

Enabling Location Based Service Deployment for Corporate and Consumer Mobile Applications

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Good afternoon, ladies and gentlemen. Before the break, the session was talking about the enabling technology, particularly on MMS. I would like to expand on the theme of enabling capability, but more specifically on the location based services. Location based services are nothing new, but SUNDAY would like to play a role of an enabler such that the developer community like yourself will be able to make use of the open API to develop the applications for the enterprise and also for the consumers.

I would like to break down my presentation into 20 minutes of presentation and then there will be 5 minutes of demo.

First of all, when you talk about the location tracking technology, one thing that comes into our mind is GPS. Satellite can do everything. It has advantages and disadvantages. I will briefly go into the comparison of different tracking positioning technologies and how to make use of the integrated GPS and GSM hybrid solution in order to provide the best performance. The next topic is that, with this open platform, how third parties can make use of this platform to develop their own services. This will be a partnership between the operator and the service developers. Finally there will be a live demo.

What is the application when we talk about tracking service? It can be fleet management, tracking the vehicle. It can be a resource tracking such as job dispatch, which is basically tracking of the people. Since 911, a lot of people are more concerned

about their personal security. A lot of people are more concerned where their kids are. So there is a growing requirement in this aspect.

A quick recap of GPS. There are 24 satellites in the sky. With a GPS receiver that can receive 3 to 4 satellites, you can report the latitude and longitude. The advantage is that it provides an accurate positioning capability, but on the other hand the disadvantage is the shadowing by the buildings. With all the high-rise buildings in Hong Kong, especially in the urban area, this means that most of the time we cannot receive the GPS signal on the ground level. When you are indoors, inside a tunnel or a basement, you cannot receive the satellite signal either.

Another technology is dead reckoning. You install the equipment in the vehicle, measure the speed of the vehicle and also the turning, and then feed the data to the onboard computer so that it may identify where you are. Whenever you turn the corner, the dead reckoning mechanism would keep track of your correct position on the road. This technology is mainly for the vehicle.

The next positioning technology is what SUNDAY provides. It is GSM tracking. They are not an accurate tracking technology, but it has the advantage that wherever you are within the GSM coverage, it can provide some location information to you. It's really an application built into the SIM card. It has two algorithms, cell based and NMR based.

Cell based uses just only a single cell, where you register to the strongest cell that reports where you are. If the cell is 5 km, it has an accuracy of 5 km.

The better positioning algorithm that SUNDAY is using is to make use of the surrounding 6 base stations and to estimate the best position for you. From our measurement and the optimisation built into the network, we can on average get an accuracy of 150 m in the urban area and 1.5 km in rural area.. I do not claim this is an accurate positioning method. But, it has a lot of advantages. Wherever there is GSM coverage, the system can provide the position to you. It is low cost, no external device required. It is an application burnt into the SIM card. It is particularly useful for the corporate application. You can query through the control centre where the work place is, or you can have your regular location reported back to the control centre.

For example, with the SIM tracking mechanism, the phone goes round this route with the surrounding base stations. If we are using the single cell method, every single base station will report the location of the phone. It is not accurate because the distance between cells can range from 200 m to 500 m in the urban area. But what we are trying to do is that whenever you make a measurement, it will report up to six base stations and with this information, it will report back to the location server. The location server, based on this measurement, would then calculate the measurement and estimate the best location. It will then, instead of reporting that you are in a single cell location, estimate the route with an accuracy of 150 m. If you are in the Karaoke, it is even more accurate because we normally have a base station in the Karaoke. This is a measurement. It gives you some idea about the accuracy of the tracking. This is what we take the measurement by using dead reckoning and comparing it with SIM tracking.

I have mentioned three technologies, GPS, Dead Reckoning and SIM tracking. You can also hybrid them so that it can have the intelligence switching between the tracking technologies. With the hardware box that has the GPS receiver and also the

GSM modem, it can have the intelligence switch. If there is a GPS signal, it will report the GPS signal and take this as the priority measurement. If there isn't, it will switch back to the GSM tracking. At the same time, the GSM is also used for transmitting the measurement data back to the control centre. The control centre is the location platform which has the open API connecting to the external party.

This is a hardware particularly designed either for the vehicle or ferry application. For example, this device is put in the ferry, measuring the speed of the ferry. All measurement is GPS in real time and through the GSM network it reports back to the control centre. It has very high accuracy. You can really see where the ferry is, on which side of the pier. We take the measurement from the GPS, put it into the SMS through the GSM network, send it back to the location server and the digital map will display the location.

I would try to compare the positioning technologies. As far as the cost is concerned, it is very low for SIM tracking. GPS and the hybrid are in the middle. SIM tracking is very convenient and handy. Tracking is particularly for person. GPS is primarily for vehicle.

If you are the solution provider, how do you work with SUNDAY to develop the application? We actually open up this interface. With a very simple instruction, location query with a mobile number to a particular mobile number. And it will report to you the longitude and latitude, time, mobile number and also the estimate accuracy in terms of distance. This interface is not LIF compliance yet, but will be in the future. If ASP is specialised in fleet management, with this interface, you are enabled with your own application, your own customer, and then develop the application for the corporate. If

you do not want to have your own application, you can basically do the service provisioning at SUNDAY's GIS server. The investment is minimal by making use of this interface.

Now, I want to demo a simple job dispatch application. For example, a control centre enters a job. It then polls the maintenance staff A, B and C and they will receive the information about the job. If C takes up the job and confirms job taken. Once the job is done, it would reply job done and then automatically updates the job dispatch centre. So it will really improve the work efficiency and help the company to better manage their maintenance staff. Now, I would like to invite my colleague to the stage and do a simple demonstration to you.

The demonstration is to show you how to do the job dispatch within the maintenance department. There are 3 mobiles, mobile 1, mobile 2 and mobile 3. Mobile 2 stays at HKCEC. At the control centre, a message "Please take the job" is sent to mobile 2. Mobile 2, after receiving the message, presses the reply button. At the centre, the job is confirmed taken showing the time, date, location etc. This is the demonstration of job dispatch. Another demonstration is to keep track of user history. If we click the history report, say mobile 1, it shows the user's route history on the map. This is a simple demonstration, and this is only one example. You are the solution or application provider. You can think of a lot more different applications. This is the capability which is opened up and enabled to you all. Thank you.