

# Public Transit Assistant

## Providing Ease of Use to All Passengers

A smartphone application that will provide public transit information to passengers who are visually or cognitively impaired.

Tyler Esser



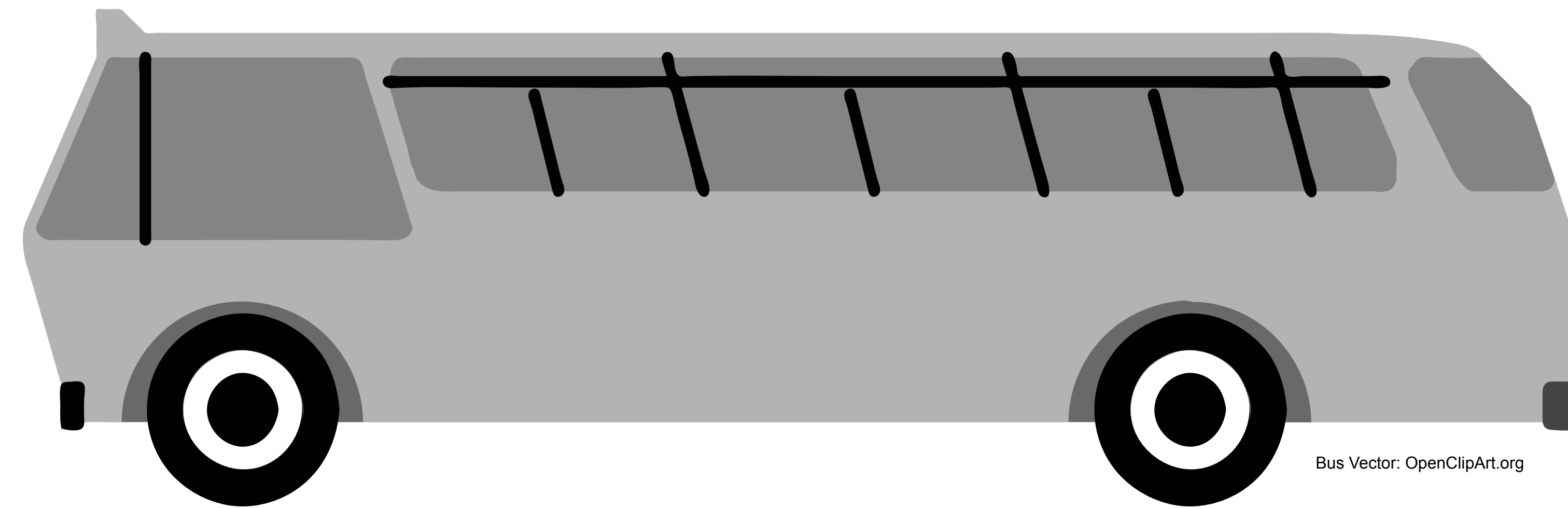
## Application

### • Android Platform

Android is currently the targeted platform for the user-facing application. Android provides a robust and high-quality SDK that allows programs to be widely used on many devices. Android also provides stream-lined methods of distributing and updating software.

### • Non-visual Information

Smartphones have useful ways of communicating beyond their high pixel count. Headphones, speakers, and tactile feedback all give application writers alternative means of conveying information.



Bus Vector: OpenClipArt.org

## Wireless Buses And Bus Stops

### • Receive route updates

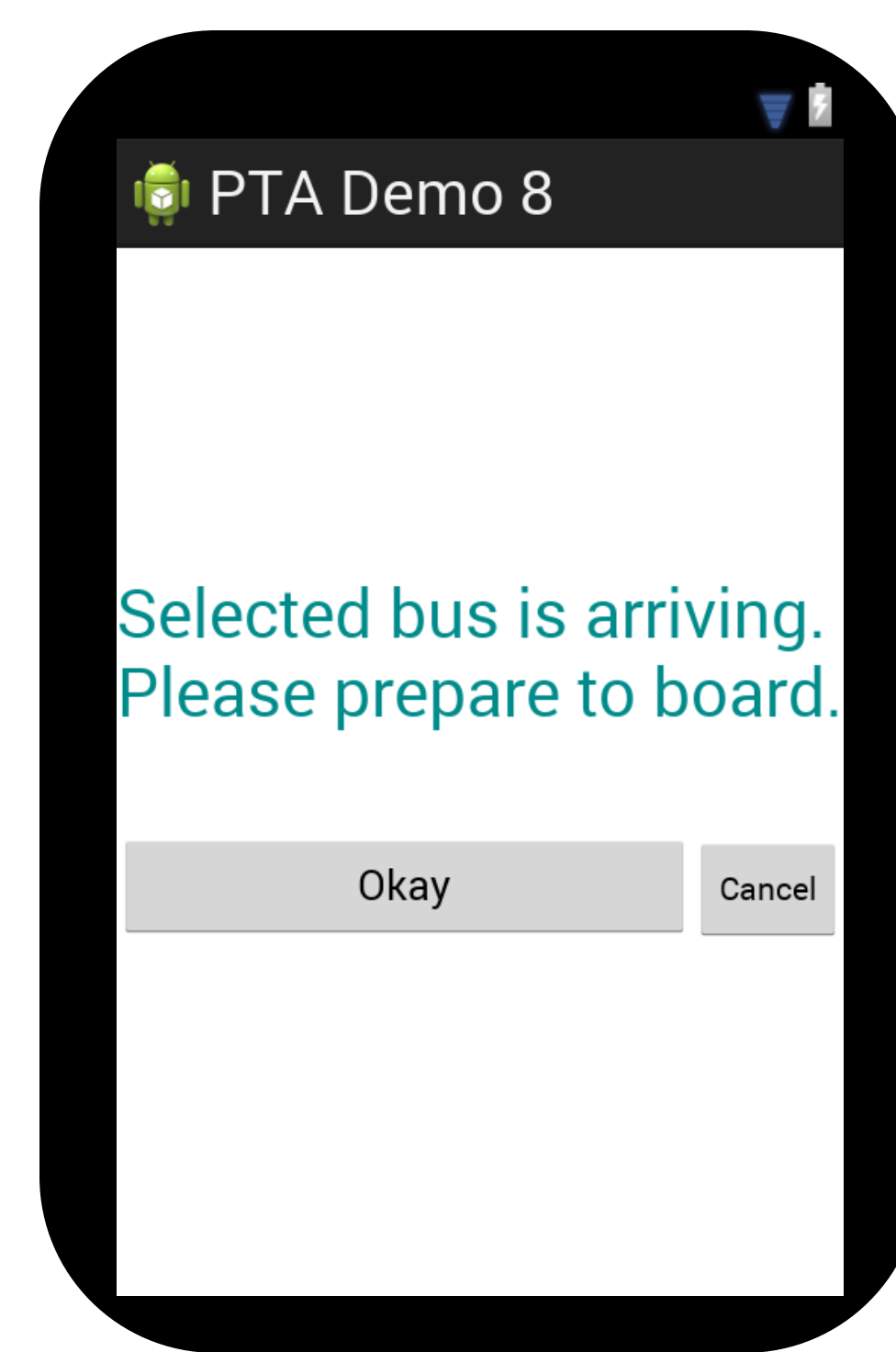
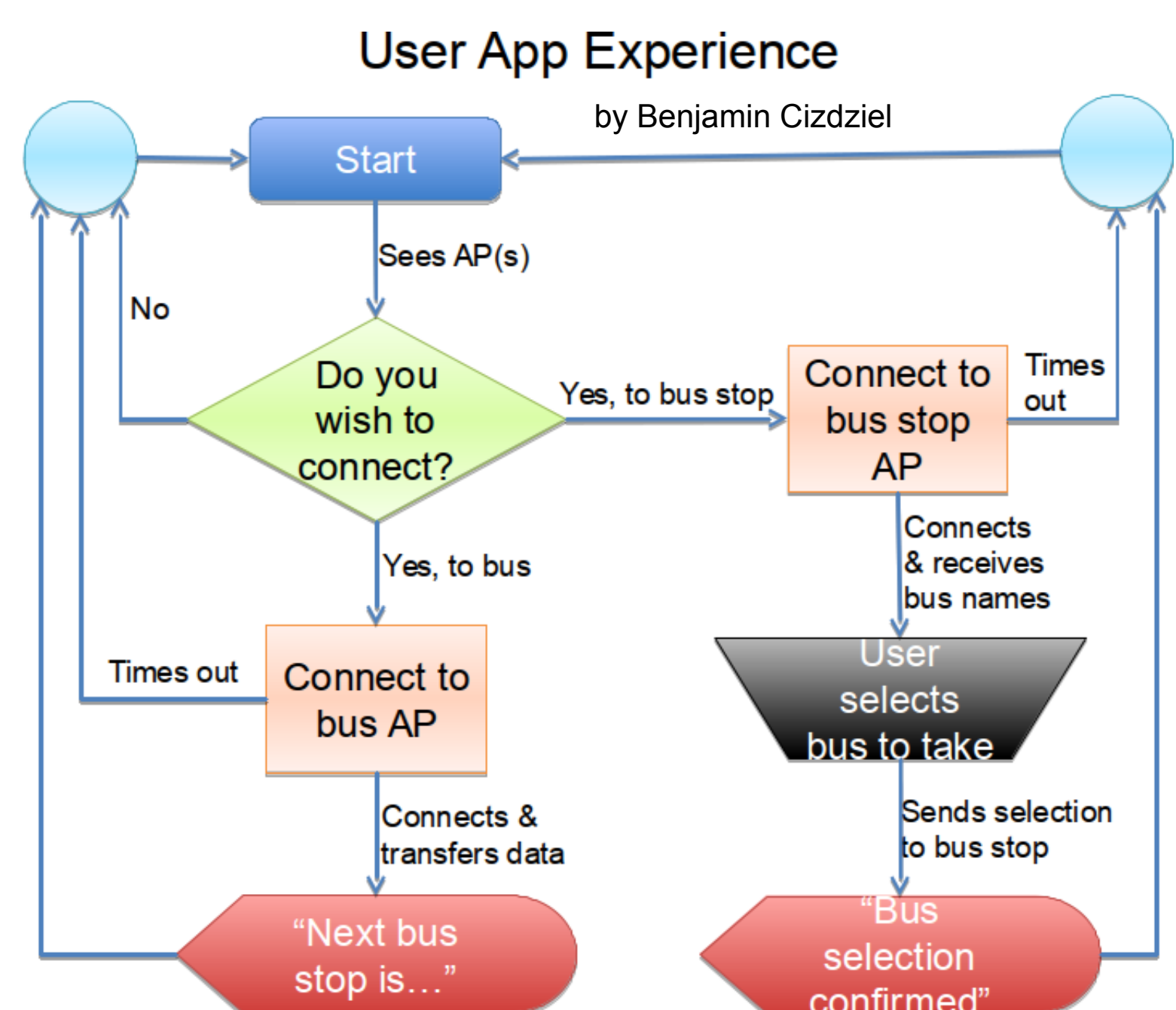
Bus stops will announce incoming buses and buses will announce upcoming stops so that the user will always be prepared.

### • Help locate yourself without GPS

Identifying which bus stops can be detected will give the application enough information to provide a rough location of the user that the user may then use for other applications.

### • Request assistance privately

While connected to the bus or bus stop, the user may elect to send an assistance request through the application that can notify the appropriate driver, allowing them to be more prepared when arriving.



"Selected bus is arriving. Please prepare to board."

## Implementation

### Application

**Interface** - The Android front-end is called an Activity and is created when the user selects the application. The Activity displays settings, menus, and information, and reacts to the users input. It binds to the service and is then able to use the services functions.

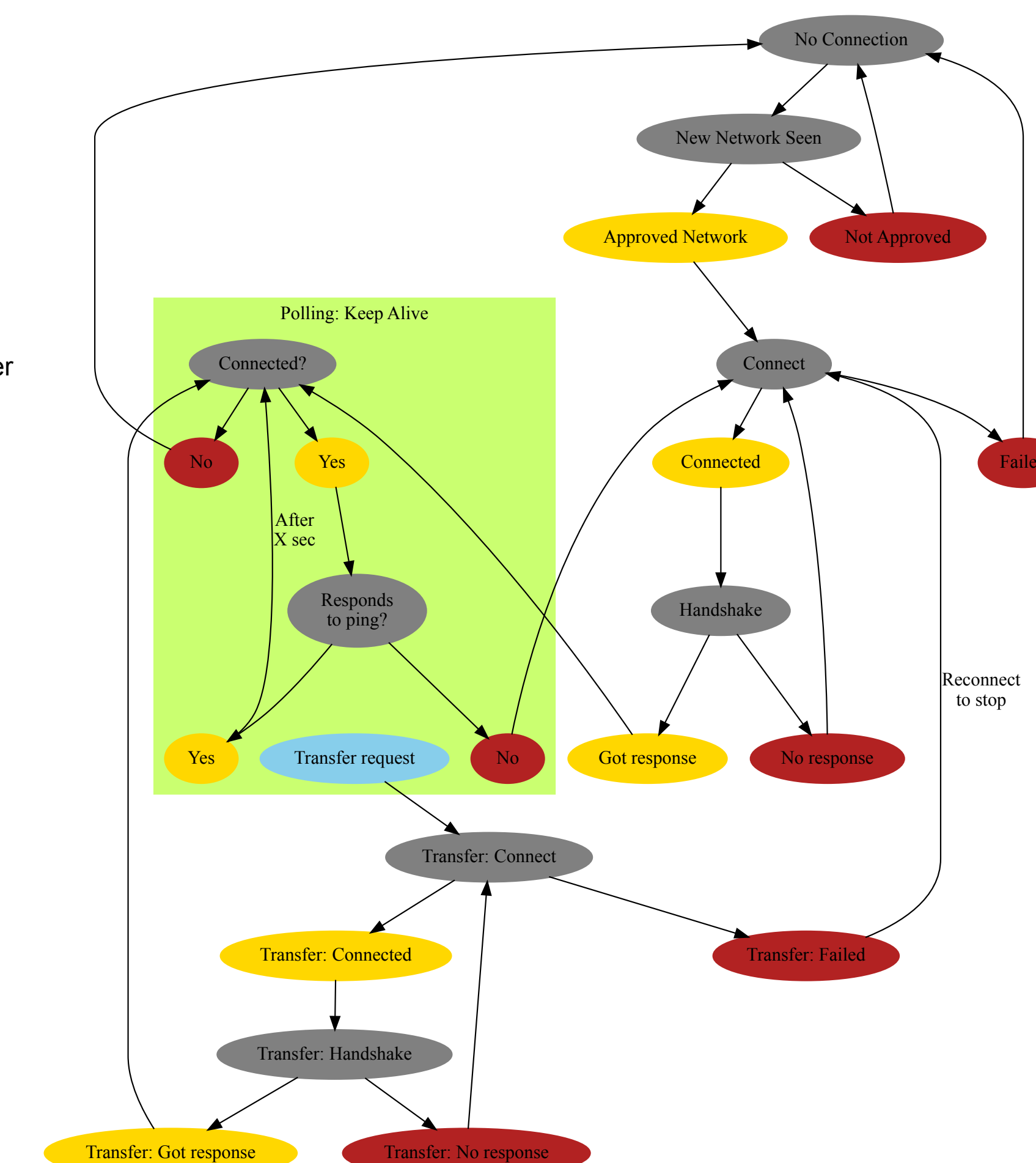
### Wireless Access Points

The server program running at the bus stops and on the buses is written in C and manages connections through UNIX sockets, allowing for simple handling of multiple connections. The server will also be able to sign messages, allowing the smartphone to authenticate the connection.

**Service** - Behind the scenes, a service is controlling the wireless connections and making sure there are no errors. The service communicates with the interface through Interprocess Message Passing.

At Right: Client Connection State Flowchart by Tyler Esser  
Software: Graphviz

A user that is connected to an access point will be able to transfer their connection when the appropriate bus or bus stop is detected.



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