A Study on the Method of Providing Family Finder on TV Services in the Open Service Platform

HyunKyung Yoo, SangKi Kim Converged Service Research Team Electronics and Telecommunication Research Institute(ETRI) 161 Gajeong-Dong, Yuseong-Gu, Daejeon, 305-700, Korea {hkyoo, kimsang}@etri.re.kr Tel: +82-42-860-6768, Fax: +82-42-861-1342

Abstract

According to the innovative development of digital information technology, our society is evolving to NGN that combines the diverse telecom and broadcasting network into a converged network. For various NGN services, it needs to open network resources to 3rd party service providers. And then, service providers enable to develop and provide more converged services with open API technology. In this paper, we define the architecture and Geocoding APIs that supported the location address of mobile subscriber. And we provide the concept and control flow of the family finder on TV services by using Geocoding API. Finally, we describe the effects of Geocoding API comparing to the existing location service model.

1. Introduction

Until now, PSTN, internet, mobile telecom network and broadcasting network providers have provided the services with their own network resources. According to the innovative development of digital information technology, our society is evolving to NGN(Next Generation Network) that combines the diverse telecom and broadcasting network into a converged network. For various NGN services, it needs to open network resources to 3rd party service providers. And then, service providers enable to develop and provide more converged services with open API technology.

Parlay X gateway using open API has service

functions of third party call, call notification, short messaging, multimedia messaging, payment, terminal status and location, call handling, audio call, multimedia conference, address list management, presence, message broadcast and Geocoding. Service developers can generate services easily by calling these service functions.

Like this, open API can present a unified face to service developers under which can be hidden the details of network protocols that are not of interest to developers. The number of announced open API services[1] may be roughly estimated at 70. These services are operated in the open service platform of Aepona, Appium, Corebridge, IBM, Teltier, Net4Call, Telenity, Herit etc. We categorized these services. First, they are categorized to personal and enterprise services if classified for whom the services are targeting. Second, they are categorized to the existing intelligent network services and the converged services of telecom and IT if classified by new or existing services. Third, they are categorized to presence, mobility, message and calendar if classified by feature of services.

In this paper, we defined the architecture and Geocoding APIs that supported the location address of mobile subscriber. And we provided the concept and control flow of the family finder on TV services by using Geocoding API.

Family finder on TV services offer a viewer on watching TV the location address based on the position of mobile subscriber. They are composed of the member positioning service and the member safety service. The former provides the location address of family and the latter notifies if members leave the set-up area.

This paper is organized as follows. Section II defines the network and functional architecture of Geocoding APIs in the open service platform. In section III, we define Geocoding API and describe the concept and control flow of the family finder on TV services by using Geocoding API. Finally, in section IV, we bring to conclusions.

2. Architecture for Geocoding Fuctions



Fig. 1. Network Architecture for Geocoding Functions

At present, most of the network operators provide the location services to their own subscribers. However, since there is no standard API for these services, either they do not provide access for new service developers or they do that as a proprietary interface. For that reason, standard interface for location services, that is, Geocoding API should be used between gateway in network and application server in 3rd party service provider.

By using Geocoding API, service developers do not need to have GMLC/MPC and addressing server. They just make use of already available resources using standard interface. Geocoding APIs translate between a terminal identifier and an location address. These APIs act as a bridge between the terminal-oriented location services of Parlay and existing geocoding services. Network entities to provide geocoding web services are location server and addressing server. The location server named as GMLC/MPC provides location information of mobile terminal to gateway. The addressing server supports address, map and routing information to gateway.

1. shows the network architecture Fig. composed of Application Server, Parlay X GMLC/MPC, gateway, addressing server, Headend, mobile and ΤV terminals. OMA/MLP(Mobile Location Protocol)[2] is the protocol used between gateway and GMLC/MPC and OpenLS(Open Location Services)[3] is used between gateway and addressing server. The proprietary protocol between gateway and Headend is defined as HCP(Headend Control Protocol).



Fig. 2. Geocoding Functional Architecture

The Geocoding functional architecture is as

shown in Fig. 2. It consists of Geocoding API block, Geocoding SCF block, MLP protocol block and OpenLS protocol block. Geocoding API block transfers web service request to Geocoding SCF block. And Geocoding SCF block has service logic for providing geocoding services. The function of MLP protocol block is to interface between GMLC/MPC and Geocoding SCF block. And OpenLS protocol block is to interface between addressing server and Geocoding SCF block.

3. The Family Finder on TV Services

In Parlay X Geocoding API, we defined 3 Geocoding operations, GetAddressOfTerminal, GetAddressOfTerminalForGroup and GetTerminal-

DistanceFromAddress[4]. GetAddressOfTerminal and GetAddressOfTerminalForGroup operations retrieve the location address of a terminal or a group of terminals. GetTerminalDistanceFrom-Address operation determines the distance of a terminal from an address.

Family finder on TV Services offer a viewer on watching TV the location address based on the position of mobile subscriber using Geocoding API. They are composed of the member positioning service and the member safety service.



Fig. 3. Member Positioning Service Flow

In these services, family members have mobile phone and family lists are pre-defined by provisioning. In member positioning service, a viewer on watching TV can be provided the location address of family carrying mobile phone.

A viewer turns on TV and activates member positioning service on clicking service icon. He or she selects the family member who wants to know location address and requests the position. He or she asks that member whether permits to inform position or not.

After permitted position search, the application server calls the GetAddressOfTerminal operation by specifying the terminal for which the location address to be retrieved. To implement GetAddressOfTerminal operation, Parlay X gateway gets the geographical coordinates of terminal number from GMLC/MPC and then feeds the retrieved geographical coordinates to addressing server. Finally it gets the location address from addressing server. Parlay X gateway returns the location address of the specified terminal to the caller application.

Location address is defined as AddressInfo[5] which is composed of country, state, district, city, street, houseNumber, additionalInfo and postalCode. Application server transmits the location address to IPTV STB. A viewer can see location address of family member in caption on watching TV.

In member safety service, a viewer on watching TV can be notified in caption on TV if children or old people leave the set-up area and where they are.

A viewer turns on TV and activates member safety service on clicking service icon. After he or she selects the family member and sets up the safety area, the application sever calls the startGeographicalNotification operation[6].

If family member leaves the set-up area, GMLC/MPC notifies gateway. And then gateway calls the GetAddressOfTerminal operation for knowing where family member is. Gateway gets the location address from addressing server via GMLC/MPC and returns the location address to the caller application

Application server transmits the location address to IPTV STB. A viewer can know that family member leaves or is within set-up area and location address of family member in caption on watching TV.



Fig. 4. Member Safety Service Flow

In provision model of the existing location services, service providers must have application server and addressing server.

But in this paper, we showed that network providers have GMLC/MPC and addressing server and open network resources to service provider with Geocoding API. Geocoding services offer the opportunity to extract key element like address that are of interest to telecom service developers, thereby simplifying their learning curve and their code. It seems more natural to extend Parlay X's notion of terminal location to the realms of Geocoding than to extend those to include a notion of terminal from which locations may be derived.

It is effective that gateway retrieved address which application server directly transmit to subscriber. Also service providers can develop and provide various location services with Geocoding API, without access to the geographical coordinates.

4. Conclusion

In this paper, we presented the architecture and Geocoding APIs that supported the location address of mobile subscriber. And we provided the concept and control flow of the family finder on TV services by using Geocoding API in the open service platform. In Geocoding API, we defined 3 Geocoding operations, GetAddressOfTerminal, GetAddressOfTerminalFor -Group and GetTerminalDistanceFromAddress operations.

In different from the provision model of the existing location services, we showed that network providers have GMLC/MPC and addressing server and open network resources to service provider with Geocoding API. It is effective that gateway retrieved address which application server directly transmit to subscriber. Also service providers can develop and provide various location services with Geocoding API, without access to the geographical coordinates.

Acknowledgment

This work was supported by the IT R&D program of MIC/IITA [2005-S056-03, Development of Open API and Service Platform Technologies]

5. References

- Zygmunt Lozinski, "Parlay Report: 12th Parlay Member Meeting," Parlay meeting, May 2004.
- [2] OMA TS MLP, Mobile Location Protocol (MLP) Candidate Version 3.1.
- [3] OGC 05-016, OpenGIS Location Services (OpenLS): Core Services.
- [4] 3GPP TS 29.199-16, Open Service Access (OSA); Parlay X web services; Part 16: Geocoding.
- [5] IETF RFC 4119, A Presence-based GEOPRIV Location Object Format.
- [6] 3GPP TS 29.199-9, Open Service Access (OSA); Parlay X web services; Part 9: Terminal Location.