

GIS for Urban Disaster Prevention and Planning



SuperGeo from Taiwan has completed a geographic information system (GIS) for disaster prevention and planning. Located in the Circum-Pacific seismic zone, Taiwan frequently experiences high-magnitude earthquakes throughout the country. Thus, the development of an effective urban planning system and disaster prevention plans has become the most crucial issue facing the government.

In general, the accurate distance measurement from each residence to the shelters is necessary for Disaster Prevention and Planning. To assist Zhubei city (a city known for high-technology development in Taiwan) in achieving buffer results of shelter ranges with diverse considerations, SuperGIS Desktop 3 is used to build the spatial data for urban disaster prevention and analyse the temporary shelter range.

Setting parks and schools within the city as the shelter locations, the researchers can plan the buffer and compare different shelter ranges with four methods including “Buffer with radius value as 600 metres”, “Buffer with Facility Location Theory”, “Buffer with the actual walkable distance”, or “Buffer with the shelter can be accessed within five minutes”.

In this project, field surveyors also adopted SuperPad 3 for outdoor surveys and collecting spatial and attribute data. Furthermore, according to buffer theory and research standard of spatial disaster prevention area, the spatial analysis tool helps build the spatial data using aerial photographs, maps of city plans, and field investigation methods.

By means of the analysis and statistic functions in GIS, this project utilised various GIS data processing tools and analysis such as network, buffer and overlaying, and combined this with the estimated level of population in each block to compare values of shelter ranges.