- **Description**

The problem space that our group chose to focus on is study on driver information technology and information delivery, and design a driving information assistant system based on user need. Through our study, the user needs are: Make the cost of the system affordable to normal urban drivers; Simple and easy-understanding user interfaces; Real-time available parking slots; Fast and easy payment methods; Weekly database update and visible navigation. There should be two main challenge need to solve.

First, simple and easy-understanding user interfaces. For a driver, the most usable interface should be routing and real-time traffic condition notification. My prototype included these two functions and to make them easy-used and easy-understanding, my prototype not only allows users to access these functions through multiple ways, but also allows users to set their own configuration on these functions.

Second, Real-time available parking slots and fast and easy payment methods. For this problem, my prototype could scan the nearby available parking slots and find the optimal one and route to it. To compile this, my prototype could visit the server of nearby parking lots and also receive the signal for available parking slots of some parking meters. My prototype could also bind to user's cellphones and allow user to pay for parking space from a distance.

In additional, my prototype is expected to have a price similar to a simple cellphone, which should be affordable for most urban drivers.

- **Future scenario of use**

OG Yang has already derived for more than half a year. He is going to have dinner with his girlfriend. The traffic condition is as bad as usual. But he is not worry about that because he installed an in-car information assistant system IAS-PT-Y in his car. Even he cannot find a parking slot, the system can. After changed to parking mode, the system just take not even two seconds and find an available parking slot nearby the restaurant. With the help of the system, OG could take up that parking slot before he arrived there. And with the route calculated by the system, OG finished the parking easily. It seems the dinner would take a lot of time. However, OG does not need to move to the parking meter frequently. Instead, he only needs to pay for it using his cell phone which was binded with the Information assistant system.

- **Critical assessment**

As described above, my protocol handled detailed user needs. By our Phase 3, the design principles are:

Ease-of-use – My protocol provided a flexible method to call a function of the system. And user can design a personal method to control the system.

Learnability – My protocol allows user set some higher level configuration include

routing method. However, my protocol does not have the ability of self-learning.

Visible navigation – My protocol shows the exact route and all notification on the screen on main device. Beside this, drivers could also easily receive these information by hearing, which I consider to be safer when driving.

Only present a few choices a time – All functions of my protocol are available with less than 3 choose steps, which I think is acceptable.

Real time information updating – My protocol would receive and update the route based on GPS signal and real time traffic condition. Even signal does not works well, user can still choose to update the local traffic information on computer weekly.

Easy-payment – By binding user's cellphone and my protocol, user can pay for the parking fee with a long distance.