

Developing a Web-based Virtual Reality Simulation System for Seismic hazards: Towards Disaster Mitigation in Metropolises

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Abstract

Rapid growth computer science technologies, especially the Internet provide human beings new measures to deal with engineering and maintenance problems which were hard to solve in traditional ways. This paper presents a sketch of an application platform based on the Internet and using Virtual Reality for civil engineering considering building a risk communication system for structures under severe disasters especially earthquake, and a VR simulation tool to help maintenance of structure. By using communication in maintenance of structure, hereafter it is not only structure engineers who will try for maintenance of structure but also we try to share maintenance issues with all people and the public.

Severe maintenance strategy can be done not only by engineers but also by owners and the mass but current solutions are insufficient in following aspects:

- 1) Research achievements (i.e. programs) and data (i.e. those from design, construction and maintenance) mainly exist as isolated islands. They are lack of integration and it is difficult to reuse the resources.
- 2) Current analyses are weak in recreating and presenting real phenomena.
- 3) There is lack of concerns in providing and distributing information, which is useful to and can be easily accessed by estate owners, administrators and the public.

Participating society for maintenance of structures can make way of maintenance easier in some senses:

- 1) The public can play an important role in maintenance of structures if they can get easy and true information.
- 2) Owners can be convinced to accept maintenance and pay for it.
- 3) Simulation can help people to understand difficult concepts in maintenance engineering.

A reasonable solution is to develop a distributed computing platform by employing the Internet oriented technology. Moreover, the state-of-the-art computer graphical technologies, notably, Virtual Reality will be utilized for information presentation.

Keywords: Maintenance, Database, Communication, Virtual reality, Internet

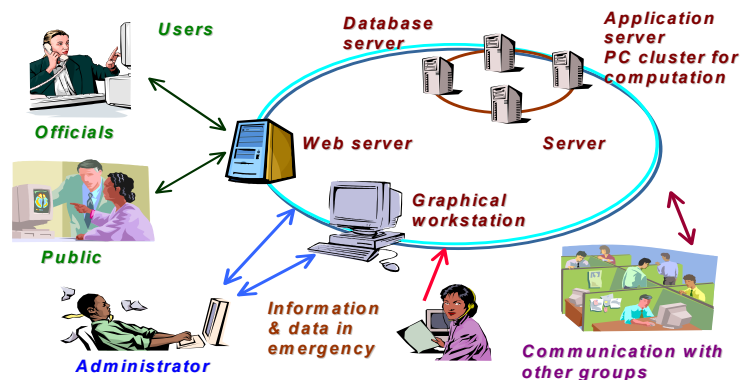


Figure 1 A perspective view of the application platform