

Development of the Advanced Nuclear Safety Information Management (ANSIM) System

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1. Introduction

Korea has become a technically independent nuclear country and has grown into an exporter of nuclear technologies. Thus, nuclear facilities are increasing in significance at KAERI (Korea Atomic Energy Research Institute), and it is time to address the nuclear safety. The importance of nuclear safety cannot be overemphasized. Therefore, a management system is needed urgently to manage the safety of nuclear facilities and to enhance the efficiency of nuclear information. We have established ISP (Information Strategy Planning) for the Integrated Information System of nuclear facility and safety management[1].

The purpose of this paper is to develop a management system for nuclear safety. Therefore, we developed the Advanced Nuclear Safety Information Management system (hereinafter referred to as the "ANSIM system"). The ANSIM system has been designed and implemented to computerize nuclear safety information for standardization, integration, and sharing in real-time. Figure 1 shows the main homepage of the ANSIM system.

In this paper, we describe the design requirements, contents, configurations, and utilizations of the ANSIM system.



Fig. 1. Main homepage of the ANSIM system

2. Development

2.1 Design Requirements of the ANSIM system

The design requirements of the ANSIM system are as follows;

- computerization of management data of nuclear facilities
- integration of nuclear information using DBMS
- sharing of computerized information in real-time

2.2 Contents of the ANSIM system

The ANSIM system contains the following contents as shown in Figure 2.

- Radiation Safety Management
- Radiation Safety Management of Advanced Radiation Technology Institute
- Management of Radiation and Radioactivity Analysis
- Management of HANARO (High Advanced Nuclear Application Reactor) Facilities
- Management of IMEF (Irradiated Material Examination Facilities)
- Management of PIPF (Post Irradiation Examination Facilities)
- Management of RWTF (Radioactive Waste Treatment Facilities)
- Document Management of Ji-jang Research Reactor Design
- Document Management of Jordan Research Reactor Design
- Document Management of SMART (System-integrated Modular Advanced Reactor) Design
- Management of Nuclear Material Control and Accounting
- Management of IAEA Expanded Declaration
- Management of Nuclear Emergency Preparedness
- Management of Nuclear Quality Assurance

Some of the contents are under construction, and these contents will be developed until the middle of this year.

The ANSIM system also contains the following major functions.

- Management of Regulations, Guidance, Procedure
- Radiation and Radioactivity Instrumentation Equipment Management
- Radiation Worker Management

- NCR (Non Conformance Report)
- KOLAS (Korea Laboratory Accreditation Scheme)
- Nuclear Emergency Preparedness and Training
- Receipt, Examination, Transcript of Radiation and Radioactivity Analysis
- DDA (Document Distribution for Agreement)
- IOC (Inter Office Correspondence)
- PM (Project Manager) Memo
- Management of Nuclear Material Change
- Data Generation for Nuclear Inspection
- Fixed-time Inspection of Nuclear Facilities
- Operation Record of Nuclear Facilities
- Application of Utilization for Reactor Facilities
- DIQ (Design Information Questionnaire) Management



Fig. 2. Contents of the ANSIM system

2.3 Configurations of the ANSIM system

The ANSIM system consists of a main server, an ORACLE DBMS (Data Base Management System) and a file server as shown in Figure 3. The ANSIM main server controls the user interface, and the file server generates and merges the PDF (Portable Document Format) files. KAERI staff information is interworked with MIS (Management Information System) server in real-time. We also make backups of all data of the ANSIM system each day.

3. Utilizations

The ANSIM system has been used since 2010. The utilizations of the ANSIM system have been increasing steadily as shown in Figure 4. The total amount of requested documentations is about 18,800, and the hit count of the ANSIM system has reached about 453,500.

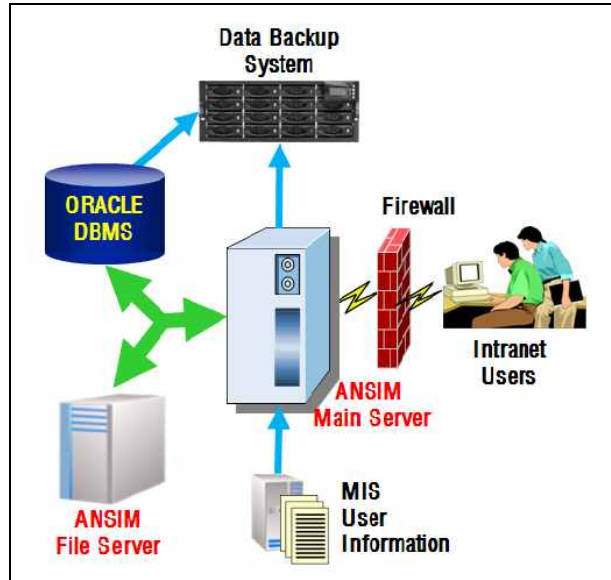


Fig. 3. Configurations of the ANSIM System

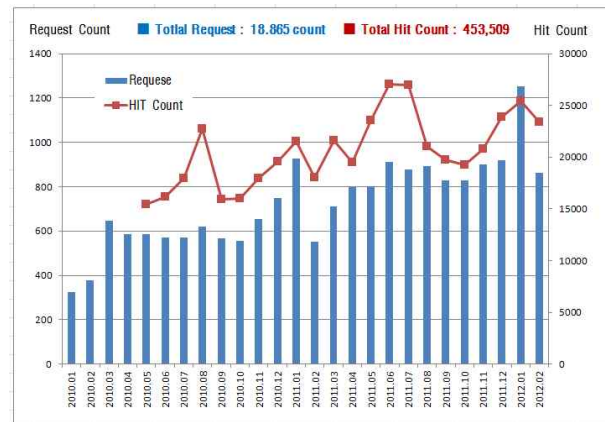


Fig. 4. Utilizations of the ANSIM system

4. Conclusions

We are insuring the safety of nuclear facilities and nuclear information by developing and operating the ANSIM system. The development of the ANSIM system has contributed greatly to improving the reliability of nuclear safety in the fields of nuclear facility management, radiation safety management, nuclear technologies exports, etc. We will be developing new contents of the ANSIM system continuously, and operating the system stably.

Presently, the ANSIM system is operating on the intranet of KAERI-Net. In the future, we will be developing another ANSIM system for an extranet to collaborate with other companies, universities, and institutes.

REFERENCES

- [1] Young-Cheol Ko, "ISP(Information Strategy Planning) for Integrated Information System of nuclear facility and safety management", Korea Atomic Energy Research Institute, 2006.08.