

SAFETY BASED VIRTUAL POSITIONING SYSTEM FOR EXISTING INFRASTRUCTURE

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Abstract : Today in the age of smart computing and advance global positioning system, it has been observed that day by day natural calamity affects our resources in regular way. One of the most important tasks is to deploy ability for rescue inside fixed infrastructure or more accident prone area. The security could be obtained through either automatic monitoring system or manually monitoring system by enabling several electronic means. Virtual positioning is one of the most relevant computational systems where one can restrict unauthorized access while monitoring every event more precisely. This paper tries to add more security feature for a given area by utilizing virtual positioning system. In addition to it we have proposed more effective security system to avoid hazards.

IndexTerms - Virtual modeling, digital arena 3D, 2D, GIS, CAD, etc.

I. INTRODUCTION

In recent era where development of computers and Information technology is on its extreme, people require to use computer based techniques for virtualization of the reality. To satisfy the people's expectation many areas of virtual geographic environment have been studied by scientist, the study of accident prone area has included so that the system might able to control and overcome with it when the hazardous situation occurs in future. Virtual infrastructure construction has been gain more attention and popularity recently.

As we all aware with the development of Geographic Information System, Today many institutions and individual firms have established their own virtual campus based on 2D GIS. To understand a two-dimensional (2D) representation of the real landscape we need a level of interpretation and imagination. The physical world exists in three dimensions and, unless if we ignore those extruded plastic maps of the world with snow-capped lumps showing the main mountain ranges, the realm of conventional maps is uncompromisingly flat. The capability of GIS to produce dynamic and attractive three-dimensional (3D) maps is one of its most exciting benefits [1].

II. VIRTUAL DIGITAL CAMPUS

The Virtual digital campus is based on the network which realizes the environment, resources and their activities digitally. We build a digital arena around us to broaden the vertical and horizontal dimensions of the real campus, which can be measured on scale of time and space.

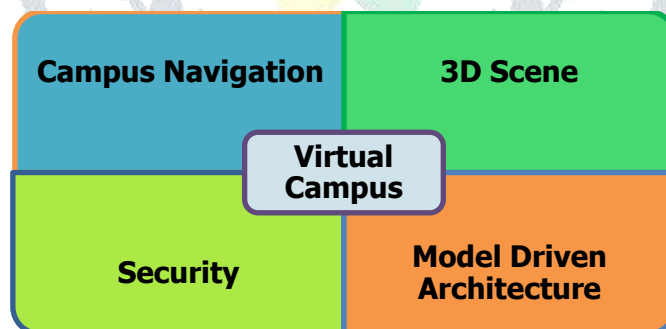


Figure 1: Structure of Virtual campus

Geographic Information system is an effective tool for processing special information, not only integrated in a unified platform for management but also it is unique geospatial data processing and analysis methods can develop various application modules, these application modules can provide campus development plan.

III. 3D GIS

As most of the virtual campus uses two dimensional GIS, which cannot meet the demands for precise positioning of real environment at the time of most critical requirement of security accurate positioning must be particularly important. Three Dimension (3D) technologies are used to simulate virtual campus network in building.

Comparing with 2D GIS and 3D GIS shows geospatial phenomenon to the users by dimensional modeling technology [2]. 3D GIS technology applied to the construction of virtual campus performance by modeling of real dimension. The diverse need of user such as 3D browsing, path query, analysis of results and attribute query could be fulfilled with help of virtual 3D GIS technology.

IV. SAFETY OF INFRASTRUCTURE NETWORK

4.1 Safety Monitoring System: It is prominent need of any campus is to provide primary safety measures like first Aid and fire rescue equipments. The awareness could be one of the valid and effective tools for spreading information in society. As we know the student and

intellectuals could play measure role for the same. We may proceed for secure channel with help of automatic safety monitoring equipment of firefighting and first aid services.

4.2 Security inside Virtual Campus: To manage virtual campus physical security needs with Blackboard SMS, a complete, enterprise-class system designed specifically for the unique requirements of the general community that integrates access control, video surveillance, and monitoring capabilities.

V. DEVELOPMENT AND DEPLOYMENT OF PRECISE POSITIONING SYSTEM

5.1 Data collection: First of all we have selected a different resolution and accuracy of data and 3D image according to the requirement. According to the building structure, environment and other scenes we included original and their virtual campus data. After getting the drawing from relevant departments added it with campus design CAD maps plan. Now we are ready to collect instant camera captured scene to obtain information digitally.

5.2 Applying the Precise Positioning system for existing infrastructure: Let put the equipment inside one part of the building where anyone who wants to check the correctness of the system experimentally. We create visual simulation scenarios, roaming management system to create 3D image using 3D graphic image processing software to enhance campus management and decision making analysis. We would establish the appropriate spatial database, and achieve query taking capability for desired orientation of location. At last after integrating all these elements and 3D GIS as shown in figure 2 the safe precise positioning system has been deployed.

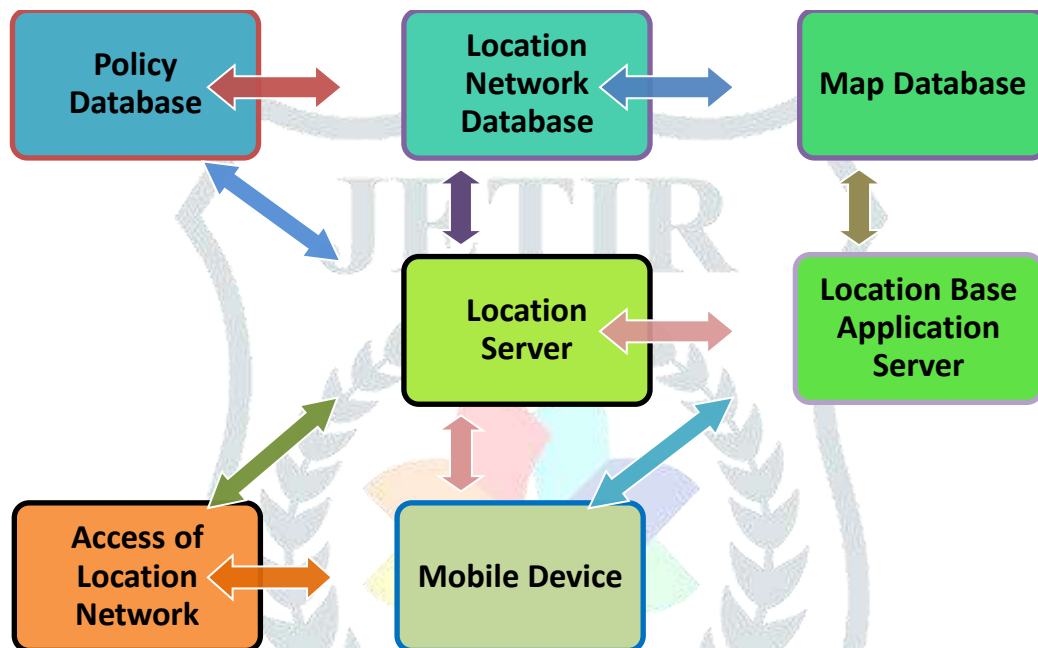


Figure 2: Safe & Precise Positioning System

VI. CONCLUSION

During the accidental incidence there is high demand of secure channels for the rescue process. Our work fulfils all the simulation based security measures to update alert in such incident. Deployment of precise target rescue equipment executed successfully. We can quickly react with add situation on basis of the simulation decisions. Hence it can greatly reduce the causality and other losses.

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