ICAS
intersection collision avoidance system

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What is ICAS ?

Intersection Collision Avoidance System (ICAS) is an applications development for a series of technologies directly linking road vehicles to their physical surroundings. This is in order to improve road safety.

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Project Goal

The goal of ICAS is to provide a communication link between vehicles and the roadside infrastructure

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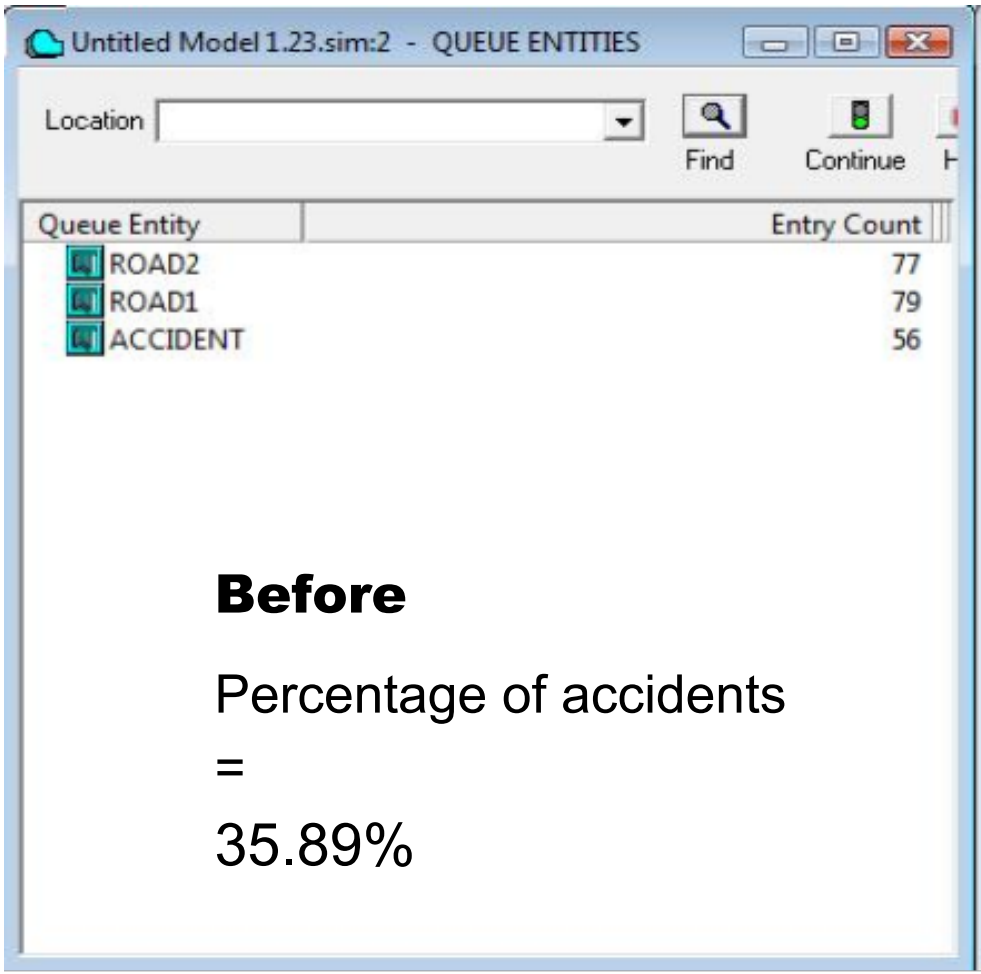
Simulation

Intersection Collision Avoidance

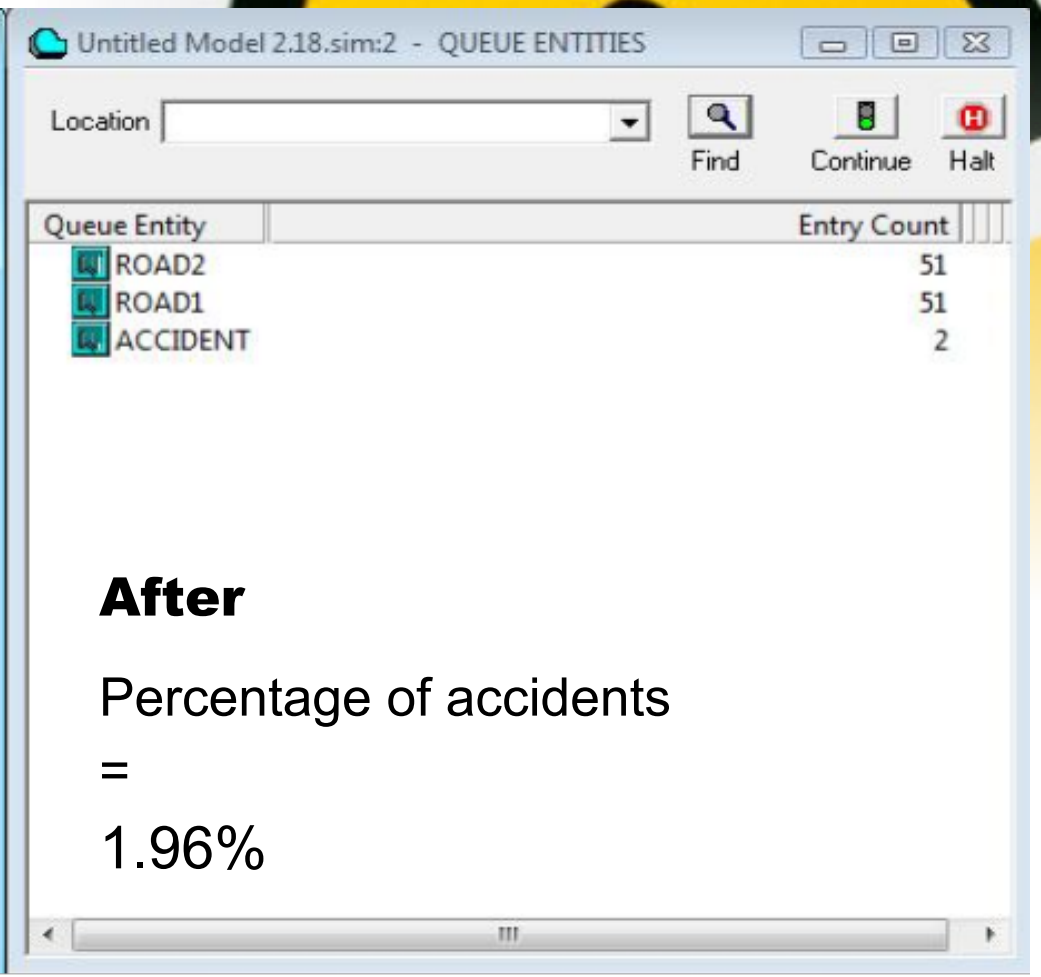


Before

Percentage of accidents

=

35.89%



After

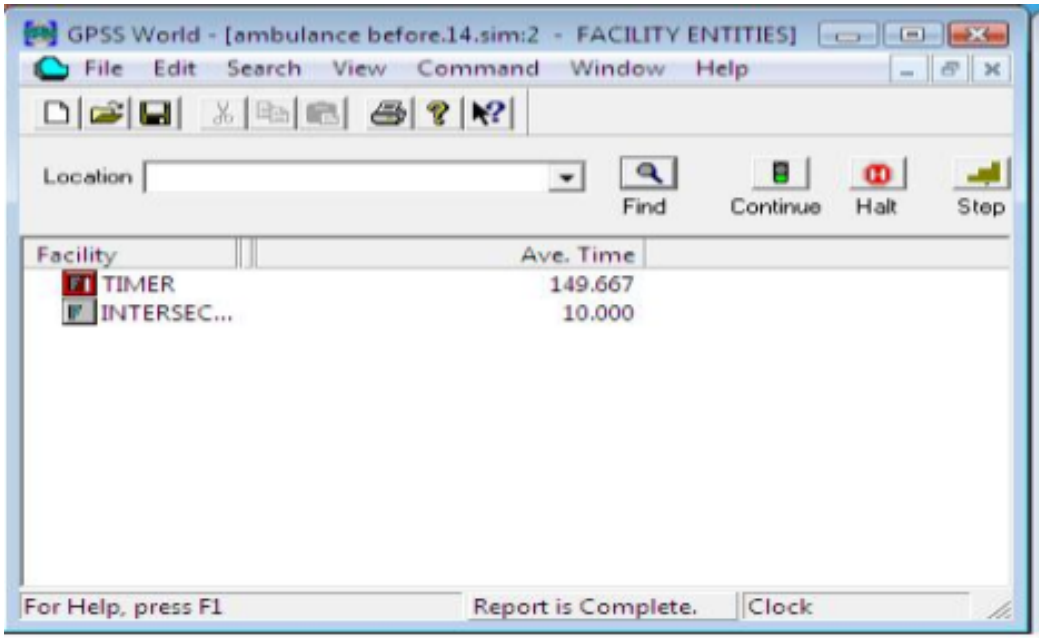
Percentage of accidents

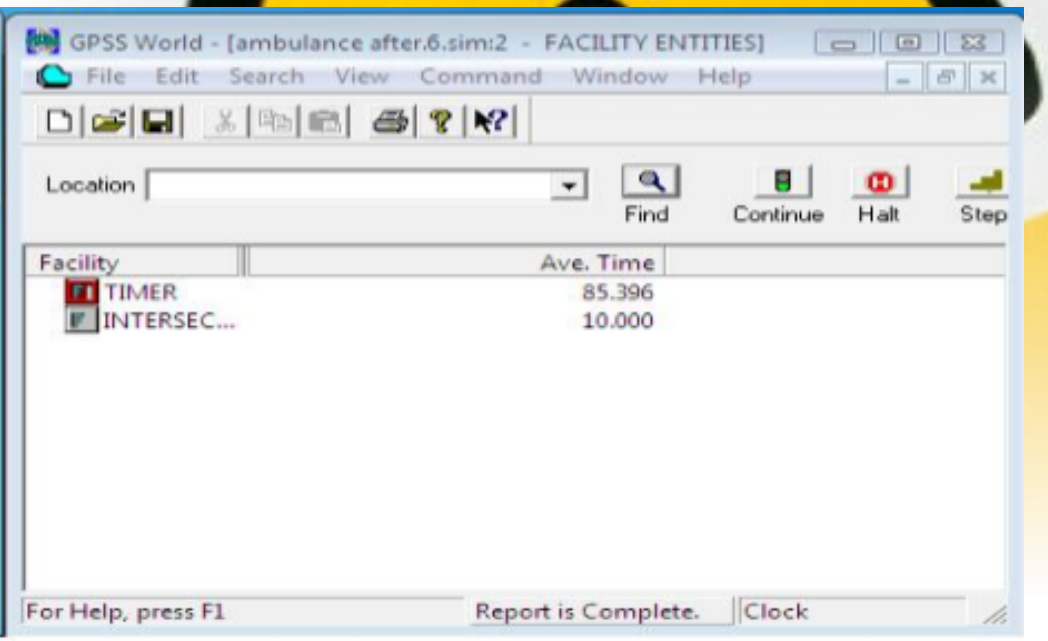
=

1.96%

Simulation

Emergency Units





Before

Average time taken ambulance = **149.666**

After

Average time taken ambulance = **85.396**

System Components

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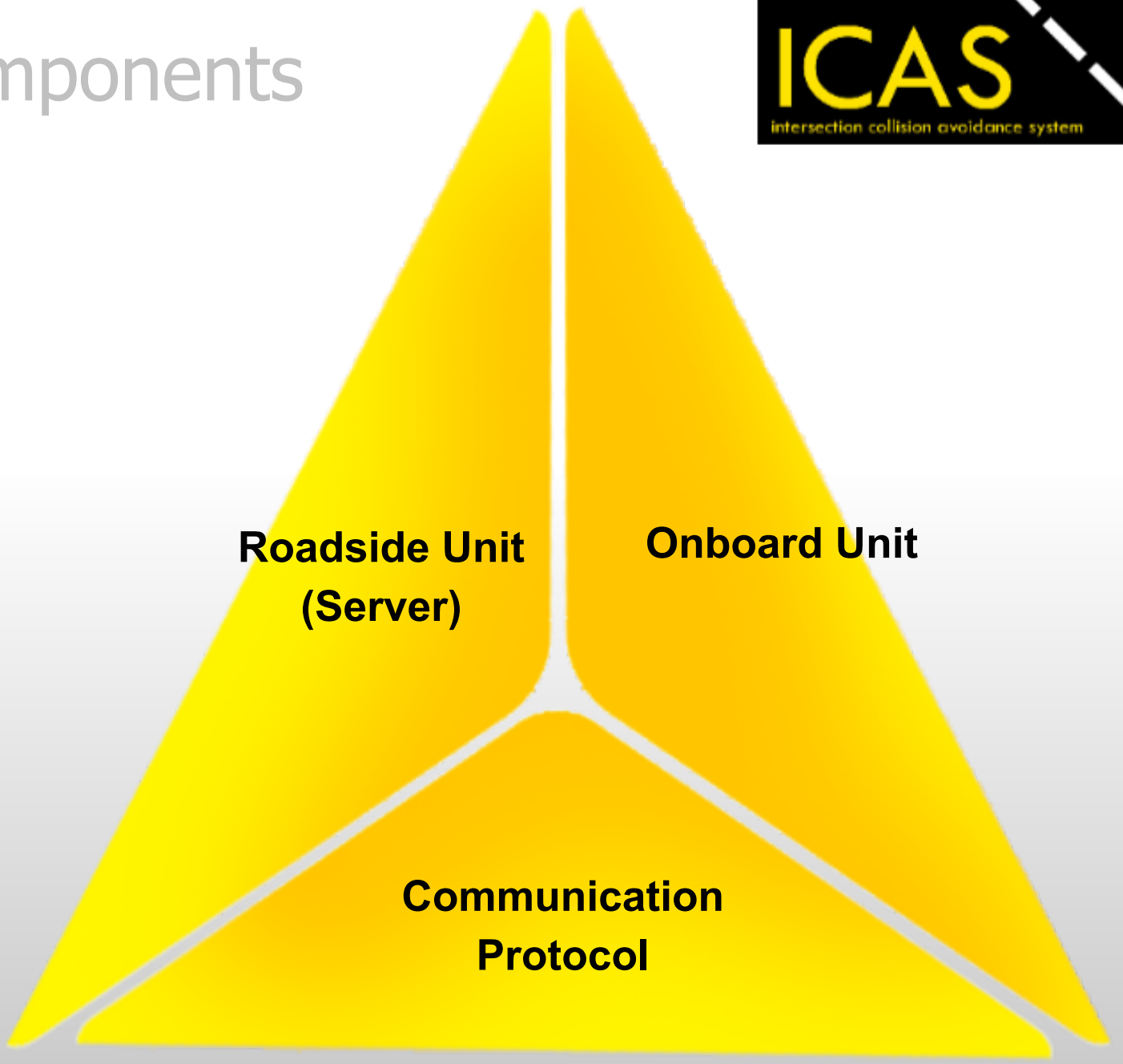
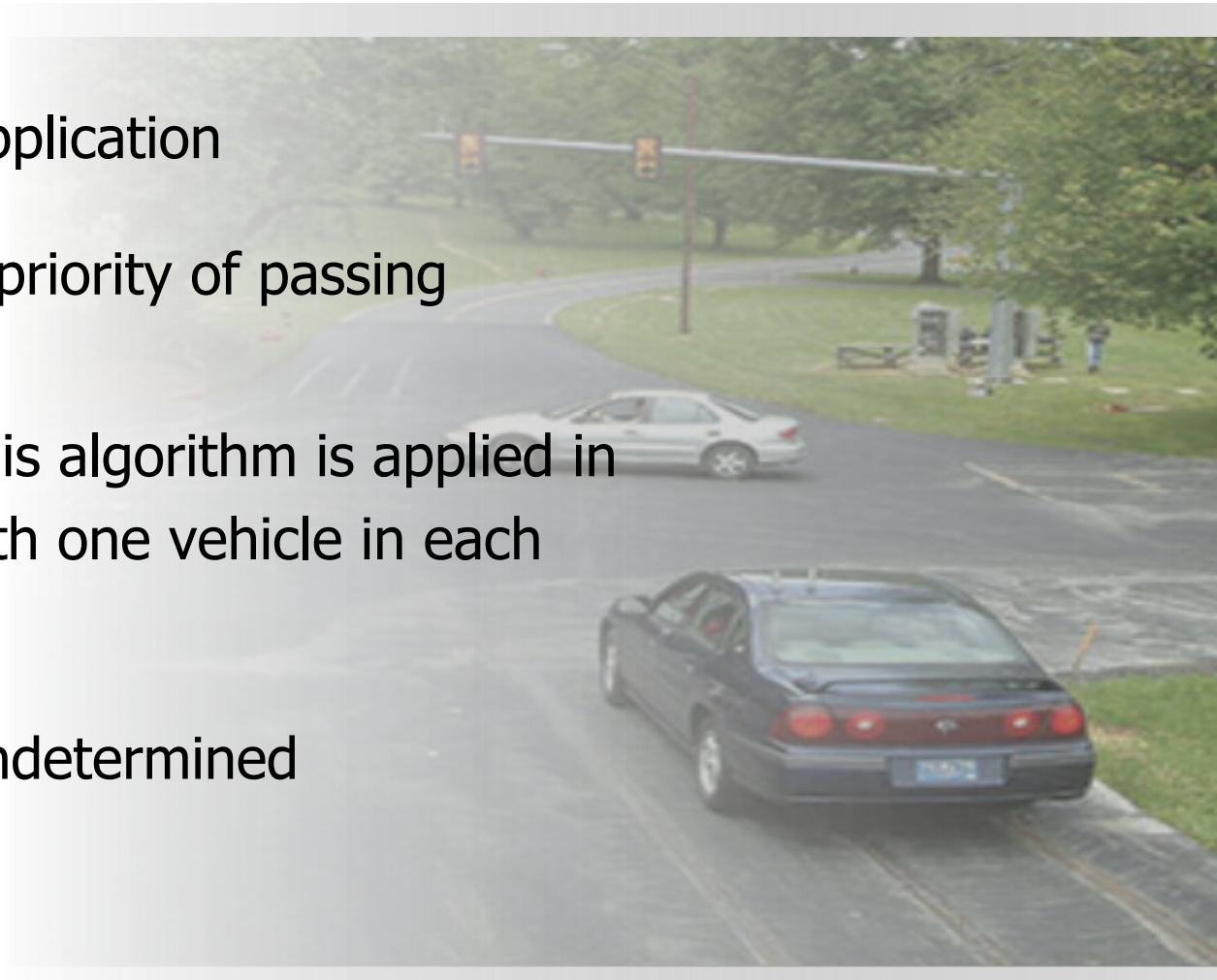
- Software
- Server



RSU Software



- Java based server-client application
- Find the algorithm to give priority of passing for the write vehicle
- We are constrained that this algorithm is applied in small streets as it deals with one vehicle in each street
- Behavior of the driver is undetermined

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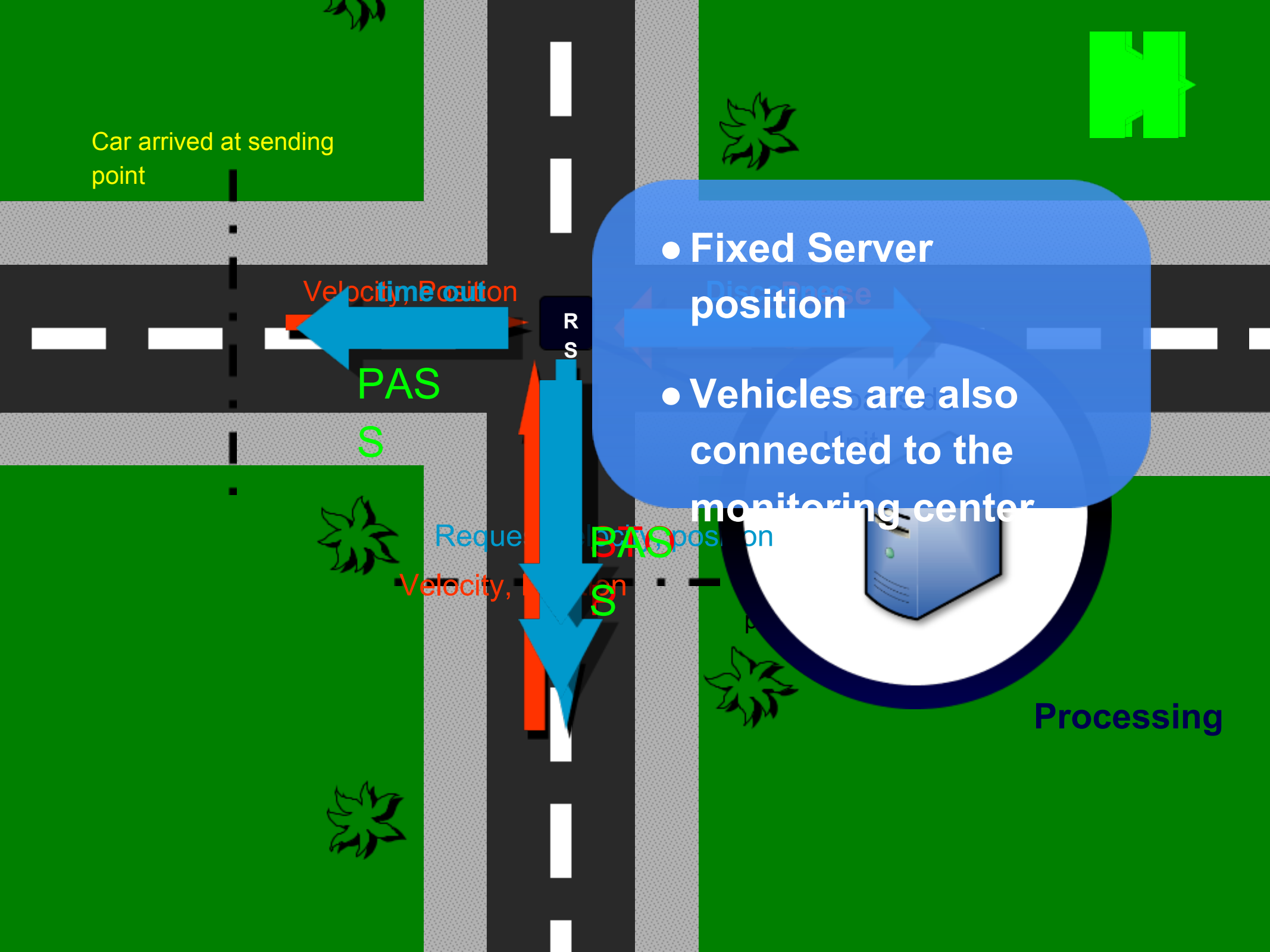
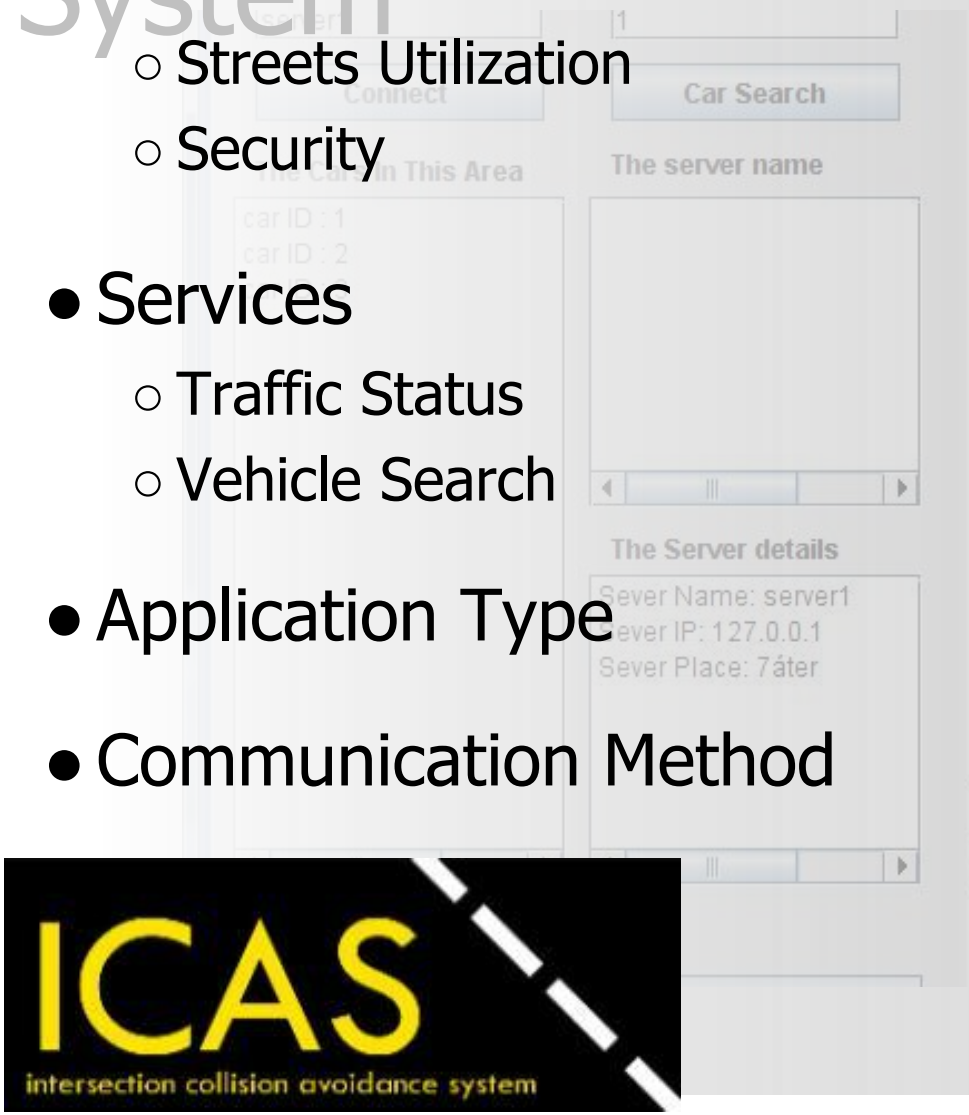
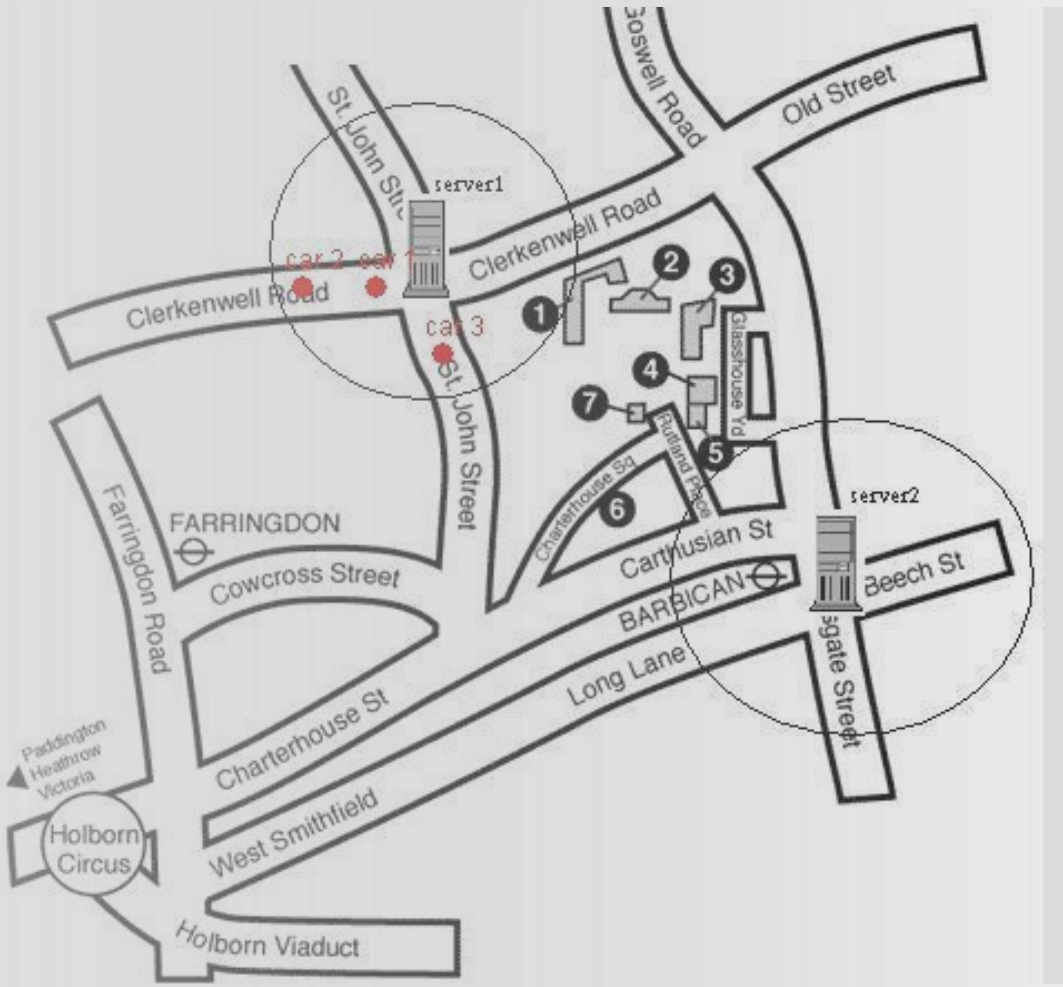


- **Fixed Server position**
- **Vehicles are also connected to the monitoring center**

Monitoring System

- Goals
  - Streets Utilization
  - Security
- Services
  - Traffic Status
  - Vehicle Search
- Application Type
- Communication Method





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Applet Viewer: monitor/monitoring.class

Applet

Server Name

server1

Car ID

1

Connect

Car Search

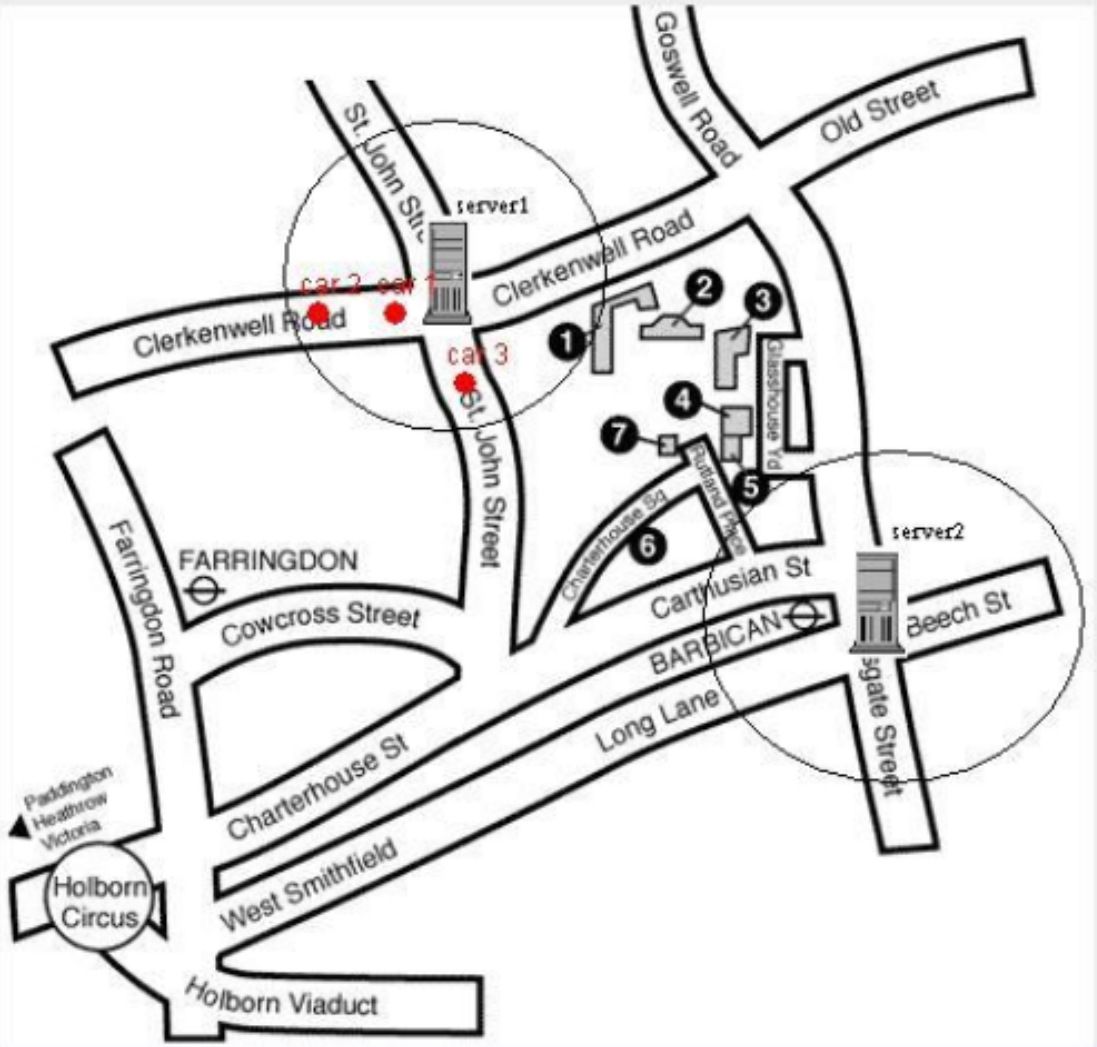
The Cars In This Area

car ID : 1
car ID : 2
car ID : 3

The server name

The Server details

Sever Name: server1
Sever IP: 127.0.0.1
Sever Place: 7åter



Applet started.

System Components

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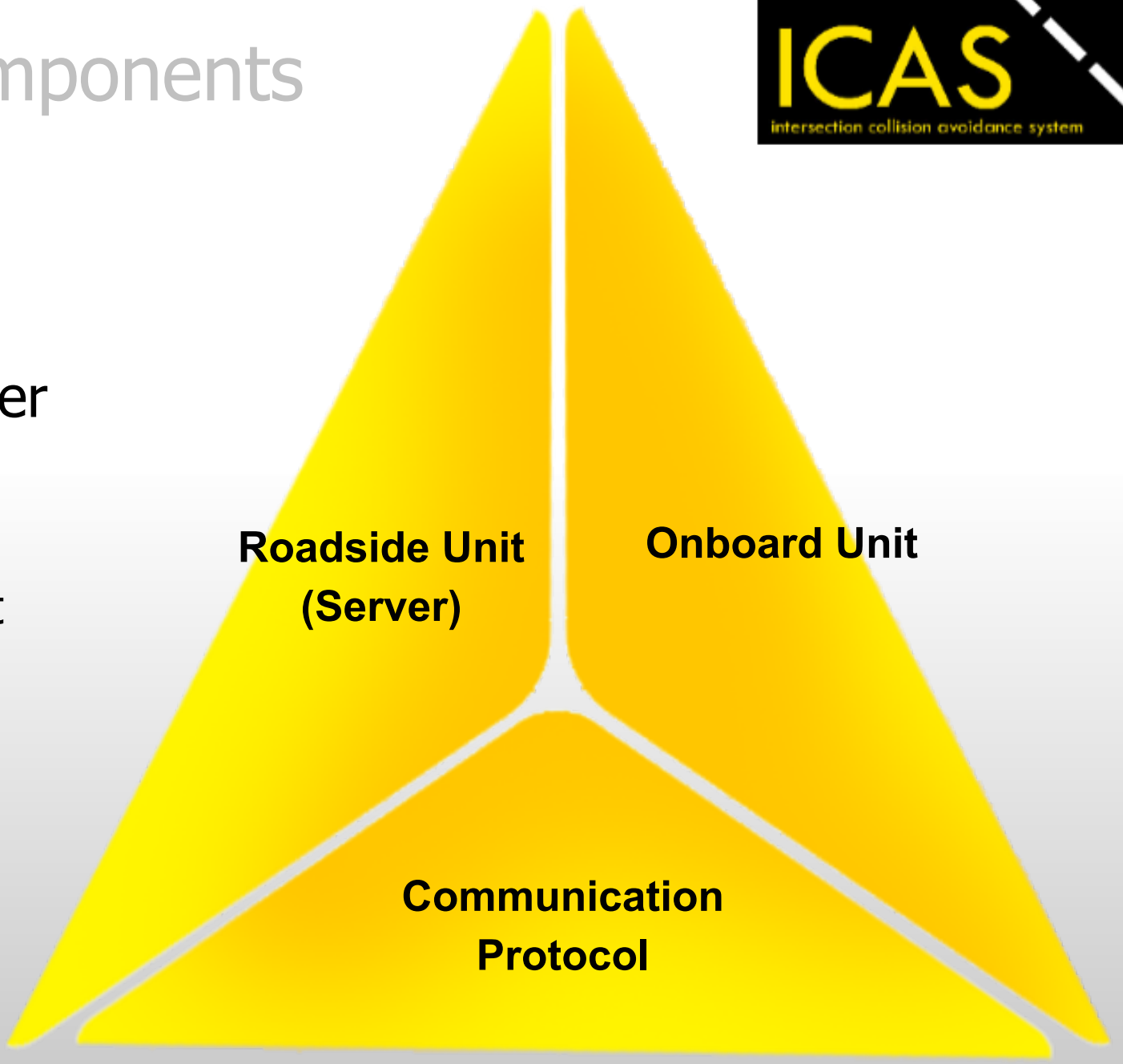
- GPS
- Microcontroller
- LCD
- Seven Segment
- Wireless Kit



GPS

- Types of GPS
  - Data loggers
  - Data pushers
  - Data pullers
- GPS formats
  - NEMEA
  - Text

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Microcontrolle

- Receive data from GPS
- Process on coordinates
  - X= radius of word *cos (longitude)*cos (lattidude)
  - Y=radius of word *sin (longitude0 *cos (lattitude)
- Send data
- Interface with peripherals
  - LCD
  - 7 segment

pic16f877A

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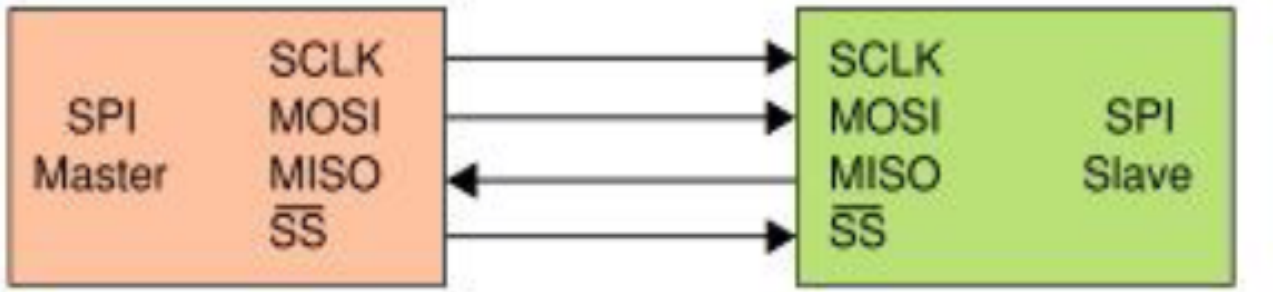
SP

I



- SPI and UART
  - Serial Transmission Mode
  - Transmission Speed

- Why SPI ?

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Wireless Kit

- Purpose
- Choice

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System Components

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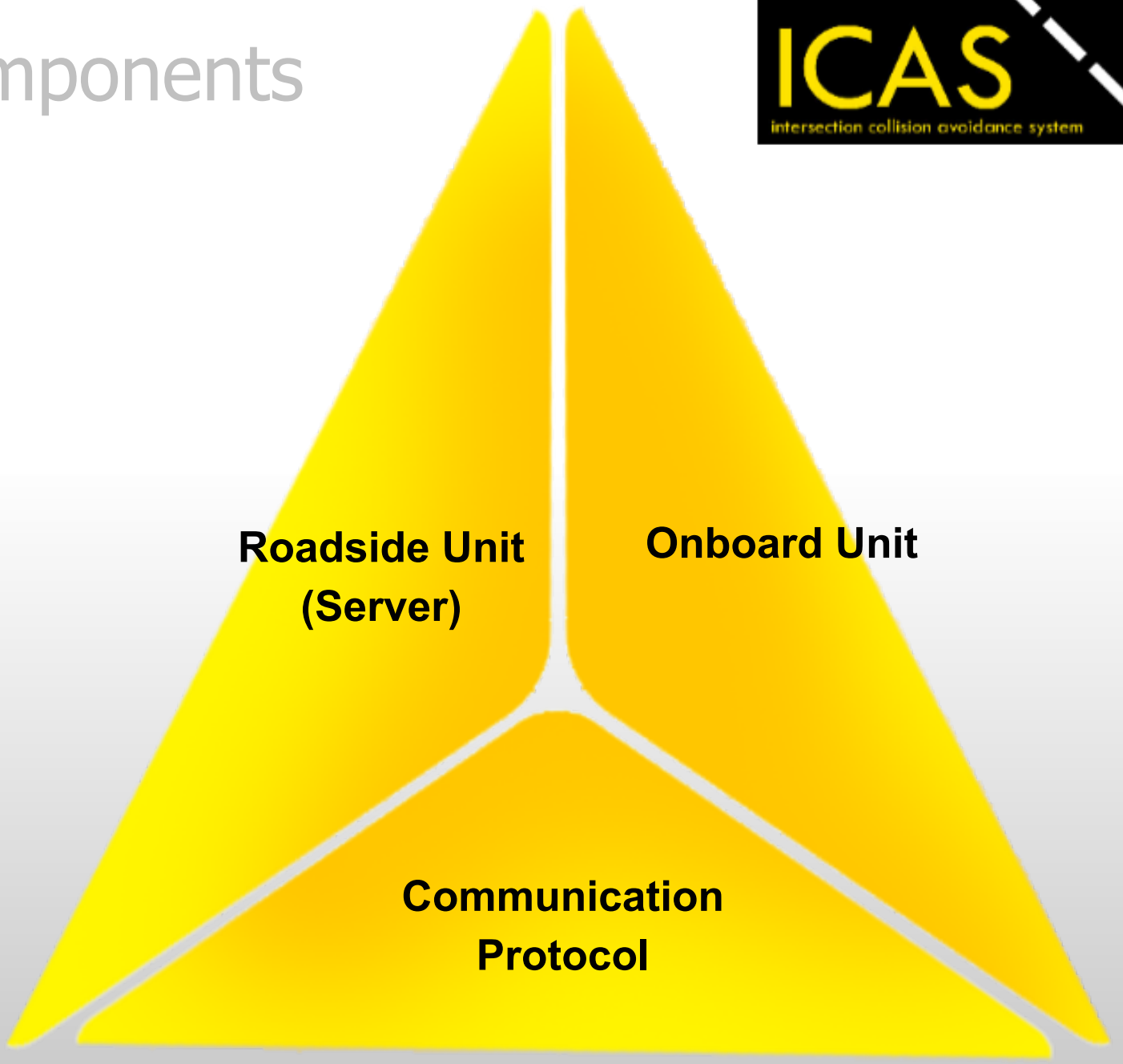
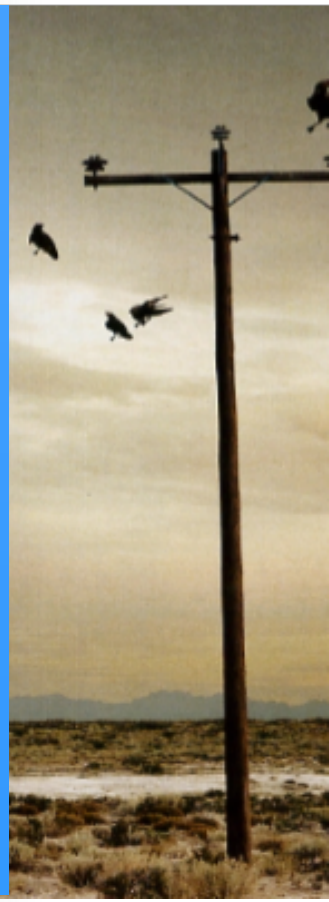


Communication Methods

- Bluetooth
- RFID
- DSRC
- Wireless LAN

a short to medium range wireless protocol for automotive use. It offers communication between the vehicle and roadside server



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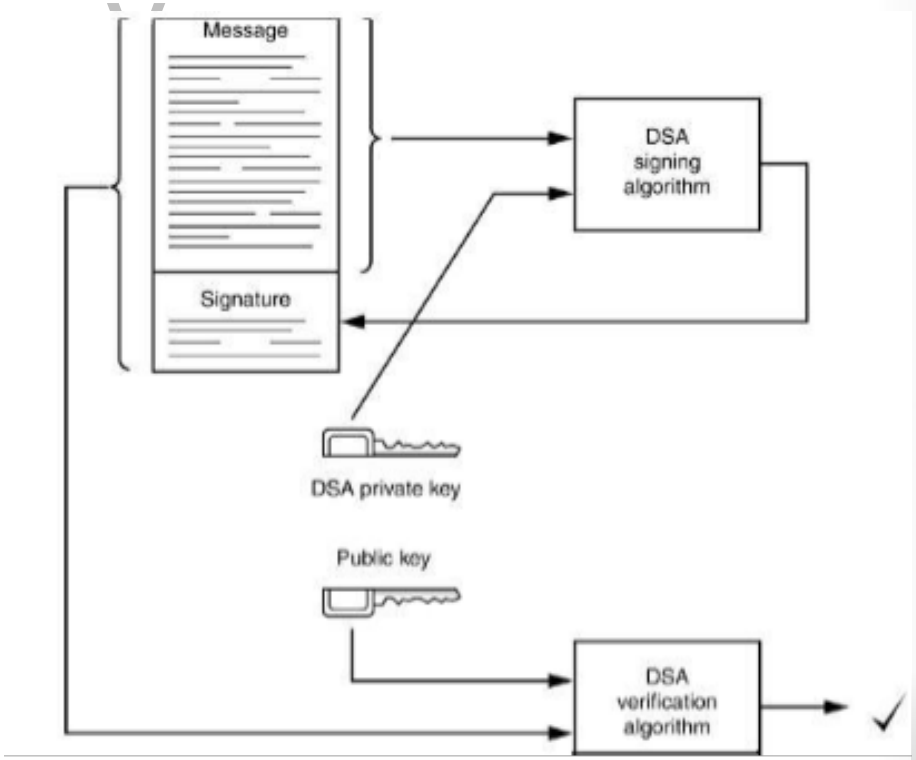
Securit



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Overall View