DEVELOPMENT OF NPM/XML-BASED DATA INTEGRATION FRAMEWORK AND NUCLEAR PLANT ENGINEERING SUPPORT SYSTEM

Koutaro Iwahara,  
*Nuclear Systems Division, Hitachi Ltd.*

Yuuichi Higashikawa,  
*Nuclear Systems Division, Hitachi Ltd.*

Hiroshi Seki, and  
*Power and Industrial Systems R & D Laboratory, Hitachi Ltd.*

Masayoshi Matsuura  
*Nuclear Systems Division, Hitachi Ltd.*

1 INTRODUCTION

The current nuclear business environment is stringent and demanding in terms of cost and speed. It requires an advanced information technology platform which helps integrate plant data electronically and provide them to participant organizations quickly and freely throughout plant life. Hitachi Nuclear Systems Division has developed plant data integration technology called Plant Data Warehouse (PDWH) and XML (extensible Markup Language)-based network-type database architecture. Hitachi is now under an extensive program to improve the efficiency and effectiveness of their business process. In it applied are the PDWH and its IT architecture.

2 DATA INTEGRATION FRAMEWORK

Hitachi has developed the data integration framework for Hitachi’s own IT infrastructure. It allows the so called legacy systems to run as front-end systems, with the PDWH as backend system. While daily jobs are executed with the front-end systems and the data are daily updated, the data which need to be shared are converted to the data description form called NPM/XML (Nuclear Product Model / eXtensible Markup Language) by translator, then stored into PDWH. NPM/XML is a network-type data description rule developed for nuclear plant. Hitachi has applied it to a BWR plant engineering and construction project to demonstrate its applicability. The demonstration has shown that a huge amount of data, which include geometry data, connection attributes of CAD data are flawlessly integrated.

3 CONCLUSIONS

Plant industry like nuclear industry has a huge spatial and temporal expance. Many organizations are involved. Accordingly, a large number of, widely distributed, variegated information systems exist. This causes the intrinsic increase in informational messiness, which may lead to operational inefficiency and unreliability unless we have such information-managing rule as NPM. NPM provides a universal framework that transcends time, space and human, based on which to manage data, information and knowledge effectively, reliably and efficiently.