BEng. Hons. Computer And Electronic Engineering, GMIT

GMIT
INSTITIÚID TEICNEOLAÍOCHTA NA GAILLIMHE-MAIGH EO
GALWAY-MAYO INSTITUTE OF TECHNOLOGY

MUSIC HOST INTERFACE

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- Background
- Tools
- JavaFX Overview
- Azure SQL database
- JavaFX Music Host Application
- Bluetooth
- Android Application
- Time Log
- Conclusion

Background

- Personal
  - Demonstrate Abilities
  - Realization of Ideas
- Initial Idea
  - Virtual Jukebox
- Complete Idea
  - Music Host dictates what the guests can do.
  - The guest can…

    -Request songs

    -Skip songs

    -Give the DJ feedback

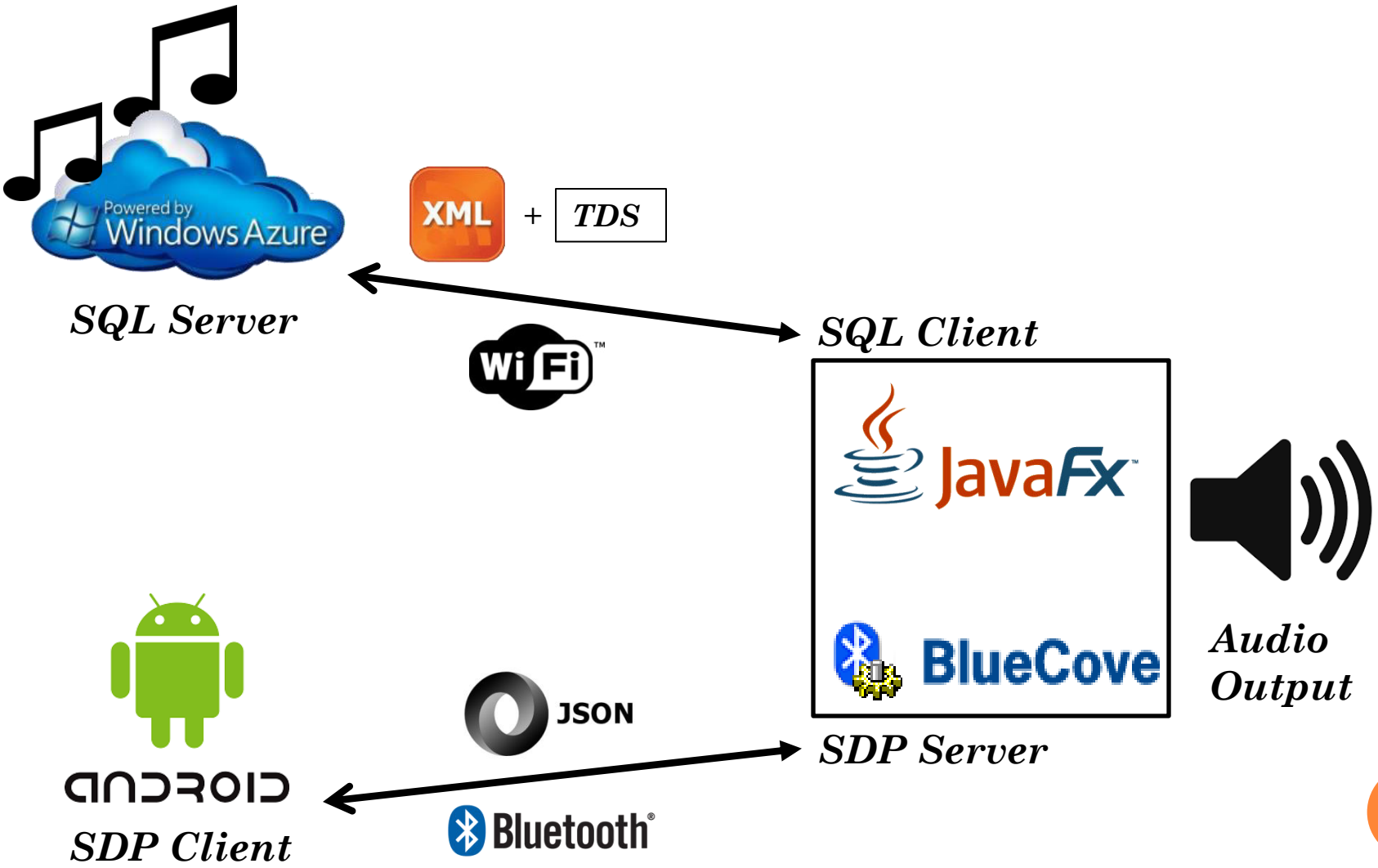
Tools

- JavaFX
  - Scene Builder
  - Media API

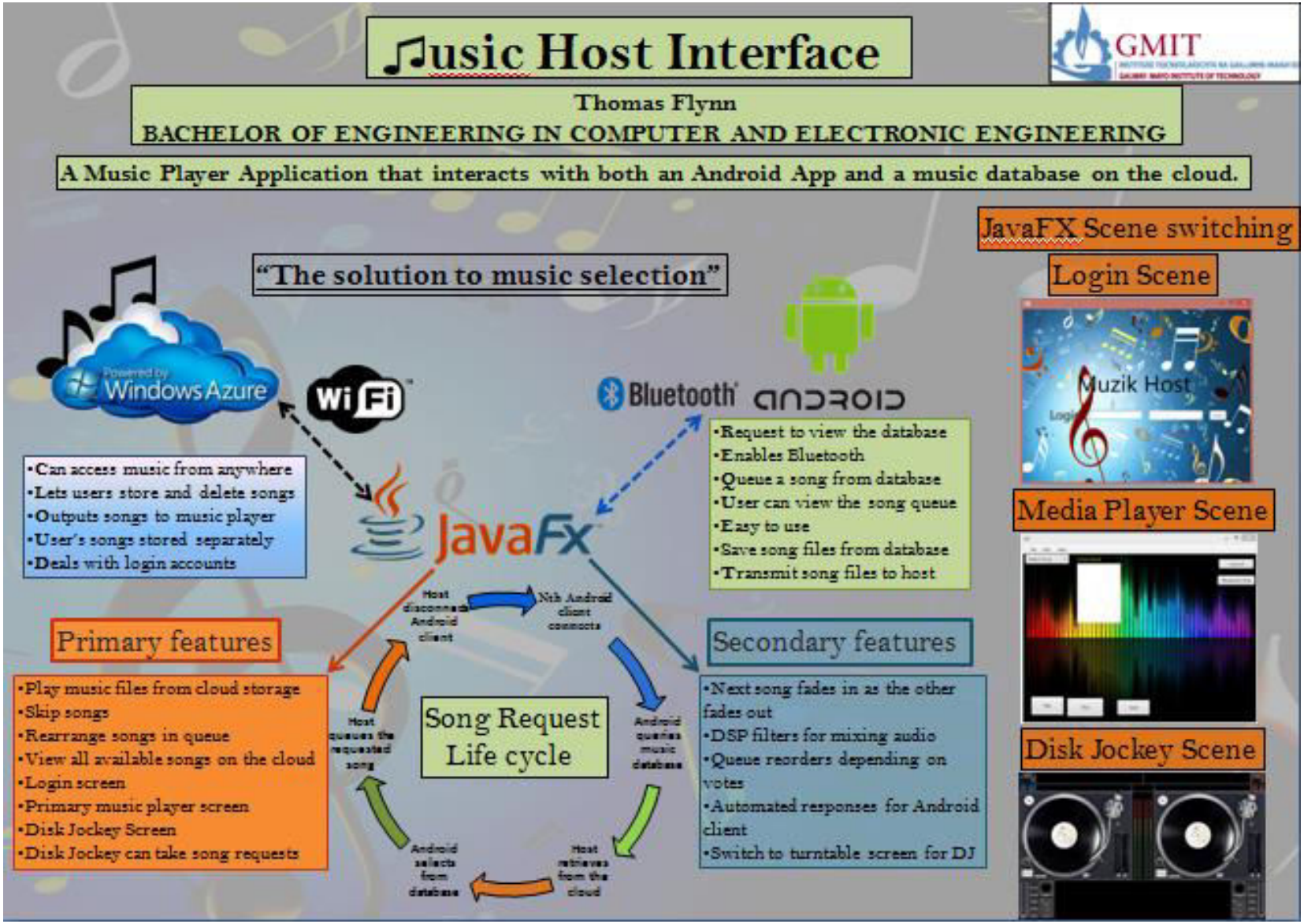
- Microsoft Azure Cloud Storage
  - User Login Credentials
  - User Songs

- Bluetooth
  - BlueCove library
  - Android Bluetooth API

System Block Diagram



Christmas Project Poster

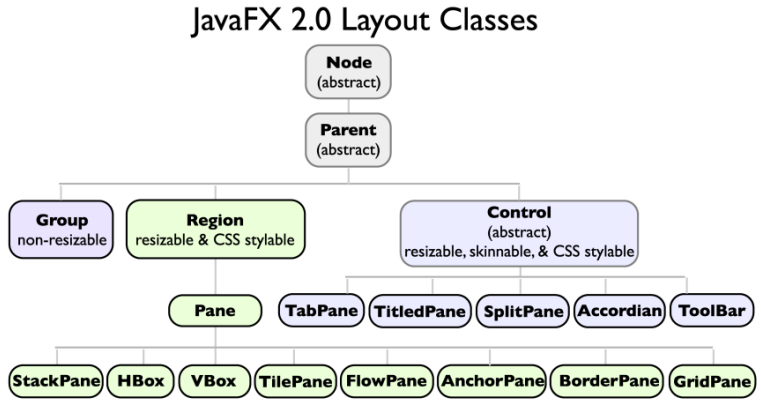


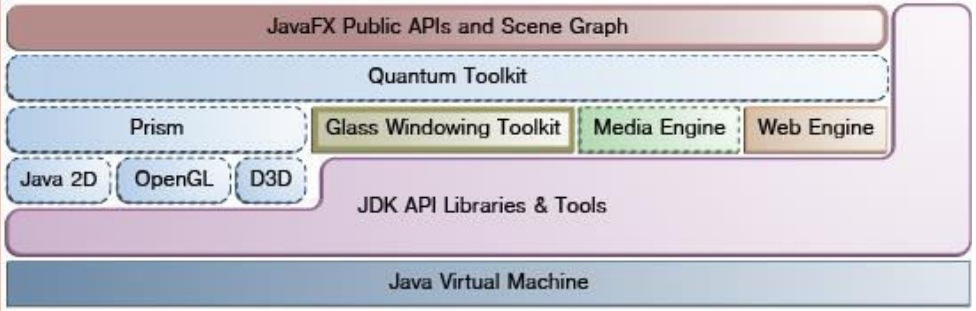
JavaFX Overview

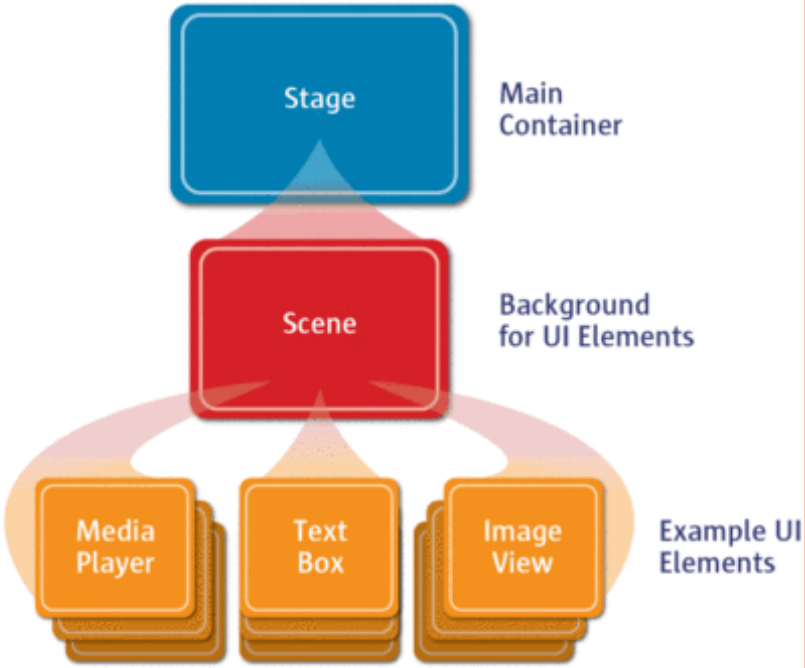
- **JavaFX** is intended to replace Swing as the standard GUI library for Java SE.
- **Swing interoperability-** Existing Swing applications can be updated with new JavaFX features.
- **FXML** is an XML-based declarative markup language for constructing a JavaFX application user interface.
- **Scene Builder** generates FXML markup that can be ported to an IDE where a developer can add the business logic.

JavaFX Overview

- Stage.
- Scene Graph.
- Node.
- Includes graphics primitives.
- JavaFX application thread.
- Media thread.



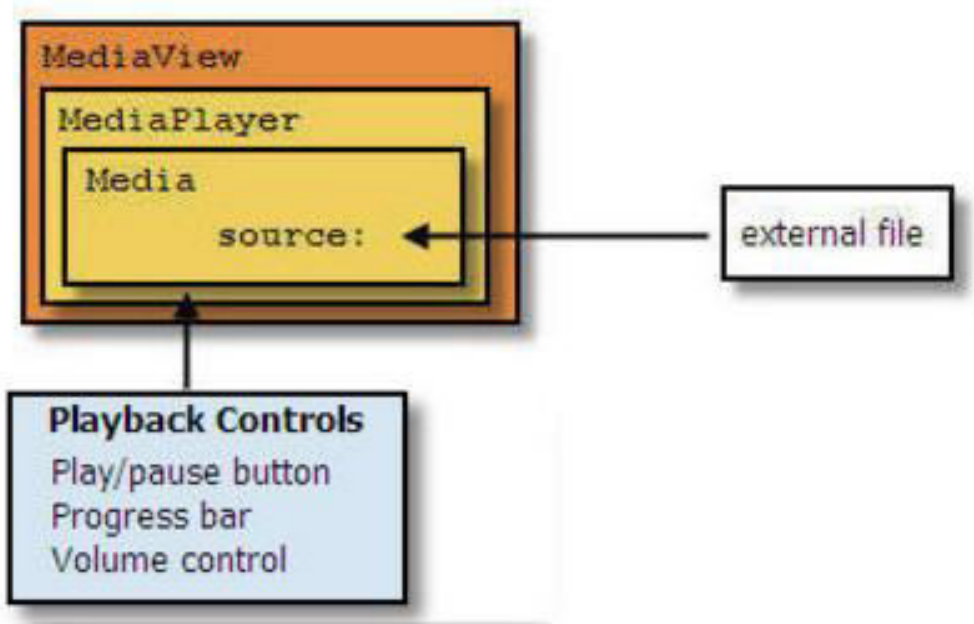




Media in JavaFX

- Media classes are part of javafx.scene.media package.
- Media, MediaPlayer and MediaView
  - MediaView is a Node, it has a MediaPlayer.
  - MediaPlayer has a Media object.

- MediaTimers allow functions to be invoked at key points in Media.



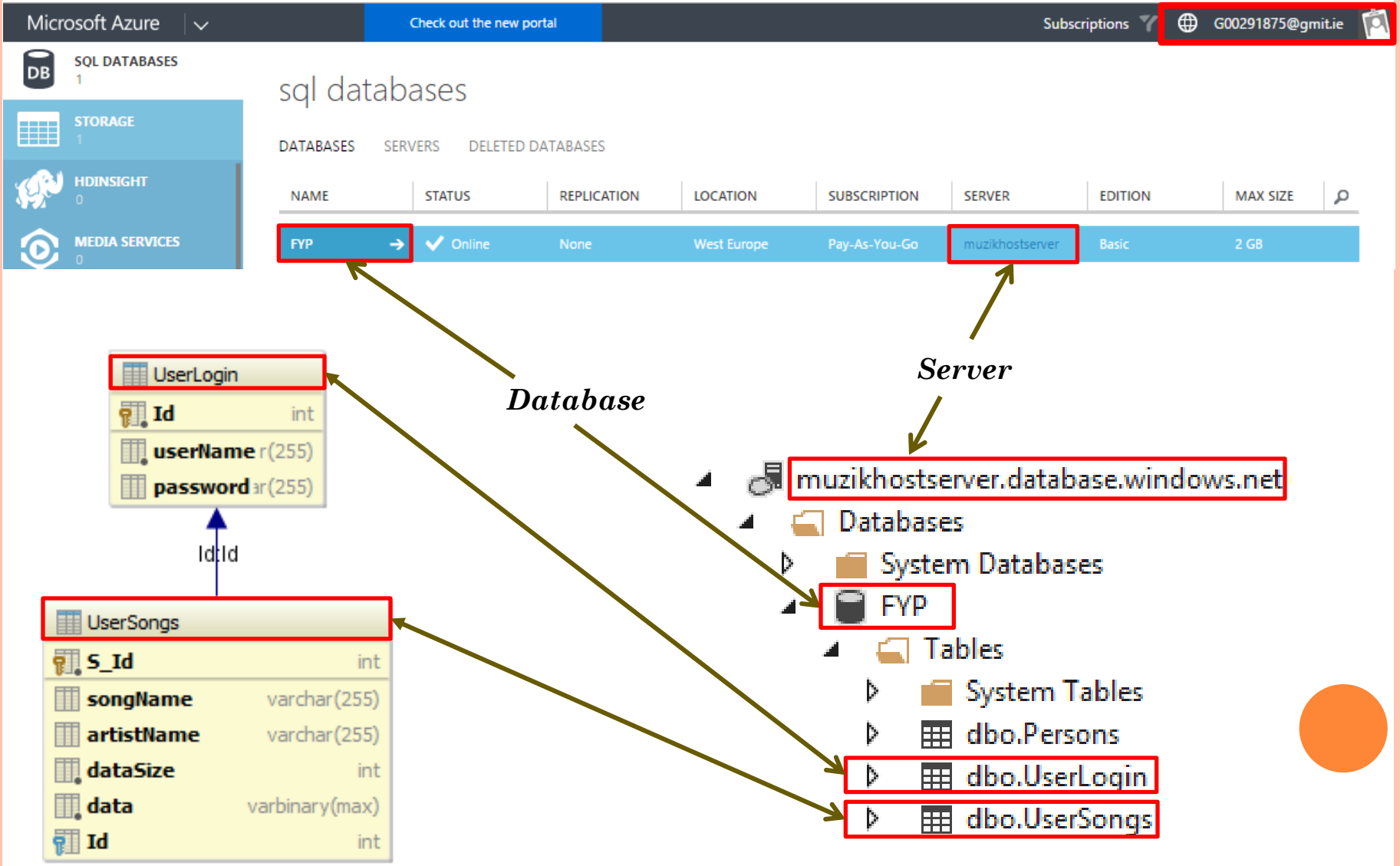
Microsoft Azure SQL Database

- Cloud based service (DBaaS)
- Special version of Microsoft SQL Server as its backend.
- XML based format for data transfer.
- T-SQL as the query language.
- Tabular Data Stream (TDS) as the protocol to access the service over the Internet.

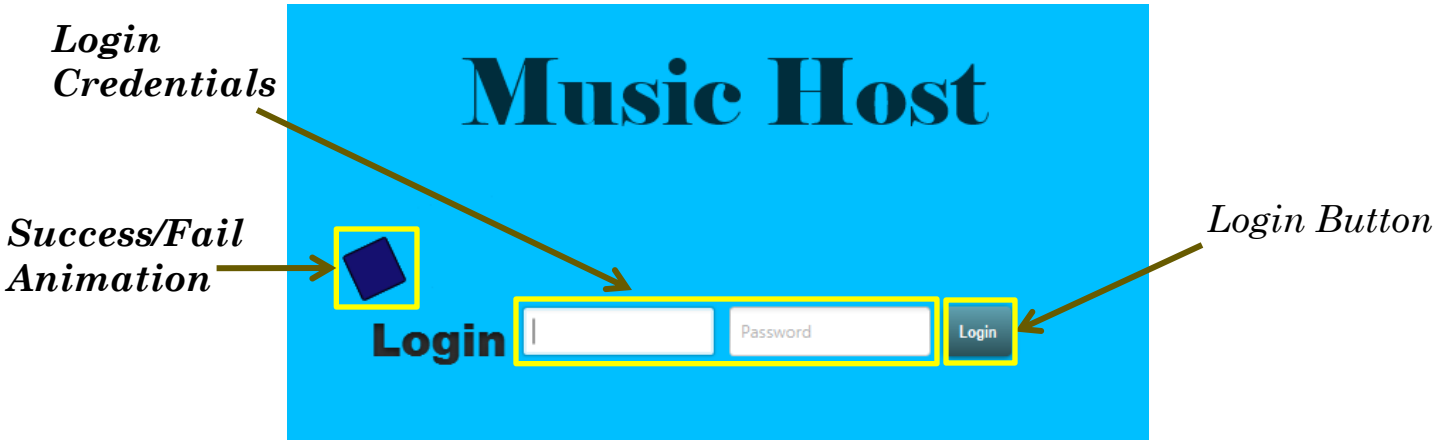
Microsoft Azure SQL Database

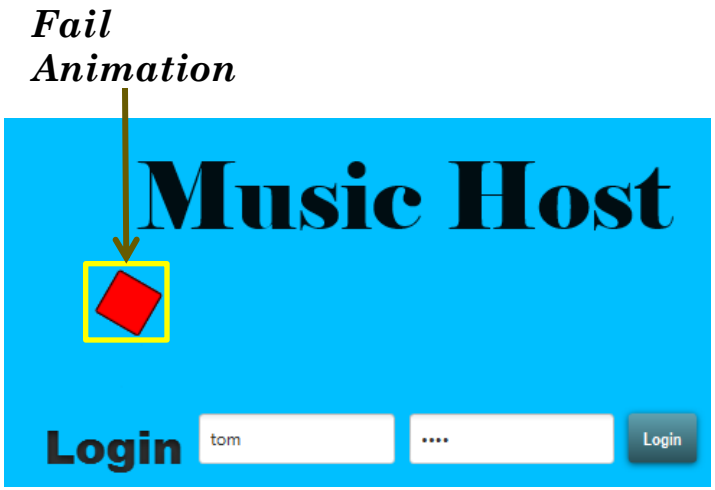
- **Minimum Driver Version:** Microsoft JDBC Driver 4.0
- **Driver** = com.microsoft.sqlserver.jdbc.SQLServerDriver
- **Server=** jdbc:sqlserver://muzikhostserver.database.windows.net:1433;"
- **Database** = FYP
- **User** = thomas11811@muzikhostserver
- **Password =** Zqlllx$8

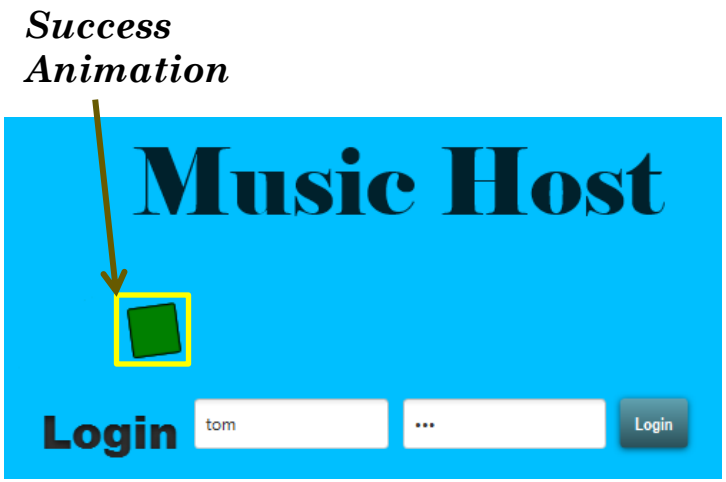
Microsoft Azure SQL Database



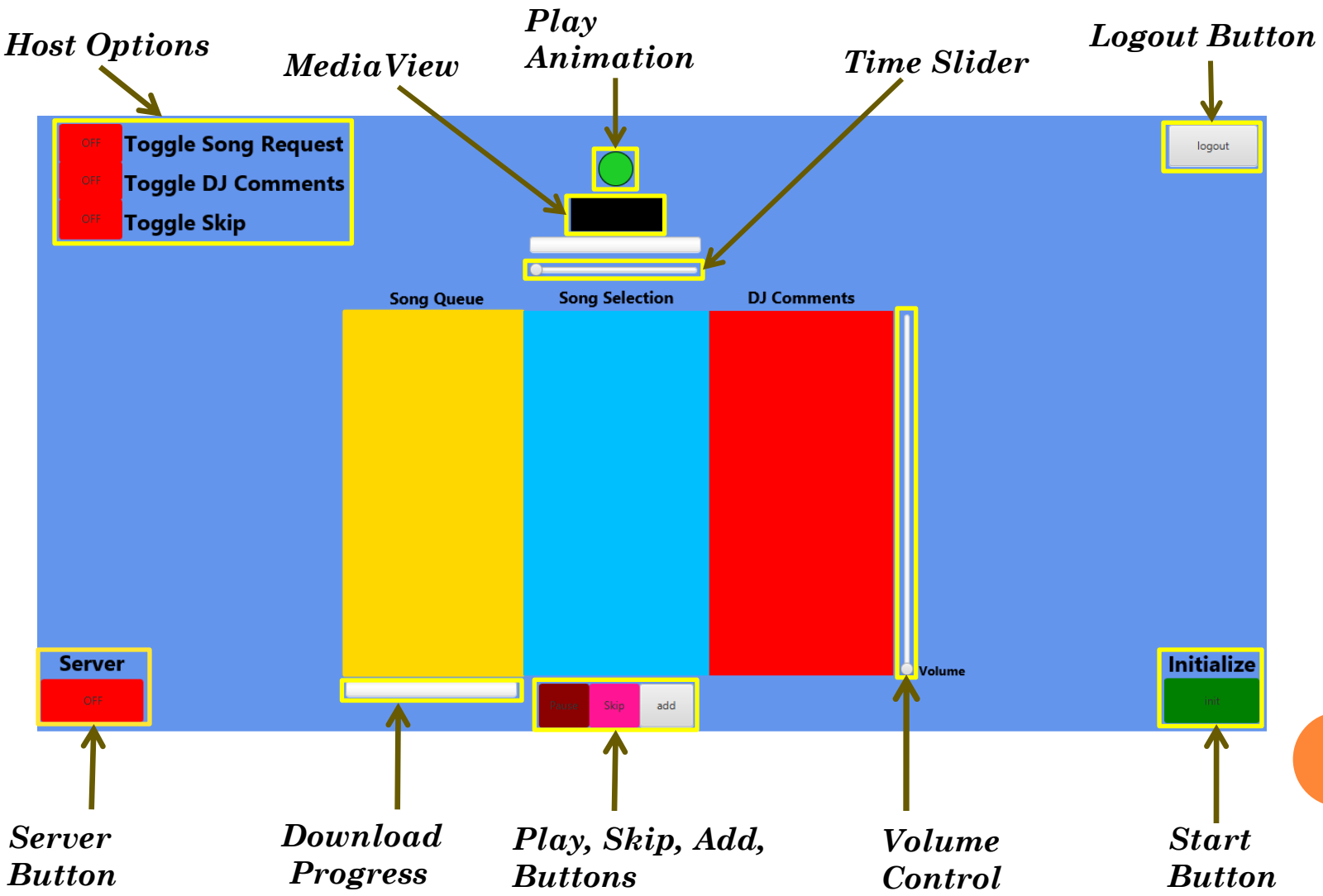
Music Host - Login Screen



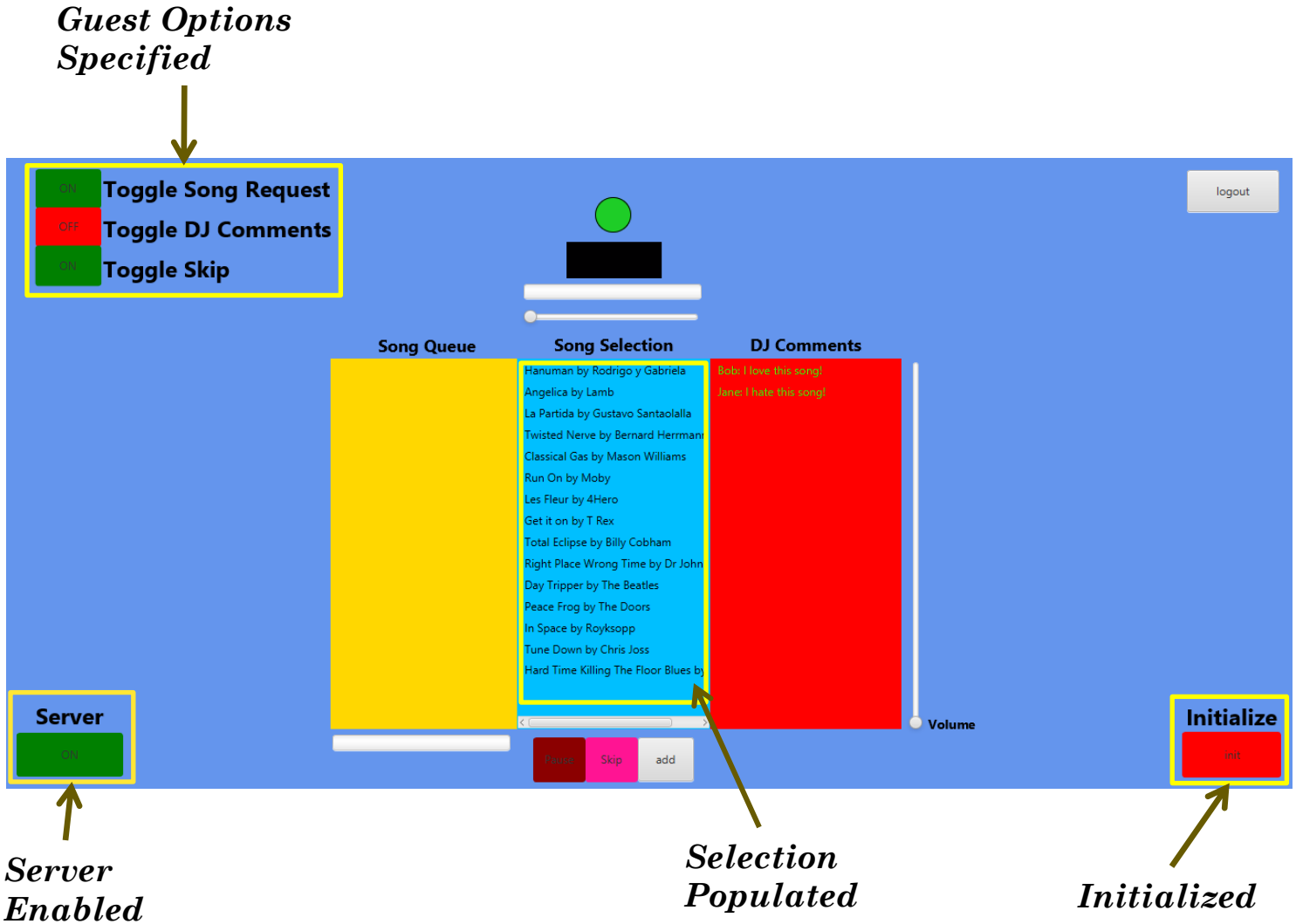




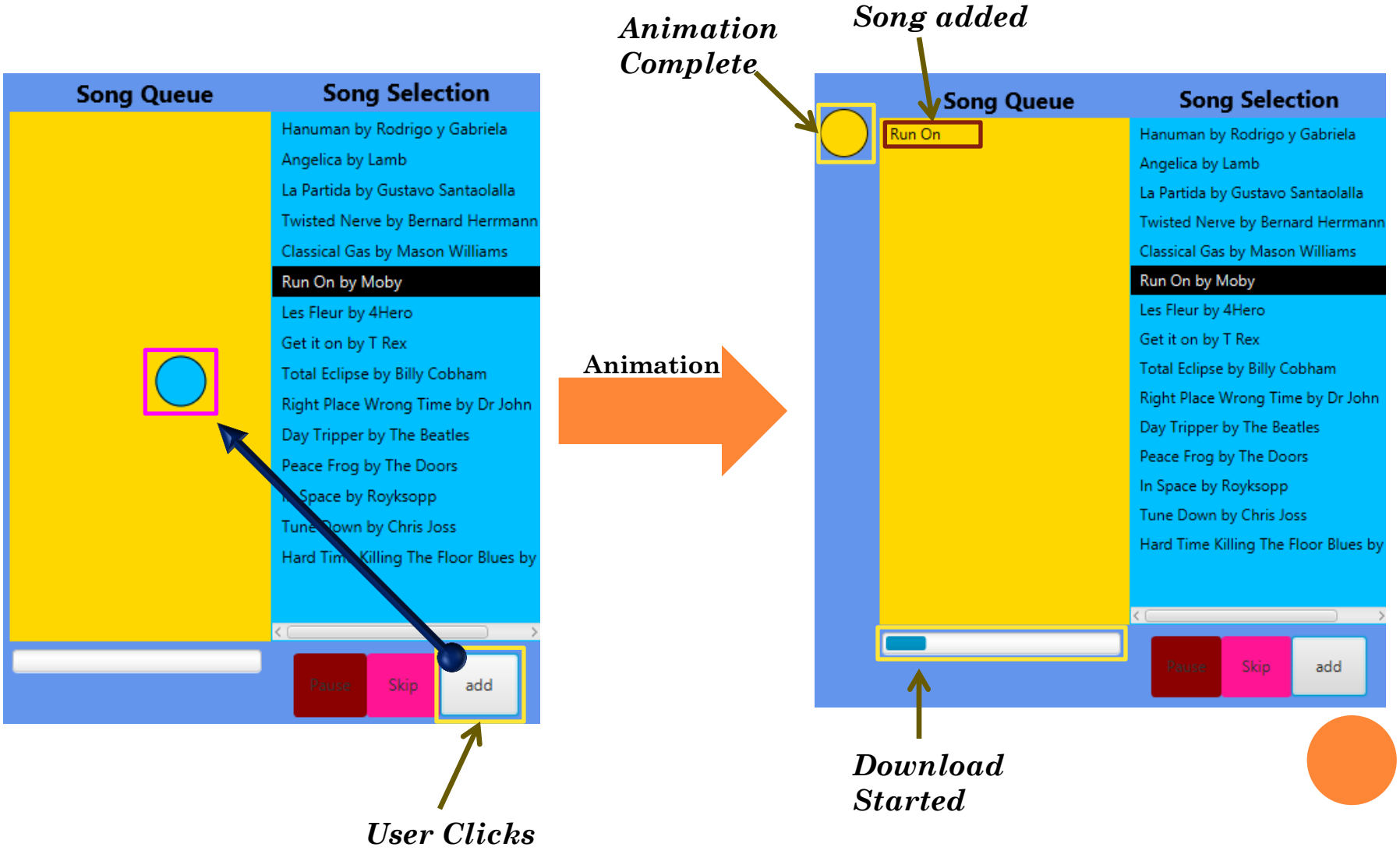
Music Host - Main Screen



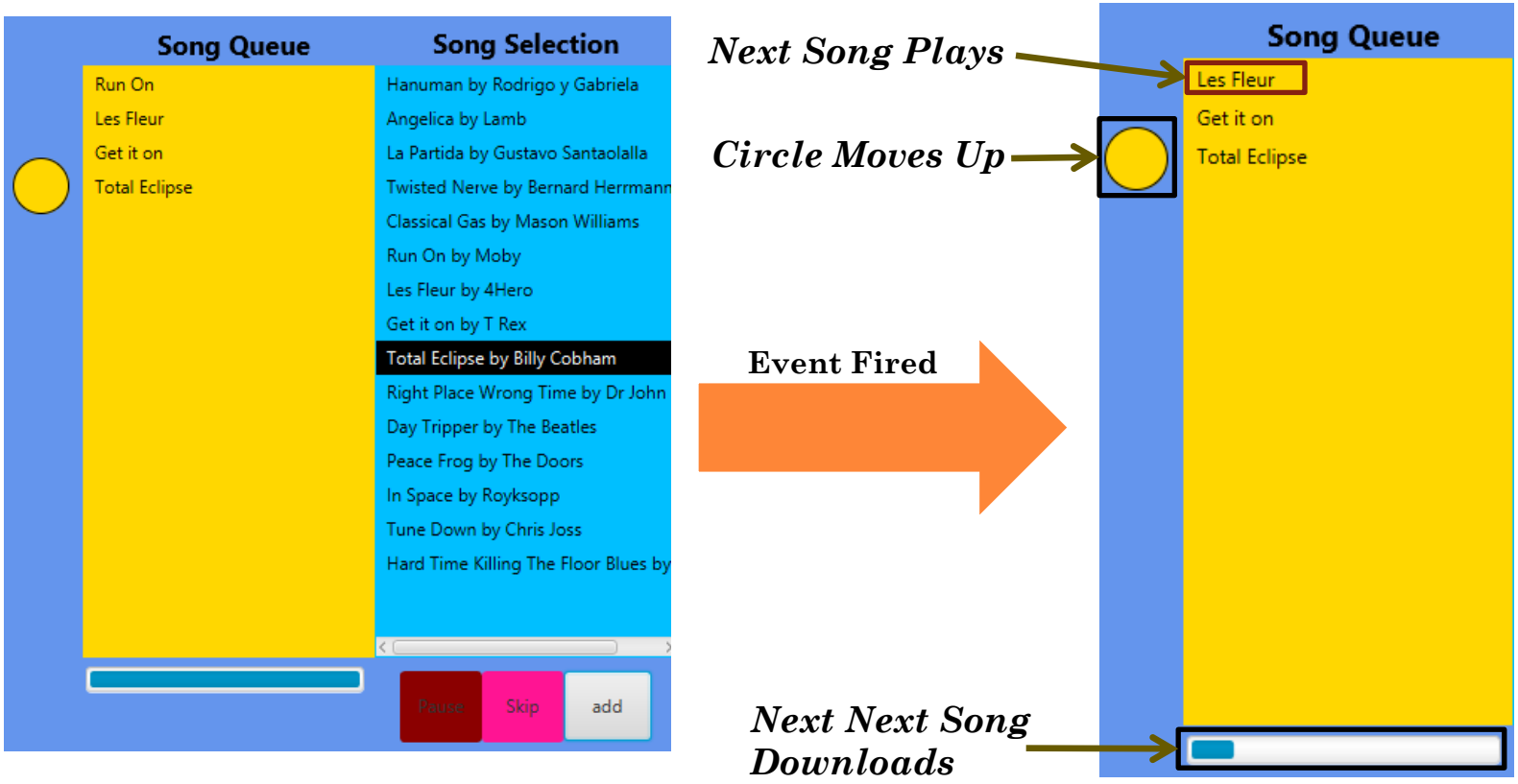
Music Host
Use Case – Setup



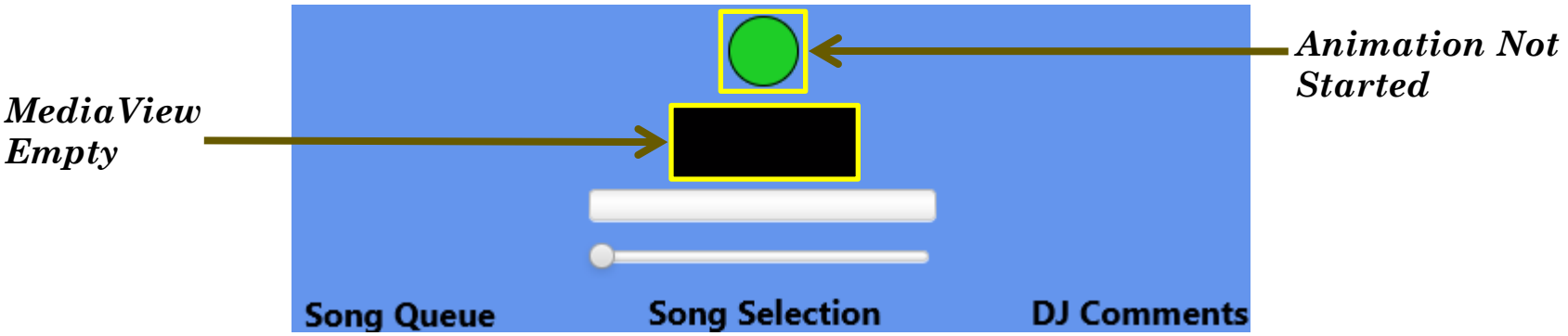
Music Host
Use Case - Song Added

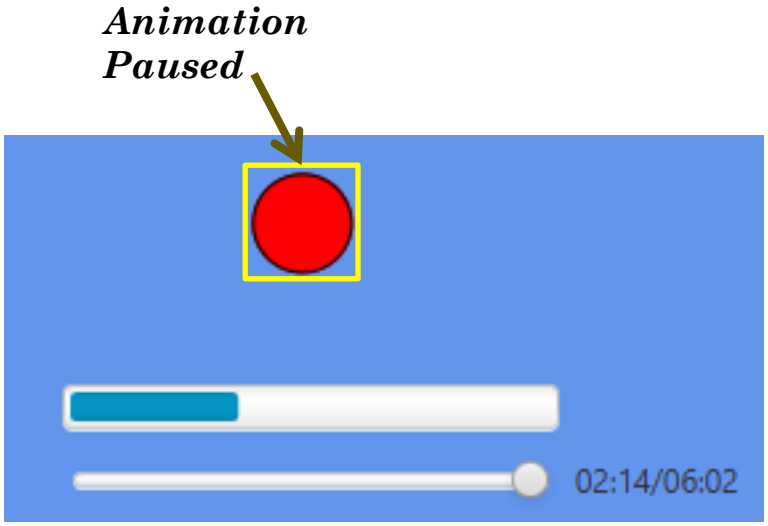


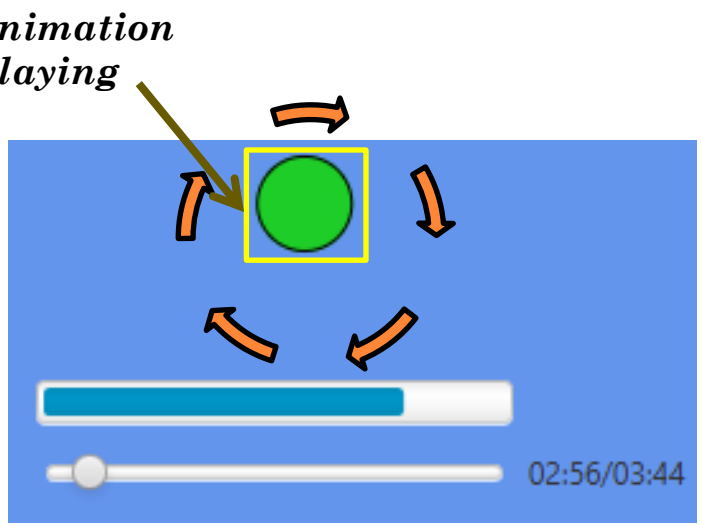
Music Host
Use Case -
Song Skipped / Song Ended



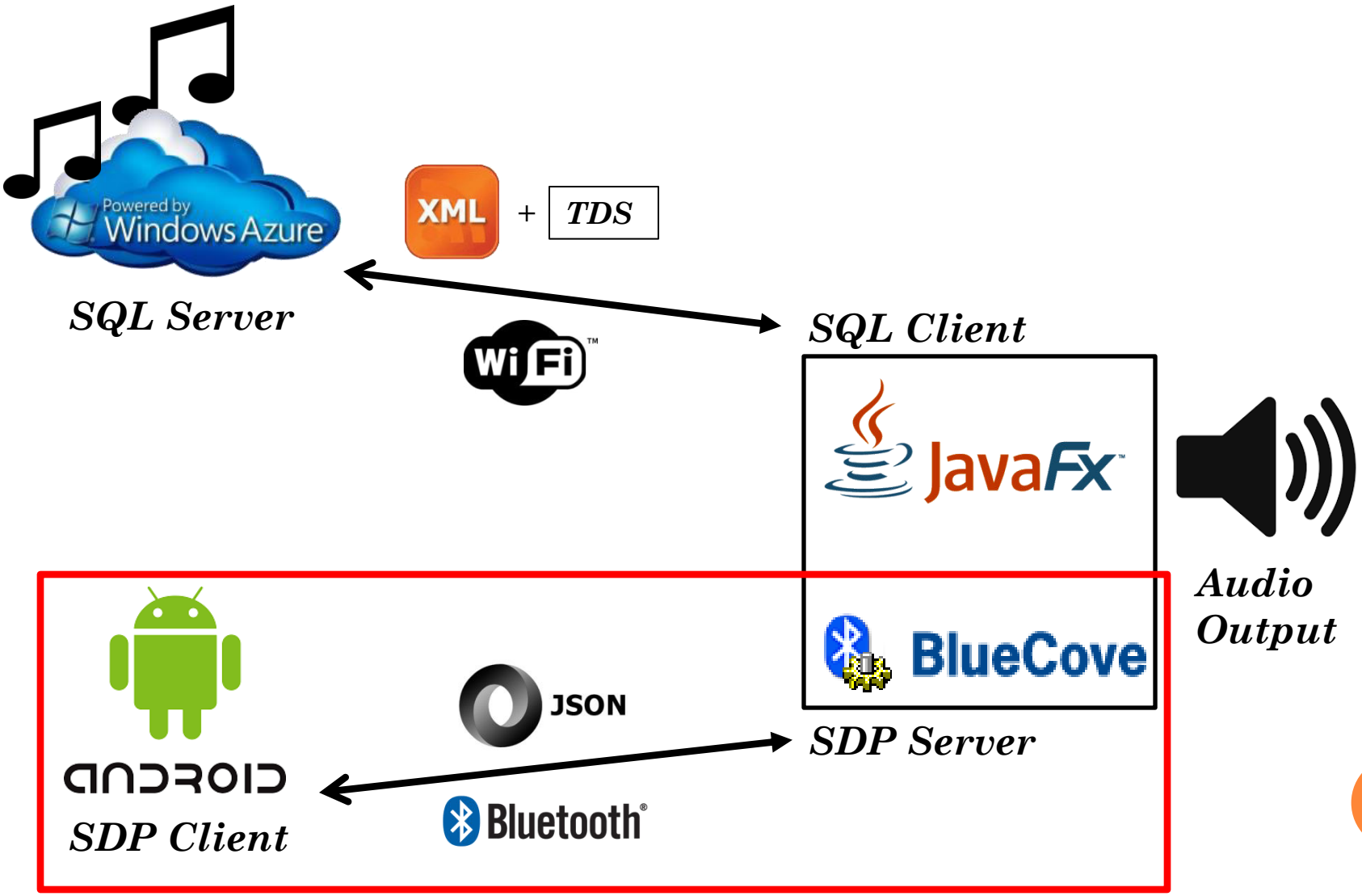
Music Host Use Case – Play / Pause







System Block Diagram

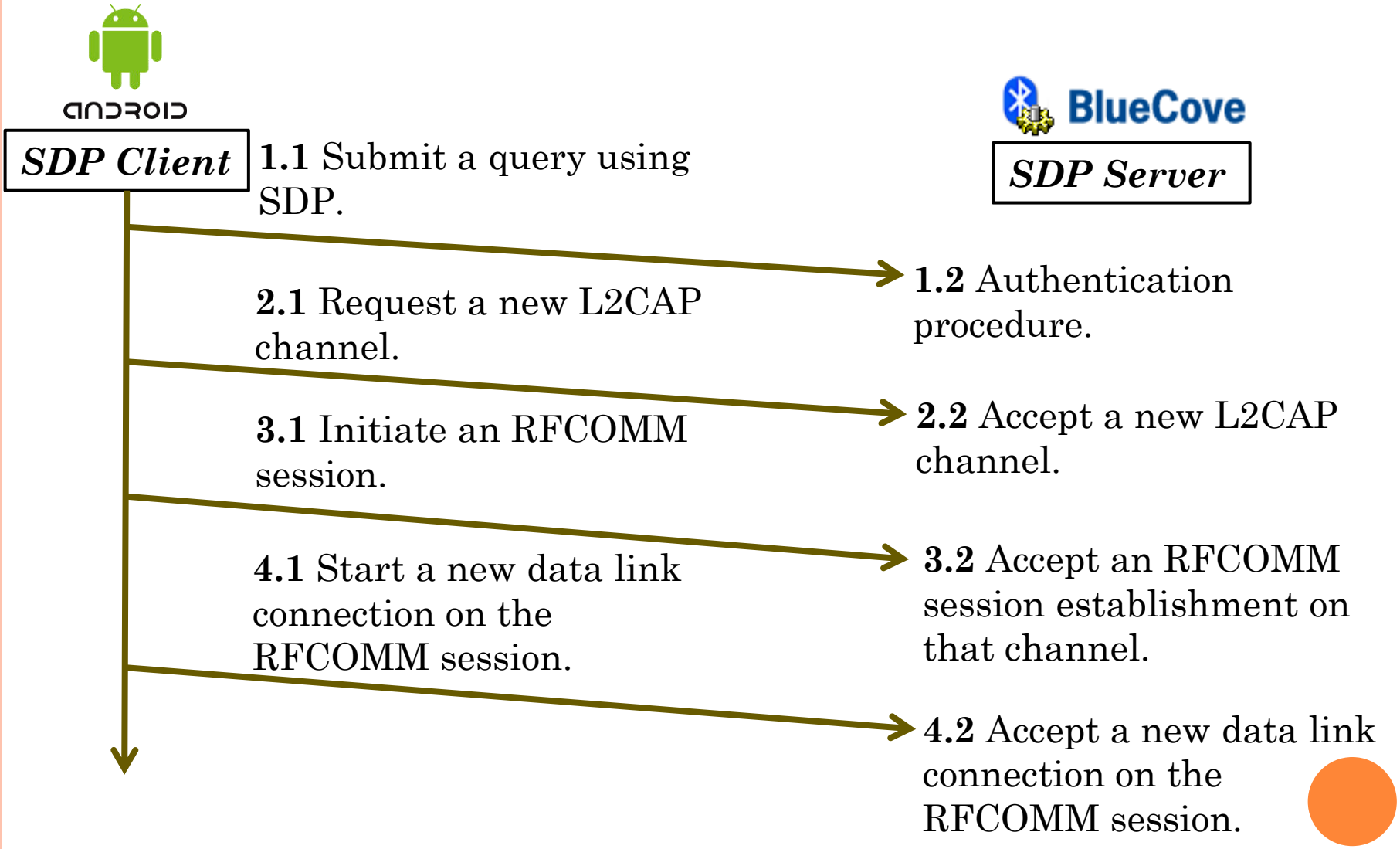


BlueCove

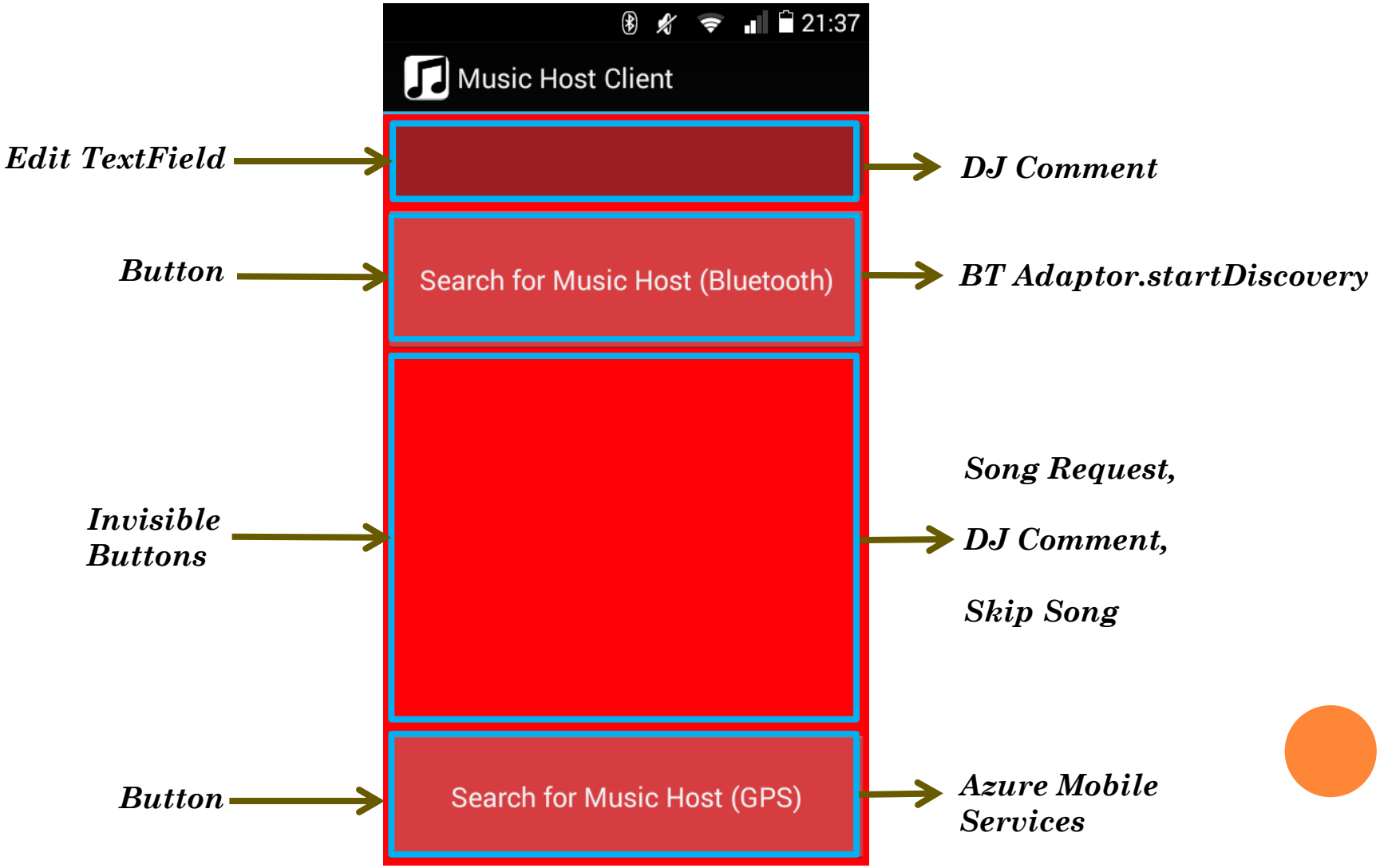
Bluetooth Server

- **Profile:** Serial Port Profile
- One connection at a time.
- Service discovery procedure has to be performed to set up an emulated serial cable connection.
- Devices are paired during the connection establishment phase.
- Link establishment is initiated by Android Client.
- There are no fixed master slave roles.
- RFCOMM is used to transport the user data, modem control signals and configuration commands.

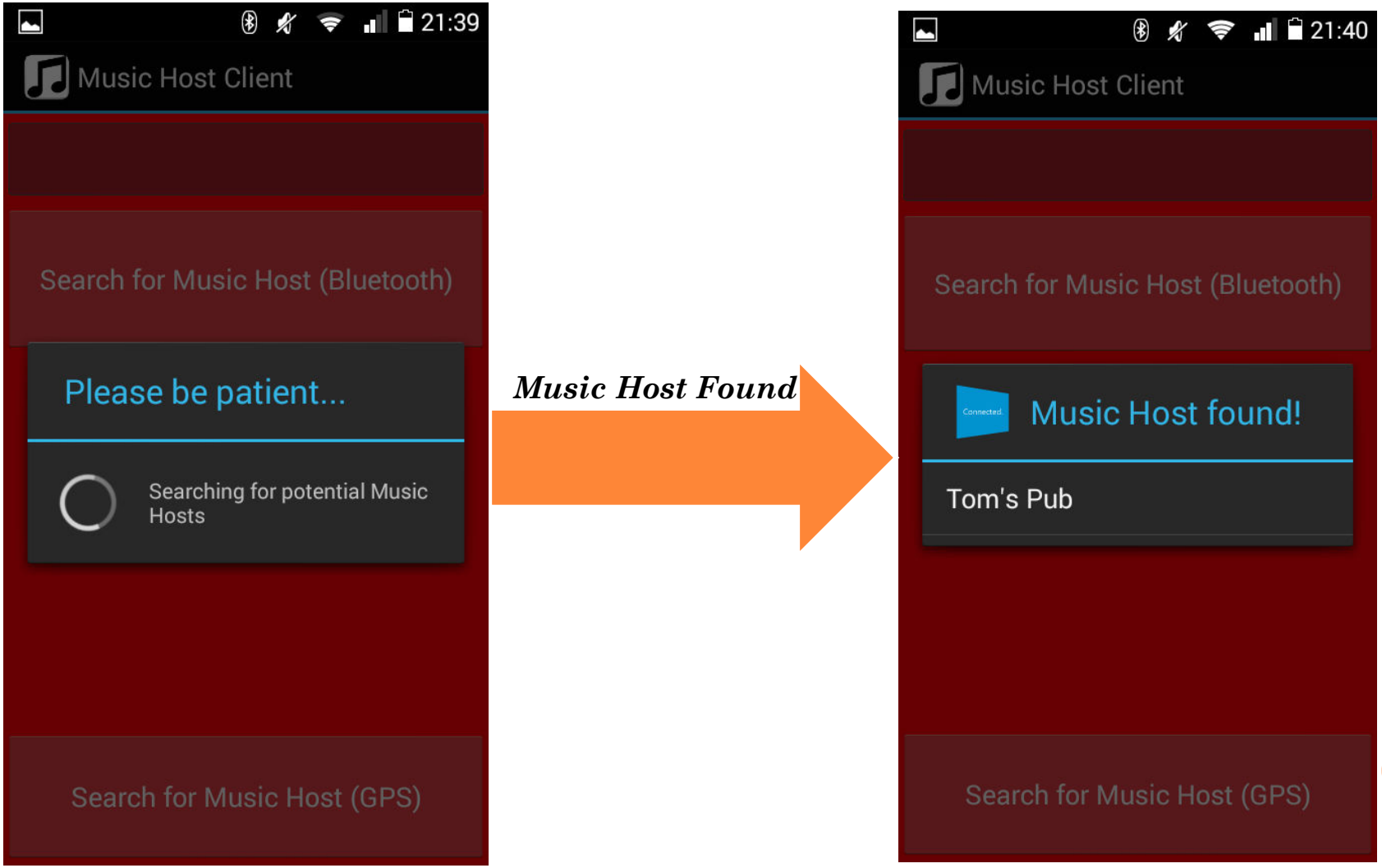
SERIAL PORT PROFILE CONNECTION



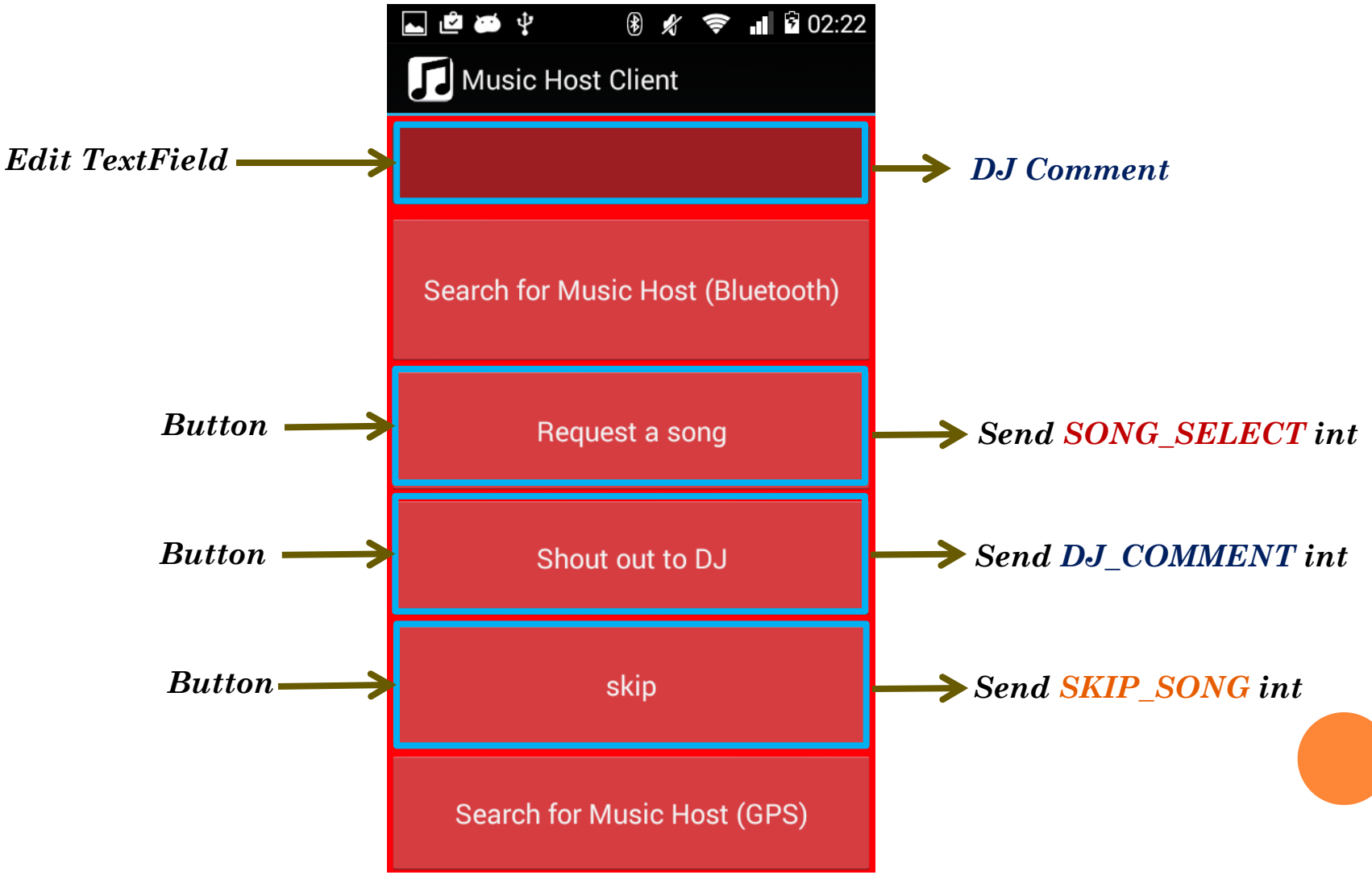
Music Host Client Use Case – Open App



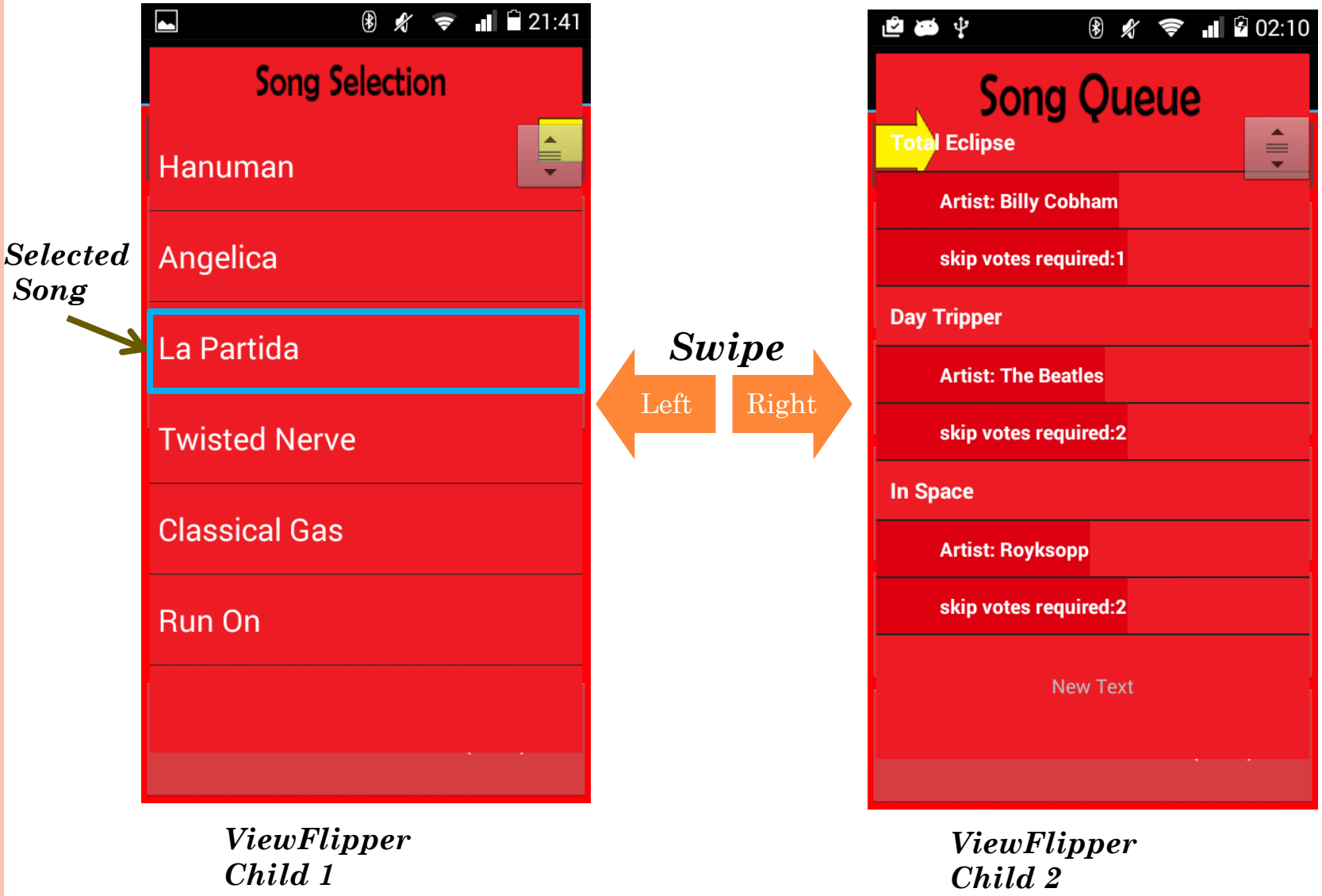
Music Host Client
Use Case –
Search For Music Host (BT)



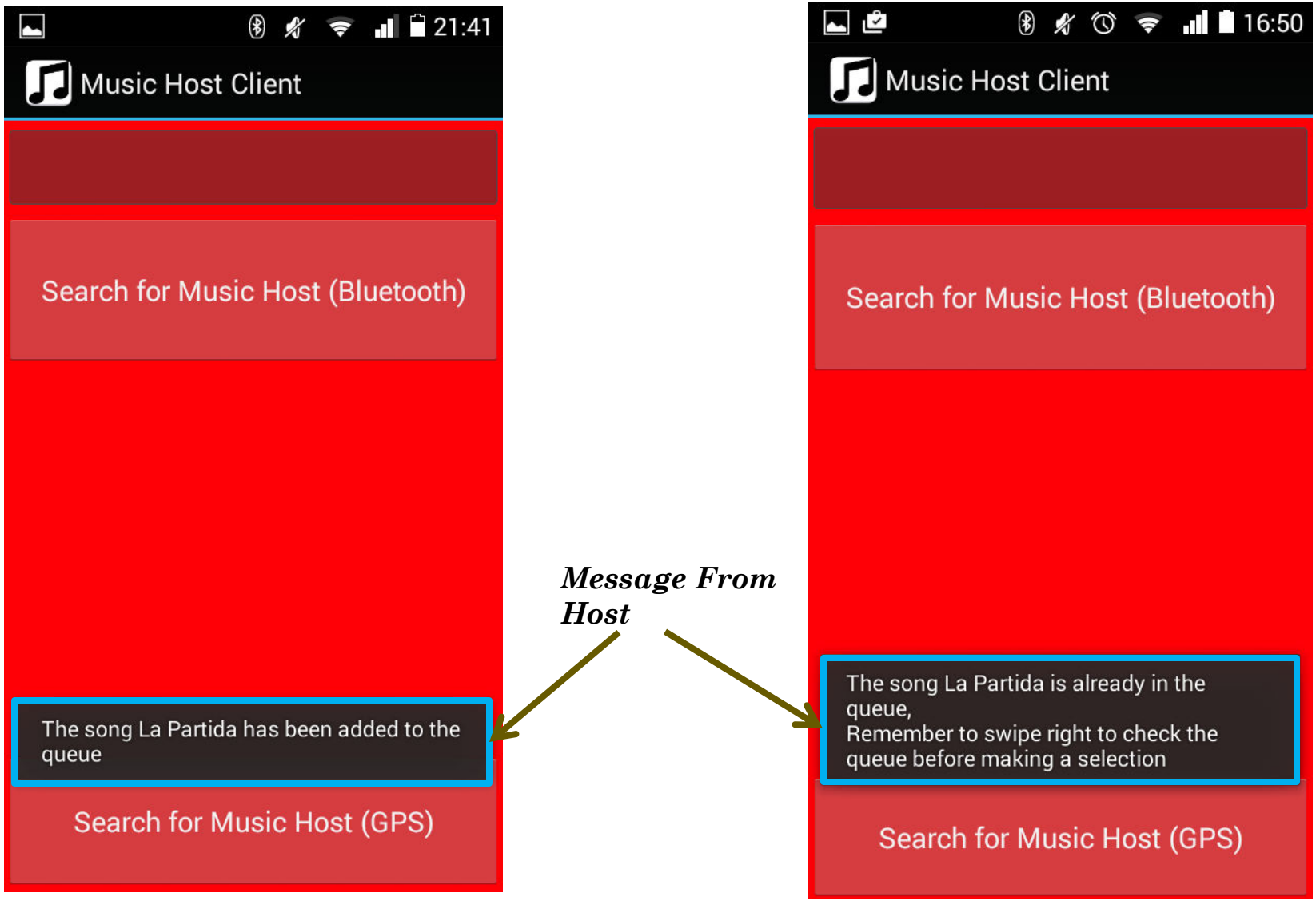
Music Host Client Use Case – Connected



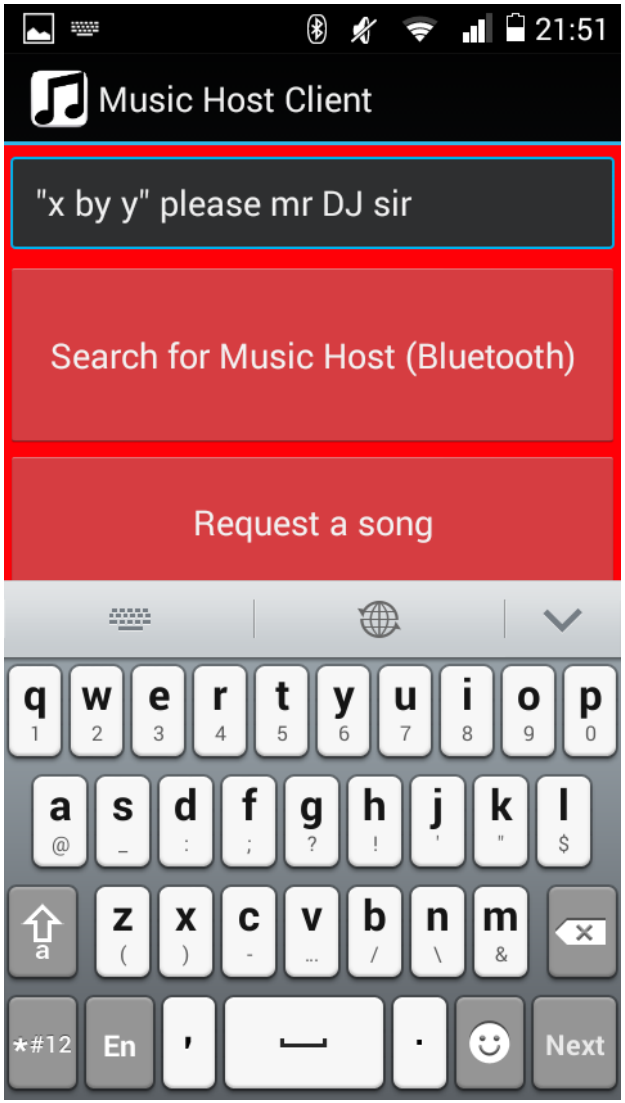
Music Host Client Use Case – Song Request



Music Host Client
Use Case –
Song Accepted / Not Accepted



Music Host Client Use Case – DJ Comment



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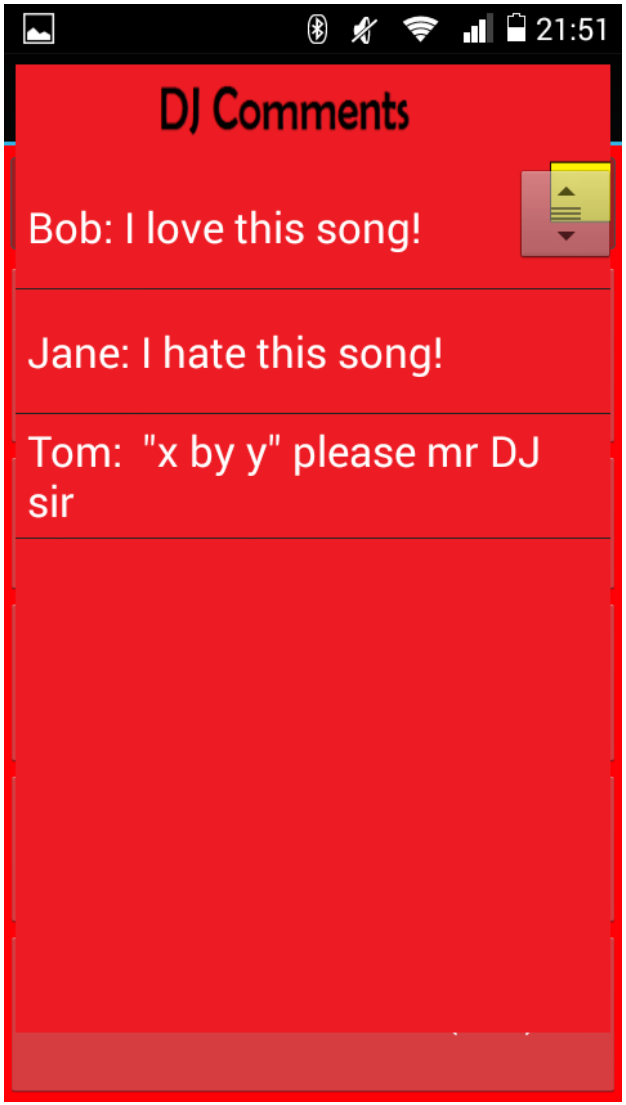
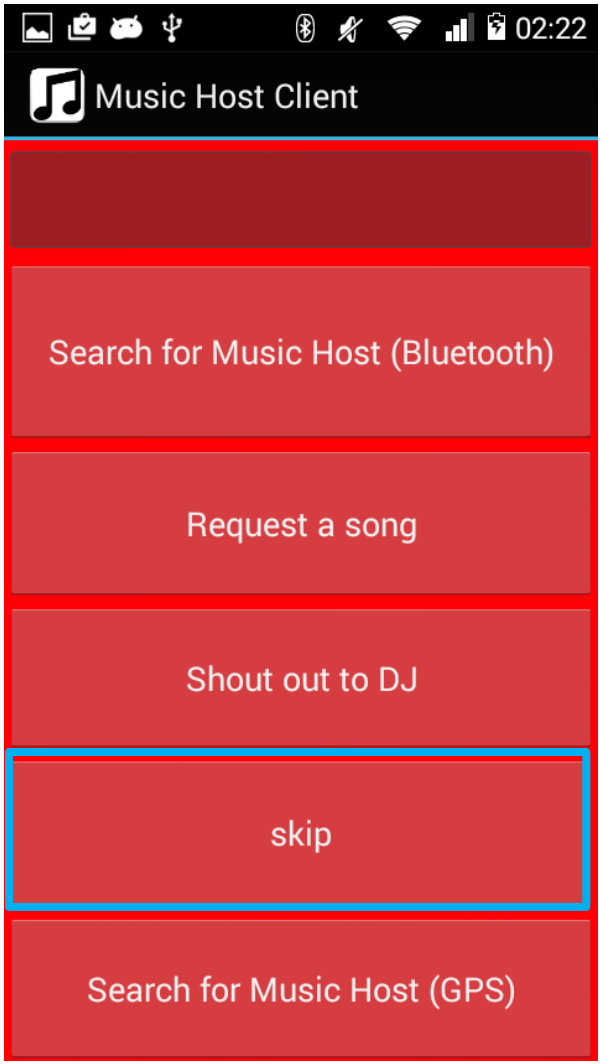
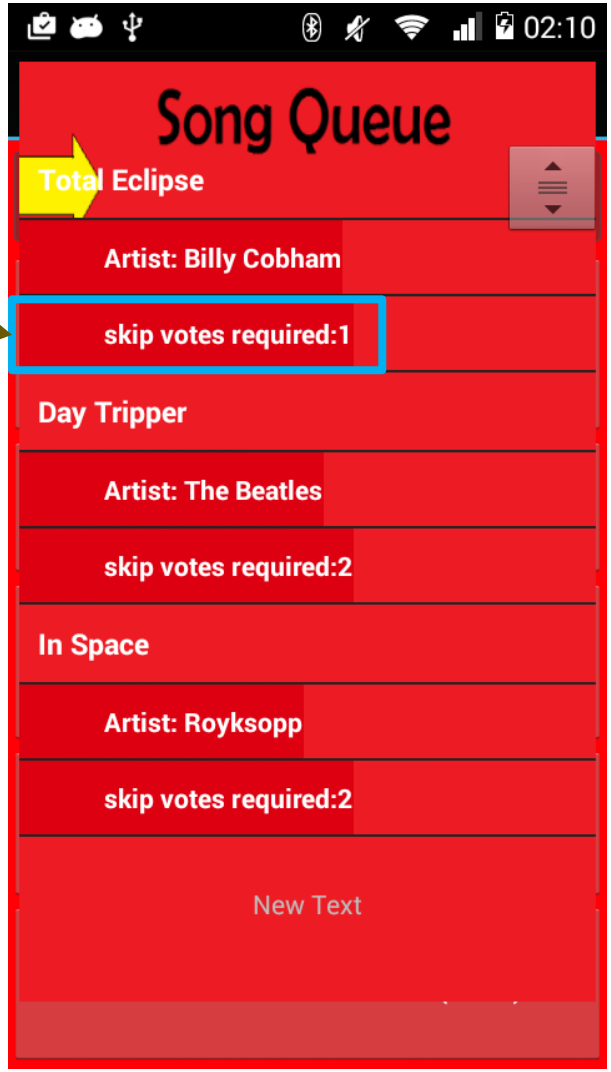


Music Host Client Use Case – SKIP SONG

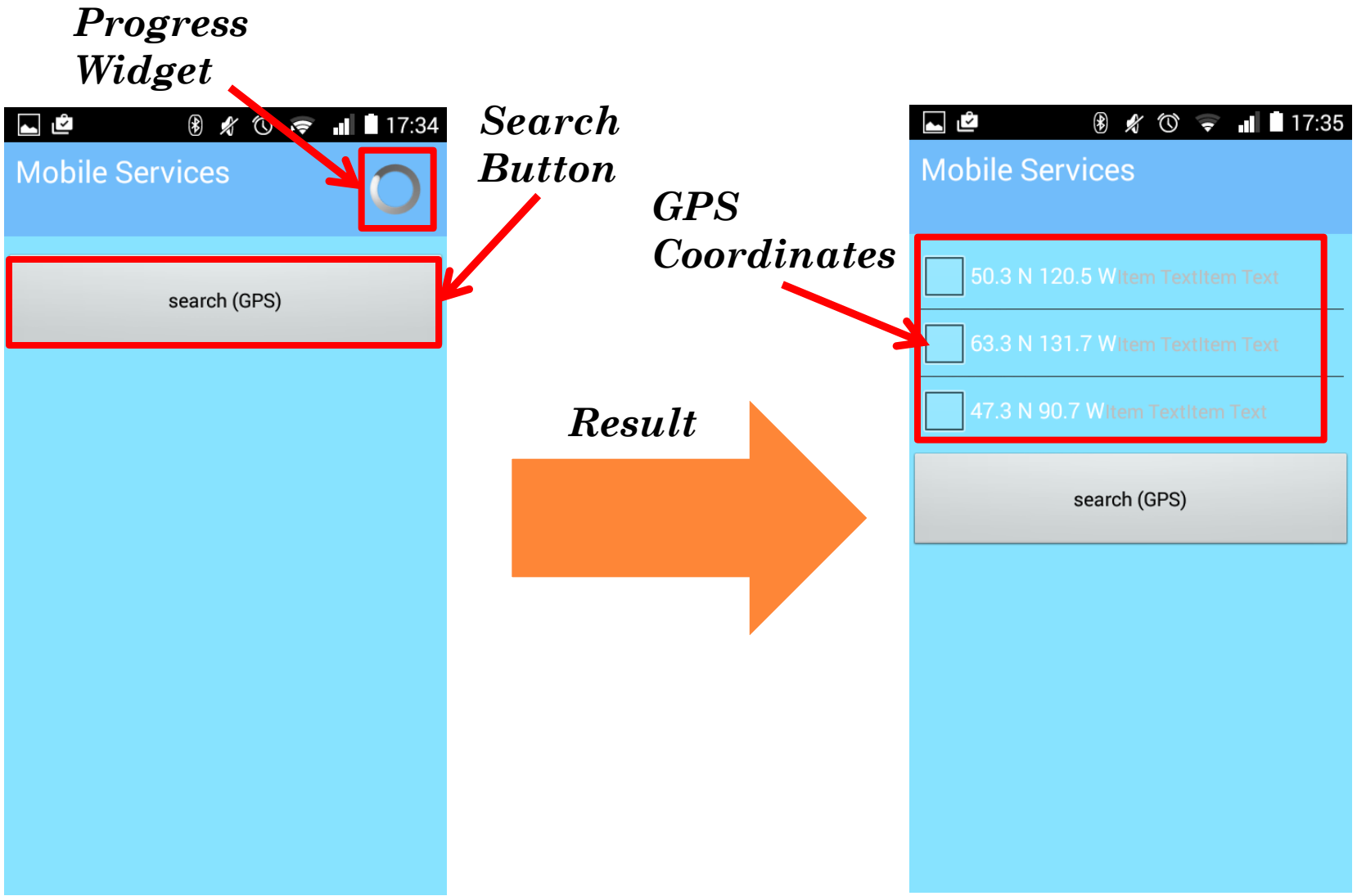


Skip votes required decremented

Button Clicked

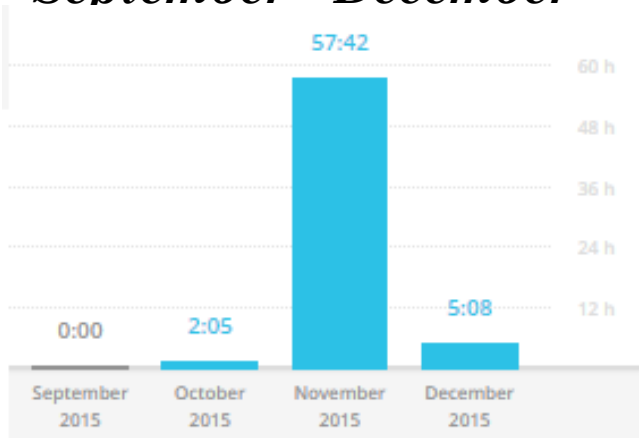


Music Host Client Use Case – *Search For Music Host (GPS)*



Time Log

September - December



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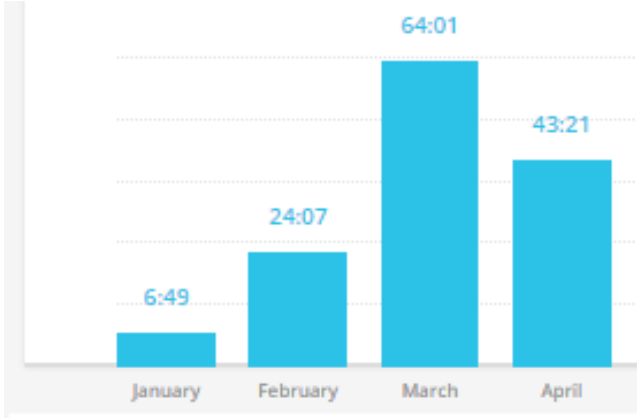
January - April



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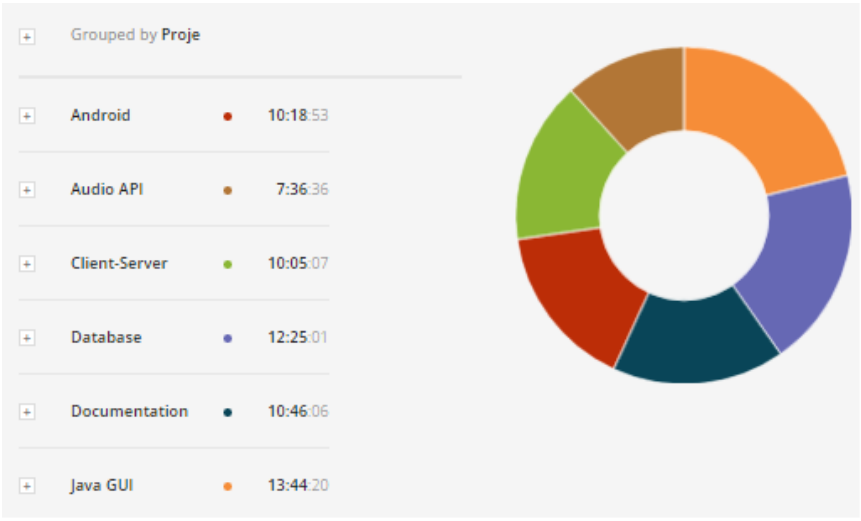

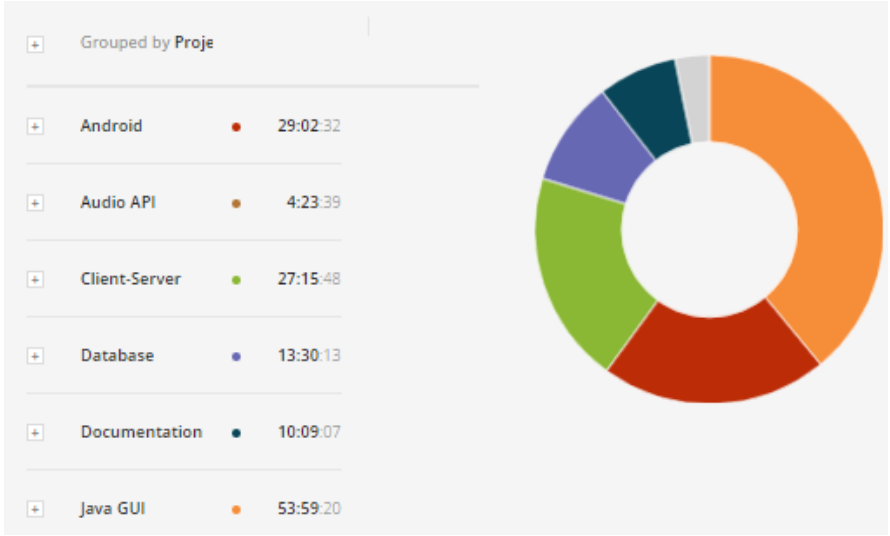

Conclusion

- Goals
  - Demonstration of abilities.
  - Develop programming skills.
- Reflection
  - More focus on Client/Server Protocol.
  - Develop for local song files.
  - Develop for Wi-Fi instead of Bluetooth.
- Conclusion
  - Project is a product of my abilities and personality.

References

- github.com/acaicedo/JFX-MultiScreen
- github.com/marcuspimenta/Chat-Bluetooth
- bluecove.org
- https://manage.windowsazure.com/gmit.ie#Workspaces/MobileServicesExtension/apps/MusicHostService/dashboard
- https://manage.windowsazure.com/gmit.ie#Workspaces/SqlAzureExtension/SqlServer/muzikhostserver/Database/5.muzikhostserver/Dashboard