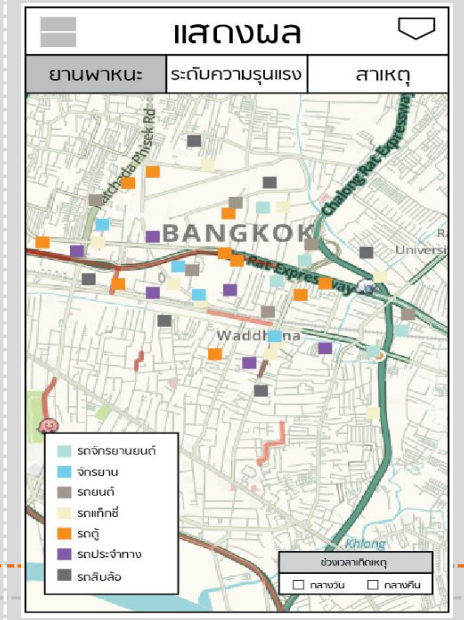
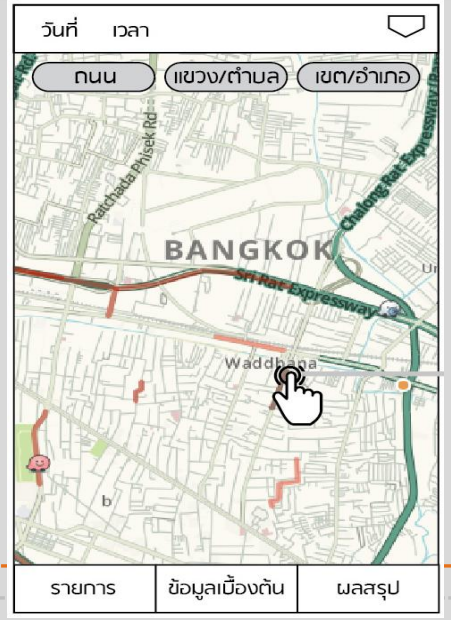
ATRANS Research Project on Safety Map Applica for Community

By Saroch Boonsiripant
Kasetsart University

Presented in 8th ATRANS Symposium "Transportation for A Better Life: Harnessing Finance for Safety and Equity in AEC"





SAFETY MAP APPLICA

21 AUGUST 2015

Project Members

- Saroch Boonsiripant, Kasetsart University
- Paramet Luathep, Prince of Songkla University
- Thaned Sathiennam, Khon Khaen University
- Preda Pichayapan, Chiang Mai University
- Sittha Jaensirisak, Ubon Ratchathani University

Advisors

- Police Captain Jinda Klubklai, WRTP, Police Education Buereau
- Noppadol Santipakorn, Managing Director, Road Accident Victims Protection Co., Ltd
- Alaksh Phonprapha, AP Honda
- Wittaya Chadbunchachai, MD, Khon Kaen Hospotal
- Hideaki Takaishi, Honda Motor Co., Ltd.
- Torpong Krongtraiwet, MD, Maharaj Nahkon Si Thammarat Hospital
- Pol.Col. Kriangdej Juntrawong, Royal Thai Police
- Dr. Passakorn Prathombutr, NECTEC

Motivations

- Thailand ranked the 3rd in road fatality rate in 2013 (WHO).
- Thailand ranked the 2nd in road fatality rate in 2014 (WHO).

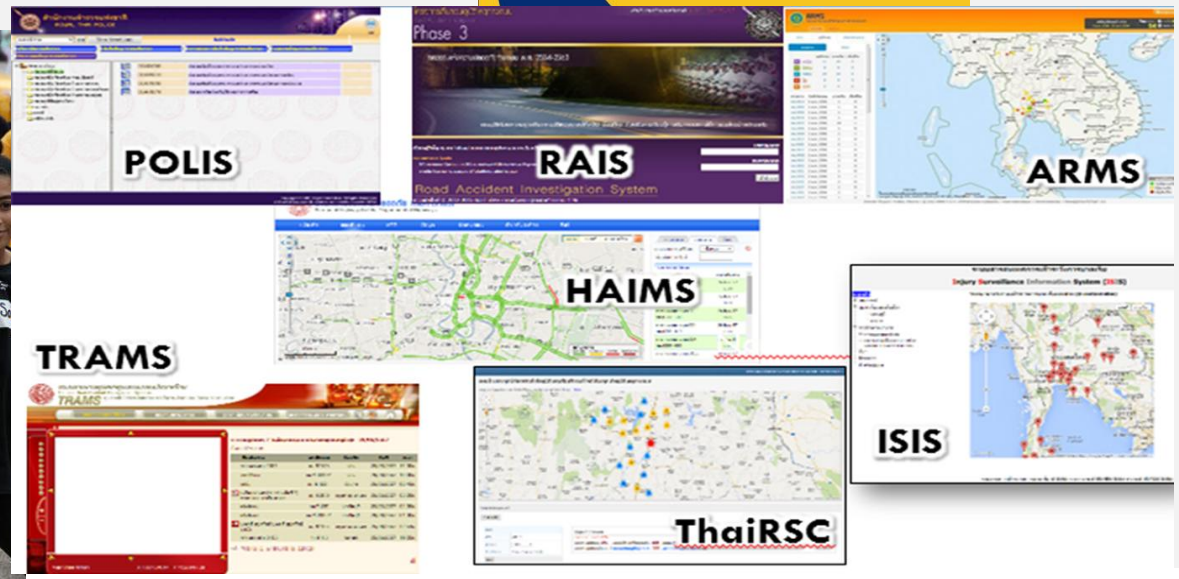
Country	Road fatalities per 100,000 inhabitants per year	Road fatalities per 100,000 motor vehicles	Road fatalities per 1 billion vehicle-km	Total fatalities latest year (adjusted/estimated figures by WHO report)
Eritrea	48.4[13]	4400.0*	n/a	
Dominican Republic	41.7	151.5	n/a	4143
Thailand	38.1	92.4	n/a	26,312
Venezuela	37.2	266.4	n/a	10,791
Nigeria	33.7	425.2	n/a	53,339

road fatality rate in 2013 (WHO).

Motivations

- Most of safety campaigns developed from local knowledge and judgment regardless of actual causes of accidents.
- Several crash databases available in Thailand.

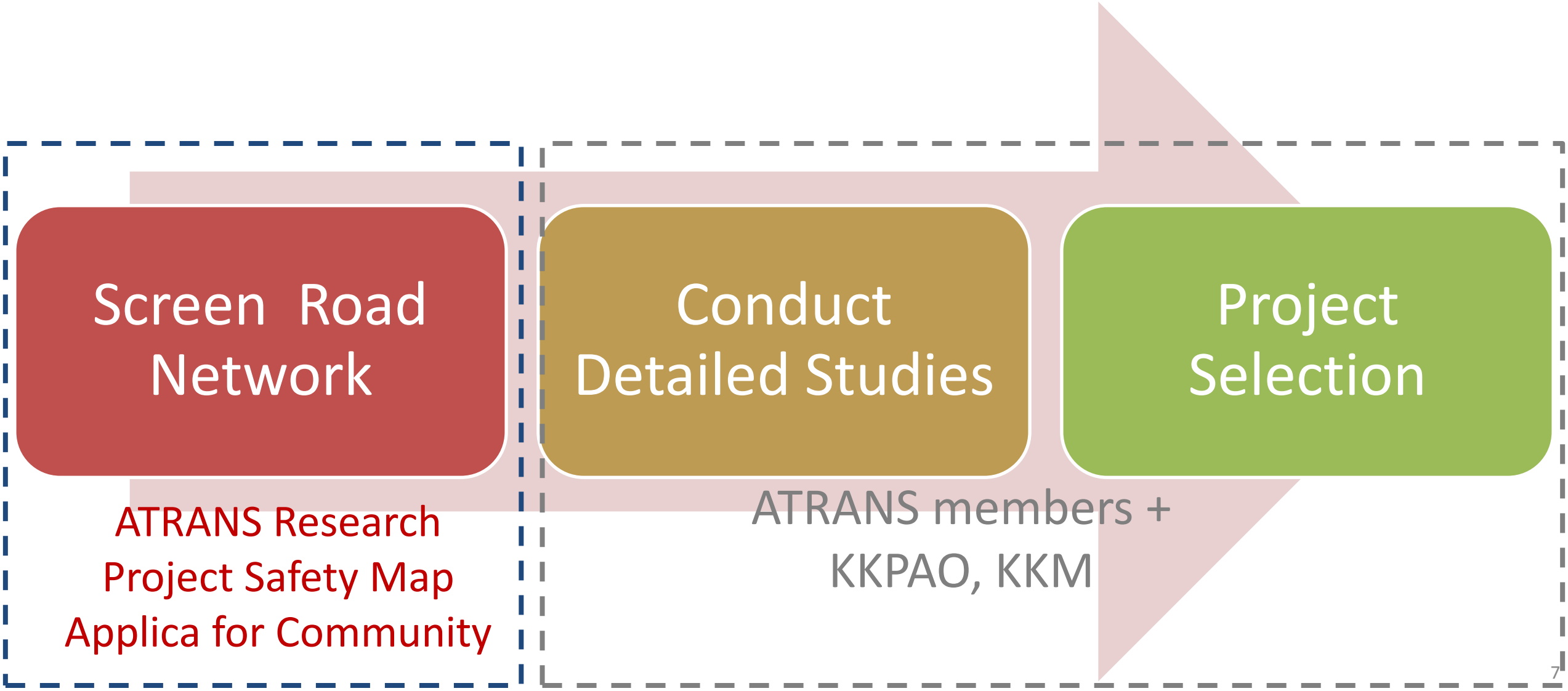
NO MORE VICTIMS ON THE ROADS



Motivations

- However, few agencies develop road safety improvement programs based on these databases because:
- It is difficult to access and
- It is difficult to understand/interpret
- Need a tool to 1) access easily and 2) visualize crash database

Road Safety Improvement Process



Objectives

1. Develop a crash database from multiple sources.
2. Design User Interface to visualize crash data.
3. Develop Safe Applica in iOS/Android Platforms.
4. Work with a local government to develop road improvement program.

Safety Map Applica Roadmap

Phase 1: **Review**

- Literature Review
- Transferability
- Stakeholder Interviews

Phase 2: **Prototype**

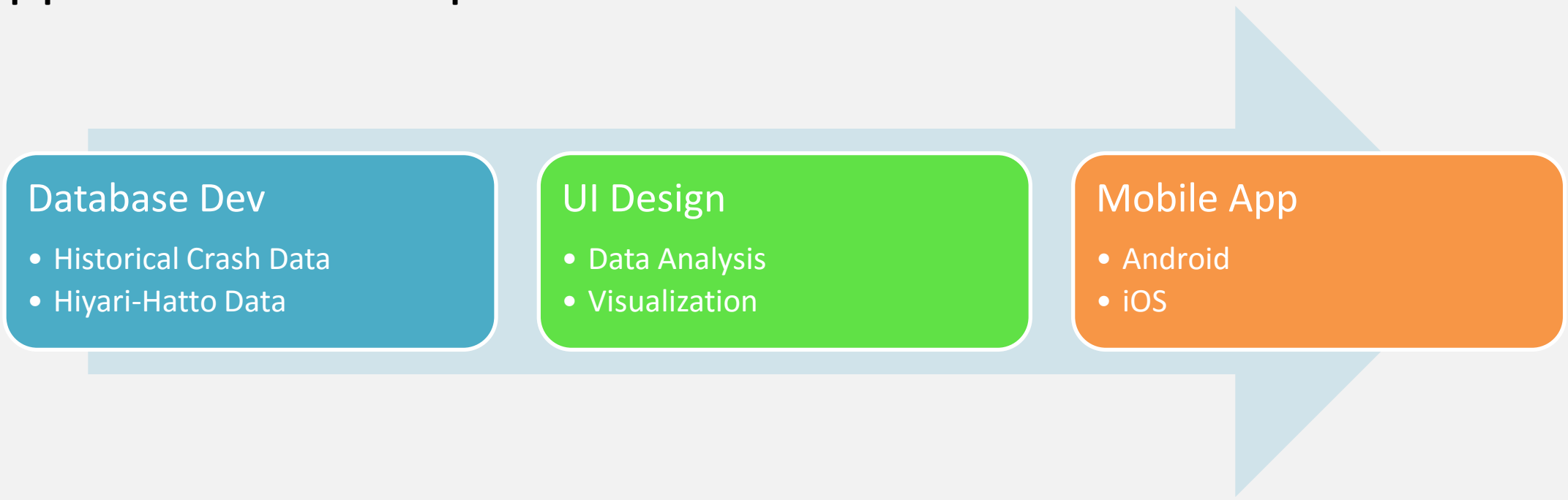
- UI Design
- Develop web app
- Develop mobile app
- Develop road improvement program for KKPAO, KKM

Phase 3: **Full Scale**

- Implementation
- Evaluation
- PR

Phase 2 – Safe Applica Prototype Development

1. Database Development
2. Process and UI Designs
3. Application Development

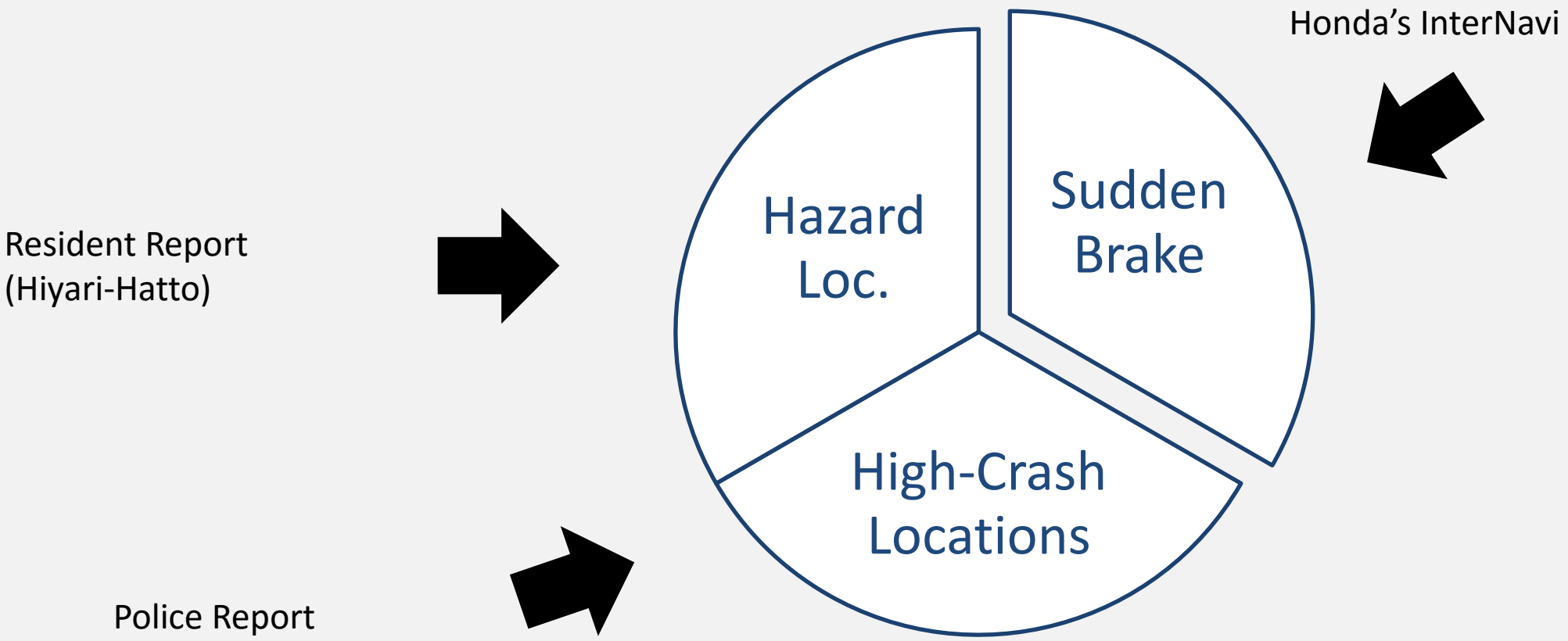


Findings from Phase 1

- Many accident databases already exist.
- Most of them need further analyses/ interpretation, better visualization, easier accessibility.

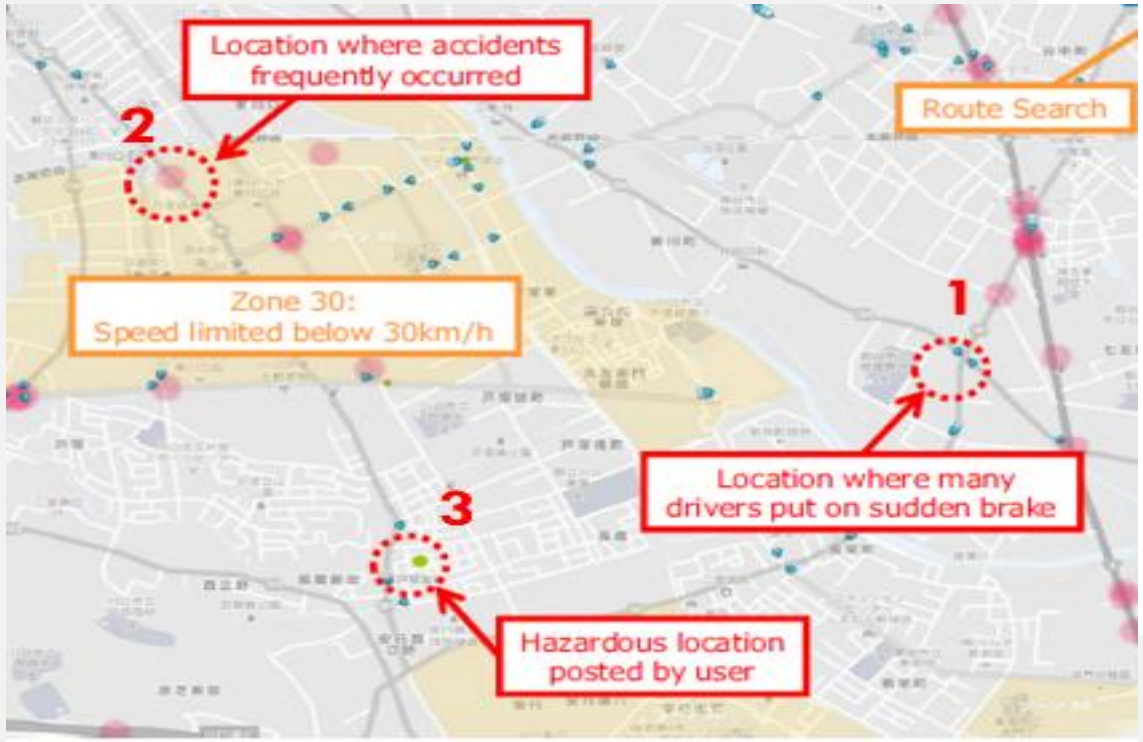
Honda Safety Map

- Data Input



Honda Safety Map

- Data Output

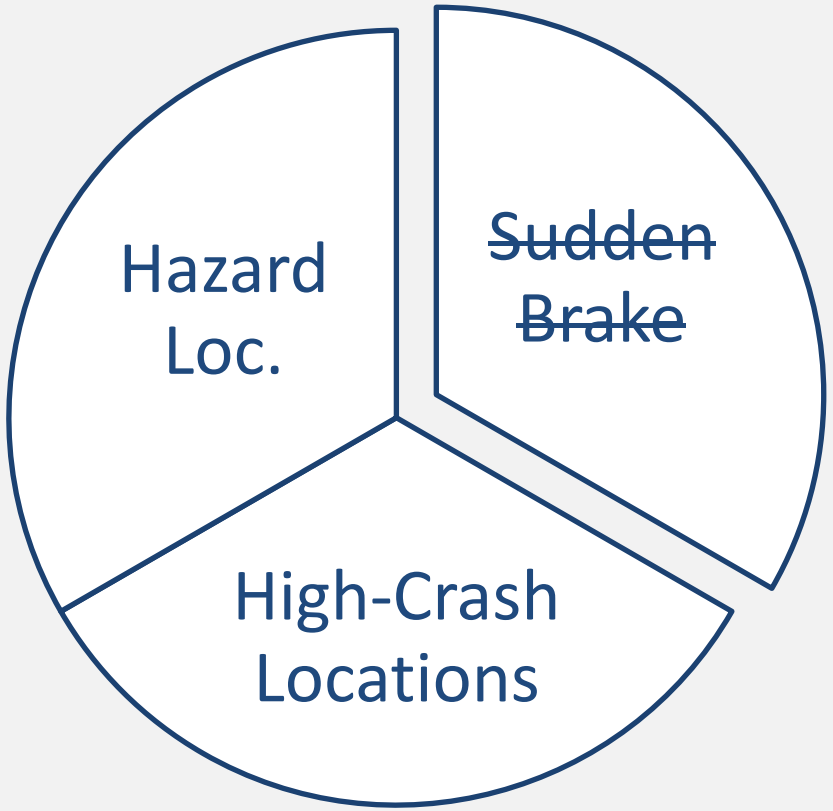


Safety Map Applica

- Data Input

Resident Report
(Hiyari-Hatto)

ER, EMS Database



Not Available

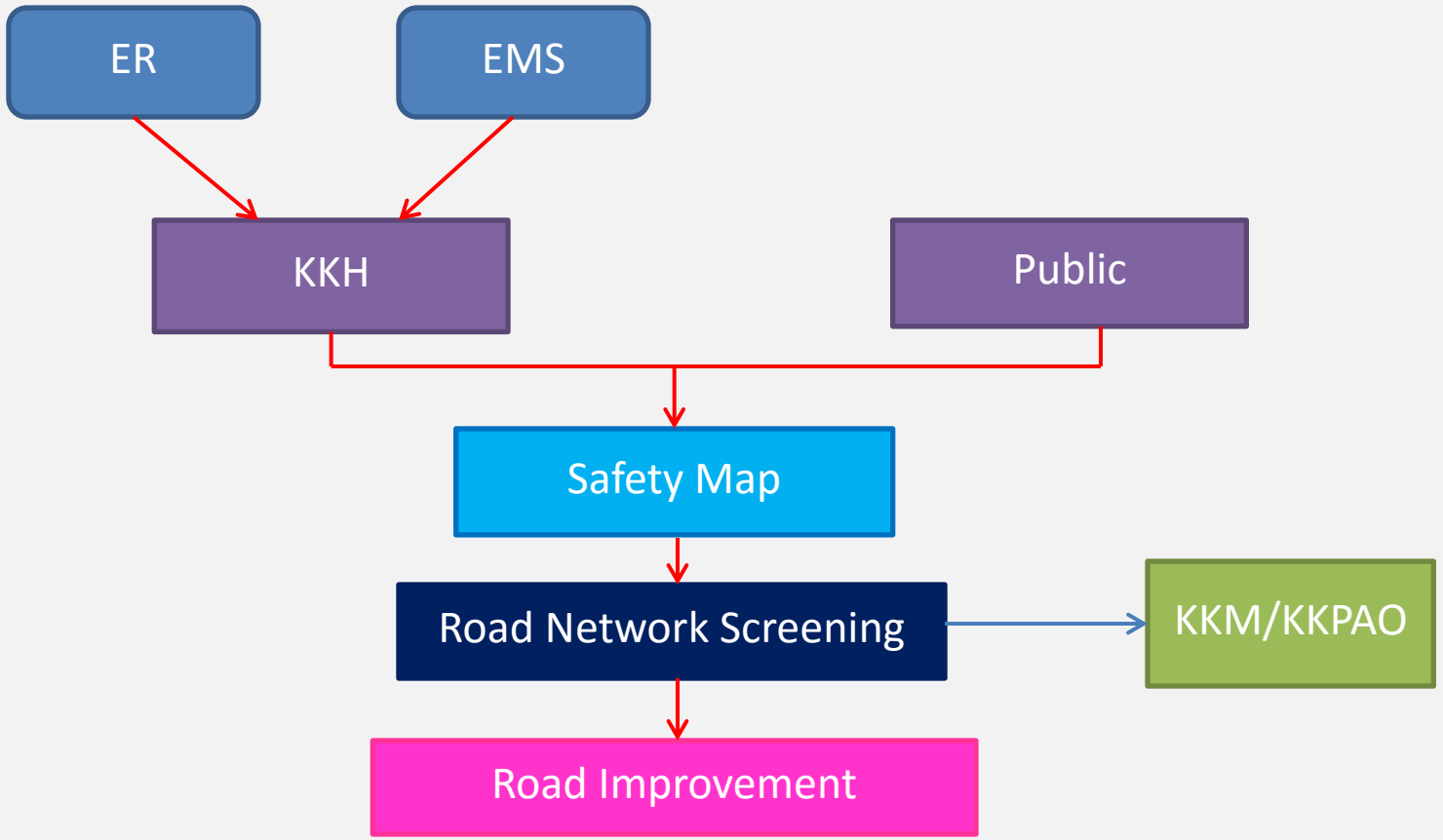
Implementation Strategy

- Start from small area and highly collaborative agency.
- Work closely with agency to develop a safety improvement program ->high/visible impacts.

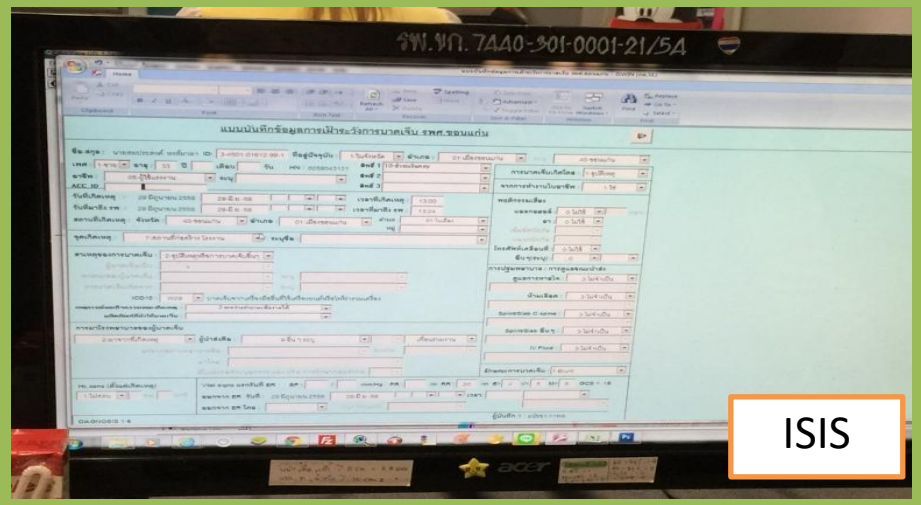
Interviews

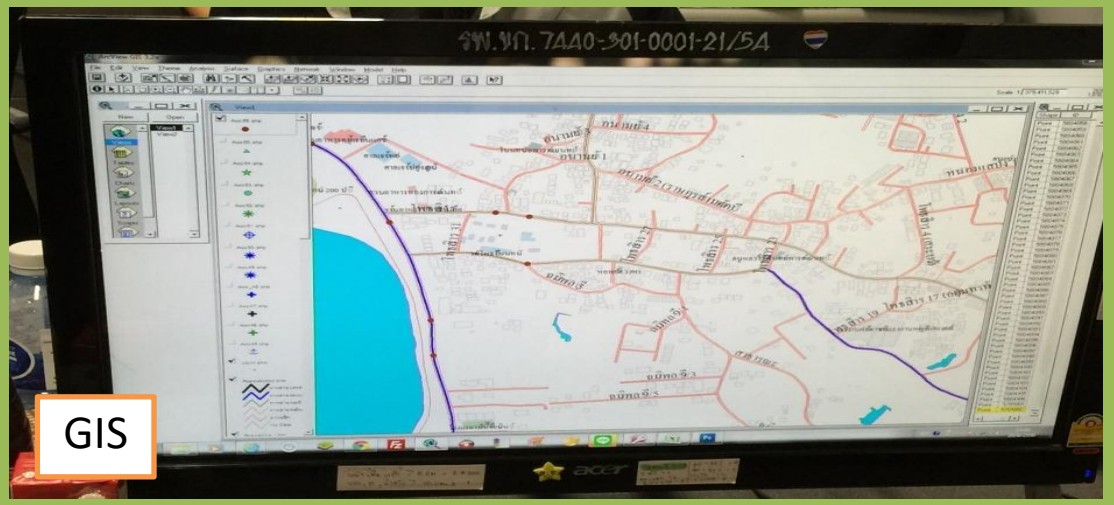
KKH

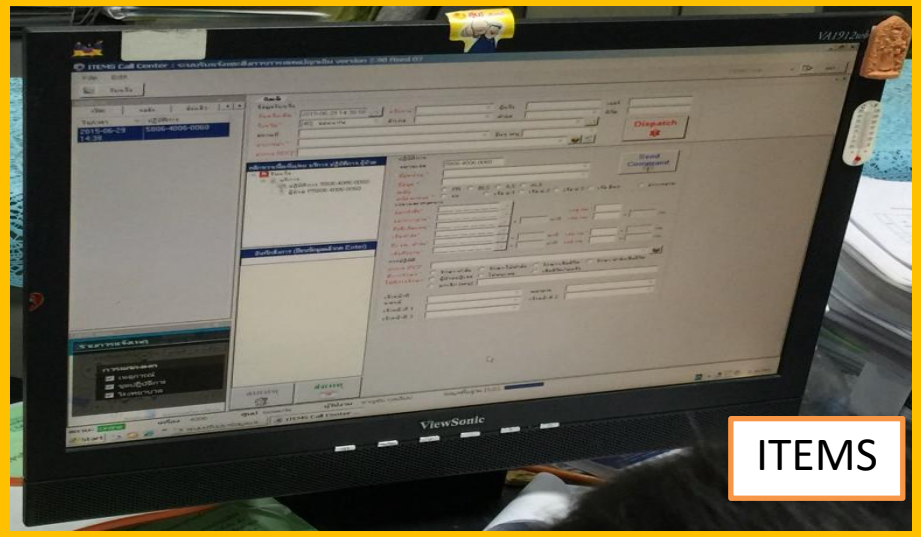
Road Safety Improvement Process



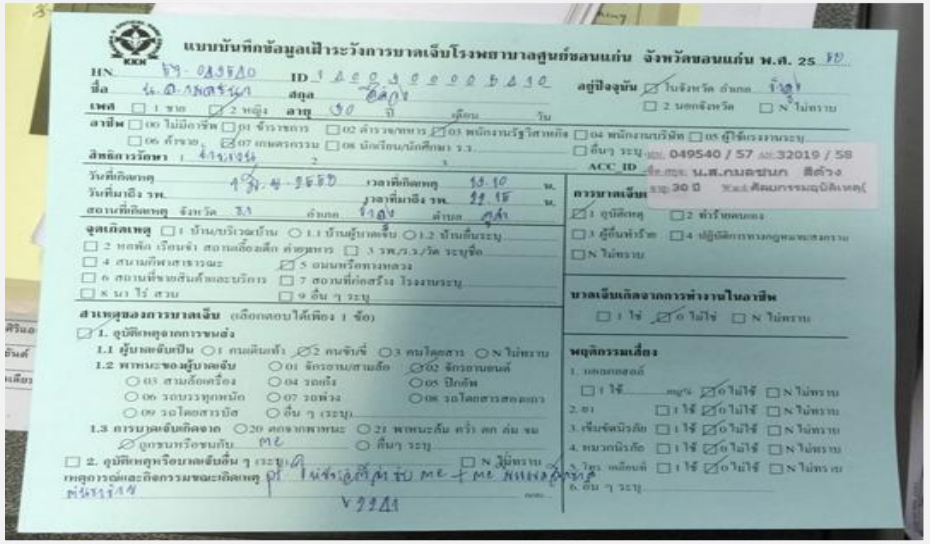
Existing Databases

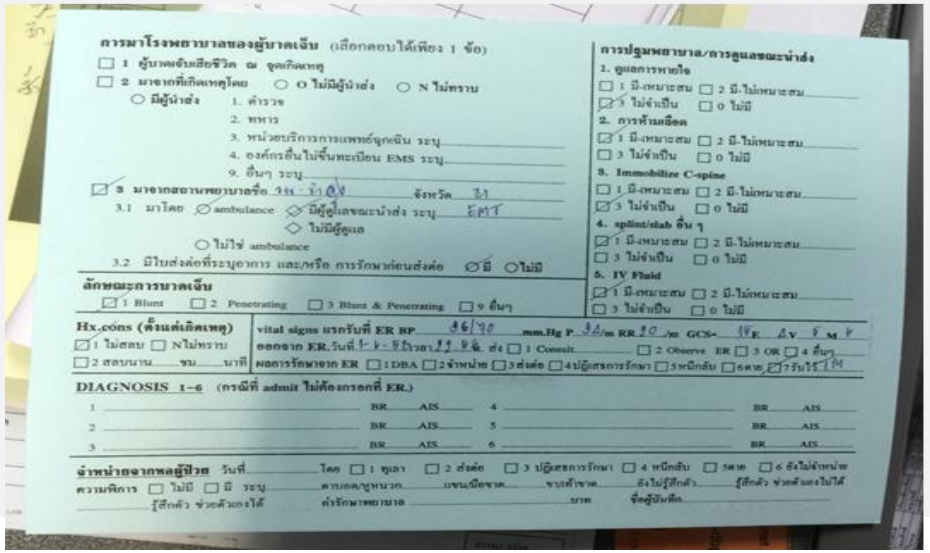






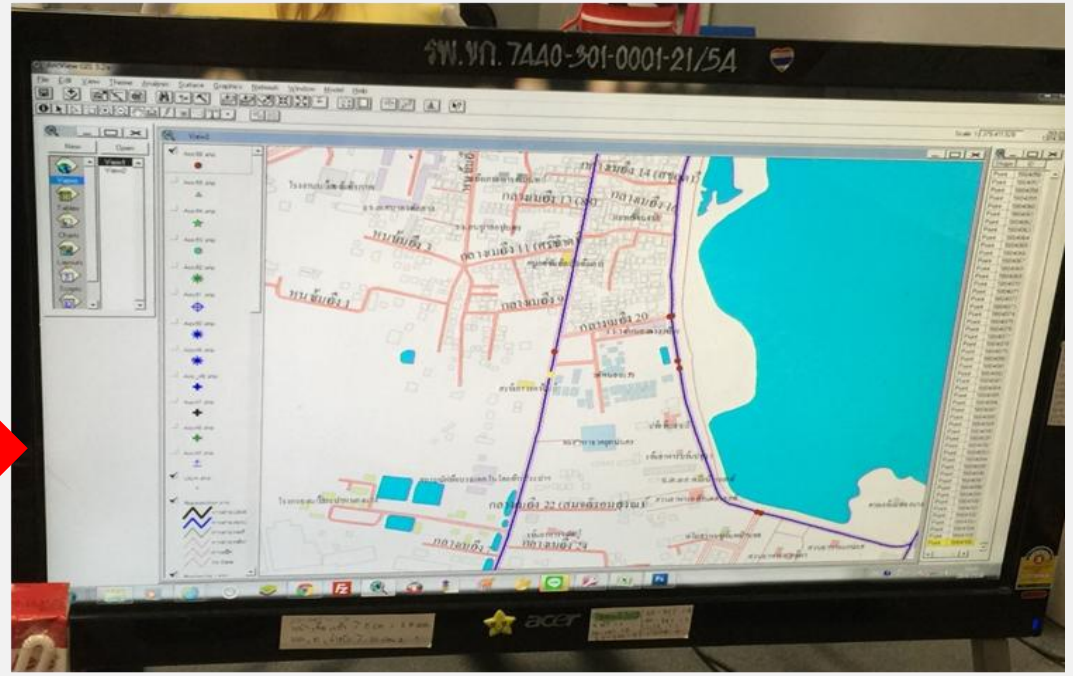
ER: Blue Card –> IS Application Interface





Field	Entry
Causes of Injuries	• Road Accident • Attempt to commit suicide • Abused • Others
Injury Type	• Blunt • Penetrating • Blunt and Penetrating • Others

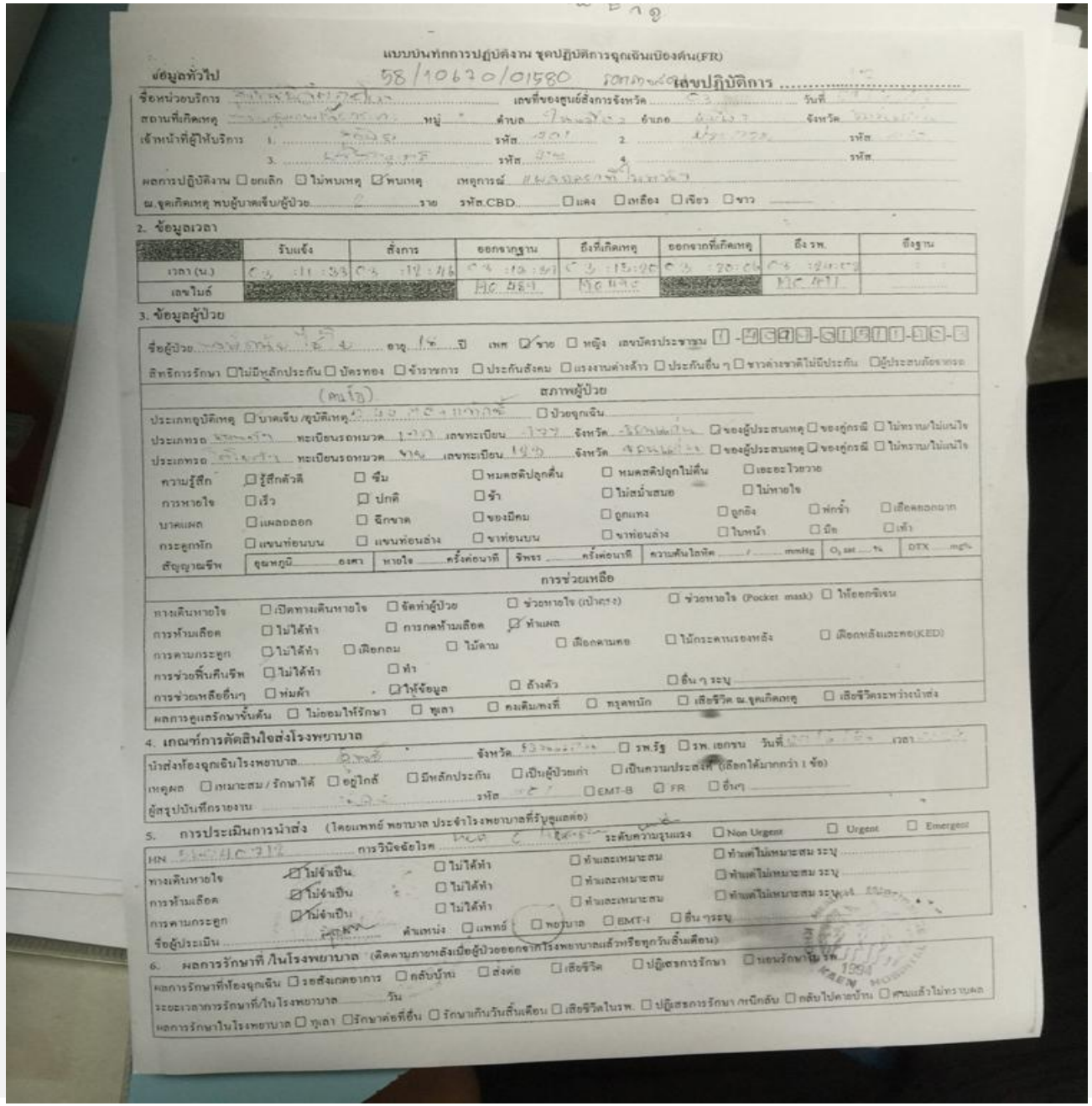
ER (KKH): White Sheet, GIS Application Interface



- HN
- **Accident ID**
- Date ,Time
- **Location**

EMS Form

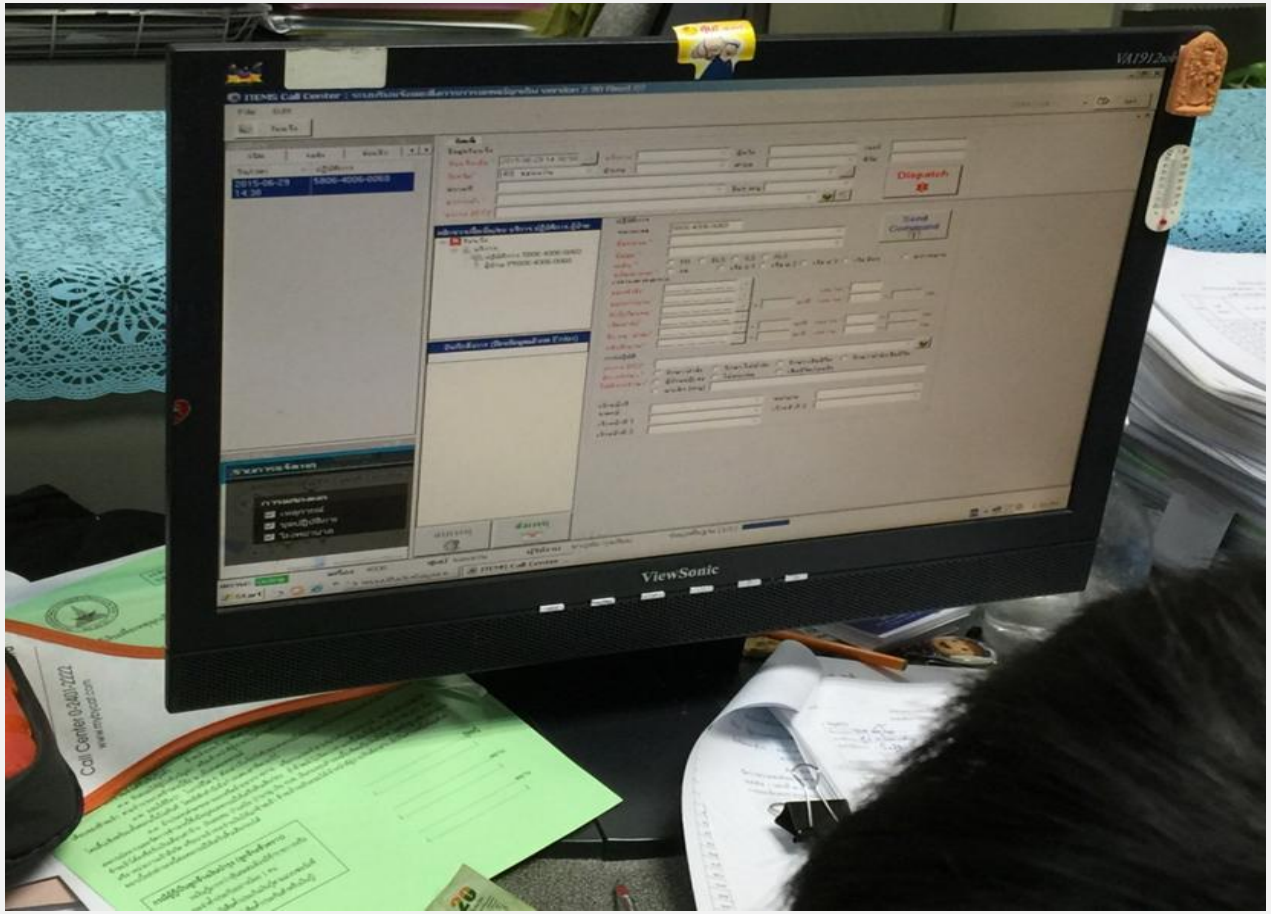
- Date, Time
- Location
- Type of car
- License Plate
- Condition (patient's symptoms)
- HN
- Incident Dispatch Code



Available EMS Data Attributes

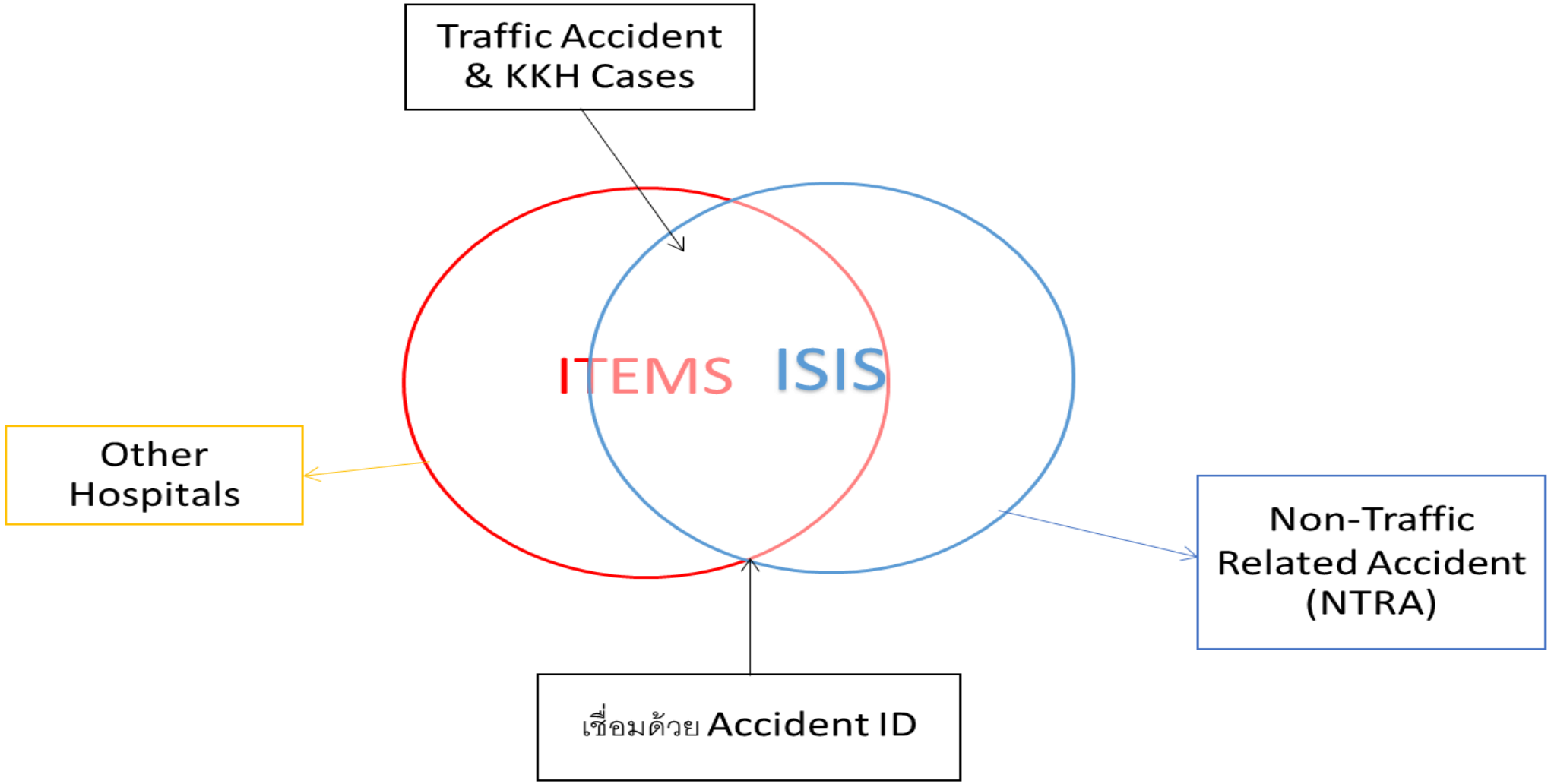
Field	Entry
Condition (patient's symptoms)	• Feeling - conscious - depress - unconscious - bawl • Breathing - fast - normal - slowly - unstable - stop breathing • Wound - bruise - torn (rip) - sharp weapon - stab • Fracture

ITEMS Application Interface

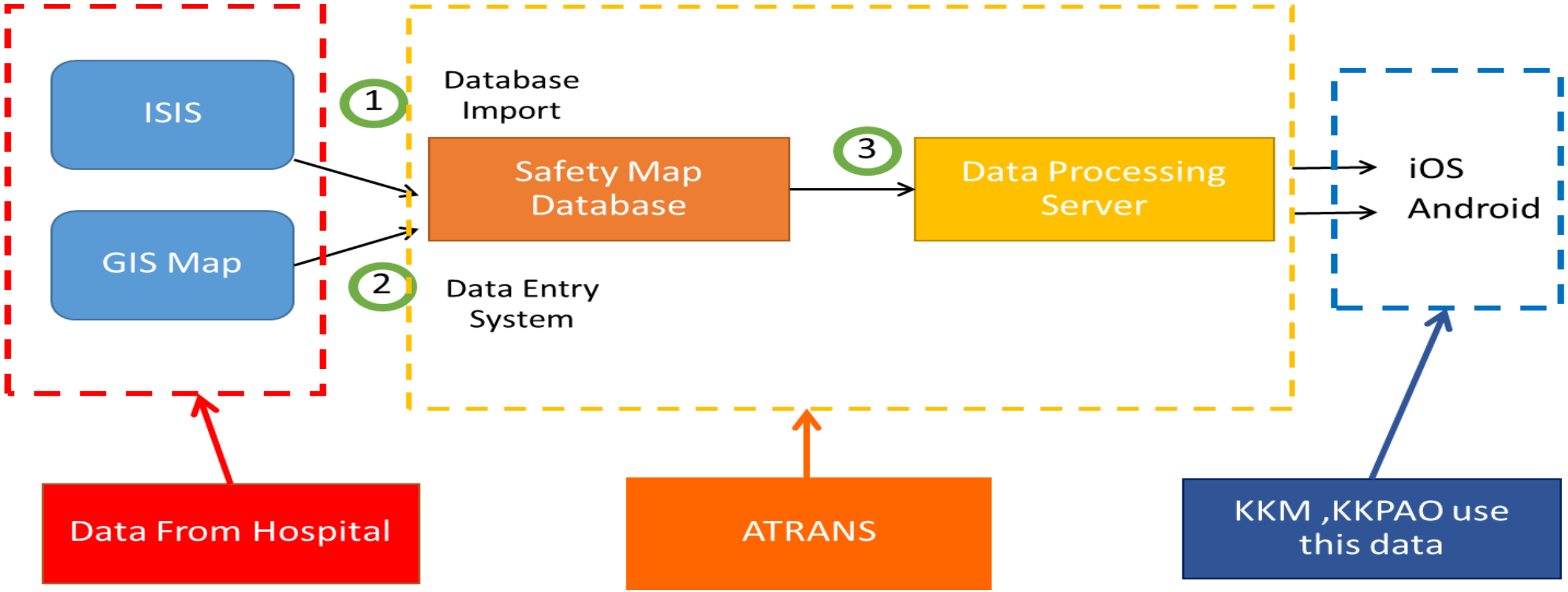


- Date ,Time
- Location
- Condition (patient's symptoms)
- Incident Dispatch Code
- Operations Information
- HN

Relationships among Databases



System Architecture

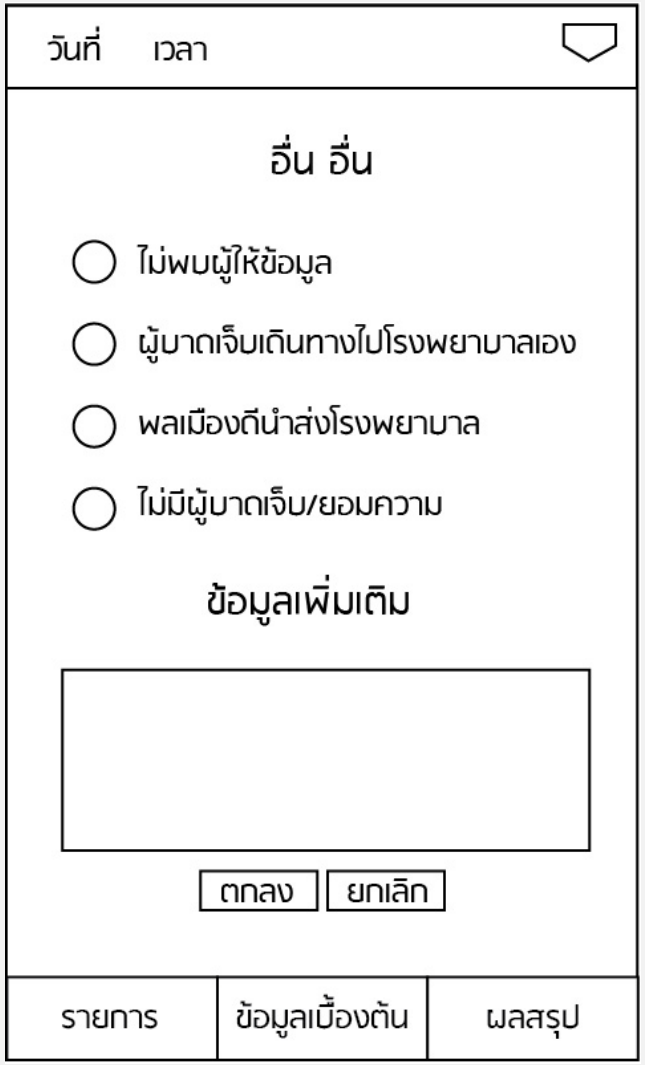


Summary

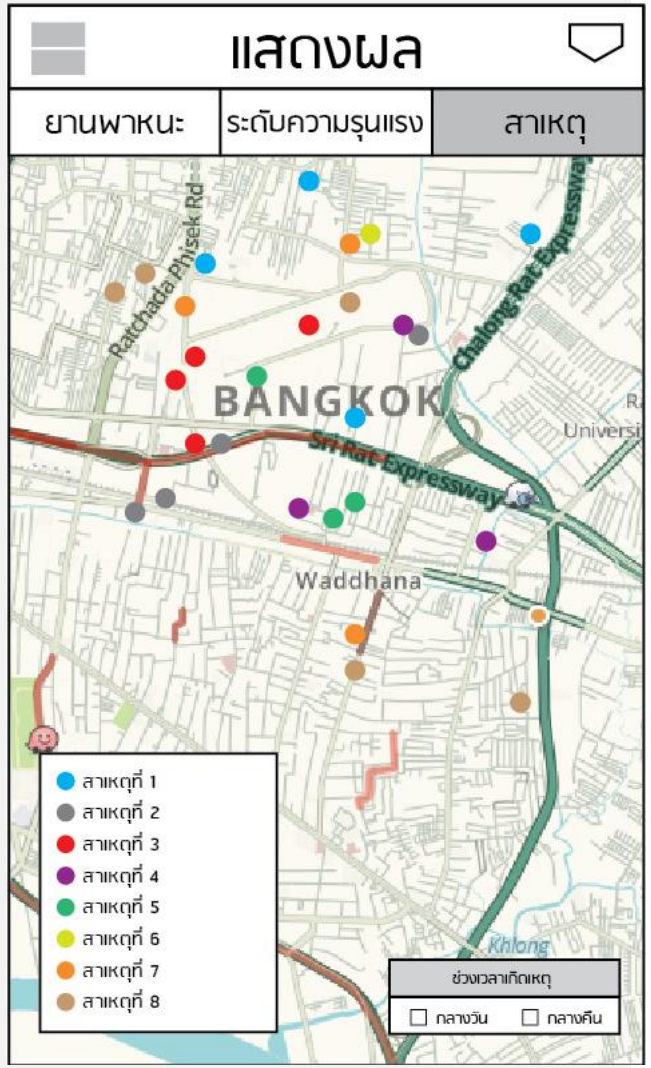
- GIS Map limited to City of Khon Kaen
- Need new spatial database system
- Data is mostly used in accident summary, no spatial analysis was conducted
- KKH has comprehensive crash database
- KKPAO has no access to crash data
- GIS database expanding to other hospitals
- Severity Score based on Trauma condition
- Integrating Safety Map in the MPO's black spot identification
- Detailed traffic engineering study and proposed solution for most promising black spots

EMS App

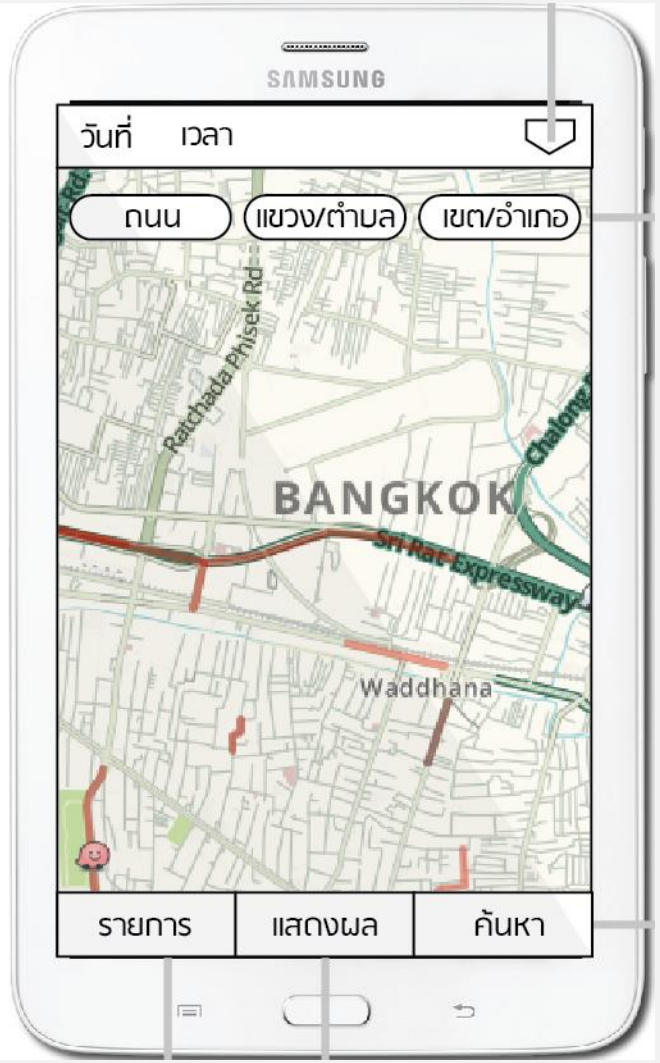

วันที่ เวลา
เลขปฏิบัติการณ์
รับแจ้ง
สั่งการ
ออกจากฐาน
ถึงที่เกิดเหตุ
ออกจากที่เกิดเหตุ
ถึงโรงพยาบาล
อื่น อื่น
กล้องถ่ายรูป
บันทึกเสียง
รายการ
ข้อมูลเบื้องต้น
ผลสรุป


วันที่ เวลา
อื่น อื่น
ไม่พบผู้ให้ข้อมูล
ผู้บาดเจ็บเดินทางไปโรงพยาบาลเอง
พลเมืองดีนำส่งโรงพยาบาล
ไม่มีผู้บาดเจ็บ/ยอมความ
ข้อมูลเพิ่มเติม
ตกลง
ยกเลิก
รายการ
ข้อมูลเบื้องต้น
ผลสรุป

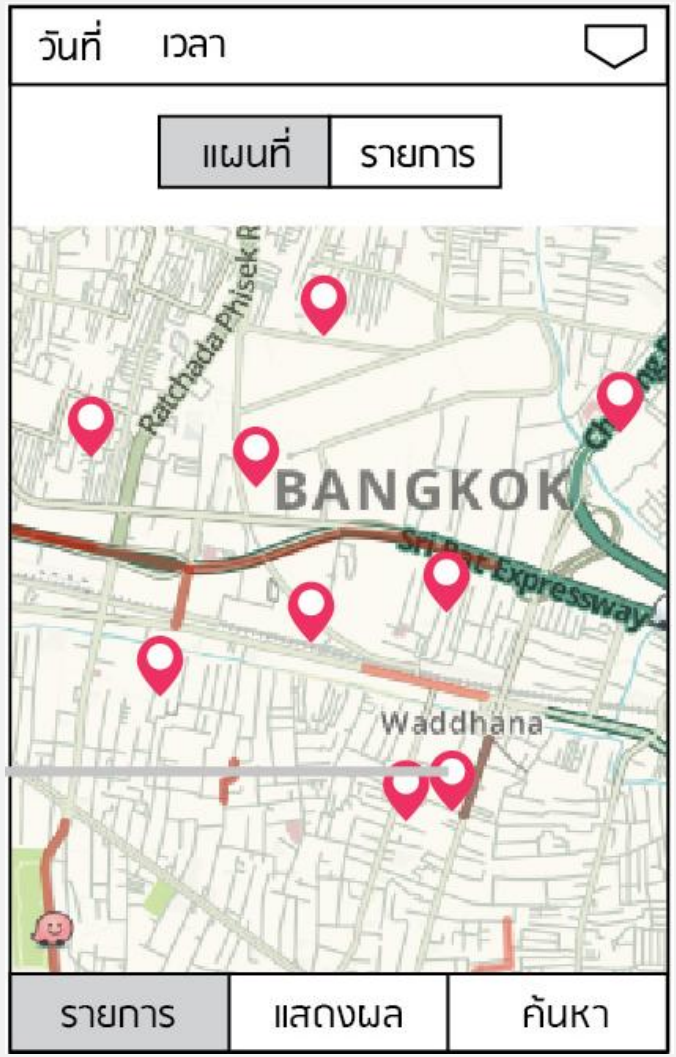

วันที่ เวลา
Krefeld
Düsseldorf-Nord
Büttgen
Heinsberg
Aachen
NE-Holzheim
วีดีโอ
ถ่ายรูป
บันทึก


แสดงผล
ยานพาหนะ
ระดับความรุนแรง
สาเหตุ
BANGKOK
Ratchada Phisek Rd
Chalong Rat Expressway
Sri Rat Expressway
Waddhana
สาเหตุที่ 1
สาเหตุที่ 2
สาเหตุที่ 3
สาเหตุที่ 4
สาเหตุที่ 5
สาเหตุที่ 6
สาเหตุที่ 7
สาเหตุที่ 8
ช่วงเวลาเกิดเหตุ
กลางวัน
กลางคืน

ER App


SAMSUNG
วันที่ เวลา
ถนน
แขวง/ตำบล
เขต/อำเภอ
Ratchada Phisek Rd
BANGKOK
Chalong
Sri Rat Expressway
Waddhana
รายการ
แสดงผล
ค้นหา


วันที่ เวลา
แผนที่
รายการ
Accident ID
เวลา
วันที่
สถานที่
รายละเอียดสถานที่ :
รายการ
แสดงผล
ค้นหา


วันที่ เวลา
แผนที่
รายการ
Ratchada Phisek Rd
BANGKOK
Sri Rat Expressway
Waddhana
รายการ
แสดงผล
ค้นหา

Public / Govern App