises the public with the research process. It teaches critical thinking, and the ability to make accurate observations, ask pertinent questions, and verify hypotheses. All these skills are crucial in today's world, since we all need to sift through vast volumes of information and learn to distinguish between fact and fiction. It's no wonder, then, that the Science Picnic has made quite a name for itself internationally, held in high esteem by other countries hoping to transplant the successful formula to their own soil.

Since the Picnic has come of age, it follows naturally that the latest event was held under the banner of "time". The concept has long fascinated physicists and philosophers alike, and its definition has been sought in equal measures by mathematicians, natural scientists and scholars of the humanities. Results of their work were presented through over 1,000 demonstrations at 200 stands of institutions from Poland and around the globe. Visitors took a step back in time by observing re-enactments of mediaeval inquisitions, trying their hand at early board games, discovering all about the precursors of today's tablets, learning how time was measured in ancient times, and discovering how bodies were once mummified. And they also raced ahead to the future: there were vehicles breaking speed records, robots mimicking humans, demonstrations of medicine of the future, tastings of molecular gastronomy, and presentations of state-of-the-art technologies which may soon become as ubiquitous as mobile phones are today.

This time, the Picnic expanded to the National Stadium's pitch. The beautifully arranged, covered stadium resembled a giant museum whose exhibits demonstrated that science and technology exist precisely to break down boundaries. Scientific development translating into technological progress in motoring was presented as an evolution of vehicles from the simplest hackney cabs to supersonic supercars.

We always take a close look at who visits the Picnic to learn about their motivations, interests and needs so that we can meet them even more closely in the future. To prepare a sociodemographic cross-section of the participants, the Centre for Public Opinion Research conducted a survey among 1,277 participants aged 10 and over. The survey was followed up by an online questionnaire.

Most of the participants were children under 18 years old (26.4%) and young people aged 19–34 (31.1%); older visitors usually accompanied children. A large proportion of guests live outside of Warsaw and its metropolitan area (23.2%). All of Poland's provinces (voivodeships) were represented, with the highest number of visitors from Mazowsze, followed by Lubelskie and Łódzkie voivodeships.

65.7% participants live in Warsaw and a further 10.3% in its metropolitan area (in places such as Łomianki, Piaseczno, Brwinów, etc.).

A third (32.9%) of the visitors are still studying, half (15.7%) of whom are at the middle and high school levels.

We are thrilled that the Science Picnic continues to be an attractive format and its aim of reaching new social groups is effective. Last year's event attracted high numbers of new visitors (60.1%) and regular participants (39.9%), of whom 8.1% have attended the Picnic five times or more. The greatest fans, who have attended 17 or the full set of 18 Picnics, comprised 0.5%.

We also investigated whether the Picnic has a genuine influence on the attitudes and behaviour of its participants. The effect can be measured after a certain period of time, therefore we asked a group of respondents who have participated in previous Picnics whether the events had aroused their interest in a particular branch of science; whether they encouraged or inspired them in any way. Such effects on their own and their family's lives were reported by every fourth respondent. They frequently named very specific examples, such as selecting a particular subject to study at school or university, joining a science club, learning a foreign language or a new science, perhaps applying molecular chemistry in their restaurant, subscribing to research journals or watching science programmes, conducting experiments at home, and so on.

Faster, faster, Bloodhound! A replica of the world's fastest car was parked in the centre of the National Stadium, arousing great interest among the visitors. 14 metres long and almost 3 metres tall, the vehicle can reach supersonic speeds. It is driven by a jet engine supported by a unit of hybrid rockets. Its total power output is 135,000 horsepower, or about the same as 180 Formula 1 cars. At full speed, the Bloodhound takes one second to cover the distance of about four and a half football pitches.

The Science Picnic was inaugurated by **Polish Radio** in 1997. We have been involved as strategic partners since 2008, and we are proud to be co-organisers of Europe's largest event showcasing science and new technologies. The Picnic's Management Board includes the Chairman of the Board of Polish Radio and the Director of the Copernicus Science Centre. The Organisational Team includes members of both institutions.

In 2013, the Copernicus Science Centre and Polish Radio welcomed a new partner: the **National Stadium**, which not only serves as the Picnic's venue, but also provides promotional and financial support.

Picnics abroad

The Science Picnic has become a well-recognised brand, an event unique on a global scale. The formula appears to be universal and it transcends borders: similar events have been held successfully in Ukraine, Georgia, Croatia, Lithuania and Russia.

We strive to maintain close ties with most of the organisers in other countries, and we are preparing a Picnic Charter – a collection of standards we believe to be key to the smooth running of the event. We are also working on a code of good practice to support Picnic organisers in preparing future events. We share our experiences on an ongoing basis, and we involve our Picnic partners in other activities of the Copernicus Science Centre.

In 2014, Science Picnics were held in the following countries:

Ukraine tops the list as the organiser of seven (!) Science Picnics in different parts of the country. Events have been held in **Lviv**, **Kiev**, **Kharkov**, **Dnipropetrovsk**, **Kryviy Rih**, **Dubno** and **Ternopil**. We participated in the latter Picnic (held on 7 September), where we invited guests to the Copernicus Science Centre tent to join us with conducting experiments.

Croatia – a Science Picnic was held between 13 and 15 September in Zagreb. We visited our Croatian friends with the travelling exhibition Captured Mind and presented the demonstration Music. It was the third Science Picnic held in the country.

Lithuania – in September, the Kaunas University of Technology held the latest Science Picnic as part of Lithuania's national Science Festival "Erdvėlaivis Žemė" (Spaceship Earth).

Georgia – the country's third Science Picnic was held in Tbilisi on 4 October. At our tent we presented elements of contemporary chemistry, and we helped Picnic visitors to construct a 3-metre-tall model of a fullerene molecule. We also held a mini-workshop introducing the basics of hieroglyphic writing. The Georgian Picnic brought together schools, universities and social organisations with a total of 60 tents and scores of science-curious visitors.

Russia held its pilot Science Picnic in 2013, with a more extensive version taking place in 2014. The event was hosted by the Samara Space Centre.

Additionally, we have received reports that our way of popularising science is reaching beyond the borders of our own continent. In **Kenya**, the Mathare Science Festival was held in October, with a thousand pupils of informal schools in the Mathare slums in Nairobi presenting their natural science projects. The event was organised by the Partners Poland Foundation; we worked with the organisation in the past during projects aimed at teachers and students in Georgia, Azerbaijan and Belarus.








Tesla Days

He practically invented the whole 20th century, and filed almost 300 patents protecting 125 inventions, the majority of which revolutionised the lives of future generations. And yet he died in poverty, largely forgotten. Any opportunity is a good opportunity to recall Nikola Tesla, so Copernicus celebrated the 158th anniversary of his birthday on 12 and 13 July.

The Centre sparkled with attractions: at the Physics laboratory, visitors experimented with a miniature Tesla coil and created drawings using electrical current; the Chemistry laboratory revealed the secrets of electrochemistry; the Robotics laboratory hosted a cybercompetition; and the Biology laboratory helped visitors learn about bioreactors: how to build them at home, and how to use the microalgae that grow in them. Participants constructed simple electrical systems, and familiarised themselves with the work of science clubs where students build devices using Tesla's original designs. Spectacles at Poland's most electrifying theatrical venue – the High Voltage Theatre – also enjoyed great popularity. One of its main actors is a powerful Tesla coil, performing during a show which literally makes audiences' hair stand on end.

Tesla Days were a great success, with weekend tickets selling out in advance. It's worth adding that the event received enthusiastic press coverage in Croatia, where Tesla's hometown Smiljan is now located.

Tesla made his first invention when he was just five years old. During the event, Copernicus prepared a special area where young constructors were able to conduct simple and safe experiments with electrical current.

Birthdays mean parties!

To celebrate Tesla's famous moustache, we organised a campaign "Turn up the voltage – wear an electrostache".

Participants cut out paper moustaches and shared photos of themselves wearing them on social media. The campaign reached far and wide, and the majority of guests and Copernicus's staff wore the artificial mustachios throughout the weekend.

Summer at Discovery Park

What happens when the potential of our Discovery Park is combined with the inventiveness of its visitors? We decided to find out by converting the park into a space for creative thinking and an outdoor gallery of artworks created by Copernicus's guests. We encouraged them to consider how best to shape, adapt and transform public spaces – to join in with taking responsibility for them.

The majority of the weekend events were hosted by arts foundations and groups, which prepared special programmes of outdoor activities. There were do-it-yourself workshops, design classes, constructions of garden installations, a gastronomy fair, artistic happenings, scientific demonstrations, outdoor games, musical chillout, and a reading room. The free events held as part of Summer in the Park attracted 5,685 visitors, with an additional 3,170 guests to the Summer Cinema.

Straw homes

Is it possible to build houses with no bricks, mortar or plaster? Yes, it is! Straw houses are cheap, environmentally-friendly and self-sufficient, and the most important element of a successful design and construction project is helpful participants. Visitors to Discovery Park learned more about building wattle-and-daub houses during workshops held by the Cohabitat Foundation.

Biomimetic architecture

Its creators are inspired by natural, organic forms found in nature. They seek ways of building durable, light, energy-efficient constructions that will help solve the water conservation problem. Visitors were especially fascinated by architecture based on termite mounds. The workshops were run by the artistic formation Parque nó.

Green games

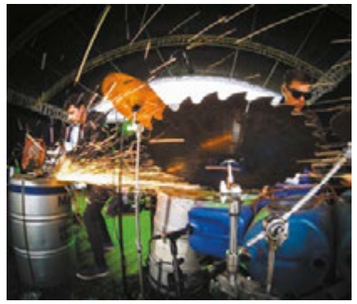
This year, we were joined by the Kwiatkibratki studio to build a flowering sculpture. The RUNO Project organised a walk whose participants searched for and picked tiny urban plants to later transplant them into glass vessels with carefully adapted habitats. Other attractions also included green architecture workshops and a joint project constructing a wicker dome which has since become a permanent element of the Discovery Park landscape.

Building Goldberg machines

A Goldberg machine is a contraption that is deliberately over-engineered to perform a very simple task in a complicated fashion. Participants set their own levels of difficulty by constructing devices with varying degrees of complexity. Everyone was able to join in: parents and kids, teachers and students, engineers and social scientists.

Tesla Days

While a 158th anniversary is hardly round, any excuse is good to remind the world of this inspired inventor. During the weekend of 12 and 13 July, we held major celebrations of the anniversary of the birth of Nikola Tesla. At Discovery Park, we demonstrated the musical abilities of AC transformers, while the group All Sounds Allowed performed using drills, saws and electrical hammers. By the entrance to the Conference Centre, our sponsor RWE Polska presented start-of-the-art electrical cars. Tesla's birthday took Copernicus by storm! More about the event on p. 46.



Copernicus August Sky

We spent Saturday nights in August glued to telescopes, observing nebulae, galaxies, star clusters and myriad rare events. Presenters from Heavens of Copernicus provided a commentary. The Perseids: a Night of Shooting Stars was a particularly notable event. More on p. 32.

Summer Cinema

Film screenings on Friday nights have become a permanent fixture of Warsaw summer events calendars. This time, we held two thematic cycles: in July, we presented "Paradise Lost" – a tale of what we are losing and gaining through scientific and technological advancements, while in August audiences attended "Cycle of Life" introducing different stages of human development. Each screening was preceded by a discussion with experts: acclaimed scientists, economists, psychologists, psychotherapists, and sociologists.

Przemiany Festival

This year's festival (4–7 September) was held under the banner "Redefining Privacy". We discussed whether privacy is worth defending, or whether it is now just a relic of the past with no place in today's digital world. We talked about the significance of anonymity – what we value about it and what we are afraid of losing by sharing data. We investigated what others know about us, and how much of this information is available in digital clouds which never delete anything. We met individuals adept at the art of going off-grid and disappearing from search engines. A total of 5,000 visitors to the 4th Przemiany Festival enjoyed exhibitions, social campaigns, films, workshops and discussions. All events were free.

Selected festival events:

The programme featured fascinating **lectures**. The fact that regulations and legislation originally devised for 20th-century societies are no longer suitable in the 21st century was discussed during the opening lecture by Andrzej Rasiej, entrepreneur, technology strategist and founder of Personal Democracy Media. We learned more about information wars from Smári McCarthy – co-founder of the Icelandic Pirate Party (a social and political movement supporting the protection of privacy and free access to cultural resources). Is giving away a piece of one's own privacy necessarily a bad thing? Can processing vast volumes of data serve a useful role in social planning, healthcare and management of agglomerations? Potential benefits of limiting our privacy were outlined by Piotr Płoszajski, head of the Faculty of Management Theory at the Warsaw School of Economics.

Countless databases, CCTV cameras, the internet littered with digital traces, payment card information, social media updates, mobile phones monitoring our each step... Almost every move we make means new data being written, exchanged and associated. How do we preserve our fast-vanishing privacy? Festival guests took part in workshops covering the basics of online security, tips on disappearing from social media, potential alternative directions of internet development, and safe use of smartphones. The curator and expert partner of the workshops and exhibitions was the Panopticon Foundation.

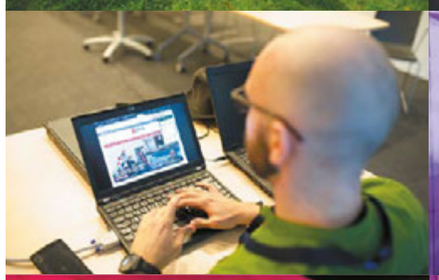
Participants were encouraged to share their personal stories and tell tales of important events from their lives by Krzysztof Żwirblis, founder of the **Social Museum**. Over the course of several days, the artist got to know our district and encouraged its residents to take part in the project. The results – a documentary film and exhibition – were presented during the festival.

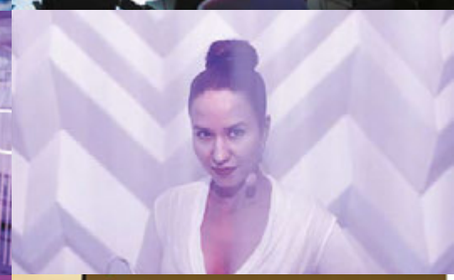
Privacy Luna Park was a theatre campaign whose participants were asked to share their most secret thoughts in exchange for the privacy of others. At least that was the artists' vision of the future, in which discretion becomes a commodity for sale, while personal experiences are hard to access or even rationed.

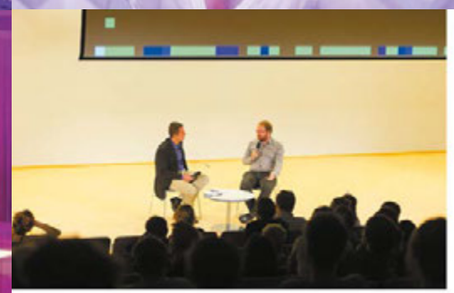










“After Hours” for adults

One Thursday evening per month, Copernicus opens its doors to adults only. The idea has proven popular with Varsovians, who have been flocking to Copernicus to enjoy the smart, interesting evenings alone, with friends, or bringing their loved ones for an unusual date. During a performance at the High Voltage Theatre, one of the guests was even inspired to make an electrifying proposal. In case you’re curious, his girlfriend said ‘yes’!

As well as hundreds of exhibits, our guests enjoy workshops, film screenings, performances, games, lectures, meetings with experts, concerts, and special screenings at the planetarium. The title of each evening recalls various classics of literature and cinema, with topics focusing on a range of fascinating scientific problems, each guaranteeing an unconventional approach to scientific concepts presented in a fun, accessible way. In 2014, After Hours received over 6,500 visitors.

The themed evenings were co-organised with Samsung – Copernicus Science Centre’s strategic partner.

Promised Land (30 January): during the evening, we discussed where money comes from and what it’s really for. What is the aim of contemporary economics? Are the concepts of sustainable growth and social market economy the only right paths towards global prosperity?

Sad Tropics (27 February) focused on the topic of global warming. Are climate forecasts really accurate? We also discussed environmentally-friendly cities, eco-urbanism, and alternative sources of energy.

Jolly Fellows (27 March): laughter is a sign of happiness and pleasure, but it can also be a fear response. We talked about biological aspects of laughter, and its function in culture and communication. Laughter also lies at the foundations of a powerful branch of the economy – after all, what is the entertainment industry for?

Brave New World (24 April): we discussed how much privacy we are willing to surrender so that our computers keep track of the time we spend commuting to work, or remind us of friends’ birthdays or errands to run. In the world of contemporary technologies, is it even possible to remain anonymous? How do these technologies affect our private, social and professional lives?

The Secret Garden (29 May): our bodies could almost be described as ecosystems rather than being isolated organisms. Around two kilos of our body weight is made up of bacteria, so it’s useful to know what they are for, and how they fight viruses and affect our immune systems, and even influence our mood.

The Sixth Sense (26 June): what is the place of the arts in science? We discussed the concept of the art + science trend, as well as listening to fascinating stories about colour, learning about the history of pigments, their creators and discoverers.

The Big Feast (25 September): not many topics stir such heated debates as questions as to the recipe for a perfect dish. Food is a highly emotive issue, and it has a powerful effect on our culture. Why are food and eating so important in society? How do they shape our relationships? Does eating together really help us get to know one another better?

Season of Migration to the North (30 October): migration processes have existed throughout humankind’s history. Is the phenomenon more pronounced in today’s world? What are the causes and effects of migration? Finally, what happens to people who are forced to migrate – refugees, exiles, asylum seekers?

Journey to the End of the Night (27 November): we spend a third of our lives asleep. During the November evening, we talked about why we dream, and what it means to sleep well and how best to prepare for it.

FameLab

The competition provides a focal point for the ideas at the foundations of the Copernicus Science Centre. After all, we exist precisely so that we can discuss difficult topics in a comprehensive way, build and support a society that believes in the power of science, leave behind dull routines, and encourage people to ask questions and to seek answers to them.

But FameLab is more than just a competition: it's also a programme helping scientists become better at discussing scientific topics in a clear and interesting way. Finalists take part in a professional masterclass. This intensive course in scientific communication, presentation and public speaking is held by Polish and British coaches.

FameLab is co-organised with the British Council. The national semi-finals (1 March) and finals (10 May) attracted almost 700 people to the Copernicus Science Centre.

Poland's third FameLab was won by Dr. Joanna Bagniewska – zoologist, graduate from the University of Oxford and lecturer at the University of Nottingham. Her performance inspired the audience and the jury, demonstrating that science can be lucid and entertaining. She represented Poland during the international finals in Cheltenham, where she received the laureate's prize.

The second prize was awarded to Justyna Lesiak, doctoral student at the University of Munich; she also received a special commendation from the Minister of Science and Higher Education, the Special Prize of BASF Polska, and the Audience Prize funded by the British Council.

In December, we inaugurated the programme **FameLab – spokespeople for science**. Seven science journalists and 15 finalists of the competition met at Copernicus to discover that working together is a worthwhile goal. The aim of the programme is to create a platform for building relationships and establishing collaboration networks between scientists developing their skills in popularising science and journalists who have experience in the field. FameLabbers learn from masters of communication through mentoring; in turn, journalists gain direct access to fascinating topics and the ins-and-outs of cutting edge research. The main effects of this skills exchange will trickle down directly to the consumers of media by providing them with top quality scientific information presented in an accessible way.

Premiere at the Robotic Theatre

"What the Old Man Does is Always Right" by Hans Christian Andresen is the first adaptation of this classic fairytale by the Robotic Theatre, premiering in April 2014. The play is built on artistic contrasts: the metallic, futuristic robots are juxtaposed against the soft modelling clay used in Monika Kuczyniecka's original animations. Adapted and directed by Paweł Kolanowski. For children aged 6 and over.

60th anniversary of CERN

In 2014, the European Organization for Nuclear Research (CERN) celebrated its 60th anniversary. Poland's celebrations were organised by the Copernicus Science Centre, Ministry of Science and Higher Education, and Polish Particle Physics Consortium. On 8 February, as part of the Accelerating Science exhibition held until 30 March, we revealed a new exhibit: an interactive tunnel simulating the Great Hadron Collider. Visitors used it to play football with protons and view their own reflections in a Higgs field. We also hosted Prof. Rolf Dieter Heuer, Director General of CERN, who delivered a special lecture. He discussed the organisation's scientific achievements, and told the audience more about the Higgs boson, whose existence was demonstrated in 2013.

He noted that countries wishing to participate in research conducted at CERN include Israel (the organisation's newest member), as well as Turkey, Pakistan and Cyprus, all of whom are currently hoping to become members. Prof. Heuer said, "We bring together people from countries that often do not communicate on a friendly basis", adding that CERN's motto is "Science for Peace".

Warsaw Health Resort

This project, forming a part of the Knowledge Incubation in Innovation and Creation for Science (KiiCS) programme financed by the European Commission and implemented by the European Network of Science Centres and Museums (ECSITE), was completed in 2014. Warsaw Health Resort was a vehicle for hosting a series of incubation workshops, including a design workshop for adults and workshops for young adults aged 16–17 (the "Urbanauts" project). To stir the imaginations of the participants, we used a range of formats encouraging creativity and teamwork. We invited several technical experts and coaches specialising in teamwork, and used innovative methods including design thinking and technologies such as 3D printing. The most important goal for the participants was to gain skills in working together in interdisciplinary groups, and to learn the value of setbacks. Although the implementation of concepts created during the workshops was not part of the project plan, some are in fact being brought to life. Two projects were nominated for the international KiiCS prize: Cicho2 and gumMO-VE. The project closed with the participants preparing a code of good practice using experiences of all KiiCS partners, including our very own Warsaw Health Resort.

prof. Rolf Dieter Heuer

The Expedition to Bring Back the Rain

The scientific fairytale we created in 2008 hasn't lost any of its popularity – quite the opposite! It had its premiere at Warsaw's Teatr Dramatyczny on 24 May as part of the Korczak Theatre Festival. The play was also performed at our auditorium as part of the celebrations of St. Nicholas Day on 6 and 7 December.

Bromba at Copernicus

Bromba is a creature slightly larger than a squirrel; she has pink fur, and she is an expert at weights and measurements. She was created by Maciej Wojtyszko in his collection of stories "Bromba and Others". Bromba has been inspiring scores of children with her passion for understanding and describing the world. On 5 July, she delighted kids by visiting Copernicus.

We were also a partner of the performance "Bromba Online" organised by Teatr 6.piętro.

3D selfies

All guests visiting the Copernicus Science Centre between 16 and 21 December were able to take a 3D photo of themselves at a specially designed photobooth, and download it to their phones. The scans will be used to create a new exhibition, so all participants are also elements in the artistic project.

Events we participated in:

Museum Night

This year, we beat our own attendance record! In the early hours of 18 May, the Copernicus Science Centre and the Heavens of Copernicus planetarium were visited by 6,430 people. They weren't deterred by rain or the queue stretching as far as Świętokrzyski Bridge. While they waited, they built models of fullerene, played with scarves, blew soap bubbles, and conducted various mobile experiments. But that's not all! They also watched the best presentations by FameLab finalists and listen to the Copernican choir. And further attractions awaited inside: six galleries, the Captured Mind exhibition, High Voltage Theatre, planetarium, and laboratories. Chemists illuminated the night with fluorescent substances and colourful flames.

The Biology lab presented carnivorous plants and bioluminescent algae, physicists used lasers to take 3D photos, while scientists at the Robotics lab tested the night vision of robots.

18th Science Festival

Between 19 and 28 September, Warsaw once again became a capital of scientific experiments, lectures and workshops. Over 1,000 events were held, and the Copernicus Science Centre hosted festival lessons. High-school groups participated in crystallography workshops, while younger students visited the planetarium for special screenings. The youngest guests attended the Little People's Science Festival (27 and 28 September) with three thematic zones focusing on astronomy, volcanology and palaeontology.

Winter and Summer in the City campaigns

During the campaigns Winter and Summer in the City (in January, and July and August respectively), we once again distributed vouchers for free entry to our exhibitions. A total of 3,400 vouchers were distributed to children from all of Warsaw's districts by the Office of Education of the City of Warsaw – coordinators of the campaign.

Visitors queuing up outside the Copernicus Science Centre for Museum Night 2014

We form a bridge linking formal and informal education. We attract people who place students and the development of their skills at the very heart of the education process. We make the most of the trust placed in us, and harness the latest scientific achievements and advances to make a real impact on the education system in Poland.

In 2014, we created a new division in our organisation's structure: the Education Department. It is the first step towards creating a laboratory for designing and testing innovative content, formats and teaching methods.

Young Explorer Club programme

Based on a simple method, universal, bringing spectacular results – Young Explorer Clubs provide an excellent opportunity for kids to experiment, learn and simply enjoy science. The tutors don't set tests or give out marks – instead they help kids verify their research hypotheses themselves. The atmosphere helps children learn better and develop key skills such as creativity, flexibility, and information processing.

325 Clubs registered in Poland

10 in Georgia

3 in Belarus

7 in Ukraine

The clubs are also run by people who aren't professional teachers: librarians, foresters, instructors from cultural clubs, and parents. They work closely together, reach beyond their own circles, and actively seek resources for running the Clubs. Their involvement means that the Clubs are leaders in their field, proponents of change, and local workshops of good educational practice.

To make the most of the programme's potential, we decided to adapt the model of its development. **We welcome regional partners**, who are well placed to maintain close and regular links with Clubs in their area and support local leaders in setting up new ones. An important task for regional partners will be obtaining local resources to be used by the Clubs' tutors. As the national coordinator, the Copernicus Science Centre supports the programme through sharing knowledge and experience, as well as preparing codes of good practice for conducting the programme. With the support of our partners, we will develop educational tools based on the Young Explorer Club method and disseminate them through workshops, online, and during tutor recruitment and training sessions.

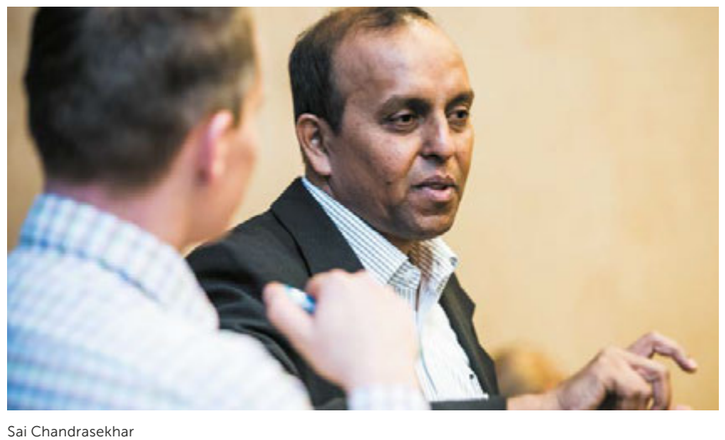
Poland's first regional Young Explorer Club was created in Rzeszów. In October 2014, the ExploRes Association for Disseminating Knowledge and the Copernicus Science Centre signed an agreement to work together, with the University of Rzeszów as supporting partner.

This year, we also created the first network abroad. **In December 2014, our partner, the Ilia State University from Tbilisi, signed an agreement concerning the opening of a Georgian network of the Young Explorer Programme**. They are also partnered with Georgia's "Teacher's House" – a contemporary centre for professional development. In order to maintain our programme's high quality, in September we held a training session in Warsaw for 12 teachers and experts from the Teacher's House with the aim of popularising the programme in Georgia and encouraging teachers to participate in this form of extracurricular activities, as well as holding mini-training sessions and presentations.

The year-long collaboration was summed up during the **3rd YEC Forum**, held at Copernicus on 14 and 15 November. The event's special guest was **Sai Chandrasekhar**, Member of the Board of Agastya Foundation in India; last year, the organisation received the prestigious Global Impact Award. It conducts activities in rural areas promoting hands-on exploration of the world using widely-available materials and methods, sending mobile science vans to local schools, training teachers and young people, and creating online platforms for schools. The programme of the 3rd YEC Forum included inspirational lectures, seven thematic workshops, four discussion panels and several further surprise activities allowing participants to share experiences. As well as providing training on the methodology of running activities at the Clubs, the Forum also served as a platform for meetings and discussions on the future of the YEC Programme beyond Poland's borders, and for tutors and educational activists from abroad sharing their experiences. For the first time, the Forum welcomed representatives of four countries: Georgia, Belarus, Ukraine and Lithuania. The event had a total of 222 participants.

In 2014, we held 13 stationary and travelling workshops for 209 teachers interested in founding their own clubs. Since we are planning to create further networks and develop the programme in other countries, we also hosted workshops abroad. The three workshops held in Ukraine were highly popular with teachers, educators and pedagogy students, with a total of 130 participants. In Lithuania, we presented a programme for representatives of educational circles, and initiated a collaboration with the Botanical Garden in Kaunas.

Young Explorer Clubs are partnered with the Polish-American Freedom Foundation.



Sai Chandrasekhar

We live a world of information overload. Every year, the volume of data available online doubles, 300,000 books are printed worldwide, and a single newspaper now contains more facts than any publisher could have imagined just a century ago. But the ability to verify and process information is at least as important as simply accumulating it. Copernican Revolution, a project we have been running jointly with the Ministry of Education since 2013, is a comprehensive programme supporting teachers throughout the country. Its aim is to popularise active methods of working with students. We want Polish schools to become spaces that stimulate young people's curiosity, encourage them to take on a hands-on approach to discovering the world, and make the most of their potential.

One of the key tasks of the project has been the preparation and dissemination of tools helping teachers of science, technology, engineering and maths (STEM) to apply the most effective methods of working with their students, based on conducting experiments, posing and verifying hypotheses, and discovering scientific phenomena through a hands-on approach.

The Copernican Revolution, which will run until June 2015, covers five core activities described in more detail below. The project "Developing and testing active ways for teachers to work with students based on the research method" (conducted under the Copernican Revolution banner) is held in partnership with the Ministry of Education and co-financed by the European Union as part of the European Social Fund.

Copernicus at large

These travelling workshops, held throughout Poland, introduce audiences to the practical applications of the research method. By conducting experiments whose subjects and aims relate to the Core Curriculum, participants learn about the merits of learning through discovery and the methodology of Inquiry Based Science Education (IBSE). In the past, the three-stage teaching cycle was used, focused on activating, acquiring, and applying. The contemporary five-step model known as the 5E – engage, explore, explain, elaborate, and evaluate – supports teachers and students working together on the basis of their knowledge and experience.

In 2014, we held 23 workshops with the participation of 436 STEM teachers from primary and middle schools from around Poland.

Teachers as explorers

Our laboratories play a key role in the process of implementing the Copernican Revolution. We held one-day workshops for teachers at our state-of-the-art labs, helping the participants develop their skills, learn how best to present the latest scientific discoveries, and – most importantly – whet their own appetites for knowledge by conducting experiments themselves.

The Chemistry laboratory held the workshop "Energising chemistry", which focused on electrical charges between molecules. The Biology laboratory conducted an "Attack of the clones" – an event revealing the secrets of genetic engineering. "Optical spectroscopy" was presented by the Physics laboratory, while the Robotics laboratory answered the question "How will we live with robots?" and showed teachers that they are able to build and program robots themselves.

Participants in the workshops were STEM teachers from primary, middle and high schools. Events at the Robotics laboratory were also open to teachers of vocational subjects such as electronics, materials science, analogue systems, digital systems, mechanics, optics, and so on.

In 2014, we conducted 58 Teachers as Explorers workshops with the participation of 534 tutors.

Copernicus in a box

Last year, we finalised work on the first educational kit developed as part of the Copernican Revolution. **Professor Czochralski's Suitcase** is aimed at high-school students wishing to expand their knowledge and experimental skills in subjects including materials science, crystallography, studies of the structure of matter, and historical research.

In 2014, we held 14 workshops focusing on the Suitcase, with the participation of 231 teachers.

We also developed the kit **"Water"**, inspired by tutors of Young Explorer Clubs during workshops held as part of the 2nd YEC Forum in 2013. The kit contains equipment, materials and lesson plans for an interdisciplinary approach to discovering the chemical, physical and optical properties of the world's most common liquid. The kit has an open formula: it allows students to create their own experiments and develop subjects discussed during classes. Measurement equipment in the kit can be used in a wide range of experiments going far beyond the main subject. The scripts include over a dozen suggested experiments which can be modified and expanded further, ranging from experiments that take less than half an hour and can be conducted during a school lesson to those requiring several weeks or even months to complete. There are also activities intended to be held outdoors. The educational kit aims to help teachers improve the scientific and research skills of late primary and middle-school students.

In 2014, we held 12 workshops with the participation of 227 teachers of physics, chemistry, biology and geography.

New natural sciences labs

The next component of the Copernican Revolution project is developing equipment for natural sciences laboratories for older primary school students. The key focus isn't on the equipment itself; after all, we don't want schools to have expensive labs which are mostly kept under lock and key. The aim is to gain the support of teachers to use methods which encourage students to become more active and place them at the centre of the learning processes by focusing on their individual talents, skills, passions and motivations. Our recommended method uses lab equipment to help teachers combine textbook theory with practical experiments. As a result, science should no longer be disconnected from reality, which in turn supports the students' learning skills and improves their understanding of the natural world.

We invited ten selected schools from different parts of Poland to test the equipment and methodology at their natural sciences labs. As part of the pilot programme (completed in February 2015), schools received equipment required for the activities described in our materials, which they used during natural sciences lessons. The conclusions from the pilot programme will form the basis of a set of recommendations for providing school labs with core equipment and instructions on using it. The recommendations will also include tips on working with students during practical experiments, descriptions of example activities to be held during lessons, suggestions for organising time during school hours, and a list of recommended equipment.

They will be used by the Ministry of Education to promote natural sciences education in primary schools through the application of the research method. This will be facilitated through EU funds provided as part of the Operational Programme Knowledge-Education-Development, distributed to local authorities in the new EU financial perspective.

Show and Tell conference

The main theme of this year's meeting of teachers, educators, and representatives of universities and other educational establishments was Maria Montessori's motto "Help me do it myself". During the conference, we discussed the reasons for using the IBSE method in STEM subjects, as well as considering how best to work with students during lessons of humanities subjects. We also discussed the place of modern technologies in the processes of teaching, learning and processing information, the application of interdisciplinary principles to teaching, and the challenges faced by today's educators and the evolution of their role as individuals supporting students in solving problems and answering questions about the world around them. The conference was inaugurated by **Robert Firmhofer**, Director of the Copernicus Science Centre; he presented the wider context of the event's motto by stressing that "independence means being active rather than passive". In her statement, **Joanna Kluzik-Rostkowska, Education Minister**, referred to the significance of using experiments in the education process, while the lecture by **Prof. Stanisław Dylak** discussed the present-day role of teachers adapting to the evolving challenges of the schooling system. Special guest of the event was **Dr. Tyler Witt**, American scientist and high-school teacher who is passionate about shifting our perceptions of teaching and learning. The conference also featured 22 workshop groups and four discussion panels. The 8th Show and Tell conference was held on 22 and 23 August with 280 participants from all around Poland.

Lecture by Dr. Tyler de Witt

ESERO educational project

Two years ago, our planetarium was the venue of a momentous occasion: the signing of the accession agreement marking Poland's entry to the European Space Agency (ESA). Now the time has come for taking the next step: the inauguration of Poland's branch of the European Space Education Resource Office (ESERO). The educational project aimed at teachers is coordinated by the Heavens of Copernicus planetarium. The project uses space research to enhance and support the teaching of STEM subjects throughout the school system. When knowledge about our Universe is introduced at an early age, it encourages students to select subjects and professions in engineering and technology in the future.

By running the ESERO-Polska office, our planetarium provides teachers with information on how best to inspire their students to learn STEM subjects by presenting them in the context of space research. We also adapt and use materials produced by ESA to be used in Poland's schools. We maintain the www.esero.kopernik.org.pl website, as well as preparing lesson plans based around the issues of space research. We also organise workshops for teachers and meetings with scientists and experts in the field.

On 11 October, the Copernicus Science Centre hosted **Space in Schools** – the first teacher workshops held as part of the ESERO-Polska project. The first part of the event was held at the planetarium, with Michał Krupiński from the PAS Space Research Centre talking about satellite observations of the Earth. During the second part, teachers worked on satellite data in order to pinpoint floods and assess their effects.

The remaining group spent their time landing a probe on Mars, launching rockets and running simulations of the Rosetta mission. The event culminated with "Cosmic Weather" – a lecture by Prof. Jan Błęcki from the PAS Space Research Centre.

The workshops hosted almost 90 teachers from around Poland: physicists, geographers, chemists, biologists and computer scientists, teaching at all levels from early primary to high school.

On 17 December, middle-school students had an opportunity to learn behind-the-scenes secrets of space missions. Over 80 young people met Polish engineers – heroes of space technologies.

Educational events

Teacher Afternoons with Copernicus are cyclical meetings for teachers, head teachers and expert advisers, who visit our exhibitions and learn more about selected elements of what Copernicus has on offer. Participants meet the Centre's "explainers" and staff, conduct simple experiments and hold discussions. Last year, we held meetings with teachers on 14 Thursday afternoons with a total of around 200 participants.

Making the most of our exhibitions as part of the process of school education requires a good knowledge of the Centre itself and the way in which educational space is organised in science centres in general. While the former element is met during Teacher Afternoons with Copernicus, the latter requires a longer analysis of the educational aspects of school visits. This is addressed during **Workshops in the Exhibition Space** for teachers. Participants also include groups of tutors working in home education, democratic schools, and open and other alternative teaching movements focused around the unschooling system outside formal education systems. During the total of 14 "Teaching in a Box: from teacher to scientist and back again" sessions, we dealt with fascinating questions concerning the very nature of the work of teachers and scientists. We also held seven workshops entitled "Three steps to creativity: thinking deeply, broadly and sideways", while our temporary and travelling exhibitions also have an educational framework. Additionally, we hosted eight workshops around Captured Mind (more on p. 18) and Microlife (more on p. 22).

It should be noted that the **educational framework of the Microlife exhibition** is not limited to workshops for teachers: we also held lectures for high-school students and their teachers. A total of 180 people attended meetings with Ruben Duro, author of photos displayed at the exhibition (5 November) and Marek Miś, expert on macrophotography (10 December). Our website includes a constantly expanding database of educational materials on Microlife; they can be used during school trips to Copernicus, as well as forming a part of lessons covering subjects related to the exhibition.

Workshops with educational kits. More about our educational kits prepared as part of the Copernican Revolution project can be found on p. 64. We also offer other educational kits, devised in previous years. Since 2012, the **energy company RWE** and the Copernicus Science Centre have been running a unique educational programme demonstrating future technologies for generating and processing energy: the **RWE Power Box**, aimed at late primary and middle-school students. It is important for young people to understand energy sources, be aware that natural resources are being depleted, ask questions about new, alternative energy sources, and learn how we can all conserve energy. So far, we have run the RWE Power Box programme twice, with over 60 Warsaw schools taking part in the first session and 40 educational establishments from Malbork and the Suwałki region in the second. Over 100 educational kits were distributed to participating teachers, and several thousand children took part in the events. In December 2014, we kicked off the third instalment of the cycle.

Family Workshops are events for young children (5–8 years old) with their parents or care-givers. We help them conduct experiments together, and provide educational materials to be used to continue the learning process at home. Last year's activities included searching for dinosaurs, investigating where water in pipes comes from, and learning about how yeast makes bread rise. We also prepared two new lesson plans: "How do instruments make sound?" and "Why do volcanoes explode?". In 2014, we held 198 Family Workshops with a total of 4,927 participants (2,589 adults and 2,358 kids).

Events we have co-organised

The Young Researchers' Festival was held at Copernicus on 21-23 March. Participants in this demanding competition are extraordinary young people: scientists of the future presenting their research to guests at the Copernicus Science Centre. During the Festival, we held a gala presentation of the results of Poland's finals of the **EU Young Scientists Contest**, with three Polish finalists vying for the prize. The event also featured the finals of the **Astrobot Robot Competition**. The prize awarded to the winning team of teenage engineers is the opportunity to visit the ESA rocket base in Norway. Students taking part in both competitions came along to Copernicus together with their teachers. The Polish Children's Fund and the Copernicus Science Centre – organisers of the Young Researchers' Festival – also held workshops on the subject of working with gifted children, and popularising science.

The **26th EUCYS (EU Contest for Young Scientists) finals**, featuring Polish competitors, were held in Poland for the first time, with the University Library in Warsaw hosting the event between 20 and 22 September. The competition was accompanied by events open to the public, including a lecture by Prof. Robert Hubert "How I became a scientist and protein crystallographer". EUCYS 2014 was organised by the University of Warsaw and co-organised by the Polish Children's Fund and the Copernicus Science Centre.

On 11 June, Copernicus hosted the 4th **Summer Seminar of Wars and Sawa**. This year's theme focused on psychology and social communication, introducing the concepts to participants through popular science lectures and workshops featuring exhibits from our latest travelling exhibition Captured Mind (more on p. 16). The seminar was co-organised by the Warsaw Centre for Socio-Educational Innovation and Training.

The gala finale of the **"School with Class" Festival** was held at the Copernicus Science Centre for the fourth time on 17–18 June. During the event, students and teachers presented the results of their projects and activities, and shared experiences and opinions. They also took part in thematic workshops prepared by the Centre for Citizenship Education and Copernicus. The festival closed with an intersectional debate with the participation of stakeholders in education: decision-makers, experts, local authorities, the media, and – first and foremost – teachers and students. The School with Class Festival 2.0 is organised by the Centre for Citizen Education and the *Gazeta Wyborcza* daily in partnership with the Copernicus Science Centre. The honorary patronage over the festival is held by Anna Komorowska, wife of the President of Poland.

303,394 group tickets to exhibitions at the Copernicus Science Centre

94% of organised groups that visit us are school trips

Breakdown of school trips

1% preschool groups

28.5% primary schools

35.9% middle schools

9.7% technology colleges

1% vocational schools

23.8% high schools

Local partners

We form an integral part of the global science centre movement, and we are a key point on the map of local innovators. We strive to reach different social groups, enter into partnerships, and encourage dialogue between communities, public authorities and academic circles. Supporting social dialogue concerning the direction of Poland's development and taking responsibility for changes taking place around us are key strategic goals of the Copernicus Science Centre.

Pact Between Society and Science

In 2013, an set of non-profit institutions involved in social development based on education, science, technology and innovation signed an agreement, forging a pact as a natural step towards building a strong environment for contemporary scientific communication in Poland. The first meeting of the new organisation's Board (whose Secretary is Robert Firmhofer, Director of the Copernicus Science Centre) was held during the **6th Interaction – Integration Conference in 2014**. The conference has been hosted by the Copernicus Science Centre since 2007, last year moving to the new venue of the EXPERYMENT Science Centre in the state-of-the-art complex of the Pomeranian Science and Technology Park in Gdynia. Held between 12 and 14 April, the meeting included discussions on several topics including finance, programme management and organisation of various types of activities. It was agreed that the 2015 conference would be hosted by the Centrum Nowoczesności Młyn Wiedzy in Toruń.

Since then, participants in the association have me once again in Toruń and in Warsaw, where Copernicus hosted a **meeting with Prof. Lena Kolarska-Bobińska, Minister of Science and Higher Education**, on 18 December. The discussion mainly concerned the role played by informal education circles – broadly focused around the pact – in the promotion of science, creation of spaces for public dialogue on scientific topics, and improvement of scientists' communication skills. In this context, the communications skills of the institutions forming the association make them excellent partners for universities and research institutes in Poland and abroad.

Partnerships with universities and research centres

We strive to introduce academic circles in Poland to science centres as inspirational spaces for research and reflection on humankind's exploration. We also hope to encourage scientists to conduct research work at the Copernicus Science Centre. We work closely with the **Faculty of Architecture at the Warsaw University of Technology**. Last year, its students joined the Copernicus Department of Production and Implementation to design and create interactive benches for our visitors. In 2014, we met representatives of the **University of Warsaw, Warsaw School of Social Sciences and Humanities, National Defence University,** and **Academy of Special Education**, and we are currently drafting and finalising areas of scientific and research collaboration.

Scientific Warsaw is a portal created by the Copernicus Science Centre, Warsaw City Hall and the Science Festival as a far-reaching tool providing information on scientific events in our city. The website www.naukowa.warszawa.pl provides information on activities of institutes, universities, faculties, science clubs, associations, foundations and other organisations participating in Warsaw's scientific life. It's also a site for presenting projects and seeking partners for their implementation. The portal was created as a direct result of its founders' involvement in the implementation of the Platform of Local Authorities and Communicators Engaged in Science (PLACES).

Vision of Warsaw's Vistula

We are an active member of the Local Support Group founded as part of the EU project "CityLogo: innovative place-brand management", implemented by the Warsaw Municipal Office. Our aim is to create a lasting model of partnership and communication between a wide group of institutions and organisations interested in developing the Warsaw section of the Vistula River and its embankments in order to bolster the city's image. Alongside Copernicus, the group includes the Regional Directorate of Environmental Protection, Municipal Transport Authority, Committee for Social Dialogue, Capital Tourism Office, National Stadium, Stołeczna Estrada, Regional Water Management Authority, Municipal Water and Sewage Authority, the Bosun of the Czerniakowski Port, the Subject:River initiative, the Praga District Port, and the Warsaw branch of the Association of Polish Architects.

International partners

We bring together people and organisations, build a society that believes in sustainable development through science, and maintain the highest level of science centres in Central Europe. We are passionate about formalising and strengthening ties with existing partners, and paving the way for building relationships with new ones. We are implementing one of EU's key goals of building dialogue between communities, scientists and decision-makers. We create networks with many institutions, research centres and associations; our organisation is built on the foundations of engagement and respectful relationships.

3rd Copernicus Science Centre Academy

Our training and internship project for Russian-speaking employees of science centres and museums was held for the third time between 29 May and 6 June. Over the course of the event, we shared our experiences and learned more about our guests' inspirations and achievements. We also conducted workshops on working with children through the Family Workshops formula, designing and producing exhibits and interactive exhibitions, and the entire process of planning and implementing programme activities, from drafting institutional goals to promoting them through PR campaigns. The third Academy was attended by 13 guests from Russia.

Partnerships with research centres

The **FabLab@School** concept was created at the Stanford Graduate School of Education by Prof. Paulo Blikstein. FabLabs are a growing network of educational digital fabrication labs that put cutting-edge technology for design and construction into the hands of middle- and high-school students. We entered into a partnership with Stanford in 2014, as the project inspired us to start similar workshops at Copernicus. Students and teachers will be able to implement their ideas using the latest digital technologies.

Study visits

Throughout the year, we welcomed representatives of institutions and groups interested in our experiences, from high-ranking politicians searching for new solutions on the systemic level to teams of teachers seeking inspiration for their day-to-day activities. By meeting hundreds of people every year, we are also able to look at ourselves through the eyes of our guests, and the events frequently serve as inspiration for our own new undertakings. We view Copernicus as a space for meetings, and we are proud to host representatives of institutions from around the globe.

Newsletter

Every month, we send out a Russian-language newsletter informing our partners of the latest news from Copernicus and European science centres and museums. We also seek to present the most interesting events organised by our partners abroad.

European projects

KiiCS (Knowledge Incubation in Innovation and Creation for Science) is a three-year programme financed by the European Commission and implemented by the European Network of Science Centres and Museums ECSITE.

More about the project on p. 57.

PLACES (Platform of Local Authorities and Communicators Engaged in Science) is a project created by a consortium of European organisations operating in the field of science communication, led by ECSITE and EUSEA. It is financed by the European Commission as part of the 7th Framework Programme. The aim of PLACES is to create and develop a code of best practice in science communication, and disseminate it to other European cities. The Copernicus Science Centre participates in the project through its partnership with the Warsaw Municipal Office and the Science Festival. More on the Scientific Warsaw portal resulting from this partnership on p. 74.

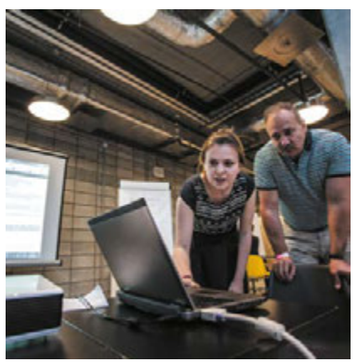
SYNENERGENE – Responsible Research and Innovation (RRI) in Synthetic Biology is a four-year project aiming to facilitate discussion on synthetic biology and disseminate knowledge on this branch of science. It is financed by the European Commission as part of the 7th Framework Programme. Copernicus will become an active participant in the project in September 2015. At the Biology laboratory, visitors will learn about methods used in synthetic biology, and the field's challenges and achievements. Workshop plans will be prepared together with the GENESIS Synthetic Biology Science Club at the University of Warsaw.

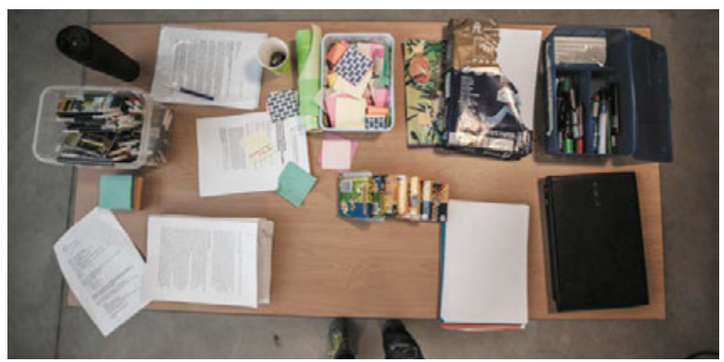
Young Explorer Clubs abroad

More on p. 62.

Science Picnics abroad

More on p. 44.





International Partners

The Copernicus Science Centre is a member of

ECSITE (European Network of Science Centres and Museums; Robert Firmhofer sits on the Executive Committee of the Board, while Joanna Kalinowska sits on the Annual Conference Programme Committee) and EUSEA (European Science Events Association)

Heavens of Copernicus planetarium is a member of

IPS (International Planetarium Society) and ILDA (International Laser Display Association)

Between 17 and 19 March, Mechelen in Belgium hosted the **7th Science Centre World Summit**. The event, held every three years at different venues around the globe, welcomed 443 participants from 58 countries. For the first time, guests included representatives of organisations and institutions other than science centres and museums: foundations, businesses, political groups and scientific establishments. The summit concluded with participants signing the Mechelen Declaration summarising a global plan of action. Leaders of the science centre community committed to concrete actions as part of the Summit's mission "Public engagement for a better world". **Robert Firmhofer**, representing Europe on the International Programme Committee of this important event, signed the declaration on behalf of the Copernicus Science Centre.

Delegations from Romania (24 January): inc. Ovidiu Dranga, Romanian Ambassador to Poland; Cristian Doicin, prime minister's advisor; Dante Stein from the Ministry of Research and Technological Development

15 May: inc. Ovidiu Dranga, Romanian Ambassador to Poland, and representatives of Romania's government and National Bank

20 May: inc. Dr. Sorin Oprescu, Mayor of Bucharest, and Ovidiu Dranga, Romanian Ambassador to Poland

Director General of the European Organization for Nuclear Research CERN, Prof. Rolf Dieter Hauer (8 February)

Representatives of the Diplomatic Collegium (29 May)

Delegation from Lithuania (27 June): Jaroslav Kaminski, Deputy Mayor of Vilnius, and municipal officials

Delegations from Croatia (1 July): representatives of Croatia's Ministry of Regional Development, Ministry of Economy, Ministry of Entrepreneurship and Crafts, and Ministry of Science, Education and Sports

3 July: representatives of Croatia's Ministry of Infrastructure and Development

Ukraine's Minister of Science and Education (26 August): Prof. Sergey Kvit

Israel's First Lady (29 October): Nechama Rivlin

Delegation from Israel (30 October): Dafne Lev, Director of the Department for Education, Culture and Sport, and Gila Kalderon, Director of Secondary Education

Delegation from China (14 November): directors of departments concerned with regional development and reform, and coordinators of the CETREGIO project

Delegation from Kosovo (20 November): representatives of Kosovo's Ministry of European Integration

Representatives of the Sejm Committee for Innovation and New Technologies (2 December)

Between 12 and 14 May, Poland hosted the official visit by Denmark's Crown Prince Frederik and Crown Princess Mary. The Royal couple arrived with a delegation of representatives of 66 Danish companies and trade associations with the aim of developing economic ties between Denmark and Poland.

The Copernicus Conference Centre held a conference as part of the visit; on the Polish side, speakers during the official trade meeting included President of Poland Bronisław Komorowski, Deputy Prime Minister and Minister of Economy Janusz Piechociński, and President of the Lewiatan Confederation of Private Employees Henryka Bochniarz, with the Danish side represented by HRH Crown Prince Frederik, Minister for Trade and Development Cooperation Mogens Jensen, and Deputy General Director of the Confederation of Danish Industry Thomas Bustrup.

Sponsors

Working closely with our sponsors is an important element of the Copernicus Science Centre's DNA. The partnerships bring together the worlds of business and scientific communication. Thanks to the companies supporting us financially, we are able to grow and expand into previously unchartered subject areas, and implement joint ventures which frequently go on to become permanent fixtures in our activities. Together we devise new methods of teaching, design elements of exhibitions and workshop programmes, and learn from one another how best to shape today's realities to meet the challenges of the future. As a result, both worlds become more complete and enriched with new experiences.

In 2014, our Strategic Partner was **Samsung Electronics Polska**, providing us with financial support and electronic equipment since our opening. Additionally, Samsung hosted workshops as part of the Masters of Coding programme: visitors to Copernicus had access to a workshop space where, together with Samsung, they learned the basics of coding.

Once again, our Supporting Partner is the energy company **RWE**, with whom we co-developed the Power Box project (more on p. 70). We also welcomed a new Supporting Partner: the mobile network operator **Polkomtel** which has been the patron of our Family Workshops since 2014, and who will introduce the latest LTE network technology to the Centre.

Polskie LNG and **BASF** sponsor our Physics and Chemistry laboratories, respectively; together we organise Chemistry and Physics Days, and develop activity programmes based on technologies used by the companies.

Polpharma – the patron of our exhibits focusing on health – hosts events at Copernicus concerning healthcare and disease prevention.

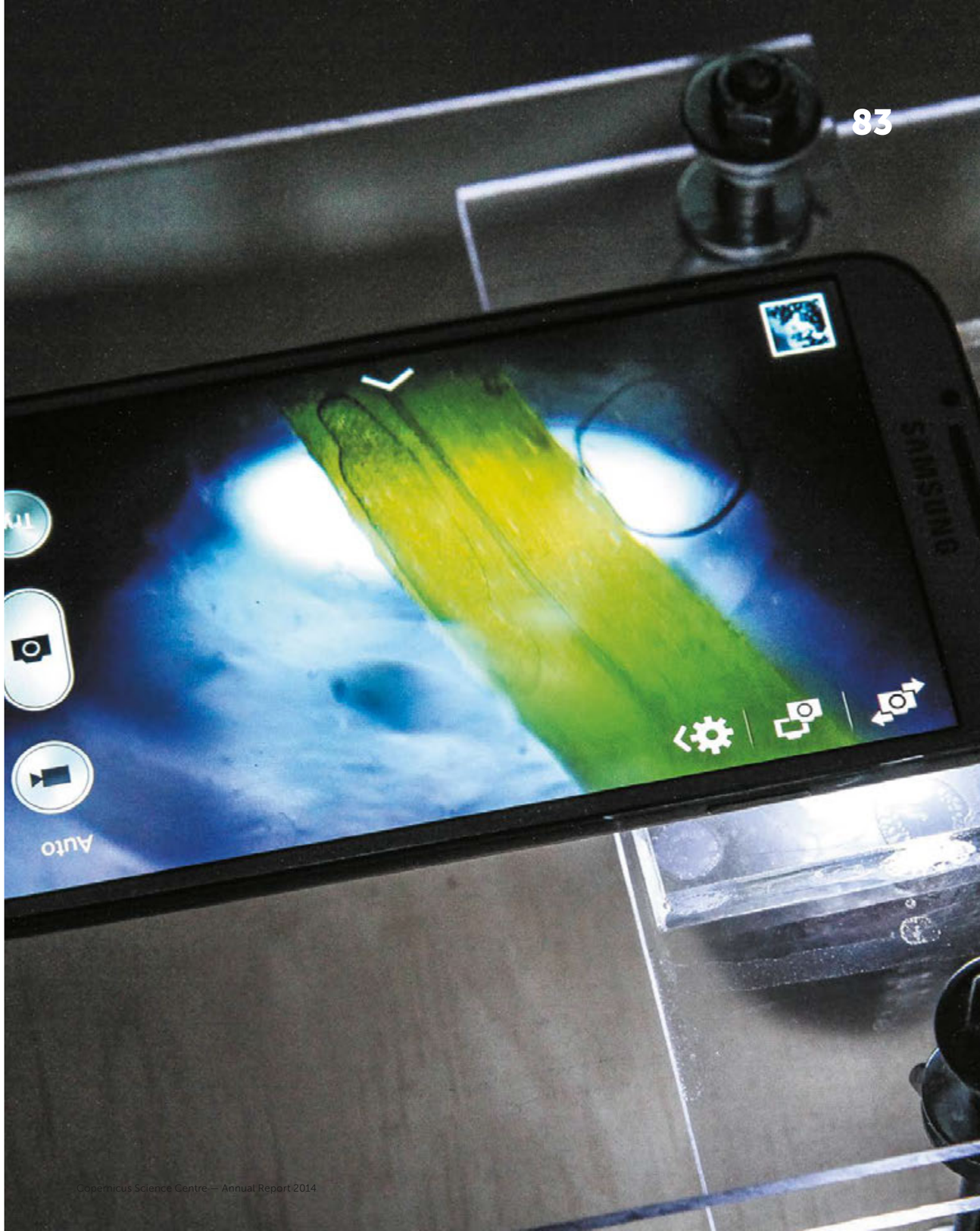
We also have partnerships with companies sponsoring individual exhibitions. The **IVONA Text-to-speech technology** supports the Electribalt electronic poet exhibit, while the software for the Chatbot was provided by **Fido:intelligence**.

The support from the insurance company **PZU** allowed us to refurbish the Drunk Driver exhibit, a driving simulator that allows visitors to safely experience the dangers of driving while under the influence of alcohol.

Businesses also support other projects implemented by the Copernicus Science Centre. **BMW** and **BASF** sponsored the FameLab competition, while the Science Picnic attracted **BASF, Dow Polska, iRobot, Samsung, Warbud, Toyota, Polish Security Printing Works,** and **Medtronic.** During the Przemiany Festival, we were joined by **WB Electronics**.

Sponsors and participants in the Friends of Copernicus programme in 2014:

Samsung Electronics Polska, RWE, Polkomtel, PKO BP, BASF, Polskie LNG, Polpharma, BMW, Warbud, Dow Polska, iRobot, Toyota, Polish Security Printing Works, Medtronic, and RS Components.



Events we have co-organised:

Makerland (17–19 March) was a conference during which participants learned more about the Internet of Things, 3D printing, robots, drones, Arduino, Raspberry Pi, automated houses, and many other state-of-the-art concepts. Special guests included experts working on projects such as Indiegogo, TechCrunch, Arduino and 3D hubs. Participants attended eight lectures and 21 workshops, and throughout the event they had unlimited access to a wide range of tools including 3D printers, drones, robotics kits, soldering benches and Arduino stations.

Warsaw Sustainability Jam (21–23 November) was the first time this global project was held in our city. The design-based creative workshops follow the problem-idea-presentation-testing-prototype formula. The Jams bring together experts from a wide range of fields, with participants working on specific projects following the main motto of all events held around the globe. The prototype stage involved participants improving them through cycles of iteration to ensure their usefulness for the end-user. Sustainability Jams are based on an innovative approach to designing and implementing solutions.

Think (in) visual communication was a conference held on 12 and 13 December, preceded by workshops running between 9 and 11 December. The focus of the event was the intellectual process accompanying the creation and processing of visual language, theoretical and experimental methods of solving communication problems using graphic design, and ways of shaping and training the thinking process during creative and design processes. The event was divided into four sections: user participation and influence on the design process, the limitations of our minds, visualisation of thought processes, and pitfalls in design thinking.

The aim of the conference **Towards a new concept of excellence in research?** (13–14 October) was to examine how the idea has evolved, and to strive to find ways of identifying and supporting outstanding research. Participants included representatives of European institutions providing finance for scientific research, scientists and science policy experts. The main organiser of the event was the Foundation for Polish Science.

In 2014 we held **92** events

with the participation of **18,203** people

Example events:

Round Table in Social Sciences on the initiative of Prof. Lena Kolarska-Bobińska, Minister of Science and Higher Education

21st Invention Exchange

The Finale Gala of the Zacznij.biz competition for best new business concepts before they are presented to potential investors with the aim of obtaining funds to develop and introduce new technologies

"Gazeta Bankowa" Technology Gala

Inaugural conference "Erasmus+: mobility, innovation, development"

Personal Democracy Forum

International conference "Warsaw 3T: Technology, Talent, Tolerance"

"List 500" Gala of top Polish business, and the "Orły Rzeczpospolitej" award ceremony

4th conference "Sector 3.0 technologies in non-governmental organisations"

"Cross Innovation" promoting innovation transfer in cities and regions across Europe

Finale gala of "Discover Europe"

Poland's summary of the international CENTRES project "Creativity and entrepreneurship in education"

14th Educational Forum for Small and Medium Enterprises

Meeting of the Management Committee of the EUROCITIES network

3rd Shale Science Conference

Conference "Information Environment 2014" organised by the Ministry of the Environment

Conference "10 years of the European Social Fund in Poland. Perspectives for the future" organised by the ESF Department of the Ministry of Infrastructure and Development

Gala of the Club of Enterprising Teachers "Impulse"

Non-Formal Education Congress

19,619 publications in the media

including:

14,728 online
2,526 on the radio
1,478 in the press
887 on TV

2,287,367 hits on the **Copernicus Science Centre website**

140,014 hits on the **Heavens of Copernicus planetarium website**

65,055 hits on the **Przemiany Festival website**

18,380 hits on the **FameLab competition website**

84,000 Facebook fans of the **Copernicus Science Centre**

13,500 Facebook fans of the **Heavens of Copernicus planetarium**

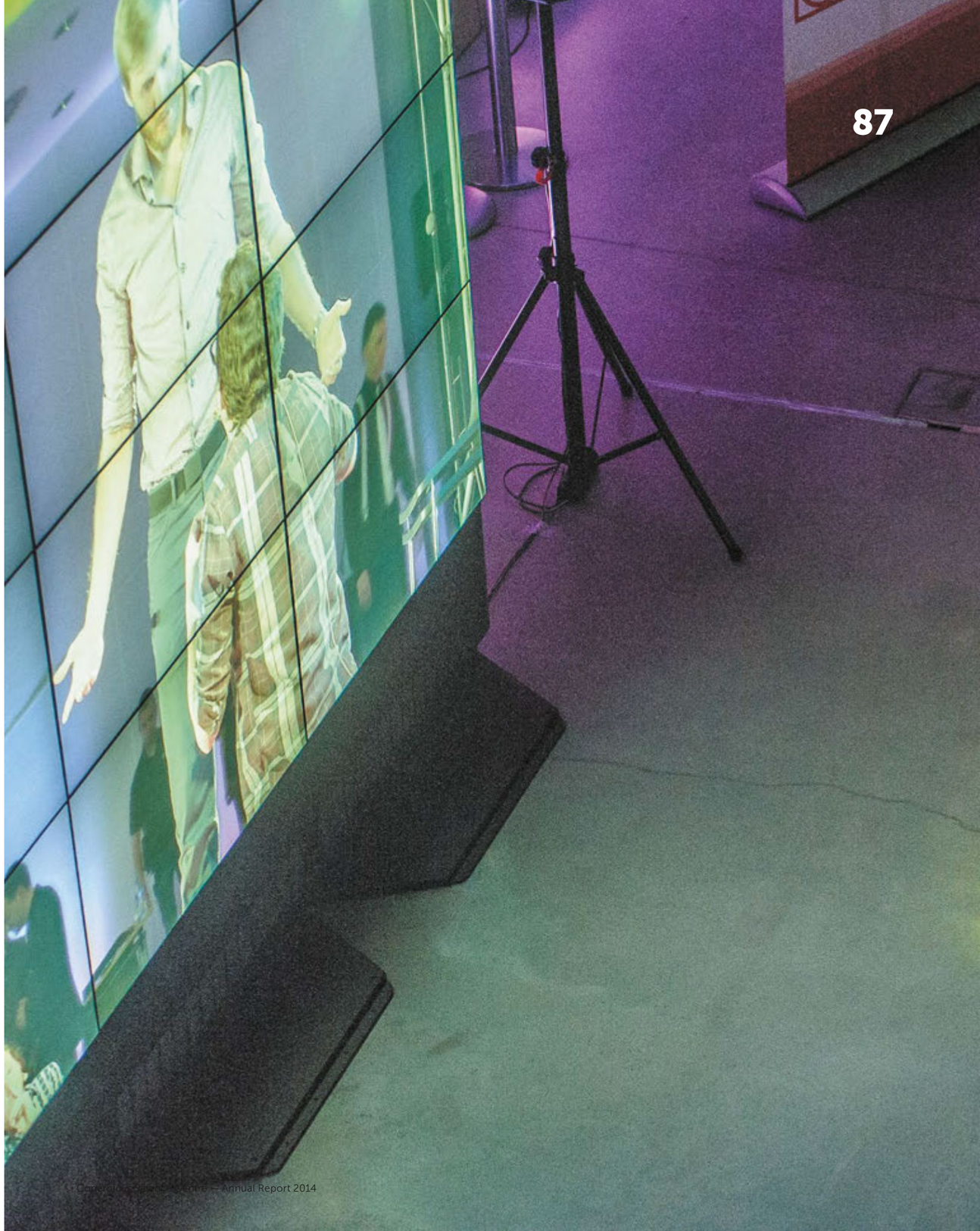
10,500 Facebook fans of the **Science Picnic**

7,000 Facebook fans of the **Przemiany Festival**

1,700 Facebook fans of the **FameLab competition**

900 followers of the **Copernicus Science Centre on Instagram**

Around **100** followers of the **Copernicus Science Centre on Pinterest**



Awards

The National Order of Merit (Officer Class) was presented to Robert Firmhofer, Director of the Copernicus Science Centre, by the French Ambassador to Poland Pierre Buhler. This Order of the State is awarded for services to France and its values. Copernicus received the honour for our partnership with the French Institute in Poland during the exhibition "Scent – An Invisible Code" in 2013.

Robert Firmhofer was also added to the **New Europe 100** list, indicating leaders in innovation in the Central and Eastern European region. The list has been drawn up by the Res Publica journal with the Visegrad Fund, Google, Financial Times, and a network of international institutions.

The **Superbrands Created in Poland 2014/15** title was awarded to the Copernicus Science Centre as one of the strongest brands in the Polish market. The international group Superbrands conducted a survey of over 2400 brands in 110 categories, assessing their recognition and acceptance.

Distinction was awarded by **the Ministry of Development and Infrastructure** to the Copernicus Science Centre as a model building constructed following spatial order principles.

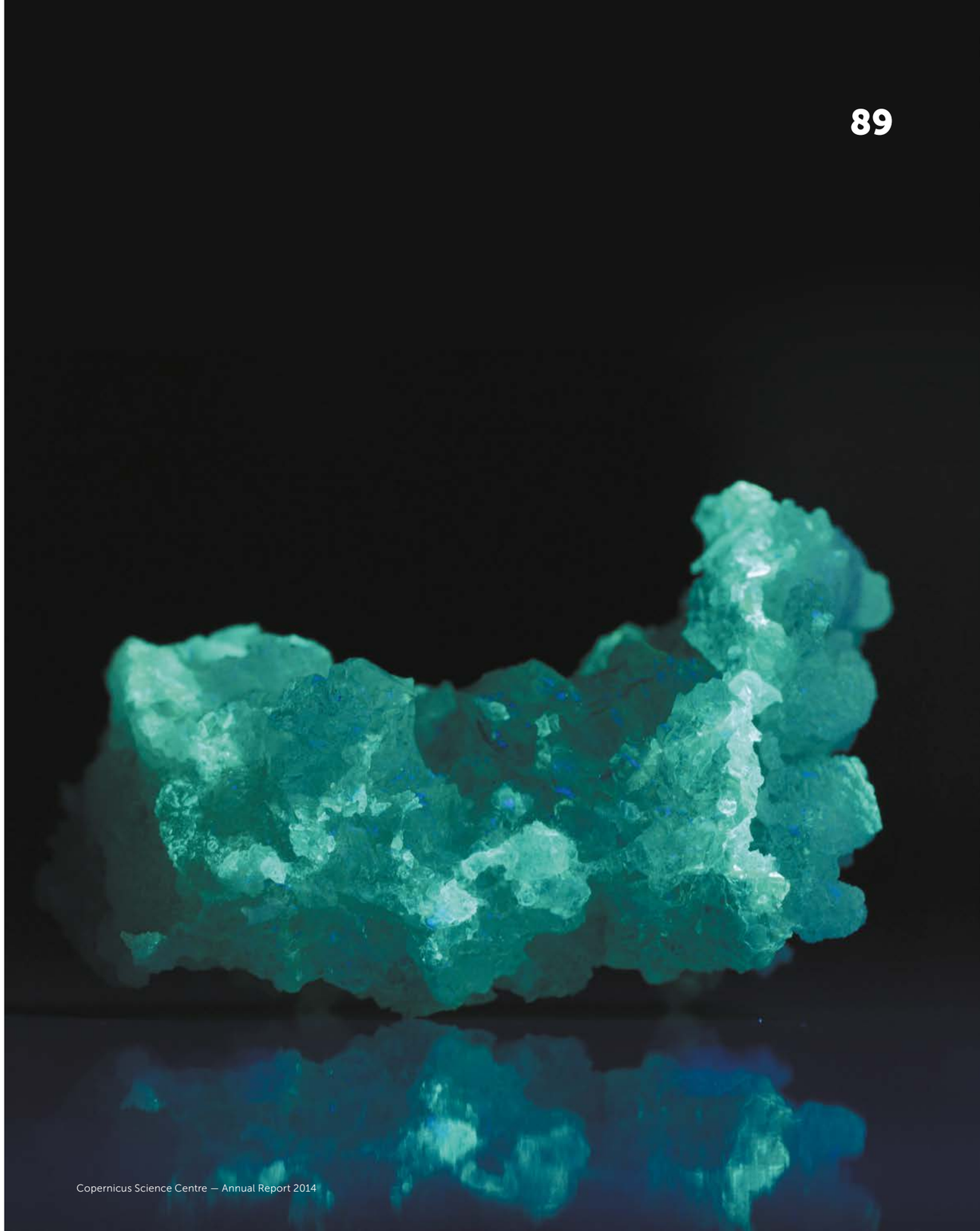
First prize in the audience vote and **Best Visual Award** for our film "Dream to Fly" awarded during the Macao International Fulldome Festival, accompanying the International Planetary Society (IPS 2014) conference in Beijing.

Gold Star for "Dream to Fly" awarded by the jury of the International Fulldome Festival in Gwacheon, Korea, organised by the National Science Museum in Gwacheon.

First prize in the "Planetarium" category for the laser display "Dark Side of the Moon" awarded in Las Vegas by the International Laser Display Association.

Prize in the Media Trends Innovation Award competition in the category "Innovative special campaigns and events" for "Exhibition on mass personalisation and 3D printing – Power to the People – as part of the Przemiany Festival 2013". The Copernicus Science Centre received the accolade jointly with OWL PR, SuperSuper and Bridge – co-authors of the project.

Nomination for the Słoneczniki 2014 prize in the "Nature" category for the Young Explorer Club programme.



In 2014, our Strategy Team (including the Management Board and selected department heads) updated the aims of our strategic plan, evaluated their implementation, and set out directions for our institution's development.

We commenced a series of internal seminars open to all members of staff. They were run by special guests from Poland and abroad who came along to share their knowledge and experiences with the Copernicus team.

We increased our employment from approx. 230 full-time slots in 2013 to 236 in 2014, and signed 237 annual contracts with "explainers" recruited during the first quarter. The team now includes 179 explainers who had already worked at Copernicus, plus 58 new recruits.

Management of the Copernicus Science Centre

Robert Firmhofer – Director

Jolanta Brzywczy – Deputy Director, Chief Accountant

Irena Cieślińska – Deputy Director

Przemysław Wielowiejski – Deputy Director

Programme Board

The Programme Board has an advisory role in overseeing that the statutory objectives and activity programme of the Copernicus Science Centre are met. The Board includes representatives of scientific, artistic and teaching circles in Poland, appointed for terms lasting six years.

Prof. **Łukasz Turski** – Chairman of the Board

Prof. **Aleksander Bursche** – Deputy Chairman

Prof. **Jerzy Axer**

Dr. **Konrad Bajer**

Irena Cieślińska

Prof. **Magdalena Fikus**

Prof. **Maciej Geller**

Dr. **Dariusz Jemielniak**

Prof. **Krzysztof Konarzewski**

Maria Mach

Prof. **Henryk Skarżyński**

Prof. **Tadeusz Skośkiewicz**

Hanna Wróblewska

We were devastated by the loss of two of our great Friends last year. We said final goodbyes to **Prof. Maciej Geller** and **Dr. Konrad Bajer** – eminent scientists, but more than anything great, selfless individuals who had a tremendous impact on our institution's identity and development.

Maciej Geller believed science to be the best way of overcoming what he perceived as growing aggression in public life. As he said few years ago, and later reiterated,

In science, critics of my views are my companions on the path towards finding the truth, rather than enemies whom I need to combat. This approach brings great achievements in science, but few successes in politics. Fundamentalists who choose the path of fighting are unlikely to reach significant accomplishments; this has been shown many times during 20th century history, while science has continued to flourish. We can and should debate, but this debate must be creative, not destructive.

This sentiment resonates in the values and mission of the Copernicus Science Centre.

The Copernicus Science Centre is a cultural institution organized by the Capital City of Warsaw, the Minister of Science and Higher Education, and the Minister of National Education.

Legal Basis

Agreement dated 1 Jun 2005 on establishing a joint cultural institution named Copernicus Science Centre, with annexes dated 21 Jun 2006 and 26 Jul 2010

Granted the status of a cultural institution on 1 Jun 2005, with amendments dated 21 Jun 2006 and 26 Jul 2010

The Polish Parliamentary Act of 25 Oct 1991 on organizing and implementing cultural activities

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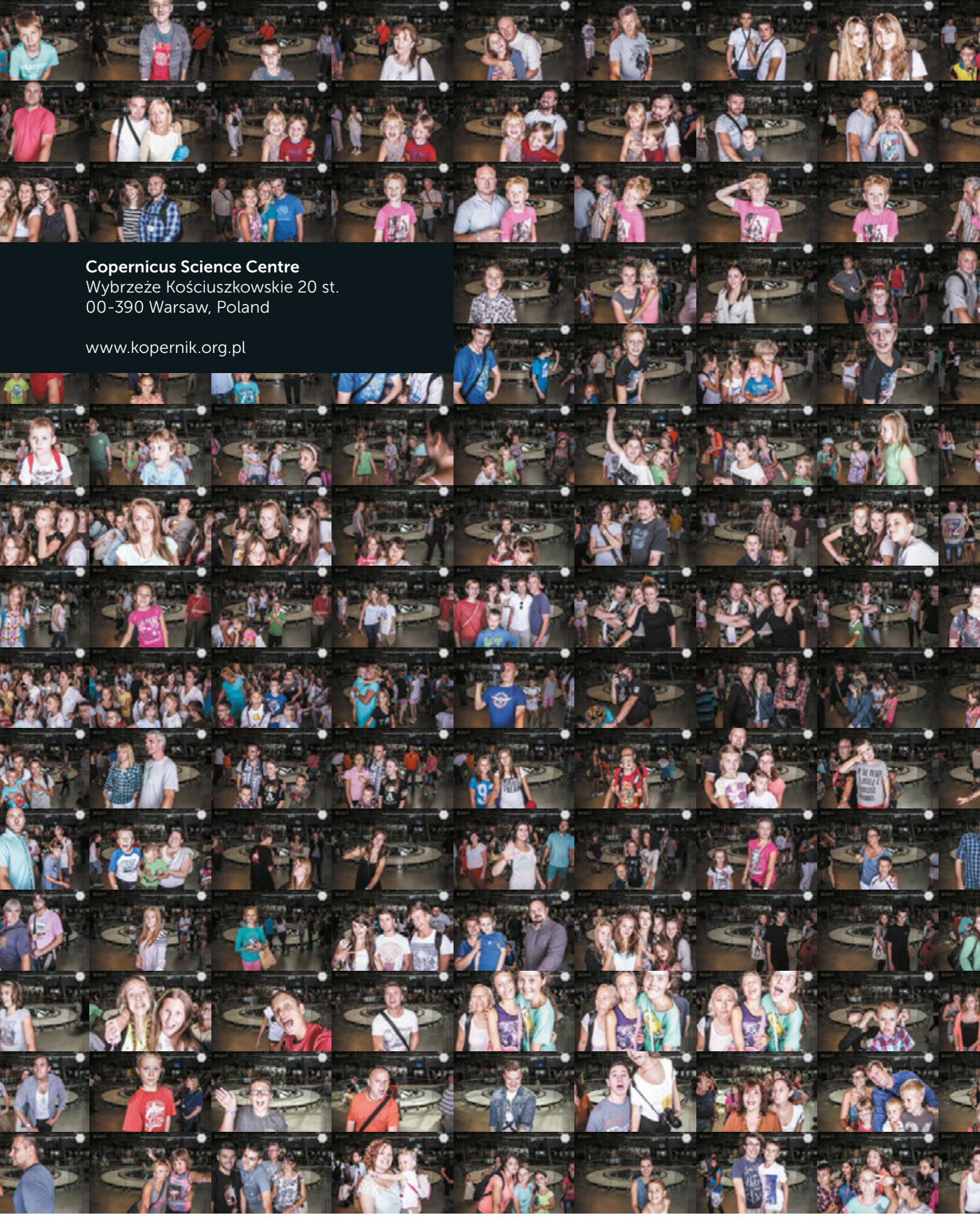
Strategic Partner



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