E-PORTAL FOR CONSTRUCTION ENGINEERS: INTEGRATED CONSTRUCTION INFORMATION PORTAL USING 4-TIER ARCHITECTURE

Boong Yeol RYOO¹ and Miroslaw J. SKIBNIEWSKI²

¹ Department of Construction Management, Florida International University, 10555 West Flagler Street EC 2935, Miami, FL, 33174, USA, E-mail: ryoob@fiu.edu
² Department of Civil & Environmental Engineering, University of Maryland, College Park, Maryland, USA, E-mail: mirek@umd.edu

Abstract
Construction information ranges from personal to organisation in addition to project specific information. It also requires particular industry information. Electronic construction information portals have become popular in recent years but most portals are intended for business transaction processing. This paper describes a web-based construction information portal (e-Portal) intended for use by construction engineers and organisations. A functional framework for the portal is presented along with a 4-Tier architecture including Presentation Layer, Application Layer, Application Programming Interface (API) Layer, and Database Layer. Industry specific information such as laws and regulations, national standards, standard specifications, technical manuals, construction materials and manufacturers is organised and presented as serviceable contents of the e-Portal. With the presented architecture of e-Portal, construction information can be acquired and processed via a Wireless Application Protocol (WAP), mobile devices, and World Wide Web (WWW) with the use of the eXtensible Mark-up Language (XML) and eXtensible Stylesheet Language (XSL).

Key Words
Construction -Portal, 4-Tier Architecture, Career Management, Web-Based System

INTRODUCTION

Prior to 1990s, construction quality was generally not a major concern in Korea due to the Korean government’s expansion-driven policy in the construction industry. After a series of engineering and construction failures, the government established strict regulations to improve quality, enforce safety regulations, and increase productivity in engineering and construction projects. One of the concerns was the validity of individual records. In Korea, each company who wants to attend a bid would submit the construction engineer’s record to the owner. There is no organisation to verify individual records. Thus, the Korea Construction Engineers Association (KOCEA), a public institution, was established to collect and maintain the construction engineers’ records in 1987. Now, it is mandatory to submit individual career records issued by KOCEA to project owners (KOCEA, 2004). KOCEA is responsible for collecting and maintaining the records up-to-date and to certify individual records of over 430,000 domestic engineers and about 1,000 foreign engineers. This is about 25% of the total number of construction engineers in Korea. The domestic construction market has been open to international contractors according to the agreements signed with the World Trade Organization (WTO) and Asia-Pacific Economic Cooperation (APEC) Council, in effect since 1997. It is also necessary to maintain foreign engineers’ records. Currently, KOCEA is serving...