

Monnig Meteorite Gallery Tour Assistance Application



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BACKGROUND

The Monnig comprises a scientific research collection (the Monnig Meteorite Collection) as well as a Museum (the so-called "Gallery"). The exhibit has an educational game and interactive video screens. While there have been some updates to the technology in the exhibits in the last twenty years, most of the Gallery remains unchanged since its opening in 2003.



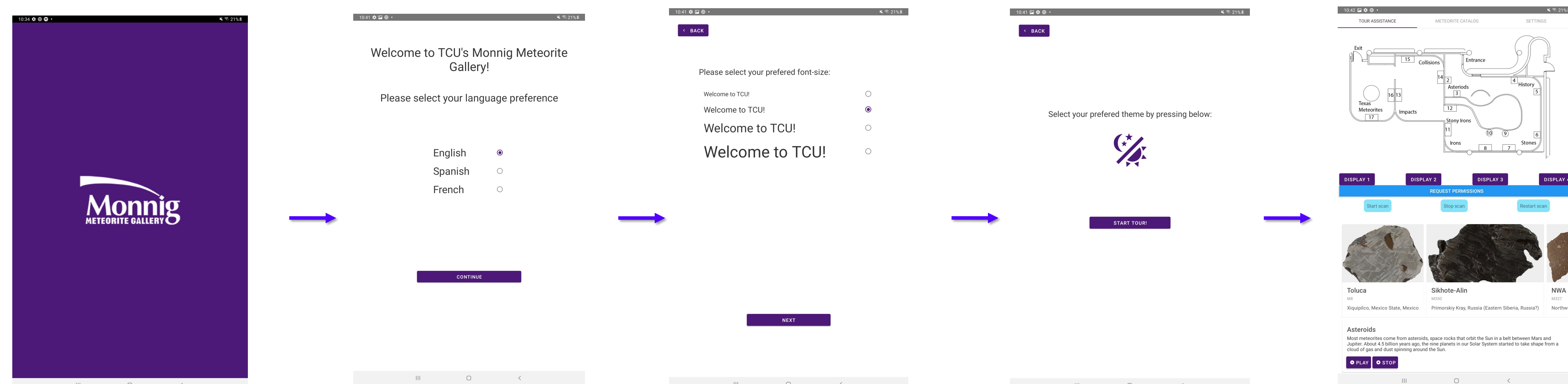
PROBLEM

- The current design is not inclusive for visually impaired visitors.
- Contents including meteorite descriptions and other informative texts in the gallery are not accessible for non-English speaking visitors.
- Less than 5% of the 3000 meteorites and other samples in the collection are on display.

SOLUTION

- Tour assisted application with sufficient accommodations for visually impaired visitors.
- Tablets will be provided by the MMG to coming visitors
- Capability of being fine-tuned to the individual's preference through brief survey.

USER FLOW

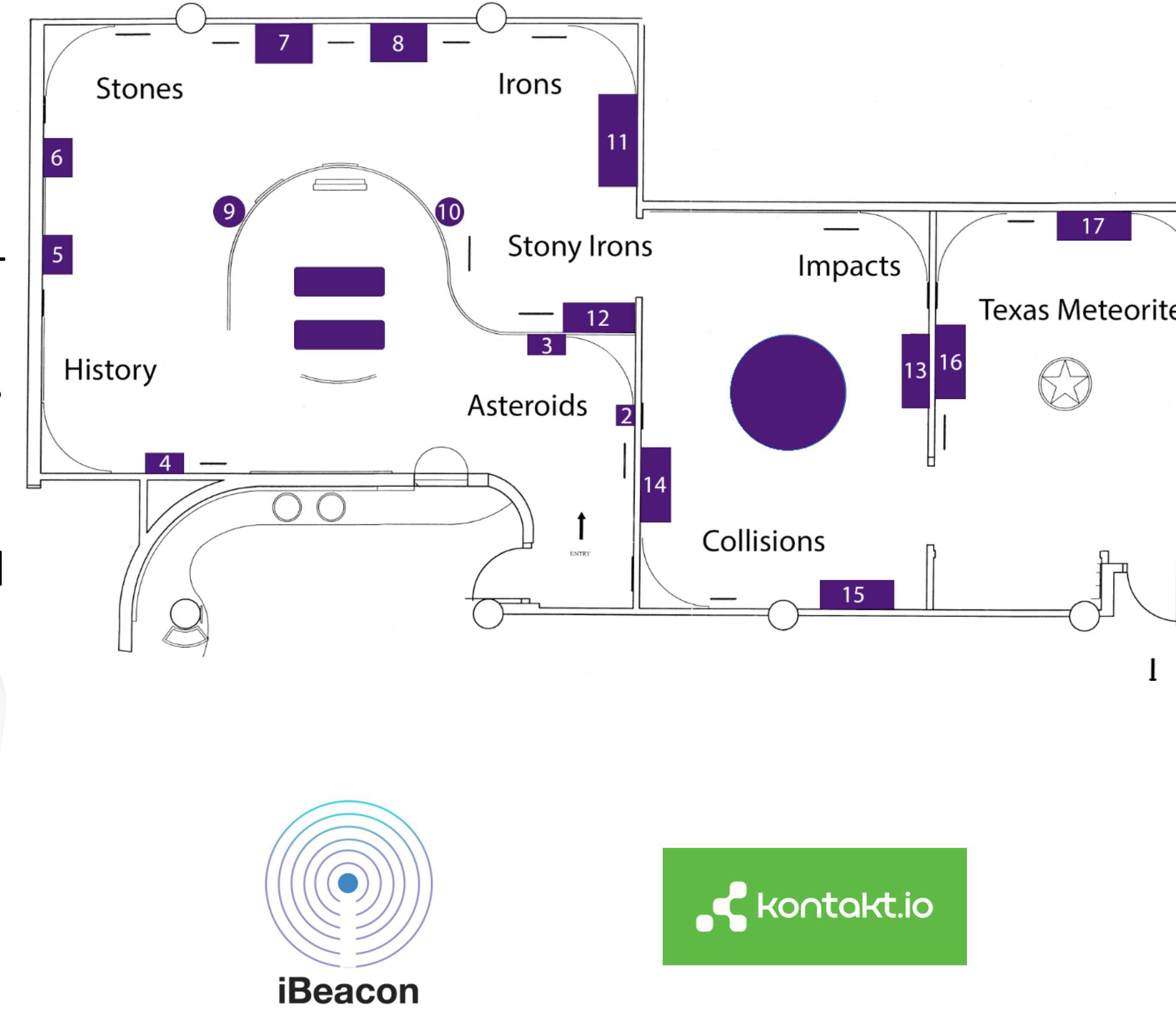


Select preferred language, font, and theme for the best clarity. Tour Assistance Screen

RELEVANT CONTENT GENERATION

With the help of the iBeacon Bluetooth protocol it is possible to perform indoor navigation. This allows the app to detect in which region of the Gallery a visitor is at a specific moment. Then, since we have the information of the meteorites' display location in the gallery, which can be absolute using the grid of the map or a name of the room, relevant content is generated in the tour assistance screen.

We use two iBeacon scanning techniques: Ranging and Monitoring. Ranging allows the application to list detected beacon spots. Monitoring allows the application to be aware as the visitor exits and enters defined regions.



TRANSLATED TEXT-TO-SPEECH

The MMG Tour Assistance App supports Spanish and French beside English. Furthermore, a text to speech feature is implemented to assist reading difficulties more efficiently.



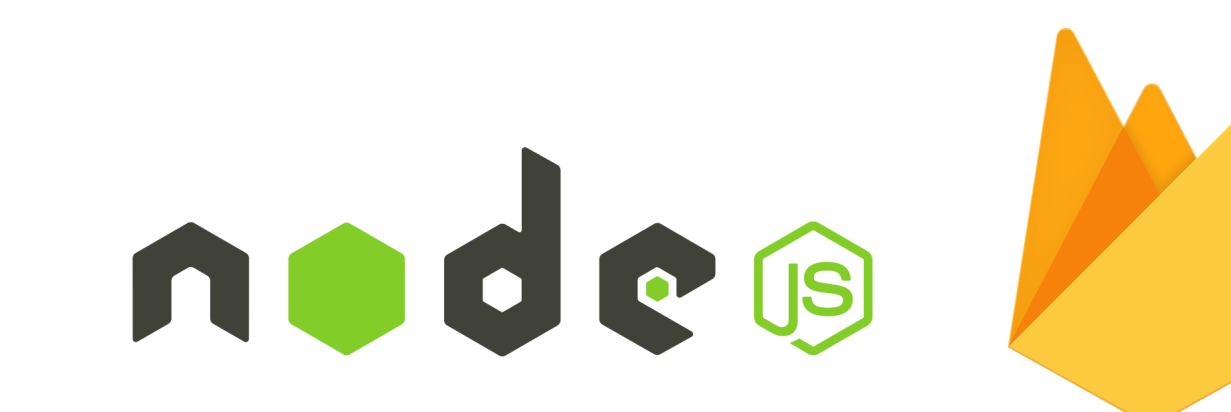
Challenges

- Translating languages both dynamically and statically.
- Optimizing beacons for ease of access for visitors with certain impairments.
- Managing conflicting data types returned from APIs.

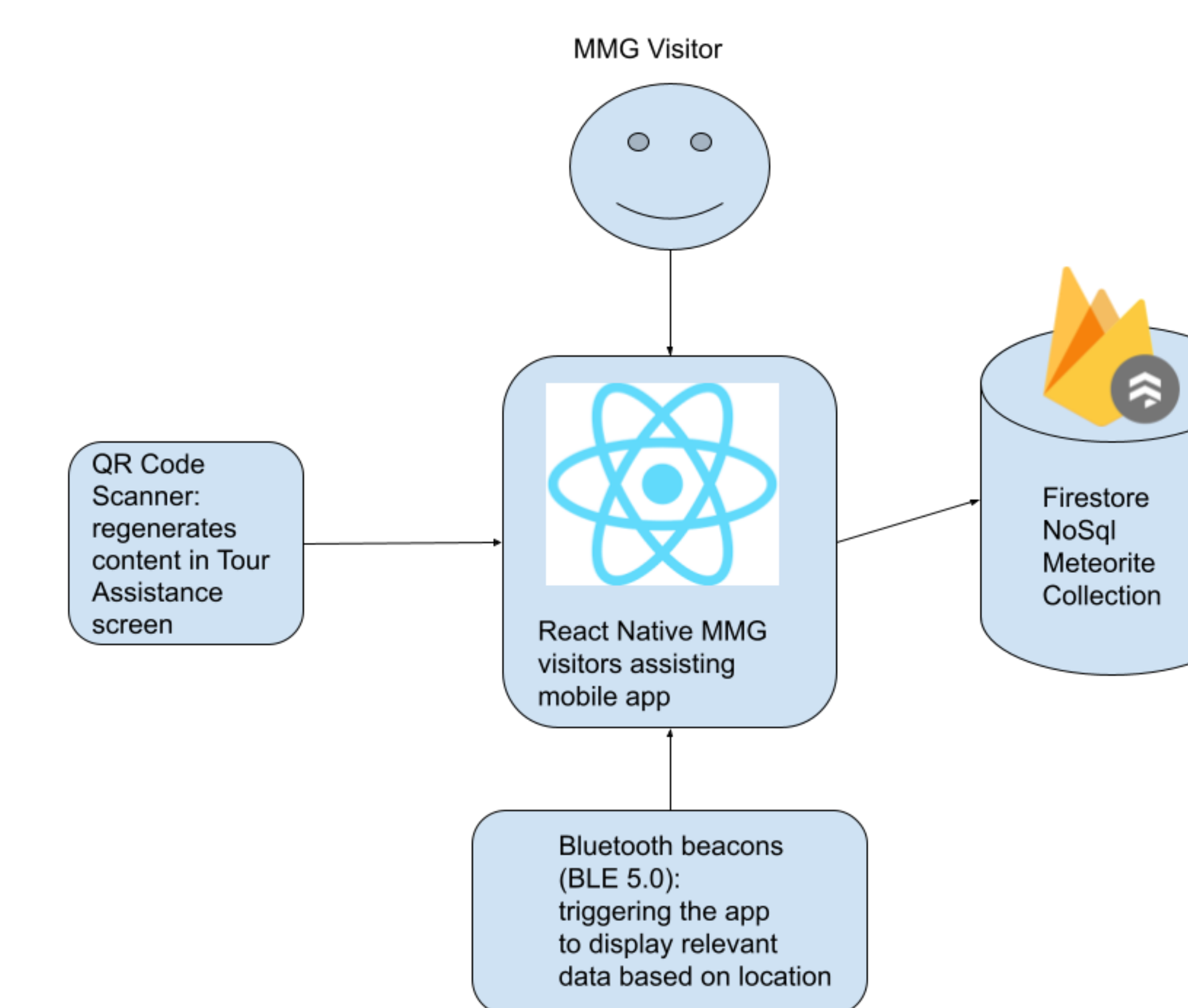
DATABASE

The MMG has a collection of more than 3000 meteorites, however only 5% of them are on display for visitors. Utilizing the content and modifying the schema this database is a significant part of this project.

We were working on top of the grand database, which has about 20 properties for each meteorite, provided by our client. To satisfy the needs of our app features we added more properties including description, picture, and a field to identify the location of the meteorite display in the gallery.



INTEGRATION



Acknowledgement

We would like to thank our senior design advisor **Dr. Bingyang Wei** and our client **Dr. Rhiannon Mayne** for their continuous support and guidance to make our project successful.