

# Release of Virtual Shizuoka Dataset

Shizuoka Prefecture



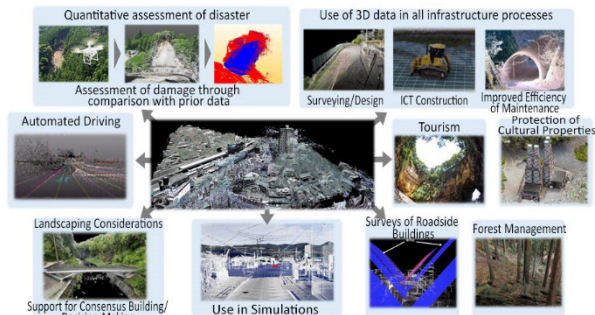
## Background and Reason for the Project

There has been a recent rise in critical social issues, including rapid population declines, low birthrates, ageing populations, shortages of skilled workers, frequent natural disasters, shrinking public transportation in depopulated areas, inadequate transportation for the elderly, and ageing social infrastructure.

To tackle these growing challenges, Shizuoka Prefecture is obtaining point cloud data as a novel form of social infrastructure and is making it open-source. It aims to enhance productivity and generate new value by constructing Virtual Shizuoka, a virtual reproduction of the prefecture.

## Project Aims

The Prefecture aims to utilize extensive point cloud data collected through comprehensive surveys of the physical environment using laser scanners and other technology as primary data for producing a digital twin. This digital twin will be used for various purposes, including disaster risk reduction, urban planning, infrastructure maintenance/management, autonomous driving, and tourism.



Virtual Shizuoka Concept

## Project Outline

Point cloud data was obtained over three years, from FY2019 to FY2021. Various methods were used, such as laser profiling, airborne laser bathymetry, and mobile mapping systems. In addition, this data was open-sourced by the G-Spatial Information Centre for anyone to utilize for secondary purposes.

Measurement Method	LP: Laser Profiler	ALB: Airborne Laser Bathymetry	MMS: Mobile Mapping System
Measurements	Ground surface, trees, buildings, etc.	Coastal and underwater topography	Roads and perimeter landmarks
Measurement Density	16 points/m <sup>2</sup> or more	1 point/m <sup>2</sup> or more	400 points/m <sup>2</sup> or more

Various Point Cloud Data Measurement Methods

## Features and Innovations

The Shizuoka Prefectural Government was honoured with the Good Design Award 2020 from the Japan Institute of Design Promotion for its innovative and bold effort to construct a virtual 3D representation of the prefecture's land. Due to the data being open-sourced, it was also praised for its practical applications, such as in maps for autonomous driving and gaming.

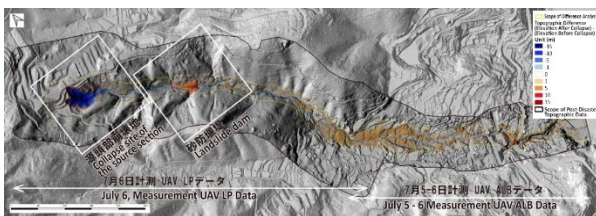
The efforts of Virtual Shizuoka have inspired the Tokyo Metropolitan Government to advocate for the acquisition of point cloud data and the release of open source data, and other localities have followed suit with similar initiatives.

## Results of the Project

Furthermore, the volume of collapsed sediment was calculated by comparing drone-captured laser

measurement data after the disaster. Analysis indicated that there was still earth fill near the origin point, leading to the installation of sensors and surveillance cameras and other secondary disaster mitigation measures.

These findings were achieved through the analysis and validation of open data, made possible through the collaboration of the Shizuoka Point Cloud Support Team, a team of volunteers from industry, academia, and government. As a result, the value of open-source data was once again highlighted, allowing for quick dissemination of information about the disaster's full scope.



Topographic Difference Map  
(before and after the disaster: 2019/2021)

### Issues, Problems and Responses

Disasters can occur anywhere and at any time. To ensure a swift initial response, it's crucial to develop high-definition point cloud data on a national scale as a form of basic land data, provide an environment for its unrestricted, open-source use, and continuously update it.

Given that efforts to gather and use point cloud data are still in their early stages, the prefecture is taking a proactive approach to expanding these efforts. It is now collaborating with the national government, other local governments, and private companies across various industries, intending to construct a Virtual Japan.

### Future Developments (expected effects and project vision and issues)

The Virtual Shizuoka data serves as a digital record, preserving the memories of the city in a virtual space through 3D point cloud data. This data can be accessed and explored through VR, allowing people

to revisit cherished places from the past. In addition, making the data open-source and accessible is anticipated to spawn new cultural and economic value.

In the real world, new urban planning to address regional challenges requires substantial funding and time. However, by designing and experiencing a virtual community through a VR simulation, everyone can have the opportunity to consider how to build inclusive and livable spaces for people of all ages, genders, abilities, and physical conditions.

### Reference URLs

<https://youtu.be/dbRRwQje9Fo>

(Virtual Shizuoka overview video)

<https://www.geospatial.jp/ckan/dataset/virtual-shizuoka-mw>

(Virtual Shizuoka Point Cloud Data for Central and Western Shizuoka Prefecture)

<https://www.geospatial.jp/ckan/dataset/shizuoka-2019-pointcloud>

(Virtual Shizuoka Point Cloud Data for Southeast of Mt. Fuji and Eastern Izu, Shizuoka Prefecture)

<https://www.geospatial.jp/ckan/dataset/shizuoka-2021-pointcloud>

(Virtual Shizuoka Point Cloud Data for Mt. Fuji and Southeast Shizuoka Prefecture)

<https://www.g-mark.org/award/describe/51263>

(Good Design Award 2020: Virtual Shizuoka Data Set)

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