

Use Case ID:	1		
Use Case Name:	Update transport data (mrt delay)		
Created By:	Jiahua	Last Updated By:	Jiahua
Date Created:	31 Aug 2023	Date Last Updated:	31 Aug 2023

Actor:	LTA Dataset
Description:	The LTA Dataset, acting as an external actor, provides real-time public transport data to the application.
Preconditions:	<ol style="list-style-type: none"> <li>1. The LTA Dataset API is available and accessible.</li> <li>2. The application has a designated module to fetch and process real-time transport data.</li> <li>3. The application's database is capable of storing and managing the incoming real-time data.</li> </ol>
Postconditions:	<ol style="list-style-type: none"> <li>1. The mrt information data is updated with the latest information fetched from the LTA Dataset API.</li> <li>2. Users of the application can access up-to-date and accurate mrt time information.</li> </ol>
Priority:	
Frequency of Use:	
Flow of Events:	<ol style="list-style-type: none"> <li>1. The LTA Dataset API provides the application with real-time transport data for mrt information.</li> <li>2. The application's transport data module receives the incoming data from the API.</li> <li>3. The application processes the received data and updates its internal database with the new information.</li> <li>4. The updated transport data is now available for users to access through various features of the application, such as route planning, estimated travel times, and alternative route suggestions during delays.</li> </ol>
Alternative Flows:	<p><b>AF-S1: Data Unavailability</b></p> <ol style="list-style-type: none"> <li>1. If the LTA Dataset API experiences downtime or is unable to provide real-time data, the application continues to use the last successfully</li> </ol>

	retrieved data until the API becomes accessible again. Users may experience outdated information during this period.
Exceptions:	
Includes:	
Special Requirements:	<ol style="list-style-type: none"> <li>1. The application must have a secure and reliable method of fetching data from the LTA Dataset API.</li> <li>2. Data parsing and storage mechanisms must be robust to ensure the accuracy and integrity of the received data.</li> </ol>
Assumptions	<ol style="list-style-type: none"> <li>1. The LTA Dataset API consistently provides accurate and reliable real-time transport data.</li> <li>2. The application's database structure is designed to accommodate various types of transport-related information provided by the LTA Dataset API.</li> </ol>
Notes and Issues	- The accuracy and timeliness of the transport data heavily influence the effectiveness of the application's features that rely on this information, such as dynamic re-routing during delays or breakdowns.

Use Case ID:	2		
Use Case Name:	<b>Travel Time Estimation (Real Time Monitoring)</b>		
Created By:	Russell	Last Updated By:	Russell
Date Created:	30 Aug 2023	Date Last Updated:	30 Aug 2023

Actor:	User (The person (commuter) who plans to travel using public transport)
Description:	User estimates the travel time by inputting his starting point, start time, mode of transport and destination.
Preconditions:	<ol style="list-style-type: none"> <li>1. The system has up-to-date public transport schedules and routes.</li> <li>2. The user has access to the software (either via a mobile app, web browser, etc) through Wifi / Cellular Data.</li> </ol>

	3. The system has access to real-time data (for more accurate estimates in case of disruptions)
Postconditions:	The user receives an accurate estimated travel time (less than 10 minutes discrepancy from actual travel time) for their journey using available public transport options.
Priority:	High
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> <li>1. User launches travel planner software.</li> <li>2. User inputs starting location and desired destination.</li> <li>3. User chooses specific criteria (e.g., preferred mode of transport, travel time, fewest transfers, sheltered transfers)</li> <li>4. The system processes the query, consulting its database of public transport schedules, routes and real-time data.</li> <li>5. The system presents at least one travel option with an estimated travel time.</li> <li>6. The user views the estimated travel time and can explore further details of the suggested route(s), such as ... whether route is sheltered, directions to bus-stop / train from current location, etc.</li> </ol>
Alternative Flows:	<ol style="list-style-type: none"> <li>1. If the system cannot find a direct route or a route preferred by the user, it suggests alternative routes of different mode of transport.</li> <li>2. If there is real-time disruption or delay in the public transport system: <ol style="list-style-type: none"> <li>2.1 The System alerts the user about the delay.</li> <li>2.2 It recalibrates travel times based on this real-time data and provides updated estimates.</li> <li>2.3 It suggests alternate routes in case of significant delays are expected.</li> </ol> </li> <li>3. If the user provides an unclear or ambiguous location, the system prompts the user to reselect from a list of potential matching locations, or asks the user to refine his search.</li> </ol>
Exceptions:	<ol style="list-style-type: none"> <li>1. In case of a technical issue where the system cannot access real-time data, it informs the user that real-time data is unavailable and provides estimates based solely on scheduled data.</li> </ol>

	2. The system cannot find viable routes between the selected locations – it alerts the user that no routes are available and suggests checking the locations or trying again later.
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	3		
Use Case Name:	<b>Cost Estimation</b>		
Created By:	Jiahua	Last Updated By:	Jiahua
Date Created:	30 Aug 2023	Date Last Updated:	31 Aug 2023

Actor:	User
Description:	User estimates the cost by inputting the starting point and destination. The system then provides a list of cost estimates for different transportation options.
Preconditions:	<ol style="list-style-type: none"> <li>4. The system has up-to-date public transport schedules and routes.</li> <li>5. The user has access to the software (either via a mobile app, web browser, etc.) through Wi-Fi / Cellular Data.</li> <li>6. The system has access to real-time data (for more accurate estimates in case of disruptions).</li> <li>7. The user is authenticated and logged into the application, ensuring that only authorized users can access the cost estimation feature.</li> <li>8. The map page is successfully loaded with all necessary components, including the interface for inputting the starting point and destination.</li> <li>9. The application's real-time data connection is active and functional, allowing for accurate retrieval of transportation information.</li> <li>10. The user's device maintains a stable internet connection, ensuring the ability to access the real-time dataset and perform required</li> </ol>

	<p>computations.</p> <p>11. Users have actively selected the mode of transportation for which they want to estimate the cost (e.g., public transportation, taxi).</p>
Postconditions:	<p>3. The estimated cost for the route with the highest priority (lowest cost) is prominently displayed to the user.</p> <p>4. A list of alternative transportation options is presented, allowing users to compare costs and make informed decisions.</p> <p>5. Users can explore the details of each transportation option, such as the estimated time of arrival.</p> <p>6. The system provides an option to save the estimated cost and route details for future reference.</p> <p>7. Users have the choice to initiate navigation based on their selected route.</p>
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	<p>5. User opens the map page within the application.</p> <p>6. User clicks on the "Cost Estimation" option or bar.</p> <p>7. The system provides input fields for the user to input the starting point and destination.</p> <p>8. User inputs the locations of the starting point and destination.</p> <p>9. The system initiates the computation of estimated costs using different algorithms.</p> <p>10. The system sorts the calculated costs of various transportation routes in ascending order.</p> <p>11. The sorted list of cost estimates is displayed to the user, showing the route with the lowest cost at the top.</p>
Alternative Flows:	<p><b>AF-S4: User input an invalid location</b></p> <p>4. User inputs a location that cannot be recognized or is not within the service coverage area.</p> <p>5. The system prompts the user with an error message indicating that the location is invalid.</p> <p>6. User is given the option to re-enter the location or correct any errors in the input.</p> <p>7. If the user fails to provide a valid location after a</p>

	<p>certain number of attempts, the system suggests using a nearby landmark or known location.</p> <p><b>AF-S5: No routes found</b></p> <ol style="list-style-type: none"> <li>After computation, the system determines that there are no available routes between the specified starting point and destination.</li> <li>The system notifies the user that no suitable transportation options are available for the given route.</li> <li>Users are prompted to adjust their starting point or destination, consider different transportation modes, or seek alternative routes.</li> </ol>
Exceptions:	<p>- Connection Failure:</p> <ol style="list-style-type: none"> <li>If the real-time dataset connection is lost during the estimation process, the system informs the user about the data unavailability and suggests trying again when the connection is restored.</li> </ol> <p>- Calculation Error:</p> <ol style="list-style-type: none"> <li>In the event of an internal calculation error or system malfunction, the system displays an error message and advises the user to attempt the estimation again later.</li> </ol>
Includes:	
Special Requirements:	<ol style="list-style-type: none"> <li>The application should incorporate a user-friendly interface that guides users through the process of inputting locations and interpreting the presented cost estimates.</li> <li>Regular updates to the transportation data and cost algorithms are necessary to ensure accuracy.</li> </ol>
Assumptions	
Notes and Issues	-

Use Case ID:	4		
Use Case Name:	Reminder for bad weather condition (notification)		
Created By:	JUN HAO	Last Updated By:	JUN HAO
Date Created:	31 AUG 2023	Date Last Updated:	31 AUG 2023

Actor:	User
Description:	Notification that reminds of bad weather
Preconditions:	<ol style="list-style-type: none"> <li>1. The application has access to weather forecast</li> <li>2. The application has access to notification</li> <li>3. The application has access to location</li> </ol>
Postconditions:	The user receive notification that notifies of bad weather and remind the user to bring appropriate tools
Priority:	Low
Frequency of Use:	High
Flow of Events:	<ol style="list-style-type: none"> <li>1. User opens the application.</li> <li>2. User inputs starting location and desired destination.</li> <li>3. System checks the weather of desired destination using weather forecast API.</li> <li>4. System notifies the user if the weather is bad.</li> </ol>
Alternative Flows:	AF-S1: An event is added <ol style="list-style-type: none"> <li>1. User added an event in the calendar.</li> <li>2. 30 minutes before the event starts, the system checks the weather of desired destination using weather forecast API.</li> <li>3. System notifies the user if the weather is bad.</li> </ol>
Exceptions:	No access to weather forecast
Includes:	
Special Requirements:	
Assumptions:	Weather forecast is accurate
Notes and Issues:	

Use Case ID:	5		
Use Case Name:	Event Manager		
Created By:	YAU JUN HAO	Last Updated By:	YAU JUN HAO
Date Created:	31 AUG 2023	Date Last Updated:	31 AUG 2023

Actor:	User
Description:	Add events to calendar and receive reminder before event starts.
Preconditions:	1. Application has access to calendars or links with third-party calendar applications.

	2. The application has access to notification.
Postconditions:	A reminder is received.
Priority:	Low
Frequency of Use:	Low
Flow of Events:	<ol style="list-style-type: none"> <li>1. User open application.</li> <li>2. User choose a desired date and time on the calendar.</li> <li>3. User add an event to the desired date.</li> <li>4. A reminder will be received on the day before the date of the event.</li> <li>5. A reminder is received 30 minutes before the event.</li> <li>6. User use route searching function to calculate route.</li> </ol>
Alternative Flows:	
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:	6		
Use Case Name:	Reachable destination under time constraints		
Created By:	JUN HAO	Last Updated By:	JUN HAO
Date Created:	31 AUG 2023	Date Last Updated:	31 AUG 2023

Actor:	User
Description:	An area is drawn on the map to show the reachable destination under a selected time.
Preconditions:	<ol style="list-style-type: none"> <li>1. Application has access to location.</li> <li>2. The application has access to real-time data (for more accurate estimates in case of disruptions)</li> </ol>
Postconditions:	Users can see a shaded area on the map to indicate reachable destination and pick available route to travel to desired destination.
Priority:	Medium
Frequency of Use:	Medium
Flow of Events:	1. User can choose the type of transportation.



	<p>2. User can choose a time constraint to see reachable destination.</p> <p>3. User can see a shaded area on the map to indicate reachable destination.</p> <p>4. User can pick available route to travel to desired destination.</p>
Alternative Flows:	<p>AF-S1: Multiple starting point</p> <p>1. User pick multiple starting point.</p> <p>2. Overlapping of reachable area is shown on map.</p> <p>3. User choose desired destination and available route is shown.</p> <p>4. User choose desired origin and travel to desired destination.</p>
Exceptions:	<p>1. No reachable destination under certain time constraint.</p> <p>2. No overlapping for multiple starting points.</p>
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	

Use Case ID:			
Use Case Name:			
Created By:		Last Updated By:	
Date Created:		Date Last Updated:	

Actor:	
Description:	
Preconditions:	
Postconditions:	
Priority:	
Frequency of Use:	

Flow of Events:	
Alternative Flows:	
Exceptions:	
Includes:	
Special Requirements:	
Assumptions:	
Notes and Issues:	