Korea Case Study

Best Practice in Korea Mobile Location Information for Emergency Callers
April 2010

Ofcom
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# Korea Case Study

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Executive Summary

It has not been possible to speak directly with the Koreans, we have however been able to carry out desk research which gives a fairly clear indication of the current state of location based services in Korea. In Korea users pay on average $500 for their handset, and benefit from no operator subsidies, despite this handset churn is more rapid than in Europe and the USA.
The Korean market has one of the most advanced LBS portfolios in the world, along with Japan. This has been driven by commercial based services rather than any emergency services mandate. Market penetration of 3G is already in excess of 43%.

The emergency services are however benefiting from the technology that is available.

Korea is motivated to provide international opportunities for its domestic handset manufacturers, (LG, Samsung) and content developers.

SKTelecom has dominant market share, and is therefore focussing its efforts on increasing ARPU rather than market share. There are no handset or feature subsidies in Korea. All handsets support ¼ VGA screen and support DMB. Location based services interoperate across networks eg friend finder.

Korean operators have already moved to CDMA2000 1x Ev-Do networks. In addition SKtelecom is rolling out HSPDA and has a W-CDMA network in Seoul.

KTF has both CDMA2000 Ev-Do and a W-CDMA network.

LGtelecom is the smallest of the three mobile carriers.

In Korea all handsets sold must support GPS.
2. Regulation & legislation

The legislation in Korea around LBS focuses around the privacy issues of the individual with exceptions made for the emergency services arena.

The Korean Communication Commission issues authorizations to location information providers and may also stop such an organisation from operating if it believes that they are no longer fit to operate such service.

Detailed instructions are provided in the case of mergers and takeovers of location information providers and destruction of location information.

Individuals that are found culpable of violating any of the laws relating to location information services face custodial sentences of 1-5 years, with their corporations facing fines.

- Location information service providers need authorisation of Ministry of Information & Telecommunication
- Explicit authorisation must be obtained from the customers to collect details of their locations
- Customers may claim for damages from:
  - the location information service provider
  - governmental agencies such as the Korean Communications Commission
- The location information service provider may not use the customer’s location information for any reason except the specific purpose for which the customer provided the authorisation
- The location information cannot be passed to third parties
- The location information SP must protect the information with all technical and administrative measures
- A full audit trail (automatic) of the collection of location information and its provision to other parties must be maintained
- The Ministry of Information & Telecommunication must inspect the details and records of the technical and administrative measures adopted by the location information service providers.

More specifically there are rules regarding the collection of location information on minors and those deemed incompetent or quasi-competent (needs consent of legal guardian).

The Korean government:

- Issued a decree relating to the standardisation of equipment (i.e., mobile handsets) for the use of location information
- Charged location information service providers and mobile phone manufacturers to comply with such proclamations
Set a standard relating to GPS (to which all handsets must comply)
Appointed a special technical agency to support the technical development and standardisation of GPS
Instructed the agency to support various business ventures using location information.

The following Korean laws relate to location information
- Established on January 27, 2005. Law No. 7372
- Partially Amended on September 27, 2006. Law No. 8002
- Partially Amended on April 11, 2007. Law No. 8367
- Partially Amended on May 25, 2007. Law No. 8486
- Partially Amended on December 21, 2007. Law No. 8775
- Partially Amended on February 29, 2008. Law No. 8867
In Korea until 2002 LBS used Cell-ID. Currently GPS based LBS use gpsOne incorporating Snaptrack technology. All three mobile operators are using this in their networks. It is available with user plane for commercial applications and control plane for emergency services location.

gpsOne has high pinpoint accuracy 5m-10m in outdoor environment.
4. Mobile operator technical issues

South Korea until 2002 used Cell-ID as the primary means of providing mobile location information to the emergency services. Since then three carriers have implemented a range of commercial location based services. They use GPS as the means to generate the location.

Within South Korea a working group on the standardisation of location based services, was set-up. This was government driven and was structured as shown in Figure 8.1. The split into sub-groups allowed focussed development.

Figure 4.1: Organisation of working groups for LBS

An architecture for end-end services is suggested by the Koreans as in Figure 4.2:
The Koreans’ plan was to:

- Issue a decree for standardisation of handsets
- Require location information service providers and handset manufacturers to comply
- Standards to be set for GPS
- Appoint a technology agency to support standards definition and user location information
5. PSAP readiness

The PSAP (Public Safety Answering Points) may request the location information service provider to provide the personal location information and “danger warning”, which may not be denied.

In order to receive the location information the PSAP must:
- subscribe to a special telephone number service
- have appropriate human resources.
- possess the appropriate equipment and facilities to receive location information and have the capability to issue a warning notice to the customer.

A location information service provider provides location information to a PSAP, only when the customer concerned has dialed an emergency service (eg 119 or 112).

It is the responsibility of the location information provider to prevent any misuse of this information and it must be provided online (not verbally).
6. Achievements

6.1 Korean NEMA’s services and vision

This agency offers five distinct services:

- **U-safe Call**: targets elderly and other vulnerable people and maintains a database that includes their personal and medical information. When one of these people makes an emergency call, the first responder dispatched gets the key data about the caller, how to contact relatives which may help clarify the whereabouts of a person in danger.
- **A GpsOne™ system** built into the handsets to pinpoint a phone’s location.
- **Telemedicine**¹, allows real time multimedia & visuals to be used whilst a patient is transported. Anyone reporting an incident can send a photo/video that can be forwarded to control centres/first responders to enable better preparation on way to incident.
- **SMS service for verbally challenged** to make emergency call.
- **Conferencing in multilingual volunteers** to carry out simultaneous translation the database is maintained by NEMA.

Approximately 20,000 (out of population of 47 m) are using the emergency LBS service annually.

¹ Note that in Korea cars are not obliged to pull over for ambulances, so that journey times for patients may be extended.
7. References

[1] Mobile Location Based Services Activities in Korea TTA

April 2003

DMB Digital Multimedia Broadcasting A digital radio transmission standard for sending video etc. to mobile devices