



Waterford Institute Of Technology HDip In Computer Science

Final Year Project

GAA GAME MANAGEMENT, REFEREE ANDROID WEAR WATCH
AND LIVE SCORES

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- ▶ Bachelor Of Science in Computer Networking.
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Project

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GAA GAME MANAGEMENT, REFEREE WATCH AND LIVE SCORES

- Game Management – Create Games, Submit team sheets and view match reports
- Referee Watch – Submit game events and match report information
- Live Scores – View GAA live scores and team sheets

Project Demo

Problems I Set Out To Solve

- ▶ Digitise the GAA Referee's workflow
- ▶ Digitise the submission of GAA team sheets
- ▶ Provide live scores for club and county GAA games.



Project Aims

- ▶ Create an Android Wear Watch
- ▶ Create a Web application to allow team officials submit team sheets
- ▶ Create a Web application to show live scores.



Tools and Technologies

- ▶ Programming Languages

- ▶ Kotlin
- ▶ JavaScript
- ▶ HTML
- ▶ CSS

- ▶ Frameworks

- ▶ Svelte
- ▶ Bootstrap

android
Wear



Tools and Technologies

- ▶ Firebase
 - ▶ Firestore
 - ▶ Realtime Database
 - ▶ Cloud Functions
 - ▶ Authentication
 - ▶ Storage
 - ▶ Hosting

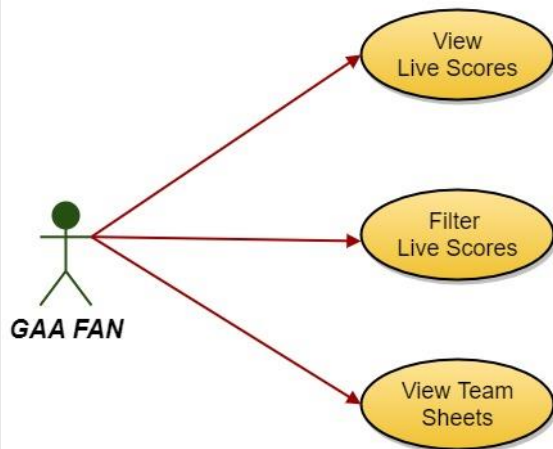


Built with
Firebase

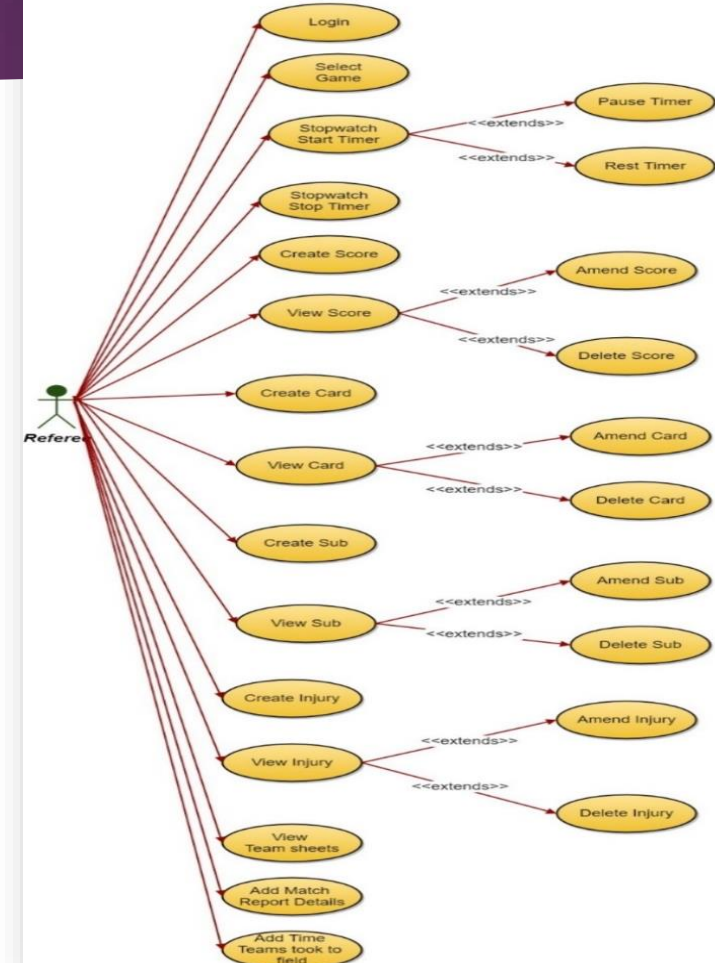
Analysis and Design

- ▶ User Stories
- ▶ Use Case Diagrams

GAA fan - Use Case Diagram



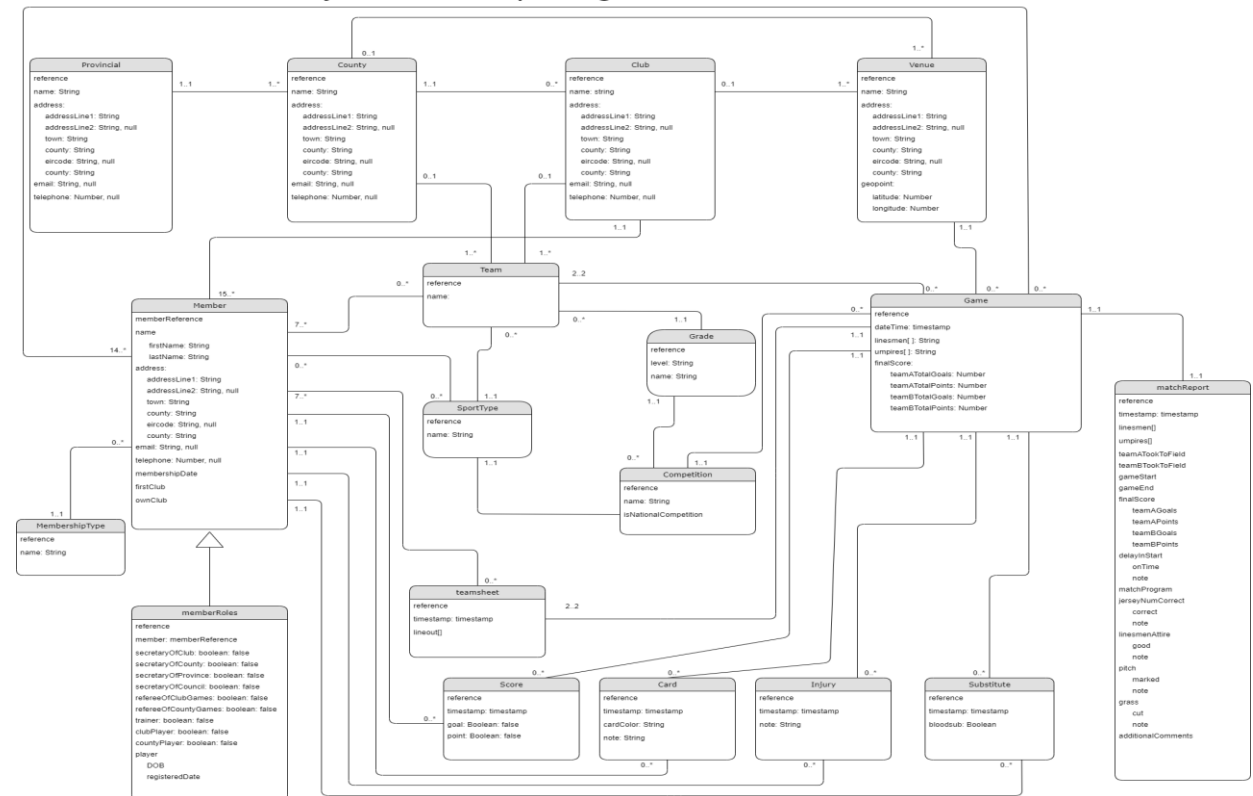
Referee Android Watch - Use Case Diagram



Database Design

- ▶ SQL V No SQL
- ▶ GAA - hierarchal organisation
- ▶ MongoDB V Firebase
- ▶ Firestore V Realtime DB

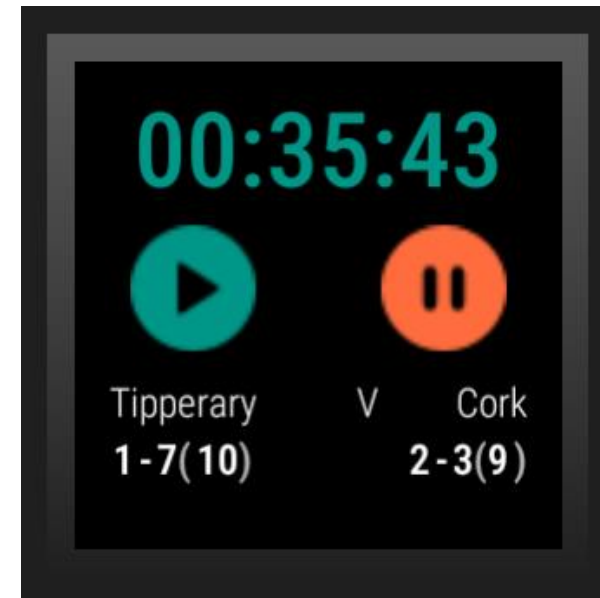
Entity Relationship Diagram



Referee Watch Functional Requirements

Referee Android Wear Watch

- ▶ Stopwatch
- ▶ CRUD – Scores, Cards, Substitutes, Injuries
- ▶ Record Match Report details such as team entering the field and match comments
- ▶ View team sheets



Live Scores

Functional Requirements

Live Scores Web Application

- ▶ View live scores
- ▶ Filter live scores
- ▶ View team sheets

All Ireland Quarter Final:
Waterford V Kilkenny



3 - 16



2 - 24

Latest Score: Goal - Kilkenny - TJ Reid

Game Management Functionality Requirements

Referee

- CRUD – Games
- View team sheets
- View match reports

Secretary

- CRUD – Match Report
- View upcoming and past games
- View team sheets

Team Official

- CRUD – Team sheets
- View upcoming and past games

User Interface Design

Balsamiq Cloud

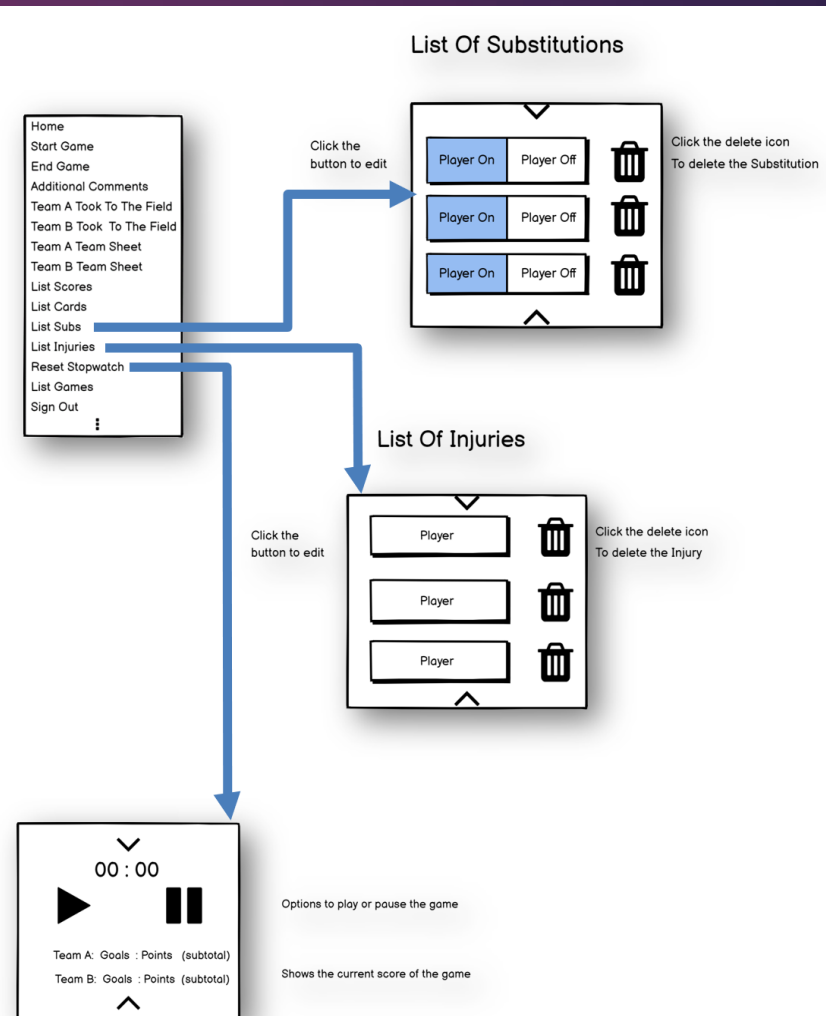
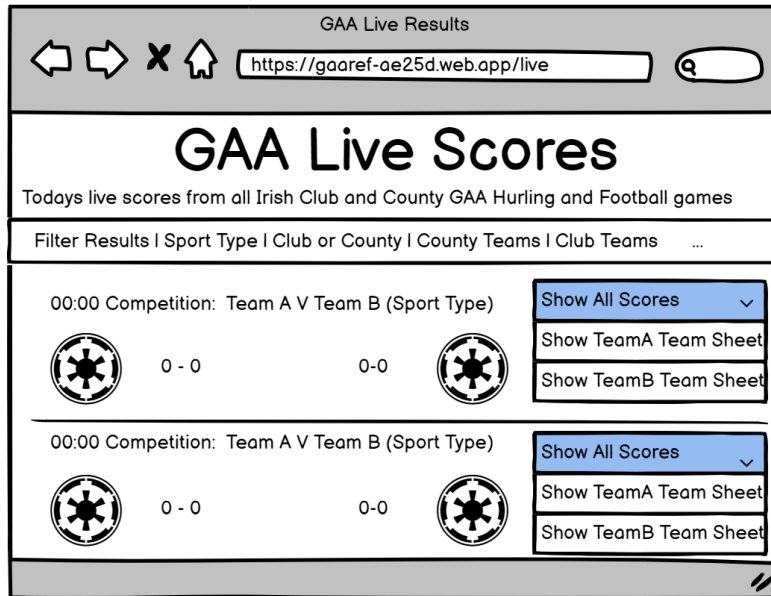
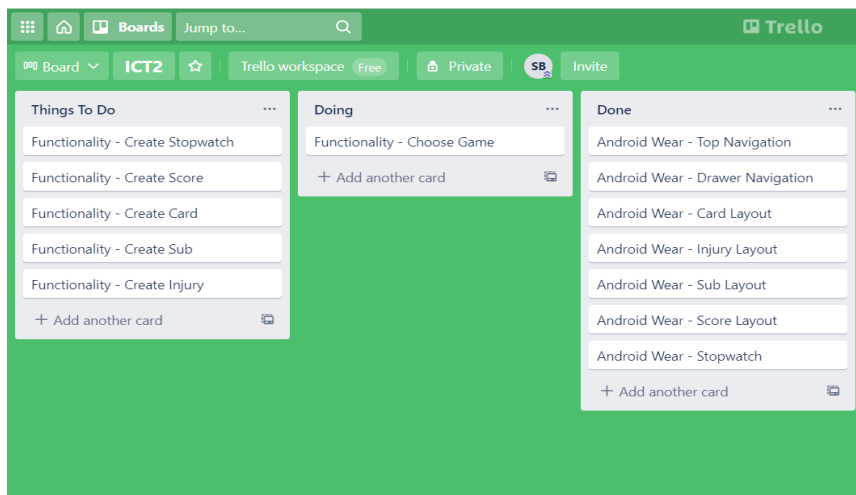


Figure 37 – Android Wear – Bottom Menu (Balsamiq Cloud, n.d.)

Methodology

- ▶ Agile Methodology
- ▶ Weekly Sprints
- ▶ Schedule
- ▶ Trello



Implementation

- ▶ 26 Sprints
- ▶ Each sprint had aims of what I wanted to complete the following week

6	18	01/03/2021	07/03/2021	Create a Firebase project and connect to the Node JS project
7	19	08/03/2021	14/03/2021	Setup Firebase authentication in the Node JS Web App
8	20	15/03/2021	21/03/2021	Research Android Wear Development, read android wear documentation, do some of their code labs
9	21	22/03/2021	28/03/2021	Setup the starter android wear application and setup google authentication with firebase
10	22	29/03/2021	04/04/2021	Setup Layouts for the android wear app – Navigation, Fragments for Stopwatch, Score, Card, Substitute, Injury
11	23	05/04/2021	11/04/2021	Create Database, JSON objects for all entities provinces, counties, clubs, venues, contact details, grades, competitions, sports type, members, teams, games, scores, substitutes, injuries and cards. Write a program to populate Firestore with the JSON objects
12	24	12/04/2021	18/4/2021	Start the Interim Report – use case diagrams, wireframes and database design
13	25	19/4/2021	25/4/2021	Create List views for Scores, Cards, Substitutes and Injuries on the wear app. Using fragments and recycler views
14	26	26/4/2021	2/4/2021	Create a Stopwatch for the wear application and – Complete Interim report
15	27	3/5/2021	9/5/2021	Create Score, Card, Substitute and Injury

Referee Watch Project Evaluation

Objectives Met

- ▶ Retrieve and view the current days games
- ▶ Stopwatch
- ▶ Create Scores, Cards, Substitutes and Injuries
- ▶ Add match report details
- ▶ View Team sheets

Objects Not Met

- ▶ Update and Delete Scores, Substitutes, Cards and Injuries.
- ▶ End the first half

Live Score Project Evaluation

Objectives Met

- ▶ List current days games
- ▶ Update total score for a game live
- ▶ Update latest score live (time, team, score type and player name)
- ▶ Update all of the games scores live
- ▶ View team sheets

Game Management Project Evaluation

Objectives Met

- ▶ List all upcoming and past games
- ▶ Secretaries can create games
- ▶ Team Officials can submit a team sheet
- ▶ View team sheets
- ▶ Referee and Secretary can view match reports

Objectives Not Met

- ▶ Secretary to update and delete games
- ▶ Secretary to be able to submit a team sheet
- ▶ Secretary and team official to be able to update and delete team sheets
- ▶ Referee to CRUD a match report

Some Problems I Encountered

- ▶ Server V Serverless
- ▶ Running the stopwatch in the background
- ▶ Firebase Functions running very slowly

New things I learned along the way

- ▶ Android Wear – Google Authentication, layouts and navigation, Retrieving Voice notes, Live Data
- ▶ Firebase Cloud Functions
- ▶ Svelte Framework
- ▶ Bootstrap Framework
- ▶ Database Design

Questions

