Cocolab

Uxmal:
Technical Specs

2021

We are a company based in Mexico City with experience in designing and operating entertainment.

For eleven years, we have been in the business of inspiring people through amazing multimedia experiences. *But the times they are a-changing,* so we decided to stir things a little and open the doors to our internal creation processes to offer them as services.

Our Expertise

We produce world-class experiences through a deep understanding of our audiences.

Strategy   Audience and market analysis to set the foundation of inspiring experiences.

Scenography   Design and production for the creation of new worlds and spaces.

Interaction   Design of the physical and emotional relationship with physical and digital environments.

Technology   Develop solutions and platforms to make the impossible, possible.

Content   Create stories in different formats to inspire and engage people through all their senses.

Our Team

At Cocolab we have something in common: we are all different.

Each member of our team contributes with their talent, interests and ideas, enriching our culture, values and the depth and breadth of our projects.

Multiple areas of expertise

Narrators, filmmakers, producers, animators, illustrators, musicians, digital artists, visual artists, architects, industrial designers, graphic designers, information designers, interaction designers, video game designers, systems engineers, software engineers, computer engineers, electronics engineers, industrial engineers, civil engineers, sociologists, psychologists, and anthropologists.
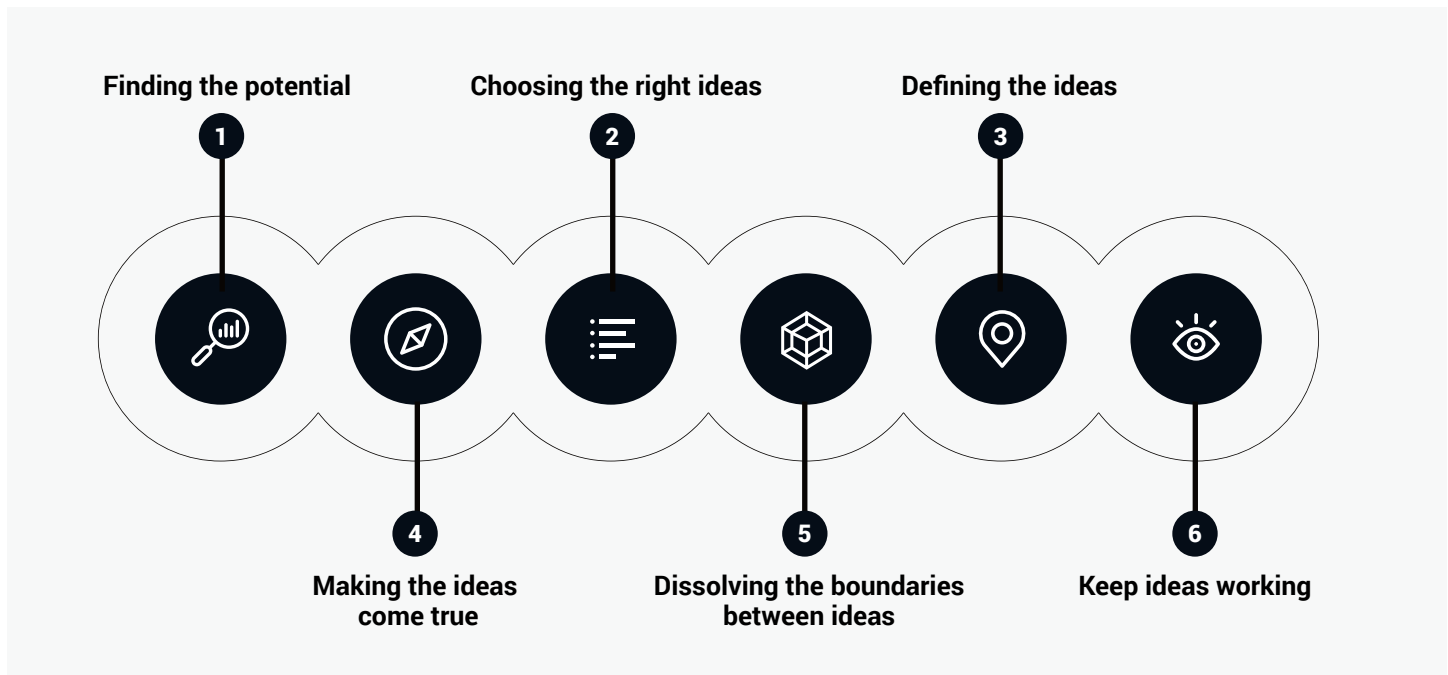
Cocolab Around the World

Cocolab has been combining art, technology and entertainment all around the world with projects in Canada, the United States, England, Thailand, Germany, Japan, China, Italy, Spain and Brazil. No matter where you are, we are looking forward to working with you.

INSPIRE / OUR PROCESS
Cocolab's Methodology

INSPIRE is the constantly evolving process we use at Cocolab to guide and shape our work. It is a collection of best practices and sequences on how to execute a project.

Its objective is to structure how we work, not to restrict what we do or how we do it.

Finding the potential
1

Choosing the right ideas
2

Defining the ideas
3

4
Making the ideas come true

5
Dissolving the boundaries between ideas

6
Keep ideas working

1 Program

We understand the needs of the project and explore its potential.

1.1 Desirability
1.2 Viability and Feasibility
1.3 Objectives and Master Plan

2 Concept

We turn intention into action and define the direction of the project.

2.1 Product strategy
2.2 Concept Design
2.3 Concept Development

3 Design

We defined every detail necessary to build a viable solution and relevant experience.

3.1 Schematic Design
3.2 Design Development
3.3 Manufacturing Documents

4 Production

We make ideas come true: desirable for people, economically viable and technologically feasible.

4.1 Pre-production
4.2 Manufacturing
4.3 Showroom

5 Integration

We dissolve the boundaries between project components to achieve a unified experience.

5.1 Installation
5.2 Calibration
5.3 Harmonization

6 Operation

We keep the ideas alive and preserve their original essence.

6.1 Pre openings
6.2 Showtime
6.3 Operation, Maintenance, Measurement and Evaluation

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Original concept
Uxmal

We Mexicans take a lot of pride in our history and ancestors, and each of us does its best to pay homage to them. Archaeologists and historians do incredible work in the jungles and universities, and we then take their research and try to educate and entertain. The ancient Mayas formed a majestic civilization, with powerful cities and a fantastic mythology. One of the most beautiful and well conserved cities is Uxmal, once believed to be a place for research and education.

We imagined it as a place where knowledge and stories were still lingering about. Voices of the ancient Maya resonating in every stone, whispers still buzzing in the jungle, torches fire cracking inside the temples.

With that in mind, we tried to find the things that set Uxmal apart. After deep reading and inquiring, together with the experts from INAH (National Institute of Anthropology and History), we came up with a story about a city full of knowledge and mythology echoing from the past. The city occupied more than 80 hectares, the more important buildings all set within a short walking distance. So we started by distributing the essential information across all the points where the visitors would be walking. The Mayan cosmogony is explained around an immense ceiba tree, the sacred tree of the Maya. The social stratification in an administrative building. The duality and Mayan cycles in the ball game court. As the visitors arrive in the main construction, the Nunnery, they are told the history of this magnificent city. Based on the ancient legend of the Magician, where a dwarf is born from an egg and grows to dethrone the governor, we tell the story of a powerful city and its extraordinary inhabitants.

These non-sequitur chapters all point to a central concept: Uxmal is a city of stories, where men can accomplish amazing feats with magic and faith.

All these definitions resulted in working documents for the rest of the teams to work on. Scripts describing actions, moods and narration; research summaries and museographic content for the mobile app.

Storytelling

The Echoes of Uxmal is an immersive nighttime experience inside an ancient Mayan city.

Uxmal is a historical jewel, hidden within the jungle of Yucatan, Mexico. Cocolab was given the opportunity of turning it into a nighttime experience that would both entertain and educate, creating new connections between visitors and the culture of the ancient Mayans.

The symbols sculpted into the walls have their own mysterious narrative, and the archeological theories suggest that Uxmal was a place of learning, and that people traveled here in order to gain knowledge.

Taking inspiration from this, Cocolab created a nighttime walk through a city of stories. We imagined that the buildings could talk, as if the echoes of the words passed down from generation to generation were still somehow reverberating in the stone structures.

From the moment the audience steps into the site, the trees breathe with light and Mayan voices whisper out of the darkness. The visitors follow a path of light through the city, passing by different places that each tell their story, before they arrive at the main show in the Cuadrangle of the Nunnery.

First they discover the vast structure of the Pyramid of the Magician. Projection mapped, the giant pyramid seems to transform itself, vibrating with the echoes of the past. Faces of Mayan gods appear out of the stone, and animated scenes are revealed as if contained within its interior.

Next, the visitors see a tree illuminated with effects and the voice of a young girl tells them about the ancient Mayan creation myth. As they continue to explore they reach a columned structure where it is explained how the city was built and who lived there, and after that they pass the playing area of the ancient ball game, where the voice of a player explains who is playing and how to win.

All these stories are designed to educate and entertain visitors, and to gradually build connection between them and the archeological site, so that by the time they experience the main show, they have the necessary context to fully understand and enjoy it.

As people enter the Cuadrangle of the Nunnery, ancient voices invite them to clap their hands to bring stories to life. The four sided structure naturally creates an astonishing echo effect that sounds quite distinct from a typical, "normal" echo. When visitors clap their hands, interactive technology makes the walls themselves seem to react as the walls vibrate and ripple in response.

The main show is a 25 minute animation with original music that is projection mapped onto three of the four walls. It begins by explaining how the ancient Mayans achieved the extraordinary feat of building this city in the jungle, as well as what the different figurative elements sculpted into the facades represent, with 3D effects highlighting the graphic architectural details.

This segues into a different graphic style as the legend begins: a traditional local myth about a dwarf who was destined to become the ruler of Uxmal and to bring about the rise of the city to its era of full power and glory.

As the show ends, the audience is invited to continue their adventure, walking through a different part of the site, and are accompanied by sounds of Mayan whispers and percussion, and the enhanced sounds of the site itself, ensuring that they leave filled with a sense of mystery, magic and wonder.

The whole experience is intended to bring us closer to the still living culture of the ancient Mayans, and to establish a stronger connection with both nature and the city of Uxmal.

Scenography
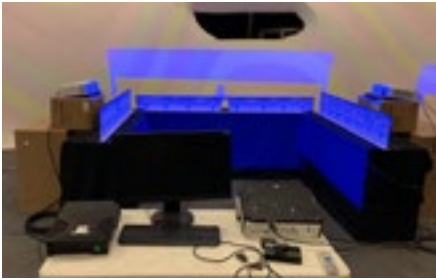
Ecos de Uxmal seeks to amaze the audience by making the site itself the narrator of the story; this posed the challenge of generating an experience in which the technology was completely hidden from the view of visitors, enhancing the multisensory appreciation of all audiovisual content.

The set design team generated custom camouflages for each of the technological elements that create the experience. Using highly durable materials that would withstand the extreme climate and wildlife of the area, in conjunction with hyper-realistic finishes, more than 80 custom covers were produced.

Parallel to this, as part of the development of the project, 2 hyper-realistic models of the site were generated, providing an accurate preview of the projection canvases to the motion, show control and projection mapping team.

- **+60 custom fiber glass covers for lighting and audio equipment.**
- **+5 camonet fabric custom tents for infrastructure and equipment.**
- **2 custom palm leaf and camouflage net covers for projection towers.**

Audio

FULL XP v7

The Uxmal Nighwalk required an audio experience that could merge technology with nature, both in the physical world and in the audible content as well.

We had to be gentle with nature, and we used the sounds of the site's own fauna at nightime. We had to use rain (and bug!) resistant equipment because the archeological site stands in the middle of a very humid jungle. The hardest part was to design a show meant to be set up every night and disappear before dusk every day, so the site could be experienced with no technology during daytime. Another difficult part was to make different timelines from different sections of the nightwalk sync between each other but still give the freedom of exploration to the audience. We were not allowed to touch the ancient buildings so we had to come with a strategy to place omni directional speakers around them and large P.A. systems for the big pyramid shows. A custom playback system "listens" to Show Control messages and sends different SMPTE tracks to keep the audio devices as the Timecode sync masters for the different stations and shows. We installed microphones on the Cuadrángulo de las Monjas plaza so the audience can clap for a reactive visual experience on their wait for the main show.

- 50 speakers hiding on the jungle for a one hour continuous audio journey.
- Custom Playback System to sync scene changes and stations' continuity.
- Custom plug and play devices and wiring to mount and unmount quickly.
- Quadraphonic show with sound reactive visuals.
- Immersive environments that blend with the natural sounds of the jungle.

Technology

Projection studies were performed on 3D capures of the physical locations, allowing high-precision canvas derivation and content creation.

A multi-server show control system was built with support for loose playback sync between stations, large scale projection-mapping, lighting control, and generative content for interactivity:

- **6 media servers.**
- **Audio, video and lighting control playback in all stations.**
- **19 projectors with canvases of up to 12288 x 1200 pixels.**
- **Multi-channel sound-based interactivity.**

Every station offers a setup, calibration and diagnostic mode to aid in everyday operative activities.

A sync mechanism was implemented in which the station-to-station transit time was calculated to commence playback automatically and provide a seamless experience to all visitors with minimal wait times.

Interactivity was provided via reactive video feedback to audio cues during an interlude in which groups of people gathered in preparation for a 30-minute linear content piece to commence.

Additionally, a 'cold spare' system was provided to take on the activities of any other playback machine in a system failure scenario.
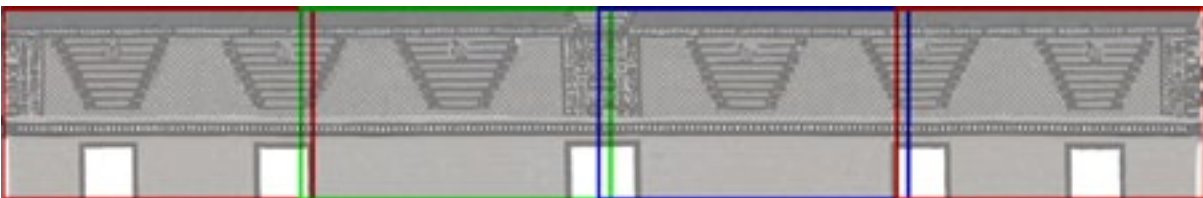
Motion

For the Preludio y Leyenda del Adivino projected in the Cuadrángulo de las Monjas the visual narrative was a challenge, given that it is a story distributed in three huge rectangular facades, the story had to maintain a visual flow in which the public's attention was captured in a very natural way. The characteristics of each building further complicated things as they had very big differences in terms of architectural details, the color of the stone and the humidity conditions in them, these were determining factors in choosing the graphic style of the art, as well as the color palette. The character design and illustration are vector style with very defined shapes and high contrasts with solid colors to facilitate visual recognition, plus a chromatic range of bright and saturated colors to counteract the conditions of the rock. The animation is fluid enough that it doesn't break up over the irregularity of the surface, at moments it has a shadow theater feel with dramatic and expressive framing, balancing the times when the composition is fully adapted to the architecture, thus really making the mapping technique effective rather than using the facades as cinematic screens.

- 72 minutes of animation was produced, although it was a 24 minute story, specific content was designed for each of the 3 facades.
- The longest facade used a 12,288 x 1200 pixel canvas.
- The panoramic composition of the three facades in linear form generated a canvas of 29,952 x 1200 pixels.
- 2D and 3D animation techniques were used, including character modeling and animation, as well as particle and VFX simulations.
- Translated with www.DeepL.com/Translator (free version).

Lighting

The lighting design for "Ecos de Uxmal" was very important for this project. Since the first sketches and ideas light was always in mind to create of this show an immersive experience. Light in Uxmal help us tell a story with the use of colors, textures and effects that gives the different stations of this show the desired look. They where a lot of technical challenges during the creation process that we had to overcome. Two of the most important are the short time to load and the use of technology that's not invasive to the archaeological site. Most of the equipment for this experience is placed in position few hours before the first show, and it has to be taken down at the end of each night. That way visitors can experience the site during the day without any technology. So most of the gear is wireless and battery powered, with few items that actually need electric power and cable DMX and all of the equipment is water proof in case there's inclement weather. The path of the show is really long and we have lights all the way through the journey from architectural lights for big stations like the pyramid of Adivino, really well thought lights for other buildings and lighting cubes that illuminate your way from beginning to end.

- **300+ Lighting Elements.**
- **100% of the gear is IP65 that can resist rain.**
- **Fully controlled DMX lighting for all the elements used in stations.**
- **80% of the gear runs out of battery that's charged during the day.**
- **Way less intrusive technology than the ones used in preview shows in the zone.**