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2018 STARTS Prize awarded by the European Commission

## STARTS Prize for MX3D & Joris Laarman Lab (NL) and Giulia Tomasello (IT)

(June 4, 2018, Linz/Brussels) The STARTS Prize is being awarded by the European Commission for the third consecutive year. It awards successful collaboration of science and technology with the arts.

The grand prize in the Innovative Collaboration category goes to a Dutch joint venture, MX3D and Joris Laarman Lab (NL), who have succeeded for the first time in using a 3-D printer to produce a fully functional steel bridge. The recipient of the grand prize in the Artistic Exploration category is Italian interaction designer Giulia Tomasello for her biotech sanitary napkin that inhibits yeast infections. The STARTS Prize winners can look forward to receiving the STARTS Trophy and €20,000 each. The awards ceremony will be held at the Ars Electronica Festival on September 7, 2018 in Linz, Austria.

The Honorary Mentions in 2018 go to Hayoun Kwon (KR) for *489 Years*; Kristina Tsvetanova (BG), Slavi Slavev (BG) and BLITAB Technology GmbH for *BLITAB* – the innovative tablet for the blind; Ei Wada (JP) and Nicos Orchest-Lab (JP) for *ELECTRONICOS FANTASTICOS!*; Maxim Kuzin (RU) and ATOM for *Fennec Turbine*; the FluidSolids® AG for *FluidSolids*; the Making Sense Team for *Making Sense – Citizen Sensing Toolkit*; Rhizomatiks Research, ELEVENPLAY, evala and Takayuki Fujimoto (Kinsei R&D) for *phosphere*; the Morphing Matter Lab at Carnegie Mellon University for *Printed Paper Actuator*; Pol Jeremias Vila (ES) and Iñigo Quilez (ES) of Beautypi for *Shadertoy*; and to Lucy McRae for *The Institute of Isolation*.

The STARTS Prize competition was once again conducted by Ars Electronica, Bozar and Waag. This year's STARTS jurors are Francesca Bria (IT), Andrej Heinke (DE), Sophie Lamparter (CH), Daehyung Lee (KR), Alexander Mankowsky (DE), Seiichi Saito (JP), Kazuko Tanaka (JP), Alex Verhaest (BE) and Victoria Vesna (US). There were 2,344 entries from 88 countries submitted for STARTS Prize consideration.

### STARTS Prize ...

This prestigious award endowed with a total of €40,000 singles out for recognition innovative projects at the interface of science, technology and the arts—hence the acronym STARTS. This initiative identifies and honors projects that demonstrate the successful interplay of science, technology and art, and have the potential to contribute to economic and social innovation. The two prizewinners each receive €20,000 and will be prominently featured at the Ars Electronica Festival in Linz, the BOZAR in Brussels, and at the Waag in Amsterdam.

### ... and the European Commission's STARTS Initiative

This competition is held in conjunction with the S+T+ARTS =STARTS Initiative – innovation at the nexus of Science, Technology, and the ARTS – of the European Commission, which sees the digital transformation of industry, culture and society as the primary force driving new forms of collaboration that advance innovation by transcending the boundaries of disciplines and genres. The fundamental principle: effectively linking up technology and artistic practice is a win-win situation for both European innovation policymaking as well as the world of art. This initiative spotlights projects and people that can make meaningful contributions to mastering the social, ecological and economic challenges that Europe now faces.





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## STARTS PRIZE'18 – Grand Prize Innovative Collaboration

Awarded for innovative collaboration between industry or technology and the arts that opens new pathways for innovation.

### MX3D & Joris Laarman Lab: The World's First 3-D Printed Metal Bridge

<http://mx3d.com/projects/bridge/>

It all began with a dream. Today, years later, the world's first 3-D printed, fully functional metal bridge has been completed and the dream has come true. Joris Laarman's organically formed, stainless steel bridge is 12.5 meters long and 6.3 meters wide. It will span the Oudezijds Achterburgwal, Amsterdam's oldest and most famous canal. Old and new, past and future have thus been amalgamated in a way that is as manifest as it is symbolic.

A retrospective: In 2011, Joris Laarman and the interdisciplinary team MX3D begin working on creating large objects without supporting structures. They aim to achieve this with a combination of industrial robots and 3-D printing. Following an initial proof of concept, they achieve their big breakthrough in 2014: They build the "Dragon Bench," a 4-meter-long, 2-meter-wide, 1.5-meter-tall sculptural steel bench. Spurred on by this success, the team now sets its sights on bringing Joris Laarman's dream to fruition. Using a procedure they developed themselves, they begin to create a 12+-meter-long footbridge out of stainless steel. The bridge is printed, layer by layer, over the course of six months. And then the big moment arrives—the world's first fully functional 3-D printed bridge is finished and ready to be installed. The bridge is also equipped with sensors to deliver ongoing documentation of its vibration behavior. All measurements are transmitted in real time to a digital model of the bridge meant to enable the builders to enhance the bridge's design and structure, and thus further develop their current language of form into a completely new digital aesthetic.

By building the world's first 3-D printed metal bridge, MX3D and the Joris Laarman Lab have provided proof that the MX3D process they have jointly developed makes it possible to create metal objects and structures of any size that are aesthetically pleasing as well as intelligent. Once it is installed, their bridge will serve as both a metaphor and an eye-catching connection between historic Amsterdam and the future with all its manifold possibilities. Amsterdam's 3D Printed Steel Bridge, the collaborative project singled out for recognition with the 2018 STARTS Prize, has opened a door for all 3-D printers, researchers, engineers, architects and city planners who will be configuring urban spaces in the future. The artistic visions and spirit of Joris Laarman Lab have made a significant contribution to this effort. The unique and innovative collaboration set up by MX3D between the artist, governmental organisations like the City of Amsterdam and companies like Autodesk, ArcelorMittal, Lenovo, The Alan Turing Institute and Lloyds Register Foundation proved essential in realizing this dream.

The Statement of the STARTS Jury

*"Designing for 3D-printing opens up a whole new world of complex forms and shapes previously impossible with traditional techniques, says Tim Geurtjens, co-founder and CTO at Dutch design studio MX3D. The jury found their 3D-printed metal bridge a really important marker for the future of architecture and construction. The bridge was designed for one of the canals in Amsterdam's Red Light*





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*District, by Joris Laarman Lab. Architects working in this area are convinced it won't be long before additive manufacturing transforms their discipline. This opens up all sorts of new aesthetic possibilities. Traditional steel or concrete structures have a high level of redundancy—material that doesn't need to be there, but which is too difficult or expensive to remove. But 3D-printing allows material to be placed only where it is required. This project is not only great in engineering and design but also generates discussion about the future of design and construction. Robotic arms are getting more sophisticated by the day and can be used to print in traditional materials, such as plastic, concrete, or composites, or employed to weave or knit three-dimensional fiber structures. The bridge is 12 meters long and 6 meters wide, and will be installed in the old city center of Amsterdam across a canal, early next year. The project innovates the type of materials and the techniques used, and presents a new kind of open collaboration amongst MX3D engineers, Amsterdam city officials, scientists at Arup, and Imperial College London to define data-driven algorithmic methods for evaluating the safety of the bridge and enabling the bridge to interpret its environment. Sensor data will feed into a "digital twin" of the bridge, creating an algorithmic model that responds to the data in real time. This is the beginning of a great urban transformation. There are many large-scale 3D-printing projects happening all round the world but this project has built something that works for people living in a large European city and is leading the way."*

## STARTS PRIZE '18 – Grand Prize Artistic Exploration

Awarded for artistic exploration and art works where appropriation by the arts has a strong potential to influence or alter the use, deployment or perception of technology.

## Giulia Tomasello: Future Flora – Celebrating Female Biophilia

<http://www.gitomasello.com>, <https://vimeo.com/171795174>, <https://www.youtube.com/watch?v=DMYIOHzpu-E>

In the soil, in the air, in water ... they exist everywhere. The reference here is to microbes—most commonly, bacteria, viruses and fungi. Millions of these microorganisms can also be found in the human body. Most of them live in a symbiotic relationship with us, their hosts, and help us stay healthy. But some of them can also make us sick, especially when they proliferate excessively. One example of this is *Candida albicans*, a yeast that lives primarily on the mucus membranes in our mouth and throat, in the genital area and the digestive tract. But if it spreads from there, the consequences can range from unpleasant to dangerous. 75% of all women have contracted a vaginal yeast infection at least once in their life. The symptoms include itching, a burning sensation, redness, swelling and a discharge; they are usually treated with antifungal agents or antiseptics.

Now, Giulia Tomasello has developed an alternative to them in the form of a speculative treatment method in which the Italian interaction designer and researcher deploys lactobacillus, a biological foe of *Candida albicans*. A user-friendly kit provides a very convenient way to cultivate lactobacillus at home. The bacteria culture grows on a pad that adheres to the crotch of a pair of panties so that it comes into contact with the female genitalia. *Candida albicans* is thus confronted with a hostile environment that inhibits its proliferation. At the same time, this biological sanitary napkin helps to regenerate the injured microflora in the vaginal epithelium.

Giulia Tomasello's alternative treatment method, an harvesting kit rather than only a sanitary pad, takes the do-it-yourself approach and thereby gives women the chance to exercise self-determination and control over their own body. She aims to encourage women to assume an active role with respect to their own health care, and to speak openly and unabashedly about their gynecological ailments and



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the symptoms associated with them. She calls for breaking, once and for all, the taboos that still prevail in our enlightened society, and for women to continue to emancipate themselves. The European Commission has awarded Giulia Tomasello the 2018 STARTS Prize for her *Future Flora – Celebrating Female Biophilia* project.

The Statement of the STARTS Jury

*“Through the thick digital forest, there was a distinctive and loud call for returning to nature, attention to life, biology, the self, the body—especially empowering the female body and its sexuality which came as no surprise after a year of #MeToo. Responding to this collective consciousness wave, the jury agreed that ‘Future Flora’ embraced the issues of reclaiming female power—with DIY and no shame—in a way that could prove empowering to others seeking to find a voice. Interaction designer Giulia Tomasello brings to the forefront issues that the medical community should consider in their production of pharmaceuticals for women. This project also engages the public to consider feminine hygiene and the surrounding taboos. It makes us think differently about bacteria in general—important in times of overuse of antibiotics and antiseptics that are destroying the ecological balance. With the advent of scientific research into the microbiome, the designer asks how we feel about the idea that we consist almost entirely of bacteria. Many existing thrush treatments include a whole host of chemicals that cure yeast infections but also destroy good bacteria, making things worse for women. In her own words, Giulia explains that “the kit has been designed to allow women to establish, nurture and harvest their very own personal skin flora at home, becoming not only consumers but also active participants in their own health and wellbeing.” Digital technologies are tricking us into an immaterial world made out of shining data. As Digital Ghosts, we are hallucinating about being almighty, even immortal under the sun of a God-like AI. Giulia Tomasello forces us to lower our gaze from the digital heaven to the most vulnerable female body part—the vagina. With ‘Future Flora’ she demonstrates this vulnerability as a strength, using the embodied openness as a medium between internal and external organisms, creating in this way what she calls ‘Future Flora’. ‘Future Flora’ provides a clear and loud signal that ‘Future’ is not only ‘Digital’. The STARTS Prize Jury got Giulia’s eye-opening message: there is a huge potential for innovation in the European spirit, but we must not forget that it is our bodily existence that fuels the imagination.”*

## STARTS PRIZE ‘18 – Honorary Mentions

Hayoun Kwon (KR): 489 Years

<https://www.hayounkwon.com/>, <https://www.youtube.com/watch?v=Qad-hmC4t7M>

*489 Years* is a work of computer animation based on the accounts and recollections of a former South Korean soldier. The film offers insights into the demilitarized zone between North and South Korea. Since only authorized persons are permitted to set foot in the zone, Hayoun Kwon used animated sequences to reconstruct this place. The soldier talks about his experiences during a reconnaissance mission in an area that had been completely reclaimed by nature—a paradoxical setting in which he felt both alarm in light of the political-military importance of this zone as well as awe at the beauty of nature. With her imagined landscape, Hayoun Kwon tells of the geopolitical reality of the divided peninsula and the danger of war constantly prevailing here.



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Kristina Tsvetanova (BG), Slavi Slavev (BG) / BLITAB Technology GmbH: BLITAB - the innovative tablet for the blind

<http://blitab.com/>

*BLITAB*® is the world's first tactile tablet for blind and visually impaired people. The Braille tablet uses an innovative technology to display texts and graphics in real time so that users can feel them. This invention, named Smart Tactile Technology, can be used in many other products and intelligent corporeal applications. *BLITAB*® converts all documents into Braille script whereby tiny bumps become slightly elevated from the device's surface and descend again as soon as the text changes. *BLITAB*® Technology GmbH is based in Vienna.

Ei Wada (JP) + Nicos Orchest-Lab (JP): ELECTRONICOS FANTASTICOS!

<http://www.electronicosfantasticos.com>, <https://eiwada.com>

*ELECTRONICOS FANTASTICOS!* is a project that gives decommissioned electrical appliances a new life as musical instruments, invents new possibilities to make music, and invites young and old alike to undergo orchestration by artist/musician Ei Wada. The project staff currently numbers 70 individuals from diverse business sectors and disciplines. Their concerts in Japan are very popular—especially among technicians working for various electronics manufacturers, kids and, by no means least of all, seniors, many of whom donate their old electronic devices to *ELECTRONICOS FANTASTICOS!*

Maxim Kuzin (RU), ATOM: Fennec Turbine

<http://okbatom.com/projects/fennec>

The *Fennec Turbine* is an ultramodern, compact wind turbine that is quiet, safe and durable. Its core element is a unique hyperboloid rotor. From an artistic standpoint, the *Fennec Turbine* calls to mind the work of famed Russian engineer Vladimir Shukhov (1853-1939) and can be positioned at the interface of machine and architecture.

FluidSolids® AG (CH): FluidSolids

<http://www.fluidsolids.com>

*FluidSolids*® converts organic waste into composite materials. With its excellent ecological and physical characteristics, *FluidSolids*® organic composite materials have the potential to gain market share as alternatives to metal, wood and, above all, plastic.

Making Sense Team: Making Sense – Citizen Sensing Toolkit

<https://smartcitizen.me>, <http://making-sense.eu>

The Making Sense Team's mission is to show how open-source hardware, software and design can be employed in conjunction with the approaches of digital makers in order to develop measuring instruments for precise, fundamental analysis of local environmental problems such as air pollution, noise pollution, and exposure to radioactivity. What they developed was a toolkit for participatory sensing, a data measurement concept that entails groups of people compiling various sensor information and generating data from it. The objective is to gain a more profound understanding of specific processes and thereby to increase awareness of sustainability. The project's findings have been licensed under Creative Commons and published online as a book.



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Rhizomatiks Research, ELEVENPLAY, evala, Takayuki Fujimoto (Kinsei R&D):  
phosphere

*phosphere* is an excellent example of a complex immersive dance performance that is the outcome of wide-ranging, interdisciplinary collaboration under the creative directorship of Daito Manabe and the Rhizomatiks Research Studio. This extraordinary performance uses new digital technologies to render an artistic demonstration of the process of crystallization of minerals, during which the audience becomes part of a constantly changing, three-dimensional architecture of light.

Morphing Matter Lab at Carnegie Mellon University: Printed Paper Actuator

<http://morphingmatter.cs.cmu.edu/paper-actuator/>

*The Printed Paper Actuator* is an electrical, 3-D printed impulse generator for paper. It is made of very affordable materials such as paper and commercially available thermoplastic printing filaments. The manufacturing process is fast and simple; the sole prerequisite is a conventional FDM 3-D printer. It is very easy to integrate the paper actuator into objects to create new types of paper-based, modifiable and movable interfaces. Examples of applications are pop-up books, all sorts of toys, origami robots and lamp shades.

Pol Jeremias Vila (ES), Iñigo Quilez (ES) / Beautypi: Shadertoy

<https://www.shadertoy.com>

*Shadertoy* enables artists and programmers to produce their visuals by means of code, to share their creations, and to learn from others. The website furnishes a comprehensive code editor, high-performance rendering, a system for generating sounds by means of code, virtual reality rendering, and an extensive set of textures, music and videos. When a work is uploaded to the website, its animation and code are made available to the community so they can experiment with and learn from it. More than 85,000 works from over 50,000 designers in approximately 100 countries have been uploaded heretofore. Shadertoy can be used free of charge.

Lucy McRae (UK/AU): The Institute of Isolation

<https://www.lucymcrae.net>

Lucy McRae's documentary film *The Institute of Isolation* asks whether isolation or other extreme experiences can be used to increase a person's resilience. *The Institute of Isolation* is a fictitious institution that, as a research & training facility, offers alternative methods of conditioning the body and adapting it to fundamental aspects of human biology. The film focuses on genetic engineering, space travel, sensory deprivation and the changing relationship between the body and technology. The protagonist, McRae, moves through a series of sensory chambers—the weightlessness trainer prepares subjects for a possible life in outer space; a soundproof room is the setting for research on the psychoacoustics of silence.