



整合道路圖資、事故繪圖、碰撞
分析之全方位交通安全平台
Streets and Roads Safety Analysis Platform

智慧交通

Smart Traffic



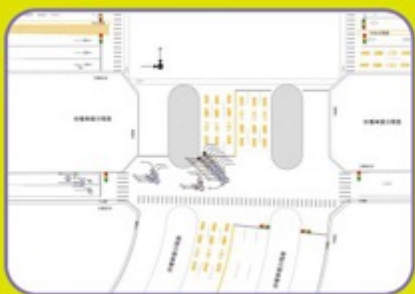
Mobilization
應用行動化

防制交通事故數位治理方案

Digital Governance Solution for Traffic
Accidents Prevention

榮獲110年第4屆政府服務獎
數位創新加值獎
Received Government Service
Award 2021

Visualization
資訊視覺化



精準執法
Precise Enforcement

科技執法
Technology Enforcement

教育宣導
Education and Dissemination

肇因診斷
Cause Diagnosis
of Traffic Accidents

Digitization
資料數位化
交通事故繪圖
Traffic accident
reconstruction sketch

事故發生
Traffic Accidents Occur

Automation
分析自動化

碰撞構圖分析
Collision diagram
analysis



Core System
核心系統

道路地理圖資
Road geographical
information

地理資訊
Geographic Information

道路資訊
Road Conditions Information

高精圖資
High Definition Map

工程改善
Engineering Improvement

Problem Analysis : Traffic Improvements Have No Scientific Backing is Like A Blind Men Feeling an Elephant



The citizens reported that traffic accidents often occur here, so today we convene all units to help improve.

Village Chief

There are frequent accidents here, after the car comes over, then there is a car accident in front of it

Traffic Division of police department

After investigation, 10 accidents occurred at this intersection this year, causing 11 injuries. The main cause of the accidents was failure to give way to vehicles in accordance with the regulations. There were 5 accidents in total, and the time of occurrence was mainly from 4 p.m. to 6 p.m.

Please discuss the improvement plan of this intersection according to the reports of Village Chief and Traffic Division

Traffic Engineering Section in Transportation Department

It seems that the speed of the vehicles here is very fast, so I feel that there should be deceleration markings and the word "slow" on the ground

From the view of education

(What is the failure to give way to vehicles in accordance with the regulations)

From the view of propaganda

(whether we need to preach to drivers that they should slow down at this intersection?)

Problem Analysis : Traffic Digital Governance Lack of Common Foundation

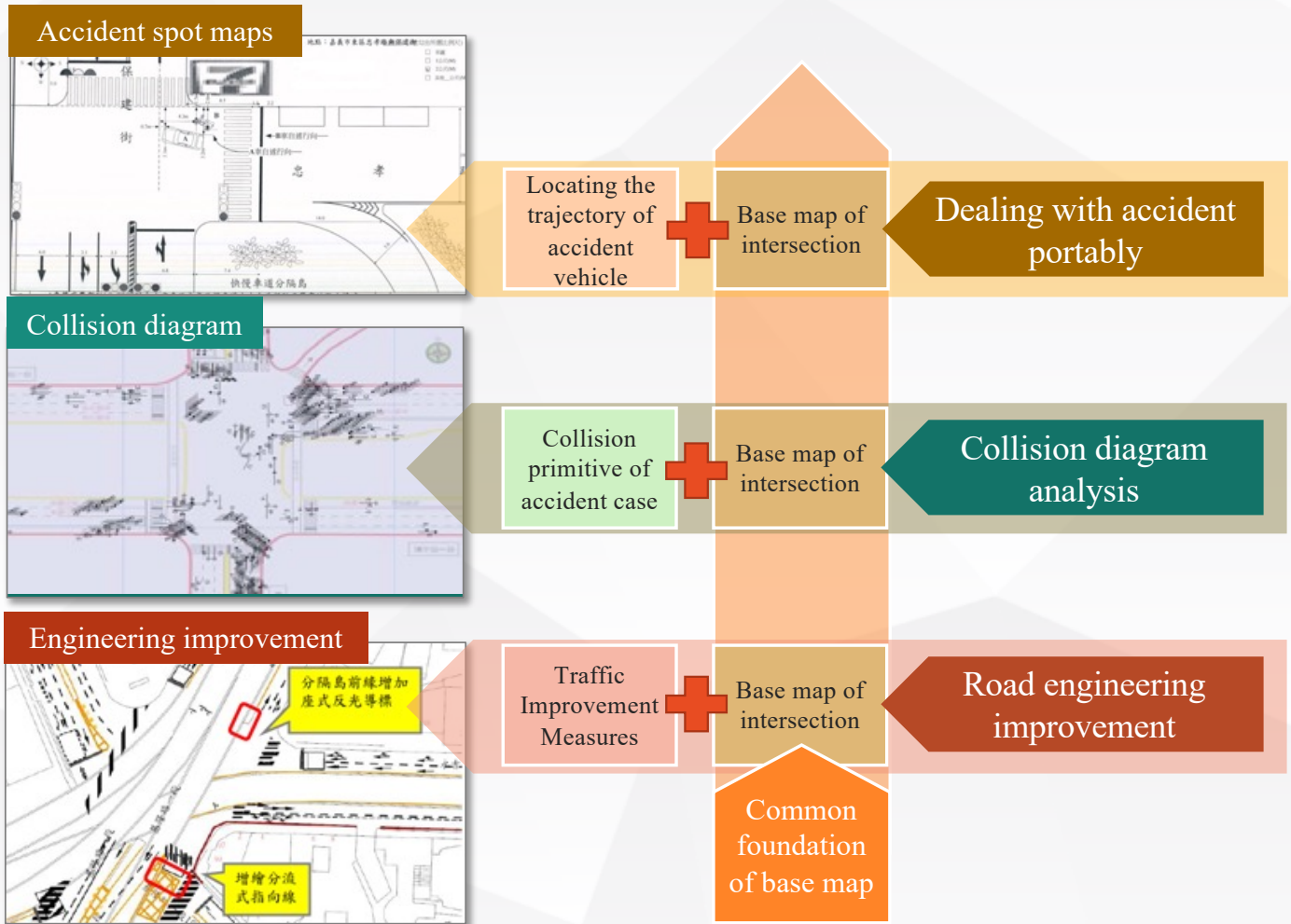
There are **350,000** accident spot maps in whole country every year

Hand-drawn

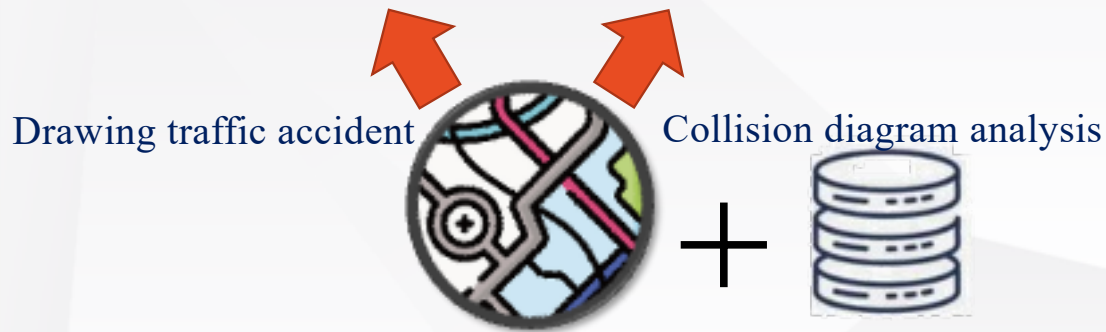
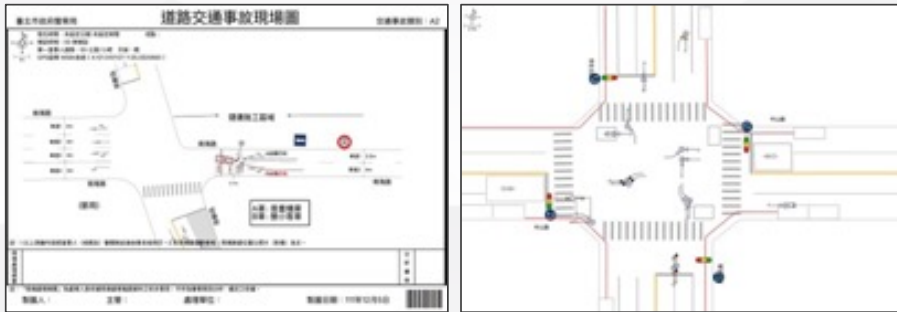
Microsoft Visio

Scanning & saving

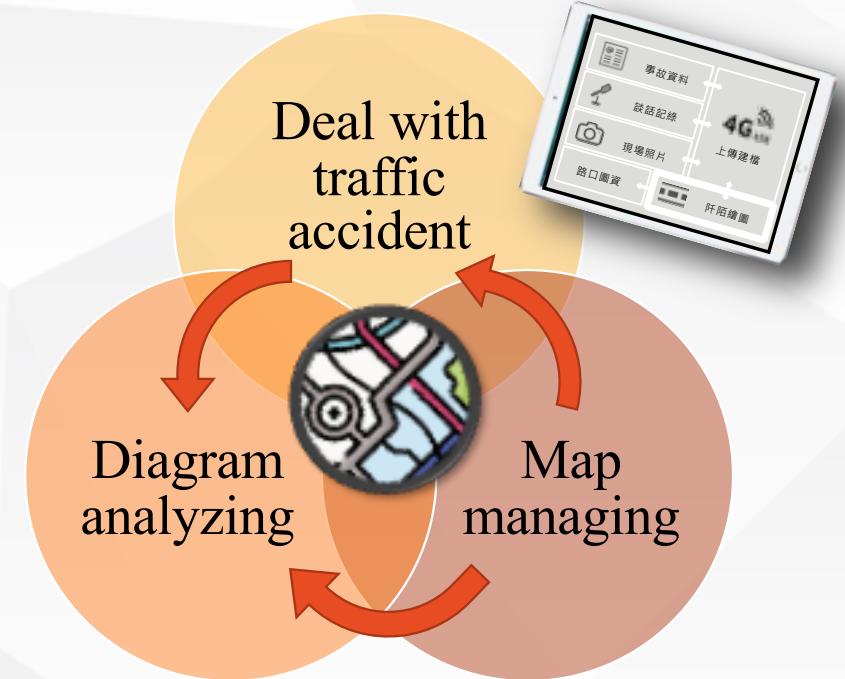
No value of digital application



Core of Digital Governance : QianMo System



- QianMo System combines web applications and databases, and operating independently.
- QianMo System takes **drawing street block** as the core, which can derive traffic accident drawing and collision composition analysis.



- The main design concept of QianMo System is to provide other platforms for **drawing and information services**
- QianMo System also can provide mobile devices, such as iPad, to develop application for processing portably.

Road Geography Map : HD Mapping of Geographic Information

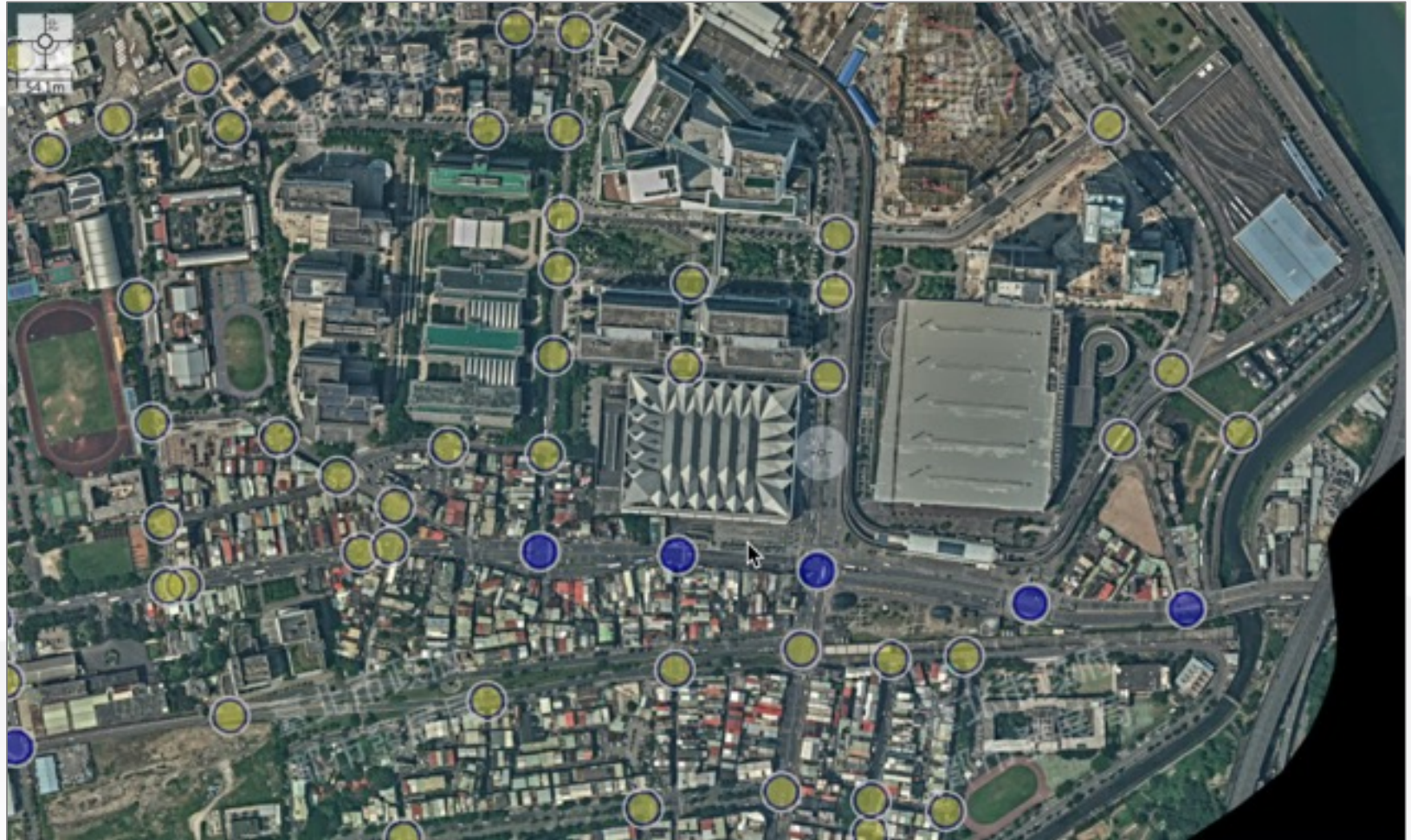
➤ GIS layer synchronous mapping technology which matching the scale and orientation



The photo of street block

GIS layers

GPS location



Scaling and overlapping are performed simultaneously

Dealing with Traffic Accident : Smart Drawing with System Computing

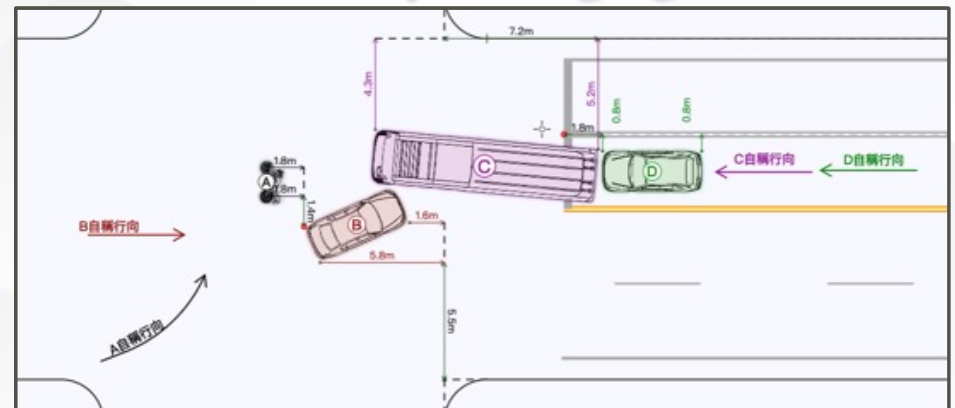
🏆 Automatically correcting angle which is more convenient for framing



🏆 Automatically displaying the road width which can avoid from repeating marking

1m	1m	路肩	1m	路肩	2.9m
3.5m	3.5m	車道1	3.5m	慢車道	2m
3.5m	3.5m	車道2	3.5m	快車道	5m
4m	2.5m	中央分隔島	1.3m	中央分隔島	1.3m
3.5m	4.9m	車道2	6.2m	車道3	3.1m
3.5m	3.5m	車道1	3.5m	車道2	3.1m
1m	1m	路肩	1m	路肩	1m

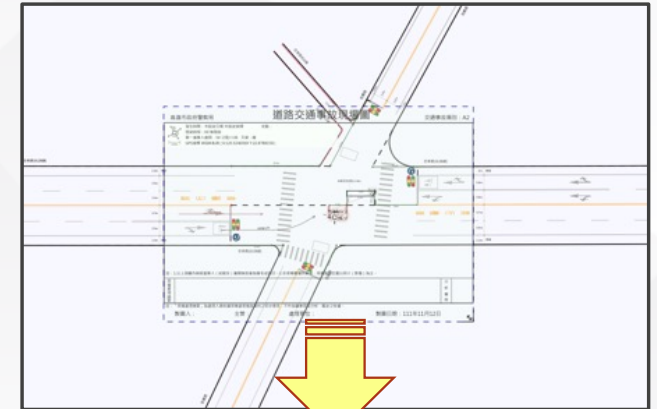
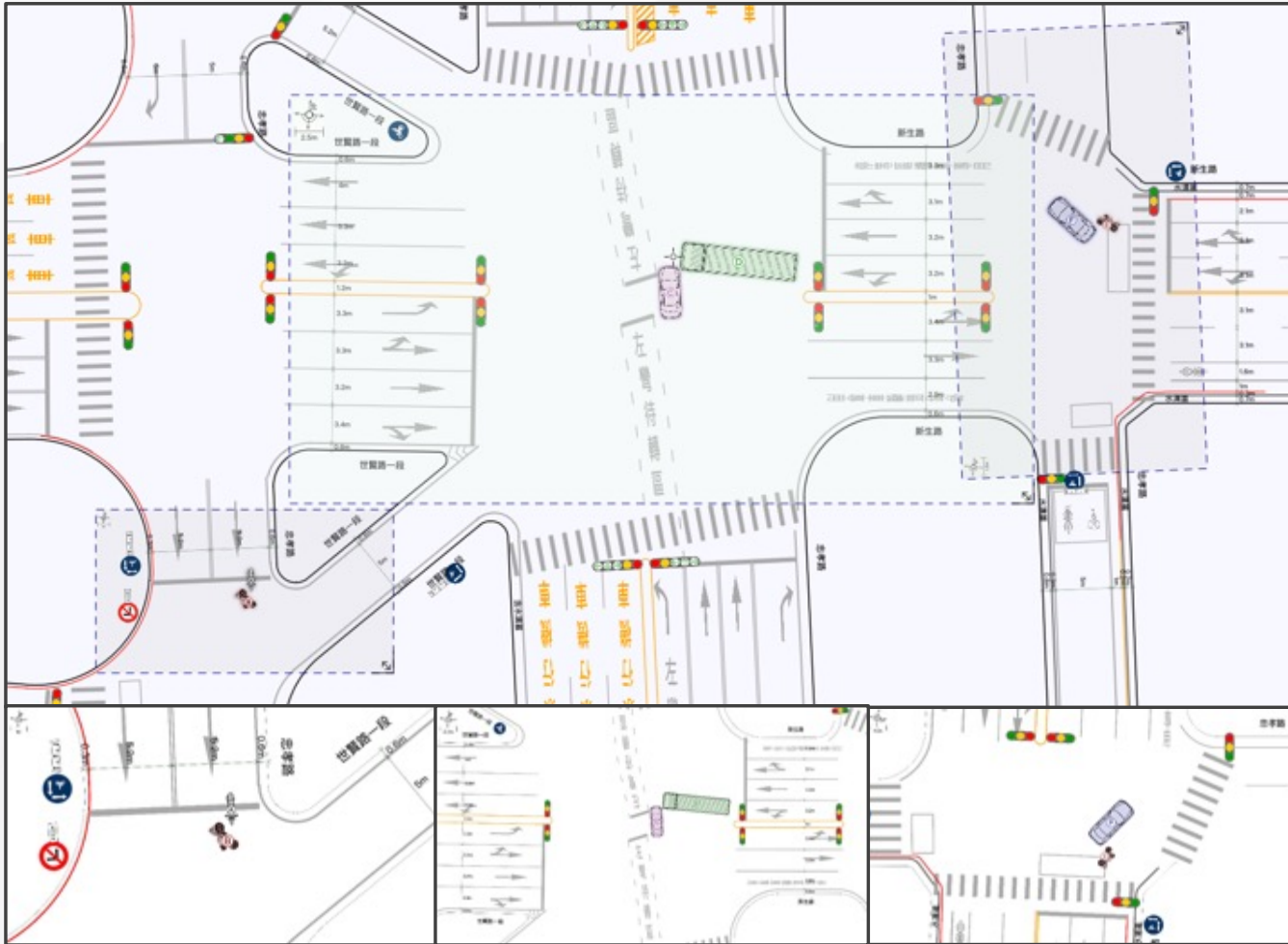
🏆 Automatically managing color



Dealing with Traffic Accident : Intelligent Outputting



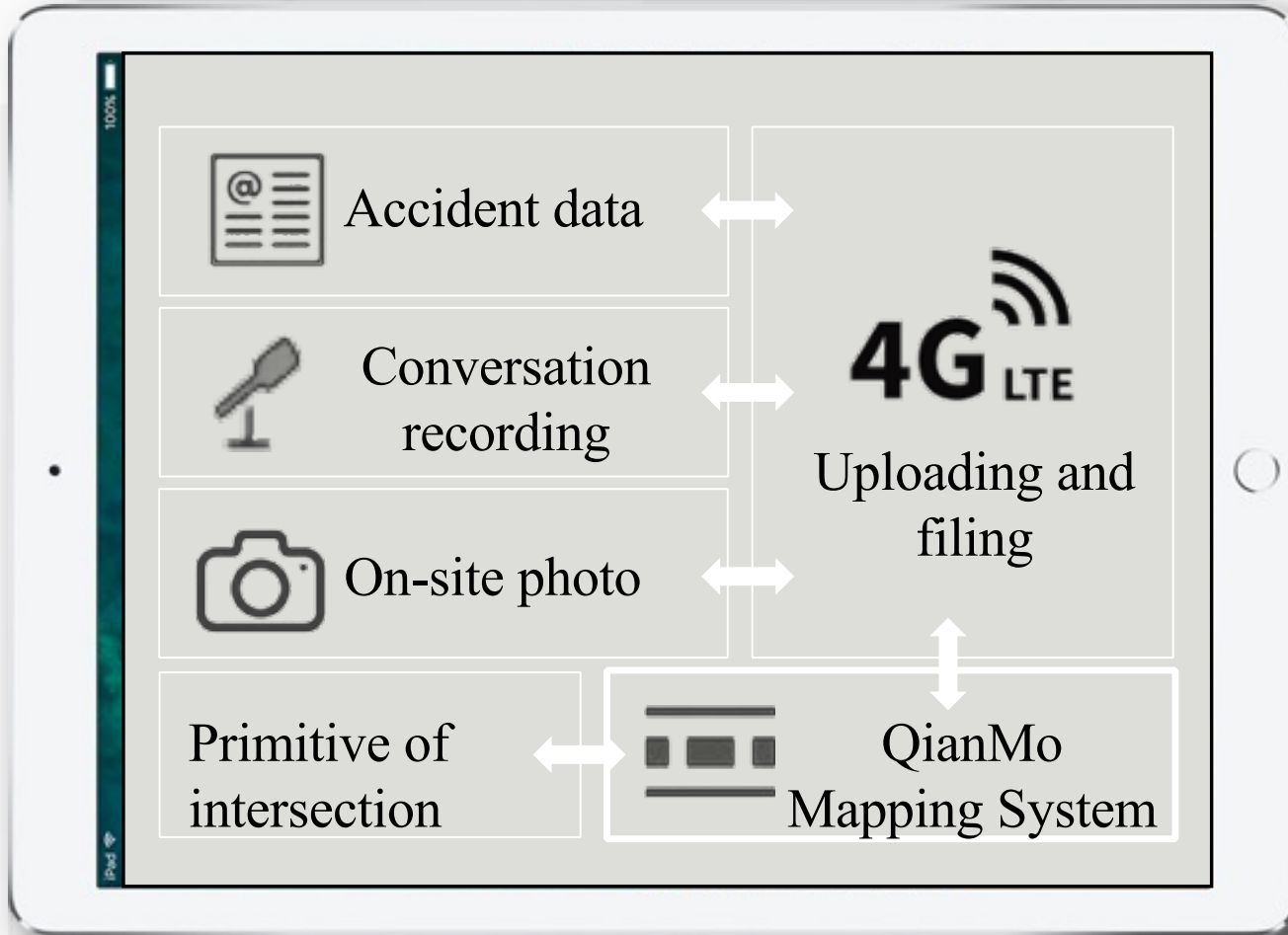
It's more convenient to capture the street block, and more efficient to output the accident spot map



Accident at the intersection of Xinyi Rd. and Zhongxiao Rd. in Alian Dist. 7

Using the Application in Mobile Phone to Deal with the Traffic Accident

➤ Solving problems through mobilization once in time, and using cloud archives to achieve full digitization

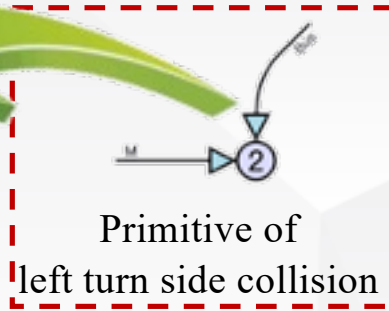


Analysis of Collision Diagram : Visualizing the Trajectory of Accidents



Map of street block

Overlapping the intersection map with the primitives



Primitive of left turn side collision

Selecting the corresponding primitive based on the accident information, and placing it at the collision position to obtain the coordinate data, so as to become the collision primitive.

Time of occurrence :
4 a.m. to 8 a.m.

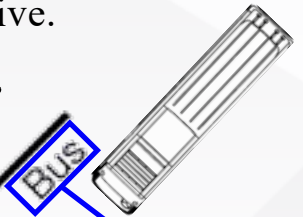
Motorbike



M

West to east, straight

Northeast to southwest
turn left



Bus

- 4 a.m. to 8 a.m.
- 8 a.m. to 4 p.m.
- 4 p.m. to 8 p.m.
- 8 p.m. to 4 a.m.

Collision position

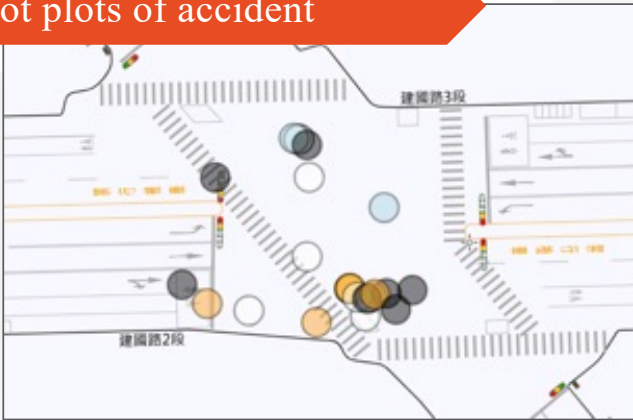
Injuries and Deaths

Analysis of Collision Diagram : the Function of Aggregating and Sorting



Intersection of Jianguo Rd. and Wenheng Rd., Fengshan Dist., Kaohsiung City

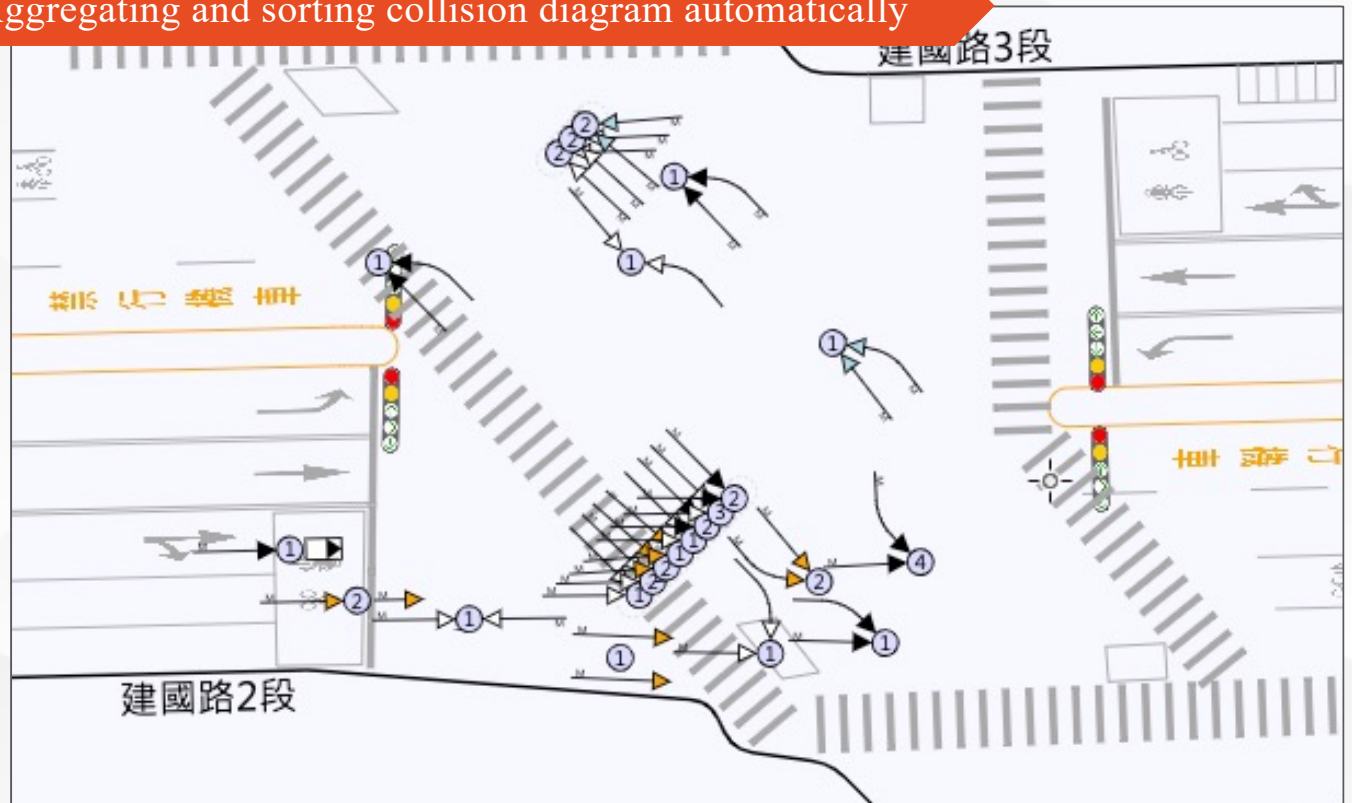
Dot plots of accident



Unsorted Collision diagram

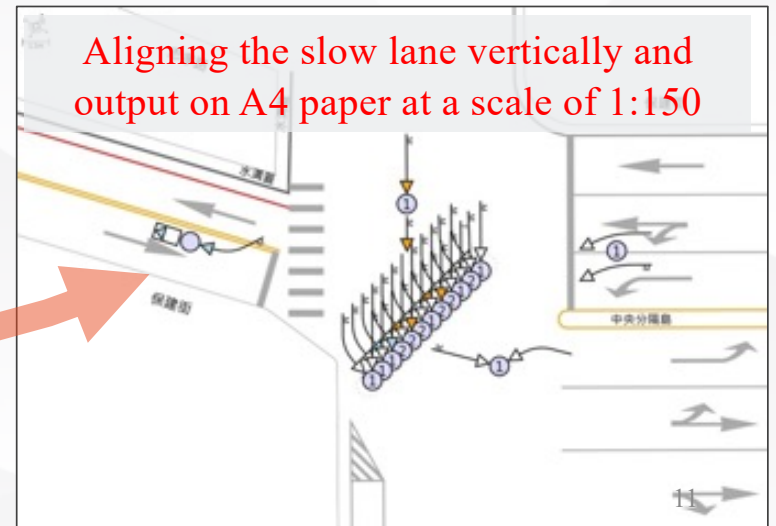
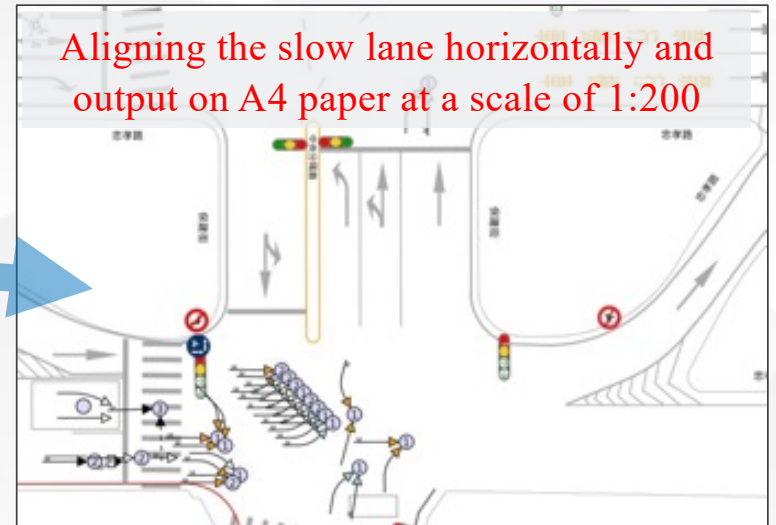
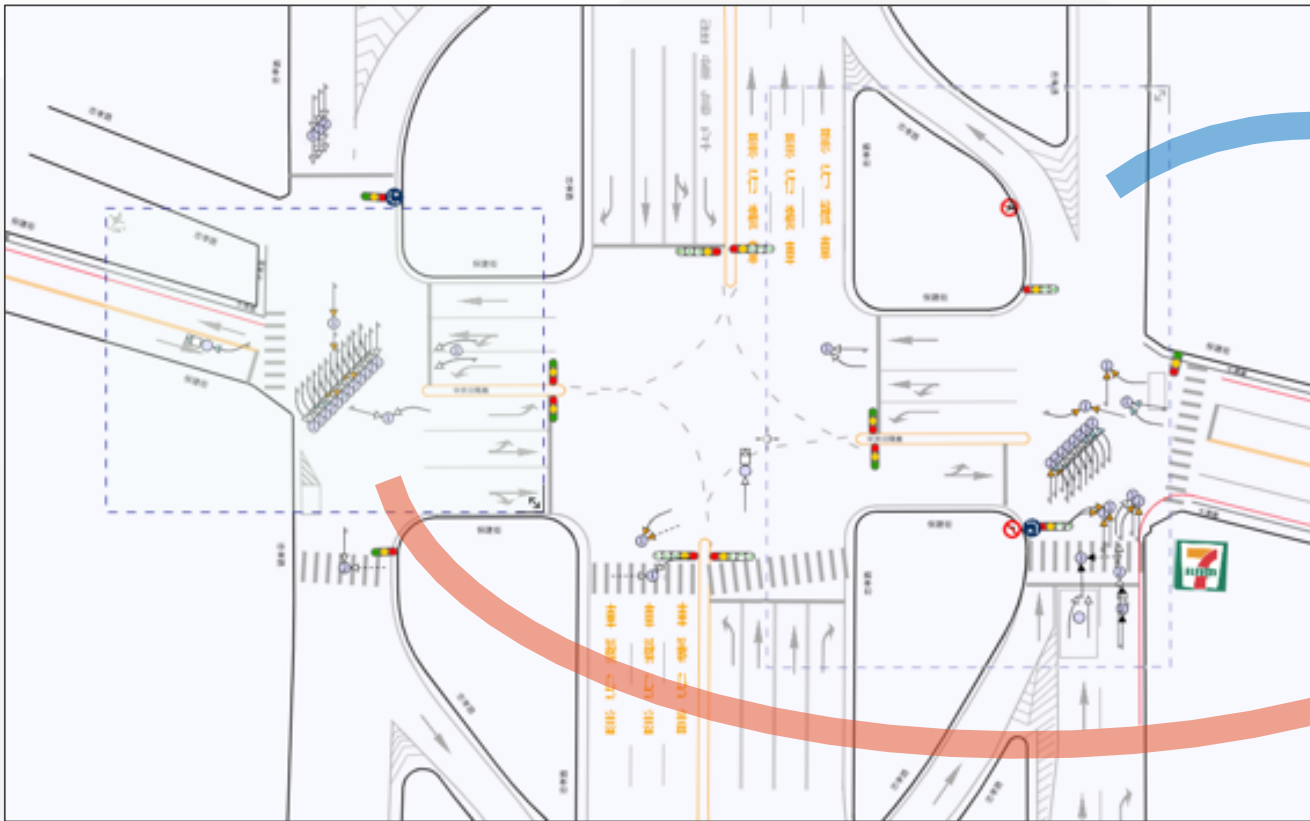


Aggregating and sorting collision diagram automatically



Analysis of Collision Diagram : the Function of Framing and Exporting

Intersection of Zhongxiao Rd. and Baojian St., Chiayi City



QianMo System can calibrate the street block, and according to the specified scale, output the any position in collision diagram.

Analyzing accident : prone intersection and cross-domain improvement

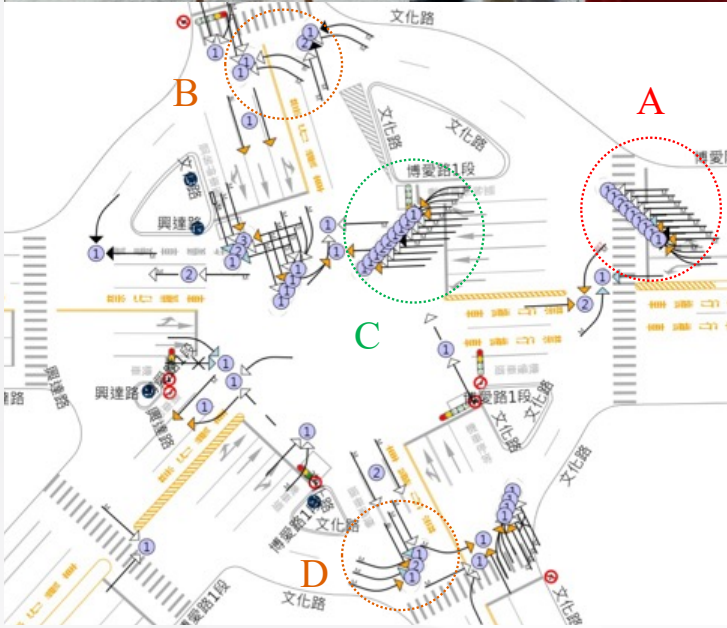


Traffic Division of police department

The police department informed that traffic accidents often occur at this intersection, so today we convene all units to help improve.

Please read the files at hands. The cause of the accident shown in the collision diagram of this intersection is that the right-turning car which driving from bridge to ordinary road crush the straight-going motorcycle, and the second cause is...

May I request the traffic engineering section to report the improvement plans developed for each accident cause.



Traffic Engineering Section in Transportation Department

According to the accident cause presented by the collision diagram, in order to reduce the interweaving of cars and locomotives, we can use traffic poles to extend...

From the view of education

Informing nearby schools to strengthen education on accident risks, and reminding parents who pick up and drop off children to pay attention for this issue

From the view of propaganda

There are many accident cases between turning vehicles and straight-going vehicles, so it's necessary to strengthen publicity that turning vehicles should give way to straight-going vehicles.



Thanks for Listening