Use Case Document –Emergency Response for Landslide – V1.0

Kerala State Disaster Management using IBM Intelligent Operations Center

Presented by:

Registered in India as **"Tecnics Integration Technologies Pvt. Ltd"**
No.88/86, First Floor, Opposite Patel PU College,
Kariyammana agrahara Bellandur Post, Bangalore – 560103, India

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1. Introduction to User Story

This user story talks about providing emergency response and managing disaster activities caused by Landslides by leveraging the capabilities of IBM Intelligent Operations Center, ESRI Arcgis and sinmap.

This section of the documents explains the requirement of the user story and what we are trying to achieve from this user story. Below are the details of the user story:

Sno.	What is required?	Why is it required?
1.	See on Geo Map the places where Landslides occurred in an area	We can 1. Monitor the area for any emergency situation 2. Keep track of surrounding assets around the affected area 3. Deploy emergency response team to the affected area
2.	Be able to get the details of Landslide 1. The data coming from NWP 2. The data coming from IMD 3. The data coming from SEOC 2. The other necessary data like District name, Taluk name, Station Name, soil type etc	We can 1. Get appropriate data of the Landslide event 2. Plan for quick actions at the time of any land slide event
3.	Be able to run SOPs for quick response	We can 1. Intimate appropriate departments and officers to take necessary actions 2. Make the response team ready for the rescue operations 3. Aware the public to take safety precautions at the time of emergency situations
4.	See on Geo Map the assets available around the affected areas. For example 1. Colleges/schools 2. Police Stations 3. Hospitals 4.Bus Stations	We can 1. Rehabilitate public to a safe location 2. People who needs medical attention can be sent to nearest hospitals 3. Availability of beds, Occupancy of Schools, Colleges and other assets etc can be determined
5.	Get historic data of Landslides occurred in the past	We can 1. Get the historical data of Landslides for evaluation 2. Analyze the data for determining the priority areas of interest 3. Get statistics of the events in terms of time, place and event occurrence
6.	Closure of the Event	We can 1. Evaluate event status correctly and determine the management of the event successfully.

1. Objective and Understanding of User Story

The key objective of this user story is to assist and manage any disaster caused due to Landslides with actionable intelligence which will aid in taking proactive steps for the management of Landslides events with smart decision making and quick response to the event.
The main objective in implementing this user story aims to address the following:

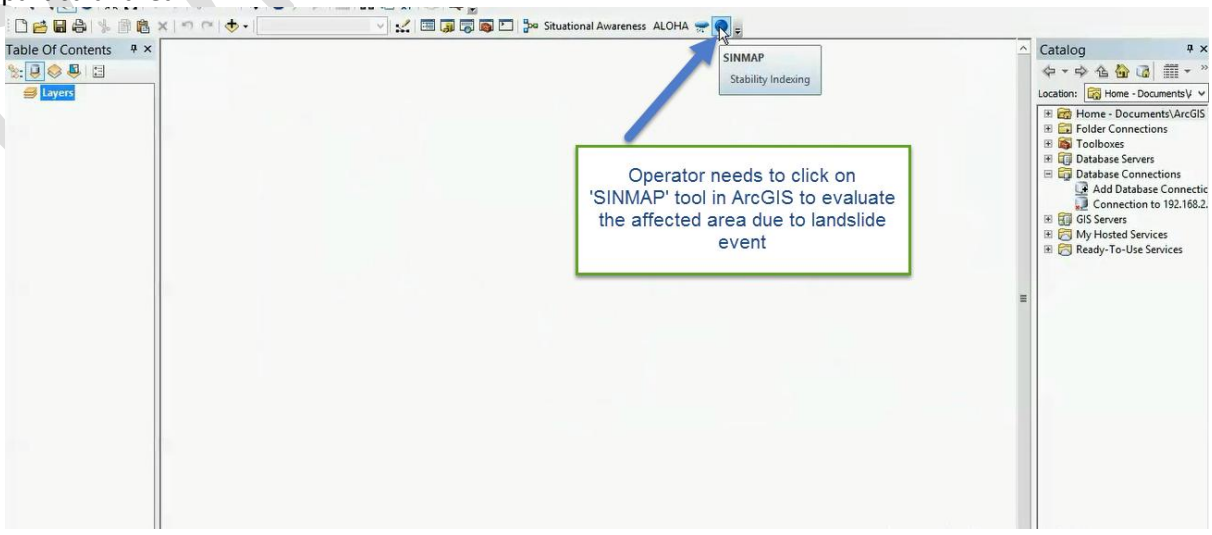
- Effective utilization of available nearby resources like schools, hospitals, police stations, bus stations etc.
- To include response action as a part of Standard Operating procedure, this in turn will help in closure of the event.
- To continuously monitor the status of the Landslides event and take necessary actions or dispatch required amenities and resources effectively.
- Improve overall safety and security measures.
- Decrease the number of human loss and loss to the state and improve the quality of living.
- Enable strategy for data sharing within different departments of the state.

2. Proposed solution to User story

By following the best practices and leveraging IBM IOC, will meet the requirements stated in the user story by building solution using IBM IOC and the high level use case that is required for operator to monitor, manage and provide various functionality to manage a Landslide as well as gives quick response mechanism for emergency situations occurred at the time of Landslide event.

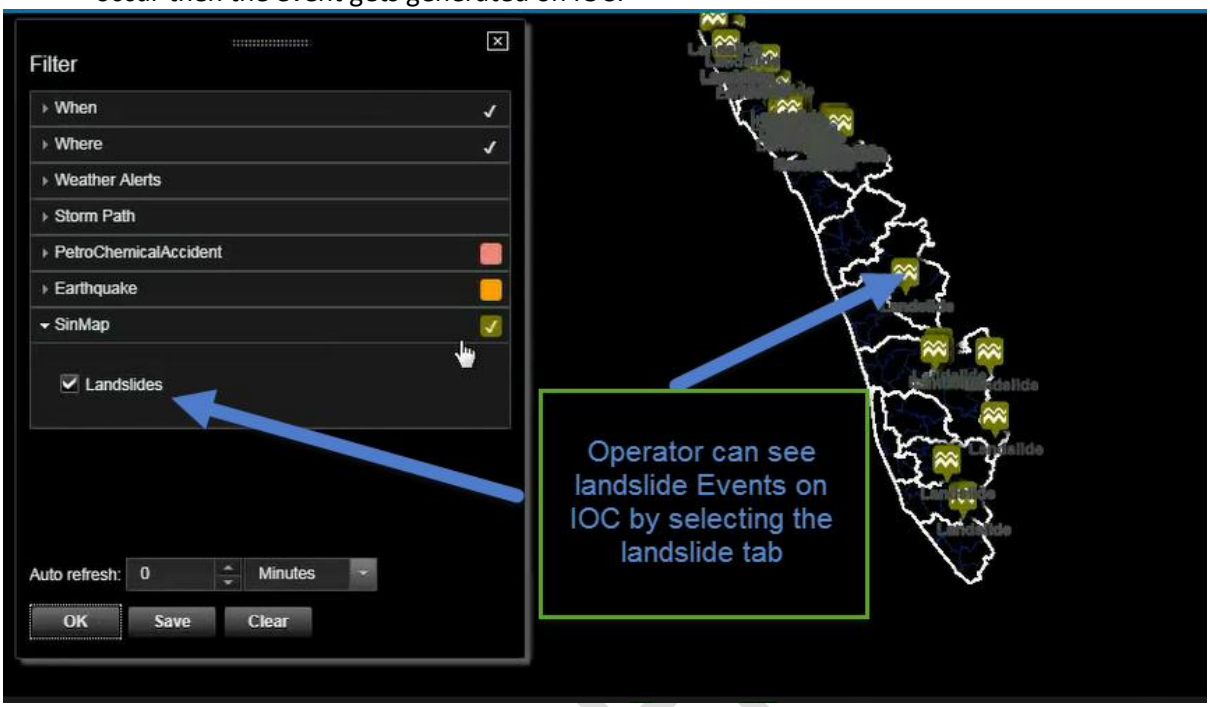
STEP 1: Sinmap tool is launched in ArcGIS:

- ✓ Whenever operator receives reports of heavy rainfall, very heavy rainfall or extremely heavy rainfall, He opens ArcGIS Desktop to run sinmap tool for checking any landslide event in that particular area.



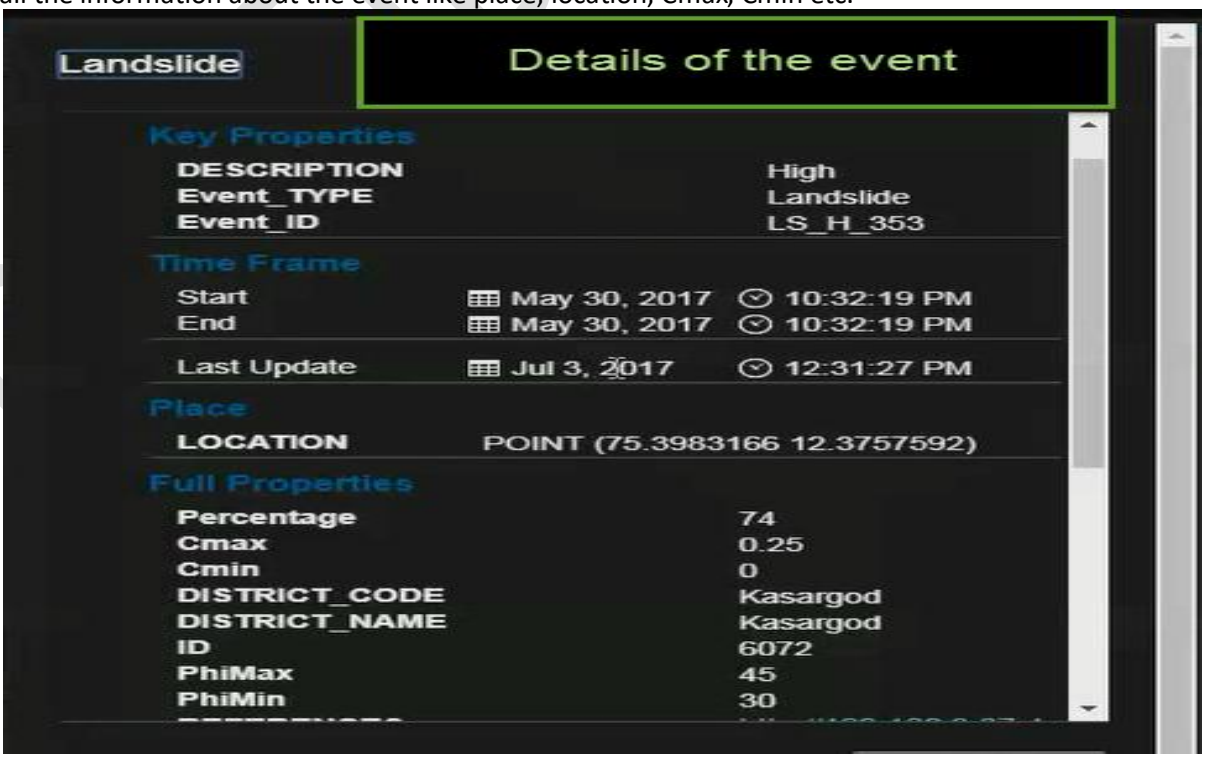
STEP 2: Landslide event gets generated on IOC:

- ✓ As soon as Arcgis completes the process, and if there is any chances of landslide event to occur then the event gets generated on IOC.



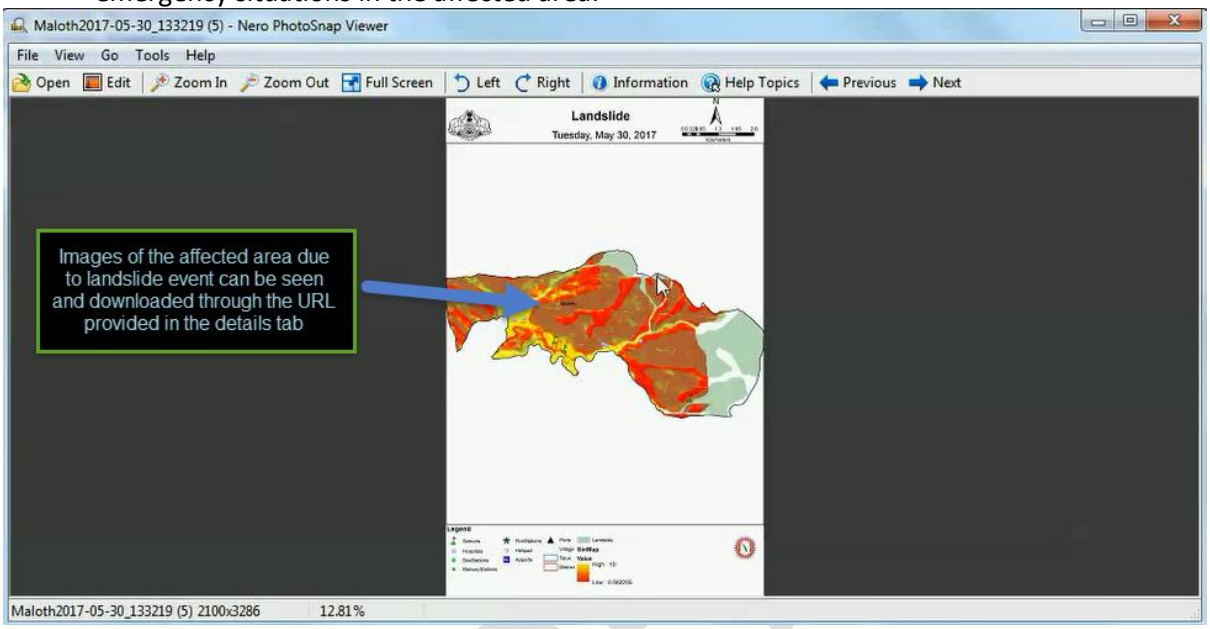
STEP 3: To get the full details of the Landslide event :

- ✓ We can see the full details of an event by clicking on the details tab where it gives operator all the information about the event like place, location, Cmax, Cmin etc.



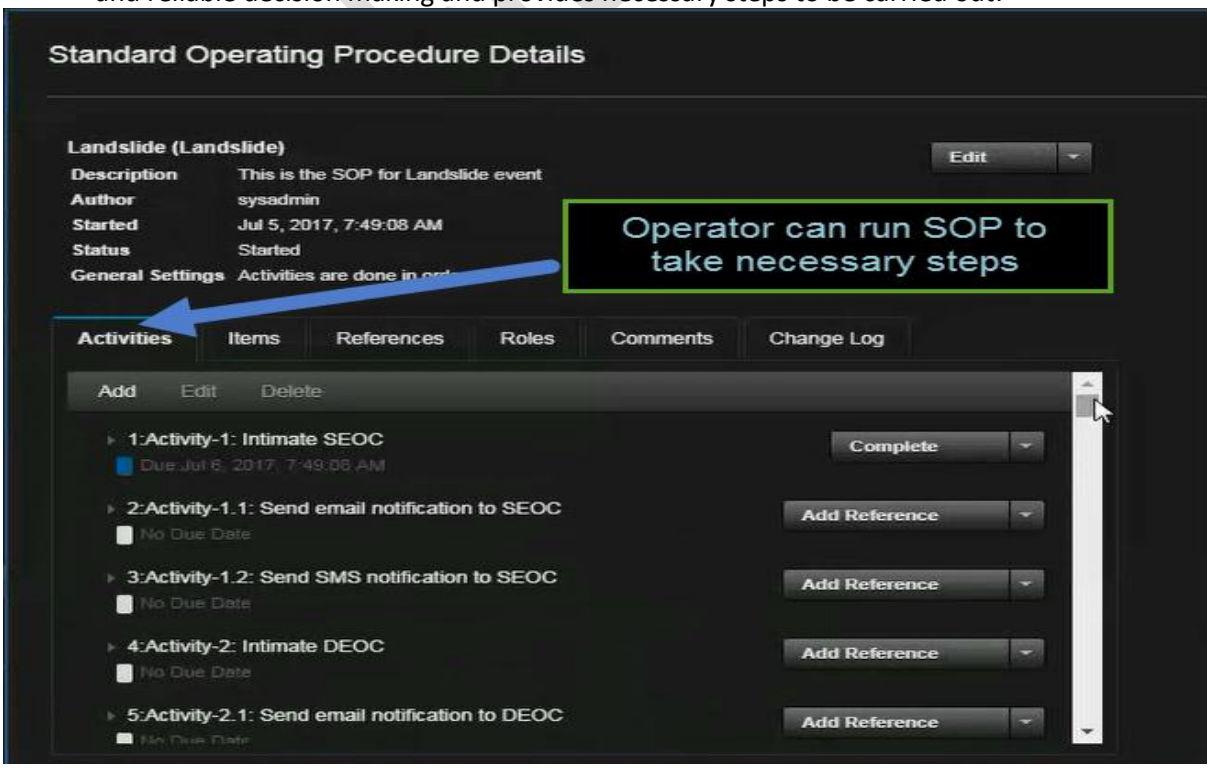
STEP 4: To see the available assets like police stations, schools, colleges, bus stations, hospitals etc present around the area where the event is generated:

- ✓ Operator can see the available assets and resources which can be used at the time of emergency situations in the affected area.



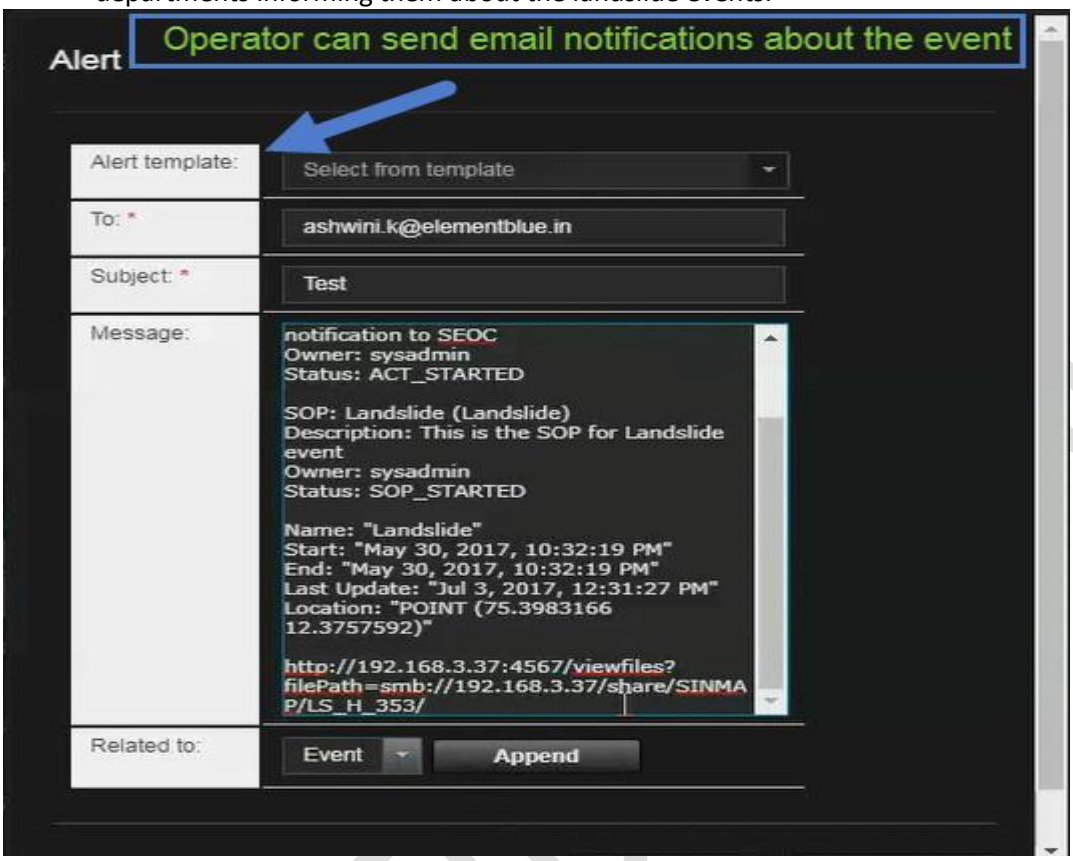
STEP 5: To Run Standard Operating Procedures for fast decision making:

- ✓ Operator can run standard SOPs for the landslide event which enables operator to make fast and reliable decision making and provides necessary steps to be carried out.



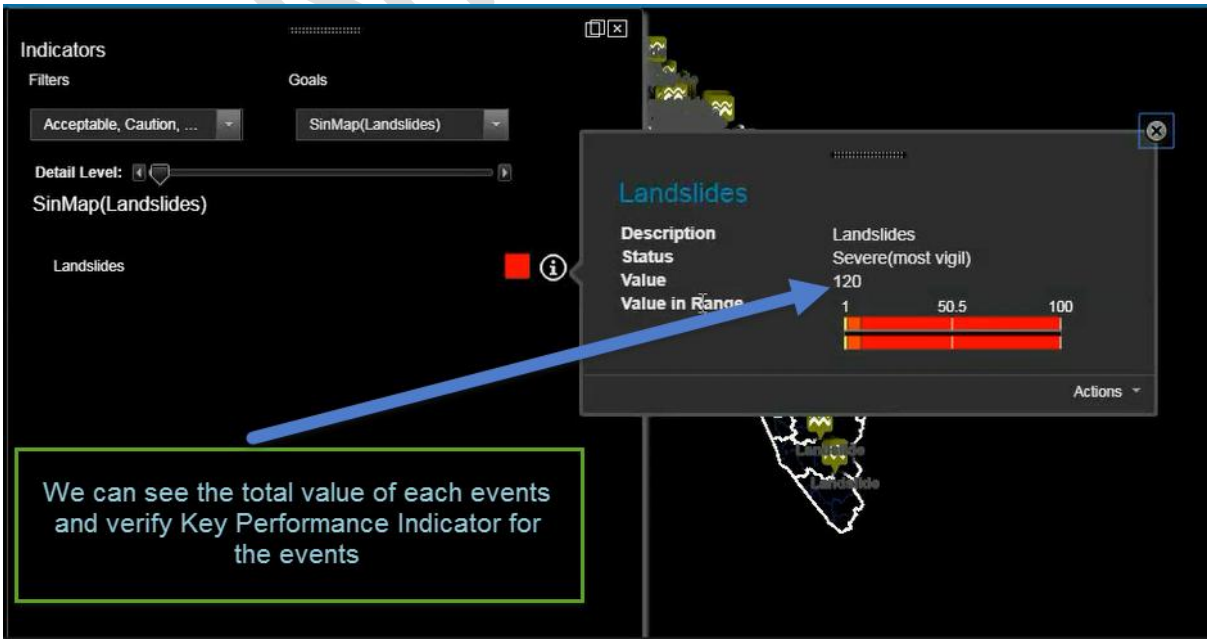
STEP 6: To send email notification:

- ✓ Operator can send email notifications to key personnel, city leaders as well as different departments informing them about the landslide events.



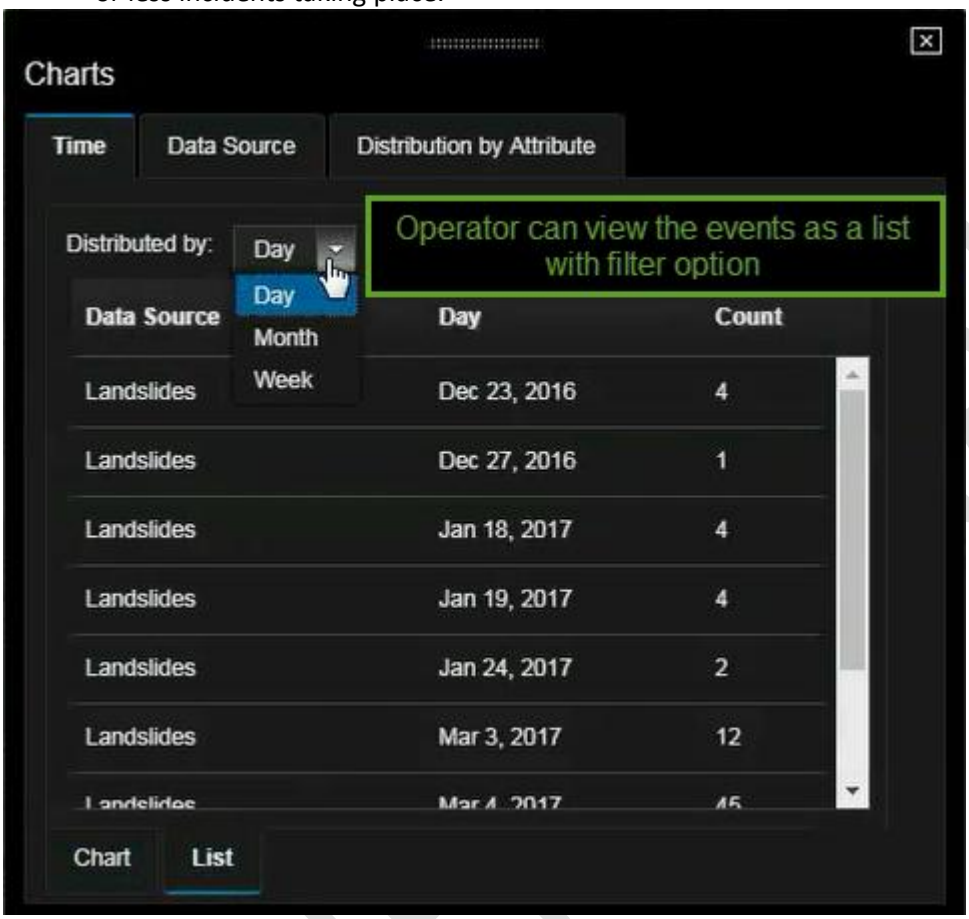
STEP 7: To see key performance indicators for the event:

- ✓ Operator can see key performance indicators which gives an insight of landslide events like value of total incidents occurred etc.



STEP 8: To see the event statistics in terms of list:

- ✓ Operator can see statistics of landslide events and can filter it down to day, month and weekly events being generated and gets an insight of that span of time when there are more or less incidents taking place.



Solution will provide integrated data visualization, real-time collaboration, and deep analytics that can help leaders prepare for problems before they arise and to coordinate and manage problems as they occur, to improve the efficiency of operations.
Solution delivers the following major functions:

- Visual workspace
- Events and incident management
- Resource, response, and activity management
- Status monitoring
- Collaboration, instant notification, and messaging
- Reports
- Semantic model
- Preventive mechanism

This solution makes supervision and coordination of complex sub-systems more effective. The solution helps you evaluate the effectiveness of the decisions and applied procedures and make improvements. The solution helps to:

- Handle events and alerts, in both emergencies and non-emergencies.

- Organize response teams, enabling fast and clear communications between team members.
- Define and provide standard operating procedures for handling the different situations that arise, with the correct assignments, which are based on legal requirements or historical experience.
- Track the progress of the performance of those procedures, including the results of the actions.
- Locate resources with the required capabilities to handle the events.
- Enable the continuous improvement of the organization's services and responses.

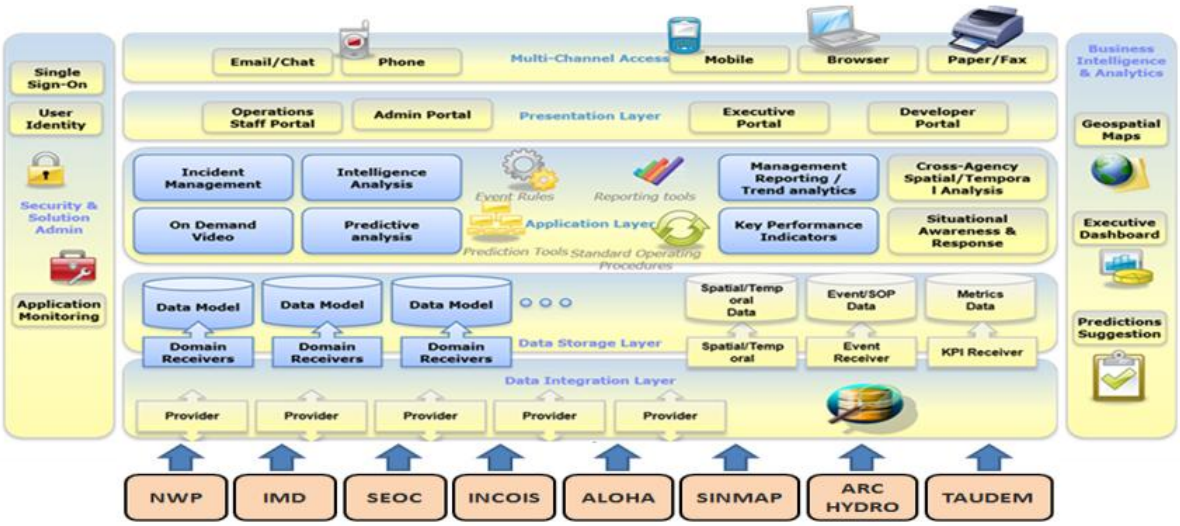
3. Solution Features, Functions and typical use case description

The following steps describe typical flows through the IBM Intelligent Operations Center solution infrastructure:

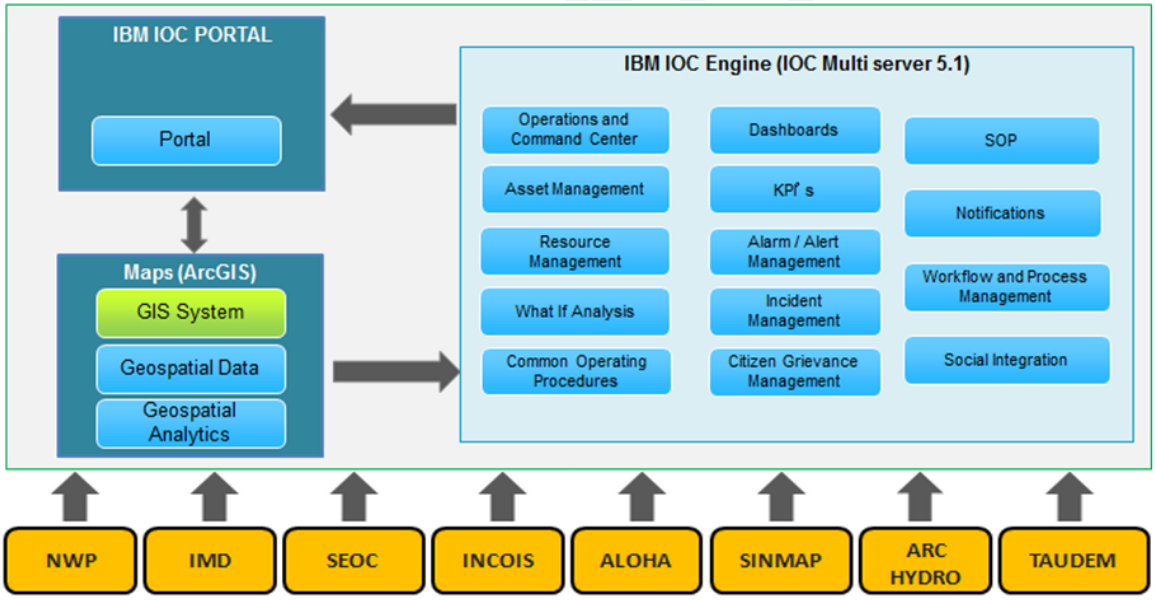
If IBM Intelligent Operations Center receives an event, it performs several actions to mediate or manage the event. Some of the actions include:

- Display the event as an item in the event list.
- Add an entry in the geospatial database and show the event location on the Map on the operator dashboard.
- Check the characteristics of the event against the SOP matrix, which maps event characteristics to specific procedures.
- If the event matches one of the defined SOPs, a new standard operating procedure workflow is initiated and is visible in the IBM Intelligent Operations Center portal My Activities window.
- Correlate events that are received within a specified time and location. For example, trigger a notification whenever two or more events happen within a specific period of time.
- Check the resources and capabilities database, link the event to the appropriate resource, and display the information in the user interface.

4. Solution Architecture



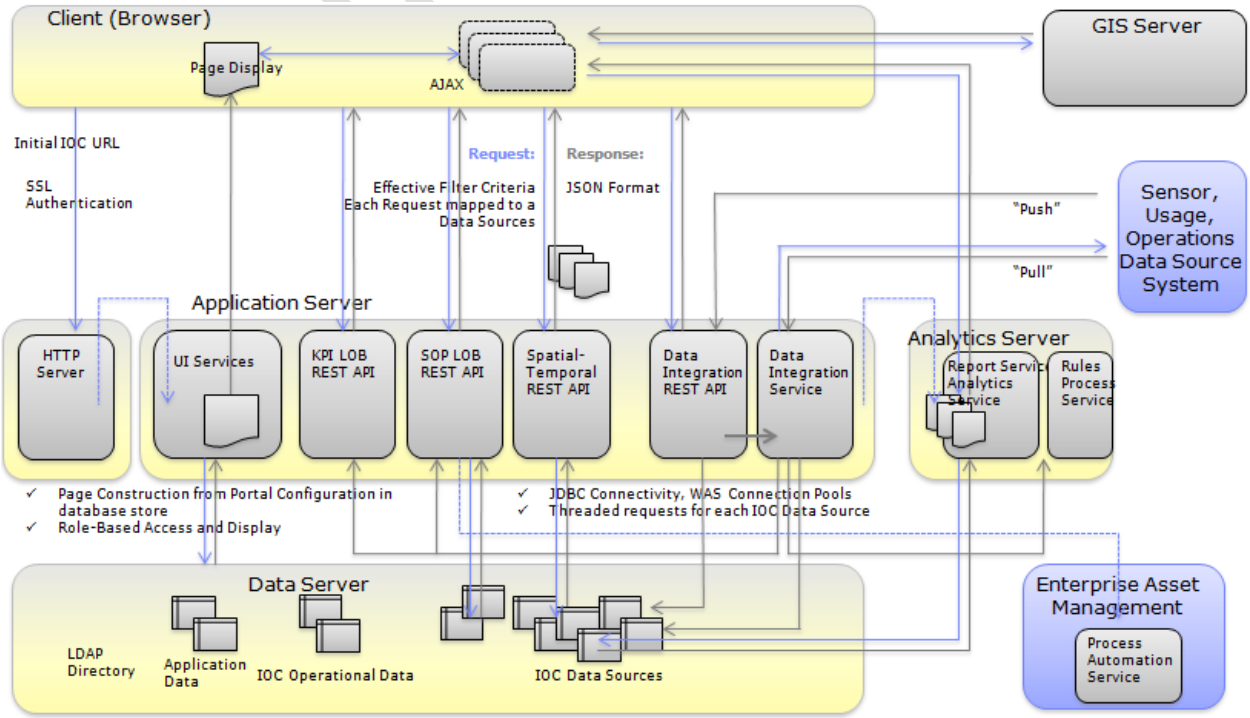
5. Integration Architecture and Approach



Integration approach to this user story is as follows.

1. REST Service based Integration: Alerts / data can be pushed from the subsystem using REST Services exposed by IOC

6. THE IOC 5.1 REQUEST/RESPONSE FLOW ARCHITECTURE



7. Conclusion:

Using this approach, we are able to achieve the following:

- Landslide has been closed successfully.
- Verifying the details of the Landslide if there is any event generated.
- Monitoring for emergency situation and providing quick response to the situation.
- Utilization of state resources and assets in an efficient way at the time of Landslide.
- Analyzing the different types of Landslides and giving an insight to emphasize on events which needed to be taken care of.