### **Business Request**

In this project, there was a growing demand for actionable insights into seismic activities globally. The challenge was to process vast amounts of real-time earthquake data, provide meaningful trends, and make this information accessible to stakeholders through a visually engaging dashboard. The stakeholders required an automated system capable of:

* Ingesting real-time earthquake data from external APIs.
* Processing and analyzing this data to identify patterns and trends.
* Delivering interactive visualizations to showcase key insights, such as earthquake frequency, intensity, and location.

### **Our Solution Overview**

To address these requirements, we implemented a scalable data engineering pipeline that:

1. **Data Ingestion**: Automated the collection of real-time earthquake data using Azure Data Factory to ensure a continuous flow of accurate information.
2. **Data Processing and Transformation**: Leveraged Azure Databricks (PySpark) for scalable data transformations, ensuring the dataset was clean, structured, and ready for analysis.
3. **Data Storage and Analysis**: Used Azure Synapse Analytics and Azure Data Lake for efficient storage and advanced querying capabilities.
4. **Dashboard Development**: Built an interactive Power BI dashboard that provided stakeholders with clear visualizations of earthquake trends, including intensity, location, and frequency.
5. **Automation**: Scheduled regular updates to ensure stakeholders always have access to the latest insights.