Group 3: Real time earthquake alert system

a.

Performances

- Computation Time: This must be achieved in 10 seconds for earthquake detection and alarm system.
- Computation Accuracy: The system shall be able to pass three levels of accuracy test to minimize false detection.
- Noise Level Detection: The system shall be able to detect noise level as low as 45g$\sqrt{}$hz from the real quake.
- Sensitivity Level Detection: The system shall be able to detect sensitivity level as high as 0.080mg/digit

Interface

Smart Device: The system shall be able to sends and display a warning message to nearby devices such as a smartphone or TV that pops up appropriate emergency procedures

Design Constraints

Accelerating Sensors or seismograph that meet the minimum requirements specification needs to be used.

Others

Safety: The system shall be able to automatically shut off connected home-automation devices such as electricity, gas and tap water according to the level of strength.

b.

Stakeholder: Government

Government may need to deploy this kind of real time earthquake alarming system to alert its citizens to prevent disastrous consequences.

Explicit information. With the explicit requirements defined as the documents communicated by stakeholders to the developer team, there might be not enough specification elaborated or requirements formulated property to the developer for software development. This would lead to wrong requirements elicitation and thus the system is not designed accordingly.

Implicit information is requirements the users are going to expect but not captured explicitly. Considering the real time earthquake alarming system, users will expect the system to give real time

alert when an earthquake happens without the need to login to the system and check that information.

Knowledge discrepancy between system specification and development team. For example, the earthquake software specification is well defined by the system architect but the lack of particular knowledge in the relevant domain for the developer might develop something that is not desired.

c.

i. Animation prototyping. It is important to show the visualization to the users for the simulated system and its intended system behavior. For example, all the computed and predefined steps of actual system behaviour can be prototyped for real time earthquake alert system and make necessary improvements from the prototype.

ii. Requirements prototyping. This kind of prototyping is needed as it will effectively enable the planning and developing of the related system based on the user needs and saves cost on unrelated development. Requirement prototyping serves as a guiding point for the communication between developer and stakeholder. It also helps both parties on understanding the purpose of the system are proposed in such a way.Requirement prototyping describes how users interact with the system display. The second relates the interaction of the system with external environment.Interaction of system with external environment is important for this case study as it relates to the detection of the earthquake from the specific location.

iii.

Animation prototype	**Requirement prototyping**
Animation and illustration of systems have to be drafted and simulators to give users the “feel” of how the system is like.	Requirement of the system needs to be elicited from stakeholders and presented to them before any development work is carried out.
Slightly cost and time consuming as some animation work has to be carried to realise the prototype.	Cost effective and fast as the requirements can be gathered through discussion and survey.