THE ECSITE MAGAZINE

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spokes, noun, plural of spoke
1. One of the rods or braces connecting the hub and rim of a wheel.
2. *Nautical* One of the handles projecting from the rim of a ship's steering wheel.

Raising VOICES
Andrea Bandelli

ecsite

Raising VOICES

A VOICES Focus Group in session at Copernicus Science Centre in Warsaw, Poland.

Photo: VOICES project

Cross-cultural themes: A VOICES Focus Group drawing taken from a session in the United Kingdom.

ANDREA BANDELLI
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Ushering in a new era for science centres and policy making

They've evolved over the past two decades from experimental niche activities to widespread initiatives slated to impact European policymaking. Ecsite's European Projects have now culminated with VOICES where science centres and museums are taking on the role of public opinion brokers in European policy. VOICES has spoken and the EU is listening.

A short history of progress

Science centres and museums have increasingly profiled themselves as forums where visitors can learn, discuss and even deliberate about matters related to science, technology and society. EU-funded projects are a big part of this evolution.

Ecsite members have been engaging at the policy level since the early 1990s with European Commission-funded projects such as Cipast, Meetings of Minds, Nanodialogue, Decide, Dotik, and others. The projects demonstrated that science centres and museums were ready to play a significant role as facilitators of public dialogue and deliberations on contemporary – and often controversial – scientific issues.

Ecsite's European Projects are also engines of innovation in the science engagement field because they illuminate new ways to engage visitors, reach new publics and create lasting relationships among institutions. Evolving and learning are two major objectives.

Inching closer to policy

Public opinion on science and technology should be "…heard and incorporated into decision-making processes." This resolution, part of the Cape Town Declaration signed at the Science Centre World Congress in 2011, is not only a goal – which Ecsite's members pursue through EU projects and in many other ways – but is also a responsibility that Europe's science centres are taking seriously.

Ecsite's EU projects were often missing an important component, however: Direct links to policy making processes. Projects focussed more on sewing outcomes into the fabric of museum life; making a concrete impact on policy was left to other parties, usually project funders, with little or no role for science centres and museums.

Science centres and museums are now plugging in to the policy process in a very real way. For example, the Polka project defined new policies for treating rare diseases using input from over 3,000 citizens – public input gathered in part by science centres – on genetic research, access to treatment and genetic testing.

Another project, PLACES, is a platform where over 60 European cities are defining local science communication policies and plans, with science centres as the moderator between research, citizens and policy.

Hearing VOICES

Enter VOICES, a ground breaking pilot project to formally involve citizens from all European countries in defining research and innovation priorities for the EU's new Horizon 2020 framework program about urban waste. This project, the first of its kind, was carried out in 27 countries and involved consultation of 1,000 citizens.

VOICES was designed as a pilot project to learn about a process which is set to become more and more en vogue in the future. And with the advent of VOICES, public discussions about science and technology are no longer confined within the walls of science centres but have implications for how science and technology are embedded in society.

"Science centres have a major role to play in facilitating multi-stakeholder meetings, where lay citizens convene together with other local players to integrate multiple perspectives in policy making," says Jacqueline Broerse, Director of the Athena institute at the VU University in Amsterdam, Netherlands – the institution responsible for designing the VOICES focus groups and analysing VOICES outcomes in conjunction with Ecsite.

Gilles Laroche, head of the Ethics and Gender unit at the European Commission, agrees. "It's absolutely crucial to communicate the results of VOICES to the member states and at regional level. The Commission has a key role to play, but we need the continued commitment of Ecsite to provide trustworthy spaces for meaningful

interactions with citizens," Laroche says."VOICES has demonstrated that science centres can play an important role as interfaces between science, policy and society due to their capacity to connect life and culture in the city, with regard to science."

Evaluation of the project shows that the public supports and is eager to engage in activities like VOICES. For example, 99 percent of participants were satisfied with the VOICES consultations and 98 percent felt they had the opportunity to say all, or most, of what they wanted to say. The vast majority of participants, 92 percent, felt consultations were aimed at the right people.

This overwhelming success also carries responsibility: 83 percent of those consulted in VOICES expect to be informed about project outcomes. Feedback about participation in policy making should be a two-way process, not only the final communication of the results. This is an area where science centres and museums are expected to play a major, strategic role.

Make way for citizen science

To continue on their trajectory as influencers of policy, some science centres will need to adjust their approach to communicating with the public; VOICES consultations were not occasions to showcase science centres' wealth of knowledge, but to tap into the expertise and ideas of citizens.

"The VOICES events made clear that science centres are real meeting places. But science centres often feel a need to 'teach something' – something they decide, and they tend to do it in a rather top-down way," says Elisabetta Tola, science journalist at Formicablu, and curator of the VOICES website.

Jacqueline Broerse agrees. "We had a few instances where the moderators of the events, staff of the science centres, were 'pushing' extra information in a didactic way, because they saw the event as an opportunity to educate the public," she recalls.

"In the [VOICES] event I attended, several people said 'I've learned a lot.' It was not about the 'official' knowledge that was given at the museum, but the event became a place to learn about what the other participants were bringing into the conversation," says Gilles Laroche. "This is a new role for museums, where you learn from others who have specific knowledge in their daily life, and who are willing to share it."

Becoming forums for public dialogue does not negate the traditional educational role for which science centres are known and loved all over the world. But it does mean adapting the skills and mind-sets of science museum staff so as to value visitors' knowledge – their experiences, opinions and ideas. The role of the science centre, then, is to enable dialogue between participants, equalizing the playing field so facilitators and citizens can bounce dialogue back and forth[1].

The next wave

VOICES' citizen consultations have gathered remarkably more information and exceeded the European Commission's original goals for the project.

VOICES represents the first time the Commission made a commitment to integrate citizen-inspired outcomes in its research and innovation policy agenda and institutional governance process. European citizens showed that they possess a great deal of knowledge, intuition and civic responsibility, from which community-based solutions and social innovation may most usefully emerge on challenging subjects such as urban waste and beyond.

"From the analysis of the results we are gaining insights about social sciences, about policy, about legal aspects, all kind of things that were not envisaged at the beginning of the project," says Gilles Laroche. "So how do we exploit that now?" he asks. "The experience with VOICES will be fundamental for promoting public engagement in future EU funded research and innovation projects. It has already had a clear impact in developing the upcoming 2014-2015 calls for research proposals in relation to urban waste. We can do much more, however, and this is what we have in store for next year."

The best way to exploit VOICES outcomes may be to bolster in-house capacities of science centres to process and analyse insights gathered through citizen consultation. Professional development in theoretical and analytical skills would allow science centres to be valuable – and autonomous – interpreters of knowledge gathered from citizens. (A Pre-Conference Workshop at this year's Ecsite Annual Conference in The Hague, Netherlands, will address some of the training issues identified by VOICES. – Ed.)

This professional training would no doubt contribute to the next wave of Europe-wide policy collaborations by reducing project costs and having more impact at the science centre's local level.

But this is already happening.

"I learned that Ciência Viva in Portugal and Parque de las Ciencias in Spain are both using the materials developed for VOICES to gain new skills and organize local focus groups with citizens on other topics. This is precisely the kind of 'spin-offs' that are needed to build local capacity," says Jacqueline Broerse.

VOICES' next wave is apparently well under way. ¶

Views, Opinions and Ideas of Citizens in Europe on Science (VOICES) is a yearlong, Europe-wide citizen consultation exploring the concept of waste as a resource. The results are being used to shape Horizon 2020 research priorities with regard to urban waste management. voicesforinnovation.eu

VOICES in numbers

- 1.270.000 words translated
- 1.000 European citizens
- 557 EU municipalities
- 350 ideas
- 300 hours of consultation
- 100 focus groups
- 33 locations
- 27 EU countries
- 22 external experts
- 8 research directions

1 One example of how this can be done in a structured way is described in the article "Technology of imagination: a card-based public engagement method for debating emerging technologies" by U. Felt et al. (2013). The research group at the University of Vienna used a modified version of the "PlayDecide" format as a public engagement exercise and a qualitative research tool to understand how citizens develop and negotiate their opinions on emerging technologies, moving between individual and collective positions.

with the advent of VOICES, public discussions about science and technology are no longer confined within the walls of science centres but have implications for how science and technology are embedded in society.

www.voicesforinnovation.eu

MARZIA MAZZONETTO
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VOICES aligns with EU strategy: Eurobarometer

The greatly-anticipated final outcomes of VOICES were released on November 15 2013. Twenty-seven country reports and one overall EU report present VOICES' key findings, showing for the first time on a truly European scale how citizens' opinions can be systematically incorporated into EU research policy.

In an interesting turn, the European Commission released the results of its latest high-profile Eurobarometer survey the day before the VOICES reports were launched. The poll shows that the majority of European citizens feel research and innovation should incorporate public dialogue, but that citizens do not feel adequately informed about the science and technology topics of the day. The European Commission encouragingly cites VOICES as a key part of its strategy to better engage citizens with research.

Here's a peek at some of the main findings from the VOICES reports:

1. **VOICES validates the EU's current priorities of research and policies on urban waste**
   Citizens want:
   - less packaging, and more efficient packaging materials. They want to see 100% biodegradable packaging, and plastics that can be fully recycled without loss of quality.
   - products which are easier to reuse and recycle.
   - manufacturers to be regulated more heavily, taking responsibility for the lifespan and recycling of their products, and ending planned obsolescence.
   - more recycling points are needed at convenient locations.
   - incineration plants to be used as much as possible to produce heat and energy.
2. **VOICES also proposes new ways to strengthen current research**
   - European citizens feel convenience in the household is crucial. This is a part of waste management often neglected by research. There is a clear need for devices to facilitate sorting and compacting in the home ("smart bins"), or technology which allows waste to be used as a resource in the household.
   - Citizens want to feel the benefit of waste separation. This can be done by making incentives, deposit systems and reward schemes more widespread.
   - Education and communication are crucial. Citizens are largely unaware of what happens to their waste, and would feel more engaged in the process if knowledge was more widespread.
   - Technology can be a motivation to recycle in itself. Citizens feel that systems using chips, electronic tags and apps can help to empower people in the recycling process.

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GET THE FULL VOICES REPORTS AT: www.voicesforinnovation.eu

MAARTEN OKKERSEN
HEAD OF COMMUNICATIONS, MUSEON,
THE HAGUE, NETHERLANDS

Photo: Guggenheim Museum

Design is the method of putting form and content together.
Design, just as art, has multiple definitions; there is no single definition.
Design can be art.
Design can be aesthetics.
Design is so simple, that's why it is so complicated.

— PAUL RAND

The Guggenheim Museum in Bilbao, Spain, designed by Canadian-American architect Frank Gehry, is the building most often cited by architecture experts as the most significant work completed since 1980 in the 2010 World Architecture Survey.

Design, broadly speaking

We hope this series will offer information and inspiration that will help science centres, museums and their visitors to develop innovative ways to understand technology and to use it sensibly and sustainably.

The *Spokes* Design & Technology Series is a selection of upcoming articles about contemporary designers and their designs. The series will concentrate particularly on developments relevant to museums and science centres. Of course, design is a broad term. In recent years, it has become an overworked buzz word and lost much of its true meaning. Products are often labelled 'design' to make them sound more interesting and justify inflated prices: we stay at a 'design' hotel furnished by Phillip Starck; we sit on a 'design' chair by Jasper Morrison, and our 'designer' camera is styled by Paul Smith. Design has too often become superficial, elitist, conventional and – most of all – politically correct.

By contrast, Bauhaus designers like Walter Gropius or Charles and Ray Eames were idealists who aimed to use modern materials and new production techniques to produce aesthetic and affordable domestic items for ordinary people. In the 1980s, Dieter Rams, Braun's chief designer, formulated ten principles of good design that are still valuable today. Good design, he said, is innovative… makes a product useful… is aesthetic… helps a product to be understood… is unobtrusive… is honest… is durable… is thorough down to the last detail… is concerned with the environment… and is as little design as possible.

The *Spokes* Design & Technology Series will look for what's hot and what's not in design and technology with a special focus on sustainable design. What, for example, are the new trends in museum architecture? We have seen how an innovative, high-profile design like Frank Gehry's Guggenheim Museum in Bilbao (Spain) can trigger the creative transformation of a city and even boost the economy of an entire region. MUSE, designed by Renzo Piano, has recently opened in Trento (Italy), while Techmania, housed in an old Skoda car plant in Pilsen (Czech Republic), has undergone a complete make-over. We are interested in their experiences and curious to hear what challenges they faced in the course of the design and construction process.

The series will also investigate current trends in the field of exhibition design, where ambient technology and the playful approach of the computer games industry are now being used to complement authentic objects and ensure that visitors' interaction with exhibits and with each other is increasingly natural and intuitive. 'Experience design', first defined in Gilmore and Pine's book *The Experience Economy*, has become an important facet of the management of science centres and museums. These days, visitors expect museums to offer them the kind of complete experience they get at Disney World. But how do you plan that experience, where does the visitor's journey begin and how can we control it? Are Living Labs a good way to give added depth to the experience?

The value, and especially the legitimization of design will be, in the future, measured more in terms of how it can enable us to survive… on this planet.

— DIETER RAMS

The current generation of designers has added a number of new criteria to Dieter Ram's list – principles like social commitment, accessibility and co-creation. These young designers have grown up with computers, work online and – unlike Rams – are no longer reliant on big business or mass production for the manufacture and distribution of their products. A good example of this independence is the online campaign for Phonebloks, a simple and idealistic concept for a new kind of more durable mobile phone. The campaign has been prompted by the realization that millions of mobile phones are discarded every year, even though most of them have only one faulty or obsolete component; the rest works fine. The one simple reason for all this waste is that mobile phones are not designed to be repaired or upgraded. The new, durable phone is to be made up of separate components that can be 'clicked' together. Each component will have its own function, such as Bluetooth, Wi-Fi, battery or display. And each will be easy to replace with a new one whenever necessary. Moreover, by choosing individual components, users will be able to customize their phones to meet their personal needs.

The support for the Phonebloks campaign has been stunning. The YouTube video alone has generated over 16.2 million views in less than two months. The campaign has attracted over 9,705,540 supporters with a social reach of 378,987,875 people. Thanks to this massive support, the campaigners have been able to approach some of the biggest companies in the world and Motorola has agreed to become their development partner. As this example shows, young designers have a do-it-yourself (DIY) mentality and are driven by the same sense of social mission as Eames. They are not in the business of superficial product prettification. They produce their pioneering designs online, via crowd funding, or present them at events like this year's Dutch Design Week in Eindhoven, where this year's theme was Now Future. According to the press release, this "refers to the economic crisis, flirts with the rebellious spirit of punk in the 'no future' era of the 1980s and simultaneously demonstrates a constructive approach and commitment. 'Now future' is a call to everyone to roll up their sleeves, make a positive statement in times of doom and gloom, and emphasize the power and importance of contemporary design."

Most people make the mistake of thinking design is what it looks like. People think it's this veneer – that the designers are handed this box and told, "Make it look good!" That's not what we think design is. It's not just what it looks like and feels like. Design is how it works.

— STEVE JOBS

If I'd asked people what they wanted, they would have said a faster horse.

— HENRY FORD

Interesting and unexpected designs are also showcased at GameCity, an annual festival held in Nottingham (UK). GameCity projects aim to contextualise videogames as accessible, important, cultural, visionary and enduring pieces of work made by creative designers with diverse skills, ambitions and imaginations. They want as many people as possible to be able to join in, play, learn, and have fun in the process. This is the place to see exciting games with refreshingly different story lines and a complete absence of soldiers, guns and bloodshed. One such game is Recharge, developed by American pop group Linkin Park. Recharge is located in a not-too-distant future world where humans have depleted all natural resources on the planet. The few energy stores remaining have been seized by machines and an elite minority. Players battle their captors and recharge the world with clean, sustainable energy.

Typography and graphic design are traditional disciplines within the general design field, dating right back to the invention of the printing press. But over recent decades the digitization of printing and developments in the field of web design have revolutionised the graphics industry. Recent developments are interesting particularly for the influence of advertising campaigns in the worlds of fashion and popular music. The result is a new visual culture in which the distinction between "highbrow" and "lowbrow" culture has vanished. We need to consider how we can use this postmodern visual idiom both in the development of visuals and in advertising our science centres and museums.

What works good is better than what looks good, because what works good lasts.

— RAY EAMES

A designer is a planner with an aesthetic sense.

— BRUNO MUNARI

A designer is an emerging synthesis of artist, inventor, mechanic, objective economist and evolutionary strategist.

— BUKMINSTER FULLER

Until recently, posters, flyers and advertisements in the print media were the key components of our publicity campaigns. Now, the majority of visitors to museums and science centres plan their excursions and visits on the basis of information obtained via their iPads. Specific web design and smart technology can help us develop online communication and build better websites. Google Analytics enables us to trace the exact behaviour of our online visitors but how can we assess the resulting data and improve our online communications and e-marketing through smart interaction design? What are the do's and dont's of effective web design?

Needless to say, the new Design & Technology Series won't be about superficial hypes or the latest short-lived gadgetry. It will seek to identify reliable technology that we can use in our displays and that will work for our visitors. We hope this series will offer information and inspiration that will help science centres, museums and their visitors to develop innovative ways to understand technology and to use it sensibly and sustainably. ¶

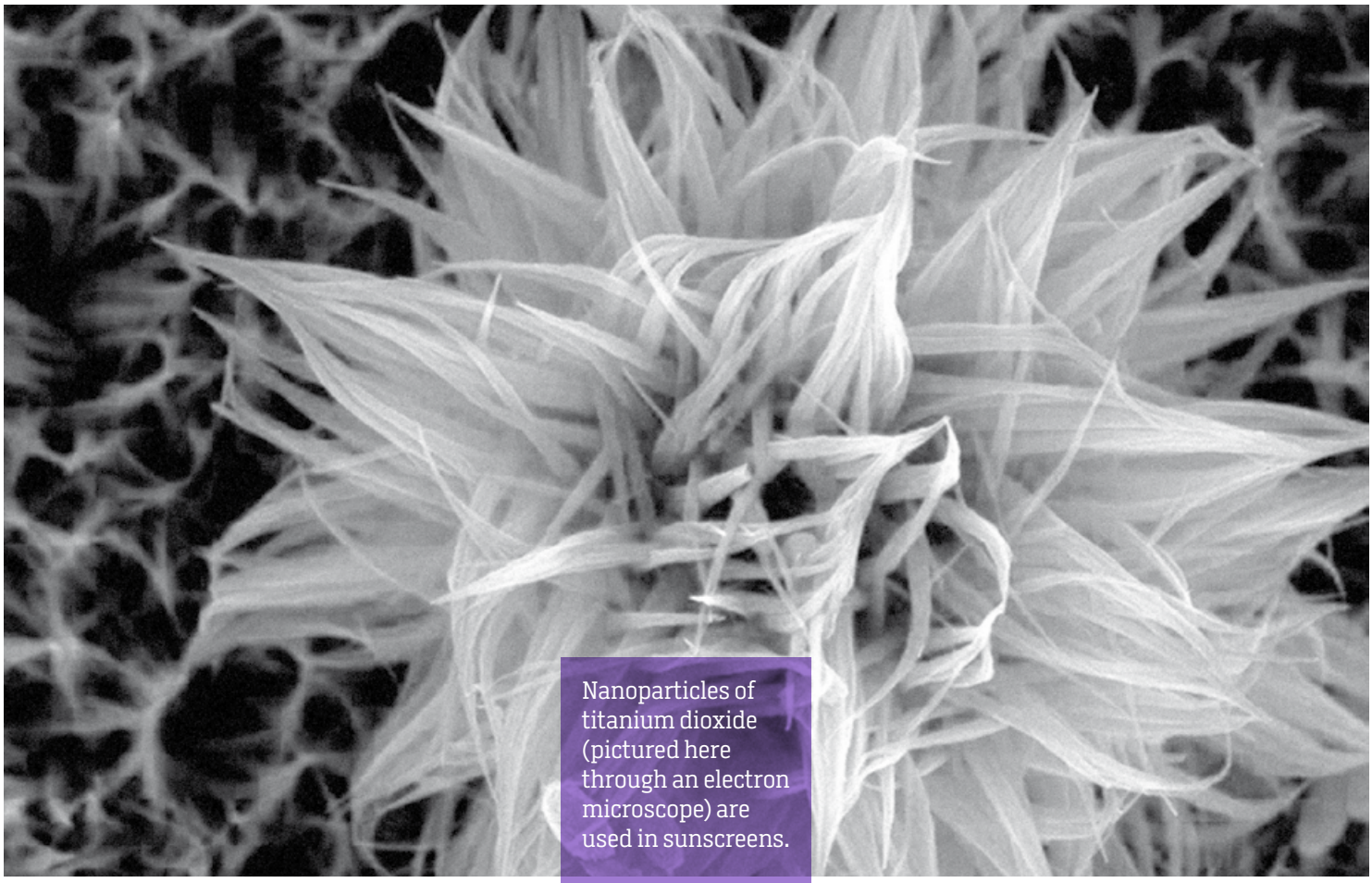
Phonebloks:
Independence, customization, durability and conservation – the next generation in mobile phone design?

A logo doesn't sell, it identifies. A logo derives its meaning from the quality of the thing it symbolizes, not the other way around. A logo is less important than the product it signifies; what it means is more important than what it looks like.

— PAUL RAND

Practice safe design:
Use a concept.

- PETRULA VRONTIKIS



Nanoparticles of titanium dioxide (pictured here through an electron microscope) are used in sunscreens.

Why is nanotechnology dividing public opinion?

Originally appeared 11 October 2013 at blog.britishcouncil.org, re-published with permission from the author.

BY
JON TURNEY
SCIENCE JOURNALIST, UNITED KINGDOM

Nanotechnology is said to improve several aspects of our lives, e.g., the shelf-life of food or the quality of sunscreens, but its minute scale challenges the imagination and raises public concerns. Dr Jon Turney participated in a recent British Council-supported debate within the nanOpinion project. Here, he explains the controversy surrounding nanotechnology.

Since Galileo first looked at the heavens through a telescope, we have got used to the idea that science investigates things beyond our normal senses. The far universe, the subatomic world, the slow drift of continents and the fastest particle interactions are all accessible with the right instruments. But we still don't know how many things work in these strange realms.

What is nanotechnology?

Nanotechnologies operate on scales that challenge the imagination. A nanometre is a billionth of a metre, about half the diameter of the DNA double helix. Defining a whole set of technologies by the fact that they are really, really, small also means the term covers a vast range of ideas, processes, and products.

When we talk about nanotechnology, you might think about things already on the market, like sunscreens, that use nanoparticles of titanium dioxide. The term might also call to mind ideas in development, like improved materials for solar panels or nanocapsules to deliver drugs to cancer cells. Or you might recall a host of scenarios – some from science fiction stories, some from non-fiction policy reports – about nanobots in the bloodstream, neural hook-ups for brain-to-brain communication, or machines for nano-assembly fabricating products quickly and cheaply.

What are the most common uses of nanotechnology?

One way to cut through this tangle of ideas is to observe that nanotechnology is most often used to fashion new materials, rather than in ultra-miniature devices. The 'nano' prefix means that the composition of materials is controlled on the atomic scale, or close to it. That in turn means the properties of what you are making can be fine-tuned.

For example, the micro particles of titanium dioxide in paint, and older sunscreens, are white. Nano particles, which still block UV rays, appear transparent. So nanotechnology can stop your skin from getting a white cast when you rub on sun protection factor 15 sunscreen.

What concerns exist?

Improved control over materials does not just mean better products. As with any new technology, there are concerns about unknown effects – and perhaps some extra ones, simply because nanotechnologies are so incredibly small.

This is not just because they seem insidious due to their invisibility. The properties of materials are influenced by different effects at very small scales, where quantum mechanical laws trump classical physics. And biological systems, in particular, may respond to nanomaterials in ways we don't like.

How Europe is investing in this new technology

The European Commission is thinking hard about regulation of nanotechnology, and has been running lots of public engagement projects to discover what people think about the prospects for nanofutures, and what their concerns may be. They've made large investments in nanotech research and development, with a view to new products which may boost Europe's economies in coming decades.

The nanOpinion project, in which the British Council is a partner, has been running for 18 months now, and is trying to fathom public opinion across Europe. Reaching lots of different people, many of whom haven't thought about this stuff before, calls for a mixture of methods, from media coverage to a website (nanopinion.eu), along with public monitoring stations and discussion events.

What's public opinion like?

A round-table on food production held at The Guardian's London offices on 9 October, for example, heard speculation about new flavours and textures in foods from nano-processed ingredients. The attendees also discussed nanocoatings to improve operation of manufacturing lines and prevent microbes getting a foothold in the machinery, and improved packaging for the finished products to improve shelf-life and alert consumers to spoilage.

At the same time, there were concerns about possible hazards from new products, especially when nanomaterials mean nanoparticles. Although people have probably been exposed to natural nanoparticles throughout evolution, eating them may be another matter altogether. Improving emulsification – when watery and oily liquids mix – so that low-fat margarine, for example, has a healthier composition, may be one simple improvement. But introducing completely new nanomaterials into packaging or even into food itself, invites more caution.

How we're gathering public opinion

How people feel about the gradual introduction of nanotechnologies like this into everyday use will be part of the final report from nanOpinion. Discussions will draw on repeated polling and responses gathered at live monitoring stations, which have been set up throughout Europe. One such station was organised today at the Cheltenham Literature Festival, enticing festival-goers to handle nanotech products and give their views on what our nanotech future could hold. It is a small part of a long process, but we hope it helps people begin to understand what developing technologies on these invisibly small scales might mean. ¶

nanOpinion monitors public opinion on nanotechnologies using new formats of interaction, consultation and dialogue with a special focus on hard-to-reach audiences. Ecsite coordinates the outreach part of the project which connects with citizens on the street.

nanOpinion numbers

- 17 partners from 11 countries
- 8 Ecsite members are involved
- Over 4000 questionnaires already filled in by participants from 30 different countries
- More than 50 live events
- Web portal, media supplements, educational resources

Final results from the nanOpinion project will be published in October 2014 and preliminary findings are now available on the project's website.

www.nanopinion.eu

07

05 Finding out if bioeconomy can save the world. Photo: RTD Services
06 Dangerous beauty on show in Barcelona. Photo: Museu Blau
07 A famous mouse in the house at Odysseum
10 A gentle introduction to the topic of radioactivity at Universcience. © A.Robin/EPPDCSI – All rights reserved

05

10

HAPPENINGS

EXHIBITIONS

01 Wildlife Photographer of the Year 2013 exhibition
Now in its 49th year, the Wildlife Photographer of the Year competition, owned by the Natural History Museum London and BBC Worldwide, showcases nature in all its splendor. Life Science Centre, November 2013 - March 2014. *www.life.org.uk/*
Newcastle, UK

02 SPACE – Exhibition: Space in all its facets – from the fantasy musings of the Baroque age to the ambivalent development of space travel in the 20th century and the visionary ideas of the present –will be on display at Technisches Museum Wien, Vienna, Austria, 25 October 2013 – 29 June 2014. *www.technischesmuseum.at*
Vienna, Austria

03 Scents – the invisible art is the first exhibition about fragrances in Poland and is co-organised by Goethe-Institut, Institut Français in Poland and Copernicus Science Centre. Copernicus Science Centre, 21 November 2013 - 10 January 2014 *kopernik.org.pl/en/*
Warsaw, Poland

04 Is it possible? (Ist das möglich?) is an interactive exhibition about industrial materials such as paper, textile and metal. Experiments address the question: Is it possible? Visitors test their new knowledge in a quiz show. LVR-Industriemuseum Engelskirchen, 2 April - 26 October 2014 *industriemuseum.lvr.de*
Oberhausen, Germany

05 Mission Possible - Will Bioeconomy save the world? is a hands-on exhibition with touch-screens, exciting experiments and interactive games all about bioeconomy Science Center Satrosphere, 30 November 2013 – April 2014. *http://bioprom-net.eu/*
Aberdeen, UK

06 Enverinats (Poisoned) gives visitors a close-up view of nature's venomous creatures, with 50 live animals including tarantulas, frogs and snakes, as well as a considerable number of plants, mushrooms and minerals. Natural History Museum of Barcelona, December 2013 – February 2015. *http://w110.bcn.cat/portal/site/MuseuDeCiencies?lang=en_GB*
Barcelona, Spain

07 "Museum mit der Maus" (Museum with the Mouse) has massively boosted visitor numbers since its introduction. The mouse in question is one of Germany's most popular cartoon characters, the mascot of a very popular and highly acclaimed children's edutainment series on German television. The exhibition offers a wide range of hands-on experiments and other interactive attractions for preschool and primary school children. Odysseum, *www.odysseum.de*
Cologne, Germany

08 Escher's Universe is an audiovisual full dome program in the style of M.C. Escher – a versatile Dutch artist – using multimedia technology for digital planetariums. Take a ride through a very particular universe in which regular polyhedra, nature's crystals and relativity bring new dimension to Escher's vision. Parque de las Ciencias, *parqueciencias.com/parqueciencias/index.html*
Granada, Spain

09 Voice: The exhibition that tells all
Play with your voice, test it, work it, adjust it... and compare it with other voices around the world. Our voice carries our words and communicates our emotions. Discover here the many facets of your voice by taking part in listening games and fun experiments – test, record and listen to your voice and then modify and play with it and compare it to others. Universcience, 10 December 2013 to 24 August 2014 *universcience.fr*
Paris, France

06

10 Radioactivity: from Homer to Oppenheimer
Characters such as the Hulk, Homer or Spiderman make radioactivity a fascinating topic! With history, techniques, atoms, medical use and even amusing anecdotes, all the aspects of this phenomenon are presented in a simple and fun way. Universcience, 3 December 2013 to 8 June 2014, *universcience.fr*
Paris, France

03

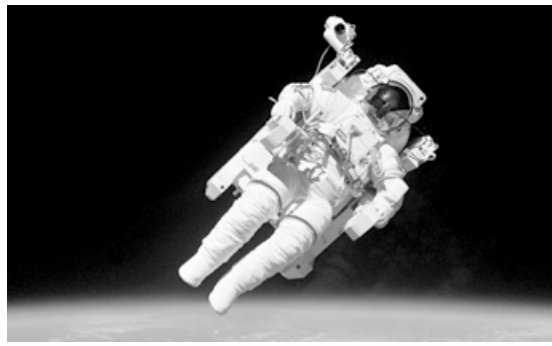
EXHIBITIONS

02 Visitors will fly high at Science Museum Vienna. Photo: NASA

03 Polish poster for Scents exhibition, Copernicus Science Centre

08 Art and science come together in fulldome format in Granada. Photo: Parque de las Ciencias

08



02

HAPPENINGS

EVENTS

9-13 December 2013
European Forest Week takes place in parallel to Metsä 2013 where sustainable uses of forests is explored at the science centre and in Metsähallitus´s timber structured house. Pilke Science Centre. *sciencecentre-pilke.fi*
Rovaniemi, Finland

10-14 February 2014
'International Conference and Intensive Seminar on 'Strategic Transformations: Museums in 21st Century'. In view of this rapid transformation in museums across the world and the challenges faced by museums, a conference to share best approaches and practices will help in developing strategies and framework for transformation of museums of all kinds. Get the conference brochure and sign-up form online: *http://ncsm.gov.in/Strategic-Transformations.aspx*
New Delhi and Kolkata, India

10-12 March 2014
PLACES of Scientific Culture. Over 40 Ecsite members are part of the PLACES project – a four-year FP-7 initiative seeking to define and develop the concept of the European City of Scientific Culture. Partake in the final PLACES conference for an engaging experience.
Does your local authority support scientific culture in your city? Ask them to sign the PLACES Declaration, available online.
For more information: *openplaces.eu/conference and info@openplaces.eu*
Bremen, Germany

17-19 March 2014
Science Centre World Summit, . Technopolis®, the Flemish Science Centre (in cooperation with the Museum of Natural Sciences in Brussels) is highly committed and very busy preparing an unforgettable Summit for you. Register before 27 December 2013 to nab early bird rates. *scws2014.org*
Mechelen/Brussels, Belgium

10 April 2014
Fame Lab Regional Heat is a UK-based science communication competition which is now seeking new voices in science and engineering across the world. The Netherlands heat is hosted by Science LinX, the University of Groningen science center. *sciencelinx@rug.nl*
Groningen, Netherlands

5-8 May 2014
International Public Communication of Science and Technology (PCST) Conference. The International Public Communication of Science and Technology (PCST) Conference is coming to Latin America for the first time in 2014. Previous conferences have been located in every other continent around the world. PCST 2014's main theme is "Science communication for social inclusion and political engagement". *www.pcst-2014.org*
Salvador, Brazil

22-24 May 2014
25th Ecsite Annual Conference: People, Planet, Peace. Seventy-five engaging sessions have been chosen and the Ecsite Business Bistro booths are open for booking. Get ready for the 25th Anniversary video promos coming in December. *ecsite.eu/annual_conference*
The Hague, Netherlands

21-26 June 2014
Euroscience Open Forum: Science Building Bridges.
ESOF 2014 Copenhagen is designed as an open platform for debating science and as a showcase for European and global research at all levels. ESOF 2014 will be a unique opportunity for leading scientists, young researchers, students, entrepreneurs, policymakers, journalists and the general public to discuss new discoveries and debate the direction that research is taking in all the sciences. *http://esof2014.org/*
Copenhagen, Denmark

RESOURCES

REACH OUT: Improving, science, technology, engineering and mathematics education in Europe
Ecsite's European Project, Disseminating Educational Science, Innovation and Research in Europe (DESIRE), has conducted much research to highlight best practices and new models of dissemination. The result is the new REACH OUT toolkit, available at *www.ecsite.eu/activities_and_resources/resources.*
Prefer a hard copy? Contact *dlaval@ecsite.eu.*

Gender & Science Networking Database
Developed by the Gender Equality Unit of the University of La Laguna, the database facilitates networking among entities committed to gender equality inside and outside universities. Access detailed information of 154 entities committed to gender equality in different global regions including Africa, Europe, Latin America and the Caribbean, and North America. *igualdad.ull.es/english_database_intro.html*

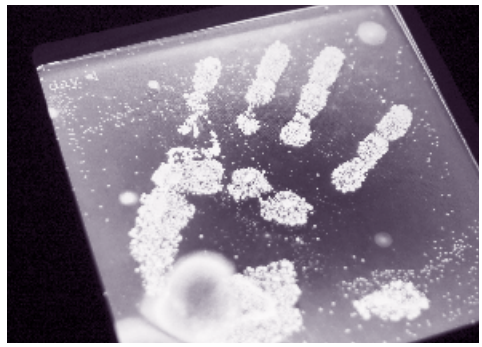
Virtual Science Hub Do you want to communicate your science to schools? Check out the Virtual Science Hub - ViSH portal, which is a place for teachers, scientists and especially science communicators to offer virtual excursions on science topics for schools. Get students excited about science, interact with teachers and help make science teaching more fun. *http://vishub.org*

01

01 Carlos Coelho, President of Ivity Corporate Brand, Portugal, wowed the Ecsite Directors Forum 2013 with a keynote address on branding. Photo: Pavilion of Knowledge

02 The beauty of synthetic biology. Photo:Martin Hieslmair

03 Bom apetite at the Directors Forum 2013 in Lisbon. Photo: Pavilion of Knowledge



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LIFE OF ECSITE

New members

Ecsite is delighted to welcome the following institutions into its membership:

Full

- **CIIMAR** - Interdisciplinary Centre for Marine and Environmental Research, Portugal
- **Konya Science Center**, Turkey
- **Museum of London**, United Kingdom

From Associate to Full

- **Museu da Ciência da Universidade de Coimbra**, Portugal

Sustaining

- **city2science** - Science Communication and Strategy Consulting, Germany
- **AUDIOVERSUM**, Austria

Associate

- **Al Nayzak Organization for Supportive Education and Scientific Innovation**, Palestinian Territory
- **Brno Observatory and Planetarium**, Czech Republic
- **Liberty Science Center**, United States
- **Mercator Océan**, France
- **Muséum d'Histoire Naturelle de Nantes**, France
- **The Times Cheltenham Science Festival**, United Kingdom

We need your opinions about Ecsite's services

Ecsite received 69 responses to its Membership Survey 2013 launched in October. However, much more feedback is needed in order to serve members optimally, so the survey was re-released to Ecsite members' email inboxes on 3 December. with the hope of obtaining 200 total responses. Member feedback maps Ecsite's goals and improves services, so please add your opinion to the mix. Associate and Sustaining members are particularly encouraged to respond. View the preliminary survey results online: *www.ecsite.eu/news_and_events/news/ecsite-membership-survey-2013-preliminary-results*

They came, they networked, they picnicked

Full member science centre directors and CEOs from all over Europe gathered at the Pavilion of Knowledge – Ciência Viva in Lisbon, Portugal for the 2013 Ecsite Directors Forum. Guests were treated to interesting keynotes, workshops, two avant-garde theatre pieces, and a picknick-style welcome dinner complete with baskets of fine Portuguese culinary offerings, lawn chairs and a bright green lawn. It was the perfect setting for nerves-free networking. Thank you to Pavilion of Knowledge organizers for their gracious and innovative hosting.

A spacial rendezvous with Rosetta

Can science centres and museums build common tools to cover the most exciting 2014 Space events at the European level? Ecsite and the European Space Agency (ESA) are rising to the occasion with the Hook-up with Rosetta campaign.

The Ecsite Space Group devised the campaign and the main tools for science centres and museums to cover the special rendezvous between Rosetta and her comet.
Campaign tools include an exhibition created by Cité de l'Espace, Toulouse, France, educational activities developed by Science Centre NEMO, Amsterdam, Netherlands and events led by Parque de las Ciencias, Granada, Spain. These resources will be accessible for free to all Ecsite members.

Each event in the campaign corresponds to significant moments in the actual mission. Events blast off on 20 January 2014 when Rosetta will wake-up after 957 days of hibernation in deep space.

Launched by ESA in 2004 and now with ten years of Space travel behind her, Rosetta will become the first Space probe to dispatch a lander on the surface of a comet's nucleus. The information Rosetta extracts from her comet promises insight into the origins of the solar system. Not bad for a single Space probe.

To learn more about Rosetta mission, visit: *www.esa.int/rosetta*. To get involved in the Ecsite Space Group or the Hook-up with Rosetta campaign, contact Didier Laval, Project Manager, Ecsite: *dlaval@ecsite.eu*

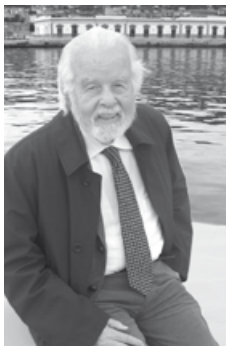
Why should we care about synthetic biology?

…first, because discovering an emerging field that combines biology and engineering could be pretty neat (after tech hackers and digital hackers, here come the biohackers?) Moreover, synthetic biology is all about creating and designing new biological systems, which can be as appealing as it is frightening. What are today's possibilities and tomorrow's applications? How about the numerous ethical questions raised by this field? How could we monitor the environmental and socio-economic risks that may come with it?

Public awareness of synthetic biology remains low as is often the case with emerging fields. Seven worthy Ecsite members are joining the SYNENERGENE project to help the challenge of building public engagement and participation in synthetic biology actions, and in including citizens as stakeholders in a dialogue about the future of this interdisciplinary field.

The SYNENERGENE project is a 4-million-euro action plan funded by the European Commission and will involve a wide variety of stakeholders from science, industry, civil society, education, art and other fields in an international mobilization and mutual learning process.
www.synenergene.eu

Didier Laval
Project Manager,
Ecsite, Brussels, Belgium



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THE SCENE

Seeing the world through silly goggles

The aim is to start public discussion on mental health as both a personal and social issue. Produced in cooperation with Universcience, Paris, and Ciência Viva, Lisbon, Heureka Goes Crazy is the first interactive science centre exhibition on mental health. Mikko Myllykoski, Experience Director at Heureka, explains the controversial advertising campaign for the exhibition:

Before introducing the campaign and the title with the word 'crazy' in it, we discussed the topic with our partners: The patient organization (Finnish Central Association for Mental Health) and the citizen organization (The Finnish Association for Mental Health) and our experience experts (people who suffer from mental illnesses and have received training to talk about their experience with the public) and the scientific experts who are supporting us.

Everybody agreed that this is an exhibition that does not whisper, it wants to attract the attention of the public. The use of the silly goggles and the word 'crazy' are ok because the content of the exhibition is throughout respectful. Through the silly goggles you see the world differently and you are seen differently. In the advertising campaign, our staff wears the goggles to signify that mental illness can happen to anyone: It could be you, it could be me. At Heureka, the staff 'en masse' wanted to say: it could be us. The exhibition starts with the "The border of madness" milestone which is there to raise the question "Can we draw the line? Isn't mental health a continuum?" **Heureka Goes Crazy runs at Heureka from 12 October 2013 to 21 September 2014 and then moves on to Lisbon and Paris.** *heureka.fi/*

Remembering Paolo Budinich

Professor Paolo Budinich founded the International Center for Theoretical Physics in Trieste in 1964 with Nobel laureate Abdus Salam. Later, he established SISSA (International School for Advanced Studies in Trieste - a member of Ecsite) and contributed to creating the International Centre for Genetic Engineering and Biotechnology and the Elettra Synchrotron facility.

Prof. Budinich worked with Werner Heisenberg and Wolfgang Pauli during his career as a theoretical physicist. In 1985 he developed “Immaginaire Scientifique”, a temporary exhibition which inaugurated the spaces of La Géode in Paris, where a few months later La Cité des Sciences et de l’Industrie would open its doors. Two years later the "Laboratorio dell'Immaginario Scientifico", a permanent version of the exhibition, was launched in Trieste and became the first science centre in Italy.

Prof. Budinich was one of the founding members of Ecsite and a permanent member of the Ecsite Board until 1996. He passed away in Trieste on 14 November 2013 at age 97.

Andrea Bandelli
Science communication consultant,
Amsterdam, Netherlands

Science: A powerful form of diplomacy

Science is a universal language that connects cultures and builds bridges between people. This is reflected by the Dialogue among Cultures Award from Città della Scienza which was presented to Maya Halevy, Director of Bloomfield Science Museum Jerusalem, in memory of Peter Hillman – neuroscientist and founder of Bloomfield.

The award was delivered during the opening ceremony of the Annual science festival, Futuro Remoto, in November when Città della Scienza resumed its first exhibition areas following the arson of March 2013 which destroyed most of the centre’s infrastructure.

Dr. Hillman became professor emeritus at the Hebrew University of Jerusalem after graduating with a PhD in physics from Harvard University. In 1980, he launched a project to create a center for science dissemination in Jerusalem, worked on this dream for more than ten years, and saw it evolve into the Bloomfield Science Museum.

Città della Scienza had the honor of sharing a wonderful project for the construction of peace in the Middle East with Dr. Hillman: the design and construction of the first Palestinian Science Centre, in cooperation with Europeans, Israelis and Palestinians.

Dr. Hillman was a brilliant scientist, an open man, a peacemaker. He used his infinite passion for science to spread knowledge to the next generations. Thanks to his vision, the Bloomfield Science Museum, located in western Jerusalem, is open to everyone regardless of age, culture or religious background. He died on 20 June 2013 at age 84.

Anne-Marie Bruyas
International Relations,
Città della Scienza, Naples, Italy

01 Prof. Paolo Budinich in Trieste, 2007, Photo: Wikipedia
02 Anneli Pauli, Director of Heureka, dons the silly goggles to promote Heureka Goes Crazy. Photo: Heureka, the Finnish Science Centre
03 Science as diplomacy - Dr. Peter Hillman leaves a lasting legacy. Photo: Bloomfield Science Museum Jerusalem
04 Visitors give high ratings to the Natural History Museum in Vienna, Austria. (C) Naturhistorisches Museum Wien, Kurt Kracher

04

THE SCENE

Movements

- **Olle Nordberg** retires from his position as CEO of Teknikens Hus in Lulea, Sweden, but will still work part time as a consultant to plan the centre's upcoming expansion.
- **Lesley Lewis** moves on from her position as CEO of the Ontario Science Centre in Toronto, Canada, to pursue "new challenges - locally, nationally and internationally."
- **Alejandro Mancilla** leaves his position as Touring Manager at Science Gallery, Dublin, Ireland, to pursue consulting in design, production, promotion and touring of exhibitions.

Members in the news

"Science Museum's Collider exhibition celebrates collaborative research, not individual glory," Ian Steadman, *New Statesman*, 13 November 2013
"Even Peter Higgs thinks that the Nobel Prize doesn't allocate credit for discoveries fairly - but this exploration of the Large Hadron Collider shows that modern science is a large, collaborative process involving hundreds and thousands of brilliant minds." The Science Museum, London, UK. *www.newstatesman.com/future-proof/2013/11/science-museums-collider-exhibition-celebrates-collaborative-research-not-indiv*

"Glasgow science centre tower to re-open in 2014," *The Scotsman*, 6 November 2013
Built in 2001 but closed due to problems since 2009, the centre's 127-metre tower is being renovated with help from Scottish Enterprise and Glasgow City Council. Glasgow Science Centre, Glasgow, UK. *www.scotsman.com/lifestyle/arts/news/glasgow-science-centre-tower-to-re-open-in-2014-1-3176283*

Making the cut

TripAdvisor.com, a widely used travel resource, recently racked up its 2013 Traveller's Choice picks and many Ecsite members took impressive rankings in the Museums category.

European members
- Natural History Museum, Vienna, # 2 in Austria
- Technisches Museum Wien, Vienna, # 8 in Austria
- Museum of Natural Sciences, Brussels, # 7 in Belgium
- Experimentarium, Hellerup, #10 in Denmark
- Deutsches Museum, Munich, #3 in Germany
- Norwegian Aviation Museum, Bodoe, #8 in Norway
- Ciencia Viva – Pavilion of knowledge, Lisbon, # 4 in Portugal
- CosmoCaixa, Barcelona, #10 in Spain
- Swedish Museum of Natural History, Stockholm, #5 in Sweden
- Technorama, Winterthur, #5 in Switzerland
- Natural History Museum, London # 8 in United Kingdom

World members
- Questacon, The FMA National Science and Technology Centre, Canberra, #6 in Australia
- Mada Tech, Israel National Museum of Science and Technology, Haifa, #8 in Israel

Good reads

What is the scientist's role in society and how do we teach it? *The Guardian*, 4 November 2013
Early career researchers need to learn how policy is made and assessed to encourage more joined-up thinking in science, *www.theguardian.com/higher-education-network/blog/2013/nov/04/science-in-society-policy-research*

Exploring science museums through Google Street View, Philippa Pits, Museum Studies at Tufts University blog, 16 October 2013
"In an arguably more visually exciting initiative, Street View has even mapped a series of zoos and botanical gardens around the world. But unlike their impressive Art Project, Google Street View's indoor tours of science museums fall flat."
http://sites.tufts.edu/museumstudents/2013/10/16/exploring-science-museums-through-google-street-view/

Science city promises exciting fare, *The Hindu*, 7 October 2013
"The concept of Science City has been envisaged to enhance public understanding of the culture of science and technology and apart from students, benefit common man also through exhibitions, seminars, popular lectures, science camps and other related activities."
www.thehindu.com/news/cities/Hyderabad/science-city-promises-exciting-fare/article3974336.ece

Rosalia Vargas

President of Ecsite,
and Ciência Viva - Pavilion of
Knowledge, Lisbon, Portugal
Photo: Ciência Viva

COMMENT

The pursuit of global relevance

Science centres are increasingly assuming a key role as proactive agents for increasing public involvement in science and technology, with a special focus on local and regional community needs. They achieve this by providing multi-sensory appealing experiences that are in tune with the digital and technological revolution that we are living in, but also through an emphasis on engagement, dialogue and community action. These developments are part of the increased relevance that scientific knowledge has to the expectations of developed societies. That is why science centres are engaging with and stimulating social, economic and cultural development, linking some of the most dynamic actors and stakeholders in their regions.

We must now face a new challenge.

Given that science centres have shown their relevance to their local and regional communities, how do we move forward to ensure that they can also play a role in meeting the global challenges that are emerging in a rapidly changing world?

Working together is the answer.

The Science Centre World Summit 2014, which will be held in Mechelen, Belgium, in March 2014, will be a crucial resource in promoting this strategy. By providing common ground for both regional networks and organizations from outside our field, the SCWS will foster innovative partnerships and devise shared approaches to address the complex issues of our time. The main goal is to generate and grow large-scale citizen engagement in applying science and technology to the creation of a better world.

Many Ecsite members share a similar vision, as they clearly expressed in the Directors Forum, this November, in Lisbon. The fact that the SCWS 2014 is to be held in Europe challenges us to seize new opportunities that will have global relevance and to take on increased responsibilities for generating active participation.

Surely this is a challenge that we are eager to embrace.

ANNUAL CONFERENCE

To keep in mind

Online registration opens 7 February 2014 at *www.ecsite.eu/annual_conference*

The 2014 **full main conference** fee schedule for **members** is:

- Between 7 February and 7 March 2014, save 33%
- Between 8 March and 7 April 2014, save 25%
- Between 8 April and 7 May 2014, save 20%

Ecsite members who have paid their 2014 membership fees are eligible for the Early Bird rates between 7 February and 7 March 2014.

Institutions who become members of Ecsite as of the 6 March 2014 Board Meeting will be eligible for the Member Rate registration fee, but not the Early Bird rate.

Book your accommodation early – The Hague is a busy place in May. Check the conference website under “Hotels” .

Jeroen Pijl, Communication and Productions and Sanne Sok, Conference Manager – both from Museon in The Hague – are the hard workers behind the Ecsite Anniversary videos. A new video will premiere each week in the lead-up to the Ecsite Annual Conference.

Spokes caught up with Sanne and Jeroen to find out more.

How did you come up with the idea of these anniversary videos?

Maarten Okkersen, Head of Communications at Museon, came up with this idea. He knew that Jeroen is good in the area of film, creativity and editing. He knew that Sanne is good in the area of social interaction, organizing and being a good friend. We are also a good team – we filmed together before and making these movies was also the perfect opportunity to meet people which is useful for organizing Ecsite 2014.

What were your biggest challenges in this process?

We wanted the videos to have some humor and not be too formal. What we also found important is that people would feel at ease as not everyone enjoys being filmed!

What do you want the videos to achieve?

That it brings people together, creating a family, which some people also hoped for when we were interviewing them. And that this sense of cooperation continues to improve and grow in the network.

What’s your advice to others taking on a video promotion campaign?

Good preparation and, again, ensuring that people feel at ease. Also we found it very important to create an atmosphere where people are open and can think with you.

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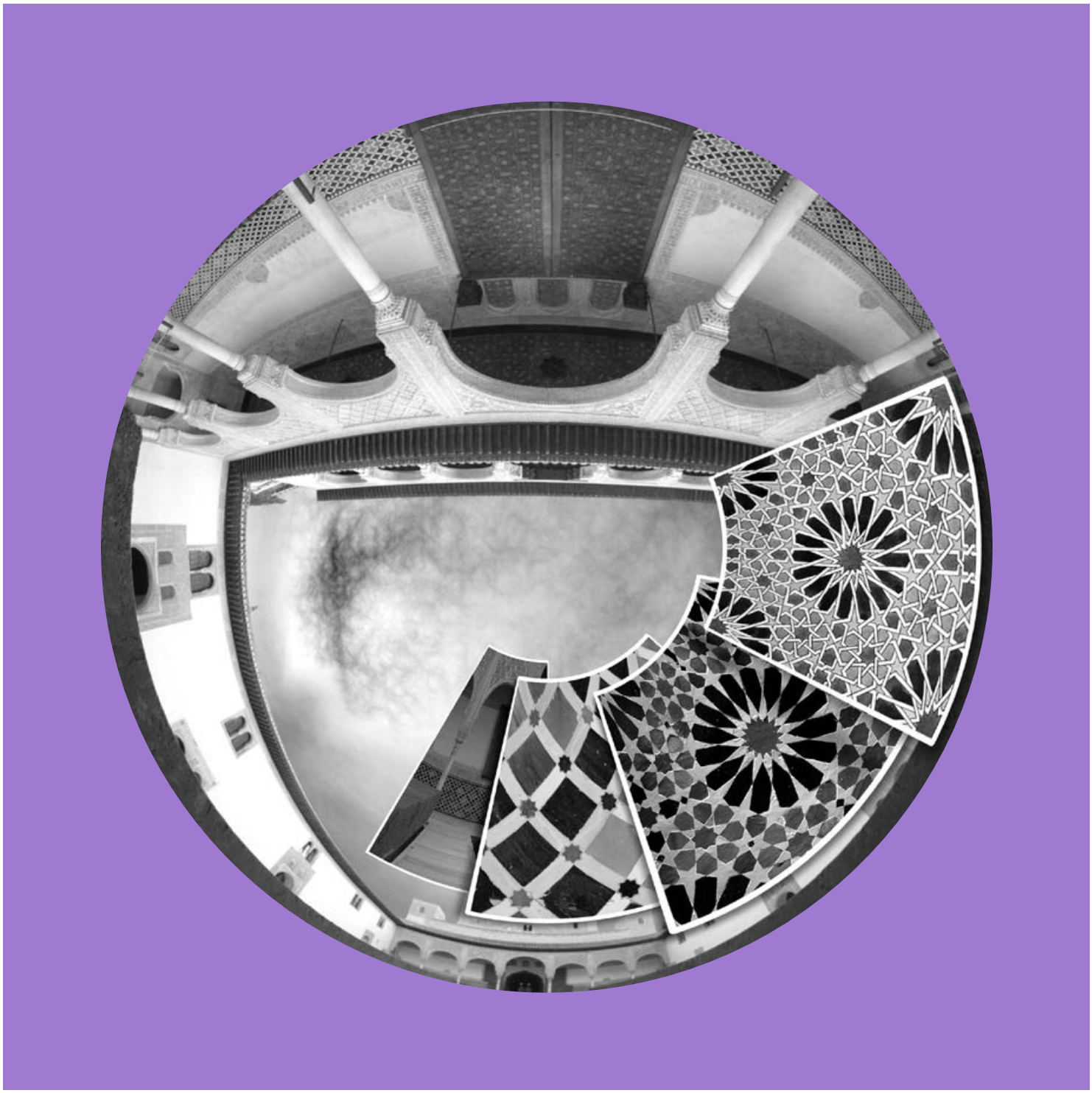

Photo: Parque de las Ciencias.

A still capture from the full dome experience,
Escher's Universe, at Parque de las Ciencias, Granada Spain.