



## LUMEN | MIXED REALITY STORYTELLING

### Winner of the 1st edition of the PLAYABLE MUSEUM AWARD

*A project by*  
**ARVIND SANJEEV,**  
**a young interaction designer from India**

*Info online at [MuseoMarinoMarini](https://www.museomarini.it)*

Young interaction designer and engineer, Arvind Sanjeev (Kerala, India, 1991), is the winner of the first edition of the [Playable Museum Award](#) with his project: LUMEN | MIXED REALITY STORYTELLING. The Playable Museum Award was launched by the Museo Marino Marini (Florence) - coordinated by engagement scientist and game designer, Fabio Viola - to conceptualize the museum of the future.

An international panel of judges - composed of Giorgia Abeltino, Yuval Avital, Antonio Lampis, Jeffrey Schnapp, Fabio Siddu and Massimiliano Zane - shared the reason behind their deliberation: *“Lumen perfectly captures the spirit of the Playable Museum Award. It is a project that successfully merges manual creativity, technological innovation, scalability, interaction between visitors and museum space and interdisciplinarity”*.

LUMEN is a Mixed Reality Storytelling platform that lets people immerse in alternate realities - AR/VR - in their natural space through machine learning and projection mapping technologies. It tries to explore the creation of a new kind of media that takes advantage of the physical world, while overlaying a layer of digital fiction on top of it. The main inspiration behind LUMEN was imagining a future with no more screens or headsets, thanks to a highly technological device created by the 27-year-old Indian, Arvind Sanjeev. A storytelling platform that lets people tell their stories through magical interactions with their environment.

President of the Museo Marino Marini, Patrizia Asproni: *“The 2018 Playable Museum Award has exceeded our expectations and we are very proud of all the startups that participated. LUMEN satisfies all the call requirements. It is an ambitious and certainly innovative project that opens*



*new challenges related to cultural innovation, experimentation and the future. It is a truly playable project and will be made into a prototype before being tested in January 2019, when we will also be launching the second edition of the Playable Museum Award. This year a staggering 240 projects were submitted from all over the world, confirming the interest of new generations of creatives and visionaries towards museums and reinforcing the role of the museum as an innovation and experimental hub. We are very much looking forward to working with Indian maker Arvind Sanjeev and his team to make Lumen available in Italy, following an initial test at the Marino Marini Museum in Florence”.*

*“The Playable Museum Award is a part of a collective process towards building the Museum of the Future, an open hub where creatives from all over the world feel encouraged to imagine and design cultural experiences for new generations” announced Fabio Viola. “This successful first edition pushed the public opinion to see the Museum as a place of action and interaction, moving away from a passive consumption of the spaces and artworks. Next year I hope to receive many more projects arising from contamination, ideas coming up from multi-disciplinary environments, such as the Copenhagen Institute of Interaction Design - CIID, where the winning project, LUMEN, was born. The real cultural revolution should start at school, encouraging creativity and out of the box thinking!”.*

**Winner Arvind Sanjeev will be awarded a grant of 10,000 euros and the opportunity to be mentored by the judges and project curator, Fabio Viola.** The official presentation ceremony will take place when the museum reopens in October, during a day of events dedicated to the Playable Museum Award, with a presentation of the finalists’ projects and the [online platform](#) dedicated to the award. A data bank of ideas and creativity, a collective intelligence available to everyone, setting the Marino Marini museum apart as an abstract meeting hub for production and cultural consumption.

The *Playable Museum Award* is a Museo Marino Marini Firenze initiative in collaboration with the Associazione Culturale TuoMuseo and with the support of the Fondazione Cassa Risparmio Firenze and ProgeniaCube.

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A project by ARVIND SANJEEV

Info online at [LUMEN\\_ArvindSanjeev](#)

Video: [LUMEN Reimagining Immersion](#) | [LUMEN Behind the Scenes](#)

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# LUMEN

### INTRO:

The main design question was: how might we immerse people in alternate realities without isolating them using a headset? All popular AR/VR technologies today that lets you immerse relies on headsets or screens. Lumen challenges this trend and explores how people can feel immersed in their natural space by merging bits with atoms.

### THE PROBLEM

The tech industry is burgeoning with augmented reality and virtual-reality-based technologies like the Microsoft Holo lens, Oculus Rift, HTC Vive and many more. But has anyone ever critically thought about the headsets that people wear to experience them? These AR/VR headsets socially isolate people, you are not able to share the experiences you have while using these headsets with someone else who is not wearing one and is socially handicapping people. Research has even shown that



experiences generated using such technologies on long term dissociate people from reality. Moreover, constraining your movement to a particular location through the tether on the headset only makes it worse. Technology was meant to be designed in a way that it adapts to people, and not in a way where people have to adapt to use such technologies. Do we really want to live in a future where everyone has a headset on their face?

## THE PROCESS

Lumen was created through a people centred design process by talking, co-creating and collaborating with different people. Starting off with several sacrificial concepts that were used for talking with experts in the realm of AR and MR and to ground them on the same thinking, key interactions were then identified from these story sketches. Moreover, co-creation and prototyping sessions with a LARP (Live Action Role Playing) storymaster, Troels Andersen, were really helpful for understanding about the elements and experiences that creates immersive stories. As part of research, escape rooms and museums were also studied for understanding the immersion they are capable of creating. For exploring the interactions, several different concepts such as storytelling with kids, storytelling in art galleries, storytelling in homes, etc were tested with people through functional prototypes. And through these sessions, it was understood that the potential for this kind of tool lies in it being a platform, a storytelling platform that lets people tell their stories through magical interactions with their environment. **And that's how Lumen as a platform was born.**

## THE TECHNOLOGY

Lumen uses the yolo darknet machine learning platform to classify objects which is then processed by the onboard algorithm that generates stories on top of those classified objects. Narratives for this platform are designed by storytellers and game designers who will be having access to the background graphical interface that will serve as the story builder and dashboard. The hardware consists of a laser projector in combination with a camera and depth sensors that work to create the best projection mapping experience for the user. In total, three different prototypes were made. Each prototype was an iteration over the earlier one based on the learnings from the testing sessions.

## THE DESIGN

We all have a deep connection with flashlights, we used to play with them while we were kids and used to tell stories using it. We use a flashlight to find something that we are looking for, to help us find our way in the dark or even to make the invisible visible. Lumen borrows this metaphor of a flashlight to help people create a strong mental model around using it. You can use it just like a flashlight, by pointing and clicking on anything to reveal something hidden. However, it was also clear while testing that it might not be ergonomic for people to hold Lumen in one hand while trying to interact with something with their other. Further time will be hence spent on making future designs will be sleeker or even adapted to smartphone cases to make it more ergonomic.



## ARVIND SANJEEV



### More info at [ArvindSanjeev](https://ArvindSanjeev)

Arvind Sanjeev is an interaction designer and engineer currently based out of Sweden but originally from Kerala, India. He is described as being a serial innovator at several platforms and has been running an educational initiative called [DIY Hacking](#) (now known as [Maker.Pro](#)). Yahoo-Accenture had also awarded him as the "Most Promising Innovator".

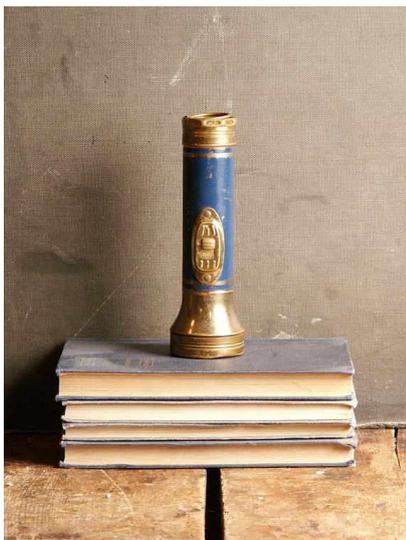
Arvind is convinced that ubiquitous computing is the future, which has propelled him to work on new interfaces and inspired him to delve deep to learn more about it. He believes that the future holds screenless and more tactile interfaces that can augment the efficiency of people through information and that this can be developed only through efficient human-computer interaction design which lead him to pursue his master's in interaction design from Copenhagen Institute of Interaction Design.



## QUESTIONS & ANSWERS | ARVIND SANJEEV

**PLAYABLE IS ...** I define playable to be a two-way-interaction, where people can interact with the environment and the environment responds back to them. Moreover, if the environment responds back to them in a unique way each time, this kind of provokes the user to interact with the environment again and creates a sort of playful dialogue. This creates a much better interactive experience for people and engages them in this narrative. I feel that this is key for creating an immersive experience for people.

**A PRACTICAL EXAMPLE OF LUMEN INSIDE A MUSEUM** Imagine when people come into a museum, they are handed over Lumen in the form of this enchanted vintage flashlight something that looks like this:



And as soon as they turn ON this flashlight, they notice that this flashlight is not any regular flashlight, it is actually trying to tell the person or the group of people carrying it a story through its enchanted light. It projects arrows and pointers and helps the person to navigate to particular parts of the museum. On reaching each waypoint, Lumen then tells the story of the particular exhibit in that location. For example, if it's a sculpture, Lumen projects a face onto the sculpture that captures the essence of what the artist wanted that sculpture to be. It can then tell the story of how that sculpture came to be and what was going through the artist's mind while creating it. This is one example flow of how I imagine Lumen to live inside a museum.

**WHAT WAS MISSING IN THE MUSEUM LIFE BEFORE LUMEN?** My subjective thoughts have always been that I want to feel more engaged and connected with the stories that the museum is trying to tell me. I want to be a part of that story and feel what the artist was feeling while working on her/his creations. Current museum experiences are mostly one sided, there is no opportunity for visitors to interact with the exhibits and have an immersive experience.

**DIGITAL AND PHYSICAL. HOW DO THEY INTERACT IN LUMEN?** People can interact with Lumen through its projections, they can point at the interfaces that it projects and use gestures as input. At the moment, the prototype does not have this capability, but it can be implemented by using optical tracking or even relying on the Leap Motion.