The Soft Crowd Management"Special reference to Kumbh- Haridwar"

Dr. Aruna Rani
Dehradun, Uttarakhand, India

Abstract: *In this paper a new technology of controlling the crowd is presented this technique can be implemented in real events. By this technology the time schedule, security, contingency plans and entry/exit can be maintained. In this technology the application software is utilized to control the crowd. So the title is given as "Soft Crowd Management". The application software uses the PHP Technology and the Maps shown in the software uses the RS/GIS and GPS Technology. Which are used in demarcation of the crowd control points/locations.*
Keywords:*RS/GIS, GPS, application software, PHP, crowd management.*

I.   Introduction

Crowd congestion is a common thing, when the crowd is gathering in a large volume at a place such calamity [1] may occur. So the crowd must be managed. Generally the technique utilized for the crowd management is the Gate control [2] or Channel control technique. In which the temporary channels are created at the spot to control the crowd. Controlling the crowd by trained army people and volunteers is again a very common thing.

When the big event has to be performed at a place which is pre scheduled such as the pilgrimage events at Haridwar in Uttarakhand. At such placesthe new technique "The Soft Crowd Management" must also be utilized.As this is assured that the people will be gathered from the diverse corners of the country at a small place.So all the identified channels must be soft controlled.The Digital Globe Satellite imagery 0.5 meter resolution downloaded from google and GPS based survey is used to identify the locations of crowd control points. Crowd control points are the locations from where the mob can be diverted to another root to prevent the congestion.

1.   The Crowd Management Using RS/GIS And Applicationsoftware "Haridwar Geo"

The reasons for crowd management are: 1. Mass gatherings of people raise the odds of a dangerous occurrence happening. 2. Individuals within a crowd always take for granted that others have the responsibility. 3. Big crowds or gatherings of people make changes in action slower and more complicated. 4. Big crowds or gatherings of people make communications slower and more complicated. And most importantly, big crowds of people raise the possible number of victims (Marsden, A. W, 1998).
To prepare for the unexpected, a management committee should consider few basic plans such as:
   a.   Evacuation point planning
   b.   Communication/announcement plans
   c.   Law enforcement/public official engagement plans
   d.   Mitigation plans

Fig. 1 Application Software "Haridwar Geo"

The application software[fig.1] presented in this paper is the small step towards the crowd management. It is the combination of RS/GIS and computer application development.

The first step for soft crowd management is to install the application software at all control points. At these places the information can be updated online in the software. In advance stage of the software the count of the pilgrims can be upgraded using 3D scan facility. As the information is getting updated from all the control points by this way we can count the heads of peoplealso in that event.

1. Evacuation Point Planning Using RS/GIS

In evacuation point planning after identification of the suspected location for crowd congestion a fly bridge can be constructed. The fly bridge [fig 2] can be highly equipped with mitigation force and equipment.

Normally, evacuation plans and drills are aimed to cover all conceivable situations and to guide the crew in coping with ominous situations in an organized manner. While it is very important, but not as a rule take into consideration the tendency for real emergenciesto develop beyond what was expected. Nor can we plan for what we are unable to imagine.Plans and drills have thus limitations.

Fig. 2 Suspected location for crowd congestion

A good evacuation system is always supported by alternative route planning and the crowd control points. Fig. 3 and fig. 4 are the case study at Haridwar in Mayapuri area. The locations marked in round are those locations from where the mob can be diverted to another route in case of over-crowd. These are also the channels for the better management of crowd.

Fig. 3: Crowd control points

Fig. 4: Crowd Control Points

Simultaneously by online monitoring of the crowd this is possible to give the alerts to the people on the software. These alerts can be announced by task force of communication/announcement plans.As the event goes for many days so the tent facility location map has also identified for planning and user's point of view. Fig.5 and Fig.6 shows the area locations for tents and parking highlighted by yellow lines.

Fig. 5: Tent and parking areas

Fig. 6: Tent and parking areas

3. Features Of "Haridwar Geo"

In this application[fig.1] various facilities has been given from the user point of view and the admin point of view. The application can converted into mobile application so it can be mounted on cloud for the ease of user and admin.

From the Admin Point of View: Admin has the power to update the information of Alerts, Images, User Registration and latest updates etc.

From the user point of view: User can find the various information from the application like emergency helpline numbers, geographical maps of the area, inquiry center, Govt. offices, locations of ashrams, parking sites, Information police stations, fire, divers, schools, medical facilities etc.

Fig. 7: GPS based locations in Mayapuri area.

Risk Analysis and Emergency Response Plan

In a large crew gathering internal and external both type of risks get involved. In the case of internal risk, any kind of rumour or fact play its role. And in case of external risk, international or national level's risk planning such as intruders or militant activity may be the cause. To avoid such things pass planning/registration system may be the effective planning. For the emergency response the mitigation unit and the rescue plan will play the great role. Here the online monitoring system will play great role to reach at particular location in short time period.

II. Conclusion

This paper has successfully achieved the objective using RS/GIStechnology as well as features of software application for crowd management. The Implementation of soft crowd management technique can be proven as the great ease for the management of crowd and facilities.

References

[1]. K.S. Sudhi, "Crowd management crisis looms large over Sabarimala", The Hindu, KOCHI, December 25, 2015
[2]. Lauren Bradshaw, **"Crowd Management Plan for an Existing Outdoor Event research paper", CustomWriting.ComSeptember 30, 2011.**
[3]. Spiro G. Doukas, "Crowd Management: Past and Contemporary Issues" The Sport Journal, ISSN: 1543-9518
[4]. Mohd. Fazil Ali, AbulBasharandAsadullah Shah, "SmartCrowd: Novel Approach to Big Crowd Management Using Mobile Cloud Computing", Conference: International Cloud Computing Conference ICCC 2015, At Riyadh Saudi Arabia, DOI: 10.1109/CLOUDCOMP.2015.7149656
[5]. Marine Profile Sweden AB, "Crowd Management", Academia.edu
[6]. globalco_glob, "Research Paper on Crowd Management Plan", March 31, 2015