BuildERS

Factsheet of the Indonesian Case Study of the BuildERS project

The numbers on the images are created synthetically to demonstrate MPD capabilities. These are not actual numbers.

GENERAL INFORMATION ABOUT THE DASHBOARD

The BuildERS project aims to improve the overall resilience of people, communities and thereby the whole society, by focusing on the most vulnerable individuals, groups and communities, such as tourists in the countries they are visiting. Within the project, the potential of using mobile positioning data (MPD) to obtain a more precise rescue planning and emergency management was explored, and as a result, Positium has built a dashboard that:

- is based on MPD in Indonesia,
- shows near real-time MPD data (24h lag),
- shows how many tourists (people with foreign SIM-cards) are in different areas, where they are from, if and where they are moving to,
- shows inbound data of 1-2 days prior to the crisis and daily updates take place a couple of days afterwards as well,
- has municipality as the area size but can also display results on a smaller area level,
- has two layers: tourists and movement.

This dashboard makes it possible to see how many tourists were in different areas at different times, and how the count has changed during disasters. It is also possible to analyse their movements' directions and volumes. With the knowledge of tourists' counts, movements' volumes and directions, it is possible for rescuers to plan and deliver better, need-calibrated relief services for this vulnerable group that have no understanding of local circumstances.

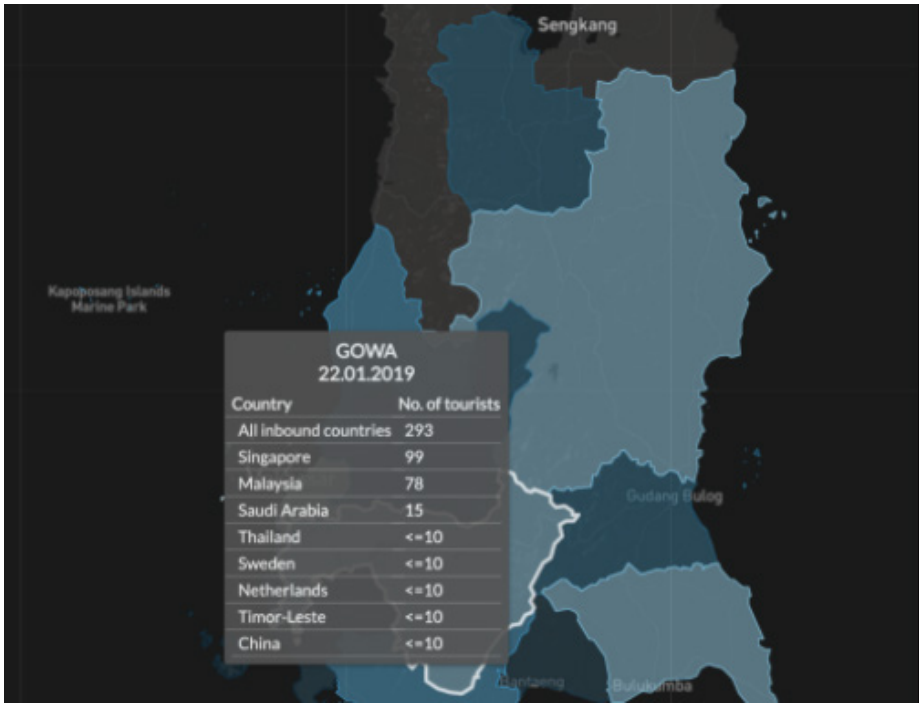
The data used in this dashboard is only the inbound data, thus only tourists' data can be shown. The anonymous individual data are cleansed, used in calculations, and the results are updated in the dashboard, ensuring that the results are all anonymous and complying with privacy regulations. The information on the dashboard is a demonstrator of possible functionalities MPD has to offer.

WHAT CAN THE DASHBOARD DO?

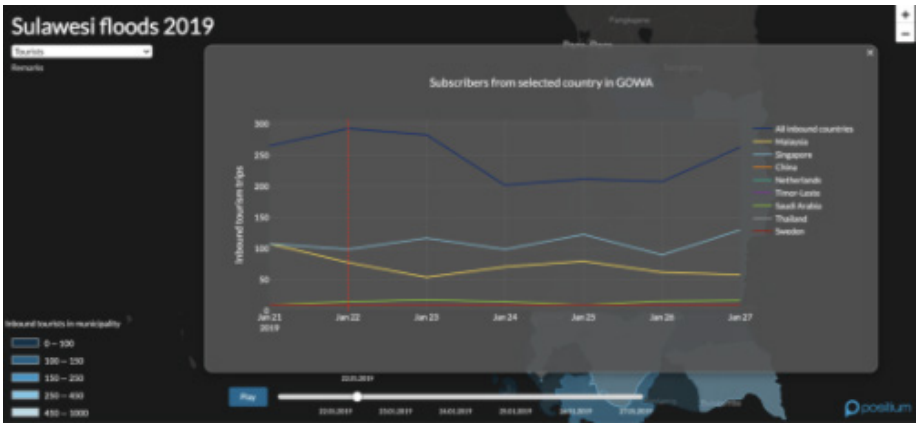
The dashboard can be used for the following purposes:

- reveal the number of tourists in the crisis area, their countries of origin, and the directions of their movements
- estimate the total number of tourists potentially affected by the crisis
- let foreign embassies and consulates know about the tourists who were affected by the crisis
- assess if crisis notifications reach vulnerable people on time and in a way that is easy to understand

The tourists layer shows the number of foreign tourists and the information regarding where they are coming from in the chosen municipality. This information can be used in the communication with foreign embassies and consulates, to let them know how many tourists and from which countries were affected by the crisis. Authorities can also provide support rescue services with resource and evacuation planning.



Dashboard showing number of tourists per country on 22nd of January 2019 if mouse is hovered over the area.

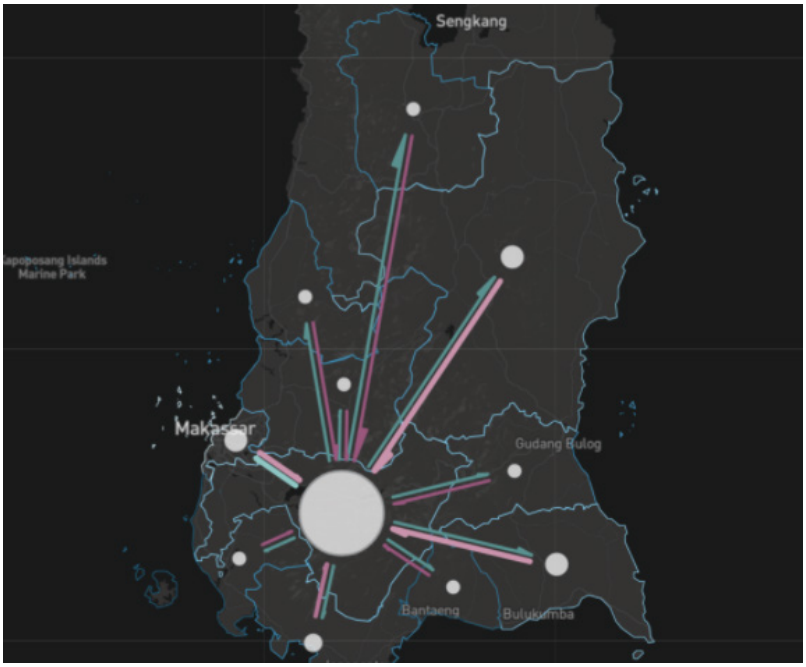


Dashboard showing the change in number of tourists over the whole period if clicked on the area. This change in real life is visible several days after the crisis (each day, one day's data is added)

Definitions and usage description on tourists' layer:

- **Foreign tourist** is a subscriber with a foreign SIM-card that is linked to Indonesian cell towers e.g. to perform calls, sending SMS-s or to use mobile internet.
- **Hover** over an area, to see a tooltip showing how many subscribers were in the chosen area at the chosen day per country of origin.
- **Click** on a municipality to see the change of the same data over multiple days on a line graph.

The movements layer can be used to see how many movements of foreign tourists and to which directions are happening between the municipalities and helps to determine which roads to block/unblock first or to estimate the amount of resources needed for different purposes. It can also be used to evaluate if tourists are moving out of the crisis area.



Movement's layer starting page showing movements' directions from crisis area (Gowa) to nearby areas.

Dashboard showing movement counts from crisis area (Gowa). During the chosen day 23rd of January, tourists made 261 movements, 170 out of the crisis area and 91 into the area.

Definitions and usage description on mobility layer:

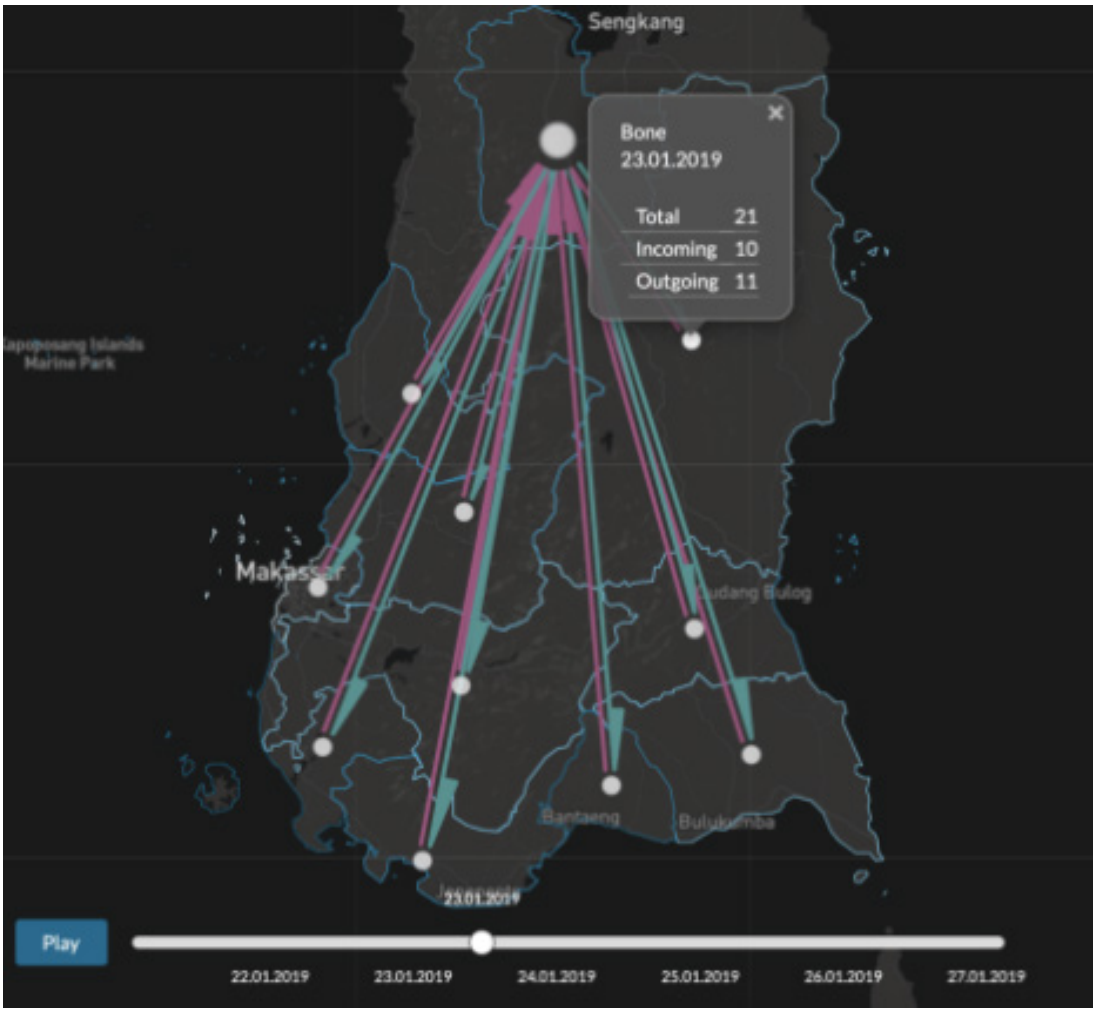
- Incoming movements show movements from other areas into the chosen area.
- Outgoing movements show movements from the chosen area into other areas.
- Total movements show the sum of incoming and outgoing movements.

Hold the mouse on the bubble of the area you want to see.
You can see three columns:

- Today: this number shows how many movements out of or into the area were made on the chosen day.

- Change from yesterday: this number shows the movement count's difference between yesterday and the chosen day. This can be used to monitor if tourists have started to move out more than on the previous day.

- Change from first day: this number shows the movement count's difference between yesterday and the first day. This can be used to monitor if tourists have started to move out more than on the first day.



Dashboard showing that you can choose any area nearby to see movements linked to the other areas as well. Tooltip shows movements between the chosen area Soppeng and Bone

HOW DO LOCAL STAKEHOLDERS BENEFIT FROM THE POSITIUM DASHBOARD? KEY TAKEAWAYS FROM THE FOCUS GROUP DISCUSSION

After thorough discussion, the stakeholders and end-users found the biggest value of the dashboard to be the following:

- **The dashboard is useful during the crisis** because end-users can see almost real-time updates on how many tourists are potentially affected and who might need help. Besides, end-users can also monitor if and where these tourists are moving to.

- **The dashboard is useful after the crisis** as it helps analyze previous disasters to assess whether the response should have been different. Moreover, the dashboard can also be used to analyze if notification systems are efficient in reaching vulnerable people on time and in an easy-to-understand way. Therefore, planning of resources and processes for future crises can be adjusted to further reduce the costs on aid and relief for emergency proliferation.

- **By integrating the Positium dashboard with the ones currently implemented by local institutions, the whole process could be improved.** For example, the Positium dashboard could complement the existing dashboard managed by the Ministry of Foreign Affairs by adding additional source of information showing all tourists in the area, not only the ones who are found healthy, injured or dead.

- During the discussion, the end-users also put forward several interesting ideas. For instance, they suggested that **the Positium dashboard, based on MPD, could also be integrated with other disaster management dashboards** that have been developed using various technologies. The recently developed mobile app by the University of Indonesia called SafeMyLife, and PetaBencana, a tool combining data from hydraulic sensors with citizen reports on disasters, are good examples. These integrations could guide people to move out of the crisis area and escape danger.

UI SAFEMYLIFE MOBILE APPLICATION
WHAT IS IT AND HOW DOES IT WORK?

The Universitas Indonesia (UI) SafeMyLife mobile application aims to improve search and rescue team response time and increase the victim survival rate by considering the victim vulnerability prioritization and technology utilization through mobile disaster applications. It can be used from the pre-disaster and emergency response phases.

The application has two main features:

1. Preloaded Content

This feature contains information (safety points, safety tips, disaster maps) that are communicated to mobile phone users.

The map interface provides users with:

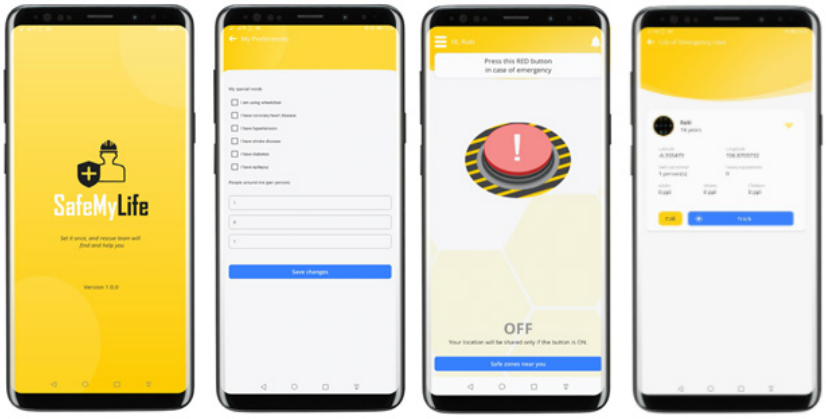
- The nearest safety points from their location during a disaster displaying them on a Google Maps interface
- The addresses and the time to reach these safety points (police station, local hospital, mosque, community centres etc)
- Safety tips in the form of YouTube videos
- Real-time information about disasters given by the governmental authorities

2. Preloaded Content

Through this feature, users can notify the rescue team about their condition during an emergency. If the victims press the Panic Button in the application, rescuers not only can contact them back to provide

needed aid, but can also determine their location and health status, making it easy for the paramedics to prepare the treatment for the victims. Based on the information that users provide when they register on the app, the algorithm categorizes them into groups, thereby allowing vulnerable groups (the disabled, women, children, the elderly, people with underlying medical conditions) to be identified.

The user interface of the Panic Button in the SafeMyLife app can be seen in the figure below.



Through this feature, the rescue team will be able to:

- Receive notifications from users during an emergency
- Contact them
- Determine their location and health status and provide needed aid to victims
- Determine the required equipment and rescue personnel allocation to be deployed
- Categorize the users into groups and potentially identify vulnerable groups (women, children, the elderly, the disabled, people with underlying medical conditions)

With the help of the SafeMyLife app, a city's inhabitants are expected to become more vigilant when facing potential disasters and other hazardous events. Ultimately, the application becomes an example of the efforts made to address urban resiliency in the development of sustainable smart cities.