UTILIZING GEODATA FOR INTERACTION TV(IPTV) EXPERIENCE

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Abstract: This study was conducted with the aim of modeling an information structure that would allow appropriate methods of amassing, integrating, and arranging all collected information related to each derived Geodata content type. The analysis of the status and types of Geodata contents currently serviced through the web and mobile provided the preliminary case study through which the types of Geodata contents most appropriate for the IPTV were derived. User viewing research and user need research were carried out in order to extract the most appropriate types of Geodata contents for the IPTV environment. The information collected based on the results of the first and second rounds of research were mapped to the content types that were already being serviced by the existing media. Through this mapping, the appropriate types were extracted and a corresponding prototype was produced. The results of this study propose the necessary basic structural factors of the information types for the future development of IPTV contents.

Key words: Paper User experience design, Interaction TV, IPTV, Geodata, GIS, Mashup

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1. Introduction

The expansion and integration of media as a result of the development of digital technology have played a significant role in exposing users to new information and renewed intellectual structure as well as promise greater changes and development in media contents.

Mashups based on Geodata take on a new information structure by inducing user participation and co-ownership. Diverse SNS are being provided through webs and mobiles by adopting this new information structure. IPTV's allow two-way networking and can be synchronized to web and/or mobile. As a result the research and development efforts to produce contents appropriate for the IPTV environment are gaining much force and attention. The TV environment has a strong familial and communal characteristic and therefore it is expected that a synergy effect can result by introducing SNS that has a strong collaborative characteristic to such an environment. This study derives the types of SNS contents that use Geodata in an IPTV environment and through this, aims to model an information structure most appropriate for the TV environment. To do so, the study first selects an experimental model after analyzing user behavior and user needs when viewing an IPTV environment-friendly content type. For modeling the information structure, the detailed information type of the

extracted experimental model is analyzed and this then is mapped to the existing information structure's types that are currently serviced through the web and mobile. A prototype is then produced based on the matched results and an appropriate method of arranging information can be proposed. The results of this research propose the fundamental factors necessary to the UI structure and GUI structure of future IPTV Geodata contents.

2. The status on the application of Geodata

2.1 The application of Geodata on Web 2.0

Web 2.0 can be defined by the characteristics of participation, co-ownership, and open environment. This is because users can produce and distribute self-produced contents which allows the natural production of an infraware where information is move around dynamically and is applied liberally. Naturally, web as a platform provides an environment that can implement diverse user applications. The defining characteristics of Web 2.0 are what allows easy access to services such as SNS and Mashups. As a representative example that applies Geodata on the web is Google's map service. The Google Map is a Geodata service provided by Google that uses JavaScript to mark map information on the web and allows position information control through Open API. A Mashup that makes use of Google Map's Open API is the Google Housing Map. Housing Map is a representative Geodata service that integrates the real estate sale information on the Google map. When the user selects a particular real estate product indicated on the Google map, the corresponding address and other related information are provided to the user.[1] An example of a Mashup of news and map services is the Geonews and Google Yahoo is a Mashup of information such as transportation and weather. Locally, map services are provided mainly through portal sites. Yahoo Korea, the first local portal site to provide a Korean version of the world's satellite map is has applied the real-time transportation information to the current service since the end of the last year and went on to promote the i-phone or i-pod exclusive 'Yahoo There Map service.'

2.2 The application of Geodata on Mobile 2.0

SNS is the example of a mobile map service Mashup. The SNS which is based on real-time position updates is often provided as a mobile phone's main background or in the form of a general application. The service allows users to identify the positions of other users and communicate with them. The leading provider of map service Mashup is Nokia. With the Nokia beta Lab as the main player, similar services are provided from many different perspectives. Leading examples of related services include Nokia chat, Friend view, Nokia photos, and Nokia vine. DoCoMo's map called Talk can be used through Zenrin Datacom's application. Nokia services can be used by registering all the necessary users whereas the local service, 'Pajama 5' allows the user to select only 5 users to update each others' positions and communicate with text messages. In the local arena, real-time position information services that synchronize information on surrounding restaurants and cinemas to the map service are due to be released next month.[3] NHN is due to incorporate the Wingbus restaurant information service to the mobile web service to provide users with a personal web service that can be used even if the user is moving and other SNS.[2]

3. The application of Geodata on IPTV

3.1 The extraction of Geodata content types applicable to the IPTV environment

3.1.1 Method

A. 1st round. Research on user behavior when watching TV

Ethnographic research and in-depth interview were used to conduct the research on user behavior when watching TV. The derived family members' types will be selected as the experimental model of the user behavioral analysis for to conduct the research.

B. 2nd round. Research on user needs to extract SNS elements appropriate to the TV environment

FGI was conducted on the experimental models selected through the 1st round of experiment depending on the TV program and depending on the level of focus. Then, programs with high viewing rates and SNS needs were selected for in-depth interview through which detailed information types were extracted. Also, opinions of the method of providing information were sought and applied to the information structuring. The programs used for the case study were programs that were recently aired and received high view rates.

Table. 1 Programs selected to derive the types of information

Program genre	Program Title	Program genre	Program Title
Drama	The queen of the home(MBC)	Entertainment	MooHanChallenge (MBC)
Sport	WBC Finals (Korea: Japan)	Documentary	Human documentary 'Love' (MBC)
News	Breaking news: Pres. Ro's death (KBS)		

3.1.2 Experiment results

A. Result of user behavior as a result of 1st round TV viewing

The study revealed that with more family members watching TV together there was an increased behavioral patterned by a common topic that everyone present can share. The study also revealed that with less family members watching TV together, the higher frequency of family members using other media (internet, game, mobile phone, MP3). An interesting observation was that the subjects were unconsciously drawn to the TV screen by audio stimulants in addition to the visual stimulants present.

Table. 2 The types of family members while watching TV

Type of family member	Percentage
All members watched the TV	5%
Spouses	30%
One parent and child	10%
Children (Brothers and sisters)	15%
Alone	40%

Table. 3 Result of ethnographic research

Type of family member	Behavioral pattern while watching TV
All members watched the TV	Conversation, dining, snacking, games or housework that the family does together
Spouses	Conversation, dining, individual housework
One parent and child	Conversation, dining, individual housework
Children (Brothers and sisters)	Conversation, internet, game, assignments, work, housework
Alone	Internet, game, assignment, work, phone call, messaging, housework

B. The analysis of SNS elements appropriate to the 2nd round TV environment

The requirements to the SNS functions per program per level of focus were all different. Regardless of the genre

of the program the user required SNS for providing interested information the most. By the nature of the program, users required expressing one's opinion as an important criteria in addition to providing interested information for News programs. In cases the level of focus were high there was not much need for SNS. The sports and drama programs showed high levels of focus. For sports programs there was a high need for sharing the moment and expressing one's opinion. For programs that showed low levels of focus there was a comparably higher demand for providing interested information.

Table. 4 Analysis of SNS elements appropriate for TV environments

Depending on	Affinity extraction criteria	
Program	Drama: provide interested information, share information, share opinion Sports: provide interested information, share the moment, share opinion News: provide interested information, share opinion	Entertainment: share information, share opinion, provide interested information Documentary: provide interested information
Level of focus	High focus: share the moment, share opinion Medium focus: provide interested information, share information	Low focus: provide interested information, share information, produce content

As a result of the 1st and 2nd rounds of the research, the fewer the number of family members watching together and the lower the level of focus to the program viewed there was an increased tendency to use other media. Through such user behaviors, the need to search on the internet to attain further information on the contents viewed on TV as well as the need to communicate opinions with other users were deduced. The result of the case study on the detailed information type that the user desires is described below.

Table. 5 Analysis of SNS elements appropriate for TV environments

Genre	Program Title	Type of information	Genre	Program Title	Type of information
Drama	The queen of the home(MBC)	shopping, character, place, fashion, food	Enter.	MooHanChallenge (MBC)	character, place
Sport	WBC Finals (Korea: Japan)	character, place, baseball, common knowledge	Docu.	Human documentary 'Love' (MBC)	character, medical common knowledge
News	Breaking news: Pres. Ro's death (KBS)	character, place			

As a result of extracting the information types depending on the various programs it can be concluded that although there are certain differing needs, common needs included character information, place information, culture information (fashion, food), and knowledge information (baseball common knowledge, medical common knowledge, etc.). Specifically in the case of the drama program there was a noticeably high need for shopping information. It is possible to extract the following information types and corresponding method of conveyance.

Table. 6 The information type and method of conveyance of SNS contents appropriate to the TV environment

Information type	Form of information	Information type	Form of information
Character	Picture, text, video	Place	Picture, text
Culture	Picture, text, video	Knowledge	Picture, text, video

According to the user need research for the method of conveying the information, users expressed negative opinions about included additional visual elements unrelated to the TV program on the same display screen. Also, users voiced difficulties in using services other than watching TV caused by the overly simplistic interface of the IPTV's remote control device.

3.2 The modeling of IPTV based Geodata content's information structure

3.2.1 Method

A. Research on web and mobile's content types and method of conveyance

The research subject for analyzing the content types provided in the web and the mobile, this study selected the Naver Map service and the Daum Map service. Both selected services are local portal sites that have the largest number of users.

B. The information structuring of contents appropriate for the IPTV environment

The content types deduced to be appropriate for a TV environment as identified in section 3.1 are matched to the method of information conveyance within current media (web, mobile). The results of this mapping are compared to the user behavior results organized in section 3.1 to conduct information structuring that is appropriate for a TV environment which is then produced into a prototype.

3.2.2 Experiment results

A. The result of analyzing the web and mobile's content types and method of conveyance

Table. 7 the web and mobile's content types and method of conveyance

Meda	Content type	Information type	Method of conveyance
Web	Transportation and place info.	Picture, text, video page link	Log on to service site > View basic map screen > Search information > Tag on map
Mobile	Transportation and place info.	Picture, text, video page link	Run application > User position info. > Current position > Search information > Tag on map

The contents provided on the web and mobile were mainly in the form of tagging the map and providing a page link. The content types included transportation information and place information (restaurants, cinemas, shopping centers, etc.).

B. The information structuring of contents appropriate for the IPTV environment

The results of sections 3.1 and 3.2.2_A were matched to derive the content types and methods of conveyance using the Geodata appropriate for the TV environment as follows.

Table. 8 The content types and methods of conveyance that are appropriate for contents in TV environment

Content type	Information type	Method of conveyance

Place info. , Culture info.	Picture, text, video	Run application > Information search > Tag on map > Select information > Link to related content

Section 3.1.2_B's results were referenced to provide a widget type application interface that will allow users to try other applications while watching TV. The screen capture method was used as the information search method in order to simplify device manipulation.

3.2.3 User scenario based on information structure

Based on the research results the following user scenario can be constructed.

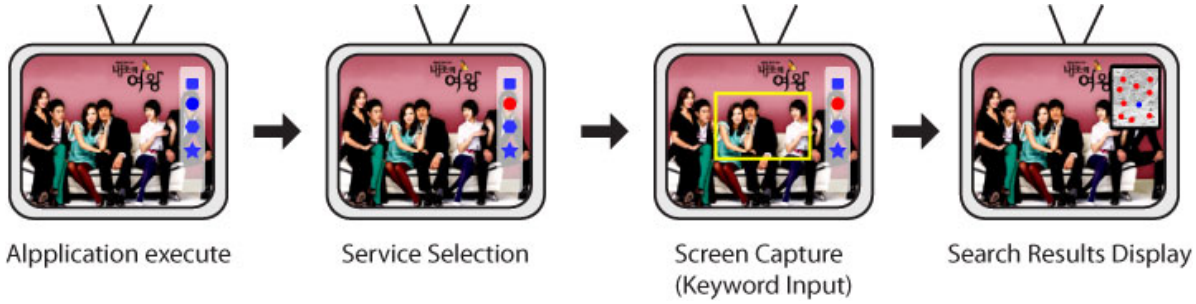

Figure.1 User scenario

4. Conclusions

This study deduced SNS content types that use Geodata in IPTV environments and used the derived types to structure and model information most appropriate to the TV environment. For the purpose of this study the content types appropriate to the IPTV environment were derived by analyzing user behavior and user needs while the user watched TV. The detailed information types were analyzed by selecting an experimental model from the extracted contents. The results were then matched to the information structure types currently provided on the web and mobile through which the information types appropriate for the TV environment and the user scenario were produced. This study is a preliminary study that precedes the application development of the Geodata contents suitable for an IPTV environment. Based on proceeding future study results, we plan to produce a prototype to conduct usability evaluation and apply these verified results to develop application UI and GUI.

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