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THE SYSTEM OF SAFE AND COMFORTABLE "KANSEI WEB SERVICE SYSTEM"

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ABSTRACT

Infrastructure valuing Web service of the usual doesn't necessarily fit user's feelings. In this paper, we propose the system construction method by using KANSEI contents. It is shown that our "KANSEI Web Service System" provides feeling safe and comfortable.

Keywords: **safe and comfortable, Web Service, System Development**

1. INTRODUCTION

Japan Ministry of Public Management, Home Affairs, Posts and Telecommunications opened "an investigation society for the study about the ideal method of the information and communication technology for relief/safe social realization" from 2006.

In the [1] last reports, three fields analyzed the present conditions and a problem about the information and communication technology in "anti-disaster measures / crisis control", "a meal" and "the civic life support such as a child / the senior citizen" and lectured on the safe and comfortable social image which Japan should have aimed at in future, and the examination of the countermeasure of the technology for it was performed.

Information and communication technology to solve the problem of the field of 3 is demanded to realize safe and comfortable society in the last report of the meeting for the study as it is shown in figure 1. The information system that the research institute of the domestic major vendor and independent administrative agency developed as a solution is

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carried as a casebook in the last reports. However, many systems introduced a casebook were systems of the infrastructure type which regarded a function and a product as important, and it has not been paid attention to about the feeling of the user.

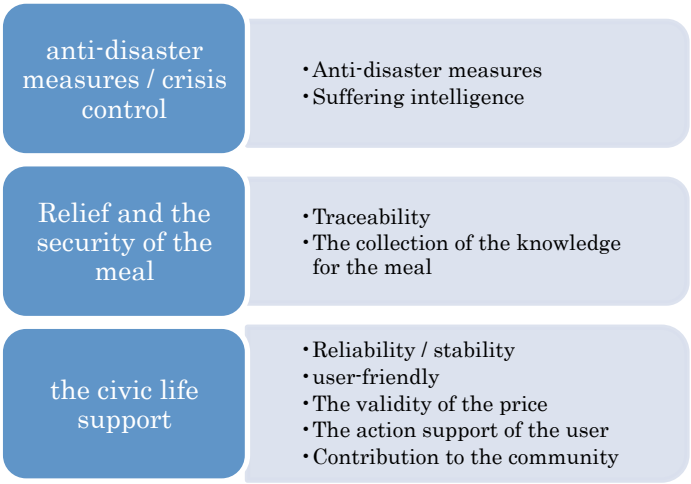


Figure 1: Information and communication technology to realize relief and safe society.

As for the information system to satisfy a matter of figure 1, the problem of the aspect of systems construction / the use is pointed out in the report as follows.

In *"the field of 3, various systems build both, and it is managed, but it is thought that information sharing should pay its attention to the construction of a platform based on a way of thinking of Web2.0 that it is relatively easily in particular even if there is it between a field and the different systems of the purpose because there is it in the present conditions that the information sharing to cross them is insufficient"*

Therefore two points of follows are realized in this study.

- The offer of the information system that fitted the feeling of the user.
- To hold information sharing easily; Web2.0-like systems construction.

Technique to be called mash up making the Web Service of the one is used as construction technique of the platforms based on a way of thinking of Web2.0 by an existing service component and the service that we developed originally to suggest the construction method of "the sensitivity Web Service system" to solve two problems mentioned above.

Based on a suggestion system, we examine the construction of safe and comfortable "KANSEI Web Service system" realizing demand "safe and comfortable" of the user as a specific example of the sensitivity Web Service system.

By this paper at first of explanation and the sensitivity Web Service of the Web Service construction method defined it, and designed the sensitivity Web Service system next. And of the sensitivity Web Service systems construction that is safe and comfortable using a KANSEI Web Service system suggested it, and mentioned the evaluation method.

2. CONSTRUCTION OF THE WEB SERVICE

2.1. Cooperation between the Web Service

Web Service is software service using common framework that was proposed to exchange information between dispersion applications or it based on communications technology by the existing WWW[2][3].

When the description language to show concrete content of communication and the Web Service between the service is standardized, and new service is built by Web Service cooperation, existing service is incorporated as a part of the service that is new as a reusable component.

Figure 2 shows problems of the service cooperation and does a connection of transfer retrieval service A and hotel retrieval service B for an example. There are problems not to be able to easily connect service when the technique to build new service from existing service and an original component called mash up is not a user knowing contents and Interface of the service well. Therefore, it is necessary or a developer builds the service that accepted the needs of the end user beforehand when service is offered to the end user by a mash up method or builds service automatically depending on a user, and to offer it[3][4].

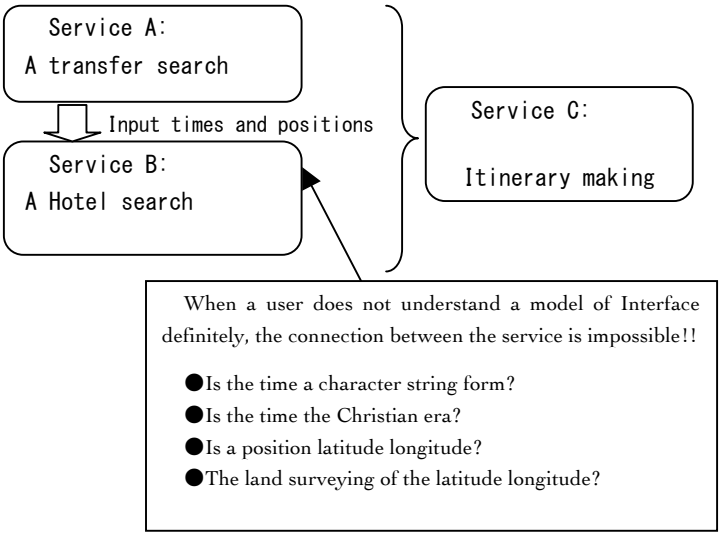


Figure 2: The problems of the service offer by the mash up method.

2.2. Application of the Semantic Web technology

Semantic Web is to name information the meta data which are a machine possible reading, and it is a design to process contents in the Web by software automatically. This Semantic Web technology is applied to a study of the service automatic generation[8][9] by the cooperation between a search[5]-[7] and the service of the service depending on the needs of the user a lot now.

2.3. Automatic cooperation of the Web Service

It becomes difficult for the end user to choose appropriate Web Service by recent Web infoglut. In addition, a lot of things that a grain is bigger than offered Web Service dismantle a task as needed, and the task of the user must carry out plural Web Service. The automatic

cooperation of the Web Service reduces the trouble of the user, and it is the field where a study is performed for the purpose of offering appropriate service to the user. [8]-[12].

2.4. KANSEI Web Service

The KANSEI Web Service is defined as Web Service including sensitivity contents in this study. Sensitivity contents are contents to stimulate the sensitivity of the user by what a user mentions the contents and recognizes. Web Service assumes a state including sensitivity contents a state to satisfy two points of follows in this study.

- The state that a parameter to show the taste of the user as meta data of the Web Service is given to.
- The sensitivity of the user being stimulated by using the service.

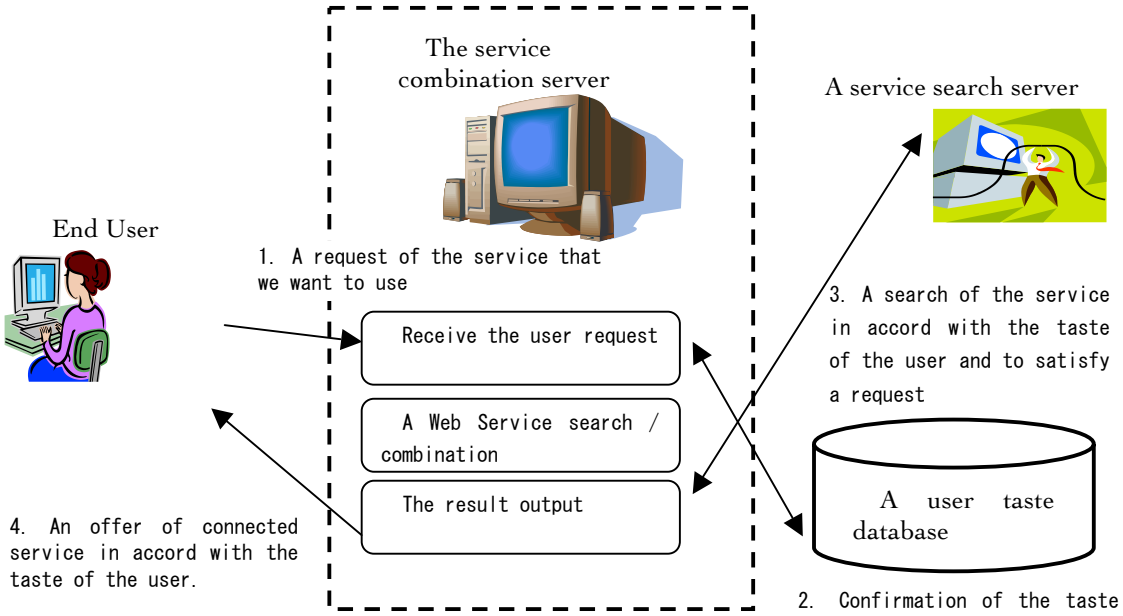


Figure 3: Service cooperation mechanism for sensitivity Web Service systems.

In this study, we suggest the construction of the sensitivity Web Service that utilized search technology of the service that accepted the needs of a user shown with 2.2 and 2.3 and automatic cooperation technology of the Web Service. The point to keep in mind at the time of the service construction is shown in the following list.

(1)At the time of service combination, the information that stimulated the sensitivity of the user whom original service has do not lack.

(2)What the service that a user hopes for can generate.

(3)Acquiring it without a user leaking necessary information.

(4)Can keep unity of a feeling of operation by putting different Web Service together.

3. THE DESIGN OF "THE KANSEI WEB SERVICE SYSTEM"

3.1. Services cooperation method

On "the Web application unification platform with Ontorogy"[8][9] of the precedent study, the suggestion of the cooperation method of the Web Service in line with a user demand is

accomplished, and service cooperation evaluation value V to be provided in an expression (1) that used the specifications of the outside front cover for as a thing evaluating cooperation quality of the service is shown. Quality of the service cooperation is high so that this evaluation value. A service cooperation evaluation value is applied in this study, and the KANSEI Web Service system of the service cooperation method along the taste of the user is built.

A service cooperation evaluation value V=U+IL+M+CL・・・(1)

Figure 4 is the constitution of this system and we use user sensitivity to show in figure 4 in this study and expand [8][9] precedence studies and offer the combination Web Service that followed the cooperation pass of several high ranks of evaluation value V, and was generated to the user.

Table 1: A parameter for quality evaluations of the service cooperation.

Parameter		Description
Information	**I**	Information of the Web Service
User Evaluation	**U**	An average user evaluation of the Web Service
Path Lenght	**L**	The number of Web Service of the cooperation pass inside
A kind of the collation	**M**	Close collation or expansion collation
An evaluation as the cooperation	**C**	An evaluation for the Web Service cooperation of the user

*1: The information that information I ... service S_n has . The value that broke number O_n of a value output the thing that the number of the value that we acquired when we carried out service among service included in a generated cooperation pass meeting was greatest as O_{max} for service S_n run time in O_{max}. In= O_n/O_{max}

*2 Evaluation C ... Because it is pass non-evaluation, we assume it 0 at the time of the examination.

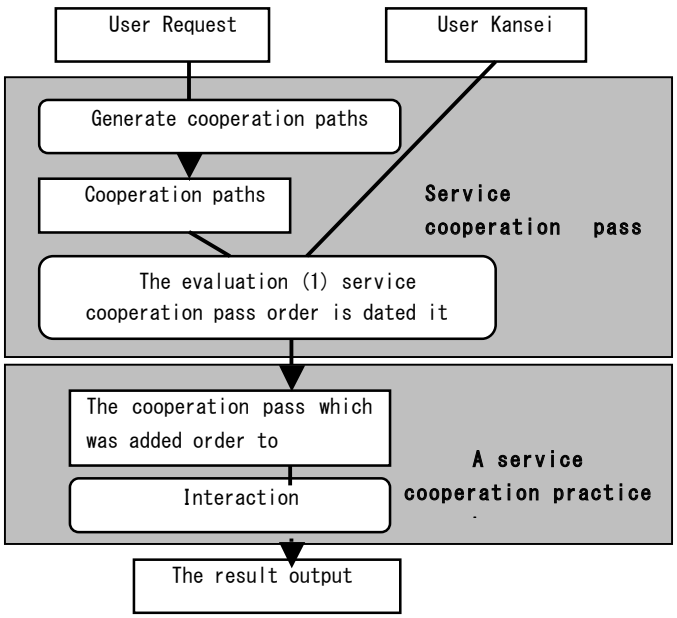


Figure 4: KANSEI Web Service system service cooperation method.

3.2. Implementation of the KANSEI Web Service

It is treated Web Service given a kansei parameter to as an attribute of Web Service shown in figure 5 for KANSEI Web Service in this study to meet a condition of the KANSEI Web Service showed in 2.4 .

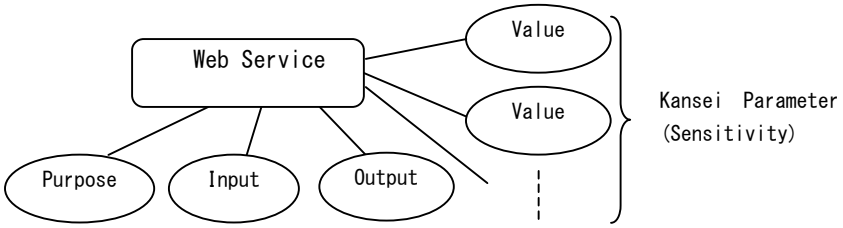


Figure 5: A KANSEI Web Service attribute example.

The value of the KANSEI parameter expresses it in (Kansei word: integer value) group and exposes a "big" adjective to "be bright" to the kansei word here and expresses a standard stimulating the sensitivity that service is shown to the integer value in the word how to make a pair.

3.3. Web Services search

The cooperation pass of the Web Service resolves the demand of the user into some subtasks to show it in figure 6, and the pass which put Web Service to solve the subtask together is generated. Because some reports[10] are accomplished about the cooperation pass generation method of the Web Service, we do not target it for the argument by this paper.

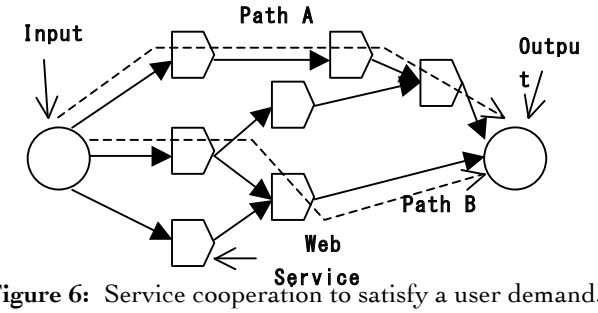
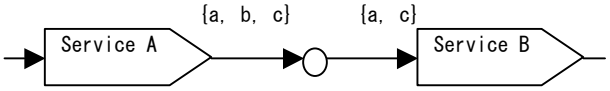
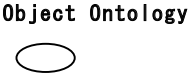


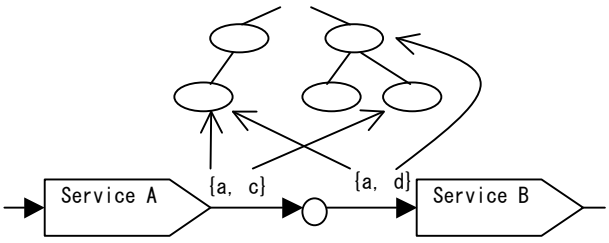
Figure 6: Service cooperation to satisfy a user demand.

The combination method of the input and output by the expansion collation is defined as close collation shown in figure 7 with Ontology for input and output collation at the time of the combination between things of Web Service[8].



(a) Close collation





(b) Expansion collation

Figure 7: Web Service input and output combination.

With the close collation, an input set of service carried out later expresses the collation method that is a subset of the output of the service in front. It is only a child node of service carried out later that the pass that there is the output of the former service be included in a child node of the input of service carried out later by the expansion collation, and it is in a collation object. The value of evaluation (1) collation kind M applies 0.7 with the cooperation pass including 1.0, expansion collation with the cooperation pass only for close collation[8].

3.4. The service cooperation evaluation value

It was acquired a value every Web Service as user evaluation value U of the Web Service to be included in service cooperation by [8] precedent studies by a user questionnaire and the mean was used and assigned values from 0 to 1.0. However, the method to acquire a value from a questionnaire every time every user using new service as Web Service increases is difficult, and it is not a realistic solution.

It is evaluated automatically whether Web Service to be included in in a cooperation pass by using a kansei parameter every Web Service to show in figure 5 is a thing along the taste of the user and uses a cosine measure with the evaluation type in this study and defines user evaluation value U.

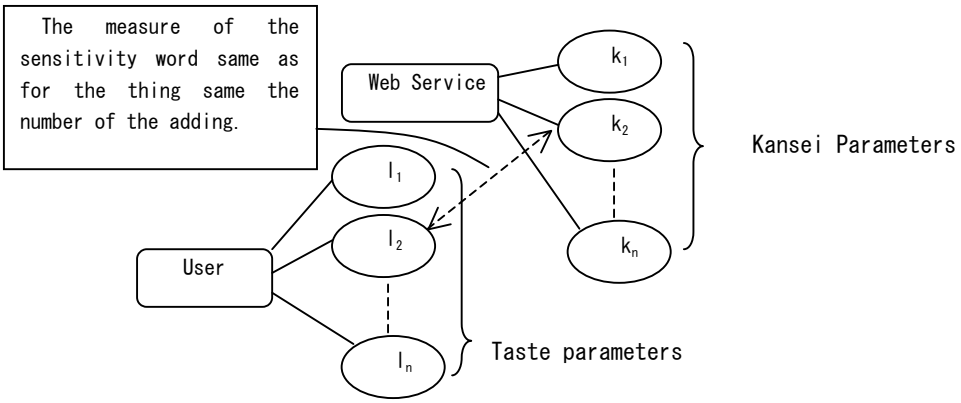


Figure 8: The relations of a user taste parameter and the sensitivity parameter.

Figure 8 shows the constitution of the user taste parameter. The user taste parameter that a user has expresses it like a sensitivity parameter in (kansei word: integer value) group and acquires these values by a questionnaire in ahead of time before a user uses this system. Service evaluation value U shall demand it in an expression (2) with a cosine measure with the taste parameter of the user and a sensitivity parameter of the Web Service.

User taste vector $\boldsymbol{l}$=l1,l2,…,ln

Service kansei vector $\boldsymbol{k}$=k1,k2,…,kn

User Service evaluation $\cos_{lk}\theta = \frac{l \cdot k}{\|l\|\|k\|} \cdots\cdots$ (2)

As for the value of evaluation value U, a different result is provided in a thing of calculating evaluation value U with user taste every user. Therefore, it is that service cooperation evaluation value V calculated using the value that reflected this user taste by an expression (1) is influenced by taste every user. In addition, a questionnaire for the service evaluation value acquisition becomes needless, and the work load to a user using a system to suggest is reduced by all users using Web Service like [8] precedent studies because service evaluation value U is found when we develop Web Service just to give one sensitivity parameter for new Web Service.

4. "THE KANSEI WEB SERVICE SYSTEM" AND THE EVALUATION THAT ASSUMED SAFE AND COMFORTABLE A SPECIFIC EXAMPLE

4.1. A definition of safe and comfortable

It is experimented on investigation to grasp a factor of the security for the security technology by [13][14] precedent studies and carries out a factor analysis of the search.

We apply this investigation[13][14] method and apply it to analysis of the security to demand from security and the service technology of the user for the Web Service and define a factor to constitute "safe" "comfortable" of the Web Service by an experiment and reflect it in the value of the sensitivity parameter that Web Service has.

4.2. Safe and comfortable Web Service evaluation

Using the KANSEI Web Service system designed in section 3, combination Web Service to realize safe and comfortable the specific example of the user demand is generated, and generated examination follows table 2, and Web Service along the taste of the user is performed. For a specific example of safe and comfortable, a user evaluates the combination Web Service that Web Service cooperates for a user demand in assistant, searching it at home nearby refuge at the time of the disaster, and was generated by using a questionnaire. If that it is a turn and agreement by service cooperation evaluation value V which user evaluation order of combination Web Service generated then showed in section 3 is confirmed, it is thought that service cooperation evaluation value V suggested is useful.

Table 2: Safe and comfortable KANSEI Web Service system —A user demand and the setting of evaluation specifications

User Request	At the time of a disaster, look for an at home nearby place of refuge.
A service cooperation pass number to generate	10 with the turn that service cooperation pass evaluation value V is high.
User Questionnaire	A user uses ten bonds Web Service generated by service cooperation and has you do an order charge account from the first place to the tenth place every service about a feeling of the use.
User questionnaire object	Several physical science graduate students who are more than five years in Internet use career.
Inspection matter	Generated combination Web Service satisfying the demand of the user.
	A turn of the service cooperation evaluation value of the combination Web Service reflecting service evaluation order provided by a user questionnaire.

5. CONCLUSION

By this paper, the grand design of the KANSEI Web Service systems construction method that utilized Semantic Web technology and automatic cooperation technology of the service was shown and investigated the element which was necessary for the implementation of the systems construction and suggested a system implementation method.

The future work evaluates the KANSEI Web Service system as a specific example by safe and comfortable shown in Chapter 4 and confirms what Web Service cooperation by the mash up of this paper suggestion method follows the user kansei, and is generated and confirms that the service cooperation method suggested is useful.

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