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Faculteit Toegepaste Ingenieurswetenschappen

I-IoT: Distributed Embedded Software

PGO 2: IoT

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1 Case

Club IoT

1.1 Problem Statement

Ignis is owner of the popular *Club: IoT*. Each Saturday night, famous DJs from around the globe come to play a set of amazing beats and enjoy the crowd. In order to keep the club modern and refreshing, Ignis is searching for new ways to improve the experience of his customers. For the tenth anniversary of the club, Ignis came up with a new recipe for success.

Ignis wants to create a system where partygoers can up/down vote a song that is currently playing through the speakers. Therefore, each customer gets a Music Rating Box (MRB) with two buttons: like and dislike. The box will display the name of the song and its artist on the small display. The club DJ has access to a large database of songs. The metadata of each track contains the name of the track, the artist and the year of release. When the DJ mixes a new song, he can select the track in a clear webinterface. At that point, all MRBs are notified of the new song and will update the info on their displays.

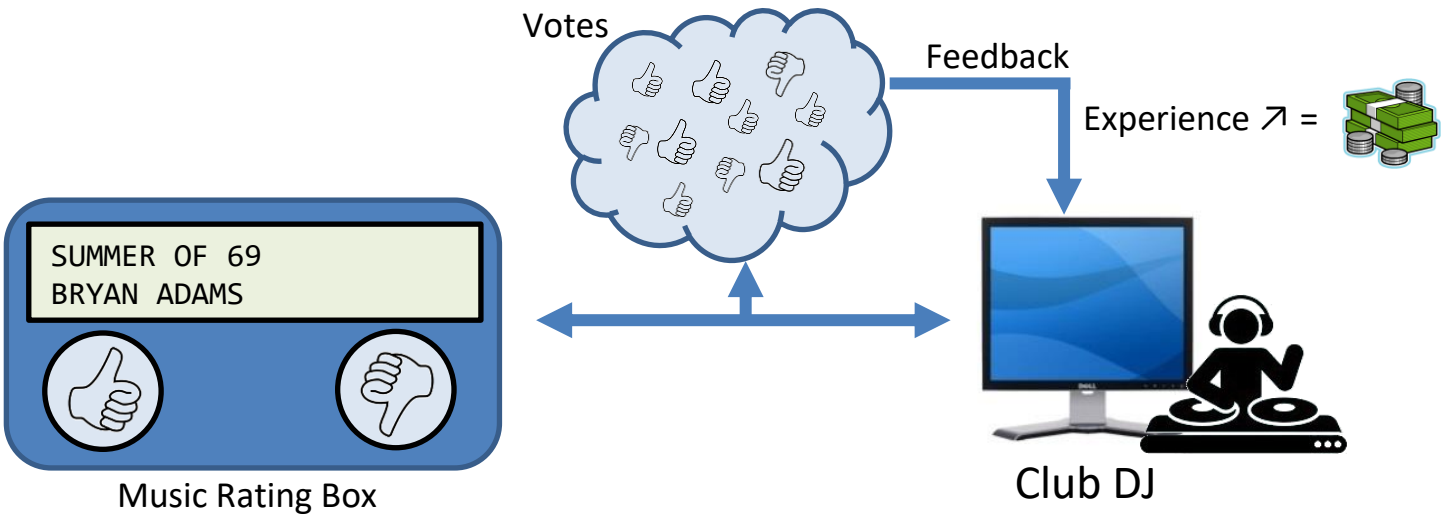
Throughout the evening, each customer with a MRB can press the upvote (like) or downvote (dislike) button to indicate their appreciation of the DJ's songs choice. The votes will be stored seperatly in a database. Each entry contains the song the vote is intended for, the id of the MRB that published the vote, the timestamp when the vote occurred and the value +1/-1 for respectively up or down vote.

At the end of the evening, Ignis would like to gain insight in the collected votes of his customers. He wants to be able to get unambiguous answers to questions, such as: 'Which was the most popular/disliked song of the evening?', 'Who was the most active voter?', 'How did the vote rating of a specific song evolve during the song playback?', etc. This information needs to be obtained out of the huge number of votes in the database as quickly as possible because time is money for Ignis. A dashboard showing these parameters would be a nice feature, but is not mandatory at the moment.

As Ignis is a successful businessman, his knowledge about electronics is limited to sending mails and browsing the web searching for the latest Walmart deals, e.g. his attached drawing below. Therefore, he came to you, as IoT experts in the making, to help him build a state-of-the-art system for his club.

Can you help Ignis in creating a working proof of concept of his new IoT-based business model?

- What would the system architecture/backbone look like?
- Which messaging protocols should be used between MRBs and the server?
- How to collect and store all data?
- How to process a big amount of data to get one unambiguous answer?



1.2 Goal

The students have to create a working proof-of-concept setup that is conform to all requirements in the problem statement which will be presented during the last session. The learning outcome of this PGO is to understand the concept of IoT and learn about different technologies that are commonly used in this context.