

A Study on the Public Data Activation Strategy based on App Developed by Non-Profession User

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Abstract

In Korea, the act for promoting use of the public data has been enforced since 2013. The Key Government 3.0 Strategy was established for providing the public data as an obligation of public authorities for users to use them free of charge. The aim of open public data and using them targeted by the government is creation of a solution for vitalizing the economy by using the public data. However, the reason for low usability and tangible outcomes despite unlimited provision of open government data is as follows. That is, it is essential to address the issue of difficult software technology required to access public data for using the data. However, with the open API method currently provided, the development procedure is not easy even for IT students or specialized software developers. Therefore, strategies for each step ideal for the level of developers are required to vitalize applications based on the public data and developed by ordinary users. Two strategic methods can be used for facilitating the use of public data and applications developed by ordinary users suggested in this paper on the basis of the public data portal organized by the Ministry of the Interior and provided to all ordinary users. That is, they are applications developed in the web browser environment and those developed in the PC environment. They allow ordinary users to develop and distribute applications based on the public data to contribute to enforcing the policy for facilitating the use of public data of the government just with basic training and basic knowledge from the training without using program coding knowledge of open API which requires the knowledge of development professionals.

Keywords: *App, Public Data, Authoring Tool, Activation Strategy, Government 3.0, Application*

1. Introduction

In the current era in which information is a source of individual's competitiveness, an important issue is how efficiently the individual takes out, discloses and uses meaningful information from data silos, rather than how many data the individual has [1].

Public data refers to data or information public authorities create or manage, and cover all data or information in various formats (text, numbers, images, video, audio, etc.) created while the authorities conduct

their duties[2]. In Korea, the act for promoting use of the public data has been enforced since 2013. The Key Government 3.0 Strategy was established for providing the public data as an obligation of public authorities for users to use them free of charge [3].

The Korean government allows users to view the public data thereof through the “Public Data Portal“ in real time, and provides the public data to vitalize the Korean economy to result in user’s convenience, starting businesses and job creation. However, it is absolutely impossible for ordinary users efficiently to approach the public data, complete usability based on economic efficiency to implement the public data in a system because they do not have enough special knowledge obtained by studying information and telecommunication. Therefore, this study aims to build infrastructure for applications developed by ordinary users and suggest a method for improving users’ convenience so that they can use the public data to develop user-friendly applications from the beginner level on the basis of government’s open public data. Furthermore, this study suggests a solution and a method for implementing it to allow extensive application and reproduction of app development infrastructure focused firstly on university students, and secondly on all the users to maximize efficient contribution to new businesses and job creation. Workshops, regular seminars and meetings have been organized and held by the private-public partnership societies for studying government app development under the sponsorship of the Ministry of the Interior and National Information Society which is a public authority for support to spread the outcome of this study.

2. App development and strategy for vitalizing use of public data

In comparison with the noticeable outcome in terms of creation and accumulation of knowledge and information resources, tangible outcomes are not seen as much as desired in creating added values and improving competitiveness by using information. One of the reasons is low usability of knowledge and information resources [4].

The aim of open public data and using them targeted by the government is creation of a solution for vitalizing the economy by using the public data. However, the reason for low usability and tangible outcomes despite unlimited provision of open government data is as follows. That is, it is essential to address the issue of difficult software technology required to access public data for using the data. However, with the open API method currently provided, the development procedure is not easy even for IT students or specialized software developers. Therefore, strategies for each step ideal for the level of developers are required to vitalize applications based on the public data and developed by ordinary users.

2.1 Application development in web browser environment

The strategy in the first step is to provide a user-friendly method for using public data free of charge and developing applications in web browsers without installation of any development programs to develop the applications. This is for providing an environment in which ordinary users who do not open API knowledge can connect public data each other in an optimized way in browsers including Chrome, Firefox, Opera, Safari and Explorer of the latest versions commonly used in ordinary personal computers.

This is a method for using various backend templates defined for each category while developing UI as users assemble blocks completed in a web-based integrated development environment to complete app services fast. With this method, ordinary users can use public data easily to develop app services. Therefore, ordinary users can connect unexpected bright ideas, creative ideas to surprise the world and business models discovered in daily living with the public data to design and develop app services, and then implement and examine them in smartphones immediately.

Exemplary training showed that ordinary users could complete applications for providing video, images and maps of restaurants, healing camp sites and tourist attractions across Korea just three hours after starting the training, and they could drive their applications in their smartphone, respectively.

2.2 Developing application in PC environment

The strategy in the second step is to provide an environment in which ordinary users who can use any office program used the most currently in Korea can develop applications related to their work easily without any coding procedure as if they use any word processors, for example, Word or Power Point in their PC environment. This aims to provide a new development environment. In the environment, ordinary users can create and provide applications for distributing, using and applying all knowledge and know-how humans have gathered from diverse industries and sectors as user-friendly contents. The environment will make all works in the world more efficient, smart and human-centered.

While large-scale enterprises and public corporations use their ‘smart offices’, their ability for planning and implementing their work in the mobile environment is an important means for employees being employed and competitive. In this perspective, the best software environment is provided to converge mobile applications without the coding process in the PC environment. In the environment that allows ordinary users to create all types of knowledge in the world as basic applications through one-day training without coding knowledge, all logics of the environment focus on providing the state in which ordinary users fully use the design tool to create their applications.

The coding of applications in this study is a strategy for creating application programs as contents by completely removing technical elements while designing objects to be implemented just by means of a GUI tool in an execution engine environment where one app operates the same as in all OS environments. The key technology in the aforementioned environment is implemented by developing and providing new architecture and technology for separating a program into ‘functions’ and ‘logics’ in application software to store, manage and execute them.

3. App developed by non-profession based on public data activation

Two strategic methods can be used for facilitating the use of public data and applications developed by ordinary users suggested in Chapter 2 on the basis of the public data portal organized by the Ministry of the Interior and provided to all ordinary users. That is, they are applications developed in the web browser environment and those developed in the PC environment. They allow ordinary users to develop and distribute applications based on the public data to contribute to enforcing the policy for facilitating the use of public data of the government just with basic training and basic knowledge from the training without using program coding knowledge of open API which requires the knowledge of development professionals.

3.1 Developing a parking application in a web browser environment

3.1.1 Public data utilization demand and open API connection

To use public data, users have to access and log onto www.data.go.kr which is the public data portal. It is then necessary to search public data to be used and get approval to use the public data. The users are given a verification key and then can select Preview shown in Figure 1.



Figure 1. Verification Key and Preview at Public Data

Selecting Preview allows the users to bring URL of the concerned public data. Copying the URL into a web browser to develop applications shows the concerned database shown in Figure 2. Users can select and use any field they want to use.

사유	공공데이터 Tag	생분류 데이터	데이터 필드 타입	데이터필드 이름	키 Tag
1	<input checked="" type="checkbox"/>	결제 신용카드	Text	결제방법	
2	<input checked="" type="checkbox"/>	PHolsDate	Text	PHolsDate	
3	<input checked="" type="checkbox"/>	unqInfo	Text	특이사항	
4	<input checked="" type="checkbox"/>	PTime	Text	기본시간	
5	<input checked="" type="checkbox"/>	PDayPrice	Text	PDayPrice	
6	<input checked="" type="checkbox"/>	PDayTime	Text	PDayTime	
7	<input checked="" type="checkbox"/>	Ing	Text	Ing	
8	<input checked="" type="checkbox"/>	PDaySdate	Text	PDaySdate	
9	<input checked="" type="checkbox"/>	priceInfo	Text	무료/유료	
10	<input checked="" type="checkbox"/>	oldAddr	Text	주소	
11	<input checked="" type="checkbox"/>	PSatEdate	Text	PSatEdate	
12	<input checked="" type="checkbox"/>	parkingType	Text	parkingType	
13	<input checked="" type="checkbox"/>	tellnum	Text	tellnum	
14	<input checked="" type="checkbox"/>	PUseDate	Text	운영요일	
15	<input checked="" type="checkbox"/>	PPriceStep	Text	추가단위요금	
16	<input checked="" type="checkbox"/>	PTimeStep	Text	추가단위시간	
17	<input checked="" type="checkbox"/>	PPrice	Text	PPrice	

Figure 2. Concerned Database Field in Public Data

The users select data to be used and design screen layout through Drag & Drop without any coding procedure to complete applications implemented in their smartphone.

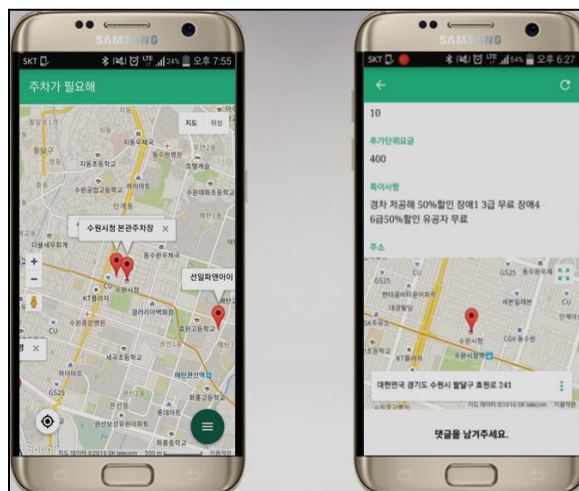


Figure 3. Execution Screen Concerned Database Field in Public Data

Applications can be developed in the web browser environment on the web without installing any tool in user's PC, and without needs for any knowledge of web servers and database. It is also allowed to mount various functions, for example, member management, notices, comments, order, booking, payment, coupons, PUSH messages, alarm and the like without a coding procedure. The part developed fast without a coding procedure can be converted to develop a function to be added through a coding procedure.

3.2 Developing abandoned animal management application in PC environment

3.2.1 Applying for using public data and connecting to open API

The process of having a verification key and data preview for using public data is the same as the process described in 3.2.1 Applying for using public data and connecting to open API. The app development program in the PC environment for ordinary users uses a smart maker, and sets up an open API in the smart maker with the issued personal verification key for connection. In the app development program, the open API environment can be set up in the following process. First, select Tool – Open API in the app development program window, and then select Set up service environment.

Second, use the Public Data Development Guide obtained to use it in the public data portal to specify service type. Figure 4 shows the service type specified when producing an application to view abandoned animal information.



Figure 4. Open API Environment Setting

Third, see the requested variable described in the Development Guide to add transferred data items shown in Figure 5 and then connect them to the atom elements of the app development program.

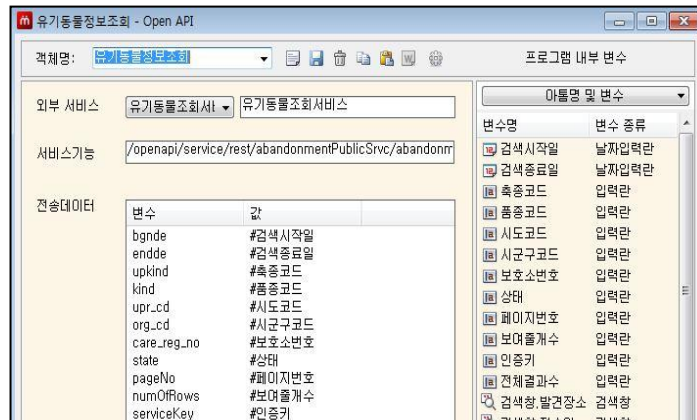


Figure 5. Link Atom with Transfer Data Item

Fourth, set up variables to receive on the basis of the transferred data items. The setup method proceeds as follows: specify any variable in the public data portal to display the data preview window, conduct syntax analysis in the programming tool to connect the output result to the atom variable. The output data obtained when viewing the public data saves the values as a concerned atom and all procedures are then completed.

3.2.2 Abandoned animal management application using public data

Figure 6 shows a window for viewing abandoned animal information. The information is made to match actual information of the public data based on the information searched by a user to show the requested information on the search window in real time.

발견장소	접수일	품종
상계동 관음선원...	20160729	[개] 말티즈
갈음동 1286-13...	20160729	[개] 믹스견
강북구청 주변	20160729	[개] 시츄
울림파크미리아파...	20160729	[개] 포메라니안
전동로 14길 12 인근	20160729	[개] 믹스견

품종	[개] 포메라니안	
나이	2010(년생)	
보호장소	경기도 양주시 남면 상수리 410-1	

Figure 6. Information Inquiry for Abandoned Animal

Figure 7 shows a window executed after selecting Record in the search window and then clicking View. The concerned abandoned animal information is then shown, and the location of animal shelter can be found by giving a call and using the GPS based on the viewed information.

발견장소	울림파크미리아파트 227동 앞		
접수일	2016년 07월 29일		
품종	[개] 포메라니안		
성별	F	나이	2010(년생)
체중	3.50kg	색상	흰
보호소이름	한국동물구조관리협회		
보호소전화	031-867-9119		견역
보호장소	경기도 양주시 남면 상수리 410-1		지도

Figure 7. Detailed Information Inquiry for Abandoned Animal

4. Conclusion

This study suggests a method for encouraging ordinary users to public data on the basis of two methods for using the public data and developing applications. The development method suggested in this study were tested with middle school students and ordinary users. It was shown that they developed applications based on public data after training in a short period from 3 to 20 hours depending on difficulty levels although they did not have special programming knowledge. Where the training is employed in the Flexible Semester Program enforced by the government, Korea can be the strong country recognized in the world in terms of application development. Furthermore, as the government discloses more public data, the economy can be vitalized, and it is possible to develop applications by using public data application implemented with the development method suggested in this study to allow ordinary users to access public data of various contents. Conversion of public data with diversified creative ideas can contribute to emerging new industries to improve one-person companies and create more jobs.

Another suggestion for using public data is the need for reducing technology gaps for public data between the central government and local governments. Another need includes specialized human resources having enough knowledge of public data and mediating between the central government, local governments and ordinary users. A program for providing subsidies to ordinary users and small- and medium-sized enterprises who use public data to run contents business can be a solution for facilitating the use of public data. Another attention should also be paid to misuse of public data resulting from simple methods of using and accessing the public data. It is further necessary to study how to use a development method higher than 4 steps for development professionals, university students majoring IT, special-purpose high-school students, general-high school students, middle school students, elementary school students, and ordinary users by expanding the two types of current development methods suggested above for beginners.

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