# Tucson Transit Tracker (T3) - Design Document

## Pseudocode

START

1. User inputs:

- Current location (auto-detected or manually entered)

- Selected stop

2. Fetch data from:

- GPS database: Bus real-time location

- Route database: Stop, schedule, construction/accident data

3. Calculate ETA:

- Consider the distance between the bus and the stop

- Include current traffic conditions

4. Notifications:

- Check for construction or accidents

- Send push notifications to the user

5. Output:

- Display ETA and real-time bus location on the user's screen

6. END

## Data Flow Diagram (DFD)

User Input:

* Users provide location data (auto-detected or manual) and select a stop.

Processing:

* The system fetches data from GPS and route databases.
* Calculates ETA based on distance, speed, and traffic conditions.
* Processes notifications for delays or route changes.

Output:

* Displays real-time bus locations, ETAs, and alert notifications.

Diagram:

For the visual representation of the Data Flow Diagram, please refer to the PowerPoint file: Tucson Transit Tracker DFD

## Reference Materials

**Analysis of KakaoBus Real-Time Bus Tracking System**

URL: <https://www.kakaobus.com>

Description: KakaoBus provides accurate real-time bus tracking and ETA (Estimated Time of Arrival). Its user-friendly interface ensures a seamless experience. Alerts for construction or accidents are updated promptly, improving convenience for users.

**Transit App's Global Public Transportation Features**

URL: <https://www.transitapp.com>

Description: Transit integrates global public transportation data, offering real-time updates for buses, trains, and bike-sharing services. However, detailed updates for smaller regions like Tucson are often delayed.

**Sun Tran Official Website**

URL: <https://www.suntran.com>

Description: Sun Tran serves as Tucson's official public transportation information platform, providing schedules and announcements. However, it lacks real-time tracking and timely updates, leading to user dissatisfaction.

**Google Maps Public Transportation Features**

URL: <https://maps.google.com>

Description: Google Maps integrates public transportation data and provides real-time information. However, it struggles with incorporating real-time updates for construction or accidents in specific local areas.

## Comparative Analysis Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Feature | Sun Tran | Transit | KakaoBus | Google Maps |
| Real-Time tracking | Limited | Yes | Yes | Yes |
| ETA Accuracy | Low | Moderate | High | High |
| User Feedback | Not available | Available | Not available | Not available |
| Update Speed | Slow | Fast | Very fast | Moderate |
| Localized Info | Limited | No | Yes | Limited |
| UI Simplicity | Moderate | High | Very high | Moderate |