

The Imaginary Atlas, Amazonia | **XR Experience**

Imaginary Atlas, Amazônia is an immersive art and research project developed as a modular system of installations exploring speculative Amazonian futures.

This submission focuses on **Installation 01 – Cabeçudo (The Big Head), a self-contained, free-roaming immersive XR** installation designed to function independently in exhibition contexts.

A second installation, Cidade-Cardume (Swarm City) —a robotic art piece— exists as part of the broader Imaginary Atlas universe and may be presented as an optional scenographic extension depending on venue conditions and logistical feasibility.

This document includes:
– a conceptual description of the XR installation
– technical requirements and spatial needs
– an overview of Imaginary Atlas as a broader, evolving project

Overview

Urban research, Amazonian tech, and new media; an antidisciplinary approach to imagining Amazonian future cities.

Imaginary Atlas, Amazônia is an art based research project and immersive installation that envisions future cities in the Amazon 100 years from now. Working across new media, interactive systems, and speculative storytelling, the project adopts an antidisciplinary approach to explore how Amazonian cities might evolve beyond extractive models and environmental collapse. Developed as a Brazil-United States co-production, the project emerges from long term collaboration between the MIT Media Lab and cultural, scientific, and academic institutions in the Brazilian Amazon.

The Atlas weaves together oral histories, traditional crafts, and emerging digital technologies. These elements are translated into spatial experiences where visitors navigate fictional urban ecologies shaped by ancestral knowledge, contemporary realities, and imagined futures.

The project begins in Belém do Pará, in the heart of the Amazon rainforest. Here, cultural structures such as the *Cabeçudo*, a popular large scale festive figure built from basketry and lightweight materials, become both symbolic and structural references. Reinterpreted through interactive and kinetic systems, these forms act as interfaces to access the Atlas, transforming popular expression and local craft logics into tools for worldbuilding.

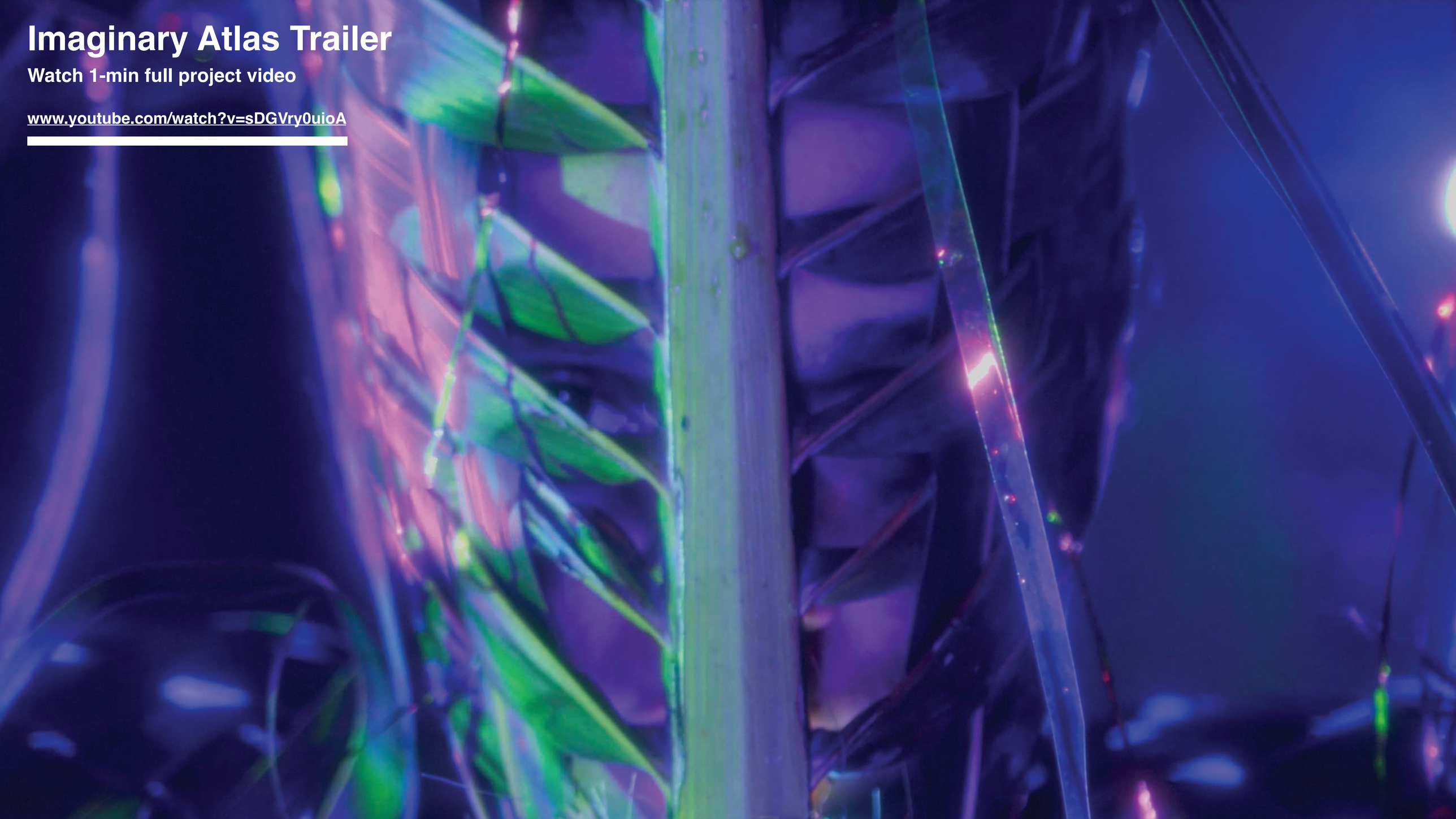


Installation view, November 2025. Belém do Pará, Brazil.

Imaginary Atlas Trailer

Watch 1-min full project video

www.youtube.com/watch?v=sDGVry0uioA



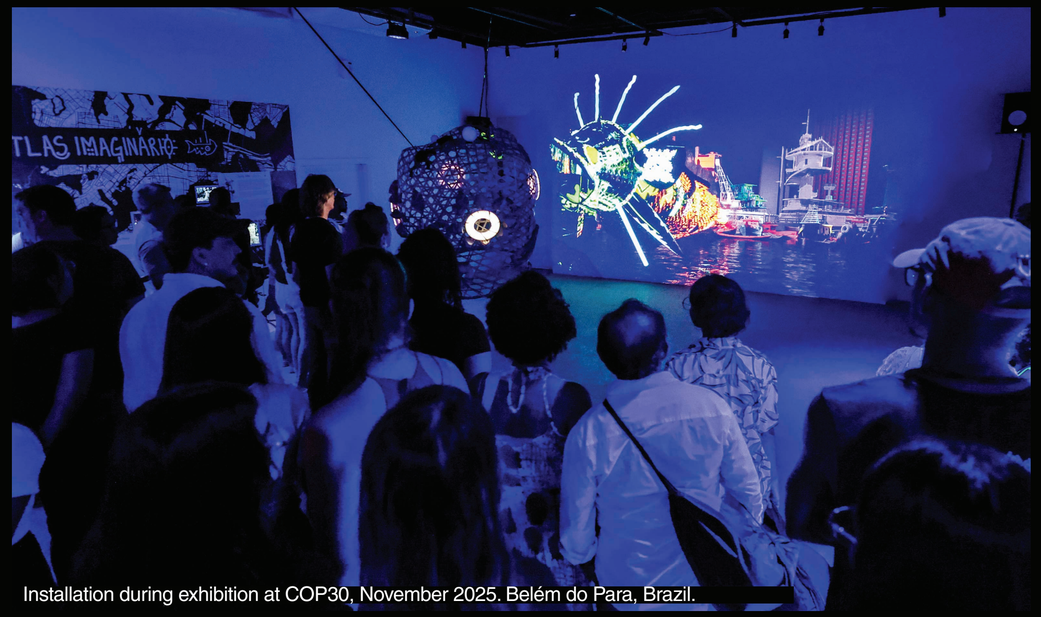
XR Installation - Demo Video

www.youtube.com/watch?v=_zqvbdAwLtY



Cabeçudo

XR Experience + Craft Interface



Installation during exhibition at COP30, November 2025. Belém do Para, Brazil.



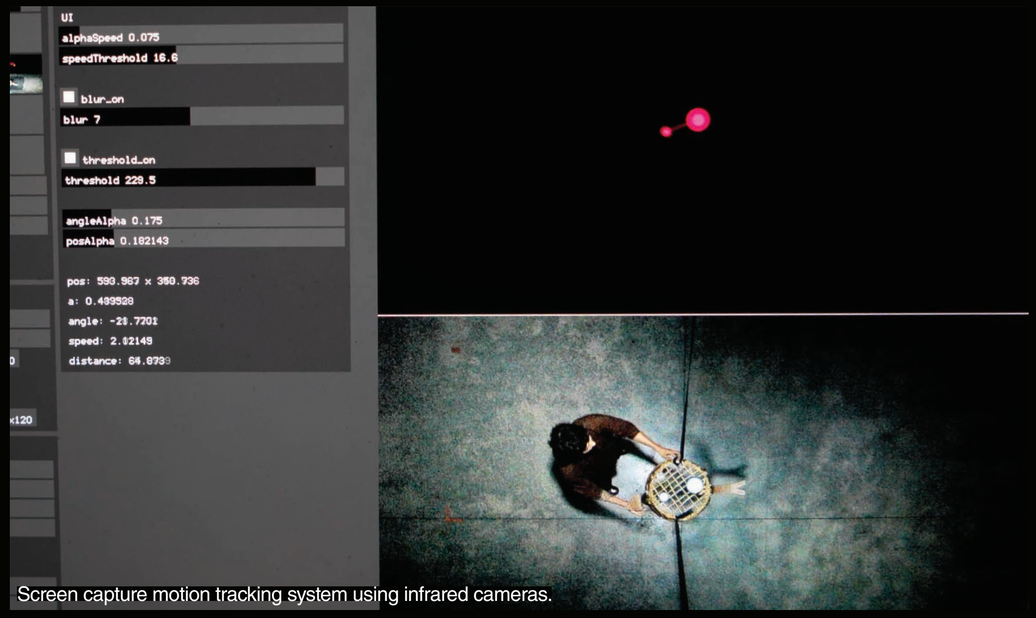
The installation is a narrative experienced as a looping 17-minute cycle, free-roaming, combining cinematic sequences with interactive moments.

Large-scale projections rendered in **real time using Unreal Engine** are controlled through a physical interface crafted with local basketry techniques (*paneiros*) and inspired by local carnival figures (*Cabeçudos do Pará*). Visitors manipulate these structures using their whole bodies, directly affecting narrative flow, camera perspective, scale, and spatial composition.

The interface transforms ancestral craft into an embodied technological system, reinforcing the idea that knowledge is activated through movement, touch, and presence.



Detail of controller.



Screen capture motion tracking system using infrared cameras.

Paneiros e Cabeçudos do Carnaval Paraense

Basketry and Carnival “Big Head” Figures from Pará

At the core of Imaginary Atlas lies a dialogue with popular imaginaries from Northern Brazil—cultural expressions that remain largely invisible within dominant national and international art narratives. In Pará, carnival traditions such as the *cabeçudos* embody collective memory, humor, and resistance through large-scale festive figures built for the streets.

Traditionally, these figures are constructed from a basketry base (*paneiro*) covered with layers of papier-mâché and paint. In Imaginary Atlas, this logic is intentionally reversed: the basketry structure is left visible and becomes the central element of the installation.

The project reimagines the *cabeçudo* as a four-faced figure, inviting visitors to enter, inhabit, and explore it from within. Rather than serving as a costume, the form becomes an architectural and spatial device, one that carries the material intelligence of Amazonian basketry and the collective spirit of carnival.

This approach honors the work of local masters and artisans, such as the carnival makers of Pará and basketry artists whose techniques are passed down through generations. By foregrounding these practices, Imaginary Atlas positions popular expression, craft, and celebration not as folklore, but as active sources for imagining future urban and cultural ecologies.



Marcelo Vaz, our team member, weaving the basket structure.

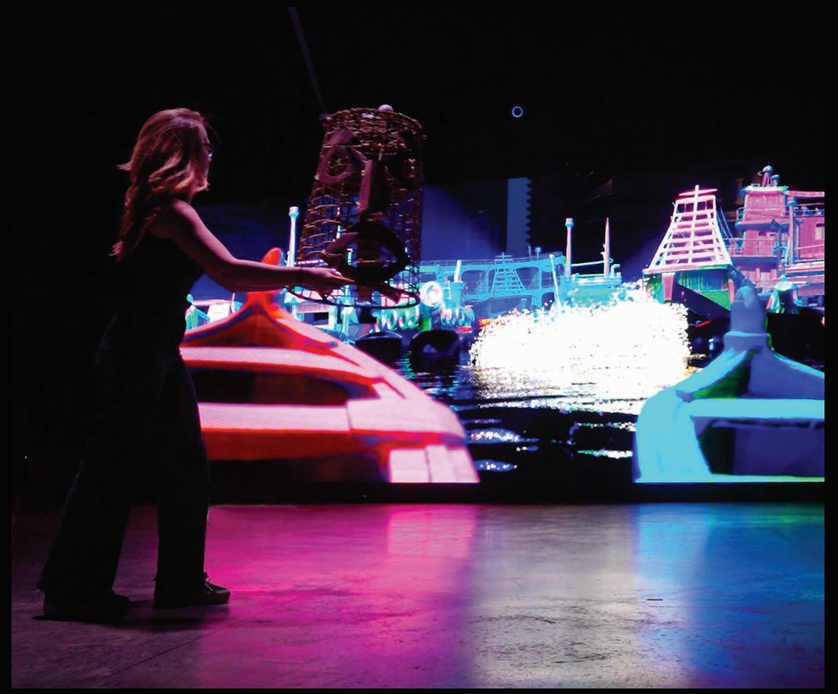


Cebeçudo under construction. Cametá, Pará, Brazil.



Mestre Vital, from Cordão Última Hora, building a cabeçudo. Cametá, Pará, Brazil.

Cinema + Game Engines + Embodied Interaction





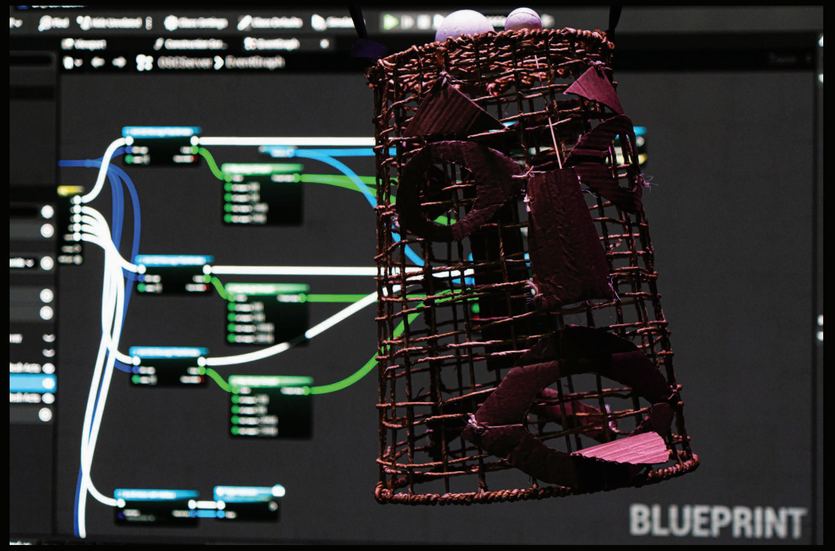
Rather than relying on screens or handheld controllers, the work is navigated through the movement of visitors inside a sculptural structure. A camera mounted above the installation captures infrared depth data, continuously tracking the position and movement of bodies within the space. This spatial information is translated into Unreal Engine, where it directly influences navigation, camera behavior, scale, and environmental parameters.

As visitors move the controller, their gestures reshape the cinematic environment. Scenes unfold as hybrid sequences, part film and part navigable world, where camera angles, distance, and rhythm respond to the body rather than to predefined timelines. Film is no longer a fixed sequence to be watched, but a space to be inhabited, one that evolves through curiosity, movement, and exploration.

This interaction model is intentionally experimental. It emerged from repeated fieldwork in Pará and close collaboration with local artists and makers. Observations of how people inhabit space and engage with festive structures informed the decision to design the experience in this way.



Early tests interactivity in the studio.



The Story:
A Post-Climate Utopia

Set in Belém in the year 2125, we imagine a post-climate utopia where water reshapes the city rather than destroys it. Guided by the Barqueira, audiences navigate in the exhibition shifting urban-forest ecologies organized by tides. The story unfolds proposing adaptation, coexistence, and new forms of imaginaries beyond crisis.

Belém 2125: Water, Time, and Urban Ecologies



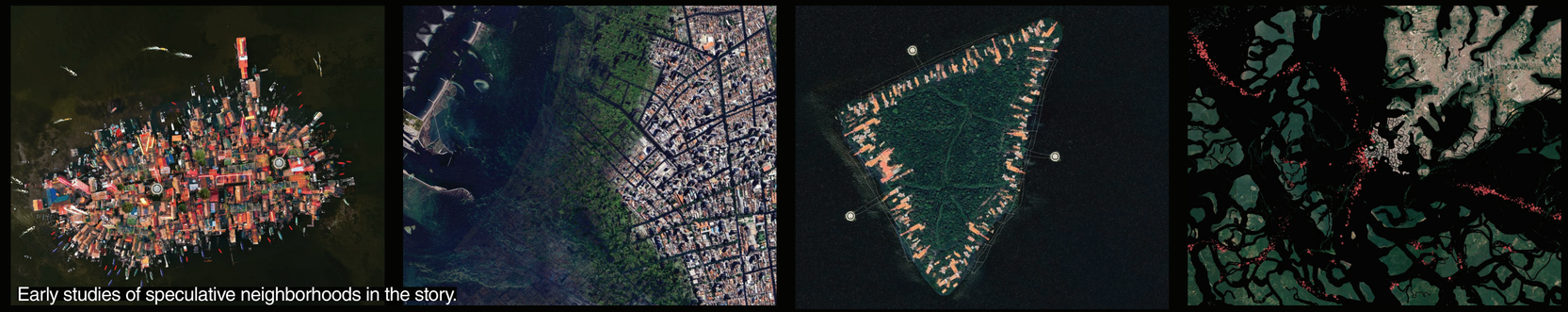
Still from Atlas cinematic sequence.

The structure of the scenes is governed by a new seasonal rhythm and the spatial configuration of Belém and its surroundings. By the 22nd century, rising waters have transformed the city into an archipelago that occasionally dries. Time is measured not in months, but by tides and water levels.

Seasonal floods and droughts are unpredictable, and the Water Calendar dictates daily life, trade, movement, and social interaction. This rhythm guides the installation experience, allowing audiences to navigate the digital and physical worlds of the Atlas.

The spatial configurations of this world—High Lands (Terra Alta), Swarm Cities (Cidades-Cardume), and The Constellations (Constelações)—reinterpret the practices and architecture of contemporary Belém, including slums, tower neighborhoods, riverine communities, festivities, aparelhagens, and floating markets, through a post-capitalist, post-climate lens.

Belém is liquid, a world audiences can explore, interact with, and help shape, navigating futures defined by water, people, and forest.



Early studies of speculative neighborhoods in the story.

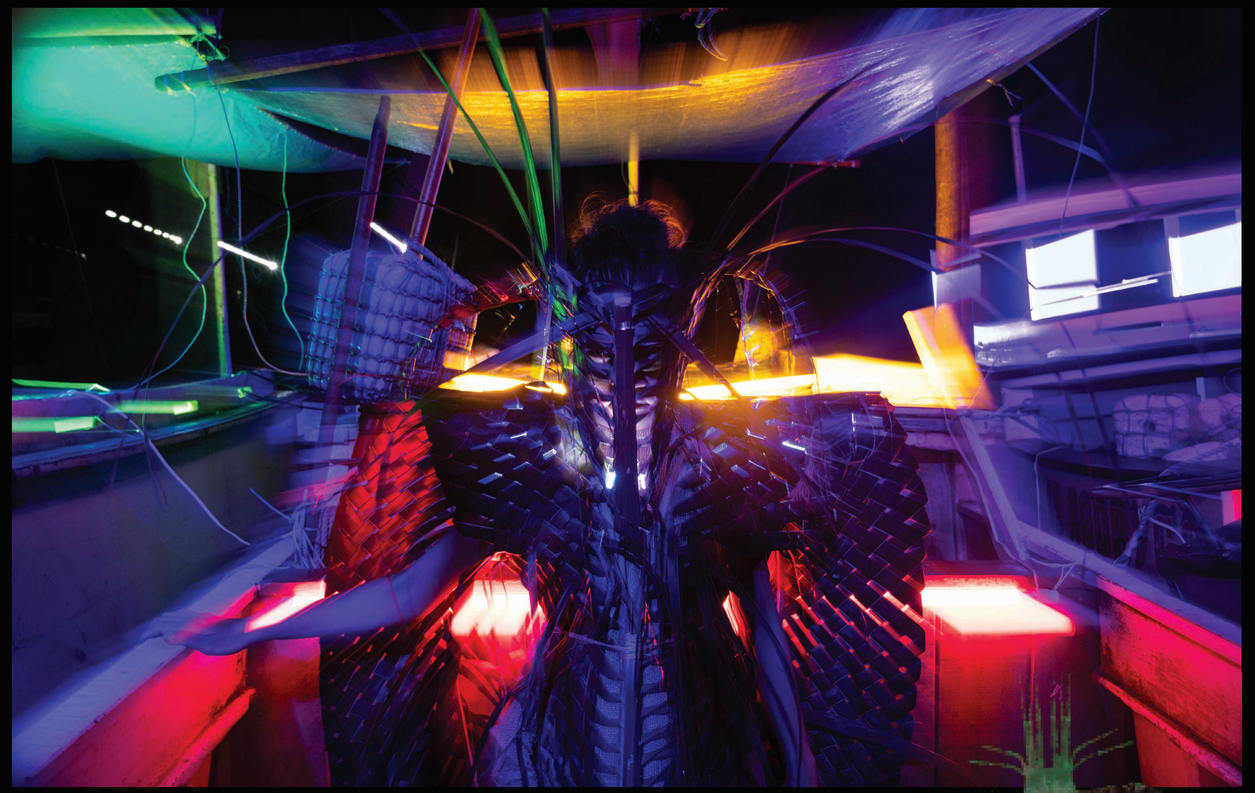
The Main Character: Barqueira

At the center of The Imaginary Atlas is the Barqueira, a river navigator who moves between forest and city, between the physical and digital worlds. She is not quite a child and not yet an adult, a hybrid being shaped by the tides, seasons, and architecture of the Amazon.

Inspired by the riverine children of the region, who navigate their own motorboats among villages, the Barqueira embodies autonomy, curiosity, and adaptation. She also bridges past and future as a trader who gathers black earth and exchanges it in the flood markets, even feeding robotic creatures with it.

The character is performed by Iris da Selva, a local singer who also composed parts of the soundtrack. Her costume was handmade from coconut palm leaves by the local artist Labo Young.

The Barqueira appears both on film and as a digitally character. As she moves through shifting ecologies, she guides the audience through a world where myth, technology, and landscape merge.









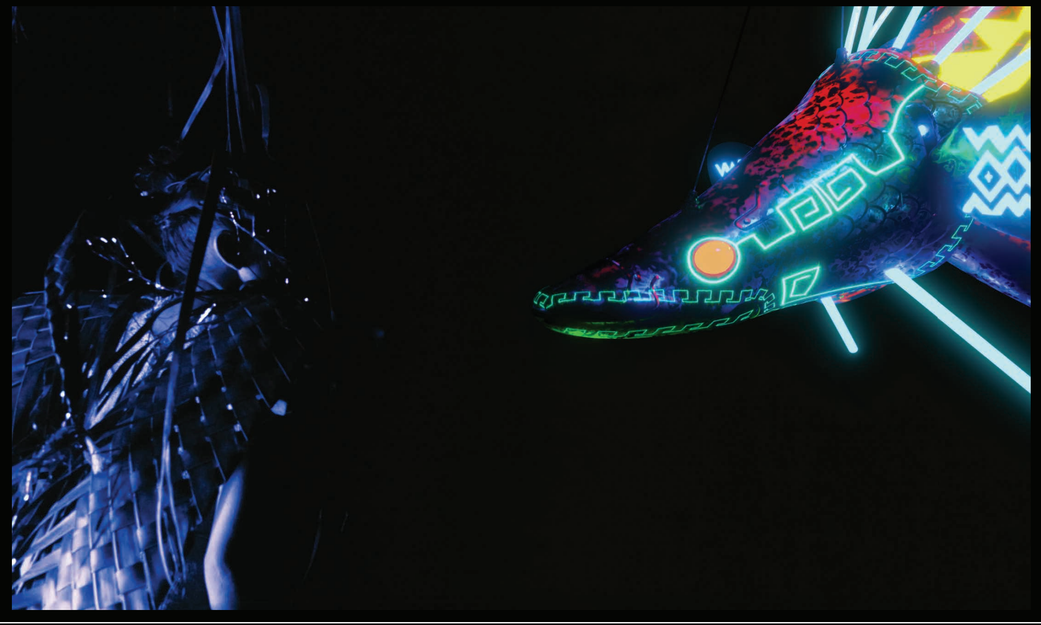


Scene 01: Cheia

Flood









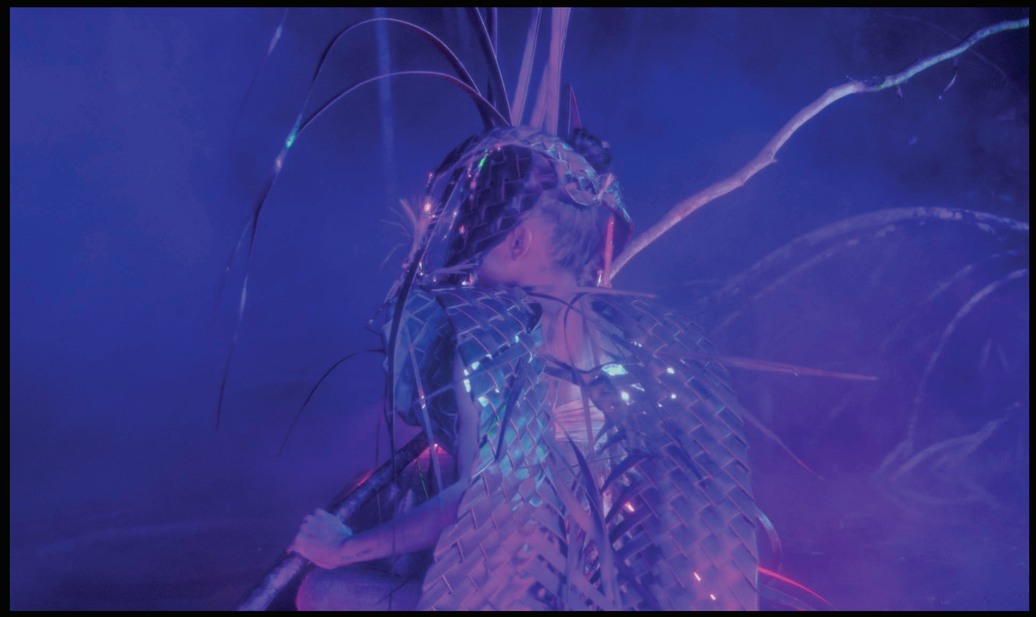
As the waters overflow, life begins to float again. River caravans from across the Americas and beyond gather at the river's mouth. Schools and hospitals travel on barges. Houses turn into boats. Festivals blend sounds from all places through robotic sound systems. It is a time for reunions, exchanges, and celebration.

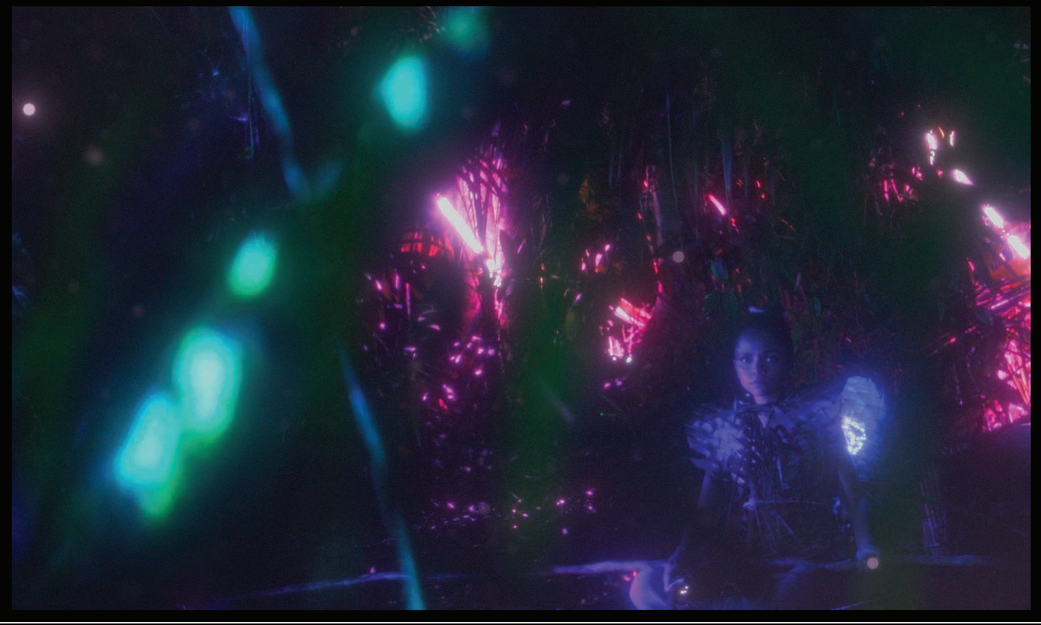
Here the audience controls the electric pirarucu fish, a half-animal, half soundsystem robot.

Scene 02: Quebra de Maré

Receding Waters









The waters begin to retreat. Aerial roots emerge, marking the end of the drift and the beginning of a time for decision: it is necessary to choose where to go once the river paths dry completely. Trails open up, leading into the forest's interior, where planting begins.

Here the audience controls the camera navigating inside a magical bio-synthetic forest.

Scene 03: Seca

Drought







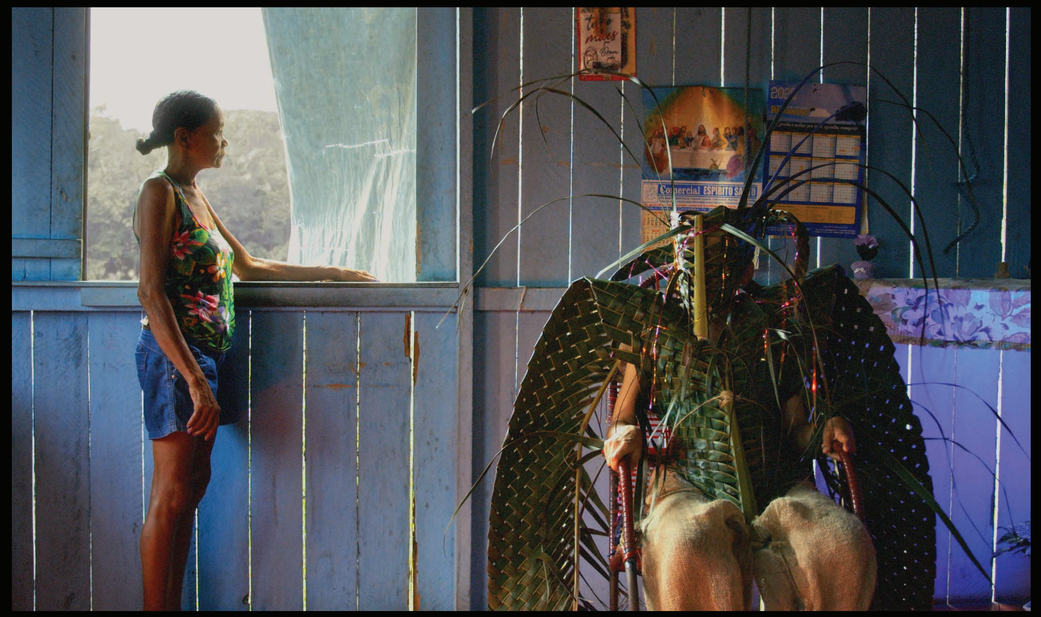


The rivers vanish completely, revealing ancestral trails. People walk once more, visiting traces of old Marajó and other zones once submerged. Ruins, remnants of the 21st century, and ancient Indigenous cemeteries emerge as the waters recede. With the islands isolated, only urgent exchanges occur by drone; everything else is resolved within the communities, using stores of cured food and local materials.

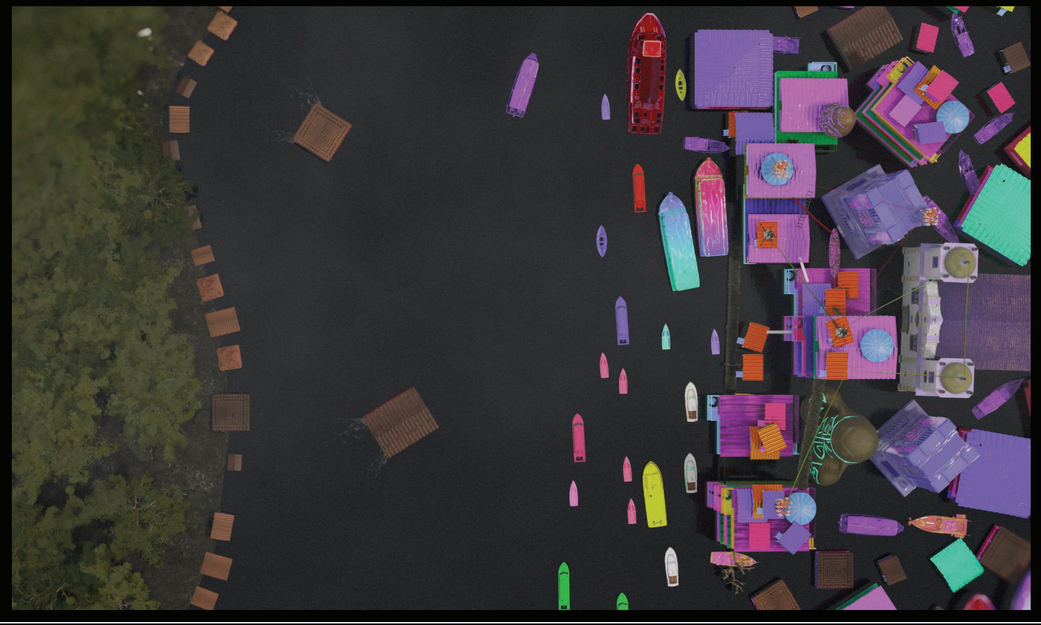
Here the audience controls an ancient indigenous ceramic urn, embeded of e-waste brought by ocean currents.

Scene 04: Troca de Águas

Rising Tide





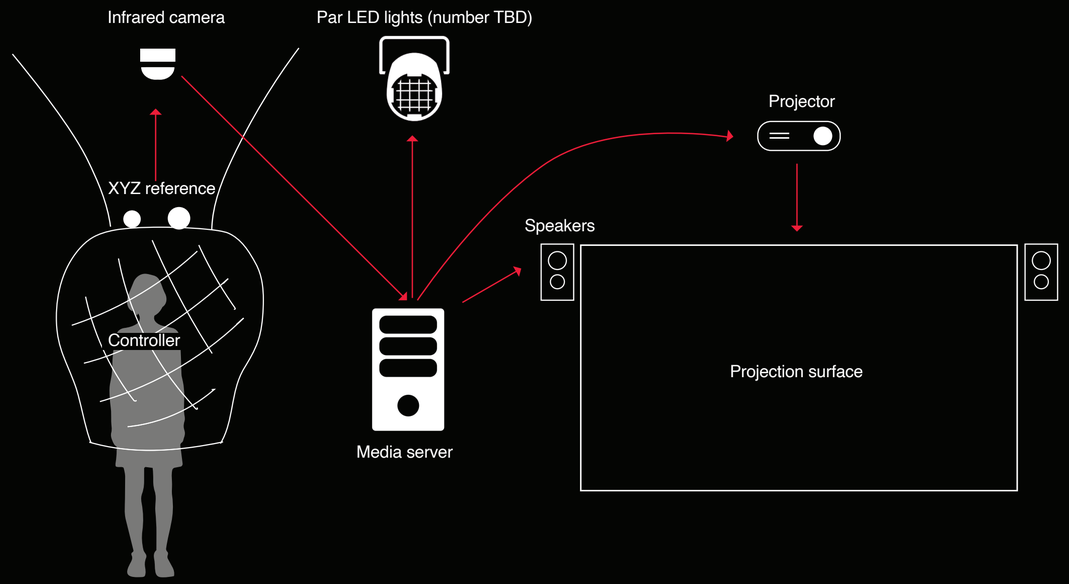




The first rains arrive. The rivers stir, but do not yet overflow. Along the island shores, communities mobilize—reinforcing homes and boats, repainting hulls, preparing floating dwellings for the new season. Gradually, the houses loosen from the banks, like fish ready to migrate. In the air, expectation and joy drift together, awaiting the encounters to come.

Here the audience controls a floating house, and shakes objects inside of it as musical instruments.

Technical Details



Description

Large-scale free-roaming interactive projection controlled through a tangible basketry interface. The experience runs as a 17-minute loop and combines cinematic sequences with real-time interactive content generated live using a game engine. Audiences are free to move within the space, with interaction activated through full-body movement.

The installation is designed to be technically flexible. Core equipment can be provided by the project team or sourced locally, depending on venue conditions, production logistics, and budget availability. The project can be installed using either shipped or locally rented equipment, in coordination with the festival production team.

Projection Surface

- Large-scale projection surface
- Suggested minimum width: 4 meters
- Height proportional to 16:9 aspect ratio
- (approx. 2.25 meters high for a 4 m wide surface)
- Can be implemented as:

- Front or rear projection
- OR LED wall (depending on venue availability)

Room dimensions

- At least 4 m distance from controller to the projection surface
- At leat 3.5 m hight from ceiling to floor

Projection System

- Projector or LED wall
- If projector is used, minimum 5,000 ANSI lumens (controlled light environment)

Lighting System

- Programmable Par LED lights with DMX control
- Real-time control of color and intensity
- Lighting states synchronized with narrative scenes and interactive events
- Number of lights TBD depending on venue size

Audio

- Stereo sound system
- Previously used: Yamaha HS8 powered studio monitors (or equivalent)
- Suitable for immersive spatial sound in medium-sized exhibition spaces

Computing and Software

- One high-performance computer running:

- Unreal Engine
- TouchDesigner

- GPU compatible with high-end real-time rendering
- Previously used: NVIDIA RTX-class GPU (e.g. RTX 5090 series)
- Equivalent GPUs acceptable (TBD)

Tangible Basketry Controller

- Can be shipped or fabricated locally with a member of the artist team
- One large basketry-based physical interface
- Approximate dimensions: 1 x 1 x 1 meter
- Approximate weight: ~2 kg
- Elastic cables for suspension on ceiling
- Integration with motion tracking camera, installed on ceiling

Installation Notes

- Open floor space for free-roaming audience interaction (TBD with venue)
- Optional seating elements (e.g. benches, stools, or poufs)
- Placement and number of projectors depend on gallery dimensions

Long-Term Research and Collaboration

Imaginary Atlas is conceived as a long-term research platform rather than a single installation. Building on sustained collaborations with local artists, communities, and institutions in Pará, the project expands into education, workshops, and open research on ancestral knowledge and emerging tech.

Full Exhibition Gallery (with all installations)

Exhibited at:
- **COP30, Fórum Landi, Belém do Pará, Brazil — November 2025**
- **SESI Lab, Brasília, Brazil — December 2025 to March 2026**

Watch installation 2, Swarm City, demo video
www.youtube.com/watch?v=zBiXlmuftrk













Field Research and Local Partnerships

The Imaginary Atlas is rooted in fieldwork across the city of Belém do Pará and riverside communities throughout the state. Between December 2023 and the present, we conducted research trips that built the core team for the project and connected with local communities, artists, and institutions. During this period, we also established a collaboration with the Ferreira Penna Science Station, which is becoming a long-term partner in our research on Amazonian urban futures.

These visits document everyday life, spatial practices, and ecological knowledge, forming the foundation for the installation's narrative, interactive design, and digital modeling. The fieldwork is grounded in lived realities and has the potential to continue as a long-term, art-based research initiative in the region, fostering co-creation between local and international researchers, technologists, and artists.





















ATLAS IMAGINÁRIO

XR Experience

Hands-on Learning

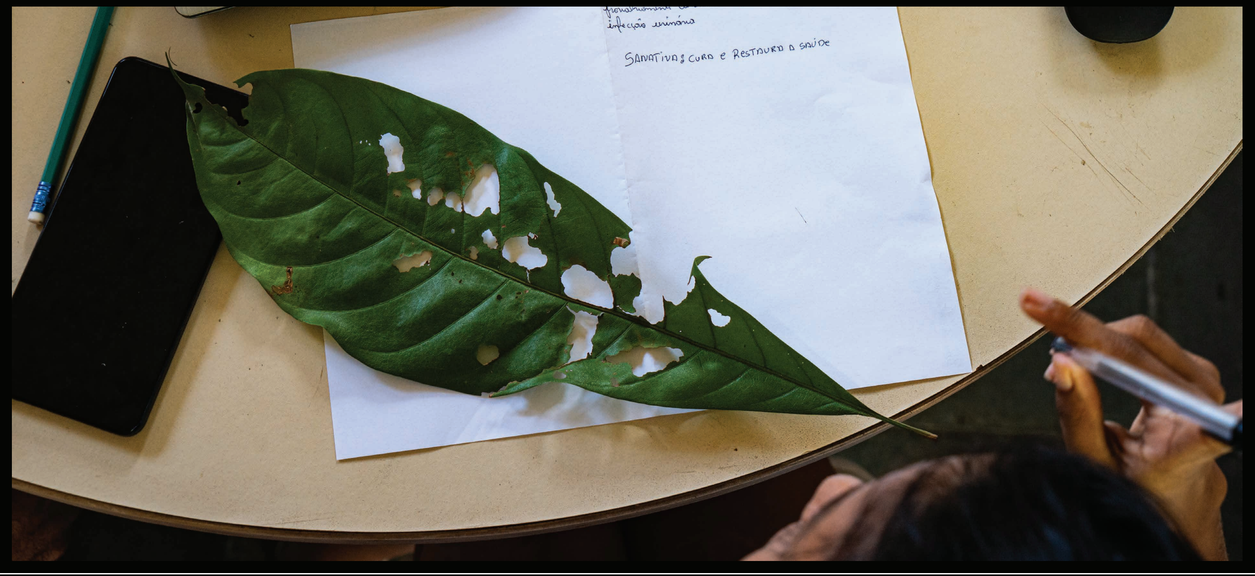




The project includes two learning pathways. First, long-term training with core team artists and local collaborators, who gain hands-on experience with new media tools while co-creating the installation. Their local knowledge shapes the project's narrative and aesthetic.

Second, intensive one-week workshops engage students and communities in exploring their environment, collecting botanical and cultural data, and transforming it into stories, images, and animations of the future. These sessions foster climate literacy, technological understanding, and awareness of community life.

These included boat expeditions, collective mapping, plant digitization, storytelling, and a community showcase with projection mapping, turning participants into storytellers and innovators while generating shared knowledge for the Atlas.





Open-Source Digital Libraries

We use 3D scanning technologies to build digital libraries of forests and cities that serve as the foundation for the installation experience. We capture both biodiversity and urban environments, from forest textures and plant species to architectural elements from Belém.

The digital archive generated through this process will become open source as the project evolves, expanding into a methodology that can be applied in other regions of Brazil. Since 3D digital archives of Brazilian biodiversity are still rare, this initiative helps fill an important gap.

Through these libraries, The archive can support storytelling, education, and research, broadening access to the ecological and cultural diversity of the Amazon region.



Maparajuba tree scanned at the Caxiuanã National Forest Science Station, our partner in the project.



Scanning expedition at Caxiunã National Forest.





Scanning Belém do Pará streets and river vegeation at the National Forest.

Core Art Team


Clara Luna


Dimitre Lima


Diogo Costa Pinto


Gabriela Bila


Iris da Selva


Jean Petra


Jonny Cohen


Juca Culatra

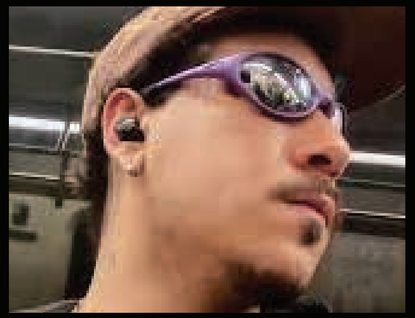

Kye Shimizu


Labo Young


Leo Chermont


Luan Rodrigues


Lucas de Jesus


Lucas Chagas - SelectaStrange


Marcelo Vaz


Natasha Leite


Ribs + Seixas


Victoria Machado



Gabriela Bìlá

Content director

Gabriela Bìlá is a Brazilian architect and media artist, currently based in Cambridge, Massachusetts, where she is a researcher at the MIT Media Lab. Through art and new media, Gabriela expands and democratizes imaginaries of what “cities” can be, using interactive and immersive interfaces to explore how humans can co-create with nature — simultaneously shaping and being shaped by the environments they inhabit.

Her works have been presented in several institutions, including the Guggenheim Museum Bilbao, SXSW, the Venice Architecture Biennale, EXPO, the Cooper Hewitt Museum New York, Espaço Itaú Cultural, Museu Nacional da República in Brasília, SESC São Paulo, SESI Lab and Instituto Tomie Ohtake. In addition to her research and design practice, Gabriela is also an educator and has developed and taught courses on speculative urban design and media production.

https://www.gabrielabila.com/installations



Diogo Costa Pinto

Technologies director

Diogo Pinto is Director of New Technologies and In-Camera Visual Effects at Estúdio Quanta in São Paulo. He develops tools and processes for creative productions, including virtual film production, real-time visualization, virtual reality, and interaction design. He uses emerging technologies in service of creative expression, combining multiple techniques for content creation and display.

Diogo has extensive experience in major film and television productions, having worked with studios such as Netflix, HBO, Amazon Studios, and Globo Play. His interactive installations have been exhibited in several venues, including CCBB, EXPO, and the Museum of the Portuguese Language. He has also collaborated with music, creating multimedia stage designs for their performances.

https://quanta.works/pt/atividades/novas-fronteiras/

The Imaginary Atlas, Amazônia

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/www.media.mit.edu/projects/imaginary-atlas/overview/

Research and development:

city science | mit media lab | QUANTA

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Technology Direction: Diogo Costa Pinto

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Rumos Itaú Mentor: Thaissa Lahma

With support of: Rumos Itaú Cultural, Fundo de Apoio a Cultura, MIT CAST

FILM
Barqueira (Performer): Iris da Selva
Costume Design: Labö Young
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Soundtrack: Leo Chermont
Lighting Design: Natasha Leite (Cenolux)
3D VFX: Lucas Seixas (Ribs+Seixas), Lucas Chagas (SelectaStrange)
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Color Grading: Luciano Santa Bárbara Foca
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Set Assistance: Alexandre Afonso Mota, Gabriel Barbosa dos Santos
Post-Production Supervision: Nilma Gomes
Digital Lab: Guilherme Calaça, Isabel Cardozo, Samara Ribeiro
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Extras: Enivaldo Amaral Monteiro, Manuel Ferreira Brito, Maria Rodrigues da Poça, Jerry Silva Bahia

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Sound Effects: Leo Chermont
3D Technical Artists: Clara Luna, Lucas de Jesus
3D Assets: Jean Petra
Texturing: Ralez

PHYSICAL INSTALLATIONS

Big Head (XR Experience)
Basketry: Marcelo Vaz (DIMIRITI)
Tracking System: Dimitre Lima
LEDs: Jonathan Cohen

Swarm City
Miriti Wood Sculpture: Marcelo Vaz (DIMIRITI)
Electromechanical System: Jonathan Cohen, Kye Shimizu
Interactive LED Lighting: Dimitre Lima

Olfactory Signature: Victoria Machado (Luna Amazonia)

BELÉM PROJECT
Local Research Assistance: Luan Rodrigues, Victoria Machado
Production: Mariana Marques

ACKNOWLEDGMENTS
Vila Sapo Community, Mosqueiro – Pará, Brazil
Vale da Benção Community, Caxiuanã National Forest – Pará, Brazil

INSTITUTIONAL PARTNERS
Faculty of Architecture and Urbanism, Federal University of Pará (FAU-UFPA)
Ferreira Penna Scientific Station
Fórum Landi
Museu Paraense Emílio Goeldi