Internet of Things

Big Project

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THE PROBLEM

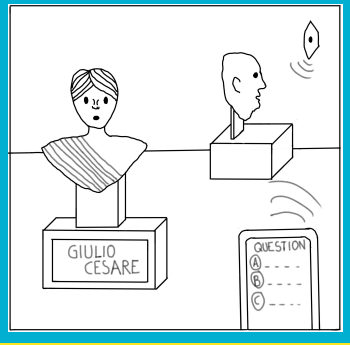
According to our survey, few young adults and teenager go to the museum more than twice per year.

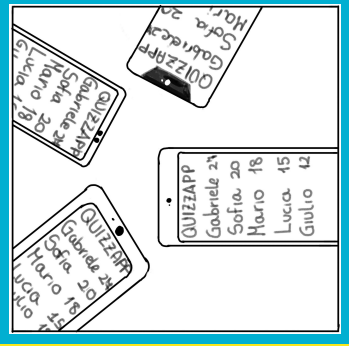
We live in a digital world but many museums are stuck in the past.

How can we entice young people to go to the museum and enjoy the visit?

OUR SOLUTION

- Our idea is to create a valuable experience for museum visitors through a game, called QuizMuseum.
- Every time a person enters a room, an application on its smartphone will pick up a Bluetooth beacon signal and will show a new question about some sculpture inside the room.
- When a player gets the right answer she/he will gain some points for the global leaderboard. Everyone receives an explanation about the casts after the question.
- The information collected will be available for the museum curators on a dashboard





EVALUATION OF THE IDEA

1. **USER EXPERIENCE POINT OF VIEW**
2. **TECHNICAL POINT OF VIEW**

USER EXPERIENCE POINT OF VIEW

GOAL

Our goal is to create an app that can entice people in visiting the museum to learn more and live a more interactive visiting experience.

TARGET

Our targets are Teenagers and Young Adults.
The app aims to collect data to provide museum curators with information on the areas that users find more attractive than the others.

KPIs

KPI 1:

The number of users theoretically interested in the app. We can get this data from the questionnaires we are doing these days, and it allows us to see if users are interested in the app.

KPI 2:

Usability Testing.
We would like to develop a mockup of our app and observe the behavior of the users in doing the tasks (for example start the quiz).

HOW TO EVALUATE USER EXPERIENCE

QUESTIONNAIRE

https://lrazovic.typeform.com/to/UzEcbW

Our goal is that at least 60% of the users who answer the questionnaire give us a positive opinion on our idea.

TEST WITH MOCKUPS

Another way to evaluate the app is to do test with some users using mockup, in this way, we can decide if the interface we designed is usable or if we made mistakes in the design phase.

Also the opinion of the curators of the museum is important, so we would like to test our app with them to get their opinions about both the quiz and the dashboard that will show the statistics of the museum

OPTIONAL KPIs

KPI 3:

The number of app downloads for museum visits, given by the formula: (N_download_app/N_visitors)

KPI 4:

Another important factor to evaluate is the average percentage of areas completed in the quiz. If a user answers to the questions only for one or two zones, he probably doesn't consider the quiz interesting or engaging enough

KPI 5:

Targeting mainly teenagers and partly young adults, one of the parameters to be measured will be the increase in visits by schoolchildren at the museum

TECHNICAL POINT OF VIEW

GOAL

Create a simple structure that allows users to enjoy the experience in the best possible way while respecting their privacy and security. Also we want museum curators not to incur excessive costs to maintain the infrastructure.

KPIs

KPI 1:

We would like to not save any kind of personal user data persistently in our app. The idea is to ask the user only for a username to which will be linked all the few "sensitive" data required

KPI 2:

Data security.
The data will be saved on a database managed by Google Cloud Platform, which guarantees high security.

KPI 3:

App must respond quickly to the user's requests (within one second).
The server must handle a certain number of requests at the same time (at least 100).

KPI 4:

A cost of less than 10€ per month is necessary to guarantee the management of the infrastructure to the museum without problems. We have estimated that the total cost of maintaining the infrastructure will be around 7€ per month. There is also the cost for the boards that should be around 30€ per board.

HOW TO EVALUATE ARCHITECTURE

IoT Lab

Given the current situation, we have decided that we can simulate the operation of our application using a board on **FIT/IoT-LAB** to simulate the boards of the museum.

Smartphone

We will simulate the reception of the data in the app, and then it will send the request to the cloud.

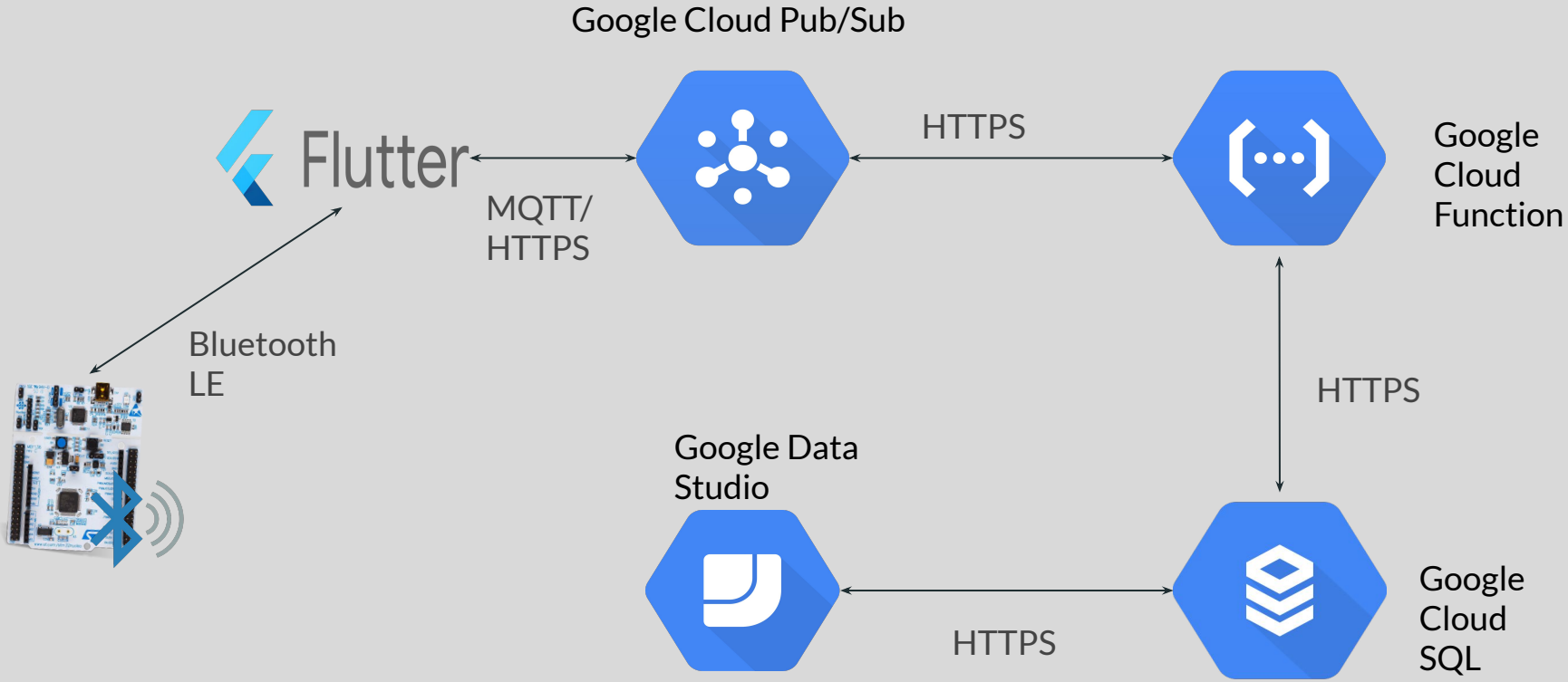
Google Cloud Platform

The cloud infrastructure will work normally receiving/sending data from/to the app and displaying the information for the curators simulating a real situation.

ARCHITECTURE ELEMENTS

1. Board STM NUCLEO-F446RE + X-NUCLEO-IDB05A1 (or similar)
2. Cross platform smartphone application
3. Google Cloud Platform

ARCHITECTURE SCHEMA



THANKS FOR THE ATTENTION 🙏

GitHub Repository