

DESIGN AND PERFORMANCE ANALYSIS OF UNIFIED EDUCATION AND RESEARCH ACTIVITY SUPPORT SYSTEMS OVER WWW

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ABSTRACT. *We have designed and implemented an academic system over WWW in such a way that the system can support both education and research activities in universities. The multimedia data, such as figures, tables, photos, graphs and animations, can be registered in DB in this system, and can be used systematically to author teaching materials and to write technical papers. In the research sub-system, a measurement and calculation can be requested for experimental and theoretical purposes. The measured and calculated data can be displayed in a graph format on a web browser. The system was implemented under distributed server environments of one central and 3 local servers, and the performance was examined. The performance was confirmed to be satisfactory.*

Keywords: Stored-data education system, Remote measurement, Remote calculation, Internet

1. **Introduction.** Recent progress of information transmission and software technologies makes it possible to develop effective information systems to supply various types of information for different purposes. As for educational applications, many systems are reported, where the information is transmitted by a satellite [6], or the internet [7]. It is important in such systems that teaching materials can be authored, the digital contents can be stored systematically, and can be used easily for the system purposes. Although previous papers described how the information was transmitted for the educational purpose, it should be clarified more how such information is managed systematically to form the teaching and learning materials. We designed and implemented such an education system by a stored data approach that students can retrieve teaching materials and exercises by a web browser over the world-wide-web (WWW) and can study by themselves [2]. The system functions were implemented as the server application, which was found to be an excellent approach to the efficient system. In the system, the teaching materials are authored by using multimedia data as well as texts. The teaching materials and the constituting multimedia data are stored in database, and can be retrieved easily.

Another important activity in universities is the research. Generally many kinds of theoretical and experimental works are tried in the research. It is very useful to execute such theoretical and experimental works in the same way as in the education system. We make a graph of the data measured in experiments and compare the values with the