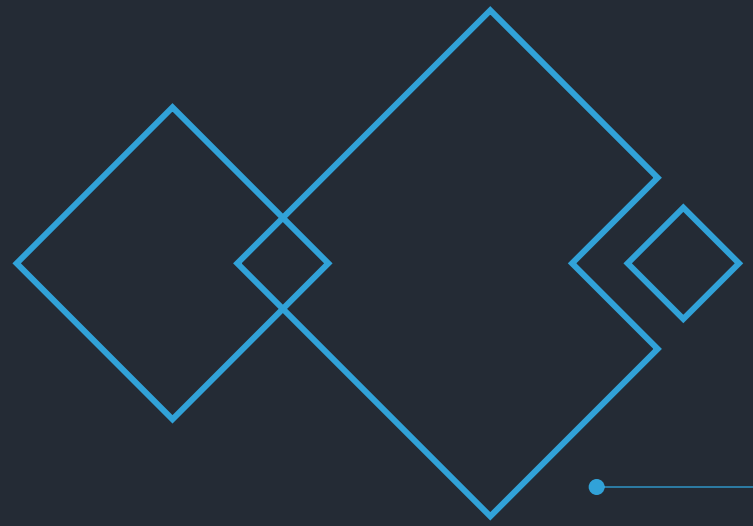
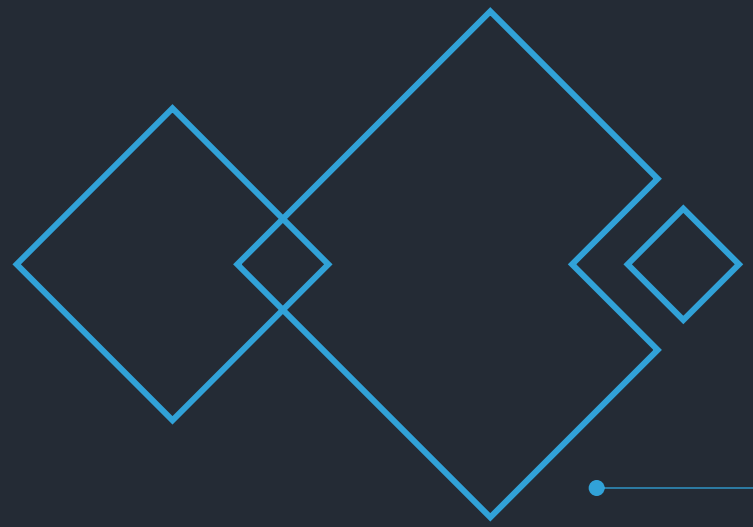


Look at M.E.

The new museum experience

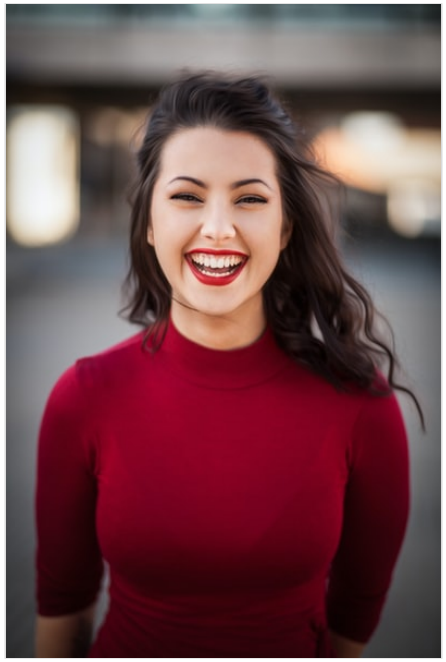


Design

CONTENTS

Personas

Personas



Monica

Finish her studies

Age: 24

Marital status: Single

Children: N/a

Undergraduate study: History & Literature

Occupation: Student

Location: Rome, IT

Bio

Monica is a History & Literature student in the MSc course in Rome. She is close to finishing her studies here and would really love to work as a teacher for a secondary school.

Although she is a very diligent person in her studies, she hasn't yet decided on which topic to write her thesis, so she is actively searching for inspiration. She is very busy, in fact she gives lectures to young students who struggle with their homework, while also making some money to help her parents paying for her studies.

She is a solar person, has a lot of friends which she loves spending time with but she is still looking for her soul mate.

Goals / Needs

- To be able to find a job as a teacher for secondary schools.
- To be able to complete her studies in such a way that she will make her parents proud of her.

Pain points

- She has yet to find a topic for her master thesis and time is running short.
- Worried about the working situation in Italy.
- Corona-Virus

Technology & Information Sources

- Multiple Apple devices.
- Uses an iMac at Uni and spends around 3 hours per day actively browsing the internet.
- Mostly browses on her iPad at home.
- Heavy user of social media.
- When she doesn't know a thing she Googles it.

Favourite brands

Personas

Bio

Markus is a Marketing Expert and as of right now works for a museum as a curator. He graduated at the Colombia University in American in Economy & Management, but he is also an art lover. He then, due to a collaboration between his agency and the Sapienza Museum, moved to Rome where he fell in love and married Maria Cristina.

He is a very precise person and dislikes who doesn't take his job seriously.

Although he is in Italy, he still stays up late to watch NBA matches and is a true fan of the Golden State Warriors.

One day he would love to move back to America with his family, even though he really enjoys Italy, and he is very passionate about its cultural sites.

On a rare free weekend, he loves making long trips with his car and one day he will travel around the world with it.

Markus

Being successful at work

Age: 44

Marital status: Married

Children: 2, Jake and Claude

Undergraduate study: Economy & Management

Occupation: Marketing Expert

Location: Rome, IT

Goals / Needs

- Being successful as a manager as well as living a joyful and calm life with his family.
- Traveling around the world on his Ford Mustang and visiting a lot of wonderful places.

Technology & Information Sources

- Multiple Apple devices.
- He is a very busy person so he doesn't have much time to navigate the internet.
- Because of his work, he is a quite technological person.
- Heavy user of social media.

Pain points

- He is really nostalgic about his homeland and family.
- Knows that it might be difficult to create an impactful advertisement for a classical history museum.

Favourite brands

Personas

Lorenzo

Going to Stanford

Age: 18

Marital status: Single

Children: N/a

Undergraduate study: None

Occupation: Student

Location: Rome, Italy

Income: €3.500 mostly from his part time job

Bio

Lorenzo is a high school student in Rome and he's currently attending his Senior year. He's a very intelligent guy who inspires his classmates through his confidence and sense of humour.

Even though his family does not struggle with its finances, he works part time as a rider for a food delivery company, so he can earn some money to feel more independent.

He visited the Museum of Classical Art of Sapienza due to a school visit and really enjoyed the atmosphere as well as for the replicas of the marble statues that the museum hosts. Also, since the museum has inside a caffetteria and atlas where it's possible to study, he and his friends have started gathering there to hang out for studying sessions.

Goals / Needs

- To be admitted to one of the top US universities.
- To find a way to help his family to fund his studies.

Ideal experience

- Going to Stanford or Yale through a scholarship for his football talent.
- To become a successful college student as well as meeting new friends and graduate with a high vote.

Pain points

- Concerned that he won't be able to afford the graduate tuition fees.
- Worried that he won't be admitted.

Technology & Information Sources

- Uses a smartphone and a computer.
- Also owns a mobile computer for when he studies with his friends.
- Mostly browses on his cellphone.
- Regular user of social media.

Favourite brands

ATP TOUR

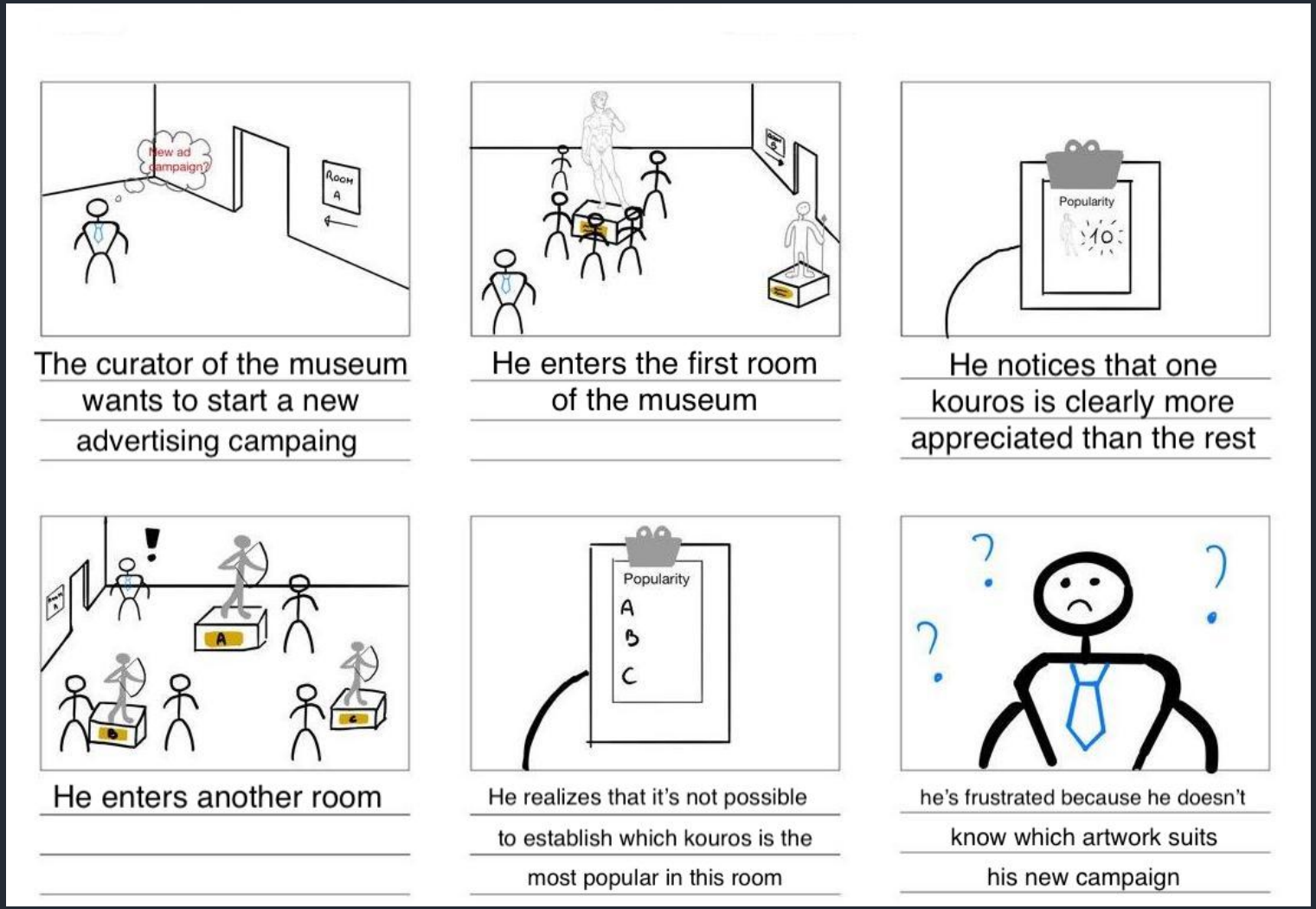
adidas

LA CASA DE PAPEL

2 The Storyboards

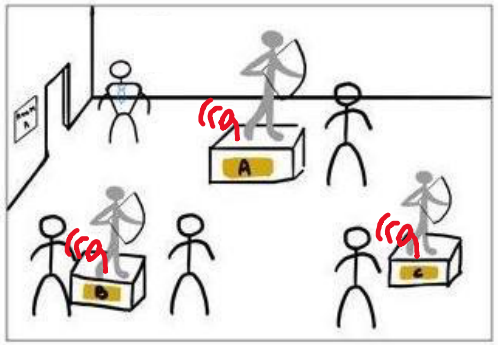
The Storyboards

First Storyboard – The Problem

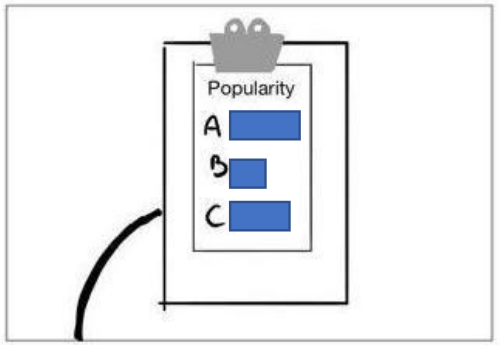


The Storyboards

First Storyboard – The Solution



He decides to install Look at M.E.



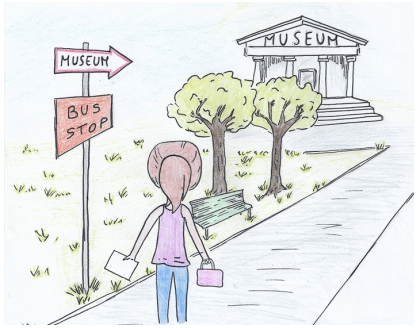
He can finally gather the info he needed

He can finally run the campaign

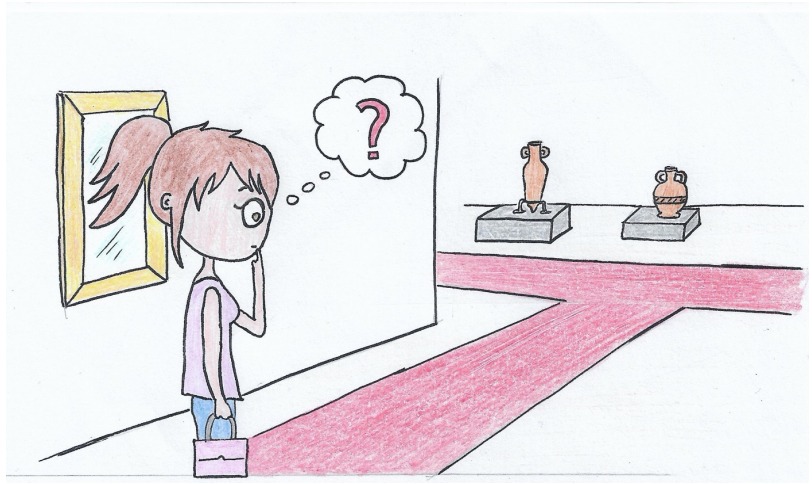
The Storyboards

Second Storyboard – The Problem

Monica decides to go to the museum. "Sounds like a great idea"



Although, when she enters, she's confused and doesn't know where to start!

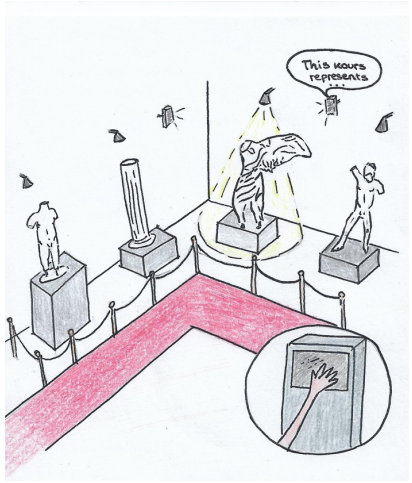


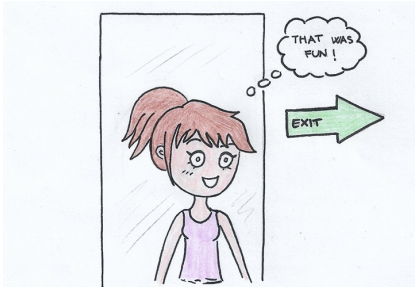
The Storyboards

Second Storyboard – The Solution

Fortunately for her, the museum has Look at M.E.
So, she can now enjoy a light-guided visit...

... as well as learning amazing stuff through the recorded explanations playing!





Finally, she leaves the museum very glad about the experience.

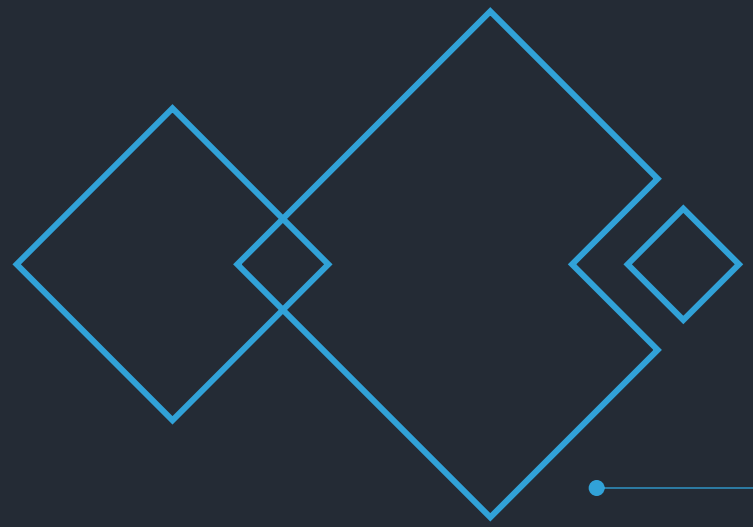
3 Design Conclusions

Goals to Be Achieved

- Improving the overall museum experience, making it more suitable for inexpert visitors.
- Providing an automatic system for the museum, that collects data about the popularity of the pieces

Final Observation

Raising the interest in neglected artworks means raising the quality of the museum as well as of the entire user experience.

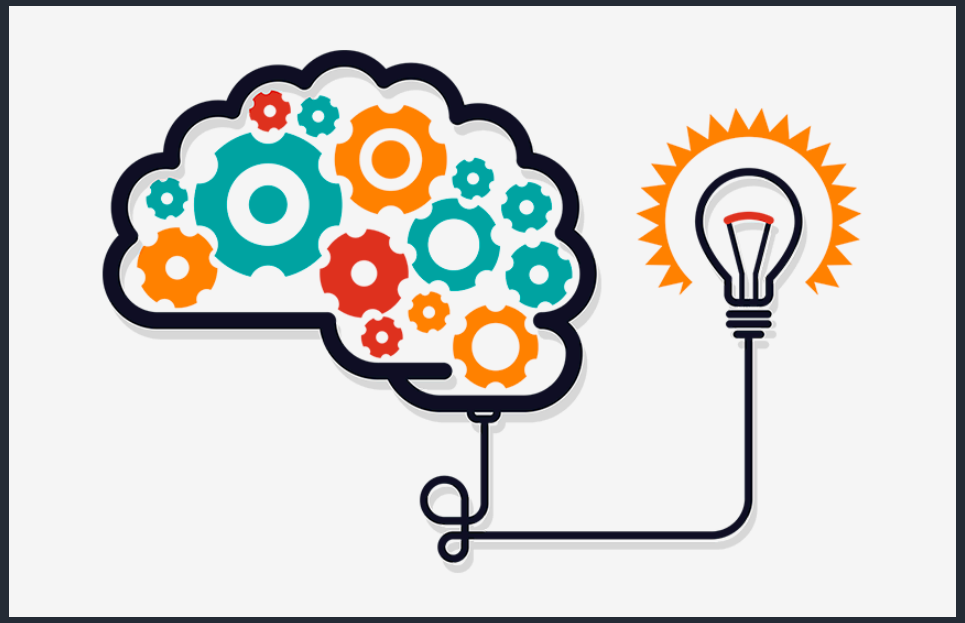


Evaluation

1. Needs analysis
2. Validity
3. Surveys
4. Risk analysis

Need Analysis

Need Analysis



Overview

The idea of the project comes from relevant needs of different users. What came out from our first survey is that many times museums are scattered, and the way they store work arts makes the experience difficult. To help museum curators and visitors of “Museo dell’Arte Classica - Sapienza” we created “Look at M.E.”.

2 Validity

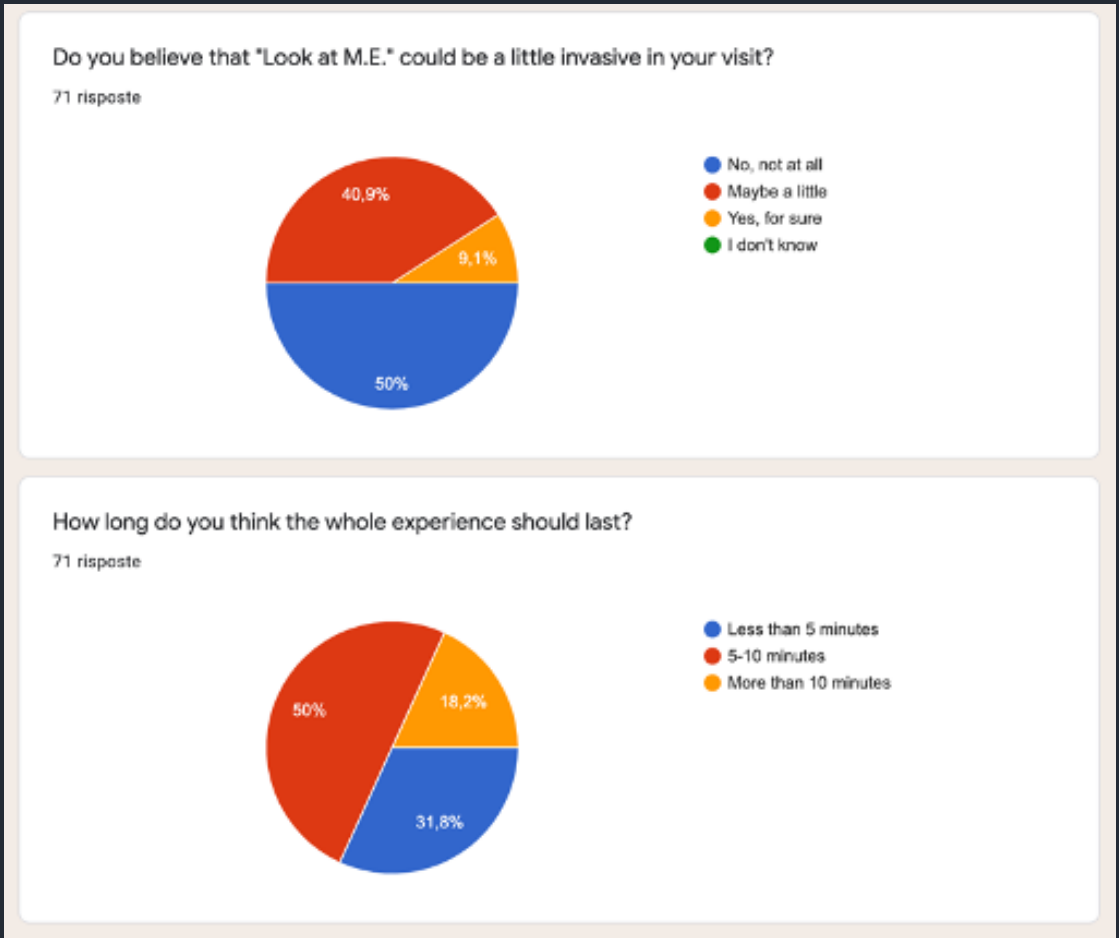
Validity

After a careful analysis of the planimetry, we came to the conclusion that our project is feasible, in fact the implementation of boards with a proximity sensor can be done without any problems.

The museum, however, should provide speakers and lights capable of illuminating with a certain power the works of art involved in the experience.

3 Surveys

Surveys



We care about users

From the user point of view, what stands out from the survey is that the experience sometimes can be a little invasive, in fact we can see from the chart that the 40,9% of them believe that. Also, we can see that for several users the whole experience shouldn’t last longer than 10 minutes.

In the last question we asked a few suggestions to improve the experience: one that we found interesting is the implementation of a holographic presentation of the work of art. It is a nice idea; we will take in consideration during the second phase of development of our product.

4 Risk Analysis

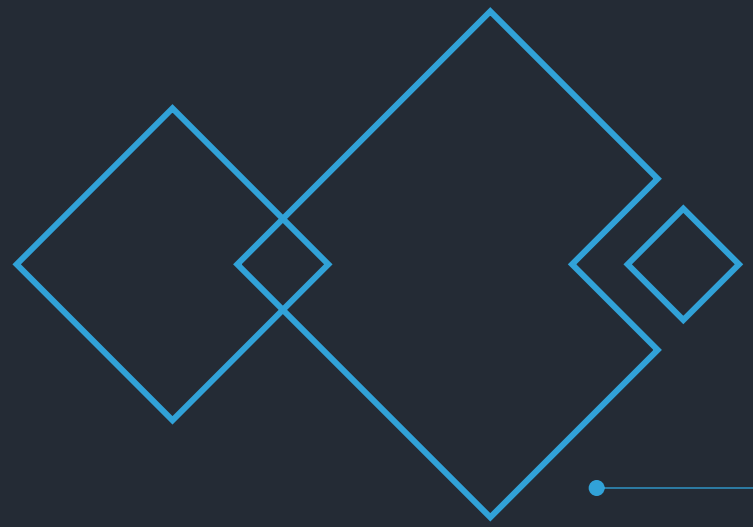
Risk Analysis

The accuracy of the motion sensor is not bad at all, but it can happen that in difficult situations a measurement can be wrong.

Moreover, the proximity sensor cannot detect more than one person in its range, meaning that the popularity ranking can be biased if more visitors are near the work of art at the same time.

Regarding the lighting experience a latency problem might be on the activation from several sensors.

Despite that, the data provided by the product in most cases are reliable, so it can provide a comfortable user experience and reliable measurement to the museum curator.



Architecture

CONTENTS

The System

The System

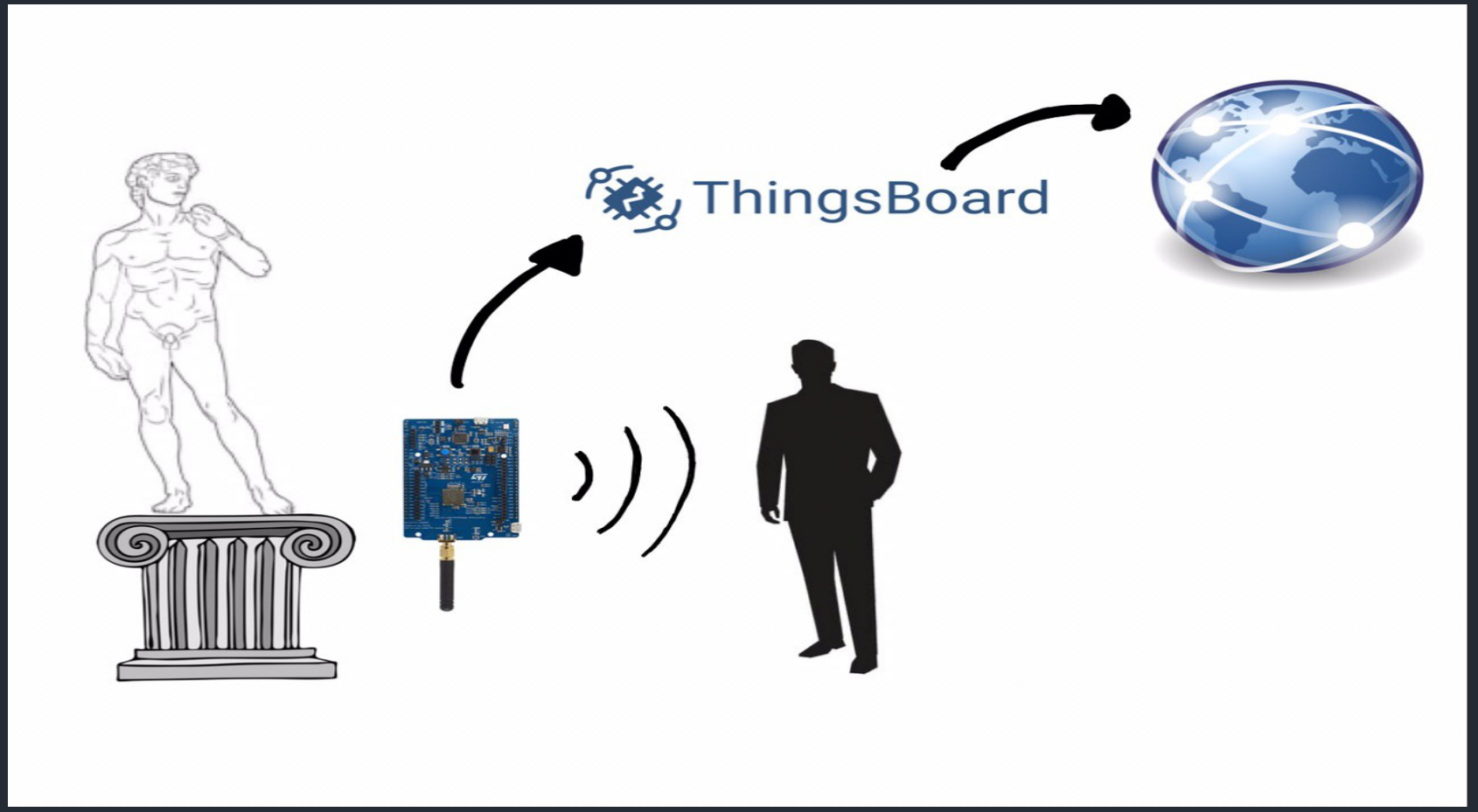
Overview

Nome uses a B-L072Z-LRWAN1 board and several HC-SR04 proximity sensors to build a popularity table ranking the different art pieces while also triggering a guided tour for the visitor.

What do we need

The final product will need a system for every statue we want to make smart. It also need some platform and software implementations.

The System



2 The Components

The Components

B-L072Z-LRWAN1 Board

The B-L072Z-LRWAN1 board is manufactured by STMicroelectronics and is pretty popular cause of its LoRa compatibility and its LoRaWAN class A certification.

Other main features are:

• 7 LEDs:

– 4 general-purpose LEDs

– 5 V power LED

– ST-LINK-communication LED

– Fault-power LED

• 1 user and 1 reset push-buttons

• Board power supply through the USB bus or external VIN/3.3 V supply voltage

or batteries

• 3 × AAA-type battery holder for standalone operation

• Support of a wide choice of IDEs

including IAR™, Keil®, GCC-based IDEs, Arm® Mbed™.

The Components

The HC-SR04 proximity sensor

The HCSR04 ultrasonic sensor uses sonar to determine distance to an object like bats or dolphins do. It offers excellent noncontact range detection with high accuracy and stable readings in an easytouse package. It operates in a distance range going from 2cm to 400 cm.

The main features are :

- Power Supply :+5V DC
- Quiescent Current : <2mA
- Working Current: 15mA
- Effectual Angle: <15°
- Ranging Distance : 2cm – 400 cm
- Resolution : 0.3 cm
- Measuring Angle: 30 degree
- Trigger Input Pulse width: 10uS
- Dimension: 45mm x 20mm x 15mm

The Components

External Hardware

We also have some hardware external to our board, for example the light and sound system that our application will use depending on the values of some variables in our script. These are external since we are not implementing them in the board but must be connected to our broker in order to receive the values that trigger them.

The Components

Software Components

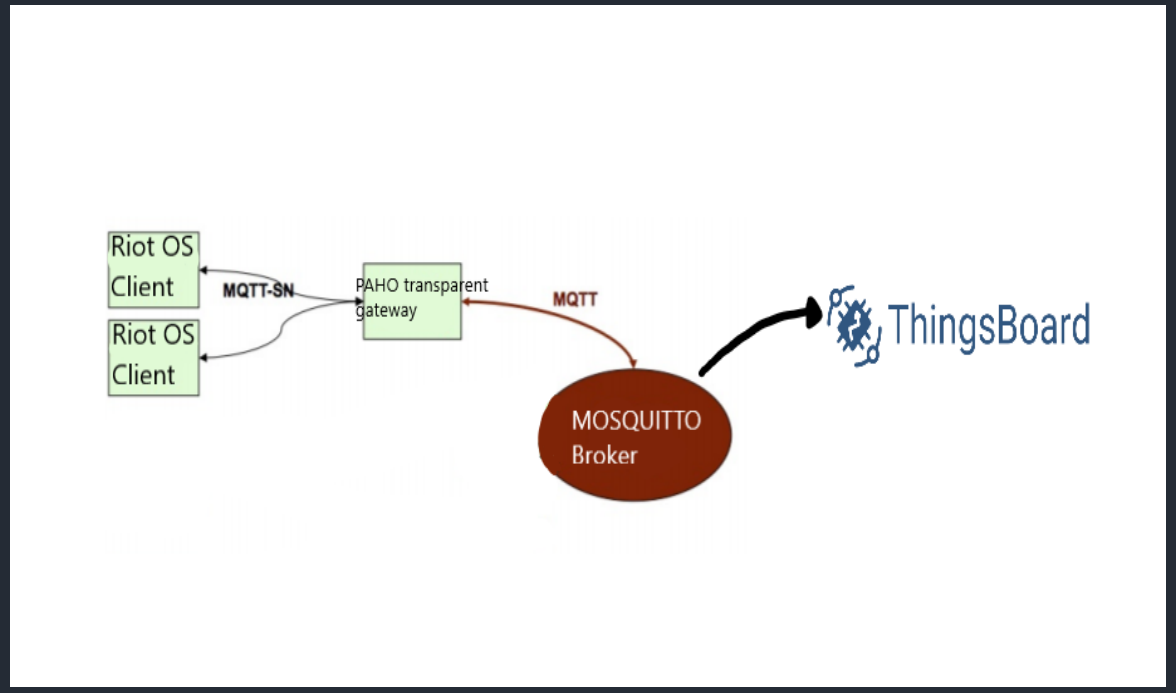
The implementation of the final product will need also several software components going from the OS in which we create our firmware to the cloud platform where we store our measurements:

- **Riot OS**
- **PAHO Transparent Gateway**
- **Mosquitto RSMB**
- **Thingsboard**

3 The Network

The Network

MQTT-SN



MQTT protocol is an open and lightweight publish/subscribe protocol designed specifically for machine-to-machine and mobile applications. It is optimized for communications over networks where bandwidth is at a premium or where the network connection could be intermittent. However MQTT requires an underlying network and this is too complex for very simple and low-cost devices such as wireless SAs.

MQTT-SN can be considered as a version of MQTT which is adapted to the peculiarities of a wireless communication environment. In fact it is designed to be as close as possible to MQTT, but is adapted to the peculiarities of a wireless communication environment such as low bandwidth, high link failures, short message length, etc.

4 The Output

The Output

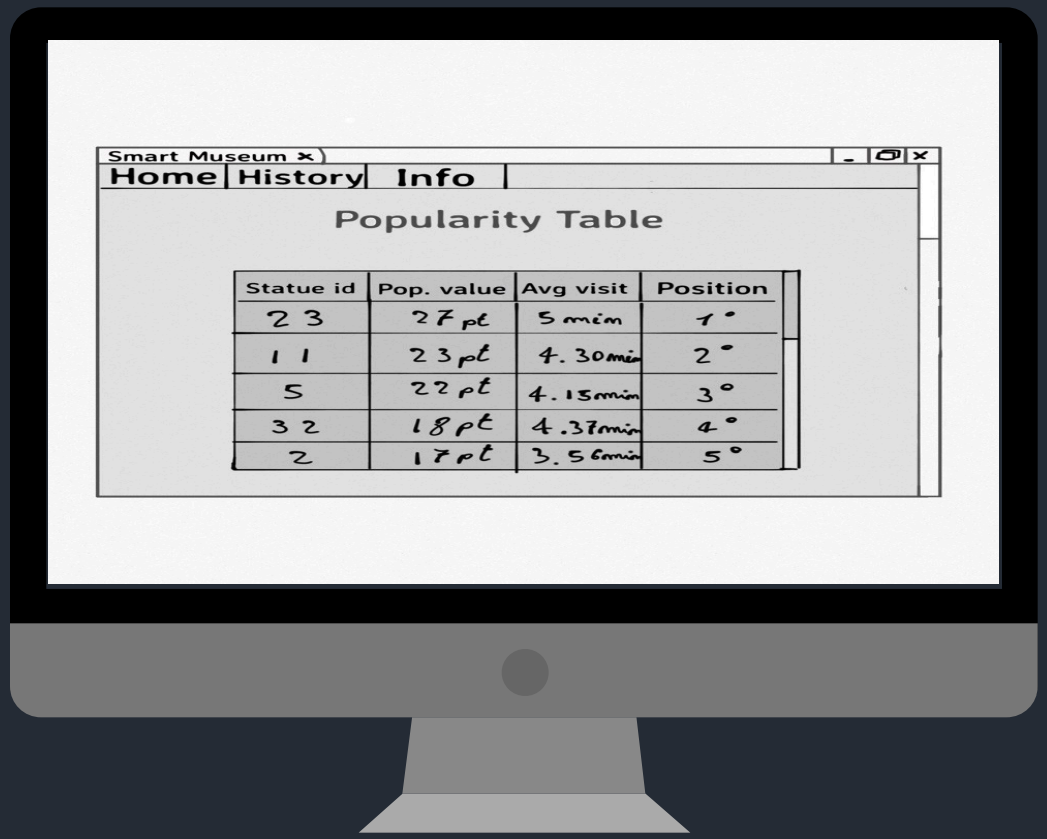
For the visitors

Our product offers two different type of outputs; one aimed to the museum visitors and one for the museum curator.

For the visitors in fact on activation a guided tour made by light that sequentially light up all the statues in the room and audio output to give visitors additional informations on the art pieces.

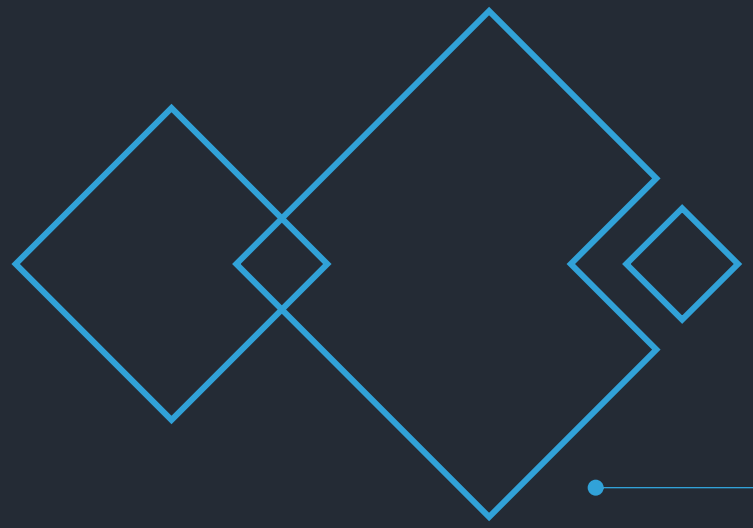
The Output

For the curator



For the curator we will create a popularity table in a web page from the values given by the proximity sensor depending on some parameters.

This will help the curator understand how to better advertise or place a certain cast.



Thanks !