Conceptual Design of On-line Based Licensing Review and Assesment System of Nuclear Installations and Nuclear Materials ("PRIBEN")

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1. Introduction

At the present Indonesia has no nuclear power plant in operation yet, although it is expected that the first nuclear power plant will be operated and commercially available in around the year of 2016 to 2017 in Muria Peninsula. There are only three research reactors, one nuclear fuel fabrication plant for research reactors, and one experimental fuel fabrication plant for nuclear power, one isotope production facility and some other research facilities.

All the facility is under Nuclear Energy Regulatory Agency (BAPETEN) controlling through regulation, licensing and inspection. The organizations operation submits licensing application to BAPETEN before utilizing the facility. According to the regulation before BAPETEN give license they perform review and assessment for the utility application. Based on the review and assessment result, BAPETEN may stipulate, reject, delay or terminate the license.

In anticipation of expansion of the nuclear program in Indonesia, BAPETEN should have an integrated and updated system for review and asses the licensing application. For this reason, an expert system for the review and asses the licensing application, so-called PRIBEN (Perizinan Reaktor, Instalasi dan Bahan Nuklir/Licensing of Reactor, Nuclear Installations and Nuclear Materials), is developed which runs on the online-based reality environment. The "PRIBEN" are information management system application (relational database management system- RDBMS) for integrated and online licensing activity of reactors, nuclear installations, and nuclear materials for the entire stake holder which is related with the licensing process. This application is developed and designed based on graphic interface with modular system. This application is flexible and easier for more advances developing in near future.

2. Scope and Objective of PRIBEN

"PRIBEN" monitoring are for research reactor, non reactor nuclear installations, personnel certification, package certification validation and power reactor, especially for site licensing.

"PRIBEN" basic data systems have several objectives:
a. To create a homogenate and integrated licensing process;

b. To make easier licensing process which is conducted by several personnel together in on time and integrated;
c. To make easier tracking system for all the licensing process which is have been perform, on going, and will be conducted so the position/condition of an activity could know in every moment fast and correct.
d. To assure all the activity and administration of licensing process is documented and record systematically.

3. The Structure and Construction of "PRIBEN"

3.1. Basic Concept of " PRIBEN"

"PRIBEN" is design with comprehensive and *integrated* because it's connected online to all available transaction in every activity of BAPETEN. Here are the activities:
a. Licensing Registration (New, Renewal, Modification, Incident/Accident)
b. Planning and Evaluation
- Preliminary evaluation
- Internal and coordination meeting
- Final evaluation and Stipulated of decision
c. Recording and documentation of evaluation process.

"PRIBEN" composed of 3 (three) modules as shown in fig. 1. The modules are:
a. Master Data
b. Operational
c. Publishing/Stipulate/Report

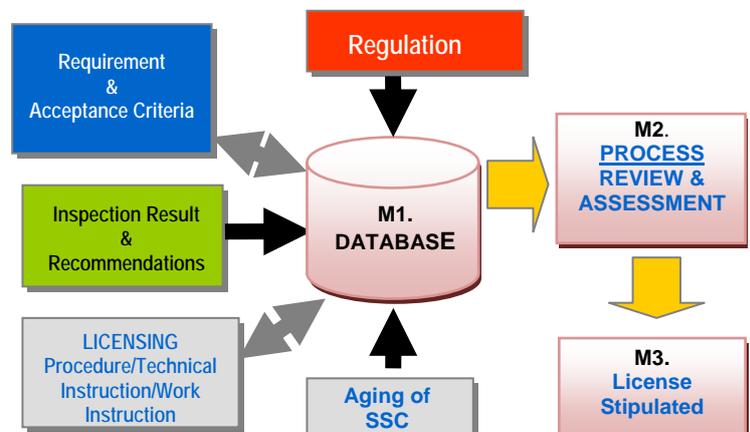Fig 1. The structure of PRIBEN Modules

3.2. Application and Display of "PRIBEN"

PRIBEN is *relational database*. It is design using PHP and MySQL database script application. Fig. 2 shows the screen of PRIBEN for research reactor. In the left there are several available menus for application:

a. Main Facility
b. Support Facility, and
c. Independent Study (as a refreshment for beginner evaluator)

For example, if we choose research reactor then we can click the research reactor box in menu in the left of the screen (see fig.2.) Indonesia only have 3 (three) research reactor so there are only 3 option to choose. Then if we want to choose PRSG-MPR Reactor in Serpong then click "MPR 30MWth, Serpong" so we will see other screen, etc.

After we enter the MPR 30MWth, Serpong in the right of the screen we will see beside general specification, we can see also 4 (four) button:

1. *Button* OPERATION STATUS, to show a licensing process including the Report for Result of Review and Assessment (LHE), if available.
2. *Button* NUCLEAR MATERIALS, to show a status process of nuclear materials in facilities which are related with the LHE, if available.
3. *Button* REPORT, to show status of report from facilities which is related with the daily report

or incident/accident report (incident reporting system).

4. *Button* PERSONNEL, to show personnel status who is work as radiation worker including Supervisor/Operator Reactor, Maintenance Personnel, Nuclear Material Supervision Personnel, Radiation Protection Personnel, etc which is predicted needed for the database.

"PRIBEN" application are focusing to a review and assessment (evaluation) process in order to ensure that every problems which is excise in each facility can handle by BAPETEN, including process for certification of nuclear materials package/transportation, ageing management and regulation collection which is needed in licensing review and assessment process.

4. Conclusion

"PRIBEN" could be able to support an integrated and dynamic nuclear installations and nuclear materials licensing system.

REFERENCE

[1] Act No. 10/1997, BAPETEN, 1997.
[2] NUREG 0800, Standard Review Plan for the review of SAR for NPPs, USNRC, 2007.
[3] Licensing document of MPR, Triga Mark II Reactor, and Triga Mark Reactor, BAPETEN, 2007.

Fig 2. The Screen of PRIBEN for Research Reactor