

NUS Bus Management System

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System and Target users

Bus Management System - Client-Server

Users - NUS Bus Managers

Features

Receive bus information updates

Receive station information updates

View Bus information

View Station information

Highlight the route & bus stops of a bus

Send Buses

Receive Bus and Station Info

Receives information from buses and stations

- We assume buses and stations know the number of people currently there
- Currently, the data is simulated but can be changed easily to actual bus and station information
- Information is sent back to the Server via sockets

Updates the interface accordingly

View Bus and Station Info

- Click a bus or a station to view its information
- Shown in the sidebar
- Updated automatically

Highlight route

When the mouse is over the sending bus buttons, the respective route will be highlighted in the map.

Make it easier for bus managers to make decisions

Send Buses

Able to send buses, as determined by the user

- The station's color is changing according to the level of population.
- When there are many overcrowded stations on a route, the manager can decide to send an extra bus in addition to the regular schedule.

The Responsibilities

Front End GUI - Li Yin and Liu Yang

Back End Simulation and Transmission - Chris
Bainbridge

The GUI Design Principles

Make it look like a map

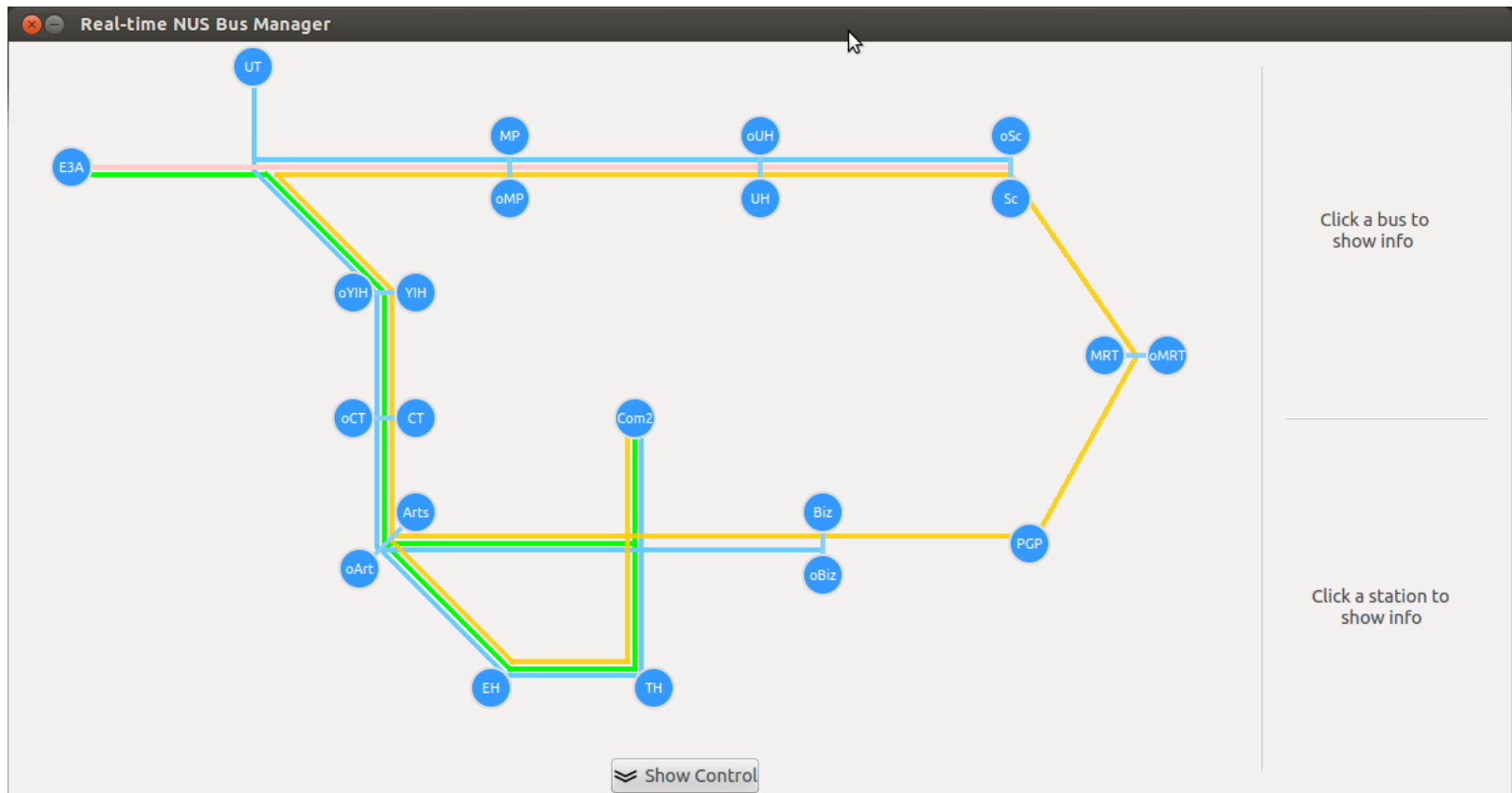
- Familiar to users

- Makes sense

Highlight useful information

Display information neatly

Map



Highlight Information

The screenshot displays the 'Real-time NUS Bus Manager' interface. The main area features a map of bus routes with various stations marked by colored circles. A yellow line highlights a specific route starting from UT, passing through MP, oMP, UH, oUH, Sc, oSc, MRT, oMRT, PGP, Biz, oBiz, Arts, Com2, CT, oCT, YIH, oYIH, and ending at EH and TH. A mouse cursor is positioned over the 'Send Bus A1' button at the bottom left.

Bus Info

- Bus ID: 15
- Bus Label: D2
- Free Seats: 45
- Bus Status: Normal

Station Info

- opp Business School
- Population: 65
- A2 is not coming!
- D1 is not coming!

Buttons at the bottom: Send Bus A1, Send Bus A2, Send Bus D1, Send Bus D2, Send Bus B, Send Bus C. A 'Hide Control' button is also present.

The Colour Scheme

Colour scheme used

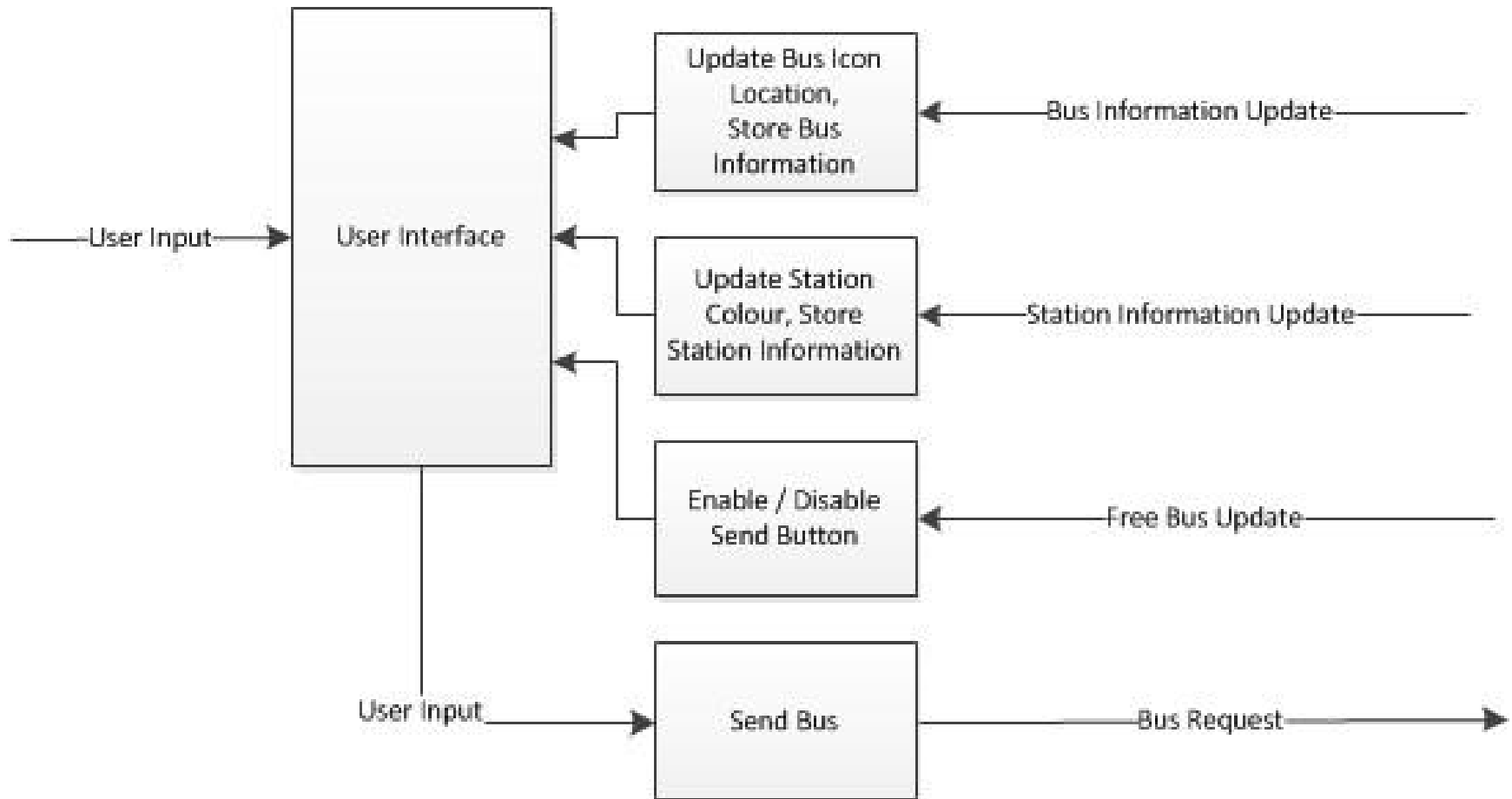


The System Architecture

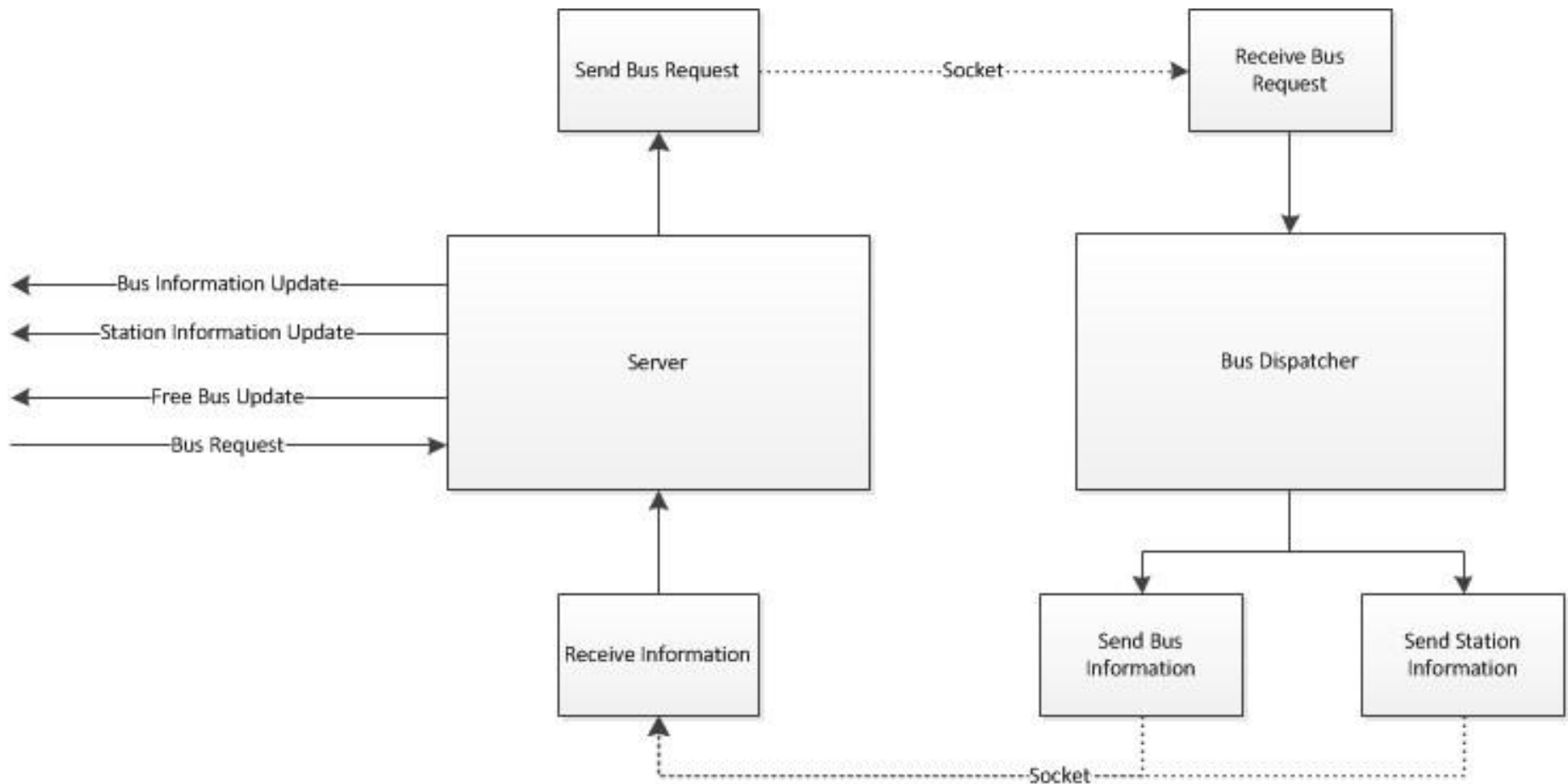
Main Components:

- User Interface
- Communication with buses / stations
- Buses / Stations (sending information)

The System Architecture - Front End

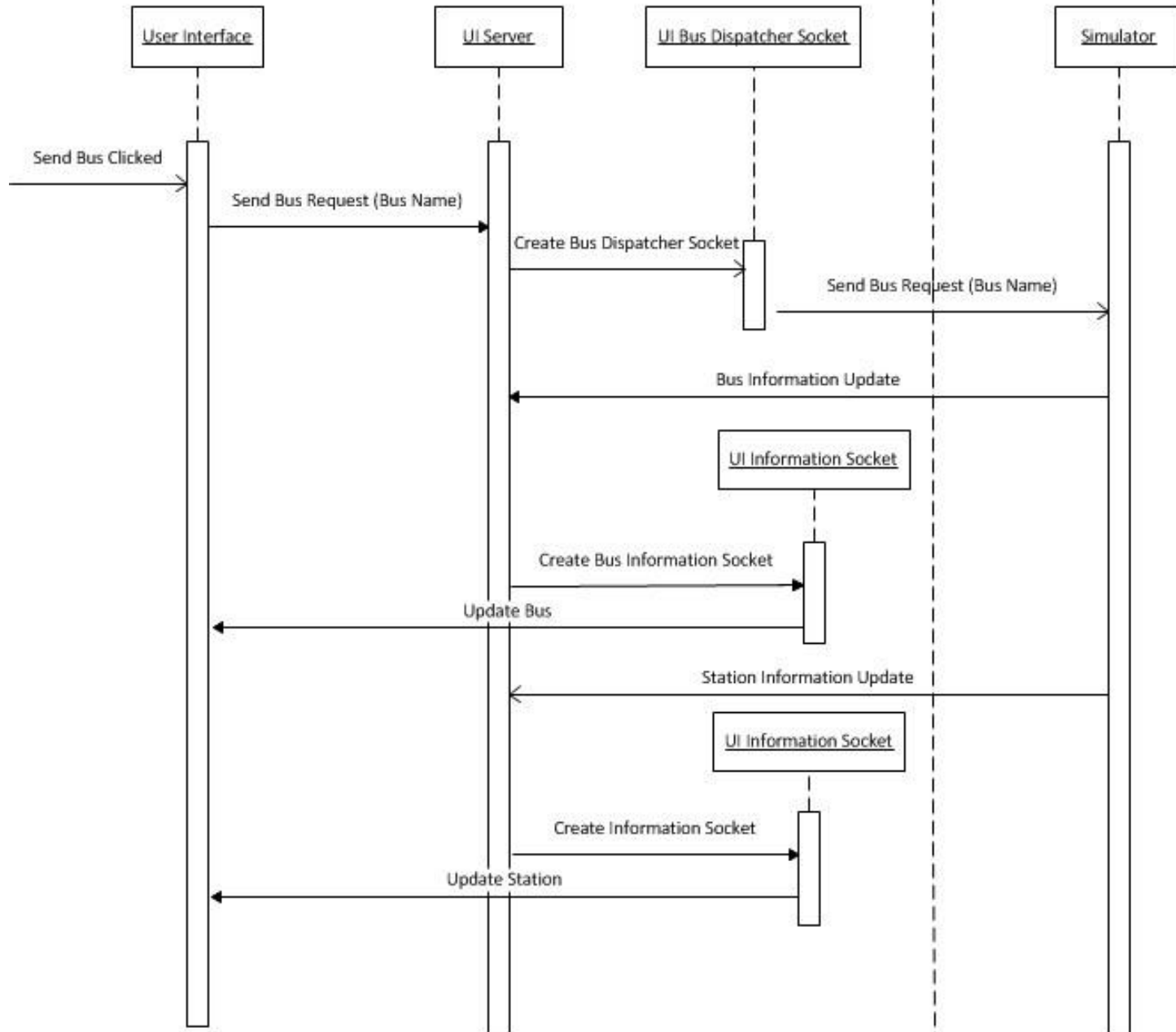


The System Architecture - Back End



NUS Bus Manager

Bus and Station Simulator



The Issues

Front End

- Window size is not adjustable
- Difficult to change existing routes / bus stations

Back End

- Can only send data from Initial Sender to Receiver and not the other way (over the socket)
- Issues with memory leakage? Maybe...

Demo

The interface displays a network of bus routes. A yellow line highlights a specific route starting from E3A, passing through YIH, CT, Arts, Com2, TH, Biz, PGP, MRT, and Sc. Other routes are shown in grey. A bus icon is visible on the UH station. The interface includes a 'Real-time NUS Bus Manager' title bar, a 'Hide Control' button, and a bottom panel with buttons for 'Send Bus A1', 'Send Bus A2', 'Send Bus D1', 'Send Bus D2', 'Send Bus B', and 'Send Bus C'. A mouse cursor is hovering over the 'Send Bus A1' button.

Real-time NUS Bus Manager

Bus Info

- Bus ID: 15
- Bus Label: D2
- Free Seats: 45
- Bus Status: Normal

Station Info

- opp Business School
- Population: 65
- A2 is not coming!
- D1 is not coming!

Hide Control

Send Bus A1 Send Bus A2 Send Bus D1 Send Bus D2 Send Bus B Send Bus C

The Improvements

Additions to the GUI

- Show number of people in the bus without having to click on it
- Ctrl-F for highlighting buses / stations
- Scheduler that allows user to schedule bus departure
- Code for different screen sizes / resolutions

Additions to Back End

- Add information about bus status (e.g. broken down)
- Fix Memory Leaks

Any Questions?

We've got the answers!