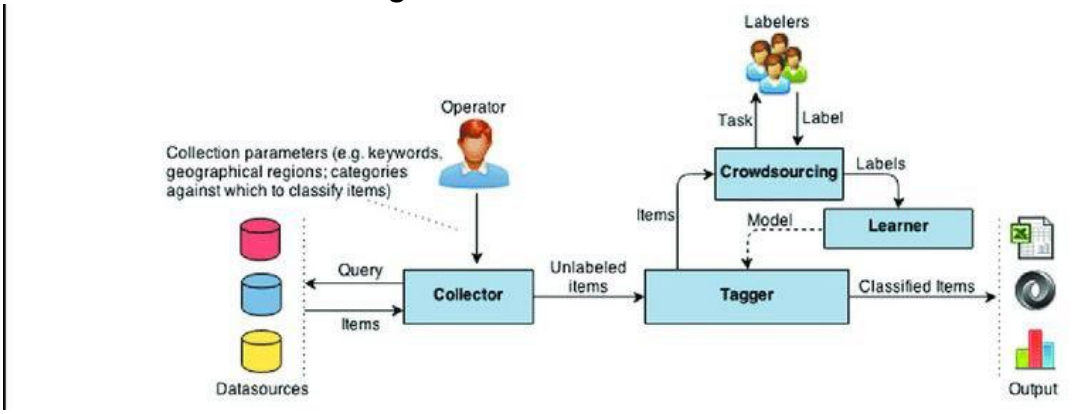
Project Design Phase-I
Solution Architecture

Date	19 September 2022
Team ID	PNT2022TMID13948
Project Name	Natural Disasters Intensity analysis and classification using Artificial Intelligence
Maximum Marks	4 Marks

Solution Architecture:

- **Technical and methodological enhancement of hazards and disaster research is identified as a critical question in disaster management.**
- **Artificial intelligence (AI) applications, such as tracking and mapping, geospatial analysis, remote sensing techniques, robotics, drone technology, machine learning, telecom and network services, accident and hot spot analysis, smart city urban planning, transportation planning, and environmental impact analysis, are the technological components of societal change, having significant implications for research on the societal response to hazards and disasters.**
- **Social science researchers have used various technologies and methods to examine hazards and disasters through disciplinary, multidisciplinary, and interdisciplinary lenses.**
- **They have employed both quantitative and qualitative data collection and data analysis strategies.**
- **This study provides an overview of the current applications of AI in disaster management during its four phases and how AI is vital to all disaster management phases, leading to a faster, more concise, equipped response.**
- **Integrating a geographic information system (GIS) and remote sensing (RS)into disaster management enables higher planning, analysis, situational awareness, and recovery operations.**
- **GIS and RS are commonly recognized as key support tools for disaster management.**
- **Visualization capabilities, satellite images, and artificial intelligence analysis can assist governments in making quick decisions after natural disasters.**

Solution Architecture Diagram:



Four Phases of Disaster Management:

- **The disaster management cycle (DMC) is the process for planning to reduce the impact of a disaster (Figure 6). The DMC also guides government, agency organizations, civilsociety, and businesses to execute and build resilience in the community.**
- **The process illustrates four stages of disaster management, which implies interlinked activities further classified into three activities: Pre-disaster activities, current, and postdisaster activities.**
- **In the DMC,, the activities are combined to reduce the risk of human and physical losses.**
- **Before a disaster, the planning referring to mitigation includes developing prevention laws and implementing standards to battle any catastrophe or emergency.**
- **It also suggests preparing well and in accordance with the available resources—preparedness is considered one of the most significant phases in the DMC to minimize the damage of a disaster.**
- **During a disaster, response and rescue activities are performed.**
- **The aim is to provide first aid and humanitarian assistance and assess the initial damage.**
- **After the disaster, recovery activities, including the overall community development assistance program, are started, restoring the livelihood of the community, and precise damage assessments are implemented.**

Before a Disaster		***During a disaster***	***After a Disaster***
Mitigation	**Preparedness**	**Response**	**Recovery**
1.Develop preventive laws and regulations 2.Implement advanced codes and standards 3.Establish zoning requirements 4.Buy insurance 5.Construct Barriers	1.Stock disaster supplies kit 2.Develop mutual aid agreements and plans 3.Train response personnel and concerned citizens 4.Prepare shelters and backup facilities	1.Search and rescue to identify affected people 2.Assess initial damage 3.Provide first -aid and humanitarian assistance 4.Open and manage shelters	1.Debris removal 2.Infrastructure destruction and reconstruction 3.Restore the livelihoods 4.Community development