

CyberArts 2018

Prix Ars Electronica  STARTS
PRIZE '18



2018

CyberArts

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CyberArts 2018

International Compendium

Prix Ars Electronica

Computer Animation · Interactive Art + · Digital Communities
Visionary Pioneers of Media Art · u19-CREATE YOUR WORLD

STARTS Prize '18

Grand Prize of the European Commission honoring Innovation
in Technology, Industry and Society stimulated by the Arts

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STARTS PRIZE '18

Innovation at the nexus of
Science, Technology and the ARTS

The STARTS Trophy was designed by Nick Ervinck. The Belgian artist explores the boundaries between various media, fostering a cross-pollination between the digital and the physical. He applies tools and techniques from new media, in order to explore the aesthetic potential of sculpture, 3D prints, animation, installation, architecture, and design.

TAWSTAR, 2016 Photo: Peter Verplancke

Grand Prize of the European Commission honoring
Innovation in Technology, Industry and Society
stimulated by the Arts

“We should promote intersectional approaches to joint programs between the arts, culture, science, engineering and technology. STARTS illustrates that this interaction is successful and therefore marks a great example for current and prospective connections between the arts and technology.”

Christian Ehler, Member of the European Parliament



This project has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 732019.

STARTS – Science, Technology, and the ARTS

The S+T+ARTS = STARTS program is a program of the European Commission launched in 2016 to encourage synergies between the arts and technology to support innovation in industry and society. STARTS promotes the inclusion of artists in research and innovation activities in Europe. To encourage collaboration of engineers, scientists and artists, STARTS is currently funding four different pillars: STARTS Residencies of artists in technology institutions, STARTS Lighthouse pilots to finance research with artists as active parts of projects that work on concrete challenges for industry and society, STARTS Academy uniting engineers and artists to teach digital skills to citizens and young adults in a playful way, and the annual STARTS Prize to give visibility to outstanding examples of collaboration between art and technology.

Innovation in and for Europe

It has long been an established fact that innovation is at the core of a competitive economy. Europe has historically focused its attention in engineering on R&D and standardization. Today, however, focusing only on technology is not sustainable. An increasing number of high tech companies throughout the world assert that, in addition to scientific and technological skills, the critical skills needed for innovation to happen and to be of value for society are skills such as creativity rooted in artistic practices. In this context, the expertise and practice of artists can directly drive and influence innovation in technology. They offer new perspectives, inspire new directions, and act as a catalyst for a successful and socially responsible transformation of new technologies into new products and new eco-

nomie, social, and business models. In recognition of this development the European Commission has launched the STARTS initiative—Innovation at the nexus of Science, Technology, and the ARTS.

STARTS Prize '18

Grand Prize of the European Commission honoring Innovation in Technology, Industry and Society stimulated by the Arts

The European Commission's STARTS Prize is designed to spotlight people and projects that have the potential to make a sustainable positive impact on Europe's economic, technological, social, and ecological future. This competition seeks innovative projects at the nexus of science, technology, and the arts, and honors the best of them with the STARTS Prize. The STARTS Prize aims to showcase and celebrate visions and achievements at the interface between innovation and creation. The winners receive the STARTS Trophy and €20,000 in prize money. Both winning projects as well as a selection of the Honorary Mentions and Nominations are showcased at the Ars Electronica Festival in Linz, at BOZAR in Brussels, and at Waag in Amsterdam. Plus, projects singled out for STARTS Prize recognition are featured in exhibitions and shows that Ars Electronica, BOZAR, and Waag stage worldwide.

The STARTS Prize competition is staged annually in two categories:

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.

Grand Prize – Innovative Collaboration

Awarded for innovative collaboration between industry or technology and the arts (and the cultural and creative sectors in general) that open new pathways for innovation.

In an elaborate process of open call and nominations by advisory experts, a total of 2,344 entries from 88 countries were submitted in the application period that ran from January 10th to March 12th, 2018. Out of the total number of 2,344 entries, four groups of experts nominated 30 projects for the STARTS Prize, which were presented to the STARTS Prize jurors for final consideration. Following extensive deliberations, they decided to award *Future Flora – Celebrating Female Biophilia* by Giulia Tomasello for Artistic Exploration, and *Amsterdam's 3D Printed Steel Bridge* by MX3D & Joris Laarman Lab for Innovative Collaboration. Furthermore, they selected 10 projects for an Honorary Mention.

Submission and evaluation process

On behalf of the European Commission, Ars Electronica in collaboration with BOZAR and Waag issued an open call for entries to a competition that determined the third recipients of STARTS Prize. Considering the interdisciplinary approach, the STARTS Prize '18 was again launched with a dual approach for submissions:

Submission via open call

The STARTS Prize open call started on January 10th, and ended on March 12th, 2018.

Submissions could be made either by artists / creative professionals or the researchers / companies involved.

The competition was open:

- to groundbreaking collaborations and projects driven by *both* technology and the arts.
- to all forms of artistic works and practices with a strong link to innovation in technology, business, and/or society.
- to all types of technological and scientific research and development that has been inspired by art or involves artists as catalysts of novel thinking.
- to artists and teams from all over the world.

Purely artistic or technologically driven projects were not the focus of this competition. The competition was not limited to any genres such as media art, digital art etc., and not limited to Information and Communication Technologies.

Recommendations by international advisors

To encourage a wider range of participants as well as a geographical and gender balance, 20 international advisors who are experts in the field were engaged to recommend interesting projects and artists. These recommended participants were contacted by the Ars Electronica team and asked to submit their project via the submission platform, with the same process and deadlines as for the open submissions. These international advisors served as facilitators to identify relevant works and projects during the submission process and helped to ensure a wide reach out and fast introduction to the new award.

Nominations

All submissions were evaluated by a nomination committee in the order of their arrival. The STARTS Prize Nomination Committee nominated 15 projects for prize consideration by the jury. Since the main categories of Prix Ars Electronica have a strong overlap with the criteria of the STARTS Prize, artists submitting for the Prix Ars Electronica could decide to enter their submission also for the STARTS Prize. Of these submissions a total of five projects per category were nominated for prize consideration by the three Prix Juries (Computer Animation, Interactive Art+, and Digital Communities). The resulting list of 30 nominations represents a comprehensive overview of the international state of the art collaborations between art and technology. Therefore all 30 projects are published in the *CyberArts 2018* book.

Jury Selection

In the final round, all 30 nominations were evaluated by the STARTS Prize Jury in order to select two prize-winning projects and up to ten Honorary Mentions. The jury consisted of nine experts, one representative of each Prix Ars Electronica category, and six representatives of the nomination committee. All decisions were unanimous.

STARTS Prize '18, a joint project by Ars Electronica, Bozar, and Waag.

Anticipatory Art Sci Futurists

Joint statement of the STARTS Prize '18 Nomination Committee (Francesca Bria, Andrej Heinke, Sophie Lamparter, Daehyung Lee, Alexander Mankowsky, Seiichi Saito) and the STARTS Prize Jury (Francesca Bria, Andrej Heinke, Sophie Lamparter, Daehyung Lee, Alexander Mankowsky, Seiichi Saito, Kazuko Tanaka, Victoria Vesna, Alex Verhaest).

From the total of 2,344 entries, 811 projects were directly submitted to STARTS Prize '18. These 811 entries were reviewed by an international expert group, the STARTS Prize Nomination Committee, consisting of Francesca Bria, Andrej Heinke, Sophie Lamparter, Daehyung Lee, Alexander Mankowsky, and Seiichi Saito. The group spent three days reviewing the many excellent applications during one of the first sunny weekends in Europe, and singled out 15 projects to be nominated for the STARTS Prize.

In parallel, the Prix Ars Electronica juries were reviewing those projects that were submitted to STARTS Prize as well as to Prix Ars Electronica in the categories Computer Animation, Interactive Art+, and Digital Communities. Each jury was asked to select and to nominate five additional projects from their specific category for the STARTS Prize. For the final decisions, one representative of each of the Prix Ars Electronica Expert Juries joined the STARTS Prize Nomination Committee to form the STARTS Prize Jury, namely Alex Verhaest from the Computer Animation category, Victoria Vesna from Interactive Art +, and Kazuko Tanaka from Digital Communities. We made the decisions together as the STARTS Prize Jury.

STARTS Prize and the overall STARTS program of the European Commission send an important signal to the world supporting art, science, technology and industry collaborations. Everyone in the room understood the privilege of being able to review carefully what creative people worldwide are working on, what they care about, what they feel, and what they feel passionate about. 2,344 projects were submitted by artists, designers, entrepreneurs, companies and universities, individuals, collectives, communities, and institutions. All agreed that successful companies of tomorrow will actively include artists and designers. Targeted thinkers should combine forces with divergent thinkers—those who experiment in the wide-open space, who professionally wander, who are comfortable being uncomfortable. Only by looking at

a problem from different perspectives will we find the best solutions. Europe with its strong and diverse cultural heritage, its artistic avant-garde, forward-thinking academia and long-standing industry is an excellent place to demonstrate the power of collaboration and become a global example on how we can co-create the future.

The jury analyzed the global tendencies that emerged throughout the review process and many controversies and questions were discussed at length. Topics that kept surfacing were related to concerns about the critical environmental issues of our planet—from pollution to wars and human suffering. Many projects submitted were concerned with water—from water quality to sea level rise and plastic in the water. The Great Pacific Garbage Patch, the billions of kilos of plastic covering the water surfaces can no longer be ignored. Artists, designers, entrepreneurs are not waiting anymore for corporations and politics to finally steer this sinking ship but propose their own solutions. The jury also noted that the complicated and evolving relationship between humans and machines is still very much present as a topic of interest for artists and designers. Will these machines help us? Will they replace us? And who is making these decisions? A clear signal was registered—we should consider these complex interactions now and ask important questions such as: Is it ok to design virtual assistance who sound exactly like humans? How do we consider data and privacy when we speak about brain-computer interfaces? How can we understand and communicate with autonomous systems, like cars on the streets?

Finally, the jury also got a glimpse into what's going on in the global mind and what the future might bring. Artists, scientists, designers, engineers working together are futuristas, or as Buckminster Fuller would say – Anticipatory Design Scientists who are preparing us for what is coming. Considering the main trends that emerged, the jury was interested in picking visionary ideas for

the future that look to practical applications which could have an impact on existing models of production and by extension society in general. The ultimate questions were whether the project pushes at the known boundaries and exhibits high technological and aesthetic sophistication as well as excellence in research.

STARTS Prize '18

In an elaborate process that includes an open call and recommendations by advisory experts, a total of 2,344 entries from 88 countries were submitted during the application period that ran from January 10th to March 12th, 2018. Out of the total number of 2,344 entries, four groups of experts nominated 30 projects for the STARTS Prize, which were presented to the STARTS Prize jurors for final consideration. Following extensive deliberations, the STARTS Prize '18 Jury decided to award *Future Flora – Celebrating Female Biophilia* by Giulia Tomasello for Artistic Exploration, and *Amsterdam's 3D Printed Steel Bridge* by MX3D & Joris Laarman Lab for Innovative Collaboration.

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.

Future Flora Celebrating Female Biophilia Giulia Tomasello

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

Grand Prize – Innovative Collaboration

Awarded for innovative collaboration between industry or technology and the arts (and the cultural and creative sectors in general) that open new pathways for innovation.

Amsterdam's 3D Printed Steel Bridge

MX3D & Joris Laarman Lab

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 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

Honorary Mentions

489 Years

Hayoun Kwon

489 Years is located in the demilitarized zone (DMZ) between North and South Korea—a dangerous place filled with unmapped landmines and hidden from media coverage. This highly relevant topic became even more so in the time between the jury deliberations and the present. In this interactive VR piece, the viewer approaches, enters, and experiences the DMZ through the eyes and memories of a South Korean soldier. First-person perspective is key to the engaging qualities of the piece and VR technology is used successfully by the artist to enhance immersion in the subject in deeply moving ways. Rather than approaching this space as a mere zone of war, the narrator speaks about the redemptive qualities of the beauty of its untouched natural state. By attracting attention to the silent force of nature in the landmine-filled DMZ, Kwon creates an atmosphere of discomfort for the viewer. Her poetic approach to this difficult problem reverberates a surreal atmosphere which is highly pertinent to the current state of affairs. The jury felt that this experience brings humanity and empathy to a very sensitive topic that is frequently misunderstood or lost in political discourse.

BLITAB – the innovative tablet for the blind

Kristina Tsvetanova, Slavi Slavev /

BLITAB Technology GmbH

The temptation when talking about digital technology is often to focus on its visual aspects—not only the transfer of images, but also the aesthetics of digital tools. A world away from the dull, metallic minimalism that dominates tech design, the *BLITAB* offers an alternative view. Invisible to the uninitiated eye, the beauty of this niche product is the result of thoughtful, functional technology that can truly improve people's lives. In our image-obsessed world, the needs and special abilities of visually impaired people are often neglected when it comes to digital experiences. Using unique technology to create a textured display, the *BLITAB* transforms text and graphics into legible bubbles. Thanks to this cutting-edge device, which translates text into "smart braille" in real-time, the pleasure and usefulness of reading online can be accessible even to those who cannot see clearly. When imagining an audience for technological creations, the jury agrees that the focus should be on *humanity* rather than on customers.

ELECTRONICOS FANTASTICOS!

Ei Wada + Nicos Orchest-Lab

What is the role of media art? Wada has been using old consumer electronic devices like CRT televisions, radios, rotary dial phones, camcorders, and more for his pieces. He begins by collecting these items at workshops, in collaboration with local communities. The process seems to revive all of these forgotten devices, transforming old into new. The end result is really cool techno music, sounds one never could have imagined by simply looking at the old gathered items from his workshop. Even more beautiful is the community that he creates around this movement, here everyone of all ages and backgrounds comes together (dressed proudly in the same border shirts) to form his supportive tribe. As it builds, the media art piece gains momentum and opens

doors of how tech can work for communities, and offer experiences of life-changing processes and outcomes. *ELECTRONICOS FANTASTICOS!* represents one of the most important roles of media art: opening doors for everyone, and introducing them to new worlds that they have never before experienced.

Fennec Turbine

Maxim Kuzin, ATOM

Maxim Kuzin aimed to square the circle: Merging beauty, sustainable use, and longevity under harsh conditions. He succeeded by creating the *Fennec Turbine*. It carries on the best Russian traditions, because it works everywhere, under all conditions, without maintenance and it has a deeper purpose of making our world more sustainable. Inspired by a hyperboloid shell structure from the Russian past, Kuzin transferred it from a static plane to a full-fledged dynamic space using supercomputing powers and futuristic alloys from aviation. The resulting structure made of aluminum blades with an optimal airfoil profile looks more like an almost weightless sculpture or a precious vase. Yet it is inherently practical, would look beautiful on every urban roof, and produces power in conditions under which other products cannot work effectively. The STARTS Jury gave Maxim Kuzin an Honorary Mention and sees his project as truly European.

FluidSolids

FluidSolids® AG

If society wants to be serious about the environment, the production and use of synthetic plastic, especially single use plastics, has to stop. The designer Beat Karrer, with a small team in Zurich and through a research collaboration with the University of Applied Science in Rapperswil, invented a serious alternative. *FluidSolids* is a new bio-based material made from natural industrial waste like wood, foods, or paper. Compared to other bio-polymers currently on the market, this

approach is convincing as it uses existing waste and turns it into value without any compromises in design or quality of the material. This bioplastic can be used for furniture, interior design, electronics, and packaging—the only difference is it's either reusable or 100% compostable. Companies and large industrial players will only make impactful ecological investments if they also offer clear economic benefits.

Making Sense – Citizen Sensing Toolkit

Making Sense Team

The CAPS EU funded project *Making Sense*, coordinated by the Stichting Waag Society, shows how citizens can use open source technology and open sensors to collectively act at the civic level. *Making Sense* developed an easy to install Toolkit—including a sensor kit and a data platform—which allows citizens to collect, share, and interpret open data about temperature, humidity, noise, and air quality. The project enables citizens, city halls, and communities to use data for the common good, since it can improve citizens' environmental awareness. The smart *Citizen Sensing Toolkit* fosters citizens' engagement in solving urban environmental issues they care about. It also facilitates their collaboration with experts and technologists to achieve positive change through real world pilots.

phosphere

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

The jury found *phosphere* to be an excellent example of a complex immersive artwork / dance performance piece created by a large interdisciplinary collaborative group with visual and technical direction under media artist Daito Manabe and the Rhizomatiks Research studio. The unique performance experience brought together creatives from engineering, sound, stage design, featuring ELEVENPLAY choreography and dancers and signifies a new era of stage direction and design. *phosphere* ("sphere of light") uses advanced digital technology to reproduce the processes of crystallization of certain minerals in a physical space and

participants find themselves as part of an ever-changing, intangible architecture of light flickering about them, as if guided by intuition. The movements of light beams are reminiscent of natural forms waving beneath the surface of water or blowing in a breeze. At once a scene and an installation, *phosphere* entails both the physical space of the room and a space imagined within a computer.

Printed Paper Actuator

Morphing Matter Lab at Carnegie Mellon University

We have been living with paper for more than two thousand years. It is a commodity that closely interfaces with human beings, even in this digital age. There have been several attempts at tech paper innovation over the past few years, for example, circuit ink printers and pens, but there has not yet been a huge innovation. However, the *Printed Paper Actuator* takes a new approach—not just printing circuit but actually kinetically working with paper. This innovation transforms the old media of paper and signals a new phase of media expression for industrial purposes (prototyping) and/or for pleasure (DIY for kids). These technological and material innovations take our idea of paper to the next level.

Shadertoy

Pol Jeremias Vila, Iñigo Quilez / Beautypi

Since the Open Graphics Library (OpenGL) was created in the 1990s, 2D and 3D graphic expressions have stepped into a new generation. The beauty of 3D graphic for games, films, and animation have been advancing based on this Open Library Platform for graphic hardware. The animation industry, however, has been struggling with shader, as it requires knowledge of programming, 3D creative platform rendering, and hardware. *Shadertoy* emerged in 2009, dedicated exclusively for WebGL, which has become the main browser based platform for 3D interactive and real-time animation. This open platform for creating and sharing shaders is by and large the next big leap

for every creator, student, and educator in the field. The jury felt it was important to recognize the work that has served over 11,000 creators who have contributed their experiments, rendering techniques, and procedural art. *Shadertoy* is a good example of crowdsourcing and openly sharing creative knowledge that leads to better artworks as well as professional applications.

The Institute of Isolation

Lucy McRae

The jury recognized that the work of Lucy McRae has been successful in capturing the public's attention. Her movies reference genetic engineering, space travel, sensory deprivation, and the changing of the human body in relationship to these scientific advances. Although fictional and clearly an artist's vision, what is particularly striking about her films is the obviously deep and serious research that goes into the development and creation of the work. Here is an example of artwork that functions as many science fiction authors have—as visionaries that later inspire scientists to manifest the ideas into reality—making what seemed impossible at the time possible. In the *Institute of Isolation*, the artist addresses issues of our bodies and minds being slowly conditioned to a new set of possible existences—on other planets, with different sensory experiences. Inspired by the book, *Evolving Ourselves* in which the authors claim that we are not subject to Darwinian notions of evolution by nature but by our choice, she produced a film that is in-between science fiction and hard science—a quite possible future scenario. This vision may prove to be of interest to those who are envisioning travel and life on other planets or even how we may have to change to survive the environmental destruction of our own planet. This project was sponsored under the aegis of the EU-funded project SPARKS.

STARTS Prize '18

Nominations

Alter

Kohei Ogawa, Itsuki Doi, Takashi Ikegami, and Hiroshi Ishiguro

Archive Dreaming

Refik Anadol Studio

DeepWear

Natsumi Kato, Hiroyuki Osone, Yoichi Ochiai

Digital Shaman Project

Etsuko Ichihara

GreenCake Block

Majd Almashharawi

NeuroSpeculative AfroFeminism

HypHEN-Labs / Carmen Aguilar y Wedge, Ashley Baccus-Clark, Ece Tankal, Nitzan Bartov

Norman

James Paterson

Off Grid

Andrew Styan

Pounding Heart

Yasmin Litschauer, Chiara Mazanec, Aisling Pircher, Laura Scheidl, Johannes Zotte

Quantum Fluctuations

Markos Kay

Radio Garden

<http://radio.garden>

Rapid Liquid Printing

Self-Assembly Lab, MIT + Christophe Guberan + Steelcase

Rediscovery of Anima

Akinori Goto

RidRoid "CanguRo"

Future Robotics Technology Center (fuRo), Shunji Yamanaka

Self Reflected

Greg Dunn, Brian Edwards, Will Drinker

Social Wallet

Dyne.org

VFRAME: Visual Forensics and Advanced Metadata Extraction

Adam Harvey

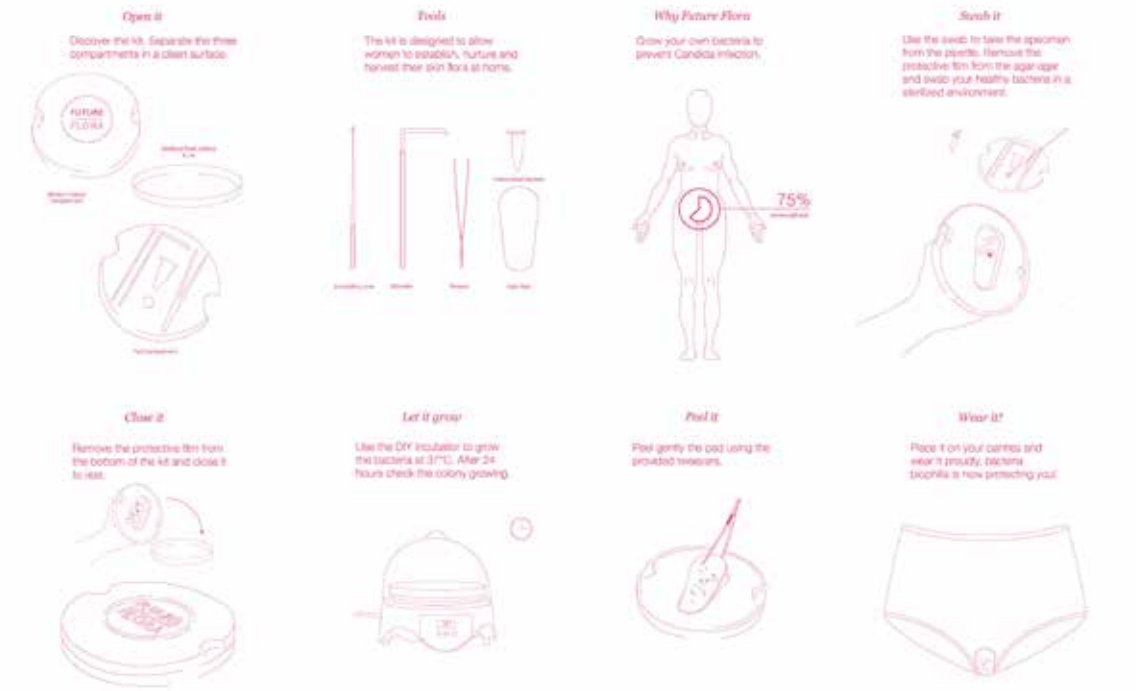
Who Wants to Be a Self-Driving Car?

Joey Lee, Benedikt Groß, Raphael Reimann, MESO Digital Interiors, David Leonard



STARTS Grand Prize PRIZE '18 Artistic Exploration

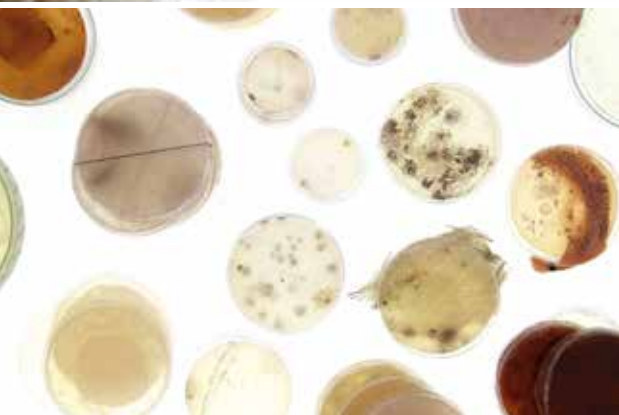
Awarded for artistic exploration and art works where appropriation by the arts has a strong potential to influence or alter the use, deployment, or perception of technology.



Future Flora Celebrating Female Biophilia Giulia Tomasello

We aren't just single individuals walking the planet: we are walking ecosystems made of microbes. Microbes are in the soil, in the water, and even in our bodies. The average human body is made up of trillions of cells: therefore, we can easily say that we are only 10% human. We live and co-exist with them. The other 90% of the human body is composed of different microorganisms, most of which are beneficial to their host. Microbes as bacteria, fungi, and viruses are part of our Skin Microflora, covering both the inside and the outer surface of the body. Even though invisible to our eyes, our microflora has a symbiotic relationship with the interface between our body and the environment—our skin¹. *Future Flora* aims to encourage this symbiotic relationship that raises the beneficial presence of microbes and bacteria in the human body, suggesting an alternative: to wear probiotics and keep

our body healthy. *Future Flora* is a harvesting kit designed for women to treat and prevent vaginal infections. The user is a woman who wants to embrace biotechnology in her house, allowing science to show alternatives to traditional medicines and probiotics. Following DIY procedures and merging biology with health-tech, *Future Flora* addresses women who are taking control of their own bodies as a precious and intimate practice of self-care, becoming a participant in the culture and the knowledge of science. How can design challenge our perception and celebrate the symbiotic relationship between the human body and its microbiome? Aiming to encourage this symbiotic relationship that raises the beneficial presence of microbes and bacteria in the human body and suggesting an alternative of wearing probiotics in our underwear to keep the body healthy.



Tom Mannion

Jan Vrhovnik

The project tackles the experience of growing and nurturing living organisms at home. The bacterial pad grows the necessary strings of *Lactobacillus* bacteria to create a hostile environment for the further development of *Candida Albicans*, acting as a living culture of probiotics. By placing the pad in contact with the female genitalia, the healthy bacteria grow on the surface of the infected area, reconstructing the microflora missing in the vagina epithelium. Considering that 75% of women suffer from Candidal vulvovaginitis (CVV) at least once in their lifetime, *Future Flora* explores women's approach in the context of personal self-care and body awareness, generating an intimate and delicate interaction between the action of nurturing bacteria while they grow, and then wearing them as a second layer of your panties.

Celebrating a *Female Biophilia*, Tomasello opens the possibility of wearing microorganisms in the future, and embracing them as part of our natural well-being. Taking care of her own health, the woman becomes a citizen scientist, establishing a first relation with her body and what is part of her living surroundings. Clothes and accessories become the ecosystem that balance the entire skin microflora.

Future Flora proposes alternatives to embrace biological remedies in our home, challenging the values and beliefs that our society embodied in the material culture. The intention behind *Future Flora* is to design a tool that will educate and enable women to take a more active role in their health-care, prompting them to seek medical advice as necessary and ultimately break some of the taboos associated with urogynecology health. Designed to empower women and increase their self-care, becoming familiar with their own bodies, developing self-confidence, and becoming active patients able to seek healthcare professional advice, discuss their symptoms openly and ultimately break the taboos that are still associated with gynecological health. A social stigma that is still pervasive in both developed and developing countries.

Future Flora aims to encourage new propositions for the society and for the future of women's healthcare by introducing the importance of a female biophilia's approach.

¹ The *Human Microbiome Project*, a research initiative by the US National Institutes of Health (2008–2017), investigated the role of microbial flora in human health and disease. Info adapted from: en.wikipedia.org/wiki/Human_Microbiome_Project

Designer and creator: Giulia Tomasello
External expert, science communicator, founder at The A Level Biologist: Arian Mirzarafie-Ahi

Giulia Tomasello (IT), born in 1990, is an interaction designer and researcher specializing in wearables, biotechnology, and material finishes. She is currently Research Assistant in Interactive Wearables at Nottingham Trent University. In the past two years she has been investigating the potential of biotechnology and living materials, proposing a biological and sustainable alternative for electronic textiles. She considers herself a maker and explorer, using materiality to question and communicate the boundaries between technology and our bodies. By designing alternative scenarios and acting as a creative thinker, Giulia questions our notions of wellbeing to develop innovative tools in the intersection of medical and social sciences. These intersections are enabled by her multidisciplinary collaborations and the symbiosis between her creative and scientific work, generating knowledge exchange and social integration in healthcare.



Future Flora

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



STARTS Grand Prize PRIZE '18 Innovative Collaboration

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

Amsterdam's 3D Printed Steel Bridge

MX3D & Joris Laarman Lab

The project's most iconic image shows robots autonomously printing a steel bridge over a canal. The MX3D bridge project thus started as a visionary moonshot project, an artist's dream. Several years later that dream has been solidified in the 3D printed stainless steel bridge. This fully functional pedestrian bridge for the city center of Amsterdam will be completed in 2018, to be placed at its final location soon after. The bridge will also be rigged with a sensor system, allowing our team of data centric engineers to generate data on the structural behavior which will inform a digital twin. That twin will help to evolve the initial form language into a truly novel digital aesthetics. The bridge offers the ultimate proof we can now print large, beautiful, and intelligently designed

structures in metals. It turned out that visualizing how this technology could impact our future was the missing link as the project easily mobilized scientists, companies, and citizens around this shared dream. For the team of printers, material scientists, Erasmus scholarships, engineers, and city officials the bridge project became a playground, allowing for unconstrained tinkering on the introduction of these types of technology in a city environment. Designed by Joris Laarman Lab, the bridge serves as a metaphor, aesthetically connecting ancient Amsterdam to a new age of possibilities. The artistic drive of the Lab was the fundament of this project, which inspired the innovative collaboration that was needed to realize the project.



Adriaan de Groot



Adriaan de Groot



The frame of the bridge consists of 8mm thick tubes. In the handrail, which is part of the construction, two 3 mm plates regularly connect, creating a strong “waffle” structure. As the two bridge heads are not perfectly aligned, the bridge curls towards the other side in an S-shape. The force lines created by this shape dominate the structure, both structurally and visually.

How it all began

A 2011 Lab experiment ultimately led to the creation of the multi-disciplinary team MX3D and its 3D printed *Bridge* project. This first project, *MX3D Resin*, mainly served as a proof of concept. It showed that one could venture far beyond the boundaries of the classic building volume. The team managed to print large scale objects without the need for support structure. By mobilizing the robot it could print on a virtually unlimited scale. The overwhelming response to the *Resin Project* showed an intense and shared desire within the creative tech community to break free from those constraints. By dissolving this mental barrier, Joris

Laarman Lab and MX3D played a critical part in speeding up the development around large-scale 3D printing. The first MX3D piece was a 2x4x1.5-meter sculpture designed by Joris Laarman, the *Dragon Bench*. This proved that it was now possible to 3D print metals on a scale previously unthinkable. Fantasizing further on the potential applications, MX3D created a bridge design concept.

This project is a collaboration by MX3D and Joris Laarman Lab.

Robotic 3D-printing, concept, innovative collaborations, execution: MX3D

Design, concept and bridge design: Joris Laarman Lab

MX3D Team (current): Gijs van der Velden, Tim Geurtjens, Joris Laarman, Anita Star, Filippo Gilardi, Boyan Mihaylov, Kasper Siderus, Casey Hemingway, Thomas van Glabeke, Jean Francois Moulin, Barney Salsby, Rasmus Frankel, Diane Toxopeus, Cas Nieuwland, Daan Goedkoop, Teun van der Velden.

With the collaboration of: The Alan Turing Institute, Autodesk, ArcelorMittal, Arup, Lenovo, ABB, Airliquide, Gemeente Amsterdam, The Amsterdam Institute of Advanced Metropolitan Studies, Heijmans

MX3D (Amsterdam, 2015) is led by CEO Gijs van der Velden and CTO Tim Geurtjens. It is a spinout company originating from the renowned Joris Laarman Lab. The company develops (mobile) 3D large scale printing solutions. Its robotic metal printing technique allowed for the introduction of all the creative and practical advantages of 3D printing to entirely new industries like architecture and engineering. Initially the company inspired the tech community by sharing their early experiment on social media. The ecosystem created by this open attitude towards innovation formed the breeding ground for the innovative collaboration needed to construct the *Bridge* project. The company is collaborating with a bridge builder in the Netherlands and will supply its technology to several other industries within the next years.

Joris Laarman Lab (Amsterdam, 2004) is an experimental playground set up to study and shape the future. It tinkers with craftsmen, scientists, and engineers with upcoming technology and its consequential aesthetics. The lab was started in 2004 by Joris Laarman and filmmaker Anita Star. Joris attended the Design Academy Eindhoven in 1998 and graduated cum laude in 2003. Anita studied film at the UVA in Amsterdam. The lab first gained attention with the *Reinventing Functionality* project, which included functional rococo radiator *Heatwave* that was picked up by Droogdesign and is now produced by Jaga. Joris Laarman Lab has over 70 works in 37 museums like the MoMA, V&A, Centre Pompidou, and recently the Rijksmuseum Amsterdam where the *Bone Chair* is exhibited. In 2011 Joris Laarman received an “Innovator of the Year” award by *The Wall Street Journal* and in 2016 the Amsterdam Art Prize. In November 2015 an extensive solo exhibition of the experimental work initiated by the Groninger Museum was visited by more than 200,000 visitors and started travelling around the world.





HONORARY

MENTIONS



489 Years

Hayoun Kwon

489 Years shows an animated landscape of the Demilitarized Zone between North and South Korea, based on the narration of a former soldier who had entered the DMZ—one of the most dangerous and heavily armed places in the world. Since only authorized personnel can enter the DMZ, Hayoun Kwon uses animation as a medium to reconstruct the space that plays on the fiction and the fantasy of a forbidden territory, providing an indirect experience for the viewer.

The former soldier featured in *489 Years* tells Hayoun Kwon various stories of his experiences in the DMZ. Among his many accounts, the artist was touched by his story of the landmines and flowers, realizing that she wanted the viewer to experience the DMZ as a paradoxical place where intense anxiety and subliminal beauty coexist. In creating her imagined landscape, Hayoun Kwon addresses the geopolitical realities of the peninsular division, its violence and projected images of this mythical space.

Originally shown through a Virtual Reality device, artificial interventions and fictional constructions enable the artist to film what cannot otherwise be shown. Animation affords her the freedom to theatricalize, exaggerate, and push the frontiers of representation, and even to exploit the fantastic potential of her subjects. Reflecting on identity and the notion of the border, Hayoun Kwon interrogates the construction of individual and historical memory, as well as the ambiguous relationship of both to reality and fiction. Offering the viewer an entrance into the DMZ, Hayoun Kwon's work leads the viewer to experience the DMZ through human emotions of anxiety and wonder.

Director: Hayoun Kwon
 Level designer: Fabrice Gaston
 Tech artist/Animation: Guillaume Bertinet
 3D Modeler: Laurent Raynaud
 Sound designer: Sylvain Buffet
 Composer: Pierre Desprats
 Consultant: Balthazar Auxietre



Hayoun Kwon (KR), born in 1981, is a multimedia artist and documentary director. She graduated from Le Fresnoy – Studio national des arts contemporains in 2011 and she lives and works in France and in Korea. Her films *Village Model* (2014) and *489 Years* (2016) have received several awards and been shown at a number of film festivals including Ars Electronica 2018. The reflection on identity and borders is central to her previous works. She has focused more specifically on the construction of historical and individual memory and their ambivalent relationship to reality and fiction.



BLITAB— the innovative tablet for the blind

Kristina Tsvetanova, Slavi Slavev / BLITAB Technology GmbH



BLITAB® is the world's first tactile tablet for blind and visually impaired people. It is the first ever Braille tablet using an innovative actuating technology to create tactile text and graphics in real-time. The invention is 'smart tactile technology' that can also be used in various products and smart body applications. *BLITAB*® is the first tablet that allows blind and visually impaired users to learn, work, and play with one mobile device, to have digital access to information in real-time. *BLITAB*® converts any document into Braille text. Tixel (tactile pixels) immediately appear and disappear as the text changes. Worldwide there are more than 285 million blind and visually impaired people, a number expected

to double by 2020 (WHO, 2012). Only 1% of all published books are available in Braille, the traditional tool for literacy and education of blind people. There is a correlation of 0.9 between being a Braille user and being employed. In the developed world, over 75% of the blind and visually impaired population of working age are unemployed. For those with visual impairment, enabling print reading with Braille makes the difference between employability and educational achievement. Inspired by a blind friend, in late 2014 we established our innovative start-up company *BLITAB*® Technology GmbH in Vienna, and later developed together with our team a novel liquid-based technology to create tactile relief outputting Braille,



graphics, and maps on a newly designed tablet. In the last 12 months, we scaled the technology and thus produced the world's first tactile display without any mechanical elements. Then we embedded it into a functional device called *BLITAB*®.

In 2015, we were part of two national funding programs in Austria ("departure pioneer" by Wirtschaftsagentur Wien and AWS Austria "Impulse XS") as well as some national grants for social startups. In 2016, *BLITAB*® was part of the EU Accelerator CreatiFI Call1 and Call2.

Kristina Tsvetanova (BG), CEO and co-founder, graduated from the Technical University of Sofia. She has experience in Supply Chain Management and Industrial Engineering at international companies and is an innovation consultant to the G7 in the field of Technology, Research & Innovation. She is a highly acclaimed social entrepreneur—European Winner of Social Entrepreneurship and Disability (2015) and winner of the EU Prize for Women Innovators under 30 (2017). Accomplishments in Europe, USA, Mexico, Singapore, China, and Japan, and her efforts to empower unprivileged children via tech, make her one of The Social Movers of the day (Agora+D). **Slavi Slavev** (BG), CTO and co-founder, has a solid background in Business Informatics and Smart materials. He has 7+ years of experience in commercial and business IoT, IT Innovations, and software development and design. With a focus on innovative IT products, he is always thinking at least four products ahead of current development. He is responsible for the technical development and prototyping of *BLITAB*®. Slavi is also in charge of production and distribution strategy of the company, with the goal of material and waste optimization.



ELECTRONICOS FANTASTICOS!

Ei Wada + Nicos Orchest-Lab



Mao Yamamoto

ELECTRONICOS FANTASTICOS! is a project where retired consumer electronics are resuscitated as instruments, new ways to play music are invented, and all kinds of people are invited to be orchestrated with the artist and musician Ei Wada.

Once we dismantle old consumer electronics, we realize the condensed wisdom of pioneers and the interesting and mysterious scientific/physics phenomenon hidden inside these objects. By transferring these into electronic musical instruments, a sound like a groan of electronics begins to echo. Old consumer electronics come to life as *yokai*—supernatural creatures from Japanese folklore, sometimes they appear as spirits of abandoned tools.

Currently, we have three main bases of creation: Tokyo, Kyoto, and Hitachi. More than 70 members have joined the project from diverse fields such as engineers, designers, musicians, and management members. In November 2017, under the most symbolic old radio tower Tokyo Tower, we staged the Electro-Magnetic Bon-Dance. The original purpose of the Bon Dance is to mourn the dead; here we extended its concept for the memo-

rial service of electronics that have played a major role in economic growth. Elderlies who donated electronics came to see the concert; children fell in love with instruments, engineers who work at electric appliance companies were thrilled to create instruments.

Everybody is enjoying the project and is very surprised how daily items have been fantastically transformed. We dream and search for the answer to our question, what is the new folklore music of urban cities? We want to realize a festival that strongly contrasts with the efficiency and rationality of the AI era, to breathe life into trash that holds memories of someone, and to produce new instruments through ideas, fantasies, and technology with many people. As a next step we wish to develop a new relationship between objects and the human spirit. We believe that this project has the potential to establish a new culture after the fetish for capitalism.

Promoter: Sony Music Artists,
Topping East—nonprofit organization
Producer: Ryouichi Kiyomiya,
Topping East—nonprofit organization



Florian Voggeneder



Florian Voggeneder



Mao Yamamoto

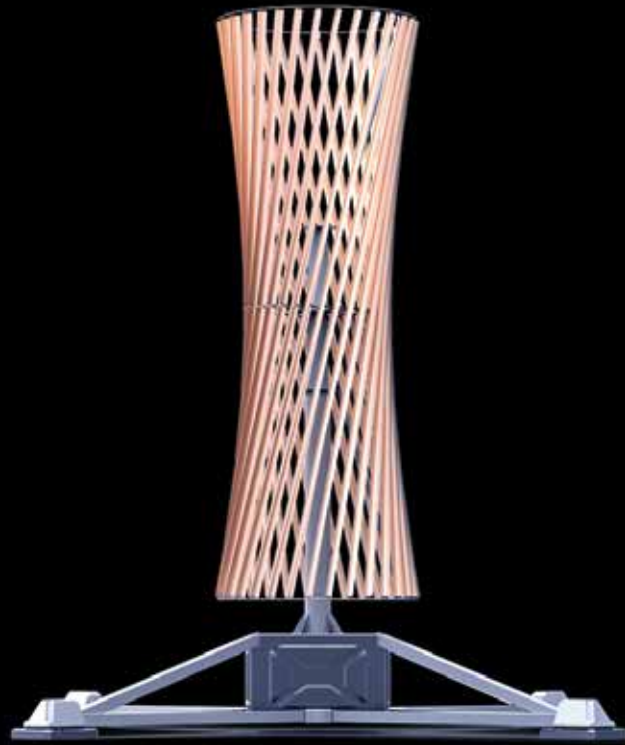
Ei Wada (JP), born in 1987, is an artist / a musician. When he was a child, Wada was convinced that there was a music festival waiting for him under the gigantic tower shaped like the crab legs embedded in tube TV. But when his friend told him that there was no such place on earth, the dream bubble burst. Then Wada decided to make the music festival himself. **Nicos Orchest-Lab (JP)**. A project team was formed for *ELECTRONICOS FANTASTICOS!* (nickname: Nicos), which started in 2015. New members coming from diverse fields have since joined the project and they improvise and exchange fantasies, knowledge, and techniques on a regular basis.



Mao Yamamoto

Fennec Turbine

Maxim Kuzin, ATOM



The *Fennec Turbine* is a state of the art and technology compact wind turbine with low noise, high safety, and long use. The heart of the technology is a unique hyperboloidal rotor which provides the lowest noise and vibrations. From the art point of view this is the new dimension for well-known works with hyperboloidal shells of famous Russian engineer, Vladimir Shukhov (1853–1939). The project moves his works from the static to dynamics. The *Fennec Turbine* is on the cutting edge between architecture and machines.

A lot of work was done to find the perfect form for low kinetic impact and low noise rotor whose productivity will be comparable to the modern wind turbine. Also, after the basic solution was found, much more work was done in the field of aerodynamical optimization to discover and determine the exact values of the parameters and reach the efficiency of the whole system, from mechanical power of wind stream to battery bank, of 17%, which is not far off the 22% efficiency of best huge wind turbines produced by Siemens and GE. And the *Fennec* project is just getting started, so there are a lot of improvements planned.



Maxim Kuzin (RU) gained an aerospace engineer degree from Moscow State Aviation Institute (MAI) since 2012. He is the CEO and founder of ATOM design bureau (CJSC "Experimental Design Bureau ATOM," okbatom.com). From 2013–2014 he was the project manager and general engineer of Tram R1 okbatom.com/projects/r1. He is a college teacher and course author—Basis of the theory of mass production—at MAMI, Moscow Polytechnic University.



FluidSolids®

FluidSolids AG



FluidSolids® is an innovation that makes it possible to transform organic waste into biocomposites. A technology platform designed for the circular economy. Material innovation justifies itself on the strength of added value: it makes products and applications more flexible, stable, ecological, and cost efficient. FluidSolids® meets all these requirements. With its excellent ecological and physical qualities, the new biocomposite FluidSolids® developed in Switzerland has the potential to capture the market in the near future as an alternative material for myriads of products made of metal, wood, and especially plastic. In comparison to other biopolymers, FluidSolids® does not compete with the food supply chain—it is made of by-products of renewable raw material. This highly versatile biocomposite is processable with the conventional techniques of industrial mass production. Enormous potential lies in its capacity to address the substantial environmental problem of plastic packaging waste. Its ecological qualities predestine FluidSolids® to be sought-after by sustainability managers worldwide to make environmental strategies become real.

Material

FluidSolids® is a biodegradable composite material. The components consist of renewable resources that are procured from industrial by-products, therefore no agricultural land is used. The material is nontoxic, odor- and emission-free and has a minimal carbon footprint. FluidSolids® features maximum surface finish and molding accuracy, a variety of surfaces, structures, and colors next to highly modifiable physical qualities and durability.

Processing

FluidSolids® is developed for industrial production and can be processed in various manufacturing techniques such as:

- Compression molding
- Extrusion
- Injection molding

Team: Philippe Jacot, Francesca Tancini, Martin Zürcher, Martin Meyer, Claude Denier, Andreas Herold, Gabriela Chicherio, Daniel Schwendemann, Peter Troxler, Pascal Stübi, Tobias Lutz

Luca Zanier



Luca Zanier



FluidSolids AG (CH). 2011: born in Zürich—1 employee experiments with first show-cases. 2012–2013: childhood years—2 employees prototype small series and realize a first customer project. Collaboration with the University of Applied Sciences Rapperswil. 2014–2015: school years—3 employees produce small series and prototypes of larger series. Collaboration with the Swiss Federal Institute of Technology. 2016: leaving parental home—5 employees produce large series and prototypes for mass production. Moving into the pilot plant in Zürich. 2017: studies—5 employees develop products and processes for mass production. 2018: work experience—6 employees ramp-up mass production.



Luca Zanier



Making Sense—Citizen Sensing Toolkit

Making Sense Team

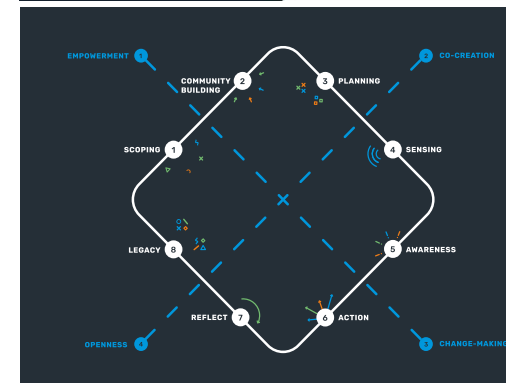
Making Sense was a project funded by the European Commission within the H2020 Call ICT2015 Research and Innovation, under the CAPS “Collective Awareness Platforms for Sustainability and Social Innovation” programme. It was designed to show how open-source software, open-source hardware, digital maker practices and open-source design could be used effectively by local communities to appropriate their own sensing tools to make sense of their environments, and address environmental problems, mainly in air pollution, noise and nuclear radiation. Based on nine elaborate pilots in Amsterdam, Barcelona and Prishtina, *Making Sense* developed a toolkit for participatory sensing, aimed at deepening our understanding of the processes which can enable collective awareness for sustainability. The toolkit consists of hardware, software and guidelines. The pilots have led us to develop a conceptual and methodological framework for participatory environmental maker practices, which we call “citizen sensing.” This framework acts as a guide to providing citizens, communities, and middle ground organisations with the tools to enhance our everyday environmental awareness; in turn, these tools enable active intervention in our surroundings, change in our individual and collective practices, and ultimately, a hands-on transformation of the environment in which we live.

We have brought the learnings of the project together in a Creative Commons licensed, online and printed book containing the *Making Sense* framework, 25 tools, 6 cases, multiple portraits and seven key insights. The book was authored by 23 researchers and practitioners. Furthermore, we updated the Smart Citizen Kit and its platform. *Making Sense* ran between 2015 and 2018, and combined the efforts of Waag Society; University of Dundee; Fab Lab Barcelona at the Institute for Advanced Architecture in Catalonia; the Joint Research Centre of the European Commission; the Peer Educators Network, and University of Twente.

Primary authors for the toolkit:
Making Sense project: Mara Balestrini, Sihana Bejtullahu, Stefano Bocconi, Gijs Boerwinkel, Marc Boonstra, Douwe-Sjoerd Boschman, Guillem Camprodon, Saskia Coulson, Tomas Diez, Ioan Fazey, Drew Hemment, Christine van den Horn, Trim Ilazi, Ivonne Jansen-Dings, Frank Kresin, Dan McQuillan, Susana Nascimento, Emma Pareschi, Alexandre Pólvara, Ron Salaj, Michelle Scott, Gui Seiz, Mel Woods

Design of the book: Lyall Bruce
 Furthermore, we have a substantial list of collaborators, to be found on pages 220 and 221 of the *Citizen Sensing Toolkit* (2018)

Making Sense was funded by the European Commission within the H2020 Call ICT2015 Research and Innovation, specifically under the CAPS “Collective Awareness Platforms for Sustainability and Social Innovation” programme (grant number 688620).



The **Making Sense Team** is comprised of activists, artists, critics, designers, makers, programmers, thought-leaders, and researchers that together have extensive expertise and hands-on experience in citizen science, as well as in developing technology for social innovation and empowerment, aka Digital Social Innovation. They have initiated and taken part in previous European projects that put people, their desires, needs, and abilities first in developing new applications of mostly open source hardware and software. *Making Sense* brought them together based on their complementary skills, and a shared passion for providing tools to enable communities to rise up and take ownership of their data, their city, and their collective future, based on a sound integration of public research and practice.





Nerea Coll ©Sónar Festival ©Advanced Music

phosphere

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

phosphere is an exploratory harmonization of two distinct spaces—a dance stage and an installation component—into one performative spatial whole. Effective use of the space at Gallery AaMo necessitated a number of tricks to ensure that the installation retained its three-dimensionality even when viewed from myriad vantage points. For example, the dance component integrates a wire frame outfitted with multiple mobile cubes of varying size. The deft interaction of dancer movement along with laser projection amplifies the three-dimensionality of the entire space, imparting the viewer with a heightened sense of geometricity. Material physicality is given parity with optical and acoustical program modeling, and melds on an equal level to produce a wholly hybrid performative space.

The performance is divided into nine scenes. The omnidirectional projection accesses a scanned 3D model to produce three-dimensional video on stage that interacts with the dancers' bodies. It should be noted that although holograms have been the subject of diverse research since the advent of media art, insufficient scalability and

security at the current stage have hampered their application in the realm of performance art. As such, the omnidirectional projection introduced in *phosphere* is noteworthy as a new approach to creating life-sized, three-dimensional video that moves onstage with the dancers. By processing in real-time all the elemental movements throughout the entire performance space with motion capture, it is possible to trace the movement of a dancer's hand, for example, and instantaneously convert that movement into three-dimensional video. In turn, this technology unlocks a new realm of creative possibility, and enables a groundbreakingly minute interplay between dance and video elements. In the pivotal culmination of this spatial interplay, objects are reduced to light, and the human body is restored to the transcendently ephemeral.

Stage director, choreographer:
MIKIKO (ELEVENPLAY)
Visual design, interaction design,
technical direction: Rhizomatiks Research
Light designer: Takayuki Fujimoto (Kinsei R&D)
Composer: evala
Cast: ELEVENPLAY



Ariel Martini ©Sónar Festival ©Advanced Music

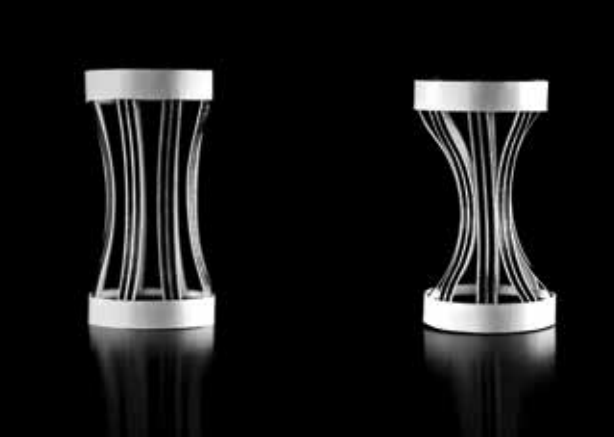


Albert Muñoz ©Sónar Festival ©Advanced Music



Albert Muñoz ©Sónar Festival ©Advanced Music

Rhizomatiks Research (JP) is a Japanese artist group led by Daito Manabe and Motoi Ishibashi. Rhizomatiks Research mainly takes up projects focusing on the field of research and development, and sets priority in opening a new expression for the future. **ELEVENPLAY (JP)** is a dance company directed by choreographer & art director, MIKIKO. ELEVENPLAY was founded by MIKIKO in 2009, and is composed of female dancers from a variety of genres. ELEVENPLAY's methods of expression are diverse, including stages, video works, and still photos. **Hironori Evala (evala) (JP)** is a musician and sound artist. Presents works of leading-edge electronic music and has concerts and installations in Japan and abroad. **Takayuki Fujimoto (JP)** a.k.a. Kinsei is a director and lighting designer. Kinsei began participating in projects of the performance art group Dumb Type in 1987. He also founded his own company, Kinsei R&D, in 2015.



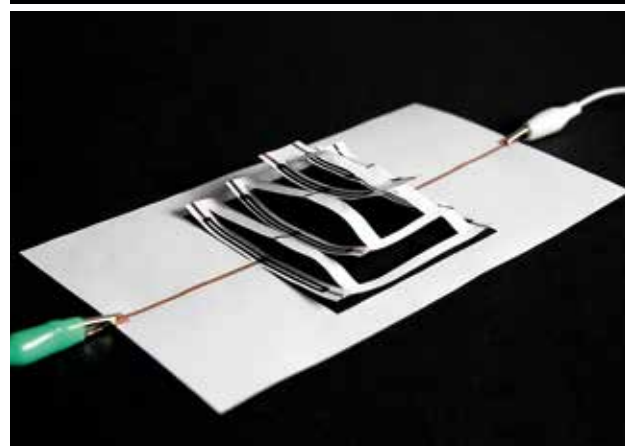
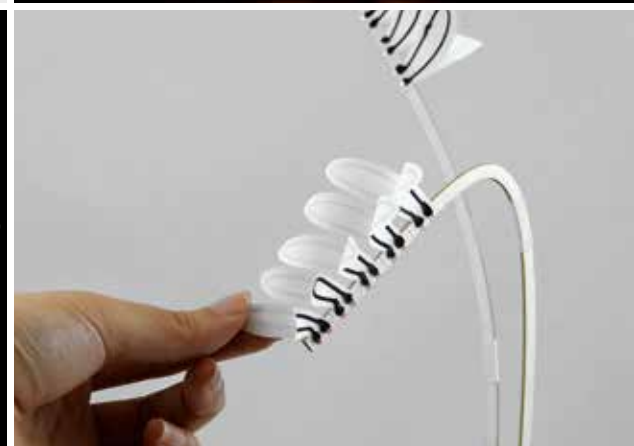
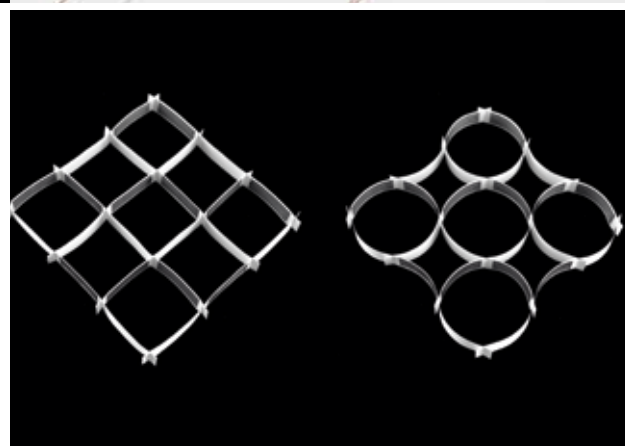
Printed Paper Actuator

Morphing Matter Lab at Carnegie Mellon University

Paper is a lightweight, abundant, and bio-degradable material. In addition, paper affords rich physical interactions including folding, printing, and painting on its surface. In recent years, paper has become increasingly interesting as a material in new interface design including paper robots, paper power generators, electronic pop-up books, animated origami, foldable artifacts, and so on. While many of these paper systems require customized actuation mechanisms, a missing component for paper-based interfaces is a low-cost, easy to fabricate, flexible to customize, reversible, and electronically-controllable actuator that is embedded within the paper. We present the design and exploration of a new electrical and reversible paper actuator printed by a FDM 3D printer. The actuator is composed of inexpensive materials, such as common paper and off-the-shelf thermoplastic printing filaments. The fabrication process is fast and straightforward, which requires a single layer print-

ing with a desktop FDM printer. Our paper actuator can be easily embedded into everyday objects to enable new types of paper-based shape-changing interfaces that exhibit motion, transformation, and rich interactivities such as pop-up books, toys, origami robots, and lampshades. *Printed Paper Actuator* is the project that achieves a low cost, reversible and electrical actuation and sensing method. This method that requires simple and easy fabrication steps enables our paper actuator to achieve different types of motion and even various electrical sensing abilities: touch sensing, slider, and self-bending-angle detection. We introduce a software tool that assists the design, simulation, and printing toolpath generation.

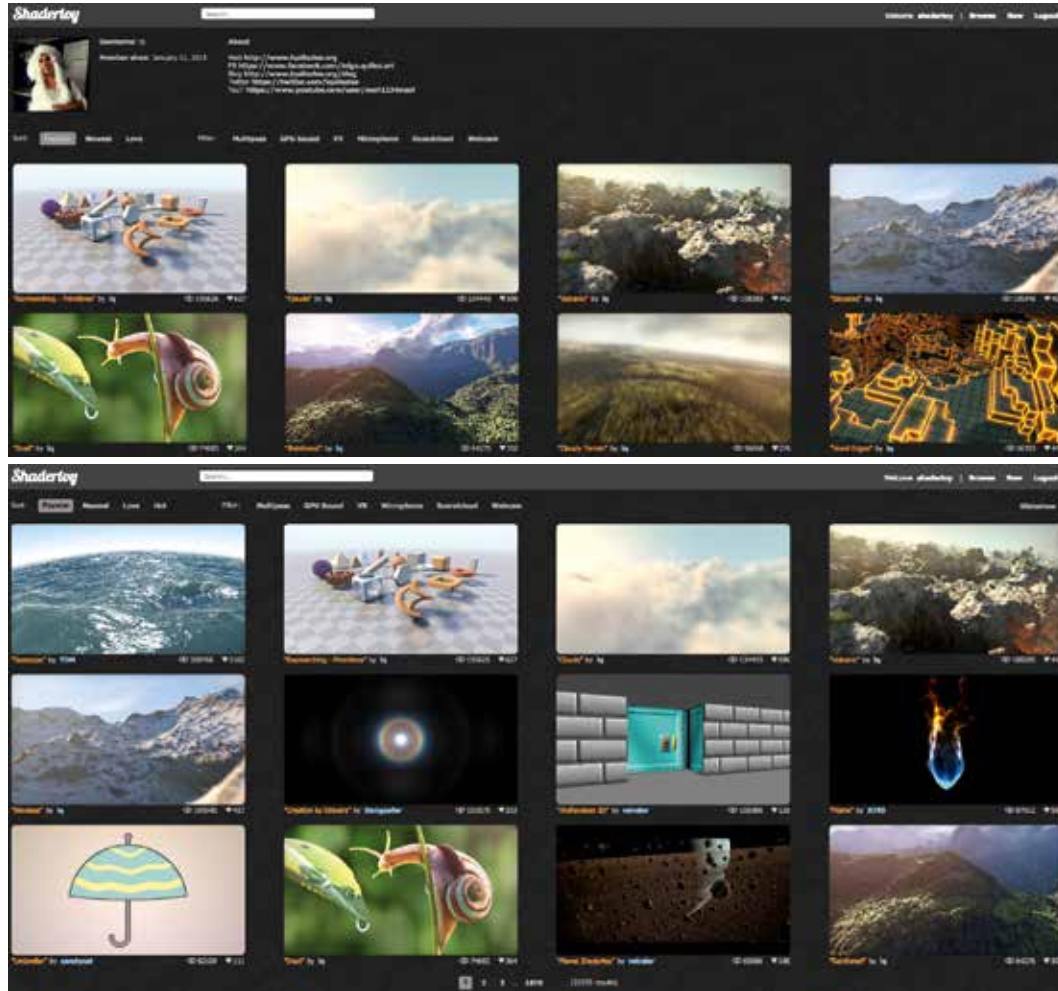
Morphing Matter Lab, Human-Computer Interaction Institute, Carnegie Mellon University
Director: Prof. Lining Yao
Design lead: Guanyun Wang
Design team: Tingyu Cheng, Youngwook Do, Humphrey Yang, Ye Tao, Jianzhe Gu, Byoungkwon An



By developing transformative and adaptive materials, the **Morphing Matter Lab** designs interfaces that redefine the interactive relationship between human, other living organisms, environment, objects, and intangible data. We challenge the definition of traditional human computer interface that was constrained by a computer screen, and encode information and interactivity into physical materials. We call such interactive material "morphing matter." Lining Yao, a designer and Assistant Professor of Human-Computer Interaction Institute (HCII) at Carnegie Mellon University, is Director of the Morphing Matter Lab.

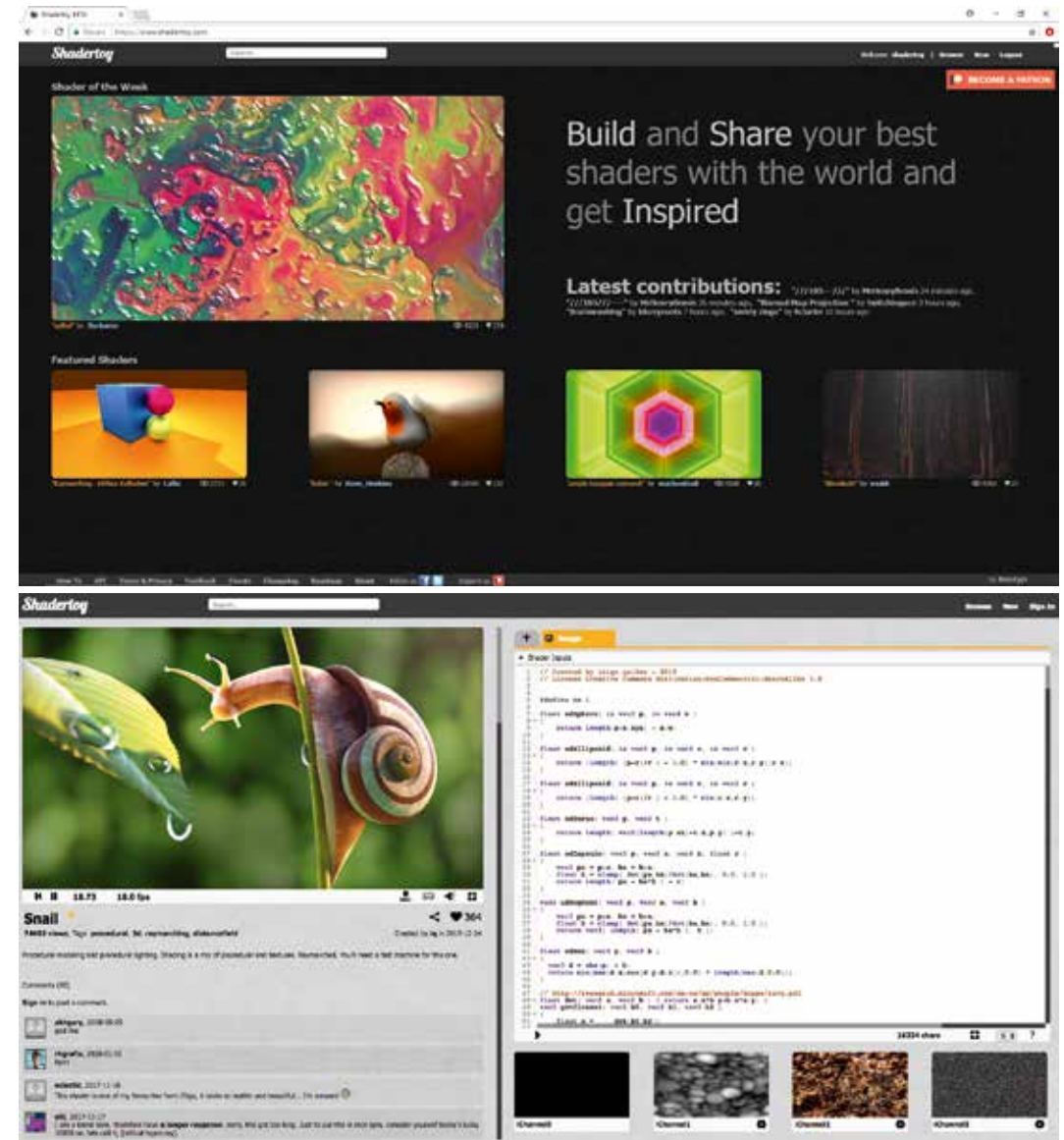
Shadertoy

Pol Jeremias Vila, Iñigo Quilez / Beautyti



Shadertoy.com enables artists, programmers, technical artists, and professors from all over the world to create visuals with code, and then share their work while learning from other creators. The website provides a rich code editor, a powerful system of multi-pass rendering, a system to generate sound from code, virtual reality rendering, and a rich set of inputs to use in pieces such as textures, music, and video. Once a piece is submitted, both the animations and the code behind it are available for everybody in the community to explore, tweak, and learn from. The community side of the website

allows for people to discover, rate, and discuss the work, making it a great place for learning. Shadertoy was created by Pol Jeremias Vila and Iñigo Quilez. It has been online since February 2013, and more than 85,000 pieces have been submitted by more than 50,000 creators. The contributors come from different backgrounds, such as the arts, game development, academia, and the film industry and represent over 100 different countries. And the best part is that Shadertoy is completely free.



Pol Jeremias Vila (ES) lives for real-time graphics. He grew up in Barcelona, but his desire to research and create real-time graphics brought him to California in 2006. After completing his Master's degree in Computer Science at University of Southern California, he joined LucasArts where he worked on rendering technology for Star Wars 1313, as well as other games. Today, he works at Pixar Animation Studios where he develops rendering algorithms to help the artists make movies. In his spare time, Pol is a co-founder at Shadertoy.com. Iñigo Quilez (ES) started coding fractals and games at age 14. At age 18 he joined the underground community Descensce where we learnt about the potential of using code and maths to build beauty through real-time rendering. After finishing his MS in Electrical Engineering Iñigo worked in virtual reality and real-time rendering of massive data sets in Belgium. Then he joined Pixar Animation Studios as a technical artist, doing whole production level work and also shot level work. Currently Iñigo works at Facebook as product manager and lead engineer of Quill and the platform's VR content and distribution efforts. In 2013 he co-founded the website Shadertoy.com together with Pol Jeremias. Both are co-founders at Beautyti.



The Institute of Isolation

Lucy McRae



The Institute of Isolation is an observational documentary that contemplates whether isolation or, more broadly speaking, extreme experience, can be used as a gateway to training human resilience. Set in a near future reality this fictional organization is a research and training ground, offering alternative methods to condition the body and adapt fundamental aspects of human biology. The film references genetic engineering, space travel, sensory deprivation, and the changing relationship the body is forming with technology. "If one can be resolved in an environment of isolation, we can more quickly adapt and be buoyant when faced with the kinds of things we may overlook, once we've departed Earth's edge."

McRae (the protagonist) moves through a series of sensory chambers spending time in an anechoic chamber examining the psychoacoustics of silence or in a self-invented microgravity trainer conditioning the body for possible life in space. These fictional locations are used to make architectural inquiries into the role buildings could have on altering human biology on an evolutionary scale.

Writer, director, producer: Lucy McRae
Writer, cinematographer: Lotje Sodderland
Editor: Daniel Gower, Domenico Favata
Soundtrack: Bizarre Rituals
Scientific Collaborators: Juan Enriquez, Nikolas Rose, Emmanuele A. Jannini, Brad Sanderson, Dr. Steve Dorney

Locations: Ricardo Bofill La Fabrica, Barcelona
University of Southampton, Anechoic Chamber and Psychoacoustics Lab
LKH-Universitätsklinikum Graz, Thoracic clinic and hyperbaric Surgery
Fischauer Thermalbad, Graz
University of Southampton, Towing Tank
Royal Botanic Gardens Kew, Palm House and Treetop
GSK Human Performance Lab, UK
La Sainte Union Catholic School, UK

Acknowledgements:
Developed with Ars Electronica Futurelab (Claudia Schnugg, Michael Mayr, Veronika Pauser, Andreas Jalovec, Christopher Lindinger) and with special thanks to Ricardo Bofill, Royal Botanic Gardens Kew, GSK Human Performance Lab, University of Southampton, Dr. Steve Dorney, Dr. Peter Glynn-Jones, La Sainte Union Catholic School, Fischauer Thermalbad, Klinische Abteilung für Thorax- und Hyperbare Chirurgie, LKH-Universitätsklinikum Graz, Oberösterreichische Gebietskrankenkasse, Outro Studio, Mark Ruffs, Wanpei Lee, Tamara Hoogeweegen, Augusta Arnardottir, Luke Hart, Alexandra Lucas, Froya Crabtree, Ross Edwards, Oliver Robinson, John Macken, Janneke Verhoeven, Konstantinos Trichas, Amie Norman, Lobke Hulzink, and Takako Sato.



Lucy McRae (UK/AU) is a science fiction artist who straddles the worlds of fashion, technology, and the body. Trained in classical ballet and interior design her interdisciplinary work centers around the body. She combines storytelling with science to create speculative artworks. Her provocative and often grotesquely beautiful imagery suggests a new breed: a future human archetype existing in an alternate world. McRae encourages scientific conversation regarding the future of health, beauty, and science and provides a feminine point of view on emerging technology. She has spoken at international events, recently at MIT's *Being Material* conference on wearables, and her award-winning science fiction artwork has been exhibited worldwide.



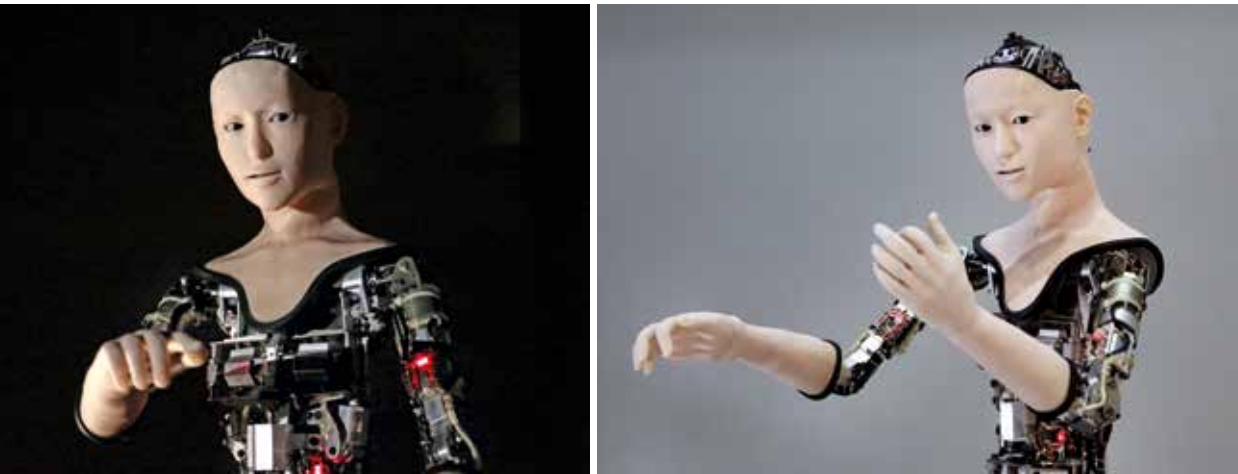
Jasper Clarke



NOMINATIONS

Alter

Kohei Ogawa, Itsuki Doi, Takashi Ikegami, and Hiroshi Ishiguro



Alter is a robot developed for the purpose of exploring what it means to be “life-like.” *Alter* appears to be a machine that has been stripped bare. However, it expresses life-likeness through complex movements. These movements may look haphazard, but change constantly due to the underlying algorithm that mimics the logic of neural circuits of living things.

A moment of “life-likeness” emerges as you observe closely—what is that moment like? Attempt to find your own answer to that question. *Alter* does not move in ways that are determined beforehand; rather, the movements made by the entire body are created in real-time. Further-

more, your responses are perceived by sensors and reflected into the movements. A central pattern generator (CPG) creates a basic rhythm that is cyclical, yet which gradually deviates from the original pattern. A neural network of 1,000 nerve cells is recreated on the computer, and *Alter* learns “life-like” activities based on signals sent from the sensors. *Alter* was born through co-operation between a researcher of androids, which are robots that appear identical to human beings, and a researcher of artificial life, who attempts to recreate life on a computer. Both researchers ask the same question: “What is life?”—but the hypotheses on that are different.

Supported by Osaka University and Tokyo University

Kohei Ogawa (JP) is a robotics and AI researcher at Osaka University, where he has been an Associate Professor since 2017. He is working on a robotics and interaction study. **Itsuki Doi (JP)** is a sound artist and a PhD candidate at the University of Tokyo, Graduate School of Art and Science, where he also received his Master Degree of Science in 2015. **Takashi Ikegami (JP)** is a professor at the University of Tokyo. He specializes in artificial life and complexity, and has been known to engage on the border between art and science. **Hiroshi Ishiguro (JP)** received a D.Eng. in systems engineering from the Osaka University in 1991. He is currently Professor at the Department of Systems Innovation in the Graduate School of Engineering Science, Osaka University, and Distinguished Professor of Osaka University. He is also visiting director (group leader: 2002–2013) of Hiroshi Ishiguro Laboratories at the Advanced Telecommunications Research Institute and an ATR fellow. His research interests include distributed sensor systems, interactive robotics, and android science.



Archive Dreaming

Refik Anadol Studio

Commissioned to work with SALT Research collections, artist Refik Anadol employed machine learning algorithms to search and sort relations among 1,700,000 documents. Interactions of the multi-dimensional data found in the archives are, in turn, translated into an immersive media installation. *Archive Dreaming* is user-driven; however, when idle, the installation “dreams” of unexpected correlations among documents. The resulting high-dimensional data and interactions are translated into an architectural immersive space.

Shortly after receiving the commission, Anadol was a resident artist for Google’s Artists and Machine Intelligence Program where he closely collaborated with Mike Tyka and explored cutting-edge developments in the field of machine

intelligence in an environment that brings together artists and engineers. Developed during this residency, his intervention *Archive Dreaming* transformed the gallery space on floor -1 at SALT Galata into an all-encompassing environment that intertwines history with the contemporary, and challenges immutable concepts of the archive, while destabilizing archive-related questions with machine learning algorithms.

SALT Research: Vasif Kortun, Meriç Öner, Cem Yıldız, Adem Ayaz, Merve Elveren, Sani Karamustafa, Ari Algosyan
Google AMI: Mike Tyka, Kenric McDowell, Andrea Held, Jac de Haan
Studio members: Raman K. Mustafa, Toby Heinemann, Nick Boss, Kian Khiaban, Ho Man Leung, Sebastian Neitsch, David Gann, Kerim Karaoglu, Sebastian Huber



Refik Anadol (TR), born in 1985, is a media artist and director who lives and works in Los Angeles. He is a director of his own art&design studio and teaches at UCLA’s Department of Design Media Arts. He is working in the fields of site-specific public art with parametric data sculpture approach and live audio/visual performance with immersive installation approach. Particularly his works explore the space among digital and physical entities by creating a hybrid relationship between architecture and media arts. He holds an MFA from University of California, Los Angeles in Media Arts.



DeepWear

Natsumi Kato, Hiroyuki Osone, Yoichi Ochiai



With the development of technology, computers are indispensable for various human production activities. Machine learning, which has been remarkably developed in the field of computer science in recent years, has attracted public attention as a technology to replace a part of human intellectual activity, and it is actively studied. However, garments that are essential to human beings are still being designed by humans. Also, the design of fashion brands is produced by several designers, so succession of technology and sensitivity is difficult. Therefore, we propose a comput-

erized garment design created by cooperative work of human and machine intelligence using Deep Neural Network (DNN). This AI learns a certain brand design and generates new design images of clothing. From the generated image, the pattern maker creates the pattern and completes it as new clothes. We made clothes using the system *DeepWear* through a series of designs, such as design by deep learning, patterning by pattern makers, and creation of costumes. With this *DeepWear*, it is possible to inherit the design in clothing without depending on the designer.

Natsumi Kato (JP), born in 1993, is a designer and fashion researcher. She belongs to the Digital Nature Group at University of Tsukuba hosted by Associate Professor Yoichi Ochiai. She researches Fashion Technology in HCI and has published papers at top international conferences such as NIPS2017 Workshop and TEI2018. **Hiroyuki Osone (JP)**, born in 1997, also belongs to the Digital Nature Group at Tsukuba University. His research is on Optics and HCI application of Deep Learning, presenting at international conferences such as NIPS 2017 Workshop, ACE 2017, and SIGGRAPH 2017. **Yoichi Ochiai (JP)**, born in 1987, gained a PhD in Applied Computer Science from the University of Tokyo, Graduate School of Interdisciplinary Information Studies, in a record time of just 2 years; Assistant Professor at Tsukuba University, School of Library Information and Media Studies since 2015; Associate Professor since December 2017; Head of Digital Nature Laboratory, and CEO of Pixie Dust Technologies, Inc.



Digital Shaman Project

Etsuko Ichihara

The *Digital Shaman Project* proposes a new mode of mourning in keeping with the technical advances of today. A 3D-printed mask of the deceased's face is placed on a domestic robot installed with a motion program that mimics the physical characteristics—personality, speech, gestures—of that individual as if possessed by their spirit. The program functions for 49 days after the person's death (the traditional Buddhist period of mourning in Japan), during which time family members can experience simulated conversation with the deceased as if he or she were still alive. On the 49th day, the robot bids farewell to the bereaved and the program shuts down. The program is thus designed to allow the bereaved to spend 49 days with a robot seemingly possessed, like a medium,

by the deceased. The creator says that she developed the concept after her grandmother's death, when she personally experienced the function that a funeral serves as a mourning ritual for those left behind. The experiment is part of a research project on funeral rites as a window into the uniquely Japanese approach to life and death.

Planning, direction: Etsuko Ichihara
Application and motion development: Uco
Planning support / Actress: Shiho Sato
Logo design: Yurie Hata
Video direction: Hiroshi Takai (Garage)
Videographer: Jinam/Akifumi Watanabe
Support: Agency for Cultural Affairs, Japan (Project to Support and Nurture of Media Arts Creators) / INNOVation program from The Ministry of Internal Affairs and Communications



Etsuko Ichihara (JP), born in 1988, is a media artist/fantasy inventor. She graduated from Waseda University. Etsuko has been creating artworks that interpret Japanese culture, customs, and beliefs from a unique point of view, and present new, technology-based approaches. Thanks to their strong impact, these works have been introduced across a wide range of media. Main works include *Sekuhara Interface*, the *SRxSI system*, and the *Digital Shaman Project*. Ichihara's works were included in the Excellence Award at the 20th Japan Media Arts Festival, Entertainment Division in 2017. She has recently presented her works in exhibitions such as 'Digital Shamanism: Japanese Funeral and Festivity' at NTT InterCommunication Center [ICC], Japan Media Arts Festival.



GreenCake Block

Majd Almashharawi



For many decades, Gaza has been subjected to extreme situations: three wars in 6 years and under siege for 10 years. This has led to a product and material shortage—especially of construction materials—in the Gaza strip, where construction demand is annually increasing. Simultaneously, ineffective environmental protection policies in industry are having a major environmental impact. One of the major causes of this environmental catastrophe is coal combustion, which results in huge amounts of ash being disposed of in an environmentally-unfriendly way, and Gaza has more than 6 tons/week of ash!

GreenCake blocks are high-quality, low-cost, and environmentally friendly bricks made out of ash and rubble from the demolished houses in Gaza. Instead of importing building materials (sand and aggregate) from outside, people can rebuild their houses from existing raw materials as self-sufficient communities.

Supported by: Award of Japan Gaza Innovation Challenge 2017, Emirates Energy Award 2017, Indiegogo crowdfunding campaign 2017, Women entrepreneurs in Palestine award, Bank of Palestine 2017, Sponsorship by JM corporation in Tokyo 2017, Finalist of Index Award 2017, Islamic University of Gaza startup funds 2016, Semi Finalist of MIT Arab Forum 2016

Majd Almashharawi (PS). A resident of war-torn Gaza, Majd observed the acute need for access to construction material in order to rebuild damaged buildings and infrastructure. She strove to meet this need by founding *GreenCake* in 2015—a company that creates environmentally friendly bricks from ash and rubble. She also developed *SunBox*—an affordable solar device that produces energy—to alleviate the effects of the energy crisis in Gaza, where access to electricity has been severely restricted—sometimes to less than three hours of electricity a day. She received her BSc in Civil Engineering from the Islamic University of Gaza. In 2018 she was selected as one of the most creative people in business. <https://www.fastcompany.com/person/majd-mashharawi>



NeuroSpeculative AfroFeminism

Hyphen-Labs / Carmen Aguilar y Wedge, Ashley Baccus-Clark, Ece Tankal, Nitzan Bartov

NeuroSpeculative AfroFeminism is a transmedia exploration told through speculative product design, emerging technologies, cognitive research, and transhumanism. Created by and for women of color, Hyphen-Labs presents a multi-layered possible future that transcends the constraints of the present; a realm which *The New Yorker* has called “another plane of consciousness.” Hyphen-Labs and its collaborators designed a roster of products—such as earrings that can record police altercations and clothing that thwarts facial recognition—thematically rooted in security, protection, and visibility. The virtual reality experience is the first chapter of a science fiction story placing you in a “neurocosmetology lab” where black women

are the pioneers of brain optimization. Here, instead of ordinary braids, customers are fitted with transcranial electrodes that allow access to a surreal digital temple blending the physical with the digital. Additionally, participants are invited to contribute to ongoing neurological and cognitive impact research studies as a way of bringing scientific exploration into public spaces.

Project creators: Hyphen-Labs: Ashley Baccus-Clark, Carmen Aguilar y Wedge, Ece Tankal, Nitzan Bartov
 Technical director: Todd Bryant, Future Media Labs,
 Artists/Designers: Ludmila Leiva, Halime Maloof, Lajune McMillian, Adam Harvey, Shannon Walsh, Mind Traveler Design, Michelle Cortese, AB[Screenwear]
 Cast: Dyane Harvey, Ashley Baccus-Clark

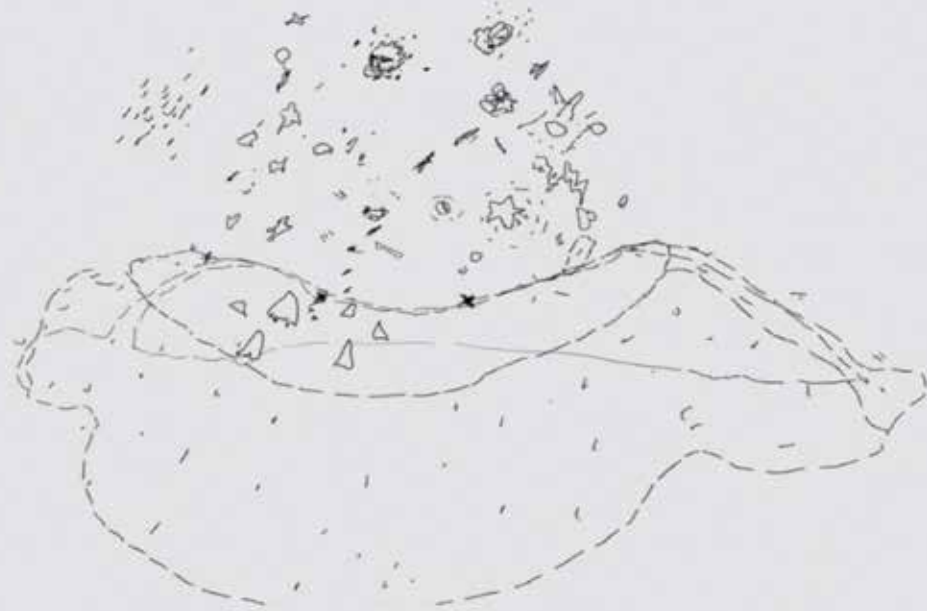


Hyphen-Labs, an international studio specializing in the design of physical products, mixed reality experiences, and site-specific installations that influence the evolution of digitalism and technology. Hyphen-Labs creative director and co-founder, **Carmen Aguilar y Wedge** (US/MX) is a structural engineer, infradisciplinary designer, and artist, synthesizing design and technology to develop immersive transmedia experiences. **Ashley Baccus-Clark** (US) is a molecular and cellular biologist and multi-disciplinary artist who uses new media and storytelling to explore themes of deep learning, cognition, memory, race, trauma, and systems of belief. She is Director of Research at Hyphen-Labs. **Ece Tankal** (TR), co-founder, is a designer and new media artist interested in exploring interventions and interaction related to bodily, spatial, and temporal concepts through mixed media installations, virtual reality experiences, and speculative design. **Nitzan Bartov** (IL) is an architect, game-designer, and artist. She's a co-founder of n-Dimensional game studio, and a member of the Hyphen-Labs collective.



Norman

James Paterson



In 2017 I created a custom animation tool—for myself. A tool to enable and facilitate my imagination and flow. *Norman* is the animation tool I've always wanted. Named after Norman McLaren, a visionary Canadian animator, the tool is built in JavaScript, runs in a web browser, and lets me animate naturally in 3D using VR controllers. The project—initially funded by Google Creative Lab—is available as an open-source tool. This enables everyone to peek into the inner workings, see how it's made, and/or adapt it for their own purposes.

It makes the process of animating more like playing a musical instrument. For instance, one mode automatically creates new frames and advances through the timeline each time you make a mark. The user can get completely lost in the process of drawing through time and space, without having to manually control the timeline. *Norman* is an experiment in building a medium and using that medium to create concrete works, at the same time.

With support from Google

James Paterson (CA) is an artist and creative technologist whose work hangs out at the intersection of drawing, animation, and code. Each of these mediums offers limitless room for exploration, but when braided together they can open up wormholes of creative possibility. Weaned on books like *Neuromancer* and *Snow Crash*, James has been daydreaming about the emergence of spatial computing since childhood. Over the past few years he's finally gotten a chance to explore creative tools popping up in this new space, and experiment with building his own tools from scratch like *Norman*—an open source VR animation sketchbook which runs in the browser. Since 1999 Paterson has exhibited his work at galleries and museums all over the world.



Off Grid

Andrew Styan



Scientific research cannot exist in isolation from society. This is certainly true of renewable energy research where (at least in Australia) the imperative for environmental sustainability is frustrated by short-term economic and political demands. *Off Grid* responds to these issues. Researchers at the University of Newcastle are developing groundbreaking organic solar cell material that is low-cost, water-based, and printed with off-the-shelf technology on flexible film. *Off Grid* incorporates this film in the construction of three microprocessor controlled motorized blinds that are suspended in the trees in a local bushland setting. Each device acts autonomously and is powered by

available sunlight, raising and lowering its blind to maintain its charge and taking no more sunlight than it needs. The reflective surface of the solar blinds mirrors the surroundings while recorded bird calls signal their presence and evoke the peaceful ambience of a natural environment—hinting that the devices belong there. Recorded statements on renewable energy and climate change from political leaders past and present break the peace when the blinds are lowered or raised.

Supported by Prof. Paul Dastoor and the researchers at the Centre for Organic Electronics at the University of Newcastle, Australia.

Andrew Styan (AU), born in 1958, is a visual artist and researcher developing approaches for building “common ground” in an increasingly polarized world—creating a space for the conversations and ideas needed to address our common social and ecological crises. Building on a former career as an industrial metallurgist, his practice uses coding, data visualization, interactivity, and mechatronics to create objects, videos, and installations that often reference natural processes and scientific principles. His research explores how this practice can be applied beyond traditional art environments.



Pounding Heart

Yasmin Litschauer, Chiara Mazanec, Aisling Pircher, Laura Scheidl, Johannes Zottele



The motivation for our *Pounding Heart* project was the desire to bring more art into our lives through the fusion of aesthetics and science. We wanted to create something that's appropriate for public spaces as well as the private sphere. Our idea is to visually depict heartbeat frequency by means of a piece of sculpture. While participants wearing headphones listen to various acoustic situations, the change of their pulse is measured by an electronic device, which sends the registered data to the sculpture, where it's visualized with light. The concept video shows what the performance looks like and suggests what other areas of application there might be in the future. After giving this plenty of consideration and staging a few brainstorming sessions in autumn 2017, we agreed on an experimental project. It's

designed to be visually appealing and to enrich the lives of people in the future. We then began to develop storyboards, which we completed in early 2018. Videos were shot and animated films created. Then came the post-production. Finally—and just in time—we created an audiovisual form. If and when the project actually comes to fruition, we'll produce a 30-centimeter-high fiberglass sculpture in the form of a slightly abstracted human heart, within which are LED fixtures that blink in time with the pulse of the individual linked up to the sculpture. The connection is made by a pulse measuring device that sends the information via Bluetooth to the LEDs' receiver. The sculpture could be set up in a hospital, a living room, or an office, whereby the particular purpose it serves there is up to the individual.



Yasmin Litschauer (born in 2000), **Chiara Mazanec** (born in 1998), Aisling Pircher (born in 1999), **Laura Scheidl** (born in 1999), and **Johannes Zottele** (born in 2000) attend Vienna's High School of Graphic Arts where they major in Multimedia. They're passionately interested in design and art as well as high-tech. After graduation, all of them plan to pursue creative studies.

Quantum Fluctuations

Markos Kay

Made as a series of virtual experiments, *Quantum Fluctuations* shows the complexity and transient nature of the most fundamental aspect of reality, the quantum world, which is impossible to observe directly. In the laboratory, elementary particles are observed by measuring the spoils of a proton collision and comparing the findings with data collected from supercomputer simulations. It is perhaps the most indirect method of observation imaginable, a non-representational form of observation mediated by computer simulations. In *Quantum Fluctuations*, particle simulations are used as the brush and paint to create abstract moving paintings that visualize the events that happen during a proton collision. In these virtual experiments millions of virtual particles interact to create

stochastic structures and patterns that allude to quantum properties such as wave-particle duality, superposition, entanglement, and indeterminacy. The film begins with the underlying quantum fluctuations and interactions that occur in the background of a collision. It shows the intricate structure of the proton beams that collide to create an outflow of particle showers which create composite particles that eventually decay. These visualizations were created with input from scientists working on the Large Hadron Collider at the CERN, Geneva. By using computer simulations as an artistic tool, this conceptual reimagining of quantum theory aims to challenge our ideas of how scientific observation and knowledge are formed. Special thanks to Valerio Jalongo & Gian Giudice



Markos Kay (CY/UK) is a digital artist, director, and lecturer with a focus in art and science. The aim of his work is to create public engagement with complex science. His art and design practice ranges from screen-based media to projection and print. Kay's work can be described as a series of experiments using generative methods which explore and abstract the complex worlds of molecular biology and particle physics.



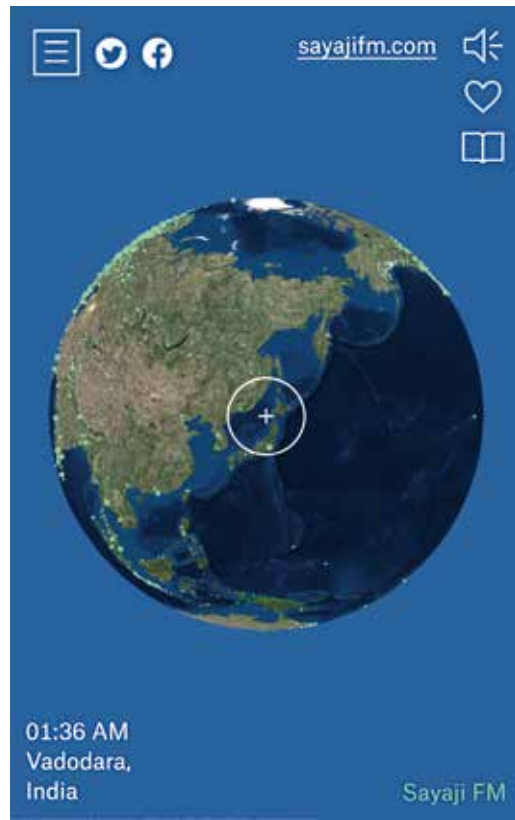
Radio Garden

<http://radio.garden>



By bringing distant voices close, radio connects people and places. *Radio Garden* allows listeners to explore processes of broadcasting and hearing identities across the entire globe. Thus, it celebrates human communication across borders through a growing selection of archival sources and live radio streams.

From its very beginning, radio signals have crossed borders. Radio makers and listeners have imagined both connecting with distant cultures, as well as re-connecting with people from “home” from thousands of miles away—or using local community radio to make and enrich new homes. The online platform *Radio Garden* introduces a new way to listen to radio online. By turning a 3D globe, you can tune in to 14,000 stations in more than 7,000 cities. At a time when most people tend to be focused on their own immediate environment, this project shows that radio has no borders and can unite the world.



The original development of **Radio Garden** started at Moniker, where Jonathan Puckey and Luna Maurer came up with the concept. The project was designed by Jonathan Puckey, Phillip Bühner, and Luna Maurer. The project was developed in-house by Jonathan Puckey. After leaving his role as founding partner at Moniker, Jonathan Puckey continued work on the platform in his own practice Studio Puckey. Every day we receive submissions from 50+ stations across the world. We work with a small team of volunteers to keep our station database up to date. By doing so, we have added over ten thousand stations in the last year. We actively prune out duplicate entries and check the validity of the submitted information.

STARTS Prize '18 • Nomination • Radio Garden
<http://radio.garden>

Rapid Liquid Printing

Self-Assembly Lab, MIT + Christophe Guberan + Steelcase

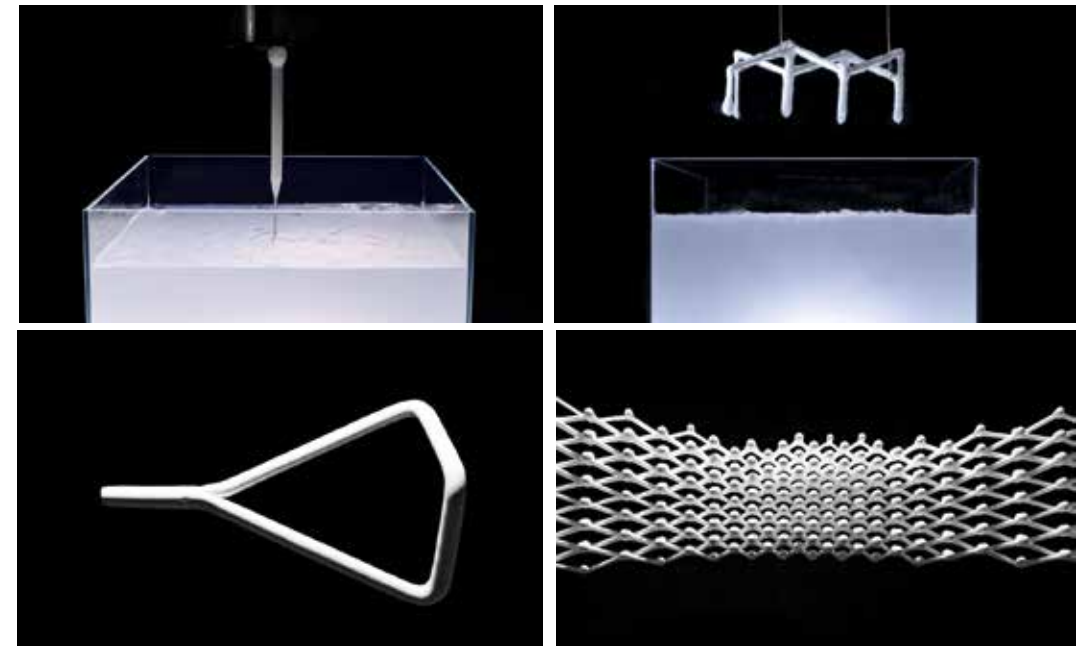
In collaboration with Steelcase, we are presenting a new experimental process called *Rapid Liquid Printing*, a breakthrough 3D printing technology. *Rapid Liquid Printing* physically draws in 3D space within a gel suspension, and enables the creation of large-scale, customized products made of real-world materials. Compared with other techniques we believe this is the first development to combine industrial materials with extremely fast print speeds in a precisely controlled process to yield large-scale products. 3D printing hasn't taken off as a mainstream manufacturing process for three main reasons:

1) it's too slow compared to conventional processes like injection molding, casting, milling, etc.

2) it's limited by scale—although it's good for creating small components, it's not possible to produce large scale objects and
3) the materials are typically low-quality compared to industrial materials.

Rapid Liquid Printing addresses all of these limitations: it is incredibly fast (producing structures in a matter of minutes), designed for large-scale products (you can print an entire piece of furniture), and uses real-world, industrial-grade materials.

Self-Assembly Lab Team: Kate Hajash, Bjorn Sparrman, Schendy Kernizan, Jared Laucks & Skylar Tibbits
Steelcase Team: Yuka Hiyoshi, Rob Poel, Markus McKenna, Paul Noll, Sharon Tracy, Chris Norman, Charlie Forslund



Christophe Guberan (CH/US) is a product designer who graduated from the École Cantonale d'Art de Lausanne ECAL and is the 2016 laureate of the Hublot Design Prize. He explores the possibilities of material interactions, digital manufacturing, self-assembly, and variable aesthetics in his creations. **Self-Assembly Lab** (US). Skylar Tibbits is a Co-Director and the Founder of the Self-Assembly Lab housed at MIT's International Design Center. The Self-Assembly Lab focuses on self-assembly and programmable material technologies for novel manufacturing, products, and construction processes.

STARTS Prize '18 • Nomination • Rapid Liquid Printing
<https://selfassemblylab.mit.edu/liquid-printed-products> • <https://vimeo.com/211513776>

Rediscovery of Anima

Akinori Goto



Bumpei Kimura

The aim of this project is to discover “anima,” which could have existed, but did not exist. The word “anima” means “life” or “soul” in Latin, and “animation” derives from this word.

When I was creating the *Toki*-series, which uses a 3D printer to create time from movement and give shape to this “time,” I realized that the reason this creation worked was not because the current technology exists. This creation could have existed a long time ago, just as long as the idea and inspiration existed. So I did not at all use the digital technology I have previously used and instead used technology that could have existed in the 19th cen-

tury, when movies were born, as well as in ancient times, and tried to rediscover the anima. I explored what kind of connections the creation could have had with society if the anima did exist.

Through this I wish to once again pose the thrill and happiness one can feel from seeing movement, in the modern era, a time when technology is advanced and images are being consumed in various places.

Thanks to: Sotaro Sawamura, Taichi Kagami, Kota Endo
Support: Project to Support the Nurturing of Media Arts Creators, 2017

Akinori Goto (JP), born in Gifu in 1984, is an artist. He graduated from Musashino Art University, Department of Visual Communication Design. His works, capturing invisible connections and relationships by combining cutting edge technology with methods and media that existed long ago, are now on exhibition. The main exhibitions in which he recently participated include Ars Electronica Festival 2017, SXSW ART PROGRAM 2017, and STOP LICHT exhibition 2017. His works are being publicly collected by the National Media Museum in the UK.



RidRoid “CanguRo”

Future Robotics Technology Center (fuRo), Shunji Yamanaka

As a partner robot, it never leaves the side of its master. It transforms into a vehicle that augments its master’s physical functions—motional and sensory—and travels with the master as one. It is a machine lifeform produced from the latest robotics and AI technologies fused by product design. In robot mode, *CanguRo* operates like R2D2 in Star Wars. As a loyal partner, it follows its master. It encourages its master by AI-based communications, providing a heart-warming support, and even works as a terminal for communications with friends. Even when *CanguRo* is away, the master can summon it using a smart phone. *CanguRo* comes to its master by fully automatic operation based on scanSLAM—fuRo’s proprietary SLAM technology that boasts world’s highest-level performance. The transformation to ride mode is automatic. In ride mode, *CanguRo* works as an extension of the master’s body. The master leans

right and left to tell *CanguRo* which way to go and *CanguRo* actively transforms its body right and left. *CanguRo* has a built-in body-sonic system and outputs heartbeat-like pulses modulated by the travel speed, allowing the master to have haptic recognition of the current speed. In near-accident situations, a smart stop function automatically applies brakes.



Yusuke Nishibe



Future Robotics Technology Center (fuRo) at Chiba Institute of Technology was established in 2003. Led by Dr. Takayuki Furuta, a pioneering robot researcher, engineers and researchers have gathered to conduct research and development of key technologies of the next generation. With fuRo at the core, future technologies are being developed through collaborative efforts inside and outside of the university. Its famous achievements include the surveyor robots used in the Fukushima Nuclear Power Plant. **Shunji Yamanaka** (JP) is a design engineer and Professor at the University of Tokyo. He graduated from the Faculty of Engineering at the University of Tokyo in 1982. After working for Nissan, he founded the Leading Edge Design in 1994. His products have received several kinds of Good Design Awards, including the Gold Prize, and he has been selected for the NY MoMA Permanent Collection.



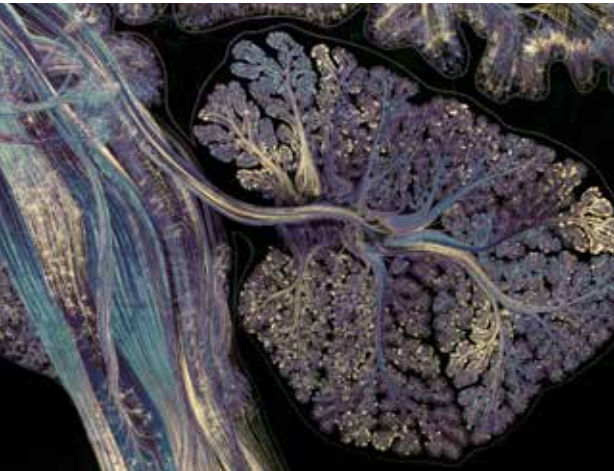
Self Reflected

Greg Dunn, Brian Edwards, Will Drinker

Dr. Greg Dunn (artist and neuroscientist) and Dr. Brian Edwards (artist and applied physicist) created *Self Reflected*, the world's most complex artistic depiction of the human brain, to reveal insight into the complexity of consciousness by revolutionizing the way in which the average person thinks about the brain. *Self Reflected* bridges the visual and conceptual connection between the macroscopic brain and the microscopic behavior of neurons by fusing the neuroscientific data, hand drawings, algorithmic manipulation, optical engineering, photolithography, and gilding to etch half a million neurons into large sheets of gold. The result, a technique called reflective microetching, uses animations created through reflected light to

create an ultraprecise depiction of the enormous scope of beautiful and delicately balanced neural choreographies designed to reflect what is occurring in our own minds as we observe this work of art. *Self Reflected* was created to remind us all that the most marvelous machine in the known universe is at the core of our being and is the root of our shared humanity.

Art, neuroscience, design: Greg Dunn, www.gregadunn.com
Applied physics, programming, design: Brian Edwards, www.brian-edwards.com
Filmmaker: Will Drinker, www.willdrinker.com
Supported by: National Science Foundation (funding), University of Pennsylvania, Carnegie Mellon University



Dr. Greg Dunn (US) is an artist who received his PhD in neuroscience from the University of Pennsylvania in 2011. While a graduate student, Dunn's artistic experiments demonstrated that the qualities of neural forms fit seamlessly into the aesthetic principles of minimalist Asian art. Greg invented the revolutionary technique reflective microetching together with **Dr. Brian Edwards** (US), an applied physicist who is the only recipient of Greg Dunn's prestigious honorary distinction Beast of Knowledge. An experimentalist with a capital E, Brian likes to make things work and doesn't care if he gets electrocuted, burned, or poisoned in the process. **Will Drinker** (US) is a filmmaker, documentarian, producer, puppeteer, ventriloquist, musician—a man dedicated to his craft who does not rest until the shot is got.



Social Wallet

Dyne.org



Freecoin "cornucopia", logo: Andrea Di Cesare

The once called *Freecoin* project, today renamed *Social Wallet*, is developed by Dyne.org Foundation as a result of 7 years of research, community co-design, and development within the works of two European projects on Collective Awareness Platforms for Sustainability and Social Innovation. Being activists and hackers at the core of the team developing the *Social Wallet*, this software was born as a reaction to the extractive monetary status-quo. A techno-political shift for the exodus from the fiat money system, the *Social Wallet* enables to build self-governance administrative environments promoting autonomy and freedom of economic interaction through the collective

re-appropriation of the power of money creation. Designed and implemented with simplicity and configurability in mind, the *Social Wallet* is a collection of software components one can use to create complementary currencies and it is compatible with most blockchain-based systems. The codebase is modular in order to enable customization depending on different needs. It contains components to authenticate wallets, show statistics, encrypt and store data. Written in Clojure, a LISP running on the JVM, it is easily deployable with a set of pre-packaged executables. All the code is open source and freely available for use and modification.

Dyne.org Foundation leads the blockchain research and development effort for the *D-CENT* project (Decentralized Citizens Engagement Technologies), designing three different complementary cryptocurrencies for communities in Spain, Iceland, and Finland (2013–2016). This research and development effort continued with the *Commonfare* project, an ongoing experience to build an information and management platform for the Commons, including money as commons. Here the concept of "Commonfare" or "Welfare of the Commons" is powered by a digital currency named "Commoicoin." In both projects the Dyne.org developers have adopted the *Social Wallet* as a collectively administered platform for grassroots communities to run their own clearing house, providing full transparency to participants and privacy-by-design auditability for cooperating institutions.

STARTS PRIZE '18 Jury

All nominations are judged by a jury to decide on the two prize-winning projects and up to ten Honorary Mentions.



Seiichi Saito, Kazuko Tanaka, Victoria Vesna, Alexander Mankowsky, Francesca Bria, Sophie Lamparter, Daehyung Lee, Andrej Heinke, Alex Verhaest

STARTS PRIZE '18 Jury



Francesca Bria (IT) is Senior Advisor and an expert on technology and innovation policies. She has a PhD in Innovation Economics from Imperial College, London and an MSc in Digital Economy from University of London, Birbeck. As Senior Programme Lead

at Nesta, the UK Innovation Agency, she has led the EU D-CENT project, the biggest European Project on direct democracy and digital currencies. She also led the DSI project on Digital Social Innovation in Europe, advising the EU on digital social innovation policies. She has taught at several universities in the UK and Italy and she has advised Governments, public and private organizations, and movements on technology and innovation policies, and their socio-economic impact. Francesca Bria is an adviser to the European Commission on Future Internet and Innovation Policy and she heads the *DECODE* project, <http://decodeproject.eu>, on data sovereignty in Europe. She is currently the Commissioner of Digital Technology and Innovation for the city of Barcelona

Andrej Heinke (DE) is director for corporate foresight and technology strategy at Robert Bosch GmbH, a technology company based in Stuttgart. Previously he worked for the policy planning department of the German Foreign Ministry, Daimler AG, and Sony Corp., after having completed his studies at Harvard's Kennedy School of Government and Free University of Berlin with a PhD.



Sophie Lamparter (CH) is founder and CEO of DART, a testing lab bringing Design, Art, Research and Technology together to create clever human-machine interfaces. DART works with research projects and early startups, enterprises, and investors. Sophie Lamparter's passion is finding new ideas and talent with a creative approach to technology. She helps them scale their ideas and consults with organizations to challenge the status quo and launch new partnerships. Before starting DART, she was Associate Director at swissnex San Francisco, Switzerland's Innovation outpost in

Silicon Valley. Sophie Lamparter has organized and curated interdisciplinary exhibitions and programs in media, digital and data arts interaction and game design, robotics, VR, AR, architecture, and urbanism. She debuted as a STARTS Prize juror in 2017 and has spoken at international events such as SXSW in Austin, Gray Area in San Francisco, and the Lift Conference in Geneva.

Daehyung Lee (KR), art critic, curator, and POWER LEADER 2012 acclaimed by Forbes Korea, has been curating contemporary Asian art for the last 17 years. He curated Korean Eye Moon Generation in 2009 and its nomadic show until 2012 at Saatchi Gallery in London. Currently he leads Hyundai Motor's ARTLAB and its global art partnerships that include MMCA's Hyundai Motor Series to Tate Modern's Hyundai Commission, LACMA's The Hyundai Project, Bloomberg Brilliant Ideas. Most recently, he curated "Counterbalance: The Stone and the Mountain" at the Korean Pavilion, La Biennale di Venezia 2017 and the Max Mara Coats! in Seoul, 2017. He holds an MA in Curatorial Studies from Columbia University in New York and has advised the interdisciplinary playground ZER01NE (2018), Gwangju Biennale (2016), Busan Biennale (2014), and Cheongju Craft Biennale (2013).



Alexander Mankowsky (DE), born in 1957 in Berlin, studied Social Science, Philosophy and Psychology at Freie Universität Berlin. In 1989 he started working in the research institute of Daimler in Berlin. The multidisciplinary approach in the institute integrated a wide array of disciplines, from social sciences to artificial intelligence. His current working topics are Futures Studies, focused on the ever-changing culture of mobility, the interdependency of social and technological innovation, and other aspects of envisioning paths into the future.

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Seiichi Saito (JP), born in Kanagawa in 1975, began his career in New York in 2000 after graduating from Columbia University with a Master of Science in Advanced Architectural Design (MSAAD). Since then, he has been active in creative work at the Arnell Group, and returned to

Japan upon being selected for the Echigo-Tsumari Art Triennial event. He produces works in the commercial art field which are three-dimensional and interactive while also being based on a firm grounding in logical thought that he cultivated through architecture. Seiichi Saito has won numerous international awards since 2009. He currently serves as Director of Rhizomatiks Co., Ltd., while also lecturing part-time at the Department of Graphic Design in the Faculty of Kyoto Seika University. In addition, he was a member of the 2013 D&AD Digital Design jury, the 2014 Cannes LIONS Branded Content and Entertainment jury, and the Good Design Award 2015-2017 jury. Seiichi Saito also acted as Milan Expo Japan pavilion theatre space director and Media Art Director at Roppongi Art Night 2015.



Kazuko Tanaka (JP) joined the marketing solutions company Hakuodo in 1998 and started her career in account services, further expanding into new business development with leading foreign marketing firms—and at the same time having 3 children. Believing

that working mothers, still a minority in Japan, need a place to share information and ideas, she started the “Hakuodo Working Moms’ Link” in 2012, networking across over 50 companies/ 500 working mothers through “Lunchcation—lunchtime communication” actions. Kazuko joined VoiceVision Inc. in July 2013 as one of its founding members, serving as community producer, and facilitates community projects for companies and local governments. Kazuko has also been on the joint team project between Hakuodo and Ars Electronica—Ars Electronica Tokyo Initiative—and has worked four seasons at the Ars Electronica Festival’s Future Innovators Summit.



Alex Verhaest (BE) is a filmmaker investigating the possibilities of interactivity and responsivity within cinematic arts. The basis of her films is a highly narrative script, existing or newly written, around which she creates a cinematic installation consisting of objects,

videos and interactive videos. Her work operates on the juxtaposition of painting, video game and cinema extended. With each new film, Alex Verhaest dives into what it means to make films in a multi-screen post-Nintendo society. Her work has been selected by several arts and new-media festivals and competitions such as the FILE electronic language festival in Sao Paolo, the New Technology Art Award in Gent, TAZ Oostende and Arts Festival Watou, and her work is featured in the Akzo Nobel Collection. Alex Verhaest has won the prestigious Japanese Media Arts New Face Award as well as the Golden Nica in 2015 in Ars Electronica’s Computer Animation/Film/VFX category.

Victoria Vesna (US), PhD, is an Artist and Professor at the UCLA Department of Design | Media Arts and Director of the Art|Sci center at the School of the Arts and California Nanosystems Institute (CNSI). With her installations she investigates how communication technologies affect collective behavior and perceptions of identity shift in relation to scientific innovation (PhD, University of Wales, 2000). Her work involves long-term collaborations with composers, nano-scientists, neuroscientists, and evolutionary biologists, and she brings this experience to students. She is the North American editor of *AI & Society* and in 2007 published an edited volume—*Database Aesthetics: Art in the Age of Information Overflow*—and another in 2011—*Context Providers: Conditions of Meaning in Media Arts*.



All submissions are judged by a nomination committee in the order of their arrival.

The nomination committee selects up to 15 projects to nominate for prize consideration by the jury.



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STARTS PRIZE '18 Nomination Committee



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STARTS PRIZE '18 International Advisors

20 international advisors who have reputation and credibility in the field recommend projects and help to encourage a wider range of participants as well as a geographical and gender balance



Rama Akkiraju (US) is a Director, Distinguished Engineer, and Master Inventor at IBM's Watson Division, where she leads the AI mission of enabling natural, personalized and compassionate conversations between computers and humans. In her career, Rama Akkiraju has

worked on agent-based decision support systems, electronic marketplaces, and semantic Web services, for which she led a World-Wide-Web (W3C) standard. Rama holds a master's degree in Computer Science and received a gold medal for highest academic excellence from New York University for her MBA. She is the 2018 President of ISSIP (International Society for Service Innovation Professionals).

Jussi Ängeslevä (FI) is a designer, an artist, and an educator. With home base at the Berlin University of the Arts and the Royal College of Arts, but lecturing around the planet, he is working with digital materiality and interaction design. In parallel to the academic work, he is the Vice Creative Director of ART+COM studios. His design ethos is leveraging hardware, software, physical and graphic design in the search for elegance in highly specific solutions, where the meaning of a work is inseparable from the medium communicating it.



Camille C. Baker (CA/UK) is a Reader at the School of Communication Design, University for the Creative Arts, Epsom, UK. She is also a media artist-performer/researcher/curator who has done recent work in participatory mobile and sensor performance using wearable technologies, and is now exploring creative coding and electronic development for smart-fashion projects. Her other research interests have included: responsive interfaces and environments, video art and live cinema, experience design, telematics, networked communities, web animation, digital media curating, and music composition and performance.



Régine Debatty (BE) is a writer, curator, critic, and founder of <http://we-make-money-not-art.com/>, a blog which received 2 Webby awards and an honorary mention at the STARTS Prize. Régine Debatty writes and lectures internationally about the way in which artists, hackers, and designers use technology as a medium for

critical discussion. She also created A.I.L. (Artists in Laboratories), a weekly radio program about the connections between art and science for Resonance 104.4 FM in London (2012-14), and is co-author of the "sprint book" *New Art/Science Affinities* published by Carnegie Mellon University.

Chiaki Hayashi (JP) is the co-founder and currently the Representative Director of Loftwork Inc. Loftwork annually produces over 600 projects. She manages the operation of the company's creative platform Loftwork.com which has 25,000 registered creators, Fab-Cafe—a cafe with digital fabrication tools, and a material-centered co-working office MTRL. She is currently Japan Liaison to the Director at the MIT Media Lab. She has recently founded the Hidakuma initiative, which aims to rebuild nature and promote local creativity.



Nadav Hochman (IL) is the director of a digital art initiative at The Tech Museum of Innovation (Silicon Valley, CA, USA), catalyzing new collaborations between global artists, industry, and research institutions. Prior to joining The Tech, Nadav Hochman led acclaimed projects

in the startup industry, academia, and the art world. His work has been featured in media outlets such as *Popular Science*, *The Atlantic*, *Wired*, and *The Guardian*. Nadav Hochman holds a PhD in Art and Information Science.



Mohamed Hossam (EG) is a Media Artist, Art Manager, and Educator based in Cairo. He is the founder of Creative Coding Cairo and Cairo Media Lab, the Interaction Design Mentor at Fab Lab Egypt, a member of the Curatorial team at Cairotronica International Symposium

for new media, and a speaker at Node Forum & Ars Electronica. He is starting work on his MFA in Computational Arts at Goldsmiths, University of London, 2018. He previously attended VVVV Academy in Berlin and studied Art Education at Helwan University. He was an EMUNI University Fellow in Slovenia and an award-winning artist at The Egyptian Academy of Fine Arts in Rome in 2017. He has exhibited at such venues as the National Museum of Wales, Cairotronica Symposium, Goethe Institute, and Opera House.

Maša Jazbec (SI) is an artist, curator, and academic researcher. She holds a PhD in human informatics from the University of Tsukuba and an MA in interactive art from the Interface Culture program at the University of Arts and Design Linz. She was a visiting researcher at Ishiguro Laboratory at ATR. She is engaged in the vision and execution of the Trbovlje New Media Setting project in Slovenia, and organizes events integrating science, art and technology at the new media culture festival Speculum Artium.



Brenda Katwesigye (UG) is the founder and CEO of Wazi Vision, a company that builds mobile technologies for diagnosis of eye defects and provides eyeglasses made from recycled material to school children in Uganda. She is passionate about creating sustainable solutions that make health care more accessible, available, and affordable. Brenda holds a bachelor's degree in Telecommunication Engineering and is a Certified Information Systems Auditor. Her passion for technology has led her to teach herself programming in Python, Java, and Ruby on Rails, which has furthered her mobile technology exploits. She is a calculated risk-taker with deep tech industry knowledge and has championed various mobile health care solutions.



Pascal Keiser (FR) has developed transversal projects between culture, digital society, and economy since 2003. He is co-founder and general coordinator of French Tech Culture—the national cultural and digital label of the French government—since late 2013. He is

co-founder of The Bridge, European accelerator of startups on crossovers, culture & technology in Avignon, and was director of Technocité Creative Industries Knowledge Center in Mons from 2007 to 2017. He also directed the digital program of Mons 2015, European Capital of Culture, and is a member of the steering committee of the new Horizon 2020 VERTIGO STARTS program.

Silvia Lindtner (AT) is an assistant professor at the University of Michigan in the School of Information, with a courtesy appointment in the Penny W. Stamps School of Art and Design. Silvia Lindtner's research and teaching interests include critical studies of innovation and entrepreneurship, DIY (do it yourself) making and hacking, science and technology studies in China, urban and infrastructure studies.



Kenric McDowell (US) has worked at the intersection of culture and technology for twenty years. His résumé includes work for Nike, Focus Features, HTC Innovation, and Google. He currently leads the Artists + Machine Intelligence program at Google Research, where he

facilitates collaboration among Google AI researchers, artists, and cultural institutions. Kenric McDowell's work often draws from the history of culture and philosophy for metaphors and models that can be applied to emerging 21st century culture and technology.



Eurico Neves (PT) is the CEO and founder of INOVA+ S.A., a leading European firm in innovation services. He is also a venture capitalist who has created or supported more than 15 new firms in the ICT field since 1997. Before that, he worked

for the European Commission in Luxembourg between 1994 and 1997 and participated in the team developing the European Green Paper on Innovation in 1995. He was a member of the Business Chamber of the Enterprise Policy Group of the European Commission, an advisory board to Vice-President Tajani on innovation and entrepreneurship matters, and a renowned expert and evaluator of many European programs in the field of innovation, entrepreneurship, and research.

Angela Oguntala (US) is a director at Greyspace, a design and futures consultancy. She has led foresight projects and advised global organizations from education to healthcare to various industries looking to understand the possible impact of near-future technologies and cultural shifts. Angela Oguntala previously headed up a lab in Copenhagen, a group focused on designing and experimenting around emerging technologies.



Erick Oh (US) is a Korean filmmaker / animator based in California, USA. His independent films have premiered and been honored at numerous international film festivals including Student Academy Awards, Annie Awards, Annecy Animation Festival, Hiroshima Animation Festival, Zagreb Film Festival, SIGGRAPH, Anima Mundi et al. After receiving his BFA from the Fine Art Department at Seoul National University and his MFA from UCLA's film program, Erick worked at Pixar Animation Studios from 2010 to 2016 as an animator and participated in Oscar-winning films such as *Inside Out* and *Finding Dory*. Erick Oh recently joined Tonko House, founded by Dice Tsutsumi and Robert Kondo, also former Pixar artists, to write and direct *PIG: The Dam Keeper Poems*. Erick Oh was also nominated at the Annie Awards 2017 for Best Animator.



Heritiana Ranaivoson (BE/FR) is Senior Researcher and Project Leader at imec-SMIT-Vrije Universiteit Brussel (Belgium). He is currently coordinating the EU Horizon 2020 *WEAR Sustain* project, which supports teams of artists and technologists to develop ethical and

sustainable wearables. Before joining imec, he was associate researcher at Cerna, the Centre for Industrial Economics at Mines ParisTech (2008-2010). He holds a PhD in Industrial Economics from Université Paris 1, Panthéon-Sorbonne.

Mika Satomi (JP/AT) is a designer and an artist exploring the field of eTextiles, Interaction Design and Physical Computing. For five semesters, she has been a guest professor at the Weissensee Art Academy Berlin. She has worked as a researcher at the Swedish School of Textiles and at the Distance Lab, Scotland in the field of practice-based design research. She holds a BA in graphic design from Tokyo Zokei University, and an MA in media creation from IAMAS, Japan. Since 2006 Mika Satomi has collaborated with Hannah Perner-Wilson, forming the collective KOBAKANT, creating artistic projects in the field of eTextiles and Wearable Technology Art. She is a co-author of the e-Textile online database "How To Get What You Want."



Bastian Schäfer (DE), born in 1980, is a maverick, kitesurfer, TED speaker, father of a boy and a girl, and an automotive engineer. After working at Volkswagen Design, he entered Airbus in 2006 in different projects for the A340, A350, and A380. In 2009 he joined the project team that created the award-winning Airbus Concept Cabin with its bionic structure. Bastian Schäfer is the project leader of the Bionic Partition project where he is focusing on generative design combined with 3D printing technology.



Jacques Vermeulen (BE) has been Nokia's Global Go To Market Lead for Smart Cities developing strategy, solutions, partnerships, and business since 2009. He is passionate to tap into his ICT, digital video, Smart City eco-system, and customer experience in order to

help build sustainable urban development. Prior to his current role, Jacques Vermeulen was in business development and sales for Alcatel-Lucent since 1998, in R&D for speech recognition, as well as ICT lead in the early '90s for the world's first full digital audiovisual editing, production, and television broadcast company. This was followed by business development and sales for these systems in Europe. He received an MS degree in Computer Science in 1990 and resides in Belgium.

Filip Visnjic (UK) is a lecturer, curator, and a media technologist born in Belgrade and now living in London. He is the founder and editor-in-chief of CreativeApplications.Net. The site tirelessly beat reports innovation across the field and catalogues projects, tools, and



platforms relevant to the intersection of art, media, and technology. In 2012, Filip Visnjic co-founded Resonate, a new educational platform and a festival located in Belgrade, Serbia. In the same year, he co-launched *HOLO*, a magazine about art, science and technology and is currently "director of platform" at FRM, working on a new canvas for digital art. He lectures at several UK universities.

Ars Electronica 2018

Festival für Kunst, Technologie und Gesellschaft

Festival for Art, Technology and Society

Organization

Ars Electronica Linz GmbH & Co KG

Managing Directors

Diethard Schwarzmaier, Gerfried Stocker

Ars-Electronica-Straße 1, 4040 Linz, Austria

Tel: +4373272720

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info@ars.electronica.art

Co-organizer Prix Ars Electronica Gala and Big Concert Night

LIVA – Linzer Veranstaltungsgesellschaft mbH,

Brucknerhaus Linz

Directors: Dietmar Kerschbaum, Thomas Ziegler

Co-organizer CyberArts Exhibition

OK Offenes Kulturhaus im OÖ Kulturquartier

Directors: Martin Sturm, Gabriele Daghofer

Co-organizer Campus

Universität für künstlerische und industrielle Gestaltung

Rector: Reinhard Kannonier

Directors Ars Electronica:

Gerfried Stocker, Christine Schöpf

Head of Festival: Martin Honzik

Technical Head: Karl Julian Schmidinger

Head of Finance & Organization: Veronika Liebl

Production Team: Alex Anikina, Christl Baur, Klaus Birklbauer, Amelie Brandstetter, Bernd Breitenauer, Florina Costamoling, Florian Cossee, Melanie de Jong, Anna Eder, Chris Eichenauer, Stephan Feichter, Hannes F. Franks, Marion Friedl, Benedikt Foreith, Jessica Galirow, Violeta Gil-Martinez, Eva Maria Grabmair, Dominik Greuter, Jürgen Hagler, Randolf Helms-tetter, Bernhard Hinterreiter, Ferenc Hirt, David Holzweber, Nikolaus Jungwirth, Isabella Kartusch, Andrea Kohut, Katharina Kolar, Katia Kreuzhuber, Bernhard Küllinger, Tobias Leibetseder, Juliane Leitner, Michael Lehner, Magdalena Lettner, Sami Mandee, Lisa Martl, Kristina Maurer, Felix Merten, Hans Christian Merten, Claudia Moser, Fabian Mühl-berger, Manuela Naveau, Michaela Obermayer, Emiko Ogawa, Hideaki Ogawa, Matthias Paul, Franz Peterseil, Veronika Platz, Moana Ponesch, Christina Radner, Isabella Reder, Katharina Richtsfeld, Elena Robles-Mateo, Alexandra Röck, Michael Samhaber, Michael Sarsteiner, Sonja Schachinger, Miro Schawaldner, Thomas Schlager, Julian Schmiederer, Daniel Schöngruber, Laurin Siehs, Markus Sigl, Killian Sochor, Karla Spiluttini, Nora Spiluttini, Sebastian Sprenger, Lukas Traxler, Jochen Tuch, Tatiana Villacob, Gohar Vardanyan, Joschi Viteka, Andreas Weilguny, Laura Welzenbach, Sophie à Wengen, Nina Wenhart, Michaela Wimplinger, Alexander Wöran, Viktoria Wöss, Carla Zamora Campos

Co-curators

Architects: Jürgen Haller, Christoph Weidinger

Ars Electronica Animation Festival: Christine Schöpf, Jürgen Hagler

Campus Exhibition, Interface Cultures: Christa Sommerer, Laurent Mignonneau, Tamiko Thiel, Michaela Ortner, Fabrizio Lamoncha

Campus Exhibition, Hexagram: Chris Salter, Anna Kerekes

Expanded Animation: Jürgen Hagler, Alexander Wilhelm

Himatsubushi Trail: Himatsubushi Research Team

Music Monday: Werner Jauk

Nightline: Salon 2000

Sonic Saturday: Volkmar Klien, Se-Lien Chuang, Andreas Weixler

Prix Ars Electronica 2018

Idea: Hannes Leopoldseder

Conception: Christine Schöpf, Gerfried Stocker

Coordination: Martin Honzik, Emiko Ogawa

Technical Management: Karl Julian Schmidinger

Finance & Organization: Veronika Liebl

Production Team: Christl Baur, Florina Costamoling, Ingrid Fischer-Schreiber, Marion Friedl, Jessica Galirow, Eva Maria Grabmair, Elmar Glaubauf, Jürgen Hagler, Kristina Maurer, Hans Christian Merten, Manuela Naveau, Tatiana Villacob, Christina Radner, Jutta Schmiederer, Nana Thurner, Joschi Viteka

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Wolfgang Königsmaier, Michael Sick-Leitner, Eva Tsackmaktsian, Christine Utz

Ars Electronica Linz GmbH & Co KG

Managing Directors

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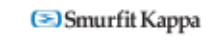
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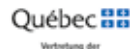
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