

# Annual Report 2022

## EPFL Amplifier for Art, Science and Society Pavilions

# Annual Report 2022

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## gled with the sensory and affective qualities

Introduction

This year marked both explosive growth in

hard-working team at EPFL Pavilions.

visitor numbers and increasing stability in the

The Deep Fakes: Art and Its Double exhibition was extended to ultimately finish the season

on 1 May 2022 following its September pre-

mier in 2021. This exhibition opposed the use

of 'deepfakes' for manipulation and misinfor-

mation, to explore very different perspectives,

tational techniques. Cultural deep fakes have

invisible dimensions, generating unforeseen

hypotheses and connections. These panaes-

thetic art-science phenomena also propagate powerful auras that rise to the surface entan-

empowered to offer forensic insights into

reimagining objects through advanced compu-

manifold significance. They are technologically

of their originating sources. As cybernated doppelgangers, cultural deep fakes are able to draw us into unparalleled tactility with the textures, patinas, forms and 3D geometries of their counterparts. Digital facsimiles also decolonize objects, defying hegemonic narratives to liberate them from their untroubled entrapments, confronting ownership, historical sedimentation, and contested social relations. Through 21 installations at EPFL Pavilions, the exhibition grappled with the applied and critical implications of the digital materialities of objects in their post-original form. It brought together wonderful collaborators worldwide representing seminal objects of pan-Asian art and architecture from China, Cambodia, India, Malaysia, Japan, Sri Lanka, and Thailand, The Middle East and North Africa was represented by important sites in Egypt, Syria, Libya and Sudan. The United States of America and significant European heritage sites in Armenia, Germany and Italy completed an encyclopedic offering made tangible through state-of-theart imaging and interactive immersion. EPFL

Pavilions was proud to collaborate with the University of Lausanne for the exhibition, and grateful to receive a high degree of sponsorship for this seminal show.

The exhibition will find a second home at the Museum for Gestaltung in Zurich in 2025, under a new working title ('The Museum of the Future'). The exhibition is also the subject of an upcoming book, Deep Fakes: A Critical Lexicon of Digital Museology to be published by Routledge in 2023. Over 1,100 of the visitors filled in a 28-question survey giving research very powerful data (28,000 data points) into the reception and meaning of cultural deep fakes in our perceptions of cultural heritage.

Following the stunning success of Deep Fakes, Cosmos Archaeology: Explorations in Time and Space opened in September of 2022, revealing the depths of the Universe through physical, perceptual and sensory interaction. In its diverse and critical perspectives, Cosmos Archaeology prompted us to rethink the historic, human, and environmental aspects of our relation to the Universe. Through its visceral and tangible contemporary representations, the exhibition enabled both scholars and the public to access the space-time continuum and the depths and the history of the Universe, making us all archaeologists of the cosmos. Cosmos Archaeology went on to be highly successful, propelling EPFL Pavilions into the top 25% of museums visited in Switzerland, 87% from outside the campus, reaching a broad spectrum of the public and underscoring the rich possibilities for art science in drawing EPFL's non-traditional audiences closer to research and researchers through varied lenses. The exhibition will reopen at the Astronomy Museum in Shanghai, in 2024, testament to the groundbreaking nature of the Pavilions exhibitions.

Also in 2022, we continued in tradition of showcasing the great photographic talents of the world investigating contemporary themes with the generous facilitation of Prix Pictet. *Fire* presented powerful images by thirteen international photographers. The Prix Pictet Fire winner was American photographer Sally Mann for her series Blackwater (2008–2012). Other temporary exhibitions rounded out a rich program for Pavilion A including *Things that talk: The Secret Lives of Scientific Instruments* and the *Balélec 40th anniversary* exhibition and *Douze-Mille-Vingt* by Julie Semoroz.

The Artist in Residence programme *Enter the Hyper Scientific*, continued to draw hundreds of applications and we were delighted to include *Physics* Caroline Corbasson in 2022. This program goes from strength to strength with four artists to be shown in 2023.

This robust programme is possible because of the rich and varied partnerships that EPFL Pavilions has created. Since 2018 the Pavilions has an impressive track record of 62 partnerships with research institutes and laboratories from around the world, bringing scientists of international renown as well as their ground breaking discoveries into the public sphere as a result. EPFL Pavilions is successfully engaged with many of EPFL's prominent research subjects and their aligned laboratories. Since 2017, EPFL Pavilions has engaged with almost 30 laboratories or research institutes at EPFL. These partnerships act as a platform for both pure research and for the invention of novel museological and scientific visualisation technologies with the added benefit and ambition of increasing accessibility for the widest audience. This priority is at the heart of the project and is the guiding principle for all of the exhibits in EPFL Pavilions. EPFL Pavilions is not only harnessing the latest research at EPFL but also works closely with its scientific partners.

And a preview into the years ahead sees the themes of hybrid architecture, algorithms and music, climate change and science diplomacy explored through a wonderful array of artistic lenses conjoined to cutting edge research.













## Programme & activities

2022 was a very successful year for EPFL Pavilions thanks to the programming of two major productions - Deep Fakes: Art and Its Double and Cosmos Archaeology: Explorations in Time and Space. Those two exhibitions respectively curated and co-curated by Prof. Sarah Kenderdine, organised and produced by the EPFL Pavilions team in collaboration with EPFL laboratories and other key partners have been the most popular since 2017. In addition to those, EPFL Pavilions proposed scientific symposiums, an Open-Air Cinema programme in collaboration with several cinema festivals, a variety of events and activities with corporations, local partners and EPFL student associations. EPFL Pavilions also hosted five exhibitions (mostly in Pavilion A) and contributed to offsite exhibitions and events.

### Deep Fakes: Art and Its Double 17.9.2021–1.5.2022

Organizers: EPFL & University of Lausanne Curator: Prof. Sarah Kenderdine

Pavilions B and A

#### Total attendance in 2022: 4,798 visitors Total 2021–2022: 9,040

Deep Fakes: Art and Its Double poses crucial questions about the potency of digital replicas to absorb audiences in enduring emotional encounters with universal art treasures. This exhibition opposes the use of 'deepfakes' for manipulation and misinformation, to explore very different perspectives, reimagining objects through advanced computational techniques.

Decades of computer science and engineering at EPFL have revolutionised the tenets of verisimilitude and representation. Today's 'perfect pixels' coalesce in imaging techniques designed to replicate cultural artefacts with ultimate fidelity. As artificial intelligence re-performs and reprocesses the visible, it is exposing the optical unconscious of art, questioning objecthood itself. With its propensity for peripheral vision, machine learning has amplified the possible futures for curatorial and artistic practices, antagonising outdated notions of authority, authenticity and access. Harnessing artificial intelligence approaches for art reproduction, cultural deep fakes are generating perpetually new archival artefacts, concurrently formed and formless.

Through 21 installations at EPFL Pavilions, the exhibition grappled with the applied and critical implications of the digital materialities of objects in their post-original form.

 epfl-pavilions.ch/exhibitions/ deep-fakes-art-and-its-double

#### Contributors

Advanced Imaging Technology Research Center (AITReC), ArcTron 3D, Art Gallery of New South Wales, ARTMYN, Bauhaus-Universität Weimar, Collart-Palmyre Project of Université de Lausanne, Consensive, CultLab3D at Fraunhofer Institute, Digital Projection, EPFL Laboratory for Experimental Museology, Iconem, Sarah Kenderdine, Terry Kilby, Oliver Laric, Bernd Lintermann and Florian Hertweck, Christian Mio Loclair, Pablo Picasso, QoQa, Remaking Confucian Rites Project and Centre for Chinese Ritual Studies of Tsinghua University, Samurai Art Museum, ScanLAB Projects, Jeffrey Shaw, Eve Sussman | Rufus Corporation and Snark.art, Ubisoft, Victoria and Albert Museum, Wunderman Thompson, Andrew Yip.

#### Partners

Loterie Romande, Federal Office of Culture, Fondation pour l'Université de Lausanne, Société Académique Vaudoise, Fondation Leenaards, Fondation UBS Culture, SICPA.

#### **Program highlights**

- Symposium in partnership with the Swiss National Museum in Zurich (see details below).
- 'In Conversation' interview series.
- Saturday guided tours and lunch visits.
- Digging Deeper evening tours and debate program.

#### Symposium

9.3.2022 17:30 – 19:30 Auditorium Willy G.S. Hirzel, Swiss National Museum Zurich

#### Partners

In cooperation with University of Lausanne, EPFL / Laboratory for Experimental Museology, Zentrum Altertumswissenschaften Zürich (ZAZH), and UZH.

#### **Keynotes**

- Deep Fakes: Art and Its Double The Exhibition. Prof. Sarah Kenderdine, EPFL Laboratory for Experimental Museology, director of EPFL Pavilions.
- The Swiss archeologist Paul Collart and the site of Palmyra. Patrick Michel, senior lecturer at University of Lausanne, Institute of Archeology and Classical Studies.
- Patrimoine archéologique syrien après dix ans: espoir et désespoir (in French).
   Michel Al Maqdissi, researcher in the Department of Oriental Antiquities, Musée du Louvre, and former director of Archaeological Studies and Excavations, Directorate-General for Antiquities and Museums, Syria.

Roundtable: Social impact of reconstruction

- Benno Widmer, head Museums & Collections, Federal Office of Culture.
- Andrea Balbo, ALIPH Foundation, project manager.
- Patrick Michel, leads currently the Collart Palmyre project as senior lecturer at University of Lausanne.
- Michel Al Maqdiss, researcher in the Department of Oriental Antiquities, Musée du Louvre, and former director of Archaeological Studies and Excavations, Directorate-General for Antiquities and Museums, Syria.
- Emanuela Sebastiani, INZone.
- Moderation: Muriel Siki, journalist, TV producer, and conference moderator.























### *Prix Pictet: Fire* 9.6.2022–24.7.2022

Organisers: EPFL & Photo London Curator: Prix Pictet

Pavilions B

#### Total attendance: 949

*Prix Pictet: Fire* presented powerful photographs by thirteen international photographers exploring the theme of 'fire'. Prix Pictet aims to harness the power of photography to draw global attention to issues of sustainability, especially those concerning the environment. The Prix Pictet Fire winner was American photographer Sally Mann for her series Blackwater (2008-2012).

 epfl-pavilions.ch/exhibitions/ fire-pictet-prize

Blackwater (2008–2012) is a multifaceted exploration of the devastating wildfires that enveloped the Great Dismal Swamp in southeastern Virginia, where the first slave ships docked in America. In this work, Mann draws a parallel between the all-consuming wildfires she encountered there with racial conflict in America, explaining "The fires in the Great Dismal Swamp seemed to epitomize the great fire of racial strife in America - the Civil War, emancipation, the Civil Rights Movement, in which my family was involved, the racial unrest of the late 1960s and most recently the summer of 2020. Something about the deeply flawed American character seems to embrace the apocalyptic as solution."

#### Contributors

Joana Hadjithomas and Khalil Joreige, Lisa Oppenheim, Mak Remissa, Mark Ruwedel, Rinko Kawauchi, Sally Mann, Brent Stirton, Carla Rippey, Christian Marclay, Daisuke Yokota, David Uzochukwu, Fabrice Monteiro.

Partners Prix Pictet, Photo London

Program highlights

- Opening ceremony
- Saturday guided tours and lunch visits







#### Cosmos Archaeology: Explorations in Time and Space 16.9.2022–5.2.2023

Organisers: EPFL & University of Lausanne Curator: Prof. Sarah Kenderdine (eM+) & Prof. Jean-Paul Kneib (LASTRO)

**Pavilion B** 

#### Total attendance in 2022: 8,689 Total 2022—2023: 14,154

Melding art and science, *Cosmos Archaeology* reveals the depths of the Universe through physical, perceptual and sensory interaction. Throughout centuries of observation, our perception of the Universe has evolved along with the tools we have invented to map and chronicle its formation. Paradoxically, while leading to ground-breaking scientific advances, new astronomical technologies produce boundless volumes of abstract data that is largely unintelligible to most.

Cosmos Archaeology presents 19 installations that break down the artificial gap between scientific rigour and visual experience to transform this imperceptible data into experiences accessible to human senses. In two years of research, the EPFL's Laboratory for Experimental Museology and Laboratory of Astrophysics have elaborated a series of custom immersive interfaces specifically for astrophysical data, in the form of interactive data simulation and visualisation, immersive projections, 3D film and augmented reality.

Harnessing these technologies of immersive and interactive visualisation and the visual arts, the exhibition transforms the most complex astrophysical data into sounds and images that everyone can experience. In its diverse and critical perspectives, it also prompts us to rethink the historic, human, and environmental aspects of our relation to the Universe.

 epfl-pavilions.ch/exhibitions/ cosmos-archaeology

#### Contributors

Artists: Simone Aubert, Pascal Bettex, Lily Hibberd, Anna Hoetjes, Theodore Kruczek (Keep-Track.space), Project Adrift (Cath Le Couteur and Nick Ryan), Quadrature (Juliane Götz and Sebastian Neitsch), Florian Voggeneder. EPFL laboratories: Lab. for Experimental Museology (eM+), Lab. of Astrophysics (LASTRO).

Partner FNS- Agora

#### Associated programme

#### 24.9.2022

#### La Nuit des musées

From 2pm to 2am, about 700 visitors came to see the exhibition *Cosmos Archaeology*. Short guided tours were organised throughout the night.

Over 200 people attended the outdoor projection of 2001 Space Odyssey at the Agora Lombard Odier. This projection was organised in collaboration with Ciné-Club EPFL-UNIL.

#### 24—28.09.2022 Open air Cinema at Agora Lombard Odier

### and Forum Rolex

Each year (since 2020) EPFL Pavilions organises an Open Air Cinema in September linked to the main topic of the exhibition in Pavilion B. This year, a total of 290 people came to the five projections (unfortunately, due to bad weather, most of them took place indoors at the Forum Rolex).

Festivals have been approached in July– August (GIFF, NIFFF, LUFF, Ciné-club Unil). GIFF declined because our event was too close to their festival, but expressed interest in collaborating for a future edition. Pierre-Yves Walder (director of NIFFF), Julien Bodivit (director of LUFF) and Yann Schlaefli (president of Ciné-Club UNIL) came to make an introduction about their festival. Three students associations partnered to sell cinema snacks before the projections and raise funds for their activities: Unipoly, 180° and Fréquence Banane.

#### Programme

- Sun. 25.9 | In collaboration with NIFFF, Les Particules, Blaise Harrison, Switzerland/ France, 2019
- Mon. 26.9 | In collaboration with LUFF, *The American Astronaut*, Cory McAbee, United States, 2001
- Tue. 27.9 | In collaboration with NIFFF *Ikarie XB-1*, Jindrich Polák, Czechoslovakia, 1963
- Wed. 28.9 | In collab. with Ciné-Club UNIL Voyage of Time, Terrence Malick, United States, 2016

#### 19-20.9.2022 Scientastic

More than 1,500 visitors, mainly families with kids, came to Pavilion B over the Scientastic week-end. In addition, a virtual escape game in augmented reality (called Tranquility Base) was taking place in Pavilion A. This activity was organised in collaboration with the student association Space@yourService.

#### 24.11.2022

### Cosmos Archaeology official celebration at Pavilion B and Forum Rolex

To celebrate the exhibition *Cosmos Archaeology: Explorations in Time and Space*, EPFL Pavilions invited special guests to a concert called Le Carnaval des Planètes lead by Simón Prêcheur Llarena at Forum Rolex. The music was accompanied live by data visualisation show specially commissioned to Andrew Quinn.

The evening was introduced by the speeches of Martin Vetterli, Sarah Kenderdine, Jean-Paul Kneib and Claude Nicollier. More than 350 people attended the event.

#### 25.11.2023

#### Cosmos Archaeology Symposium: Encounters between art and science at Pavilion A

This symposium was an opportunity for space explorers from all walks of life to meet and share their diverse knowledge. It brought together eminent personalities from the worlds of art and science around four themes, central to the exhibition.

Session 1: Exploring the dynamic Universe

- Cosmos Archaeology: Exploration in Time and Space. Sarah Kenderdine, EPFL eM+/ EPFL Pavilions.
- Observation of the Universe in 3D Going back in time! Jean Paul Kneib, EPFL LASTRO
- Beyond the Earth: what simulations teach us? Yves Revaz, EPFL LASTRO
- Visualization of cosmological big data. Florian Cabot, EPFL SCITAS
- Archaeology of Light (movie)

#### Session 2: Arts of the Universe

- The Entanglement of Space and Art, Claudia Schnugg
- Analog Missions, Florian Voggeneder
- Scanning the Surface of Venus: from satellite to canvas, Lily Hibberd
- A Feeling of Space, Anna Hoetjes
- Sounds from Mars, Simone Aubert
- Sounds of the Universe, Sylvestre Maurice
- Kinetic Space, Pascal Bettex

Session 3: Discovering the impact of humans in space

- Satellites and debris visualization, Theodore Kruczek
- Sputnik to Starlink, why we need to talk about satellites, Sebastian Neitsch
- Adrift, Weaving together Science and Imagination, Cath le Couteur
- Cleaning Up, Lionel Métrailler, ClearSpace

Session 4: Meeting Space heroes

- Space for a better view of the Cosmos, Claude Nicollier
- Designing the Archiv, Giacomo Alliata
- Billions of planets in the Milky Way: the quest for Earth Twins and maybe life, Michel Mayor
- On the Far Side of the Glass Ceiling, the Sky is for Everyone, Virginia Trimble

#### 02.12.2022

#### Astronomy on Tap n°9 at Sidewalk Café

EPFL Pavilions collaborated with Space@ yourService, an EPFL association that regularly organises "Astronomy on Tap" evenings. One of these events featured a presentation by Jean-Paul Kneib, co-curator of Cosmos Archaeology. The event gave the opportunity to dig deeper into Astrophysics and advertise about the exhibition. It was sold out (60 people).

#### 10.12.2022

### Escape Game: Switzerland we have a problem at Pavilion A

An escape game on the theme of space (created by Space@yourService) was organised at Pavilion A for a day. Organised as a test, the event was sold out (14 teams of 4 people) and attracted a different audience than the exhibition itself.

#### December 2022

#### Christmas Supernova at Pavilion A

In order to support communication and attract families over the week-ends, a festive workshop was organised. Families and kids were invited to craft Christmas bobbles getting inspired by Hubble and James Web telescopes images. 462 young visitors (and some adults) took part.

















# **2** Artist-in-Residence

Initiated in 2020 by the College of Humanities (CDH) and amplified by EPFL Pavilions, the Artist-in-Residence (AiR) programme reflects the CDH's mission of fostering transdisciplinary encounters between artists and the scientific community at EPFL. By forging collaborations between artists and scientists in different disciplines, the programme aims to establish a platform for propelling new approaches and aesthetic investigations at the intersection of art, technology, science, and the humanities. Artists are invited to submit proposals for a project to be undertaken at EPFL for a duration of three months. As part of the outcome of their project, resident artists are supported to create an exhibition or event in Pavilion A, either during or following the period of their residency.

 epfl-pavilions.ch/partners/ artist-in-residence The 2022 AiR programme invited the following artists.

#### *Light-Oriented Ontologies* Alan Bogana (CH)

This project enquires into unique interactions between light and matter on a micro and nano scale. The project will specifically focus on experimental applications of holography, photonic crystals, and UV lithography, as well as experimental forms of volumetric 3D printing with light. Bogana will have a deeper insight into the mechanisms of "volumetric printing" of various types of organic (and biological) entities with light.

#### Synthetic Landscapes

#### Dorota Gawęda (PL) and Eglė Kulbokaitė (LT)

This project explores the history of the Western landscape painting tradition. It also challenges the illusory promise of subjectivity as a whole.

#### **Spheroids**

#### Joel Kuennen (US)

The project interrogates exoplanet geologies and ecologies, to question our burgeoning interplanetary imaginary and its relationship to how we interact with the Earth.

#### Rational and Irrational Numbers Riccardo Giacconi (IT)

This aims to connect the archaic tradition of puppetry to the latest technological developments on robotics and artificial intelligence.

#### Concert and workshop Michael Wollny (DE)

In early 2022, German jazz pianist and composer Michael Wollny was the guest of the Digital and Cognitive Musicology Lab (DCML). This resulted in two public events: a concert by Michael Wollny Trio at EPFL Rolex Forum and a workshop with Michael Wollny and EPFL Prof. Martin Rohrmeier held on 10 and 11 May 2022. EPFL Pavilions hosted the presentation of *Physics*, the outcome of Caroline Corbasson's residency 2021. *Physics* is a movie, in which Corbasson offers her sophisticated perspective on the atmosphere of the EPFL campus; revealing the mysterious and intimate aspects of the relationships that inhabit and characterise it, while making visible the power and presence of its natural surroundings. This work emerged from a collaboration between the artist and the Laboratory for the History of Science and Technology. The exhibition took place at Pavilion A, from 5 to 29 May 2022.







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# **3** Collaborations

#### Douze Mille Vingt 8–13.3.2022

Julie Semoroz Collaboration: CDH Culture

#### **Pavilion A**

*Twelve Thousand Twenty*, by Julie Semoroz, places humans in a future ten thousand years from now, where everyone would vibrate with the world. The project featured the installation Xyloscille, alongside the performance Interspecies communication, a concert Foralgues by Ensemble Contrechamps, and a round table.

 epfl-pavilions.ch/exhibitions/ douze-mille-vingt

### Balélec 40th anniversary exhibition 15–27.3.2022

Collaboration: Association Balélec

#### **Pavilion A**

In 2022, the Balélec Festival turned 40: that's 40 years of music electrifying the EPFL campus. In March 2022, EPFL Pavilions provided a means to rediscover some of the concerts that made its mark on the festival through the years. > epfl-pavilions.ch/exhibitions/

balelec-exhibition

#### Invisible Demons 09.03.2022

Collaboration: FIFDH & IdM EPFL

#### Auditorium CO2

Since the year 2020, EPFL Pavilions has closely collaborated with FIFDH (International Film Festival and Forum on Human Rights), Ingénieur·es du Monde (EPFL students association) and Prof. Marc Troyanov to propose a film projection. This year's movie, called Invisible Demons is a documentary which shows how economic growth in India has been synonymous with ecological disaster. The panel discussion that followed the projection was composed of two professors from Unil and EPFL and a representative of Zero Emission Group (Prof. Yohan Ariffin, Prof. Silvia Hostettler and Héloïse Sandoz). A total of about 60 people came to that event. Things that talk: The Secret Lives of Scientific Instruments 14.4–29.5.2022

Collaboration EPFL+ECAL Lab & LHST

#### **Pavilion A**

This exhibition is a collaboration between the Laboratory for the History of Science and Technology and EPFL+ECAL Lab. Centered on three scientific objects (the Dynamometer, the Globe of Mars, and the Crookes Tube), Things that Talk offers the public the opportunity to discover their historical depth through new and playful forms of interaction.

 epfl-pavilions.ch/exhibitions/t hings-that-talk

#### Les Culturelles / CDH Cultural Week 8–16.10.2022

**Collaboration:** CDH Culture

Pavilion A + other locations on campus

The CDH Cultural Week presented different artistic events such as dance performances, conferences and workshops. The programme aims at reflecting one of the key missions of the EPFL College of Humanities: to integrate artistic practices and research into the campus life. The events were free and open to the whole EPFL community.

### Nanda Vigo at Madd Bordeaux 7.7.2022–8.1.2023

EPFL Pavilions partnered with Madd Bordeaux for an installation in the exhibition *Nanda Vigo*, *the inner space*. This exhibition introduces the work of the artist through immersive installations. Architecture, art and design are approached as total creative fields. The objective is to see, perceive and feel all the dimensions of Nanda Vigo's artistic creation.

EPFL Pavilions partnered the exhibition for the creation of an immersive installation that allowed the visitor to visit the interior of the house Lo Scarabeo sotto la foglia.

#### Spatial Affairs: Worlding 29.4.2021—31.8.2023 (online exhibition)

Conceived as part of the exhibition Spatial Affairs, presented at the Ludwig Museum – Museum of Contemporary Art, Budapest, Spatial Affairs: Worlding is an exploratory online environment, a virtual multi-user exhibition populated by crawling artworks, where visitors' avatars coexist with moving bodies of internet art and browser-based projects.







# 4 Communication

2022 main objectives in terms of communication were to:

- secure and expand existing channels of communication while developing new tools targeted towards specific audiences;
- extend collaboration with Mediacom to reach out to larger audiences;
- foster communication links with other institutions specialised in arts and science;
- consolidate links with local press and national and international media.

Printed material is an important part of the communication strategy, ensuring that EPFL Pavilions is widely present and identifiable. For *Cosmos Archaeology*, 420 F4 posters were displayed for a total of 22 weeks in Lausanne, Geneva, Morges, Vevey and Montreux, and 5,200 flyers and A2 posters were distributed throughout Lausanne and Geneva or mailed out to over 115 museums, universities and scientific institutions across Switzerland.

Additionally, the digital presence of EPFL Pavilions' communication has been consolidated and expanded, in order to reach out to new and different audiences or to reach beyond the regions that are being targeted by print displays. A video trailer, conceived as an animated version of the poster, was broadcasted 2,200 times over two weeks on 502 screens in Lausanne's metro and bus systems.

Offering insights into the contents of the exhibition, 413 social media posts to a total of 7,053 followers and 7 newsletters sent out to 913 subscribers ensured *Cosmos Archaeology* a qualitative in-depth coverage.

EPFL Pavilions' website received 31,804 visits, of which 79.1% were new visitors. Social media platforms gathered 38,083 impressions gaining 694 additional social media followers along with 144 newsletter subscribers. On the EPFL campus, 12 F4 and 200 A2 posters were displayed for 24 weeks, while digital posters were played on screens for a total of 12 weeks. Internal mailings, features in internal news and agendas and in newsletters such as the Alumni's, an article in EPFL Dimensions magazine and special welcome events came in complement, allowing for a steady and fruitful communication towards the EPFL community.

Throughout exhibitions, EPFL Pavilions has increasingly raised interest among the local press. For *Cosmos Archaeology*, two press releases were issued, resulting in ten press articles and radio/TV features, including a report on RTS 12h45 news.

In addition, in order to target the art scene, a full-page ad in Spike magazine along with an eflux announcement sent to 60,000 subscribers worldwide were booked.

"EPFL Pavilions is a place that is definitely worth knowing and, most of all, visiting." Boris Senff, 24 Heures

"At EPFL Pavilions, technical precision takes precedence over pure spectacle." Olga Yurkina, Le Temps

#### 2022 in numbers



# 5 Evaluation

#### **Visitors metrics**

14,444 visitors came to the large exhibitions displayed in Pavilion B in 2022. The number of visitors attending Pavilion A and events is not included in this figure as there is no systematic counting system.

Adult external	7,449
Adult AVS	321
Adult campus	1,183
Icom/IPC	10
Children 0—6 years	690
Schoolchildren 6—16 years	2,113
EPFL students	1,163
External students	1,094
EPFL VIP	421

Considering events and exhibitions in Pavilion A, EPFL Pavilions hosted more than 15,000 visitors, proudly standing among the 25% of the most attended venues in Switzerland (cf. Office fédéral de la statistique.)

The overall appreciation of exhibitions is very high as shown in the Muse survey.

A specific survey was proposed to the visitors of EPFL Pavilions gathering 28 questions for *Deep Fakes* and 18 questions for *Cosmos Archaeology*.

It was presented on a freestanding tablet, which allowed visitors to decide of free will whether to respond, rather than being solicited. On average, 83% of respondents loved *Deep Fakes* and 93% loved *Cosmos Archaeology*. (This reflects the percentage of respondents who expanded the heart graphic on the survey to its largest size.)

All results for *Deep Fakes* are accessible here, and for *Cosmos Archaeology*, here.

Launched in September 2020, Muse is an innovative audience evaluation application, developed in collaboration with Swiss museums that enables cultural institutions to hear the voice of the visitor. An initiative of EPFL Laboratory for Experimental Museology (eM+), led by Prof. Sarah Kenderdine, the tool provides visitors with an engaging way to communicate their exhibition experiences, while helping museums to harness this feedback when developing future exhibits and other attractions. Muse is a unique tool to gauge direct qualitative emotional and embodied participation from its users and then turn these responses into quantitative data. As an entirely online system, deployed on a tablet in museums, Muse assists organisations in audience-centric approaches to design future exhibitions, programs and experiences, and helps define value, beyond demographics.

The application is currently deployed across 30 museums and organisations in Switzerland and is used on a consistent basis at EPFL Pavilions, as the primary tool used to interface with its audiences.

#### **External audit preparation**

Upon the request of the Board of the Swiss Federal Institutes, EPFL conducts periodic audits to ensure that its mandates are fulfilled and to receive guidance for improvement. In 2023, EPFL Pavilions will be audited by an international jury of experts. This evaluation will be the first conducted for EPFL Pavilions since its foundation in 2016. The Jury will be composed of four high-level international experts:

- Prof. Bill Sherman (Chair) Director of the Warburg Institure, UK
- Prof. John Durant, MIT museum Director, USA
- Prof. Olivier Grau, Director of Digital Art and Head of the Society of Media Art Science and Technology, Austria
- Rose Hiscock, Director Museums and Collections, The University of Melbourne, Autralia

Evaluation will be led on a three-day period in February 2023. They will have the opportunity to meet with EPFL Pavilions staff and members of its scientific committee. They will also be introduced to the EPFL Presidency and to members of the CDH. Last, there will be scheduled tours of EPFL Pavilions and of the exhibition *Cosmos Archaeology: Explorations in Time and Space*, as well as the Artist-in-Residence exhibition for the 2022 cohort of artists.

In order to provide the jury with preliminary material for reviewing EPFL Pavilions, a self-evaluation report was prepared and sent to the jury at the end of 2022. This document details EPFL Pavilions' key achievements from September 2017 to December 2022: those include the delivery of 19 major curated and other supplementary exhibitions between 2017 and October 2022, and more than 400 public programs. The self-evaluation report collates EPFL Pavilions' conceptual ambitions, and its positioning, firstly in its local EPFL context. It also situates the organisation nationally and internationally in the context of similar initiatives as well as within the worldwide movement of art and science as the framework for bringing pluri-disciplinary perspectives into the public domain. The report's contents are also designed to provide evaluators with a transparent strategic, operational and contextual history from the period it came under the management of the CDH, while also exposing potential vulnerabilities and requirements to ensure the ongoing resilience of EPFL Pavilions.

The document is divided into eight sections and is supported by eight appendices which outline the history of the organisation, provide an overview of EPFL Pavilions' vision, governance, strategy, operations, venues and the history of exhibitions and programs over the last five-year period. Later sections present SWOT and resilience reviews, highlight future programming, and summarise communications strategies and audience analysis.

Importantly, the self-evaluation report is accompanied by a Terms of Reference (ToR) document, which was designed as a guide to key issues of strategic interest to EPFL and for this present evaluation. The ToR makes explicit the primary questions of concern for EPFL and EPFL Pavilions, the answers to which ensure a justifiable, resilient and vibrant future for the organisation.





















# 6 Governance

#### EPFL Pavilions Scientific Committee

The remit of the EPFL Pavilions Scientific Committee is to ensure that the various communities of EPFL and beyond find a voice at EPFL Pavilions. The committee comprises 16 members, including 12 representatives from EPFL's academic community, 2 EPFL student representatives, 1 UNIL representative, and 1–2 representatives from other local cultural institutions. It meets three times a year and its members are engaged on two-year renewable mandates.

#### **Scientific Committee**

In 2022, the scientific committee only met once as many changes occurred in members' professional careers. Tatyana Frank, Mirko Bischofberger, left their positions respectively as the Director of Photo Elysée and Director of Mediacom (communication department of EPFL) to embrace new challenges.

After five years supporting EPFL Pavilions, Prof. Béla Kapossy's mandate as the director of CDH ended in July 2022. As CDH is entering in a mutation phase, Prof. Frederic Kaplan was appointed ad-interim for two years.

A renewed Scientific Committee will take its functions in 2023.

#### Members

- Sarah Kenderdine, EPFL Pavilions director, full professor, EPFL, Laboratory for Experimental Museology (eM+)
- Marilyne Andersen, full professor, EPFL, Laboratory of Integrated Performance in Design
- Jean-Philippe Ansermet, full professor, EPFL, Laboratory of the Physics of Nanostructured Materials
- Jérôme Baudry, tenure track assistant professor, EPFL, Laboratory for the History of Science and Technology
- Mirko Bischofberger, head of communication, EPFL
- Tayana Franck, director of Photo Elysée Lausanne
- Robert Giezendanner-Thoben, head of Business Development EPFL, Vice-Presidency for Innovation
- Simon Heinein, associate professor, EPFL, Patek Philippe Chair in Micromechanical and Horological Design
- Jeffrey Huang, full professor, EPFL, Media and Design Laboratory
- Béla Kapossy, EPFL CDH director
- Francesco Panese, associate professor, UNIL, STS Laboratory
- Pierre Gretillat, EPFL MT master student, committee member ArtePoly
- Martin Rohrmeier, associate professor, EPFL, Digital and Cognitive Musicology Laboratory
- Sabine Süsstrunk, full professor, EPFL, Image and Visual Representation Laboratory

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#### Team

2022 was a year of transition to a new operational model. In May 2022, the arrival of a full-time lead producer and a 50% support producer and researcher in October 2022, called for the reorganisation of the organisation structure. This change notably allowed for the manager's responsibilities to be reorganised to focus more effectively on core duties as well as on fundraising for the first time in the organisation's history.

#### Prof Sarah Kenderdine

Director & curator | 20% since 2017

Anne-Gaëlle Lardeau Manager | 90% since 2018

#### Marie Carrard

Lead producer | 100% since 2022

#### Alexia Panos

Assistant producer | 50% since 2022

#### Loïc Sutter

Communication officer | 80% since 2022

#### Le Thy Nguyen

Events & mediation officer | 80% since 2020

#### Adam Bagnowski

System specialist | 80% since 2021

#### Ryan Jones

Exhibition technician | 70% since 2019

#### Sophie Bauer

Administrative specialist | 30% since 2021

#### Stéphanie Romon

Assistant of the director | 20% since 2017

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#### New 2022 staff

#### Marie Carrard, lead producer

Marie Carrard is an experienced museographer and producer of exhibitions involving audiovisual and digital experiences. She created and led the 'Museography and Digital Experience' unit of the Point Prod group for twelve years in Geneva. For the last two years, she has been the deputy director of the UN's Portal of Nations project. She started her career managing international projects in TV production, media and communication. She holds a double master's degree in international economics and politics from Sciences Po Paris.

#### Alexia Panos, assistant producer

After spending several years in Singapore, Alexia Panos returned to Switzerland to pursue her studies in History and Political Science. After a Master's degree in Museum Studies, she started her career at the Olympic Museum were she took part in the making of several exhibitions. Within the Olympic Foundation for Culture and Heritage, she continued working as project manager on the valorisation of the audiovisual archive of the IOC. Since achieving her thesis on the use of augmented reality in the context of historical patrimony, Alexia has been interested in innovative technologies in cultural purposes. She joined the team of EPFL Pavilions in 2022.

#### Loïc Sutter, communication specialist

After studies in visual communication in Geneva, Loïc Sutter has specialised in cultural communication within the teams of the Lausanne Underground Film & Music Festival (LUFF), Visions du Réel and Les Urbaines, as part of the Post Digital Cultures symposium. He has taken part in various artistic and collective projects, driven by a curiosity for experimental, innovative and singular approaches. He has joined the team of EPFL Pavilions as Communication specialist in 2022.

#### Ryan Jones, exhibition technician

From Sydney, Australia, with a background in Contemporary Music Performance and Audio Engineering and a passion for technology, Ryan is fascinated by the crossroads where science and art interact to unveil the diverse aspects of both fields.

#### Docents

- Hamza Akeddar, Bachelor in Microtechnics
- Nouchine Bouchiat, Bachelor in Life Sciences Engineering
- Jeanne Charlot, Bachelor in Materials Science and Engineering
- Auriane Debache, Master in Life Sciences Engineering
- Edouard Dufour, Master in Microtechnics
- Eliott Hiesse, Bachelor in Mechanical Engineering
- Aimée Keller, Bachelor in Human and Social Environmental Sciences
- Elisa Michelet, Master in Digital Humanities
- Ksenia Mironova, Master in Media Engineering
- Pauline Nicolas, Bachelor in Materials Science and Engineering
- Claire Payoux, Master in Management of Technology and Entrepreneurship
- Margot Plassard, Master in Environmental Sciences and Engineering
- Julie Riondel, Master in Architecture
- Joana Sage, Bachelor in Visual Communication
- Vanesa Santillan Messina, Master in Architecture
- Laurine Song, Bachelor in Life Sciences
  Engineering
- Hugo Stypa, Bachelor in Life Sciences
  Engineering
- Alexandre Tellier, Master in Microtechnics
- Melissa Vallette, Master in Materials Science and Engineering
- Esther Yie, Bachelor in Chemistry and Chemical Engineering
- San Yun, Master in Architecture
- André Zarza Tapia, Bachelor in Communication Systems

## 7 Budget & fundraising

The contribution of funding from EPFL to the Pavilions is stable since 2018. In 2022, there has only been a marginal increase of 2.8% compared to the total income in 2018 which corresponds to the increase in the cost of living.

Between the years 2021 and 2022, the income from fundraising was almost doubled. In 2022, fundraising brought 29.5% of the overall budget. This success has been made possible by the anticipation of the programs as well as the efforts and supports of curators and laboratories.

EPFL Pavilions also depends on important contributions of in-kind support in the form of personnel and equipment loans from EPFL that can be regarded as highly positive. Among those, eM+ is a substantial in-kind supporter.

#### Revenue

EPFL endowment	684,705	CHF
EPFL operating	764,507	CHF
Grants paid in 2022	286,413	CHF
Internal transfers	215,488	CHF
Overhead	77	CHF
Operating revenue	1,951,191	CHF

#### Expenses

Equipment, machinery, appliances	213,287	CHF
Staff, training	844,787	CHF
Maintenance, contracts, rent	34,764	CHF
Office, administration	28,969	CHF
IT, communication	27,246	CHF
Fees, patents, taxes, insurance	215,676	CHF
Books, subscriptions, ancillary costs	22,812	CHF
Internal purchases	77,731	CHF
Overheads and internal withdrawals	25,029	CHF
Provisions for 2023 production (subsidies dedicated to <i>Lighten Up!</i> )	451,902	CHF
Operating expenses	1,942,203	CHF
Operating result	8,988	CHF

# 8 2023 and beyond

#### Lighten Up! On Biology and Time 23.3–30.7.2023

**Co-curators:** Emeritus Prof. Anna Wirz-Justice (University of Basel), Prof. Marilyne Andersen (LIPID, EPFL), Prof. Sarah Kenderdine (eM+, EPFL) and Dr Giulia Bini (CDH, EPFL)

#### Pavilions A and B

In this exhibition, artists and scientists will take concepts of circadian rhythms and the powerful role of light to create works that remind us of the importance of biological rhythms and daylight. The core themes will be the day-night changes in light intensity and spectra, the critical role of twilight as a signal for the biological clock, and the obvious relationship of these external cycles to our internal cycles of sleep-wake, alertness, mood, body physiology and overall health, performance and well-being. Light via the eyes is the key synchronisation agent for the biological clock, daylight the original entrainment signal. In a 24/7 society, where urban lifestyles and work habits have gradually disconnected us from 'natural' light exposure, rhythms are fluid and no longer well adapted to the environment, resulting in 'social jetlag', depression, sleep disorders, and in the long-term medical sequelae.

*Lighten Up!* will present 19 installations by artists, architects, photographers, and designers, including Olafur Eliasson, Colin Fournier, James Carpenter, Susan Morris, Anne Noble, Liliane Lijn, Ted Hunt and Andreas Horlitz.

#### Cyber Physical: Architecture in Real Time 21.9.2023–16.6.2024

Curator: Prof. Sarah Kenderdine Artists: Uwe Rieger & Yinan Liu, arc/sec Lab (Auckland, New Zealand)

#### Pavilion B

The exhibition *Cyber Physical: Architecture in Real Time* consists of four large-scale installations. They bring to life a new world that dissolves the separation between the computer and material presence.

The interactive installations combine physical structures with holographic imagery. They are both sculptures and immersive environments. As hybrid sculptures, they are blurring the boundaries between the virtual and the physical world. As immersive environments, they allow the visitor to discover a responsive world in which the interaction with data is linked to tangible properties and connected to spatial appearance.

The four projects are part of the investigations conducted at the arc/sec Lab for Cyber-Physical Design and Interactive Systems at the University of Auckland.

#### Music Machines: Sonic Experimentation from Antiquity until Now (working title) Spring 2024

Co-curators: Prof. Sarah Kenderdine (eM+, EPFL), Prof. Martin Rohrmeier (DML, EPFL), Prof. Jonathan Impett, Orpheus Institute, Prof. Paul Doornbusch, Australian College of the Arts

#### **Pavilion B**

*Music Machines* will encompass the varieties of algorithmic composition and its machines to produce and compose music across time, from around 1000 CE until today. Including 23 exhibition items from major collections, the exhibition will survey over 1200 years of music machines and computational music making.

The exhibition will comprise three major sections:

- History algorithmic composition and rule-based composition from early beginnings through to use of computers and self-playing instruments.
- Computational composition from 1940s onwards through to current technology starting with the Stanford computer and first model of counterpoint composition through to AI and computational creativity.
- Historical and contemporary artworks including Ligeti, Cage, through to music robots.

#### Science Diplomacy: Planetary Futures (working title) Autumn 2024

**Co-curators:** Prof. Sarah Kenderdine (eM+, EPFL), Prof. Anders Meibom (ENAC, EPFL), Dr Olivier Kuttel (independent), Geneva Science and Diplomacy Anticipator (GESDA)

#### **Pavilion B**

New technologies are becoming increasingly important to all aspects of foreign policy and Switzerland plays a major role in promoting dialogue between the scientific and diplomatic communities. Exploring science for diplomacy (soft power) and science in diplomacy, this exhibition will highlight five key projects at the forefront of multilateral dialogue, action and science. For example, The Transnational Red Sea Center is a scientific research centre created in 2019 at EPFL with the official support of the Swiss Foreign Ministry. An independent and not-for-profit organisation, the centre capitalises on Switzerland's neutrality, its longstanding tradition of promoting dialogue and its reputation for scientific excellence in order to bridge science and diplomacy for the future of coral reefs. From 2022 to 2025, it will conduct a first expedition along the ca. 4,500 km coastline of the eight Red Sea countries: Djibouti, Egypt, Eritrea, Israel, Jordan, Saudi Arabia, Sudan and Yemen which will be visualised for the first time by the public.

In partnership with the Geneva Science and Diplomacy Anticipator (GESDA) foundation, this exhibition will anticipate scientific and technological breakthroughs across a 25-year horizon. It promises to coalesce dialogue between four major communities: academic, diplomatic, industry and citizens and identify the potential of science impact on people, society and the planet.

It is anticipated that this exhibition could play a role in the Swiss Pavilion at the World Expo 2025, Japan.











#### **Future objectives**

EPFL Pavilions is now strategically positioned as an internationally prominent art-science gallery with exponentially growing audiences. Furthermore, as EPFL Pavilions produces original research, ideas and cultural frameworks that transcend object-oriented curatorial practices, it is making important contributions to the art-science domain.

From 2023 to 2028, EPFL Pavilions will enter a period of consolidation where its investment and activities will be made more sustainable. EPFL Pavilions will continue to champion artistic involvement in the campus, and to help sustain cultural programmes. Increases in staffing and funding, remain highly desirable in this context, as the key means to resolve issues of sustainability. Apart from the coming exhibitions listed above, other key strategic plans include the EPFL Dashboard democratic vision for Pavilion A.



# 9 Outreach

## 9.1 Publications and presentations

Inaugural keynote: *International Congress of Museums and Digital Strategies*, CIMED 2022, 19–28 October 2022, Valencia, Spain.

Invited keynote: *Embodied Knowledge Systems (on display)*, presented at the Global Summit of Research Museums II: Objects in Motion – Museums in Motion, 17—19 October 2022, Munich, Germany.

Plenary speech: 'Computational museology: futures for inclusive museums', ICOM 2022, Prague, 26 August 2022.

Keynote: 'Computational Museology: Interfaces to Cultural (Big) Data', Museums Without Walls conference at Queen's University, Kingston, Canada, 15–17 August 2022.

Opening Keynote: *'Computational Museology: Interfaces to Cultural (big) Data'*, presented at the Archiving 2022 Conference, USA Library of Congress, 7 June 2022.

#### 9.2 Press

#### 17.01.2023

RTS 12h45 | Avec son exposition "Cosmos Archaeology" l'EPFL vous emmène à la découverte de l'Univers

rts.ch/info/culture/arts-visuels/13711551avec-lexposition-cosmos-archaeology-lepflpart-a-la-decouverte-de-lunivers.html

#### 14.01.2023

Tribune de Genève | Visite aux dimensions spatiales

► tdg.ch/visite-aux-dimensions-spatiales-468772815846

#### 30.12.2022

Le Temps | A l'EPFL, l'univers à portée de main

letemps.ch/sciences/lepfl-luniversportee-main

#### 26.12.2022

24 Heures | Visite aux dimensions spatiales ▶ 24heures.ch/visite-aux-dimensionsspatiales-468772815846

#### 20.10.2022

RTS La Première, CQFD | Une exploration dans le temps et dans l'espace

pages.rts.ch/la-1ere/programmes/ cqfd/20-10-2022#13442749

#### 23.09.2022

Le Courrier | «Cosmos Archeology», vers l'infini et au-delà!

lecourrier.ch/2022/09/23/ cosmos-archeology-vers-linfini-et-au-dela/

#### 17.09.2022

RTS Espace 2, Musique Matin | «Cosmos Archeology»

rts.ch/audio-podcast/2022/audio/musiquematin-25854256.html

#### 13.09.2022

24 Heures | Partir à la rencontre du cosmos à l'EPFL

 avenue.argusdatainsights.ch/Article/ AvenuePDFClip?artikelHash=d31fb6483b15 4e9487b9c7acd58e7938\_B796DC70577D2 B572892DB6EA28F89B8&artikelDateild =340484207

#### 12.09.2022

LFM | *Exposition à l'EPFL: partir à la rencontre du cosmos* 

Ifm.ch/actualite/culture/exposition-a-lepflpartir-a-la-rencontre-du-cosmos/

#### 12.09.2022

Bluewin | *Exposition: partir à la rencontre du cosmos* 

bluewin.ch/fr/infos/sciences-technique/ exposition-I-epfI-partir-Ia-rencontre-ducosmos-1373107.html

#### 06.07.2022

24 Heures | Trois expos photo à ne pas rater dans le canton de Vaud (about Prix Pictet Fire)

24heures.ch/trois-expos-photo-a-ne-pasrater-dans-le-canton-de-vaud-237684469930

#### 17.06.2022

RTS | «Fire»: Le feu à l'honneur du Prix Pictet

rts.ch/audio-podcast/2022/audio/le-feu-al-honneur-du-prix-pictet-25831767.html/

#### 08.04.2022

Performance, Conservation, Materiality, Knowledge | On the bleeding edge of heritage conservation: "Deep Fakes" at EPFL Pavilions, Lausanne

 performanceconservationmateriality knowledge.com/2022/04/08/deep-fakes/

#### 28.01.2022

Worship AVL | Digital Projection brings Michaelsberg Abbey to life

#### 27.01.2022

EventElevator | Digital Projection erweckt Ausstellung Deep Fakes zum Leben

eventelevator.de/video/digital-projectionerweckt-ausstellung-deep-fakes-zum-leben/

#### 27.01.2022

Blooloop | Digital Projection reinvents artworks with technology enhancements

blooloop.com/museum/news/

digital-projection-deep-fakes/

#### 26.01.2022

AV Magazine | Digital Projection partakes in 'Deep Fakes' exhibition

 avinteractive.com/news/projection/ digital-projection-partakes-deep-fakesexhibition-26-01-2022/

#### 23.01.2022

- Arte, Twist | Excerpt from Arte Twist episode
- instagram.com/p/CZE0UmYIXat/

#### 21.01.2022

Arte, Twist | Täuschend echt. Deepfakes

#### 21.01.2022

Le Temps | «Deep Fakes»: des œuvres d'art à toucher sans modération

letemps.ch/culture/deep-fakes-oeuvresdart-toucher-moderation

#### 21.01.2022

Le Serpeliou | Touchez s'il vous plaît, ou l'art de la copie numérique

 epfl-pavilions.ch/media/pages/press/ 1fce5f7315-1645701676/article\_resonance\_ expo\_deep\_fakes\_le\_temps\_21\_01\_22.pdf

#### 17.01.2022

Digital AV Magazine | Digital Projection dinamiza la exposición 'Deep Fakes' con su tecnología 3D

 digitalavmagazine.com/es/2022/01/27/ digital-projection-dinamiza-exposiciondeep-fakes-tecnologia-3d/

#### 01.2022

ISP Audio & Light | Digital Projection da vida "Deep Fakes" con tecnología 3D

 isp-audio.com/instalaciones/instalacionaudiovisual/6077-digital-projection-da-vidaa-deep-fakes-con-tecnologia-3d

#### 01.2022

Digital Projection | Digital Projection brings Deep Fakes exhibition to life with ground-breaking 3D technology

digitalprojection.com/emea/ dp-case-studies/digital-projectionbrings-deep-fakes-exhibition-to-life-withground-breaking-3d-technology/

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8 Helin, Christian Mio Loclair, 2019, Deep Fakes: Art and Its Double, © Alain Herzog

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(22) Joel Kuennen, 2023, AiR programme Enter the Hyper Scientific, © Alain Herzog

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 Animal, Riccardo Giacconi,
 2022, AiR programme Enter the Hyper Scientific

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