

The Development of Pyro Human Resource Information System

M.S. Jung, S. K. Kim, W. I. Ko
Korea Atomic Energy Research Institute
1045 Daedeokdaero, Yuseung-gu, Daejeon 305-353, Republic of Korea
Corresponding author: sgkim1@kaeri.re.kr

1. Introduction

This paper aims to provide the current status of the development of a human resource information system. Establishing an expert information system helps readily provide the personal information of international and local pyroprocess experts who are currently conducting research at institutes. The information system offers a data processing environment in which users can easily access the necessary information online for a prompt search [1]. Setting up this online networking enables us to easily obtain the personal information of pyro-experts, if necessary, and to provide the basic materials to seek an efficient system of technical cooperation. As pyro-technology presently falls under a high-tech field in the area of back-end fuel cycle, the research is under way at some advanced nuclear nations such as the United States, Korea, and Japan; therefore, the cooperation of experts from home and abroad is critical, helping gain maximum achievements through minimum investments and personnel.

Since many efforts should be preceded to secure original technology in the field of fair technology and pyroprocess engineering, we can attain the research goal efficiently if other advanced nuclear nations have already obtained advanced technology, by efficiently realizing the goal through the benchmarking of the necessary technology. To form a cooperative system for such experts, we should know, above all, what research experts are conducting in certain fields at certain laboratories of certain countries.

2. Information system structure

In particular, pyroprocess technology is a study of reducing high-level waste by the dry reprocessing of nuclear fuel and retrieving uranium and transuranium, which can be recycled as nuclear fuel materials for fast reactors, which is regarded as the only alternative to complete the recycling of the back-end fuel cycle in Korea. Thus, the establishment of a cooperative system is a growing necessity. It has been very difficult to earn the personal information of foreign pyroprocess specialists because no information system to easily find information on the experts of pyroprocess fields has existed thus far. Based on the personal information of pyroprofessionals who have participated in the international conferences collected thus far, against this

backdrop, we have developed an information system that can manage databases from around the world. It can be judged that this program is really beneficial, as this system, built by means of the CRADLE software, which is a database management system tool [2], can print out pyroprocessing experts in line with each nation or each organization in a word document using the document publisher, a component of CRADLE, and can easily provide expert information necessary to users of the information system.

Figure 1 shows a schematic diagram of an information system in terms of pyroprocessing experts.

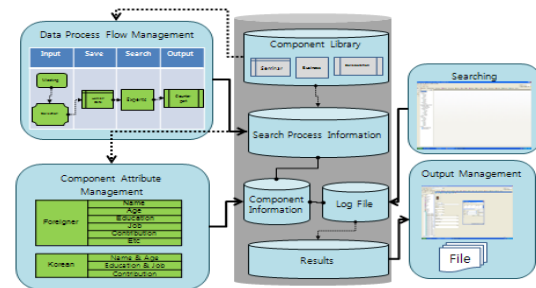


Figure 1. Schematic Diagram of Information System

3. Implementation and management of information

3.1 Data integrity of human resources

Pyroprocessing experts can be broadly divided into two databases: external experts and internal experts. First of all, this paper has introduced the methods of inputting expert information drawing upon the commands of Cradle, which was used to construct the information system. That is, it has specifically described the database environment, the database schema system, and the methods for setting commands. Widely used as a tool of founding technical tracking in the soft engineering field [3], Cradle has been currently recognized as a commercialized database control program that can be widely utilized in every area associated with searching and managing a database as well as in the field of aerospace engineering [4]. Second, how to use the expert information system has been shown. Designed using a menu method with a master tree, as shown in Figure 2, this system can input domestic and foreign experts separately for data loading, as well as information on national and international conference participants. In addition, to allow

information system users to easily notice the export information of international conference participants, data regarding both national and international specialists and participants can be linked.

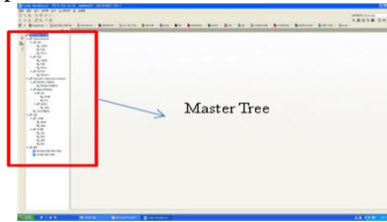


Figure 2. Master tree of information

The searching method has been adopted such that the users select and surf through national or international meetings. Furthermore, they have demonstrated the output method, which can automatically print out the experts in conformity with each country or organization. Herein, automatic output represents printing the required information by clicking the mouse in accordance with the output form already designed for the experts. Therefore, this system has the users connect with the server, and directly input and explore the information on pyroprocess experts. The system consists of three modules that can automatically print this information out on the form.

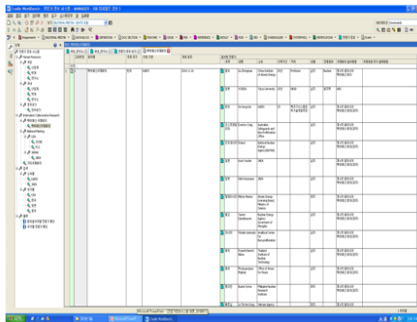


Figure 3. Hierarchy structure of database

3.2 Implementation method

To swiftly search for expert information, we mainly used a single database for all information in conformity with the unique properties of the cradle as shown in Figure 3, pursuing diversity about the pyropersonal information by containing the expert pictures in the input information. Figure 4 shows the relationship of the information parameters.

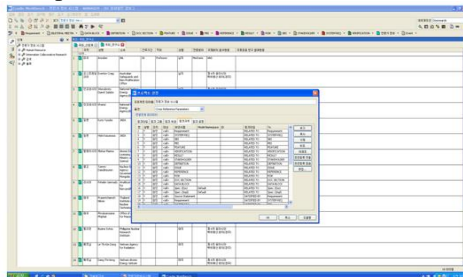


Figure 4. Relationships between information parameters

Utilizing the existing expert information system, which satisfies the standards for management of the system

engineering aforementioned [5], we can easily obtain information on the necessary experts online. Moreover, you can easily recognize the research trends about the experts concerned in the fields in which you should cooperate in research in the future. Such information will be expected to get more valuable over the years, as today, all research and industry development can be advanced by technical cooperation, which can enhance the efficiency of research. In particular, to verify the pyroprocess technology, which has yet to reach the commercial stage through collaboration among advanced nuclear states, it is necessary to gather information on experts and improve the quality of research. In addition, as the information the users obtain can be input into the database system by linking the server in an easy way, the operating method of the expert information system described in this paper has turned out to be more superb than anything else developed to date in terms of the database management of human resources.

We have confirmed that searches using this program can quickly identify needed experts and print them out through the screen the users want, as shown Figure 5.

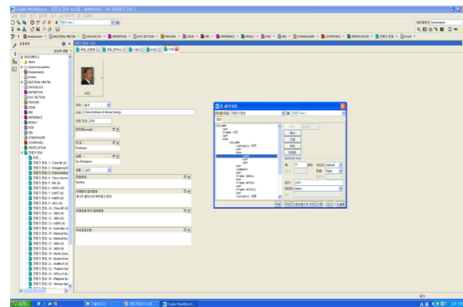


Figure 5. Search result of an expert

4. Conclusion

As the information system involving the pyroprocess experts suggested in this paper can be input and searched into the information system by not only name of Pyro-experts but also others, providing more personal information for those responsible for industry, academics, institutes, and government agencies, it would be of a big help to seek the expert information requested to establish the technical cooperation system among foreign countries.

References

- [1] Sungki Min, 2007. System Engineering Management, pp. 17-25.
- [2] SENSENG, 2010. Cradle User Guide, pp. 7-40
- [3] INCOSE(International Council on Systems Engineering), 2006, Systems Engineering Handbook, INCOSE-TP-2003-002-03, pp. 50-59.
- [4] NASA, 2007, NASA Systems Engineering Handbook, NASA/sp-2007- 6105 Rev. 1, pp. 30-47.
- [5] IEEE Computer Society, 2005, IEEE Standard for Application and Management of the Systems Engineering Process, IEE Std 1220TM, pp.37-61.