



GG Talk – case study on a social Media tool with process Innovation for Decision Support system in Religious Gathering.

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ABSTRACT

Real time Information and Intelligence plays an essential role in decision support system in Religious gatherings. In the last few years, social media data analysis has been proved to be an effective approach to enable and enhance decision support system. Religious gathering events like Kumbhmela are dynamic and critical environments where millions of people attend. During the event, there is a potential for stampede and other emergencies, and thus it is critical for Administration to access real-time and situational awareness information, especially concerning the nature of the crowd behavior. It has been well recognized in the literature that crowd behavior can have a direct impact on the crowd safety. We describe a GG Talk mobile social media-enabled crowd monitoring architecture that aims to improve decision-making by analysing the real time data from Android based mobile networks with the use of process innovation. The proposed architecture incorporates a crowd behavior, Parking, Sanitation, Traffic and lost and Found classification model, which facilitates real-time situation awareness and provides a better understanding of analysis results. Awareness and perception of crowd behavior during the event can significantly improve the impact on planning of Kumbhmela Administration. The implementation and evaluation of the proposed framework on an Android mobile phone is described.

KEYWORDS

Social Media, Decision Support Systems, Religious Gatherings, Process Innovation

Introduction:

Religious gathering In India are typically very dynamic and unpredictable. Specially Events like Kumbhmela is bundled with lot of uncertainties and required complex decision making. At these events, there is an always potential for incidents including stampedes and other Crowd Management issues. Management in Religious gatherings like Kumbhmela is a complex process that can be divided into three main stages: 1) pre-event of Kumbhmela 2) Main event during the Shahi Snan, and 3) post-Kumbhmela. The pre-event phase generally involves planning and preparation for the event. During the shahi snan (Holy Bath) in order to achieve timely response and treatment in mass gatherings, it is imperative to get real-time information and maintain high situation awareness. Situation awareness can refer to access to any information related to the crowd management, Crowd Behavior, emergency services, Sanitation issues. Situation awareness can significantly assist for the all Coordinating officials during Religious Festivals.

In the last few years, using social media tools to provide Information of Religious gathering is widely used and all this as crowd sourced due to trend of using Whatsapp, facebook and Twitter also it has been widely and successfully used to provide useful information about occurring situations. Social networking platforms, such as Whatsapp and Facebook, have recently become tightly integrated into people's daily life and everyday communication Patterns. More and more people are likely to use social media platforms to publish how they feel, what they do or what they see, etc. Furthermore, with the current advances in mobile technologies and communication, people could get access to social media everywhere and anytime using their mobile phones.

Recently, Awareness of government agencies also increased of using social media tools as a Analytics for smooth conduct of Religious events and they have also recognized the potential and importance of using social media as a useful source of information, particularly during emergencies and disaster situations Social media analysis enables situation awareness in emergency management and it helps Decision making.

In the context of Religious gatherings, crowd behaviors are considered important factors for making decisions in planning of event. Social media data like the whatsapp images, Facebook comments and tweets are good indication of a crowd's behavior but this data needs to be mapped to an accepted and standard

crowd model to provide useful knowledge. Such data can be captured and processed online to monitor crowd behavior and detect early signs of an incident. This only possible if we use it as a focus tools else other social media tools will not be very helpful for planning perspective.

In this paper, we presented case on a GG Talk Android based application mobile social media-enabled crowd monitoring architecture that aims to improve decision making in mass gatherings by providing real-time situational information about crowd behavior, sanitation issue, Garbage based on the data captured from Gg Talk. This architecture incorporates a novel crowd behavior classification model that identifies the behavior categories of crowd and also changes made in this solution based on discrepancies in terminology used by various stakeholders involved in emergency management. It supports standardization and semantics across the whole cycle of mass gathering management.

The proposed Process Innovation approach provides Volunteers and commanders with up-to-date information about the process. The GG Talk crowd monitoring architecture has been implemented as a prototype on an Android mobile phone which has a Provision of local storage to operate in offline and upload indicator to enable users to see progress of their uploads.

Religious Gathering Management:

Religious gathering can be defined as an event in which at least Millions of people attend for an extended period of time. Crowd-management is a pressing problem, especially in India where stampedes have claimed thousands of lives. During the last Kumbh Mela in Allahabad in 2013, 36 people were killed in a stampede at the Allahabad Railway Station.

Over 100 died at the Sabarimala temple in Kerala in 2011, and in India's worst stampede disaster an estimated 800 people were killed at the Kumbh Mela in Allahabad in 1954. The Muslim Haj pilgrimage is also notorious for stampede tragedies. Just last year, several hundred people lost their lives in a crush near Mecca. Due to the huge number of attendees stampedes are relatively common during Kumbh Mela festivals. The 2003 Nashik Kumbh Mela stampede killed 39 people. Considering all this facts Gg talk has use as a process Innovation for Decision support in Nashik kumbhmela.

Key challenges observed during Pre event of Nashik Kumbhela:

- No real time collaboration across departments! Each department had its own communications channel
- Information coming from administration officials and workers on the field was filtered before it reached higher ups
- Tools like WhatsApp were being used for communications but...
- All updates were transactional in nature. New messages would continuously replace older messages in the timeline
- Information Overload – Multiple teams were constantly updating in multiple groups. This resulted in significant information overload for key decision makers
- There was no differentiation between critical and normal updates.
- There was no tracking of updates and action taken as well as any patterns or insights that could act as beacons or warning signals
- Security concerns existed as lots of sensitive information was being uploaded

Process Innovation:

With the Architecture of Gg Talk ,5 key Aspects has defined by Administration which included Crowd behavior, Sanitation and Hygiene, Traffic Management ,Parking Management and Lost and Found . Volunteers has Trained by TCS Organization, which has also supported by giving analytics of all real time information and Intelligence based on Text, Audio and Video.

For Actual Execution of Gg Talk following preparation has done -

- Team of 100+ volunteers that included MBA students from different local colleges and team leads from previous initiative.
- Volunteers divided into 5 teams – Inner Parking, Outer Parking, Ghats, Routes and Holding Places
- Teams on field from 6 AM to 8 PM with some volunteers even reporting until midnight!
- 450+ updates during the day!!! 350+ images, 5 videos
- Focus on Human Behavior, Sanitation, Garbage
- GGTalk team sitting in Control Room of Administration to report any urgent / emergency update from GGTalk directly to relevant authorities.



Fig: GGTalk capture some behavioral aspects of people. Impacts made by GG Talk:

No	Key GG Talk observations during 1st Parvani	Impact observed during 2nd Parvani
1	Food and water were not served to bus drivers and conductors –who threatened to go on strike	Food and water were made available to all bus drivers and Conductors.
2	No separation of pedestrians and vehicles on key routes – risk of accidents	Pedestrians and vehicles given separated routes – improving overall safety and traffic conditions
3	Poor maintenance of toilets – broken and leakages – people avoided using them as a result	Most toilets were maintained better and saw improved usage by public
4	Announcements were made mostly in Marathi leading to confusion for out of state visitors	Announcements made in multiple languages including Hindi, English, Gujarati and Telugu apart from Marathi
5	Limited changing rooms for women	A lot more changing rooms erected for women
6	No designated entry and exit points for buses in outer parking leading to confusion and potential for accidents	Designated entry and exit points created in Outer Parking leading to a better managed traffic flow
7	Support staff such as police constables were not provided food and water	Provisions of food and water for constables and other support Staff.

Recommendation Provided to Kumbh Administration after deployment of GG Talk:

No	Key Observations	Recommendations
1	NGOs and citizens providing free food and water to visitors and devotees do not plan to handle garbage created by the same	Important for administration to inform and make aware the need to have dustbins etc near these free food and water stalls
2	Free food being served in plastic plates and bowls – leading to lot of non biodegradable garbage	Recommend using organic patravali for serving food will also provide revenue for local people
3	Confusion among drivers regarding routes as well as parking norms	Administration can enroll local ST drivers / transport companies to be present for guidance to out station vehicles
4	Routes were not clearly published leading to confusion amongst the visitors regarding which route to take	Better awareness of routes and additional volunteers at key points to guide the people will help reduce the confusion
5	There were no clear signboards at parking spaces to indicate which parking lot has buses leaving for different destinations. Ideally, this should be provided at ghat exit points by volunteers , announcements etc	It is important that people know which parking lot has buses leaving for different destinations. Ideally, this should be provided at ghat exit points by volunteers , announcements etc

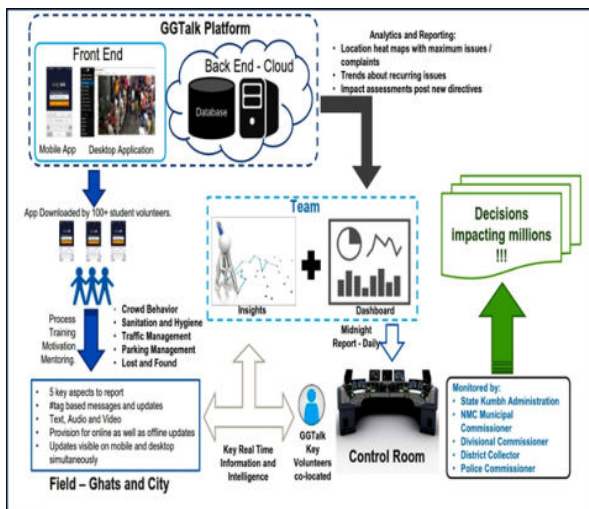


Fig: Integration phases of GGTalk for Decision Support System

Implementation Stages: On Flag Hosting of Kumbhela on 14th August and Shahi Snan (Holy Bath) on 29th August and 13th Sept.2015.

Real Time information created impact on Decision making, in below pictures it has observed that Selfie trend in any mass gathering can lead Stampede, as Selfie takers created hurdles on Moving crowd in Mass Gathering .this as resulted immediate action from Administration to Ban Selfie in Nashik Kumbhela.

6	Auto drivers were charging 4-5 times the standard rate to ferry passengers from one location to another	Need to discuss with auto union and come up with fixed published rates on major routes.
7	Buses were not available to go to Aurangabad from anywhere in Nasik..!!	There should be proper management for outside buses and also proper direction for bus drivers.
8	Garbage problem is still there at some places which is main reason for health issues	People should be instructed to throw garbage in dustbins
9	Four wheelers were allowed on various routes which caused road blocks.	No other four wheelers except ambulance or emergency service should be allowed in routes.
10	Ambulance 108 was taking people from one place to another taking high amount from people	Ambulance drivers should be instructed to use ambulance only for emergencies.
11	No proper sign boards were displayed for pilgrims.	Need color coordinated sign boards for people to go to their destination, for ex. All boards showing arrow to Mumbai will be red, and for Aurangabad will be green, so that at junctions where people tend to get lost or confused they can manage easily, This must be simple flex boards which should be placed at every 500 meters and at junctions.
12	People did not know the stop from where to catch the bus to go to trimbak.	In city, some boards are requiring to give information about buses, so that whosoever wants to go to trimbak can catch the bus easily.

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Conclusion:

The GGTalk platform can be used as a secure communications platform between various stakeholders in large gatherings such as the Haj, future Kumbh Mela, and other such religious events. The platform can also be provided as a cloud hosted "As a Service" set up to SMEs and governments for social initiatives. The tool is used as an enterprise scale collaboration platform that can be used by any organization with a distributed workforce – locally as well as globally. No matter how efficient and well-informed the administration is, there will always be blind spots. Social impact can be achieved quickly and at scale if the administration and local ecosystem is a willing and responsive partner – therefore their enrollment and participation is very important. Even small innovations can have significant impact when deployed successfully at scale. The paper described the implementation and evaluation of the proposed architecture for a Crowd Monitor application that targets Android mobile phones. This implementation incorporates parts of the proposed crowd behavior model, and demonstrates the feasibility of its use.

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