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# Early Warning for Natural and Manmade Disaster

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**Abstract:** *Emergency and disaster are on the rise in the world. One of the most important components of disaster risk management is the early warning system. Studies have shown divergent models of warning systems with different structures. However, since no systematic review of early warning systems in disasters has been conducted so far, a systematic review of the models, components, and structures of these systems is essential. This protocol is a systematic review study, which aims to evaluate the existing warning systems and their structure. An Early Warning System (EWS) represents the set of capacities needed to generate and disseminate timely and meaningful warning information that enables at-risk individuals, communities and organizations to prepare and act appropriately and in sufficient time to reduce harm or loss. On one hand, the gathering, processing and presentation of information in a consistent and meaningful manner to allow the generation of alert messages and, on the other hand, the generation and transmission of alert messages to the citizens at risk means of warning communication. An EWS allows harm and loss reduction with getting and disseminating warning information about hazards and vulnerabilities in a group of people who are considered at risk. Each word has an important meaning, for example, community involves a network of social interaction, early refers to prevention of any disaster or reduction of the potential harm or damage, warning means a message that announces danger and system put all together.*

**Keywords:** *Digitization, OCR, Python, php, file management system, open standard storage format.*

## I. INTRODUCTION

Risk analysis involves systematically collecting data and undertaking risk assessments of predefined hazards and vulnerabilities. Monitoring and warning involve a study of the factors that indicate a disaster is imminent, as well as the methods used to detect these factors. Dissemination and communication concerns communicating the risk information and warnings to reach those in danger in a way that is clear and understandable. Finally, an adequate response plan, and the promotion of readiness to ensure that people know how to respond to the warnings. An early warning system is more than a warning system, which is simply a means by which an alert can be disseminated to the public. Because of changes in extreme weather and sea level rise, due to climate change, the UN has recommended early warning system as key elements of climate change adaptation and climate risk management. Flooding, cyclones and other rapidly changing weather events can make communities in coastal areas, along flood zones and reliant on agriculture very vulnerable to extreme events. Since the Indian Ocean tsunami of 26 December 2004, there has been surge of interest in developing early warning systems. However, early warning systems can be used to detect a wide range of events, such as vehicular collisions, missile launches, disease outbreaks and forth.

## II. PROBLEM DEFINITION

An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communities, government, businesses and others to take timely action to reduce disaster risks in advance of hazardous events. Effective “end-to-end” and “people-centred” early warning systems may include four interrelated key elements: disaster risk knowledge based on systematic collection of data and disaster risk assessments; detection, monitoring, analysis and forecasting of hazards and possible consequences; dissemination and communication, by an official source, of authoritative, timely, accurate and actionable warnings and associated information on likelihood and impact; and preparedness at all levels to respond to the warnings received. These four interrelated components need to be coordinated within and across sectors and multiple levels for the system to work effectively and to include a feedback mechanism for continuous improvement. Failure in one component or a lack of coordination across them could lead to failure of whole system.

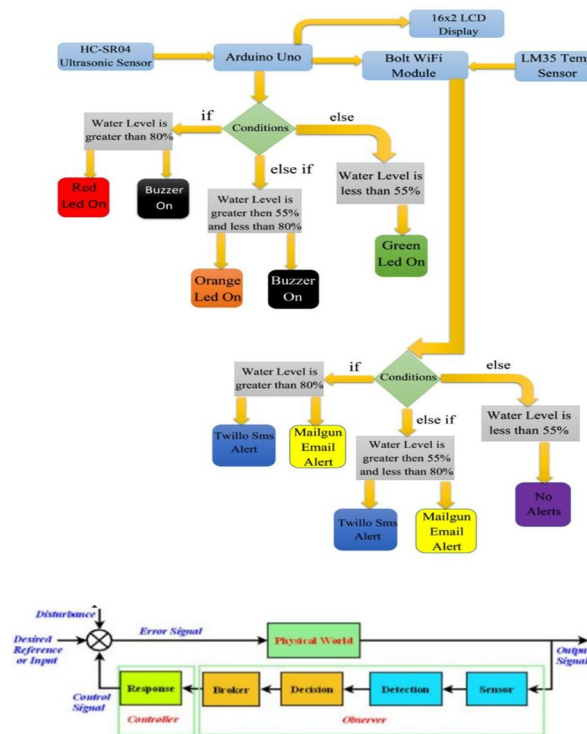
## III. LITERATURE SURVEY

Emergency and disaster and their consequences are increasing worldwide. The increasing trend of emergency and disaster has changed the paradigm of response to risk management is advanced early warning system. Upstream documents such as the Hyogo and the Sendai documents have emphasized the importance of the early warning system as one of the key elements of disaster risk reduction.

The Sendai document has set out an early warning system with a multi-hazard approach as a requirement for the countries road map by 2030. The United Nations Office for Disaster Risk Reduction (UNISDR) defines warning system as a set of capabilities needed for the timely and meaningful generation and dissemination of alert information to individuals, communities and organizations at risk for optimal preparedness and response and at the appropriate time to reduce the likelihood of injury and death. Early warning and timely response play a major role in reducing the vulnerability and mortality caused by disasters and in enhancing the resilience of communities. Deploying appropriate framework and model with the most optimal elements of the warning system can play a significant role in reducing the risk of disasters. In addition, development of warning system modelling will improve system performance. Until now, different models of warning systems with single- or multi-hazard approaches have been developed at various levels. For example, the United Nations Office for Disaster Risk Reduction has proposed a four-element platform including risk knowledge, monitoring, warning dissemination and response or there are a traditional three phase model proposed by Villagran, and an integrated model that has been proposed by Basher.

#### IV. METHODOLOGY

Early Warning for disaster management system requires precise amount of accuracy and sustainability as it can work in extreme weather conditions such as cyclones and pre-tsunami weather conditions. In order to do so we can take the help of Internet of things in which the sensors used would be accurate and with the help of programmability, these would be the right choice. The Early Warning for Disaster Management system can be made by using IOT based Arduino chipset and other important hardware components such as ultrasonic sensor and temperature sensor as well water level flood sensor



#### V. RESULT & DISCUSSIONS

After building this project we can detect the upcoming calamity or disastrous event and can prevent it from happening. And it can be seen socially helping others living in the disaster-prone area.

#### VI. SCOPE OF PROJECT

Early warning disaster management system will provide better and more accurate results after some more use of sensors and in the near future we can develop and include a server which will provide the user with more accurate weather conditions and the possible disaster and weather forecasting. Eventually we can take this initial small-scale IOT based project into large-scale IOT based project which are nowhere to be seen



## VII. CONCLUSION

This paper tells us about the disaster management using EWDMS which stands for Early Warning Disaster Management System. This device will help to obtain information about future disastrous event and will help us to prevent it. And will also help the people living in disaster prone areas to be aware of the future calamity.

## REFERENCES

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