

# IC-portal: An Integrated Communication Support System for Understanding a Social Problem

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**Abstract.** We propose IC-portal which is a novel Web-based integrated communication support system for understanding a social problem. Understanding a social problem is important for our decision making, however, it is difficult because large amount of disordered information can be found on the Internet. For understanding a social problem, (a) comprehensive multimedia presentations so that one can find an overview of the problem easily, (b) discussion support functions so that one can exchange their opinions on the problem with others, and (c) functions for understanding social concerns of the problem are important. IC-portal is a Web-portal construction kit that provides (1) interactive multimedia presentations with a conversational agent, (2) discussion support functions that can identify key opinions, and (3) an analysis function of social concerns on the problem. Design concepts and an overview of the prototype system are described.

## 1 Introduction

There exist many social problems in the world. For example, we have to find solutions to the global warming, nuclear waste, BSE<sup>3</sup>, GMO<sup>4</sup>, and so on. Understanding these problems is not easy because large amount of disordered information is provided by various persons and organizations, the background of the problems is complicated, and much scientific knowledge is required for understanding the problems. For understanding a social problem, an integrated communication support system that provides various resources and services including an overview of the problem, communication functions for exchanging opinions, and information on social concerns on the problem are needed.

We propose a Web-based integrated communication support system called IC-portal that facilitates users to understand a problem by combining various services and resources distributed on the Internet. We use SOAP<sup>5</sup> to integrate services and resources distributed on the Internet. Because services and resources

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<sup>3</sup> Bovine Spongiform Encephalopathy

<sup>4</sup> Genetically Modified Organism

<sup>5</sup> <http://www.w3.org/TR/soap/>

are wrapped with contents component called *information sheets*, one can easily organize and maintain his or her Web-portal. We describe design concepts and an overview of the prototype system in the following sections.

## 2 Design concepts

Followings are needed for understanding a social problem.

1. Understanding an overview of the problem.
2. Exchanging information and opinions with others.
3. Understanding social concerns on the problem.

Firstly, understanding an overview of the problem is needed. While we can find large amount of information by using search engines, it is difficult for understanding an overview of the problem because search results contain disordered pieces of information. These pieces of information should be organized, and converted into a comprehensive multimedia presentation so that we can easily understand an overview of the problem.

Secondly, exchanging information and opinions on the problem is needed. We often find information through daily conversation. Talking with other people who have same interests is important not only for sharing useful information on the problem but also for exchanging opinions and making consensus on the problem. Supporting communication among people is needed so that they can share information on the problem, find another aspects of the problem, and exchange their opinions.

Thirdly, understanding social concerns on the problem is needed. We often find the importance of the problem by watching TV, reading books, magazines, and Web pages. Understanding social concerns is needed for finding the importance of the problem.

## 3 IC-portal

We created a prototype system called **IC-portal**. The system is implemented on a Web-based content management system (CMS). We adopted a PHP-based open source CMS called XOOPS<sup>6</sup>. **IC-portal** is implemented as a XOOPS module. The architecture of the system is a client-server system. Users can access to the system using a Web browser.

The system consists of following subsystems: (1) SPOC (Stream-Oriented Public Opinion Channel) that provides an overview of the problem by using multimedia presentation with a conversational agent[1, 2], (2) CRANES (Coordinator for Rational Arguments through Nested Substantiation) that supports discussions by identifying key opinions[3], and (3) POC (Public Opinion Channel) that provides information on social concerns on the problem by collecting and analyzing Weblog articles[4].

<sup>6</sup> <http://www.xoops.org/>



For organizers of IC-portal, services of subsystems are provided as content components called *information sheets*. Figure 1 shows the concept of information sheets. Each sheet provides a service or resource of a subsystem. For example, *SPOC sheet* provides presentations of SPOC. *CRANES sheet* provides a discussion function of CRANES. *POC sheet* provides an analysis function of POC. Other sheets such as a *link sheet* which contains a list of URLs of related Web sites are available.

Regarding to the usage of IC-portal, Figure 2 shows an image of how IC-portal is used. We assume two types of users, i.e., (1) moderators and (2) visitors. Moderators are organizers of Web-portals, and visitors are guests of them. We aim to provide IC-portal for various actors such as NGO and NPO members, managers in a company, officers in a local government, and citizens who have interests in a social problem. We consider that diversity of viewpoints is important for understanding various aspects of the problem. Moderators can define a theme of their IC-portal for providing an information and a discussion space on a social problem. When a theme is defined, a Web page consisting of several sheets is prepared. By default, SPOC sheet, CRANES sheet, and POC sheet are prepared. Moderators can select information sheets to provide with visitors manually by using administration functions.

## 4 Conclusion

We proposed a Web-based communication support system called IC-portal for understanding a social problem. According to sheet metaphor, we integrated services of SPOC, CRANES, and POC into IC-portal by using SOAP. IC-portal can be seen as a Web-portal construction kit that supports maintenance of a web community. As a future work, we will have a field-test using IC-portal in order to understand real world issues such as security and privacy, and issues on management of communities.

## References

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