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Faculty of Computer Engineering,  
University of Isfahan

# The 5<sup>th</sup> International Conference on Internet of Things and Its Application





# INFORMATION GATHERING OF EARTHQUAKE DISASTERS BY MOBILE CROWD SOURCING IN SMART CITIES

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University of Isfahan | Ferdowsi University of Mashhad

The 5<sup>th</sup> International Conference on Internet of Things and Its Application

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## INTRODUCTION

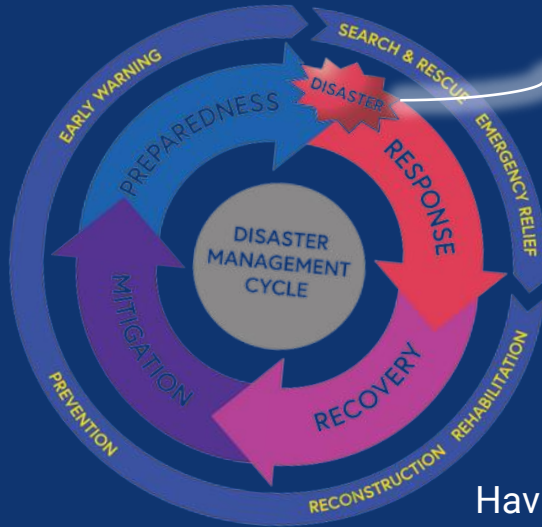
The devastating impact of natural disasters (especially earthquakes) on people's lives and causing irreparable damage to various aspects of human life.



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## INTRODUCTION

Disaster Management Cycle :



There is an urgent need for Timely planning and decision-making by rescue teams in the response phase (immediately after the disaster)

Prerequisite for Timely planning and decision-making... ?

Having comprehensive, up-to-date and accurate information about the disaster environment



## INTRODUCTION

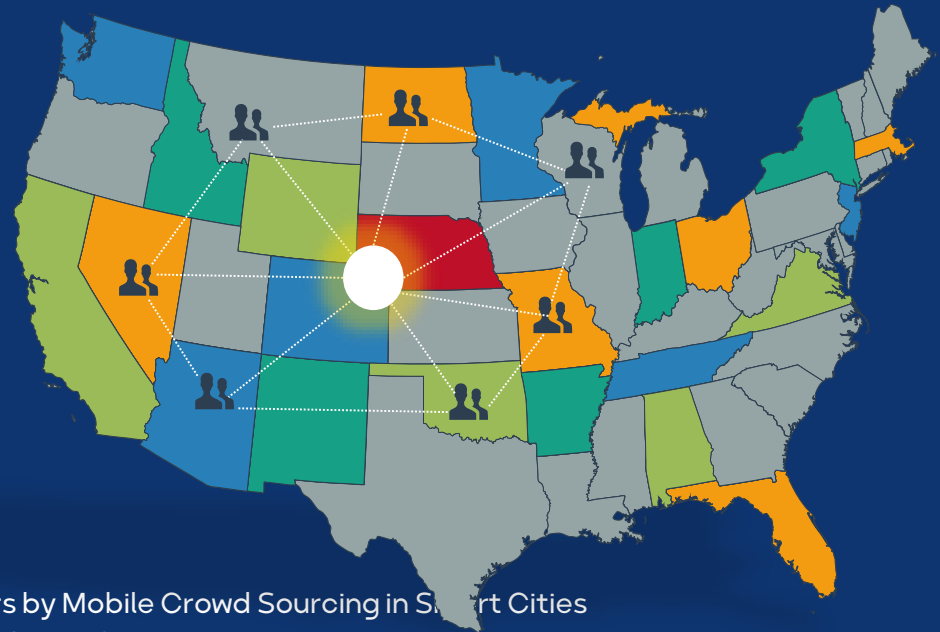
Challenge ....

How can we gather such comprehensive, up-to-date and accurate information?

Solution ... ?



**Mobile Crowdsourcing**



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## RELATED WORK

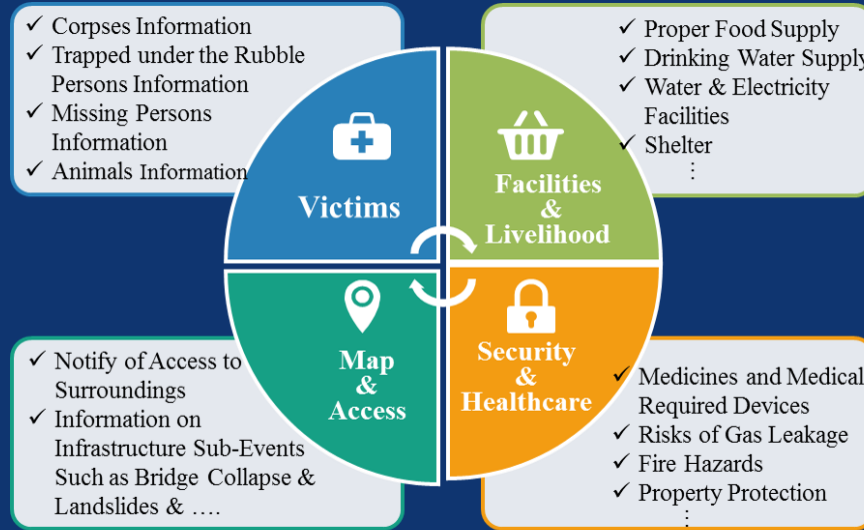
- Using Twitter tweets and comments on other social networks to extract information about the disaster.
- Using simple and limited systems for emergency calls and sending photos to extract information from the disaster.



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## PROPOSED SYSTEM

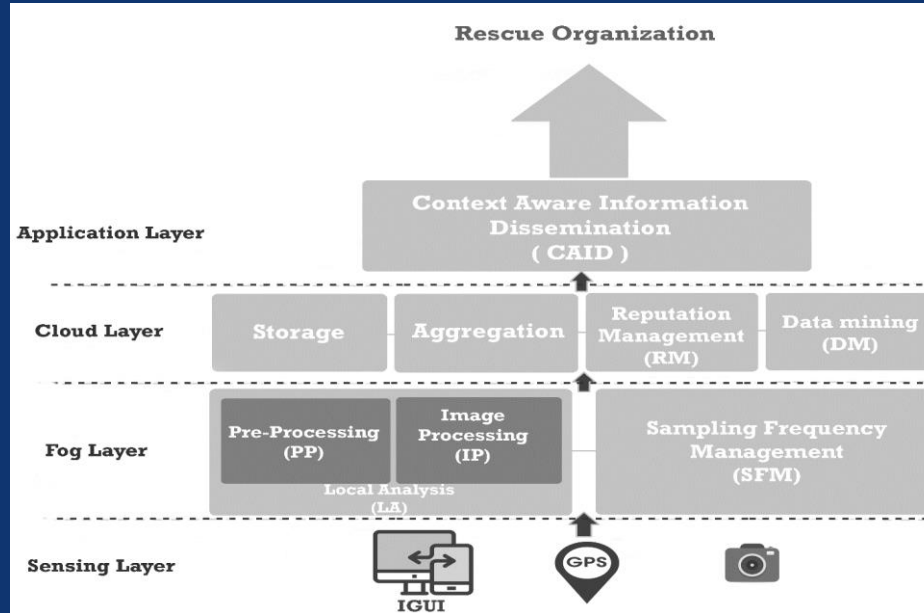
At first, we conducted requirement analysis by the help of Red Crescent Society experts.





## PROPOSED SYSTEM

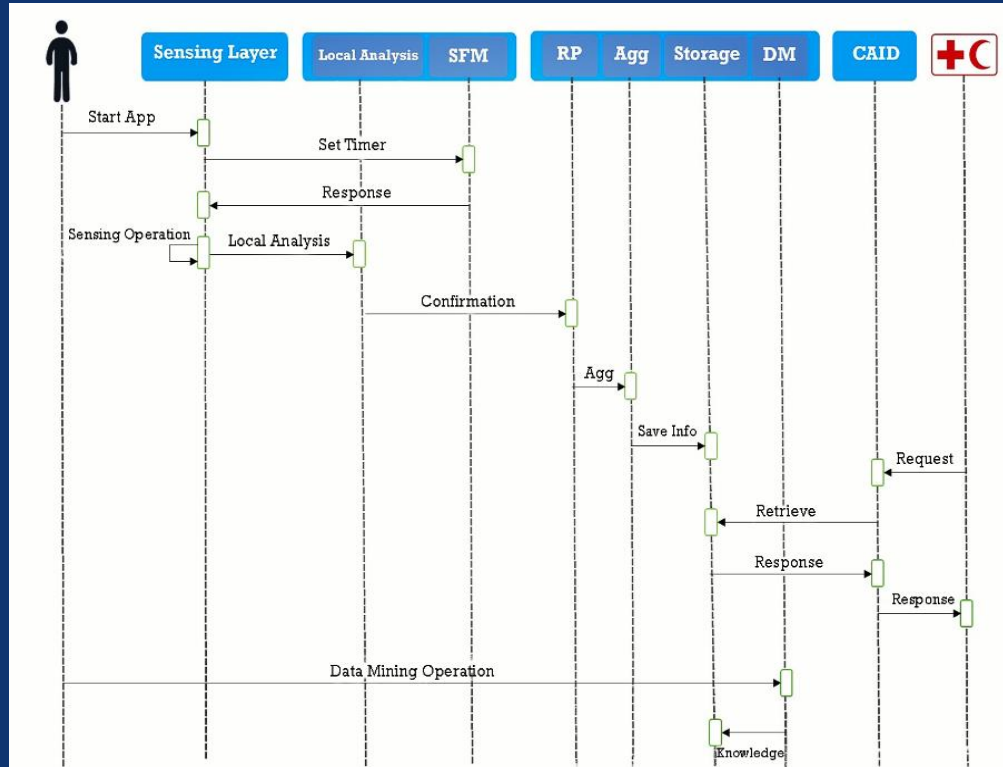
Then, we design the proposed system using the multi-layer pattern.



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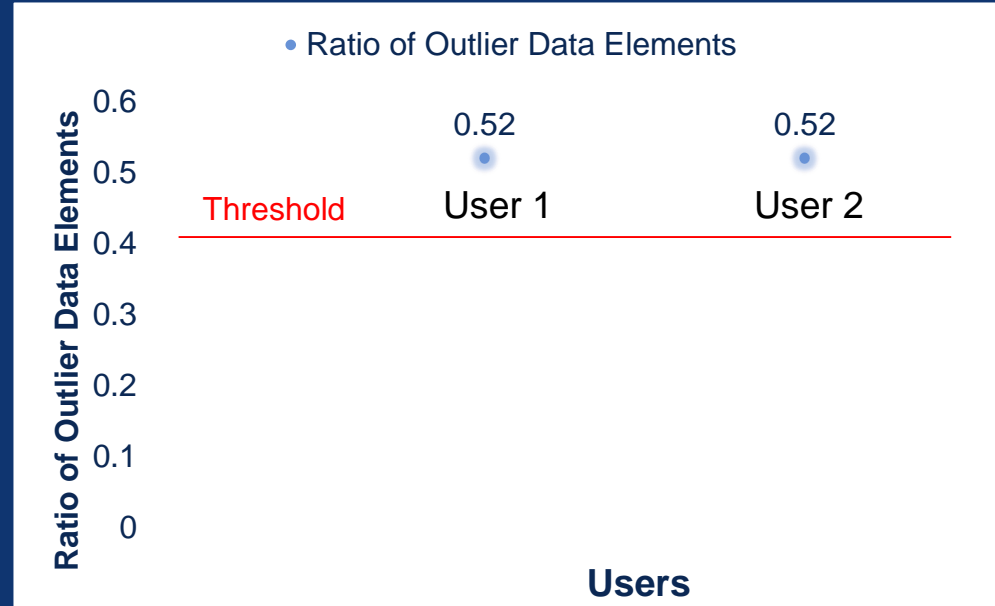
# Sequence diagram of the information gathering scenario

## RESULTS



## RESULTS

User 1 and User 2 are malicious.



## CONCLUSION

- We classified Required Information in four categories including victims, facilities and livelihood, security and health, and map.
- We designed architecture of the system using the multi-layer pattern.
- Finally, We validated the proposed architecture using the scenario-based approach.
- The proposed system (by using the proposed sensing layer, which includes multiple-choice questions as well as camera and GPS sensors) can provide the rescue organizations with comprehensive and vital information from the earthquake area. Therefore, the rescue operation could be performed with a better efficiency as well as optimal allocation of resources.





# Thanks

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