

# **CS530 Software Engineering Group Project**

## **‘CTFastrak Website Iteration Report 1’**

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**Team: Scrum Masters**

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**System Functionality:**

This system is able to take general GTFS data feed as input and extract routes, stop times, trips and shapes information. The system provides map based CTfastrak routes with different color codes. Users can zoom-in and pan around the map to view the route details. This system is able to display CTfastrak route map with all bus stops along the route. When users click on a bus stop, users get a corresponding location of the bus stop, bus stop name. This system is able to track the geographical information of current user and display it on the google map. This system can provide users search functions by any location in Hartford.

### Implemented User Stories:

<b>Id</b>	<b>Title</b>	<b>Pre-condition</b>	<b>Post-condition</b>	<b>Story Point</b>	<b>Iteration</b>
1	<u>Analysis:</u> As a developer, I need initial setup of the application, so that I can start working on further user stories.	Downloading required software and data feed formats as JASON & GTFS	Development environment will be setup on the developer's machine.	5	1
2	As a user, I want to see all CTfastrak bus route information, so that I can overview CTfastrak map. (Home Page)	Internet should be accessible on device.	System will generate all routes with bus stop information.	5	1
3	As a user, I want to get scheduled arrival times for CTfastrak at a selected stop, so that I can plan my trip well.	User has to click on bus stop marker.	System will generate bus and bus stop information and location details.	2	1
4	As a user, I want to search bus stop information on map by current location, so that I can get bus and bus stop information based on my location.	User has to allow to track current location on device.	System will generate the information for nearest bus stops and arrival/departure bus timings.	3	1
5	<del>As a user, I want to search information on map by address, so that I can get information of my preferred location.</del>	<del>User has to select Search by Address menu and enter address.</del>	<del>System will generate the information for preferred address.</del>	8	1
6	As a user, I want to open the CTfastrak web site with any	User's device should have	System will generate a	5	1

	device like mobile, PC, Laptop, tablet.	compatible web browser installed.	responsive web design using experience on device.		
7	<del>As a user, I want to search information on map by entering bus number, so that I can get information for specific bus.</del>			8	1

## Change to User Stories:

We deleted Get alerts user story, since it doesn't add values for CTfastrak website users. Users can get the estimated real time arrival and departure schedules in next iteration. In first iteration, we only copied with static GTFS data, to provide the foundational CTfastrak functionalities including route maps, bus stops and stop times information. Therefore, we added real time related user stories to our product backlog for future implementation.

**User Story 2,** Before we have decided to implement CTfastrak routes without bus stop information but we implemented all routes with different colors and bus stop locations. So, User gets information of bus stop just by clicking on bus stop marker.

**User Story 5:** We have decided to include search by address to next iteration.

**User Story 6:** Created a responsive web UI using bootstrap to get better interaction with user that run on any device with enhanced layout. We decided to implement it right away.

**User Story 7,** We decided not to implement user story 7. It's unusual for user to search by bus number as more than one bus is running with same bus number at the same time.

## Lessons Learned:

Requirements are not fully understood by us before the project begins. One lesson learned is not to estimate some user stories perfectly, that we have changed during our first iteration. First we decided to develop Android App, we realized we needed a development process that fit an enhanced rapid application development that working with all devices and, where user stories can immediately be transformed to working code. We learned, new tool and technologies also make implementation strategies difficult to implement. We understood as a user that, User also get more idea what they want after seeing initial version of the software.

A team should be flexible to implement new ideas and features. For future stories, it may be necessary to brainstorm possible issues to call real-time data on map by either GTFS or JSON feed. The team should conduct informal feasibility study to see if one alternative is preferable.

The Hartford GTFS data is too large to handle (28 Megabytes of stop\_times and 17 megabytes of shapes take long time for system to digest), we decided to extract CTfastrak data from it. This greatly helps the development of application. This lesson teaches us that take care of the data sources is always very important.

The last lesson we learned after we studied the GTFS data and Json data, we found that some user stories including static and real time data, such as the approaching bus information, should be broken down.

### Updated User Stories:

<b>Id</b>	<b>Title</b>	<b>Pre Condition</b>	<b>Post Condition</b>	<b>Story Point</b>	<b>Iteration</b>
1	<u>Analysis:</u> As a developer, I need initial setup of the application, so that I can start working on further user stories.	Downloading required software and data feed formats as JASON & GTFS	Development environment will be setup on the developer's machine.	5	1 Completed
2	As a user, I want to see all CTfastrak bus routes with different colors and get bus stop information, so that I can overview CTfastrak map. (Home Page)	Internet should be accessible on device.	System will generate all routes with bus stop information.	5	1 completed
3	As a user, I want to get scheduled arrival times for CTfastrak at a selected stop, so that I can plan my trip well.	User has to click on bus stop marker.	System will generate bus and bus stop information and location details.	2	1 Completed
4	As a user, I want to search bus stop information on map by current location, so that I can get bus information based on my location.	User has to allow to track current location on device.	System will generate the information for nearest bus stops and arrival/departure bus timings.	3	1 Completed
5	As a user, I want to search information	User has to select Search	System will generate the	5	2

	on map by address, so that I can get information to my preferred location.	<del>by Address menu and enter address.</del>	<del>information for preferred address.</del>		
6	As a user, I want to open the CTfastrak web site with any device like mobile, PC, Laptop, tablet.	User's device should have compatible web browser installed.	System will generate a responsive web design using experience on device.	5	1 completed
7	As a user, I want to get the fastest route from source A to destination B, so that I can reach to destination early. (reach the destination using one route)	User has entered valid address information and clicked trip plan.	System will generate fastest recommended route.	8	2
8	As a user, I want to get the all bus routes from source A to destination B, so that I can choose my preferable route. (with no transfers)	User has entered valid address information and clicked get directions.	System will generate all recommended routes from A to B with no transfers.	8	-
9	As a user, I want to get estimated real-time arrival times available for all CT FastTrak buses at a selected stop, so that I can plan my trip well.	User has planned trip.	System will generate estimated real-time arrival times that has been calculated per current traffic changes and displayed on the pin.	3	2
10	As a user, I want to view all real time buses on CTfastrak route map along with all bus stops, so that I know the approaching bus to a certain bus stop.	User has to select a route.	The system will generate approaching buses showed along the route on the map.	8	-

**Total Story Points: - 52** (20 completed + 32 remaining)

**iteration 1: 20 points**

**iteration 2: 16 points**

### **Subset of User Stories for next Iteration:**

User Story 5

User Story 7

User Story 9

### **Functionality of System after Iteration 2:**

Display CTFAstrak route map along with all bus stops. Each route has its trips with stop times. All buses will be identified on the map. Given the user's current location on the map, the system will be able to provide a recommendation for the nearest bus stop. The system can provide all recommended routes with no transfers from source A to destination B address. The system can provide the fastest route among all recommended routes to user with no transfers from source A to destination B address. All stops will have information about the next few approaching buses, all stops have the estimated real time arrival and departure time of the bus.

### **UI After Iteration 1:**





