平成21年度 研究調査報告書

交通安全対策支援システムのペナン市への展開

報 告 書

平成22年3月

財団法人 国際交通安全学会
International Association of Traffic and Safety Sciences

序　文

マレーシアでは、近年の経済成長に伴って車社会化が進むにつれ、交通渋滞と交通事故の増大が社会問題化している。対応を求める意識は高まりつつある。同国のモータリゼーションの発展には、二輪車を含め日本車の増加、道路整備、交通管制システムの導入と日本の寄与によるところが大きい。それゆえ、交通安全対策にも、日本の技術が大いに貢献すべきであると考えた。

そこで、(財)国際交通安全学会の自主研究において研究開発された「交通安全対策支援システム」をマレーシア第 2 の都市ペナンに適用し、交通安全対策技術の導入可能性を検討した。さらに、車社会化が進みつつあるアジア諸国等に対する新しい国際協力の手法を開発することを目指し、本調査は実施された。

本調査は、5 回に亘る現地調査を含め、現地スタッフとの連携をとりつつ、事故データおよびヒヤリ体験データの収集、交通実態調査の実施、事故対策案の策定を順調に進めることができた。これらの取組の結果、市民参加型交通安全対策支援システムが海外においても実務的に利用可能であることを確認するとともに、日本の国際技術協力活動の新たなあり方を示すことができたのではないかと考えている。

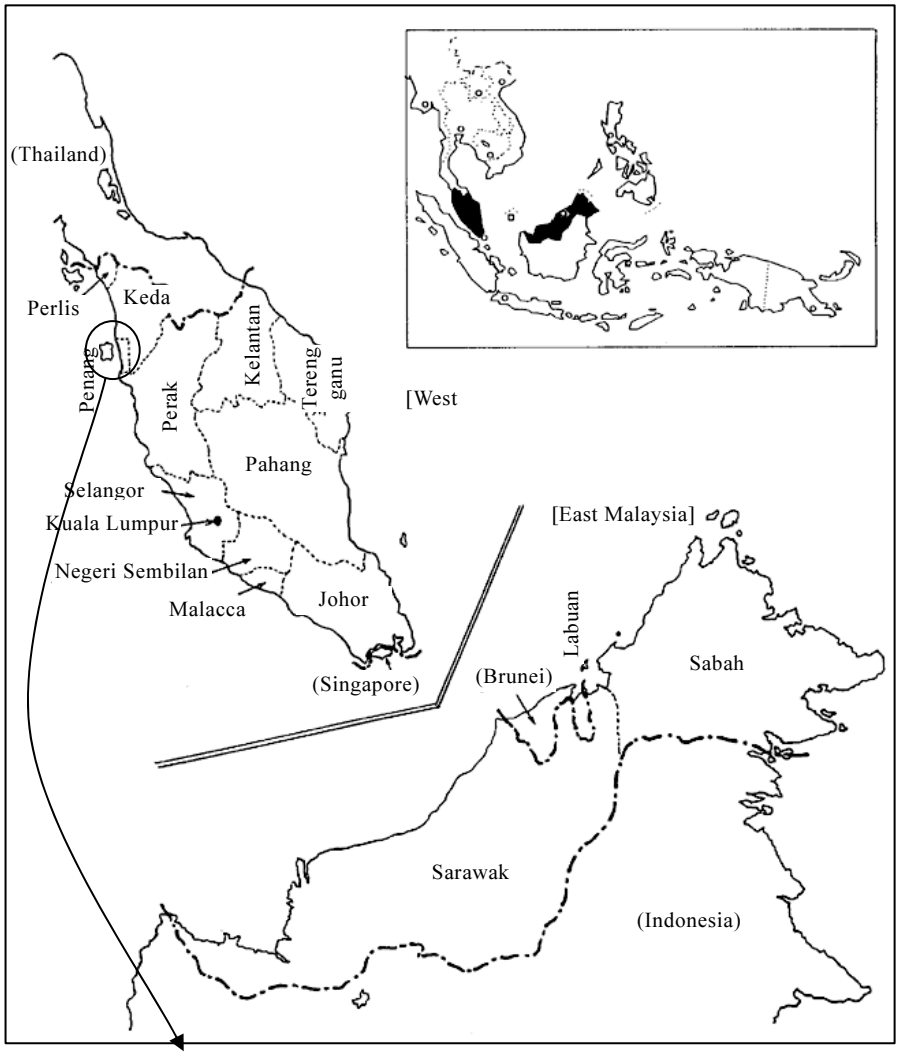
本調査に当たり、ペナン市、警察の協力は想定以上のものがあり、ペナン市での関心の高さと同時に日本での経験、実績に対する期待を強く感じたところである。今回のパイロット調査をきっかけに、本プログラム活用の方向を検討し、ペナン市あるいはマレーシアにおいて新たな視点から交通安全事業を進めることになればと願うものである。

本調査を実施するに当たり、現地での調査を協同で実施したペナン市関係部署の協力に謝意を表します。

2010 年 3 月

財団法人　国際交通安全学会　　自主研究
「交通安全対策支援システムのペナン市への展開（Ｈ１８９）」委員会
プロジェクトリーダー　　高田　邦道
（日本大学教授）

ペナン市の位置図


(Thailand)
Perlis
Keda
Penang
Perak
Kelantan
Tereng ganu
Pahang
Selangor
Kuala Lumpur
Negeri Sembilan
Malacca
Johor
(Singapore)
[West
[East Malaysia]
Labuan
Sabah
(Brunei)
Sarawak
(Indonesia)


BARAT DAYA
TERUSAN UTARA
TERUSAN SELATAN
SEBERANG PERAI UTARA
SEBERANG PERAI TENGAH
TIMUR LAUT
N.P.PULAU PINANG
BARAT DAYA
N.P.SEBERANG PERAI
Georgetown
P.Jerejak
PERAK
Pulau Penang
(The whole Penang Island)
Seberang Perai
(The part of Peninsula)
The black and gray part is the area of the local government and the black part shows a city.

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調査の概要

調査の概要

背景

マレーシアでは、近年の経済成長に伴って車社会化が進むにつれ、交通渋滞と交通事故の増大が社会問題化している。同国における 2005 年の事故件数は 12.6 件/千人、死者数は 2.4 人/万人で、それぞれ日本の 2 倍および 5 倍程度とかなり高く、対応を求める意識は高まりつつある。同国のモータリゼーションの発展には、二輪車を含め日本車の増加、道路整備、交通管制システムの導入と日本の寄与するところ大である。交通事故の多発に対する交通安全対策にも、日本の技術が大いに貢献すべきである。

ペナン市でのこれまでの活動により、同市当局および警察当局とは、すでに当該システムを適用した交通安全対策の施工を前提として、技術的な情報交換と体制づくりが進行中である。ただし、当該システムが日本と文化、社会システム、言語等が異なる地域に適用され、協調的な効果を発揮するためには、さらなる綿密な研究とシステム開発が必要である。

目的

本調査では、国際交通安全学会の自主研究において研究開発された「交通安全対策支援システム」をマレーシア第 2 の都市ペナンに適用し、交通安全対策に関する技術の移転を行うと供に、車社会化が進みつつあるアジア諸国等に対する新しい国際協力の手法を開発することを目的とする。

具体的には、①システムへの複数言語パックの適用性の検討、②インターネットによる国際的なデータ共有の可能性の検討、③市民からのデータ収集方法・内容の多様化、汎用化　④日本と形態が異なる行政組織における安全対策立案過程への適用、について検討を行う。

調査担当者と現地関係者

調査担当者

PL　高　田　邦　道（日本大学教授）

赤　羽　弘　和（千葉工業大学工学部教授）

木　戸　伴　雄（交通アナリスト）

堀　江　清　一（NPO 法人オフィス TAPE 代表／（株)長大　顧問）

親　松　俊　彦（(株)開発技術コンサルタント顧問）

小早川　　悟（日本大学理工学部准教授）

特別委員

Mr. Khoo Say Boon（ペナン市技術局　局長）

研究協力者

南　部　繁　樹（(株)トラフイックプラス代表取締役）

呉　　希　宜（日本大学大学院生）

現地関係者

Ar.Hajah Patahiyah Bt.Ismail（ペナン市長）

Sr.Tan Cheng Chui（(前)ペナン市長）

技術局

Mr.Ang Aing Thye（ペナン市助役、(前)次長）

Mr.Addnan Bin Mohd Razali（交通課長）

Mr.A. Rajendran（交通技術者）

ペナン市警察本部

DSP Loh Hang Seng（North-East 地区、Public Order Division 部長）

１．はじめに

1−1　市民参加による交通安全対策策定プログラムの概要

(1) プログラムの概要

「住民参加型交通安全対策プログラム」は、交通安全の対策策定に事故データとその危険性を行政サイドだけでなく市民の参加も得て収集し、それをベースに両者の合意形成により交通安全対策を進めるものである。

本プログラムの特徴は次のとおりである。

①　事故データ、ヒヤリ体験による科学的分析
②　市民と行政、市民間の情報交換、共有
③　対策効果の把握
④　専門家の育成と活用

本プログラムのスキームは図１－１に示すとおりであるが、基本的な要素は次の項目により構成されている。

■プログラム参加員

道路利用者、行政担当者、交通技術者

■プログラム支援システム

１）交通安全情報 WEB システム

①ヒヤリ地図作成システム

道路利用者が実際に体験したヒヤリ体験を報告し、ヒヤリ地図を作成する。（インターネット及び紙ベース併用）

②交通安全情報 WEB システム

インターネットを通じてヒヤリ体験や事故情報、安全対策などを公表し、市民が意見を寄せることが可能なシステムである。

2）交通安全対策支援システム

GIS を用いて事故データとヒヤリ体験データを統合・管理し、地図表示・検索・集計が出来るシステムである。

■ワークショップ

地区住民と行政、専門家が意見交換を積み重ねて、交通安全対策を検討、立案する場である。住民が交通安全に対する関心を高める機会になり、対策実施に対する理解も得やすくなる。

(2) プログラムの特色

このプログラムは、交通安全施策を立案する上で問題になりやすい次の事項に対応しようとするものである。

①　市内のどこが道路危険箇所であるのか明確になっていない。
②　道路危険箇所を対策する場合、何が危険なのか、どのような対策を実施したらよいのか、交通事故の原因等を正確に把握するための資料がない。
③　交通安全に関する情報公開が行われていない。
④　交通安全に関して市民の意見（ニーズ）を聞くチャンネルをもっていないため、行政当局、専門家と住民の間で齟齬が生じ、事業実施が遅れる。

これらの問題に対して、本プログラムは次の特徴を持つものである。

① 市内のどこ（交差点別・路線別・地区別）でどのような交通事故（量・質等）が多発しているか検索ができ、交通安全対策に直接役立てることが可能

② 交通安全対策を実施する際に、対策箇所で発生した交通事故やヒヤリハット体験内容をもとに事故発生要因を特定し、的確な対策を実施することが可能

③ 交通安全情報を Web サイトで公開することで、市民の交通安全に対する意識高揚を図ることが可能

④ 24 時間、インターネットを通じヒヤリハット体験を収集することで、道路の危険情報をリアルタイムで収集することが可能

⑤ さらに Web サイトを介し、交通安全に対する市民と行政の情報交換チャンネルが確立することが可能

（3）実績

本プログラムは国際交通安全学会により基本的な開発がなされ、その後国土交通省「新道路技術開発」（平成 17～19 年度）により実用化が進められたものであり、日本においては既に千葉県鎌ヶ谷市、市川市、白井市で実施され、事業実施性、経済性から本プログラムによる交通安全対策の有効性が確認されている。

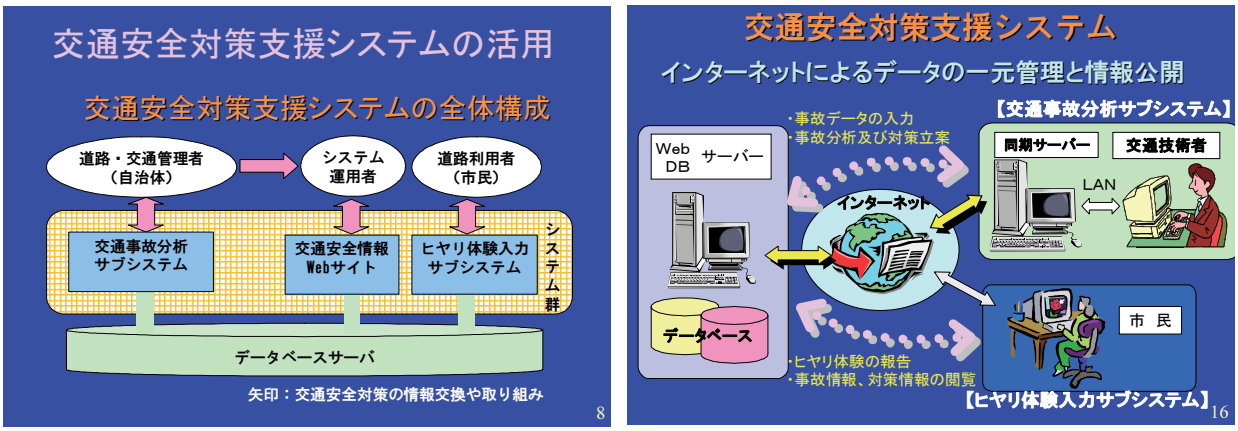


図 1－1　市民参加型交通安全対策支援システムの概要図

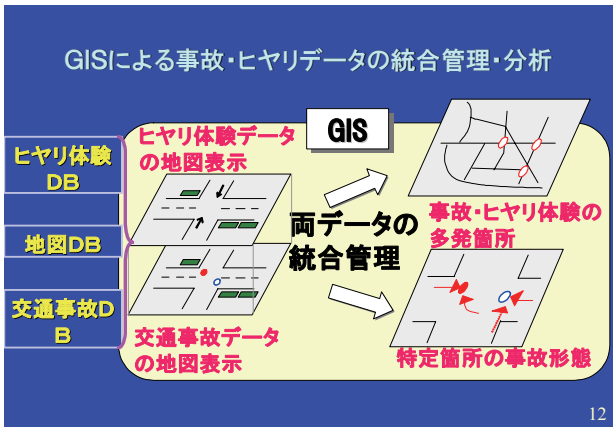


図 1－2　ＧＩＳによる事故・ヒヤリデータの統合管理・分析

1−2　マレーシアおよびペナン市の交通事故発生状況

（1）マレーシアの交通事故

近年マレーシアにおいては、交通事故の増加は著しく 2007 年までに交通事故が右肩上がりに増加している。2007 年の交通事故件数は 36 万 3,000 件と対 2005 年比で 10%増加になっている。マレーシアの人口は日本の約 20%であるが、2007 年の人身事故は、1 万人あたり 149 件（日本 65 件）と日本の約 2．3 倍である。更に、マレーシアの死者数は 2005 年には 30 日以内死亡は 6,200 人、日本の死者数は同年で 6,871 人＜24 時間以内死亡＞、2009 年には 6,023 人＜30 日以内死亡＞であり、ほぼ同数である。日本に比して自動車台数では約 2 割であること、事故報告の漏れがまだ多く存在することを勘案すると、実態はさらに深刻なものと考えられ、国民、政府では大きな社会問題として認識されている。このようなことから、2007 年にはマレーシア交通安全研究所（MIROS：Malaysian Institute of Road Safety Research）が設立されるなど、交通安全に対する意識が高まってきている。

表 1−1　マレーシアとペナン州の交通事故状況の比較

	マレーシア※1	ペナン州（割合）※2
面積	330,252k ㎡	1,030k ㎡(0.3%)
人口	2,613 万人	150 万人(5.7%)
自動車保有台数	1,503 万台	−
道路延長	71,814km	−
事故件数	328,264 件	−
負傷者数	47,012 人	−
死者数	6,200 人	−

※1 データは 2005 年。自動車保有台数～死者数は暫定値で ESCAP レポートより抜粋(事故ﾃﾞｰﾀ出典は Royal Malaysian Police)。
※2 ペナン州 HP より抜粋

表 1−2　マレーシアと日本の交通事故状況の比較

	マレーシア 1) (2005 年)	日本 2) (2007 年)
面積	330,252k ㎡	377,923k ㎡
人口	2,613 万人	12,777 万人
道路延長	71,814km	1,257,000km
事故件数 （千人あたり）	328,264 件 (12.6 件/千人)	886,864 件 (6.9 件/千人)
負傷者数	47,012 人	1,098,199 人
死者数	6,200 人 (2.4 人/万人)	6,352 人 (0.5 人/万人)

出典 1) Mohamad Nizam Mustafa, Overview of Current Road Safety Situation in Malaysia, UNESCAP, 2006
2) 総務省統計局 HP　http://www.stat.go.jp/

(2) ペナン市の交通事故発生状況

1) 交通事故死傷者

ペナン市の交通事故状況は表 1－3 に示したとおりである。死亡事故件数は減っているものの 2008 年には重大事故が大幅に増加している。しかし、データから見る限り死亡事故以外の事故件数が死亡事故の 2～3 倍程度と非常に少ない。日本の場合、最近では 100 倍以上である。これは、重大事故以外の事故の報告が相当数報告されていないためと想像される。

表 1－3　交通事故件数（2007－2008）

STATISTICS OF ACCIDENTS AND DEATH 2007－2008TYPE OF ACCIDENT	PERIOD		Fluctuation
	2007	2008	
ACCIDENTS INVOLVING DEATH (number)	97	87	-10%
FATAL ACCIDENTS (number)	104	156	+50%
LIGHT ACCIDENTS (number)	277	338	+22%
DAMAGE TO VEHICLES ONLY (number)	13,278	12,927	-2.3%
TOTAL	13,756	13,508	-1.8%

2) 道路種類別発生状況

ペナン市内の街路での発生が 80%以上と圧倒的である。死亡事故は市内の幹線道路でも多く発生しているのではないかと想像するが、今回、その資料は入手できなかった。

表 1－4　道路種類別発生状況

TYPE OF ROAD	PERIOD		Fluctuation
	2007	2008	
TOWN COUNCIL ROADS (number)	11,474	11,041	-3.7%
EXPRESS WAYS (number)	381	425	+11%
STATE ROADS(number)	509	533	+4.7%
FEDERAL ROADS(number)	724	834	+15%
PARKING INSIDE BUILDING (number)	142	137	-3.5%
PARKING OUTSIDE BUILDING (number)	456	478	+4.8%
HOUSING SCHEMES (number)	65	52	-20%
USM CAMPUS (number)	5	8	+60%
TOTAL	13,756	13,508	-1.8%

3）道路構造別発生状況

4 差路あるいは 5 差路以上の交差点よりも T 字路での事故が目立っている。また、駐車帯あるいはその付近での事故も多い。

表 1－5　道路構造別交通事故

ROAD DESIGN	PERIOD		Fluctuation
	2007	2008	
ROUND ABOUT (number)	113	92	-18%
PARKING AREA (number)	788	660	-16%
STRAIGHT ROAD (number)	8,257	8,502	+2.9%
CORNER (number)	981	879	-10%
FOUR ARM JUNCTION OR MORE (number)	994	967	-2.7%
T-JUNCTION (number)	2,568	2,331	-9.2%
STAGGERED JUNCTION (number)	2	0	-100%
ELEVATED JUNCTION (number)	0	6	-100%
OTHER ROADS (number)	49	65	+32%
TOTAL	13,756	13,508	-1.8%

4）曜日別事故発生件数

日曜日の発生件数が少なく、金曜日がやや多い傾向である。

表 1－6　曜日別交通事故

DAY	PERIOD		Fluctuation
	2007	2008	
SUNDAY (number)	1,703	1,691	-0.7%
MONDAY (number)	2,069	1,954	-5.5%
TUESDAY (number)	1,940	2,006	+3.4%
WEDNESDAY (number)	1,912	1,955	+2.2%
THURSDAY (number)	1,973	1,854	+6.0%
FRIDAY (number)	2,190	2,144	-2.1%
SATURDAY (number)	1,969	1,904	-3.3%
TOTAL	13,756	13,508	-1.8%

5）車種別発生件数

乗用車に関わる発生が最大であるが、自動二輪車関連のものも乗用車の 1／3 程度発生している。一方、トラック関係の事故は少ない。また、歩行者事故も少ないが表 1－4 で見たように市内街路での事故が多いことからすると、実態は歩行者事故も多いのではないかと思われる。

表 1－7　車種別発生件数

TYPE OF VEHICLE	TEMPOH		Fluctuation
	2007	2008	
MOTOR BUS (number)	356	401	+12%
BICYCLE (number)	37	36	-2.7%
TRISHAW (number)	4	1	-75%
JEEP / 4WD (number)	477	426	-10%
LORRY (number)	697	665	-4.5%
CAR (number)	17,685	17,147	-3.0%
MOTORCYCLE (number)	5,130	5,132	+0.03%
PEDESTRIAN (number)	213	234	+9.8%
TAXI / HIRED CAR (number)	212	178	-16%
MOTOR VAN (number)	421	345	-18%
OTHERS (number)	81	85	+4.9%
TOTAL	25,313	24,650	-2.6%

6）当事者別死傷者

死傷者のうち、自動二輪車関連（運転、同乗）の死傷者数が約 7 割を占めている。乗用車運転者の死傷者数は数%と少ない。また、歩行者のそれの割合は 15%前後である。

表 1－8　当事者別死傷者数

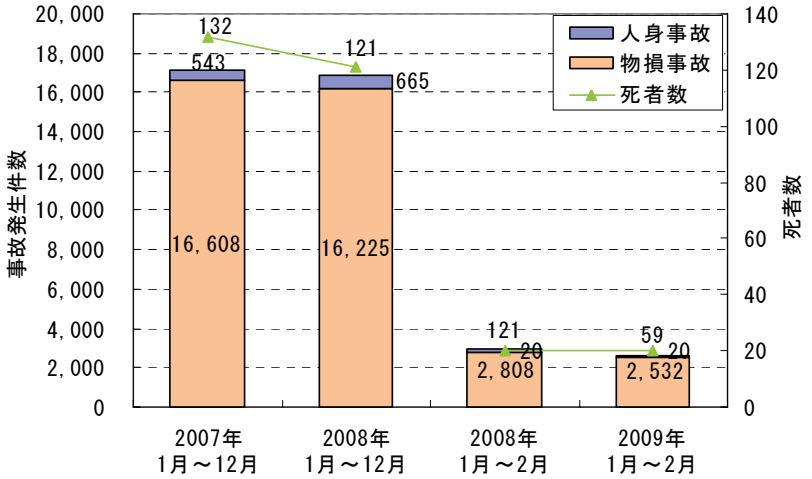
TYPE OF USER	2007				2008				Fluctuation
	D	F	L	TOT	D	F	L	TOT	
MOTORCYCLIST (number)	59	75	205	339	56	1116	258	1,430	+26%
MOTORCYCLE PILLION (number)	2	11	22	38	4	14	19	37	-2.6%
CAR DRIVER	4	6	19	29	7	13	14	34	+17%
M/KAR PASSENGER (number)	2	2	6	10	1	3	8	12	+20%
M / JEEP DRIVER (number)	1			1			1	1	-
M/VAN DRIVER (number)		1	1	2			1	1	-50%
M/VAN PASSENGER (number)			1	1		1		1	-
BICYCLE RIDER (number)	4		7	11	1	5	6	12	+9.0%
BICYCLE FELLOW PASSENGER (number)			1	1					-100%
LORRY PASSENGER (number)			1	1		1		1	-
BUS PASSENGER (number)	1			1		1	2	3	+200%
PEDESTRIAN (number)	21	19	39	79	17	10	43	70	-11%
TOTAL	97	114	302	513	87	164	351	602	+17%

D:Death　F:Fatal　L:Light Injury

(2) ペナン市の交通事故の概要

1) 人身事故と物損事故

2007 年と 2008 年の人身事故および物損事故の発生件数を比較した。人身事故件数は 120 件増加し、物損事故件数 380 件減少している。また、死者数は 10 人減少している。

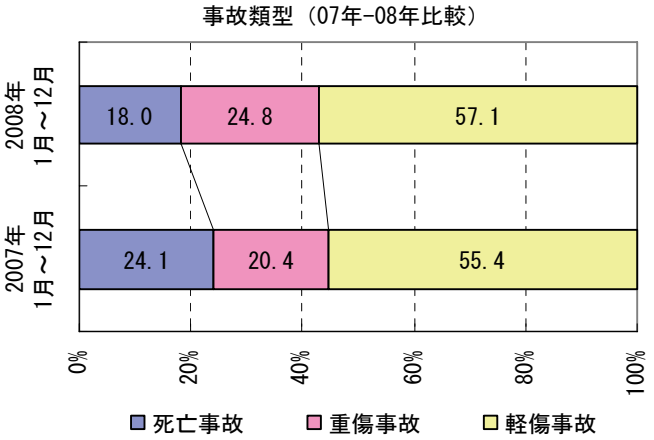


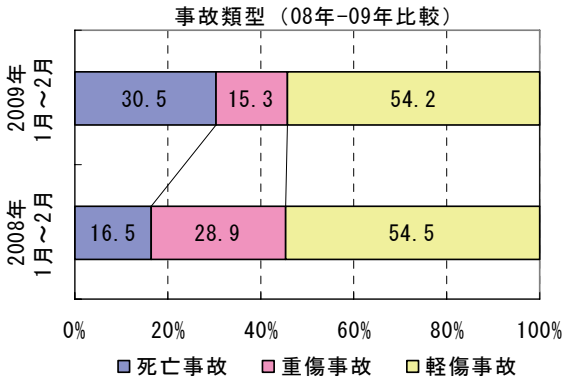
	2007年 1月～12月 (件)	2008年 1月～12月 (件)	増減数 (件)	増減率 (%)	2008年 1月～2月 (件)	2009年 1月～2月 (件)	増減数 (件)	増減率 (%)
人身事故	543	665	122	22	121	59	-62	-51
物損事故	16,608	16,225	-383	-2	2,808	2,532	-276	-10
全事故	17,151	16,890	-261	-2	2,929	2,591	-338	-12

2) 事故種別件数

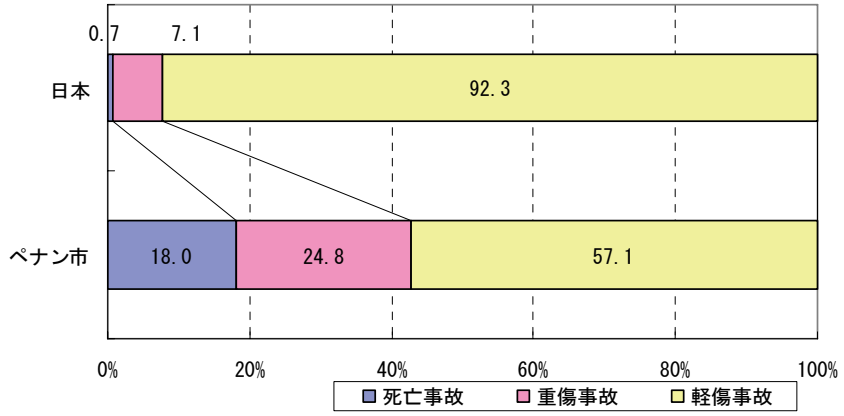
2007 年と 2008 年におけるペナン市の事故種別の事故件数の変化を整理した。死亡事故件数は 8%減少しているが、重傷事故件数が 49%増加している。

また、日本の事故種別の事故件数と比較した。日本では死亡事故と重傷事故の件数をあわせても 10%に満たないのに対し、ペナン市では死亡事故が 18%、重傷事故が 25%とそれぞれ件数の割合が日本に比べ非常に高い。





	2007年 1月～12月 （件）	2008年 1月～12月 （件）	増減数 （件）	増減率 （%）	2008年 1月～2月 （件）	2009年 1月～2月 （件）	増減数 （件）	増減率 （%）
死亡事故	131	120	−11	−8	20	18	−2	−10
重傷事故	111	165	54	49	35	9	−26	−74
軽傷事故	301	380	79	26	66	32	−34	−52

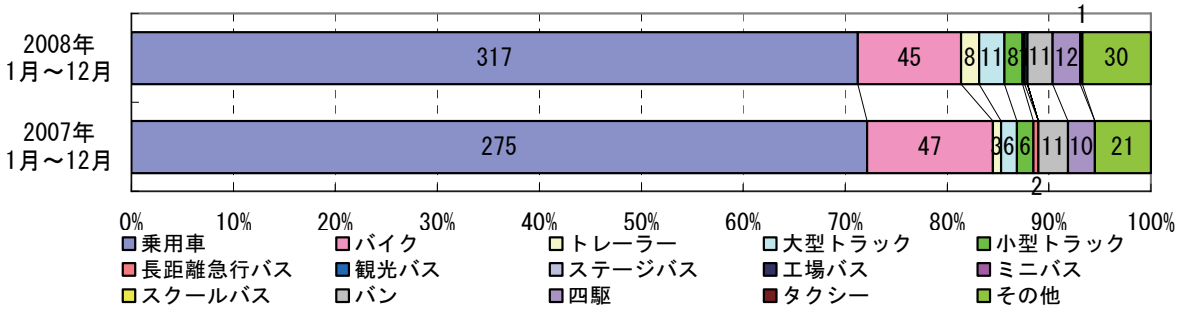


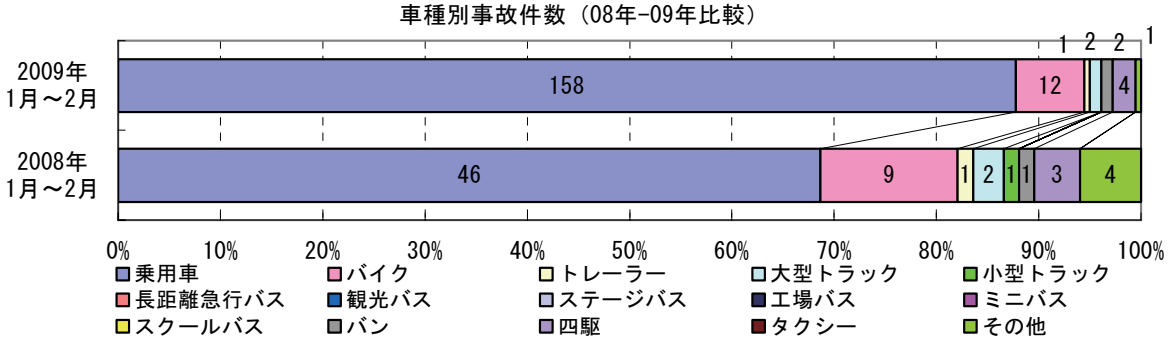
（件）

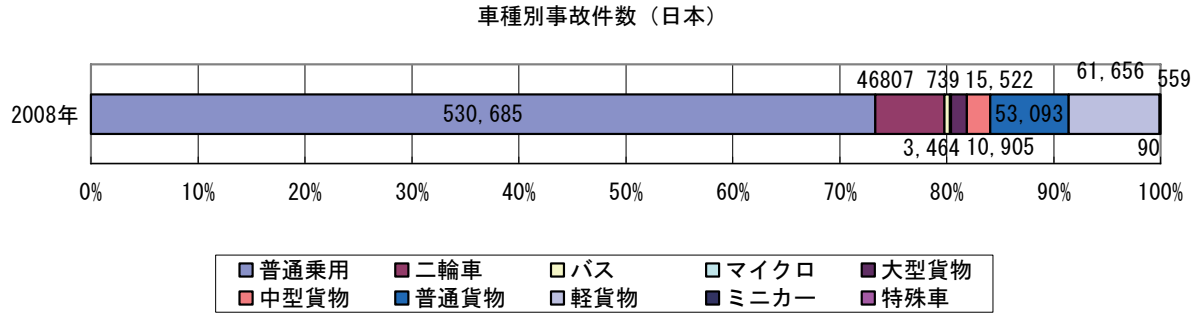
	ペナン市	日本
死亡事故	120	5,025
重傷事故	165	54,325
軽傷事故	380	706,797

3）車種別件数

2007 年と 2008 年における車種別の事故件数を整理した。最も多い車種は 70%を占める乗用車であった。次いで、バイクの事故が多く発生している。いずれも 2008 年に事故件数は漸減している。また、日本の車種別の事故件数と比較すると、日本においても小型乗用車の事故件数が 70%であり、同じように最も多い。







	2007年 1月～12月 （件）	2008年 1月～12月 （件）	増減数 （件）	増減率 （%）	2008年 1月～2月 （件）	2009年 1月～2月 （件）	増減数 （件）	増減率 （%）
乗用車	275	317	42	15	46	158	112	243
バイク	47	45	−2	−4	9	12	3	33
トレーラー	3	8	5	167	1	1	0	0
大型トラック	6	11	5	83	2	2	0	0
小型トラック	6	8	2	33	1	0	−1	−100
長距離急行バス	2	1	−1	−50	0	0	0	0
観光バス	0	1	1	0	0	0	0	0
ステージバス	0	0	0	0	0	0	0	0
工場バス	0	0	0	0	0	0	0	0
ミニバス	0	0	0	0	0	0	0	0
スクールバス	0	0	0	0	0	0	0	0
バン	11	11	0	0	1	2	1	100
四駆	10	12	2	20	3	4	1	33
タクシー	0	1	1	0	0	0	0	0
その他	21	30	9	43	4	1	−3	−75
合計	381	445	64	17	67	180	113	169

2. 調査の目的

国際交通安全学会の自主研究において研究開発された「交通安全対策支援システム」をマレーシア第 2 の都市ペナンに適用し、交通安全対策に関する技術の移転を行うとともに、車社会化が進みつつあるアジア諸国等に対する新しい国際協力の手法を開発することを目的とする。

具体的には次の内容についての取組を行う。

① 住民参加による交通安全対策を促進するための中核ツールである､「交通安全対策支援システム」のペナン市への適用検討

② 交通安全対策立案を進めるために必要な専門技術の移植可能性とその方法の検討

③ 日本と形態が異なる行政組織における安全対策立案過程への適用方法の検討

3. 調査内容

（１）調査の項目

① 交通安全対策支援システムのペナン市への適用

・次年度以降のペナン市での本格運用を想定した、総合的な技術移転の実施計画を立案する。その中で、2009 年度において下記②、③、④を本年度の研究課題として想定する。

・システムの適用には、当該システムの移植と運用支援、および当該システムにより得られる分析情報等に基づく詳細調査計画立案、交通安全対策立案への支援等の技術移転を含む。

② 言語パックの適用性およびインターネットによる国際的なデータ共有の可能性の検討

・1バイト系言語（英語等）と2バイト系言語（日本語等）とを併用可能な事故分析、ヒヤリ体験入力システムの開発、DBの構築、およびそれらの適用性の検討。

・交通安全情報を国際的に共有可能なWebサイトの構築と適用性の検討。

③ 事故データ項目の最適化や、市民からのデータ収集方法と内容の多様化の試み

・現地システムの交通事故DBの詳細な検討と、交通安全対策支援システムへのデータコンバージョンの実施。その過程において、データ項目の最適化と汎用化方法についての検討。

・ヒヤリ体験入力システムを応用し、交通安全対策の検討に必要な路上駐車および交通渋滞に関する情報を、市民から収集する方法の開発と適用性の検討

④日本と形態が異なる行政組織における安全対策立案過程への適用

・事故発生場所における位置情報取得による、データ入力の効率化方策の検討

・交通安全対策立案マニュアルの活用方策の検討

(2) 調査実施フロー

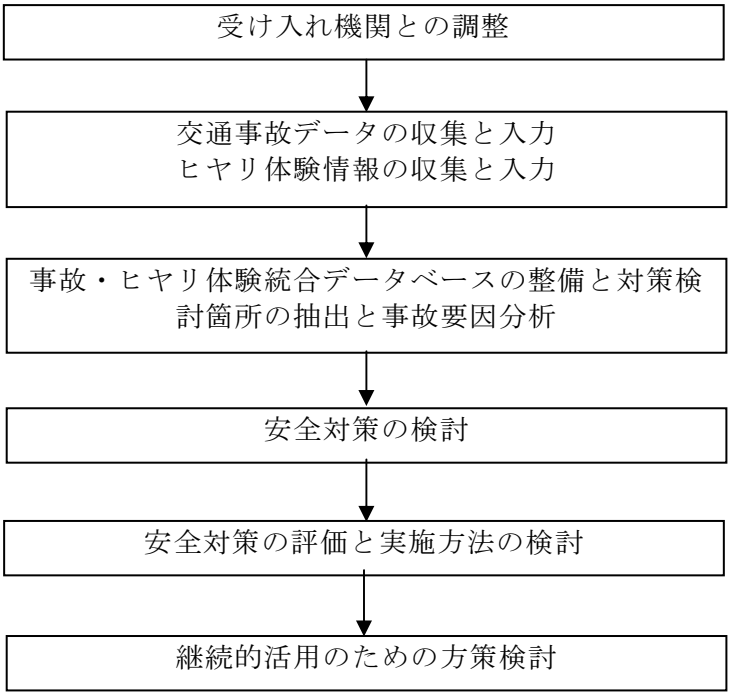


図 3－1　調査の実施フロー

4. ペナン市における市民参加型プログラムの適用

4－1　研究の準備状況

本研究に先立ち、平成 20 年度(2008 年度)、国土交通省による「建設分野における草の根の国際協力活動」における調査の成果より、次のことを確認した。

① ペナン市長の記者発表が象徴するように、関連する部局全てから積極的な協力を得ることが可能である。

② 交通警察より、交通事故データのサンプルを入手し、データの詳細内容を検証したところ、事故対策へ利用可能である。

③ 都市局より、ペナン市は既に GIS を導入しており、電子地図を交通安全対策支援システムで利用可能である。

④ システム部局より、ペナン市の庁内ＬＡＮおよびインターネット環境、システムの利用環境は日本と比較しても遜色ない環境である。

4－2　受け入れ組織

本調査に際して、協力あるいは共同で実施したペナン市関連の部局は以下のとおりである。

(1) 受入れ機関

Municipal Council of Penang Island, Malaysia

(2) 関連機関

Economic Planning Unit Penang State, Penang State Police Dept. Police H.Q, Penang State, Highway Planning Unit Ministry of Public Works


GEORGETOWN
Tanjung Tokong and Tanjung Bungah
Batu Ferringhi and Teluk Bahang
PLACES OF INTEREST
1A Botanical Gardens
4B Cheong Fatt Tze Mansion
5B Clock Tower
5B Fort Cornwallis & Esplanade
4B Goddess of Mercy Temple
4B Kapitan Keling Mosque
4C Khoo Kongsi
3C KOMTAR
2A Midlands One-Stop Shopping Centre
1A Nattukkotai Chettiar Temple
4B Penang Museum
2C P. Ramlee's House
4B Sri Mariamman Temple
1C State Mosque
5B Tourist Information Centre
2A Wat Chaiya Mangkalaram
IMPORTANT LOCATIONS & CONSULATES
4B British/Norwegian Consulate
4B Danish Consulate
4B French Consulate
4B Immigration Office
1A Indonesian Consulate
3B Japanese Consulate
1B Royal Thai Consulate
BUS,TAXI, RAILWAY STATIONS, RAILWAY, POST OFFICE, POLICE STATION
5D Port Swettenham
5D Ferry, Bus & Railway Terminal
4C Jalan Dr. Lim Chwee Leong (Interstate Bus Terminal)
3C KOMTAR (Bus Terminal)
4C Lebuh Victoria (Kenderaan Juara)
4C Pengkalan Weld (Bus and Ferry Terminal)
HOTELS
1A Berjaya Georgetown ★★★★
1F Equatorial Penang ★★★★★
3B Garden Inn
3B Agora
4B Continental Penang ★★
3C Grand Continental ★★★
4B Malaysia ★★★
3C Oriental ★★
1B Waterfall
4C Shangri-La ★★★★★
3B Sheraton Penang ★★★★★
3C Sunway Hotel ★★★★
4B The City Bayview ★★★★
4B Town House
3C Midtowne ★★
Road / Jalan ..... J.
Lane / Lorong ..... L.
River / Sungai ..... Sg.
Village / Kampung ... Kg.

図 4－1　市域概要図

5. ペナン市へのシステム移植に向けた技術開発

日本国内と言語や交通事故データの詳細内容等が異なる地域にシステムを適用するために、各サブシステムの多国語対応や、データベースの対応が必要となる。システムをペナン市へ移植するために必要な技術開発の内容について各サブシステム毎に整理を行うこととした。

5−1　ヒヤリ体験入力サブシステム

(1) 技術開発の方針

ペナン市へシステムを移植するための技術開発の方針は、次のとおりである。

・1バイト系文字（英語等）と2バイト系文字(日本語等)を併用可能なヒヤリ体験入力サブシステムの開発、データベースを構築する。

・英語以外の言語、マレー語、中国語(マンダリン語)等へ対応可能な多言語対応のシステムとする。

・多国語圏でのデータ共有を実現する。

(2) 技術開発における課題

システム開発における課題として次のことが挙げられる。

① 1バイト系文字と2バイト系文字を併用したデータベースの構築

② 複数言語に対すインターフェースの作成

③ 複数の言語間の相互翻訳手段の検討

(3) システム開発の概要

システム開発の概要は表5−1のとおりである。図5−1は、システムのイメージ図である。

表5−1　ヒヤリ体験入力サブシステムの開発方針

開発概要	内容
表示言語の選択を可能にする。	・プログラムは言語別に構築するのではなく、統合された一つのプログラムとする。 ・メインプログラムと言語ファイル群を分割、コンボボックス等で言語選択を行うことで指定された言語の設定ファイルをプログラム中に取り込み、表示言語を一括で切り替える構造とする。
各設定ファイルを各言語のフォルダに格納する。	・各言語のファイル群には、言語設定ファイル、HTML*1 ファイル群、Java Script*2 ファイルを格納する。 ・メインプログラムは指定された言語フォルダ内の言語ファイル、HTML ファイル群、Java Script ファイルを実行する。
データベースは自治体別に作成する。	・データベースは自治体別に構築し、必要に応じてデータフィールド(桁数)等を変更する。 ・データベースの構造は既存のシステムと同様とする。

*1　HTML：Web ページを記述するためのマークアップ言語。
*2　Java Script：Web ブラウザなどのクライアントサイドで実装され、動的な Web サイトの開発に用いられるオブジェクト指向スクリプト言語。

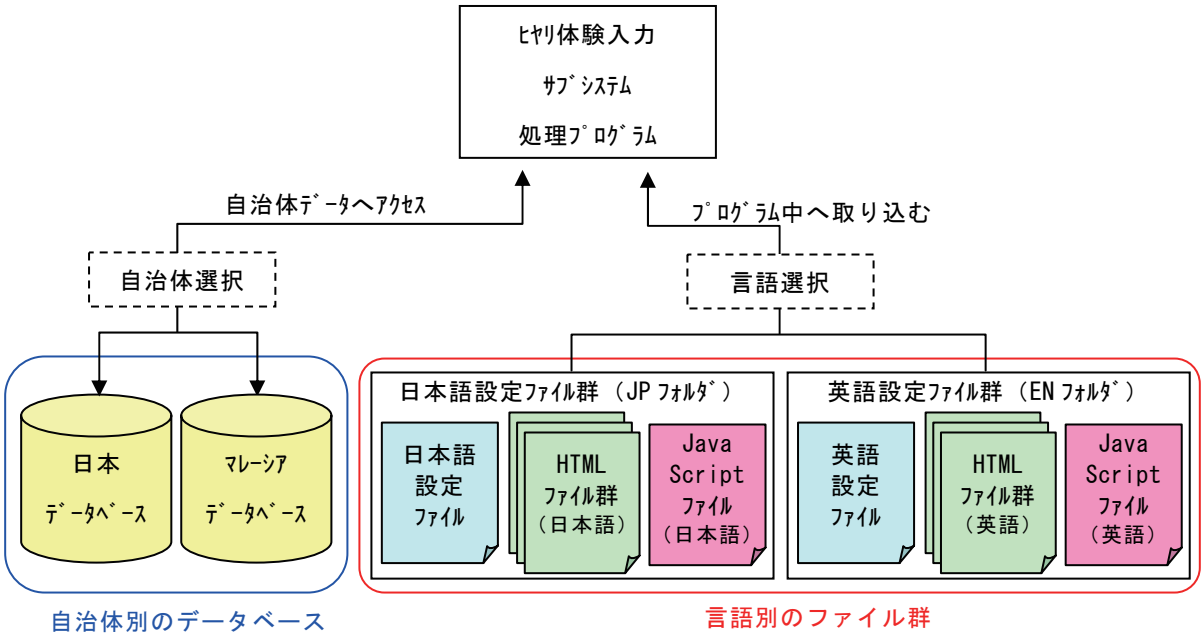


図 5－1　ヒヤリ体験入力サブシステムのイメージ

（4）開発内容

①　表示文字の多国語化

多国語化に対応するため、設定ファイル群の言語を自由に切り替えることができるように、プログラムを修正した。ヒヤリ体験入力サブシステムの表示文字の文字コード変換方式は、既に Unicode*3 文字列の変換方式の一種である「UTF-8*4」を採用している。これにより、言語別にあらかじめ翻訳された言語設定ファイルを作成することで、多国語の表示が可能となった。図 5－2 は、日本語表示および英語表示のシステムの TOP 画面である。

〈日本語〉

〈英語〉

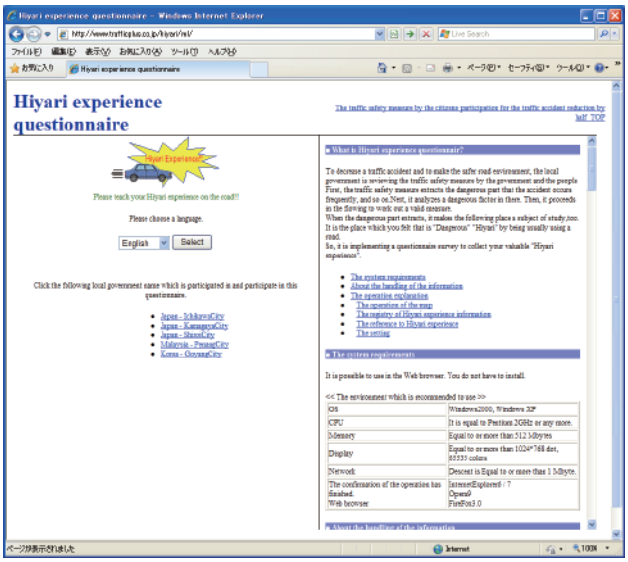


図 5－2　システムの多国語表示

*3　Unicode：国際標準化機構(ISO)で標準化された文字コード体系。
　　世界の主要な言語のほとんどの文字を収録している。
*4　UTF-8　：文字列をバイト列に変換する方式の 1 つ。世界のさまざまな文字を混在させるための、
　　標準的文字コード変換方法となっている。

②　データベースとの通信時における文字コード変換方式の変更

既存のヒヤリ体験入力サブシステムとデータベース間の通信時の文字コード変換方式が「シフト JIS[*5]」を採用していた。「シフト JIS」は日本語および半角英数字に対応した文字コードであるため、多国語の文字を入力できない。通信時の文字コード変換方式を「UTF-8」へ変更し、データベースへの多国語でのデータ登録を可能とした。図５－３は、システムとデータベースの通信時における文字コード変換のイメージである。

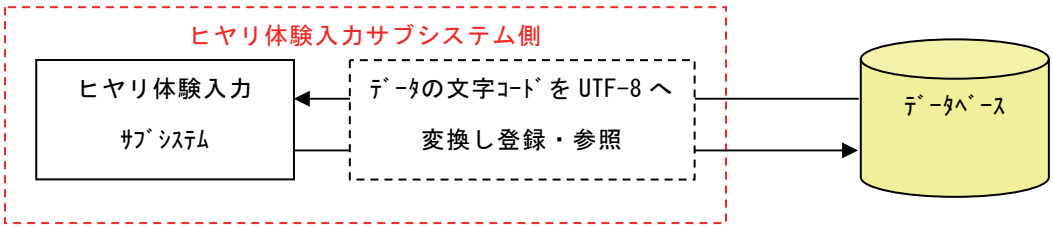


図 5－3　データベースの通信時における文字コード変換

③ フリーアンサー項目の文字翻訳機能

多国語で入力されても、他の言語圏から情報を確認する場合に、フリーアンサーの項目が翻訳されなければ情報を共有できない。「Google 翻訳 API[*6]」を使用して、選択された言語へ自動的に翻訳される機能を追加した。これにより、他の言語圏から閲覧する場合に、翻訳されるフリーアンサーの項目の表示が可能となった。図 5－4 は、自動翻訳する前と自動翻訳された後のフリーアンサーの項目を表示した図である。

（日本語）

ヒヤリ状況

時期	[日時] わからない [平/休] いつも [天気] いつも
体験者通行状況	[進入方角] 西北西 [交通手段] 自動二輪
相手	[交通手段] 自転車
互いの方向 白抜き:体験者 黒塗り:相手	79. フリーアンサー項目
ヒヤリ状況	バイクで走行中右折してきた自転車が右側通行で曲がってきたので正面衝突しそうになった。

体験者のご意見

ヒヤリ要因	人的要因
問題点	自転車の交通法規無視。右側通行、よっぱらい運転、ひきにげ、通行不可歩道の通行等
防止提案	自転車の交通法規、についての学校等での指導。自転車の法規違反に対する取締りの強化。自転車の自賠責の導入。
その他	

（英語）

The status of Hiyari experience

The time	[Date] Unclear [Weekday/Holiday] Always [Weather] Always
The passage status of the experience person	[Approach form] West-northwest [Traffic Means] Motorcycle
The other party	[Traffic Means] Bicycle
The mutual direction White pulling out: The experience person Black painted: The other party	79. フリーアンサー項目
The status of Hiyari experience *	It was likely to have head-on collision bent the right way while riding a bike has the right bike.

The opinion of the experience person

The Hiyari factor	Human factor
The problem point *	Ignore bicycle traffic laws. Keep to the right driving Yopparai, Nige Heat, traffic and pedestrian traffic not
The proposal to prevent *	Bicycle traffic laws, and school guidance about. Strengthening law enforcement against violations of the bicycle. CALI introduction of the bicycle.
Others	

図 5－4　自動翻訳前後のフリーアンサー項目

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*5　シフト JIS　　：日本語文字コードの一つ。Microsoft 社によって策定され、文字の 1 バイト目を見るだけで漢字か 1 バイト系文字（半角英数字)かを識別できる。

*6　Google 翻訳 API：Google 社が提供しており Web サイトなどの開発のために、インターネット経由で利用できるサービスの一種。無償で利用ができる。

5－2　交通安全対策支援サブシステム

(1) 技術開発の方針

ペナン市へシステムを移植するための技術開発の方針は、次のとおりである。

・1 バイト系文字(英語)で利用可能なシステムの開発。

・現地用の交通事故データの詳細な検討を行い、交通安全対策支援サブシステムで使用するデータ項目の最適化と汎用化方法についての検討。

・事故発生場所での位置情報取得による、データ入力の効率化方策の検討。

(2) 技術開発における課題

システム開発における課題として次のことが挙げられる。

① 1 バイト系文字と 2 バイト系文字を併用したデータベースの構築

② 複数言語に対応するインタフェースの作成

③ ベースマップ（電子地図の変換）の作成

④ 単路，街区等のマスタデータの検討，作成

⑤ 現地事故データ入力項目の検討とシステムで使用する事故データ項目の最適化の検討

⑥ 既存事故データベースのコンバートツール開発

・現地事故データベースの構造，項目内容の検討と電子データの変換取込方法の検討

⑦ 事故データ位置入力支援システムの開発

・現場における事故調査内容を踏えた座標取得の効果的方法の検討

・事故位置の取込システムの機能追加

(3) システム開発の概要

システム開発の概要は表 5－2 とおりである。図 5－5 は、システムのイメージ図である。

表 5－2　交通安全対策支援サブシステムの開発方針

開発概要	内容
ペナン市システム用地図の作成。	・提供されたシェープファイルの変換を行い、交通安全対策支援サブシステムで使用するベースマップを作成する。
事故詳細データ項目の最適化	・ペナン市事故調書の項目に対応した、データベースの構築と入力画面項目の変更をする。
1 バイト系文字へ対応したシステムの開発	・1 バイト文字(英語)に表示項目の変換を行い、各言語別の交通安全対策支援サブシステムを構築する。
GPS 機器等から地点データを取り込み、事故データ登録の効率化を図る。	・新規のシステム開発ではなく、交通安全対策支援サブシステムに新機能の追加を行う。 ・現地で GPS 機器等から取得した地点データを取り込み、事故データの作成や事故データとの関連付け機能を追加する。 ・既に GPS 付カメラで撮影した現場写真の登録や事故データとの関連付けを行い、写真を表示する機能を追加する。

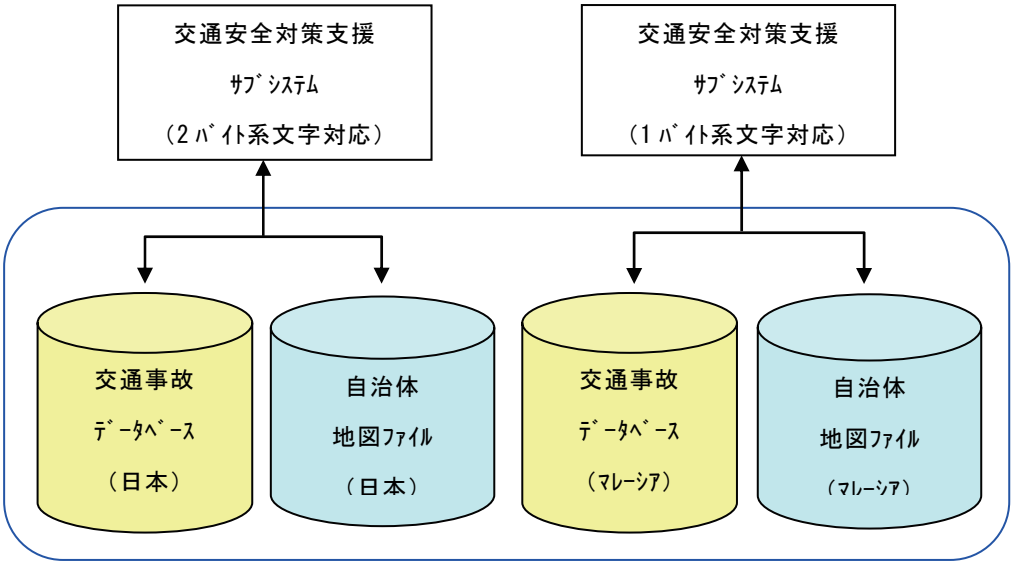


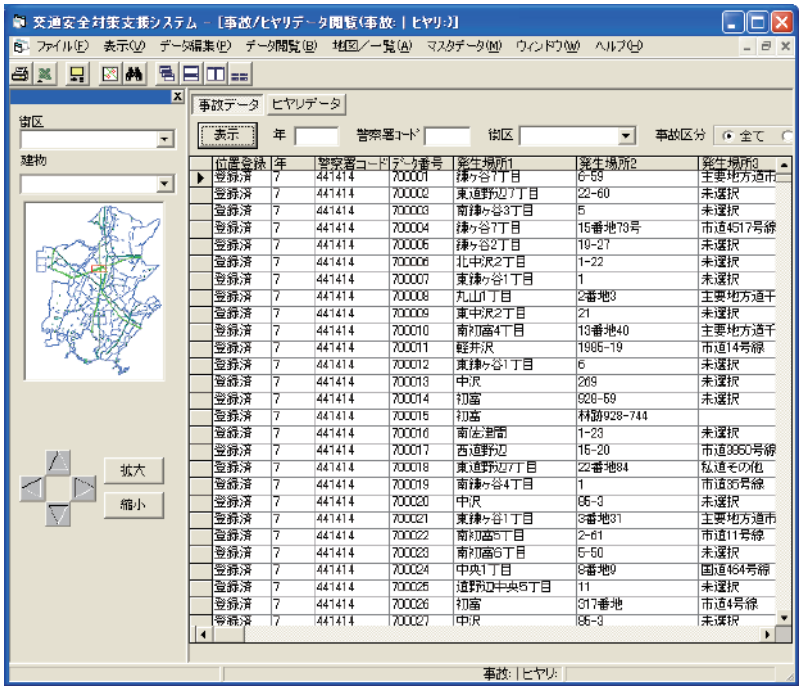
図 5－5　交通安全対策支援サブシステムのシステム開発イメージ

(4) 開発内容

① 表示文字の英語化

多言語化に対応するため、1 バイト系文字対応のシステム開発を検討した。開発用プログラミング言語である「Microsoft Visual Basic6.0」の日本語版の制約により、表示できる文字コードが「シフト JIS」のみの対応となっている。そのため、多言語の表示が可能な Unicode 文字列での表示および変換が対応できない。しかしながら、「シフト JIS」では半角英数字が表示できるため、表示文字を英語とする交通安全支援サブシステムとした。図 5－6 は、日本語表示および英語表示のシステムの画面である。

〈日本語〉



〈英語〉

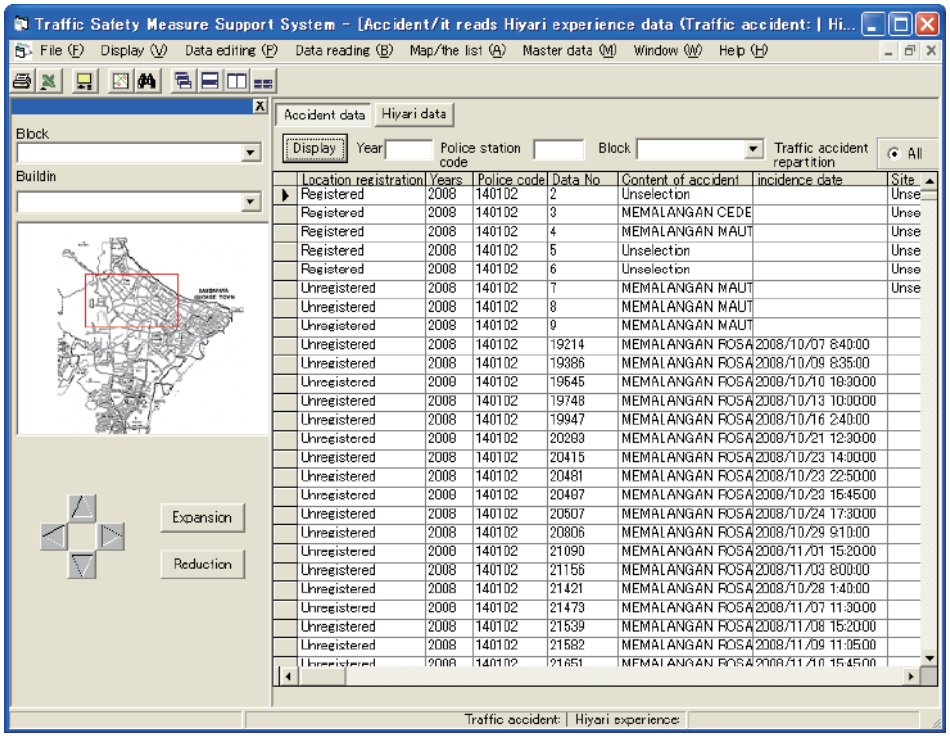


図 5－6　システムの多言語表示

② 多言語入力可能なデータベース構築の検討

交通安全対策支援サブシステムはヒヤリ体験入力サブシステムと同仕様のデータベースを使用しているため、多言語対応の文字データの保存は可能である。しかし、交通安全対策支援サブシステムのプログラムが対応している文字コードが「シフト JIS」のみのため、日本語文字と半角英数字以外の入力を行うと正しい内容が表示されない。そのため、日本語と英語以外の言語で交通安全対策支援サブシステムを構築する際は、データ表示について詳細に検討する必要がある。プログラムの開発言語を変更するなど抜本的対応が必要となる場合もありうる。

③ ベースマップの作成

ペナン市より提供されたシェープファイルの敷地境界線図・道路網図の 2 つを基に、ラスタ型式[*7]の地図ファイルを作成し、ペナン市版の交通安全対策支援サブシステムのベースマップとして作成した。交通安全対策支援サブシステムが使用している GIS エンジンである「Geo Base」に付属しているツールを使用し、Geo Base で使用できる形式へ変換した。図 5－7 は、ベースマップのファイル形式変換の流れ、図 5－8 は、ファイル形式変換後のベースマップ表示例である。

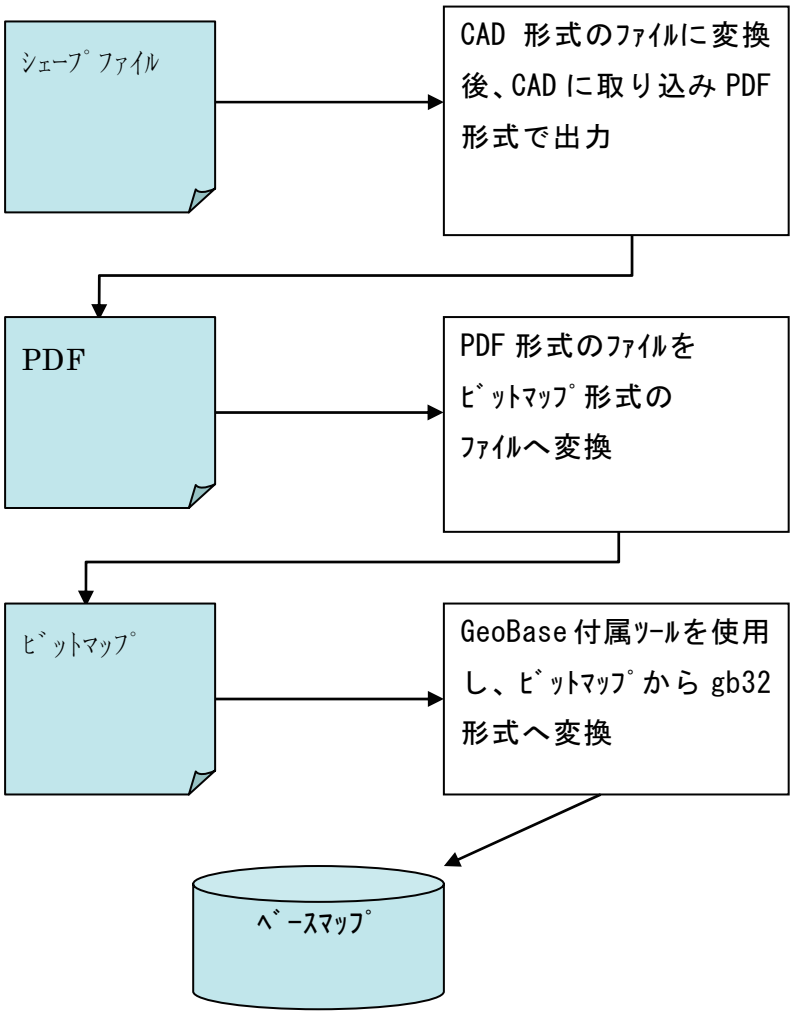


図 5－7 ベースマップのファイル形式の変換の流れ

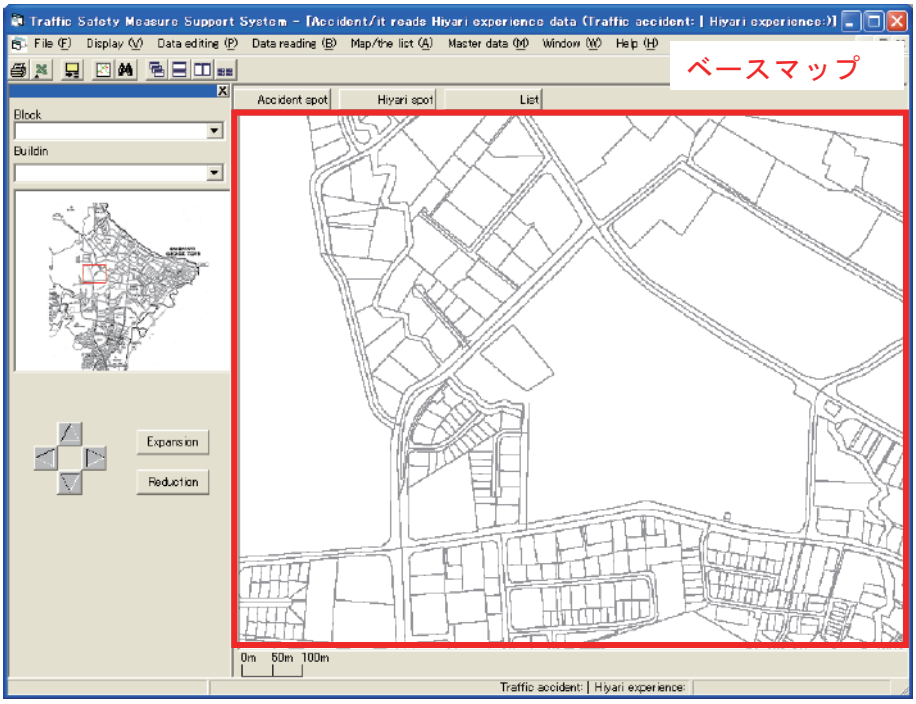


図 5－8　ファイル形式を変換したベースマップの表示

*7　ラスタ型式：色のついた点の羅列として画像を表現する

④ 交差点、街路のマスタデータの作成

パイロット地区の交差点や街路マスタデータを登録した。ペナン市では交差点の概念が日本と異なるため、交差する路線名を利用し交差点名を作成した。交差点は「道路 A-道路 B」、街路は「道路 A(道路 B-道路 C)」の様に名称を作成し登録を行った。図 5－9 は交差点、街路の名称の考え方を表し、図 5－10 は、登録を行った交差点、街路を表示した図である。

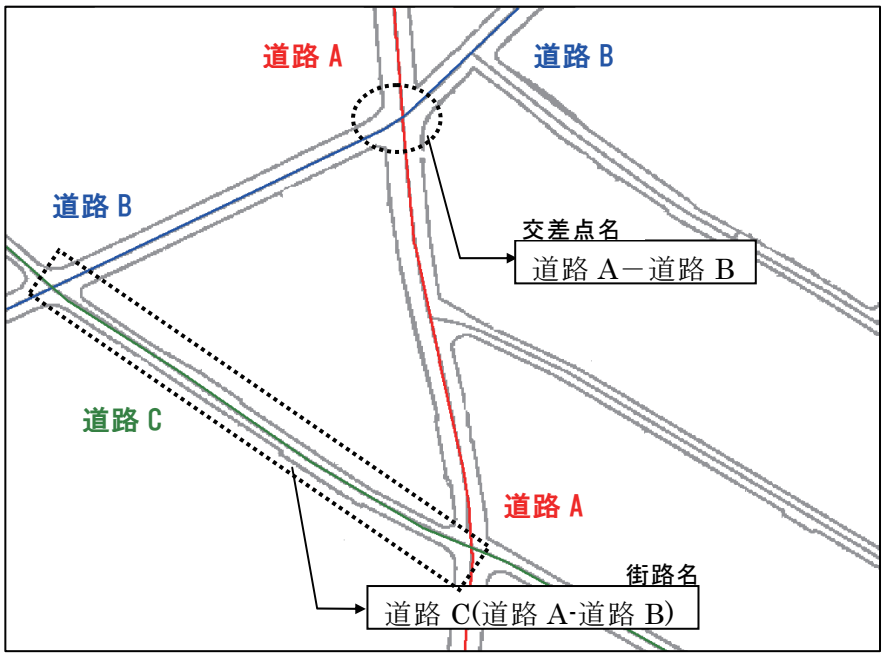


図 5－9　街路、交差点の名称

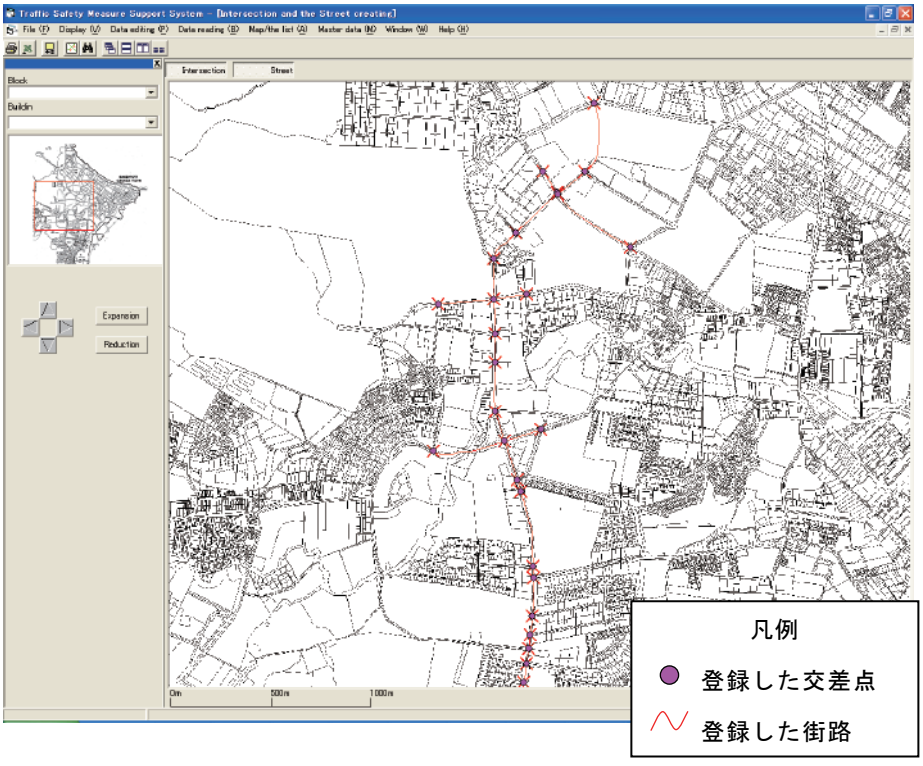


図 5－10　登録した交差点、街路(パイロット地区)

⑤ ペナン市の事故データ項目に対応したデータベースの構築

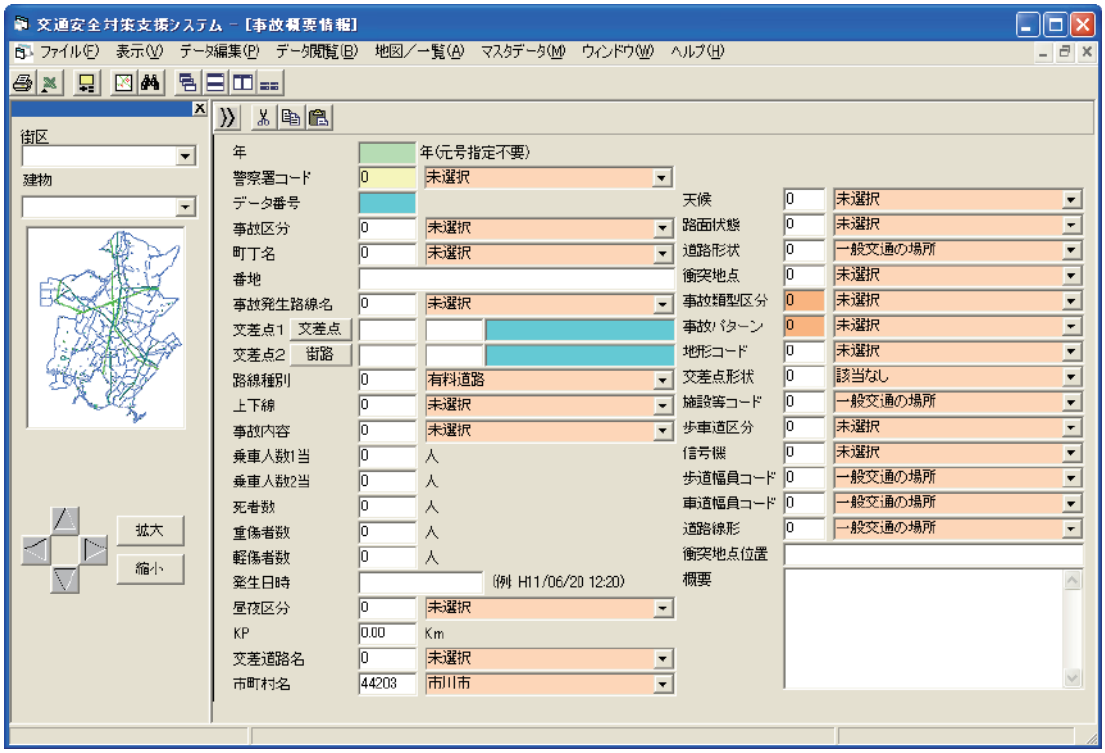
交通安全対策支援サブシステムは日本の事故調書を基に、システムとデータベースが構築されている。そのため、現行のままでは事故調書の形式が異なるペナン市へ移植できない。ペナン市で使用されている事故システム CARS[*1] の項目を基に、交通安全対策支援サブシステムの事故データ入力項目の確認を行い、CARS の画面と CARS より出力された事故調書データ(Excel 形式)を基にペナン市版のデータ項目を検討し、データベースの構成および項目を変更した。表 5－3 は、日本版とペナン市版における事故データの項目を整理したもの、図 5－11 は、日本版とペナン市版の事故概要の入力画面である。

表 5－3　事故データの項目

項目		交通安全対策支援サブシステム	CARS
年		○	○
警察署コード		○	○
データ番号		○	○
事故区分		○	○
発生場所1		○	－
発生場所2		○	－
発生場所3		○	－
発生場所4		○	－
発生場所5		○	－
上下		○	－
路線コード		○	－
路線種別		○	－
事故内容		○	○
死者数	運転手_死者数	○	○
	犠牲者_死者数		○
	歩行者_死者数		○
重傷者数	運転手_負傷者数	○	○
	犠牲者_負傷者数		○
	歩行者_負傷者数		○
軽傷者数		○	－
乗車人数1当		○	－
乗車人数2当		○	－
地点名		○	－
交差道路名		○	－
市町村名		○	－
発生日時		○	○
昼夜区分		○	○
天候		○	－
路面状態		○	○
道路形状		○	○
事故パターン		○	○
進入方向		○	－
衝突地点		○	－
事故類型区分		○	－
衝突地点位置		○	－
概要		○	○
地形コード		○	－
交差点形状		○	－
施設等コード		○	－
歩車道区分		○	－
信号機		○	－
歩道幅員コード		○	－
車道幅員コード		○	－
道路線形		○	－
字CD		○	－
衝突種類		－	○
ひき逃げ		－	○
規制種類		－	○
故障車両数		－	○
交通システム		－	○
事故発生日_時刻		－	○
事故発生日_日付		－	○
事故発生日_曜日		－	○
車線種類		－	○
速度規制区間		－	○
当事者車両数		－	○
道路欠陥		－	○
道路状況		－	○
道路幅員		－	○
舗装面種類		－	○
路肩種類		－	○
路肩幅員_右		－	○
路肩幅員_左		－	○
路面状況		－	○

※青字はCARSの項目

〈日本語〉



〈英語〉

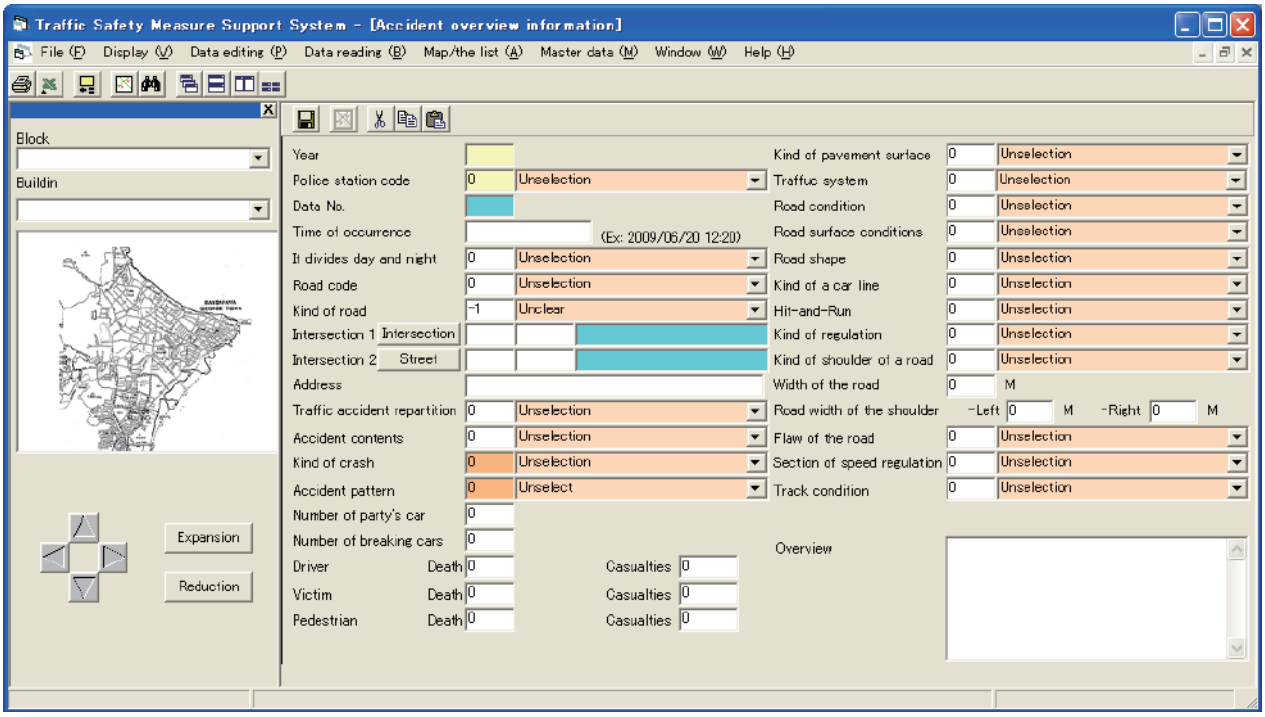


図 5－11　事故データ入力画面

⑥ 事故データの変換・取り込み方法の検討及びコンバートツールの開発

ペナン市より提供された Excel 形式の CARS の事故調書データは項目が縦並びである。交通安全対策支援サブシステムに取り込むデータ項目は横並びであり、CARS のデータとは異なる。そのため、交通安全対策支援サブシステムにデータを取り込むにあたり、データのコンバートが必要となる。データ形式のコンバートツールを作成してデータの行列の変換を行い、データの取り込みを行った。図 5－12 は、コンバートツールを用いたコンバートの流れを表した図である。

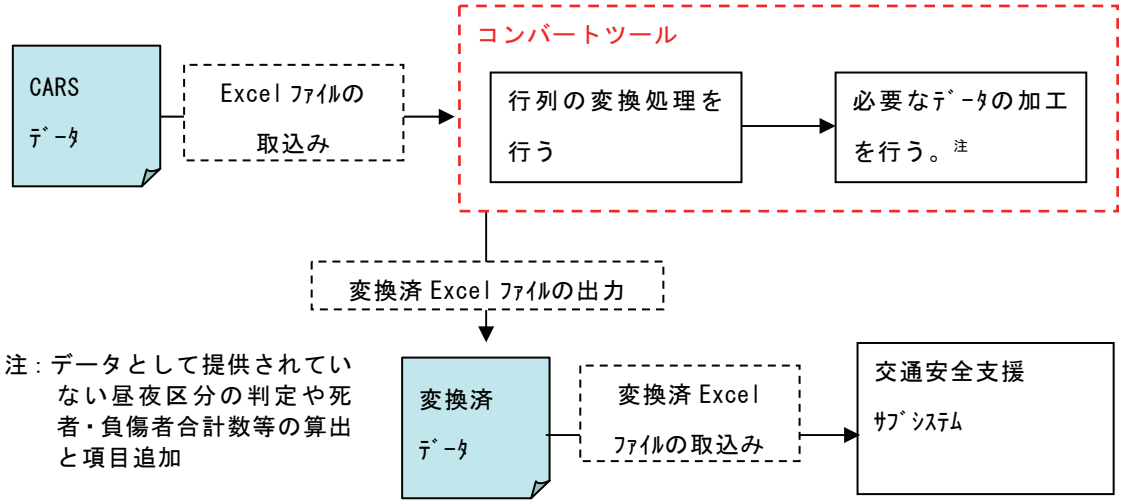


図 5－12　データのコンバートの流れ

⑦ 事故地点自動登録機能の追加

1）測位方法の検討

事故地点の自動登録を行うためには、事故地点の測位データの取得が必要である。近年、撮影した地点の座標を記録できるデジタルカメラが開発されており、このカメラを利用することで、画像と同時に撮影位置を測位することが可能である。メーカーが提供するフリーソフト等を使用することで、撮影した地点の座標のみを取得することも可能である。また、測位データを出力できる GPS 機器も市販されており、この測位データから位置座標を取得することも可能である。図 5－13 は、事例として Nikon 製のデジタルカメラを使用し、画像から測位データを抽出する際の流れを表した図である。

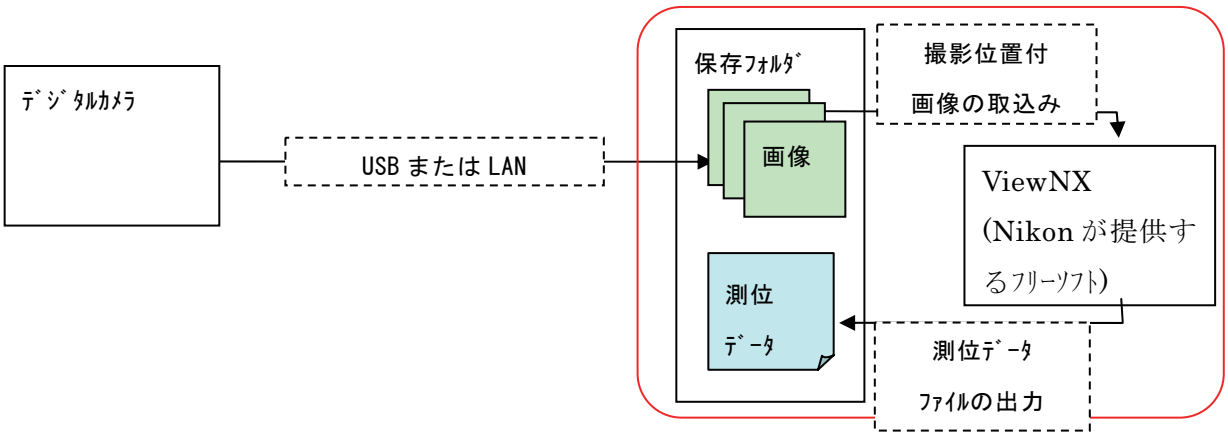
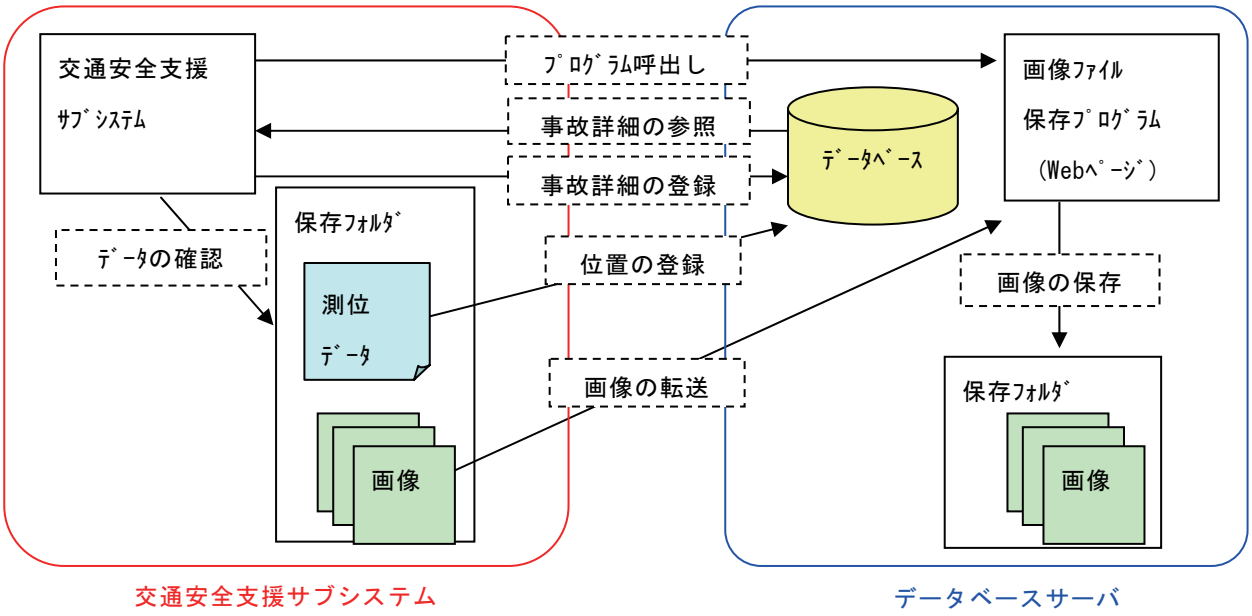


図 5－13　画像からの測位データの抽出例（Nikon 製デジタルカメラを使用する場合）

2）測位機能付デジタルカメラによる撮影画像を使った地点自動登録

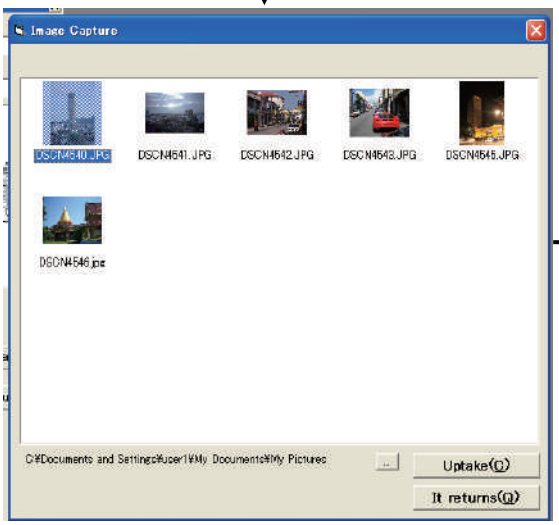
測位機能付デジタルカメラで撮影した画像を利用し、事故の発生地点を自動登録する。撮影画像から抽出した測位データにより、撮影した地点の緯度・経度の座標を抽出し、事故地点の座標の登録を自動的に行うように機能を追加した。なお、測位データが存在しない画像の場合においては、画像と事故データの詳細内容の登録を行う。また、既に位置登録済みの事故データへの撮影画像の関連付けを行う画像データ更新機能を追加した。図 5－14 は、画像の新規登録時、図 5－15 は、画像の更新時のデータ処理と画面遷移の概略である。

〈事故地点・画像データ新規登録〉



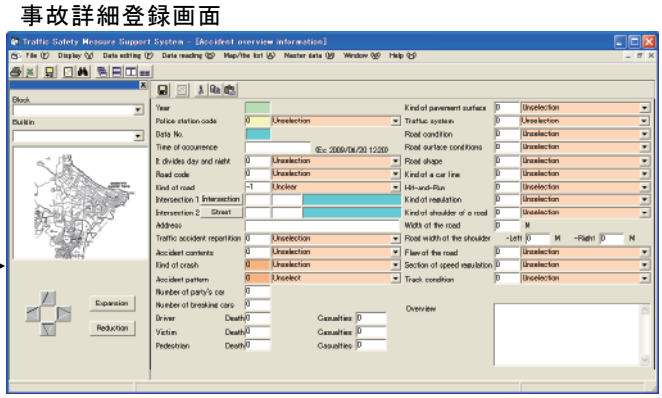
メインメニューより

画像選択画面



ローカル PC に保存されている画像が表示され、この中から登録したい画像を選択する。

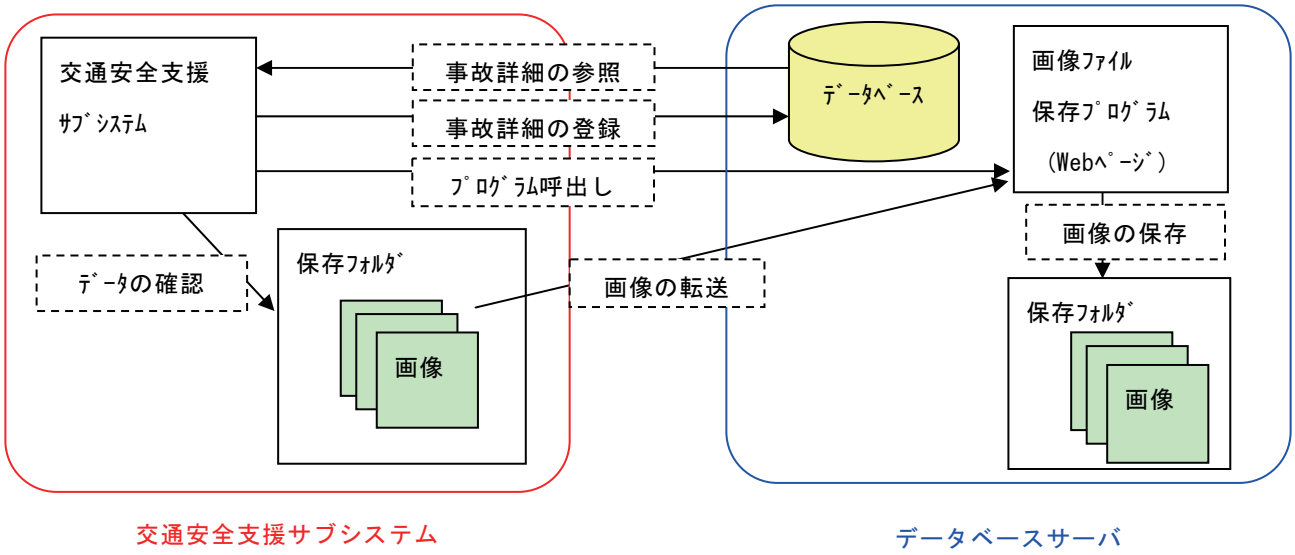
事故詳細登録画面



画像の選択後に新規での事故詳細登録画面が表示され、事故詳細の入力を行い保存する。

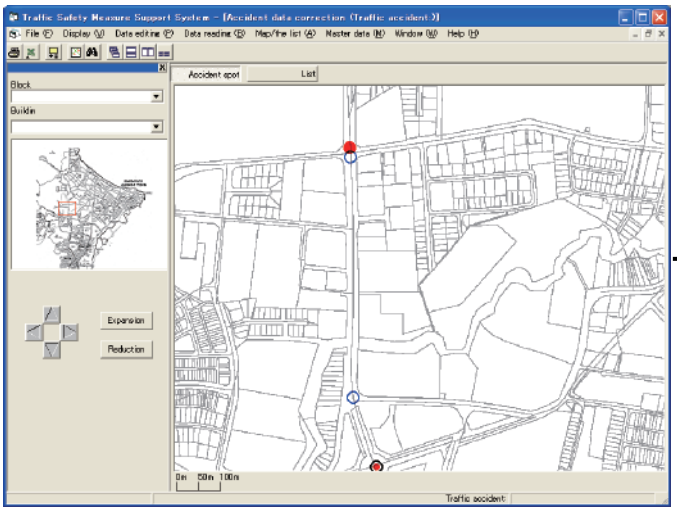
図 5－14　画像の新規登録時のデータ処理と画面遷移

〈画像データの更新〉



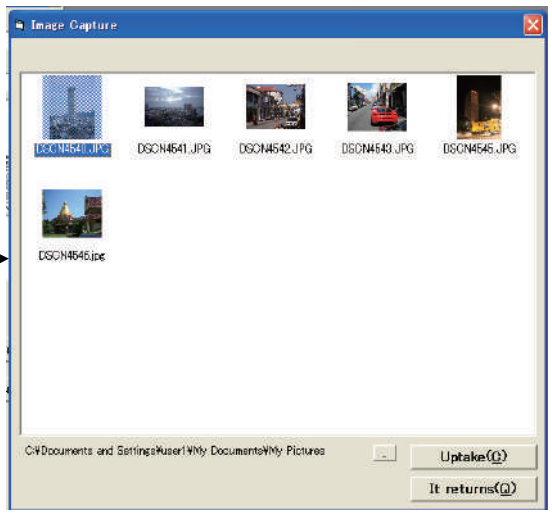
メインメニューより

事故地点選択画面



地図上の事故地点マークをクリックすることにより画像を登録する事故詳細の選択を行う。

画像選択画面

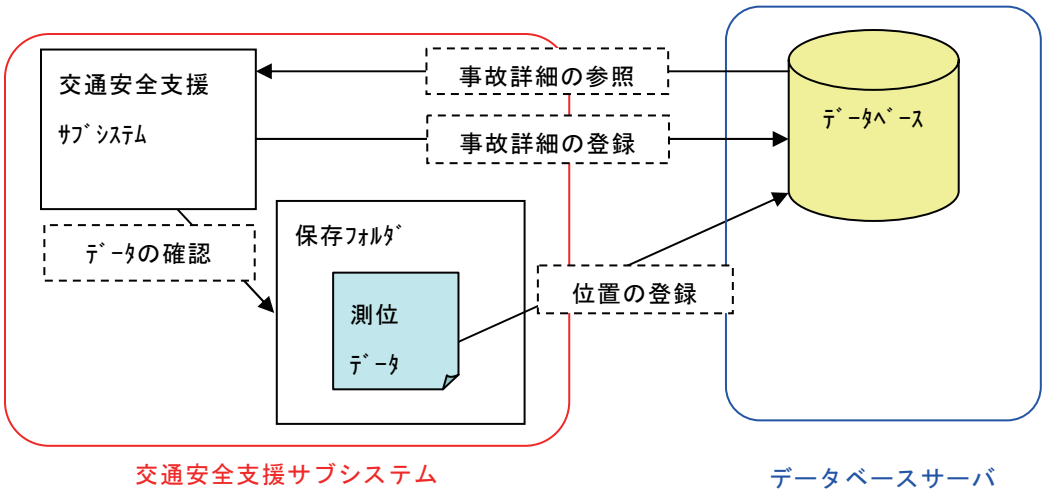


画像を選択し保存ボタンの押下で前画面より選択された事故詳細と関連付けが行われる。

図 5－15　事故画像更新時のデータ処理と画面遷移

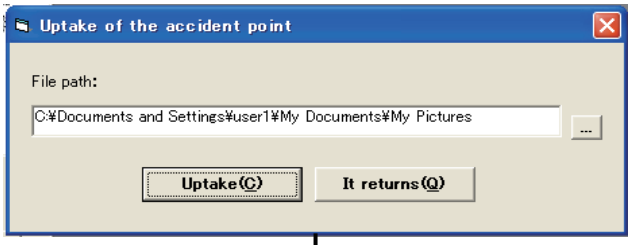
3）GPS 機器を使った地点自動登録

GPS 機器等から取得した測位データを交通安全対策支援サブシステムへ取り込むと、事故位置の仮登録が行われる。その後、仮登録された地点を選択し、事故の詳細情報を入力し保存した時点で事故詳細が登録される機能を追加した。図 5－16 は、測位データを利用した地点登録の概略である。



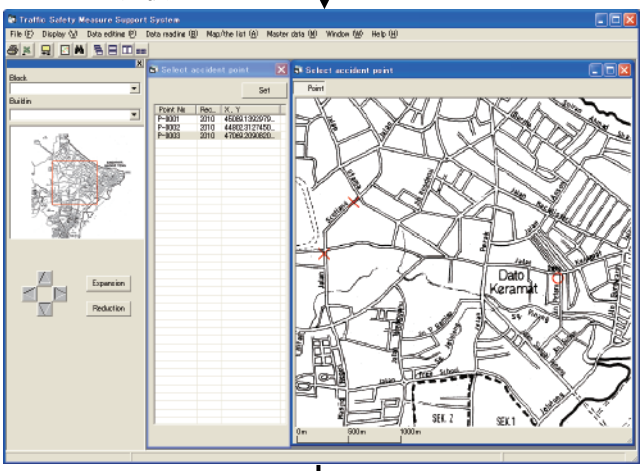
メインメニューより

測位データファイル選択画面



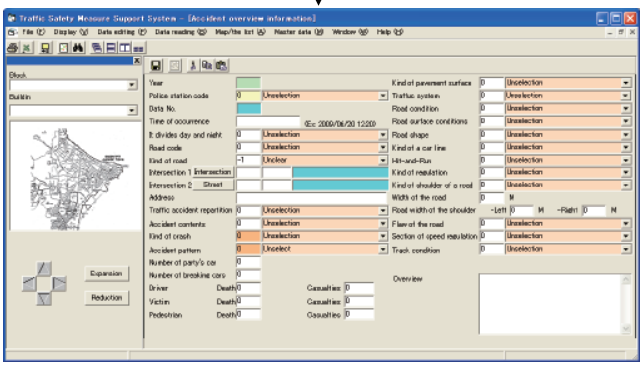
測位データのファイルを選択し、位置情報を仮登録する。

測位地点選択画面



取り込んだ位置情報を選択できるようにするため、地図上にマークが表示される。

事故詳細登録画面

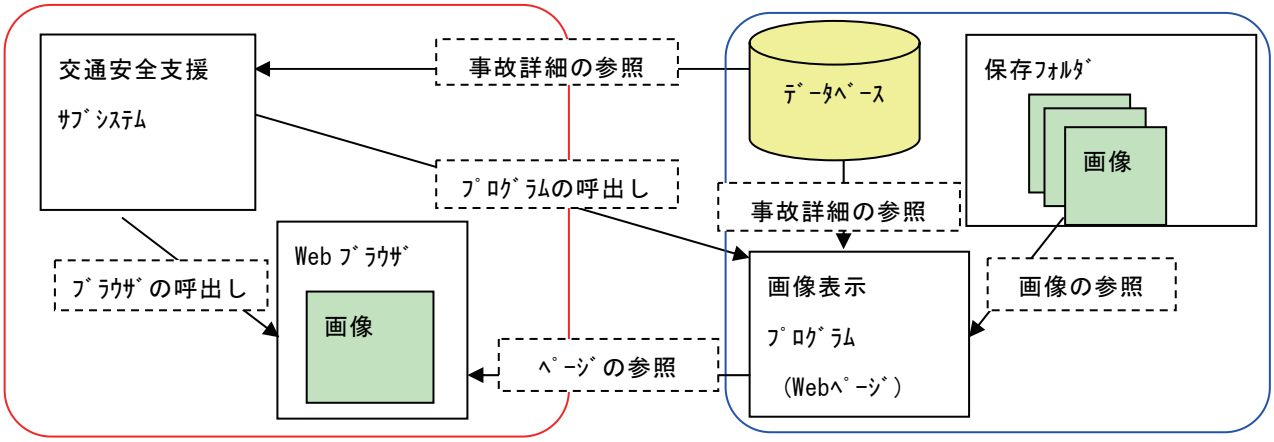


位置情報の選択後に新規事故詳細登録画面が表示され、事故詳細の入力を行い、各データを登録する。

図 5－16　事故地点登録の画面遷移と概略

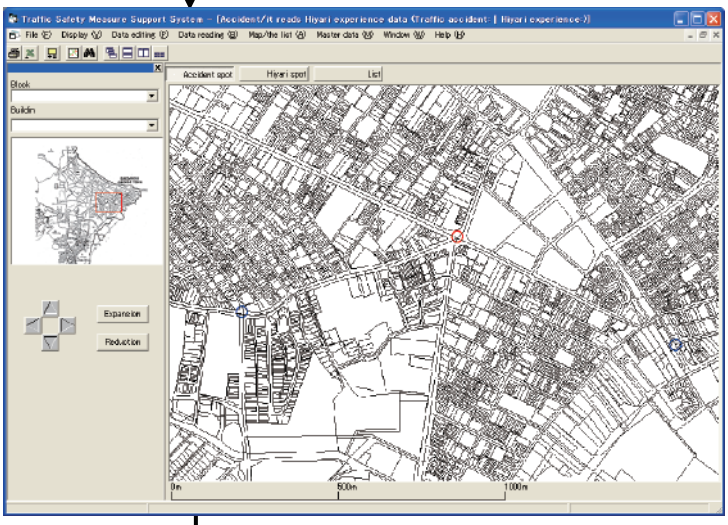
⑧ 事故地点画像表示機能の追加

事故データに関する画像を確認するため、交通安全支援サブシステムから Web ブラウザを起動し、サーバ上にある事故詳細に関連付けされている画像を Web ページ表示する機能を追加した。図 5－17 は、画像表示の概略である。

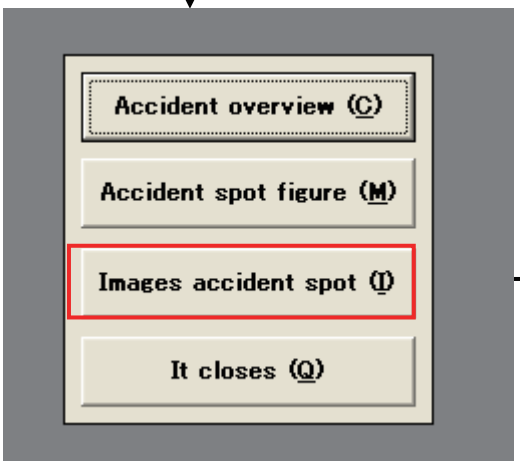


メインメニューより

事故詳細検索画面

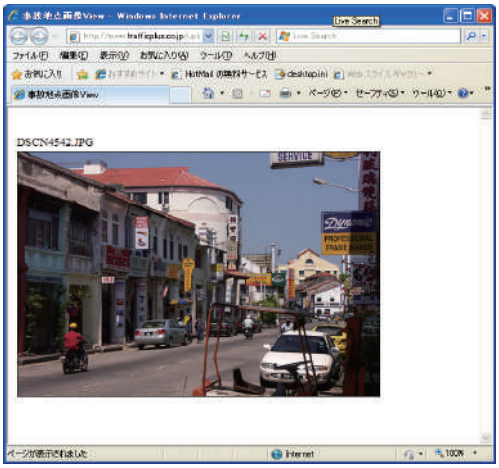


登録されている事故詳細を選択する。



事故詳細選択画面より「事故地点画像表示」ボタンを押下する。

Web ブラウザが起動し、選択された事故詳細に関連付けされている画像が表示される。



事故データ選択画面

図 5－17　事故地点画像表示画面と概略

5－3　交通安全情報サイト

(1) 技術開発の方針

ペナン市へシステムを移植するための技術開発の方針は、次のとおりである。

・交通安全情報を国際的に共有可能な Web サイトの構築と適用性の検討。

・1 バイト系文字(英語等)と 2 バイト系文字(日本語等)とを併用利用可能な交通安全情報サイトの開発と適用性の検討。

・1 バイト系文字（英語等)と 2 バイト系文字(日本語等)とを併用利用可能なデータベースの構築およびそれらの適用性の検討。

(2) 技術開発における課題の整理

システム開発における課題として次のことが挙げられる。

① 1 バイト系文字と 2 バイト系文字を併用したデータベースの構築

② 複数言語に対応するインタフェースの作成

③ ハザードマップ等のペナン市での公開コンテンツの作成

④ Ｗｅｂサイトおよび検索，表示機能の開発

⑤ 翻訳方法の検討

(3) システム開発方針の概要

システム開発の概要は表 5－4 のとおりである。図 5－18 は、システムのイメージ図である。

表 5－4　開発方針

開発概要	内容
表示言語および自治体の選択を可能とする。	・プログラムは言語別に構築するのではなく、統合された一つのプログラムとする。 ・メインプログラムと言語ファイル群を分割、コンボボックス等で言語選択を行うことで指定された言語の設定ファイルをプログラム中に取り込み、表示言語を一括で切り替える構造とする。 ・各自治体の交通安全情報はコンテンツ別に自治体選択画面を設け、選択された自治体のコンテンツに切り替える。
自治体別ファイル群を各自治体のフォルダに格納する。	・各自治体のファイル群には、各種画像ファイル群およびデータベース接続情報等を格納する。 ・メインプログラムは選択された自治体フォルダ内の自治体情報に各種画像ファイル群、データベース接続情報等を実行する。
言語設定ファイルは各言語のフォルダに格納する。	・各言語のフォルダには、言語設定ファイルを格納する。 ・メインプログラムは選択した言語フォルダ内の言語ファイルを実行する。
データベースは自治体別に構築する。	・データベースは自治体別で作成し、必要に応じてデータフィールド(桁数)等を変更する。 ・データベース構成は既存のシステムと同様とする。

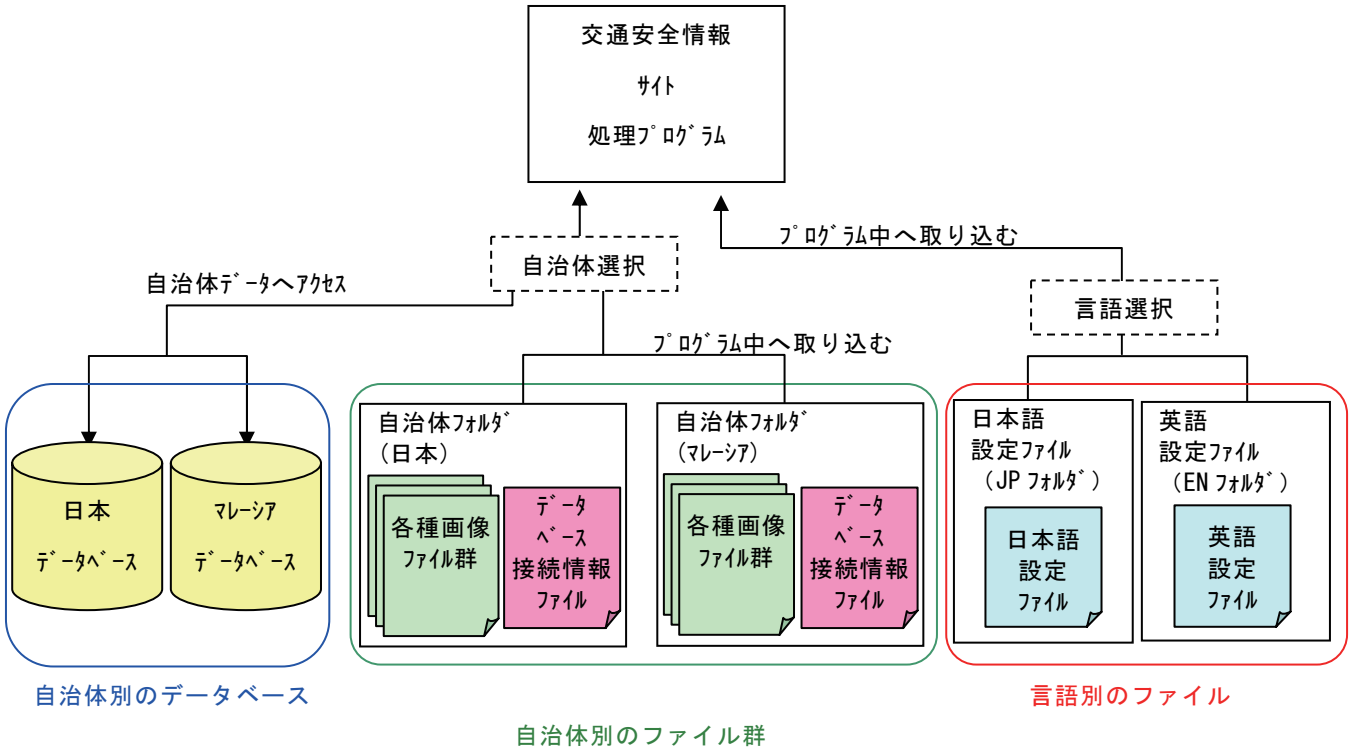


図 5－18　開発方針のイメージ

（4）開発内容

① データベースとの通信時の文字コード変換方式の変更

多言語の文字を表示できるようにプログラムの変更を行い、データベースとの通信時の文字コード変換方式に「UTF-8」を採用し、データベースからの多言語データの参照を可能とした。図 5－19 は、システムとデータベースの通信時における文字コード変換のイメージである。

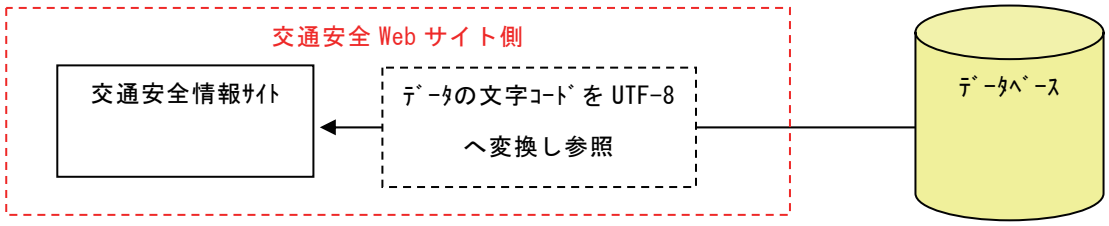
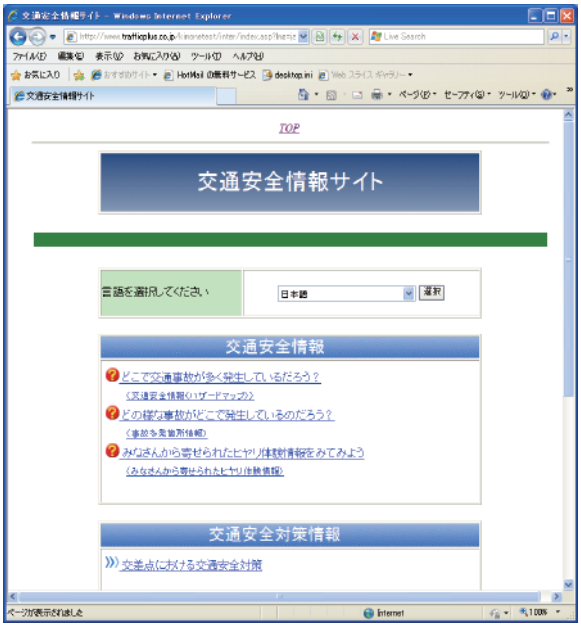


図 5－19　データベースの通信時における文字コード変換

② 表示文字の多言語化

多言語化に対応するため、設定ファイル群の言語を自由に切り替えることができるように、プログラムを開発した。ヒヤリ体験入力サブシステムと同様に表示文字の文字コード変換方式は「UTF-8」を採用している。これにより、言語別に翻訳した言語設定ファイルを作成することで、多言語の表示が可能となった。図 5－20 は、日本語表示および英語表示のシステムの TOP 画面である。

〈日本語〉



〈英語〉

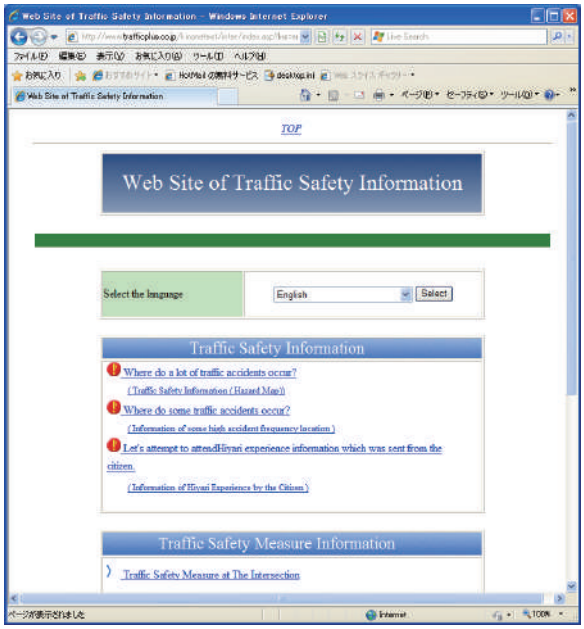
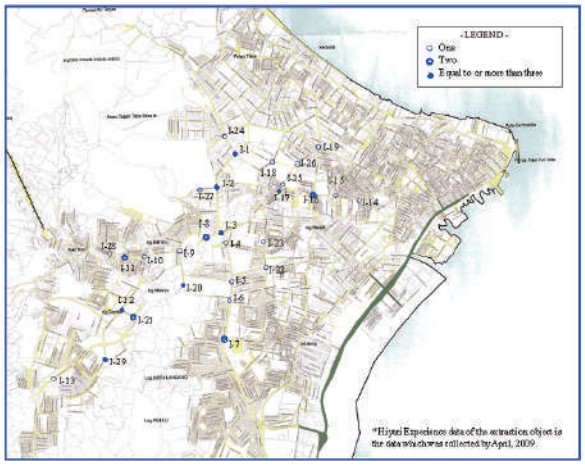


図 5－20　システムの多言語表示

③ ハザードマップ等の公開コンテンツの作成

ペナン市においてヒヤリ体験入力サブシステムから取得した一般市民のヒヤリ体験情報を基に、ペナン市版のハザードマップを作成した。図 5－21 は、作成を行ったハザードマップである。

〈交差点〉



〈街路〉

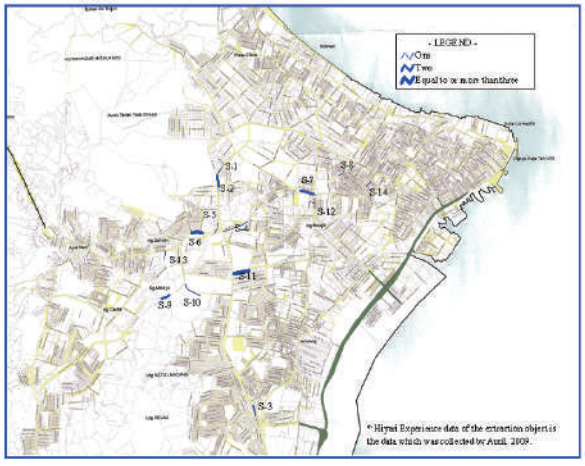


図 5－21　ペナン市ハザードマップ

④ 自治体別の交通安全情報サイトの統合と国際的なデータの共有

現行の交通安全情報サイトは各自治体別に構築されている。情報の共有化を図るために自治体別の情報サイトを 1 つに統合し、各自治体の情報(各種画像やデータベースへの接続情報など)は各自治体フォルダを使用し、選択された自治体の交通安全情報の切り替えを行うようした。これにより、1 つの Web ページより、他の自治体の情報が閲覧可能となった。図 5－22 は、交通安全情報サイトの統合と新システムの構造を示したものである。

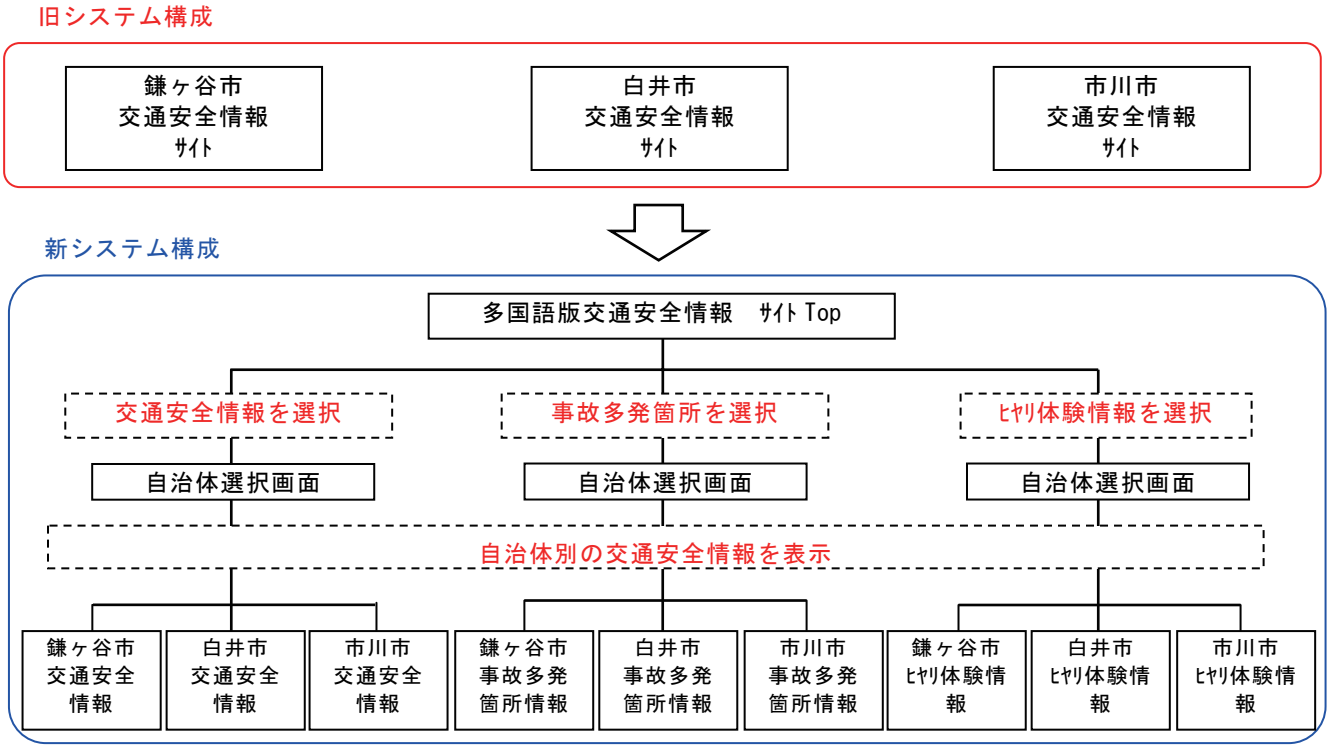


図 5－22　情報サイトの統合化

⑤ 既存のデータベースから取得する項目の文字翻訳機能

他の言語圏から見た場合に既存のデータベースから取得する項目が翻訳されなければデータの共有ができない。データベースから取得する項目も他の言語圏において翻訳された内容での表示を行うため、「Google 翻訳 API」を使用して自動的に選択された言語に翻訳を行う機能を追加した。図 5－23 は、自動翻訳する前と自動翻訳された後の項目を表示した図である。

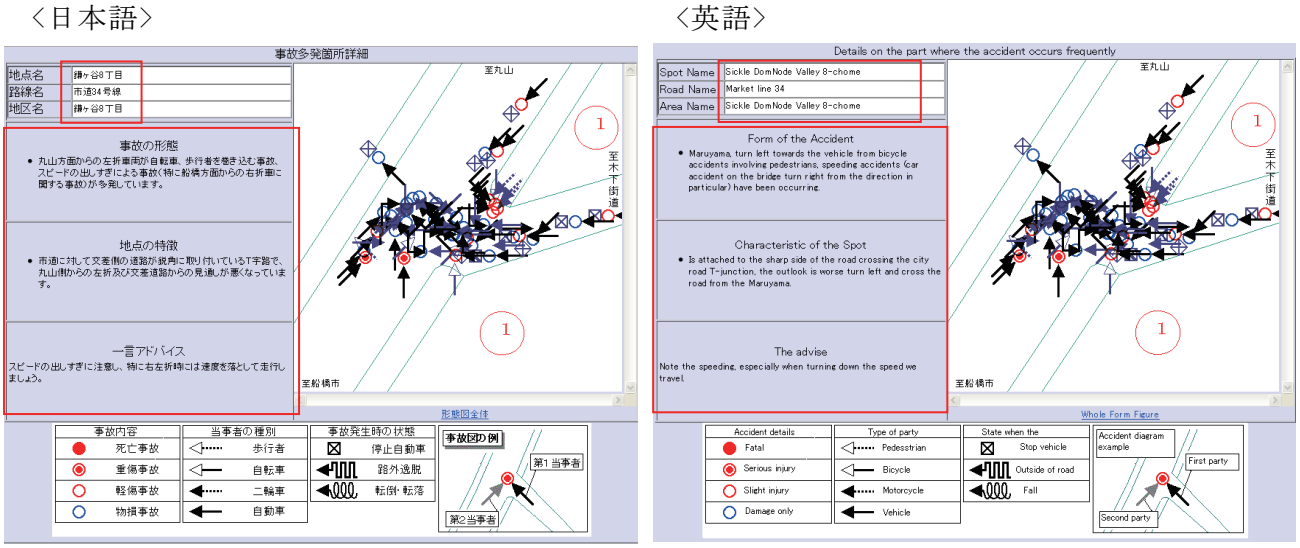


図 5－23　翻訳機能

6. ペナン市における調査の状況

ペナン市へ 6 回渡航し、現地でのワークショップや調査を実施した。加えて、メールやスカイプを使って、日本国内からペナン市の担当者へのフォローアップを行った。

	日程	調査内容	関係資料
第 1 回渡航	09/05/31 ～09/06/04	・趣旨説明とパイロット調査の結果報告（ワークショップ） ・調査スケジュールと本格導入方針の確認 ・予算要求と体制確認	第 1 回渡航報告書（P84 参照）
第 2 回渡航	09/07/12 ～09/07/16	・ペナン市長ブリーフィングとパイロット調査の結果報告 ・システム本格導入の確認と調整 ・関連データ(ヒヤリハット、事故、GIS)の収集方法の協議	第 2 回渡航報告書（P102 参照）
第 3 回渡航	09/09/01 ～09/09/05	・事故データの収集･入力方法の打合せ ・ヒヤリ体験アンケート実施の説明、協力依頼(ワークショップ)	第 3 回渡航報告書（P138 参照）
第 4 回渡航	09/12/06 ～09/12/10	・対策対象箇所の選定 ・交通調査方法の打合せ ・対策対象箇所の現地調査	第 4 回渡航報告書（P165 参照）
第 5 回渡航	10/01/26 ～10/01/30	・交通調査方法の指導 ・対策対象箇所の交通安全対策の検討	第 5 回渡航報告書（P175 参照）
第 6 回渡航	10/04/12 ～10/04/16	・調査結果報告	第 6 回渡航報告書（P189 参照）

6－1　第 1 回渡航時の調査概要

①　趣旨説明とパイロット調査の結果報告

市担当者に対し、パイロット調査の結果報告と、本調査の趣旨説明を実施した。

②　調査スケジュールと本格導入方針の確認

本調査のスケジュールを確認し、システムの本格導入に向けた方針を確認した。

③　予算要求と体制確認

必要な予算の要求と本調査の実施体制を確認した。

6－2　第 2 回渡航時の調査概要

①　ペナン市長ブリーフィングとパイロット調査の結果報告

ペナン市長に対してブリーフィングを実施し、パイロット調査の結果を報告した。

②　システム本格導入の確認と調整

市の担当者と打合せを実施し、システムの本格導入の確認と、導入に向けた調整を実施した。

③　関連データ（ヒヤリハット、事故、GIS）の収集方法の協議

システムおよび事故対策に必要なデータの収集方法について打合せを実施した。

6－3　第 3 回渡航時の調査概要

①　事故データの収集･入力方法の打合せ

市担当者および警察関係者と、事故データの収集・入力方法について打合せを実施した。

②　ヒヤリ体験アンケート実施の説明、協力依頼

バス会社ラピッド･ペナンでワークショップを実施し、ヒヤリ体験アンケートについて説明し、実施方法について打合せを行った。

6－4　第 4 回渡航時の調査概要

①　対策対象箇所の選定

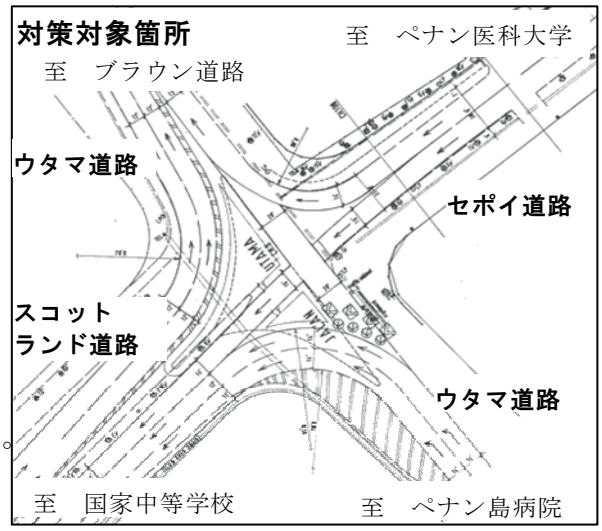
回収したヒヤリ体験より、対策対象箇所を選定した。

②　交通調査方法の打合せ

市担当者と交通実態調査の実施方法について打合せを行った。

③　対策対象箇所の現地調査

対策対象箇所を訪れ、現地調査を実施した。



6－5　第 5 回渡航時の調査概要

①　交通調査方法の指導

市担当者に対し、調査種別に調査方法の指導を行った。

②　対策対象箇所の交通安全対策の検討

回収したヒヤリ体験データと収集した事故データ、および交通実態調査結果を基に対策対象箇所の対策を検討し、対策案を策定した。

7. 調査の成果

今回の調査を実施した結果、ヒヤリ体験システムと事故分析システムに対する複数言語パックを開発し、それらを活用してデータの収集・登録を行った。このデータに基づいて対策対象箇所を選定して現地調査・対策立案プロセスを示すことができ、市民参加型交通安全対策支援システムが海外においても実務的に利用可能であることを確認した。これより、国際技術協力活動の新たなあり方を示すことができた。

7−1　交通安全対策支援システム移植のための技術開発

(1) 多国語版ヒヤリ体験入力システムの開発

① 多国語表示機能の整備

多国語表示を行う為に初期画面の言語選択と連動し、多言語パックを読み込み、表示する項目を動的に多言語対応を行うようにプログラムの変更を行った。(図 7−1 参照)

② 多国語入力対応・多国語ヒヤリ用データベースの構築

フリーワードについては、既存システムでは日本語の入力を想定しており、他言語入力時には文字化け等の不具合の発生が想定された。

フリーワードの欄に多国語の入力とそのデータの閲覧が可能となるプログラムの変更とデータベースの再設計を行った。

③ 詳細画面表示の翻訳機能の追加

多国語化に伴い Google map 上のヒヤリアイコンをクリックした際に表示される詳細画面内のフリーワードが現在選択されている表示言語と異なる場合、選択されている表示言語へ再翻訳するように機能を追加した。

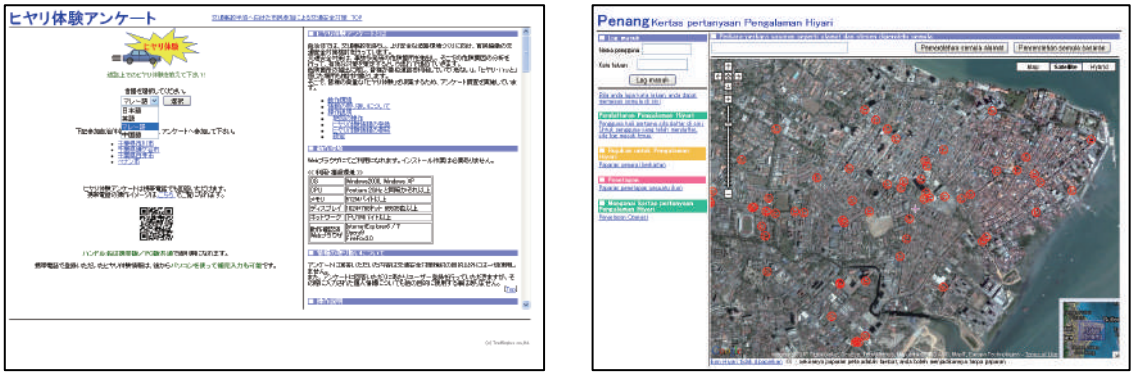


図 7−1　多国語版ヒヤリ体験アンケート入力システムの画面

(2) 英語(1byte)対応の交通安全対策支援システムの開発

① 表示項目の英語表示化

システム上で表示されている項目を日本語(2 バイト)から英語表示(1 バイト)への対応を行った（図 7−2 参照)。

② マレーシアの交通事故調書への対応

現地の事故調書項目へ対応した入力画面とデータベースを構築した。事故アイコンの表示形式を追加した（図 7−2 参照)。

③　事故位置の自動登録機能の開発

GPS カメラで撮影した事故現場写真により事故発生位置を自動登録でき、現場写真と事故詳細データを連動表示する機能を開発した。

④　交通事故データの収集とデータベースへの登録

警察より交通事故データを収集し、パイロット地区の事故データベースを整備した。

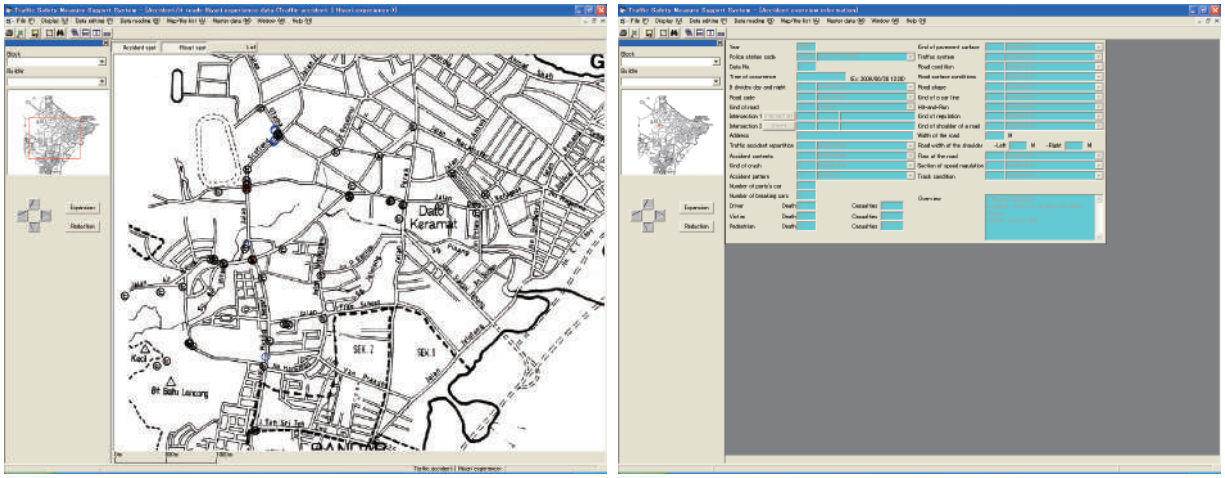


図 7－2　多国語版交通事故分析システムの画面

(3) 多国語版交通安全情報サイトの開発

①　多国語表示機能の整備

初期画面の言語選択と連動し、多言語パックを読み込み、表示する項目を動的に多言語対応を行うようプログラムの変更を行った（図 7－3 参照）。

②　国際的なデータの共有に対応

現在の「交通安全情報サイト」はサイトの入口が自治体ごとに分かれており、自治体間の情報共有が困難であった。複数の国および自治体の情報の共有が可能となる Web サイトを構築した（図 7－3 参照）。

③　ハザードマップコンテンツの更新

ハザードマップは市民へのフィードバックを目的としたコンテンツのため、断続的な情報の更新が必要である（図 7－4 参照）。

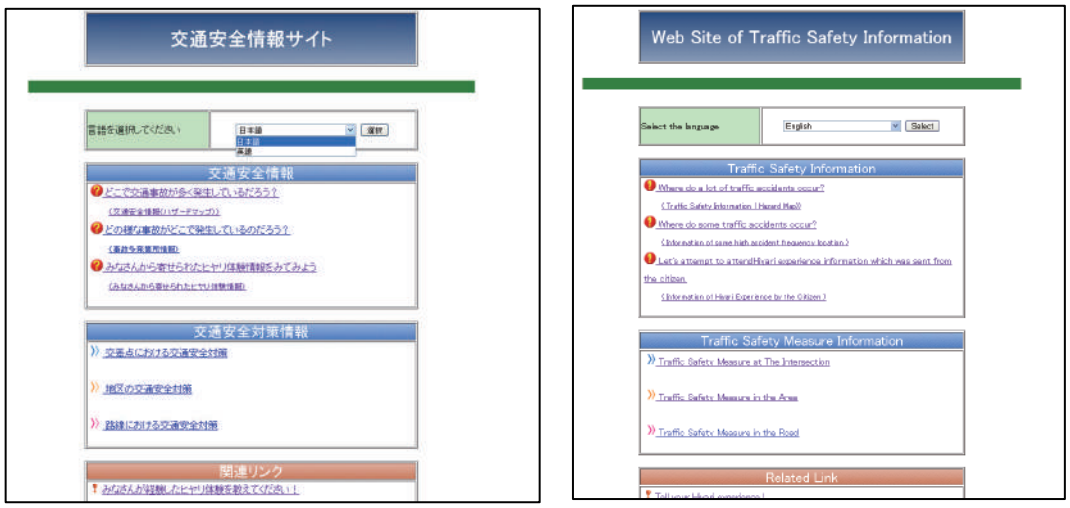
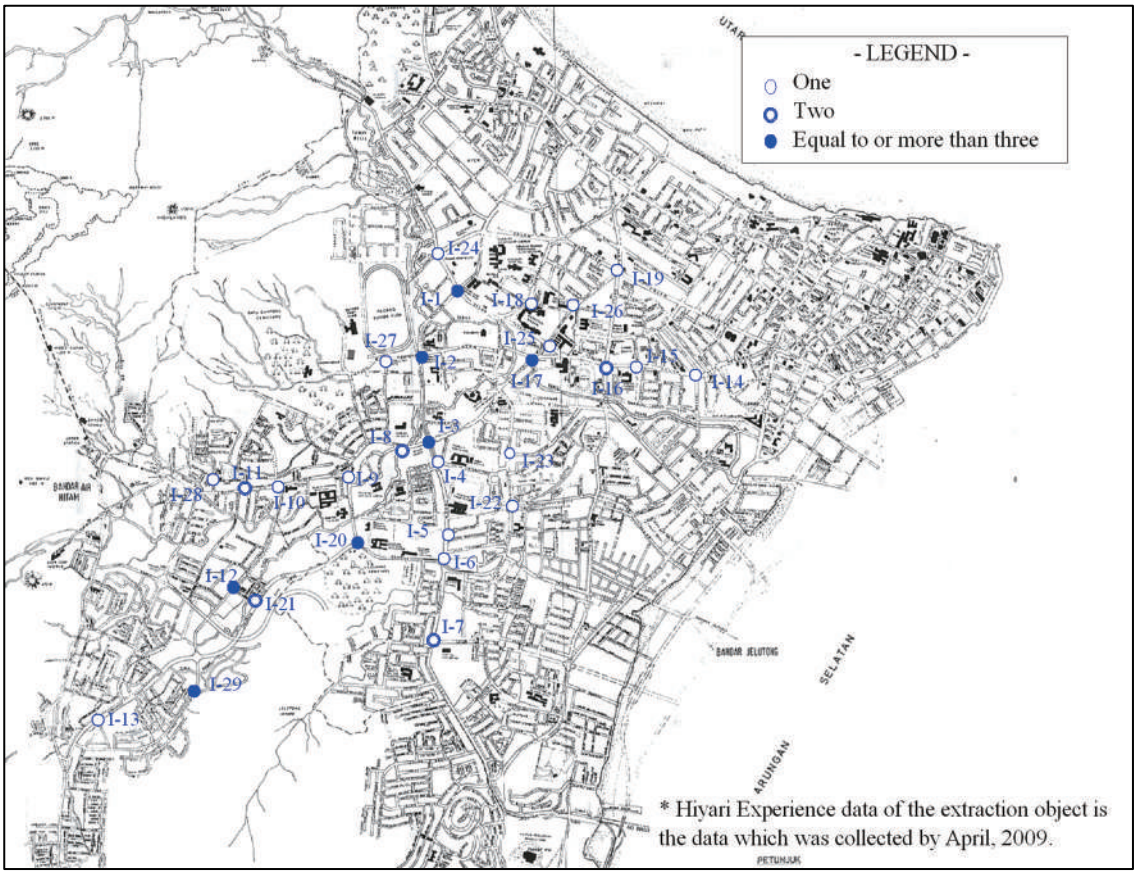


図 7－3　多国語版交通安全情報サイトの画面

【交差点】



【街路】

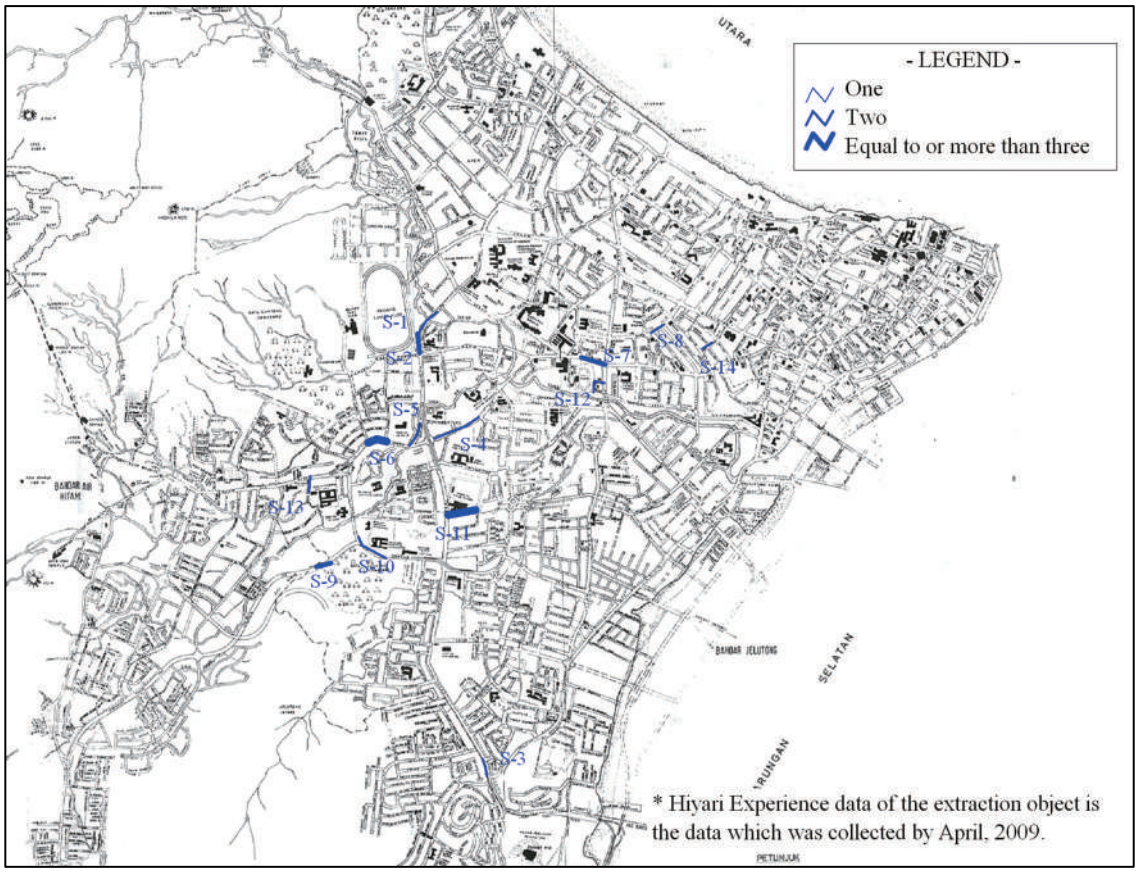


図 7－4　ペナン市交通安全ハザードマップ

7－2　スコットランド道路への適用報告

パイロット地区であるスコットランド道路において対策検討箇所を選定し、交通実態調査を実施し、事故発生要因の分析と対策の検討を実施した。詳細は次のとおりである。

（1）対策対象箇所の選定

ヒヤリ体験データを基に、対策対象箇所を選定した。選定した箇所はブラウン道路方面とペナン島病院方面を結ぶウタマ道路と、ペナン医科大学方面と国家中等学校方面を結ぶスコットランド道路およびセポイライン道路が交差する交差点である。

4 枝の交差点であるが、一方通行の交通運用がなされており、通行可能な方向は図 7－5 に示す 4 方向のみである。ペナン医科大学方面から国家中等学校方面、ブラウン道路方面は 1 車線、ペナン島病院方面から国家中等学校方面、国家中等学校方面からブラウン道路方面は、いずれも 2 車線の車線構成となっている。

図 7-5　対策対象箇所

(2) ヒヤリ体験および交通事故の発生状況

① ヒヤリ体験

当該交差点でのヒヤリ体験報告は全て自動車運転者の報告であり、内容は次のとおりである。

a.ペナン医科大学方面から右折していると、相手の車が高い速度で走行してきた。

b.街路樹で視界が遮られ、ペナン医科大学方面からの右折車は注意して走行している。

c.国家中等学校方面から走行する際、街路樹が視界を遮るので、前方の車に衝突しそうになる。

d.ペナン島病院方面から走行する際、歩道に衝突しそうになる。

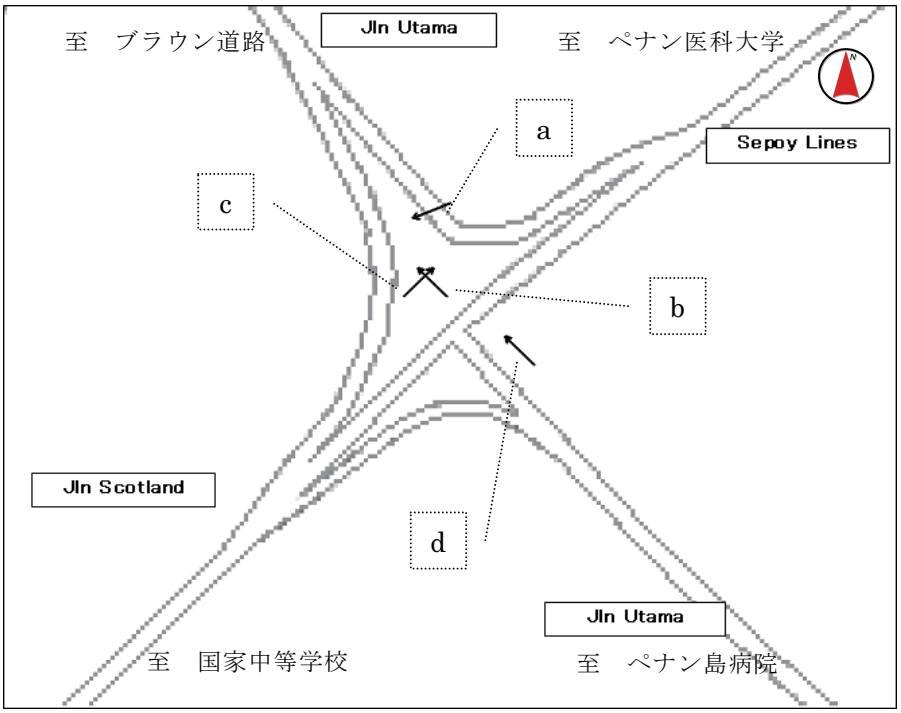


図 7－6　ヒヤリ体験状況図

② 交通事故

当該交差点での交通事故報告は 19 件であり、発生場所、内容は次のとおりである。

地点 A：国家中等学校方面からブラウン道路方面への左折通行車両とペナン医科大学方面からブラウン道路方面への右折通行車両の合流地点において、事故が集中している。車両相互の事故が 3 件、車両単独が 4 件であるが、車両単独事故は他の車両との接触回避行動に起因している。

地点 B：国家中等学校方面からブラウン道路方面への左折時、カーブ区間通行時事故が発生している

地点 C：ペナン島病院方面から国家中等学校方面への左折通行車両とペナン医科大学方面から国家中等学校方面への直進通行車両の合流地点において、事故が集中している。車両相互の事故が 5 件、車両単独が 2 件であるが、車両単独事故は他の車両との接触回避行動に起因している。

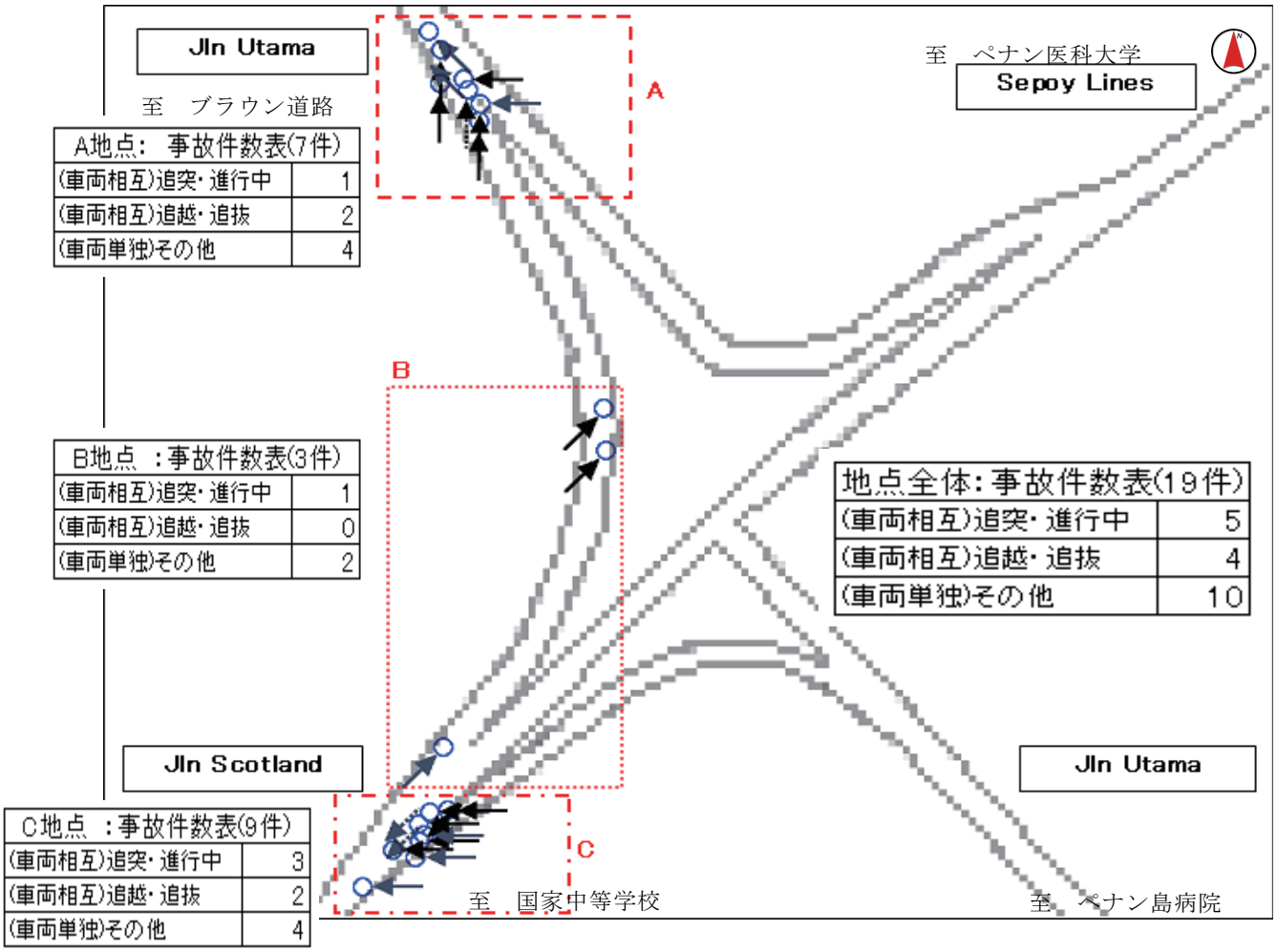


図 7－7　事故発生状況図

(3) 交通実態調査結果

① 現地踏査

現地踏査の結果は、次のとおりである。

地点ⅰ：国家中等学校方面からブラウン道路方面への左折通行車両とペナン医科大学方面からブラウン道路方面への右折通行車両の合流地点において、右折車と左折車の速度差が大きい（図 7－8　写真⑧、⑪参照）。

地点ⅱ：国家中等学校方面からブラウン道路方面への左折通行車両とペナン医科大学方面からブラウン道路方面への右折通行車両の合流後の区間において、車線変更による錯綜が著しい（図 7－8　写真⑨、⑩参照）。

地点ⅲ：国家中等学校方面からブラウン道路方面への左折通行時、見通しが悪い（次ページ写真⑥、⑦参照）。

地点ⅳ：ペナン島病院方面から国家中等学校方面への左折通行時、カーブへの流入速度が高い（図 7－8　写真③、④、⑤参照）。

地点ⅴ：ペナン医科大方面からブラウン道路方面へ右折通行時、見通しが悪い（図 7－8 写真①、②参照）。

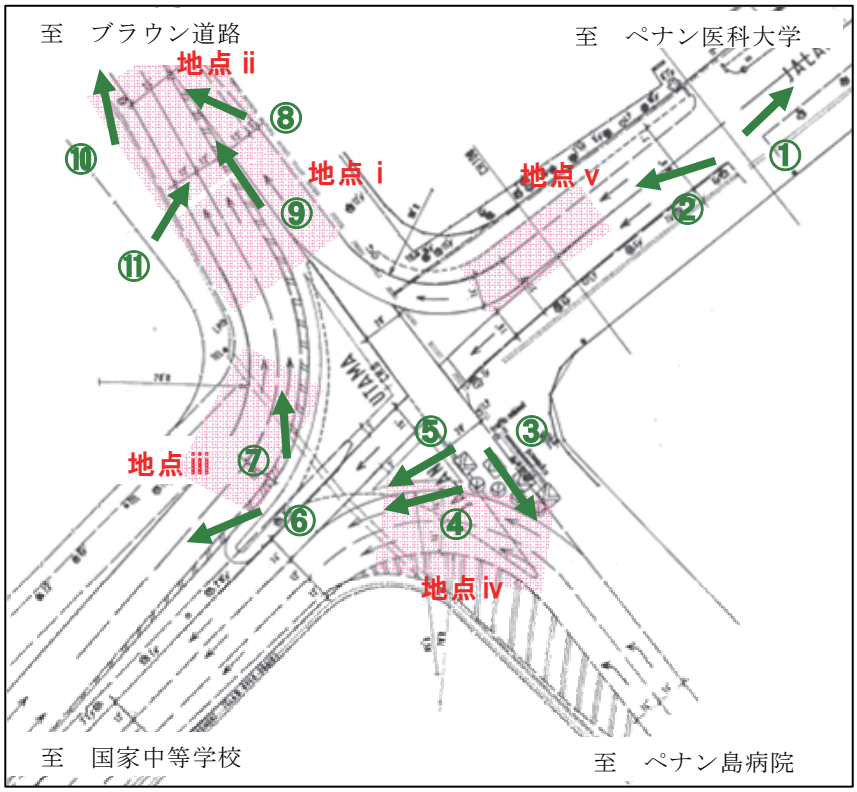


図 7－8　対策対象箇所の交通状況

② 自動車交通量調査

国家中等学校方面の断面交通量が 7,509 台/時で最も多く、次いでブラウン道路方面の断面交通量が 5,088 台/時であった。

方向別にみると、国家中等学校からの左折車が最も多く 4,767 台/時であり、他の方向に比べ非常に多い。また、同方向の大型車混入率は他方向より高い。

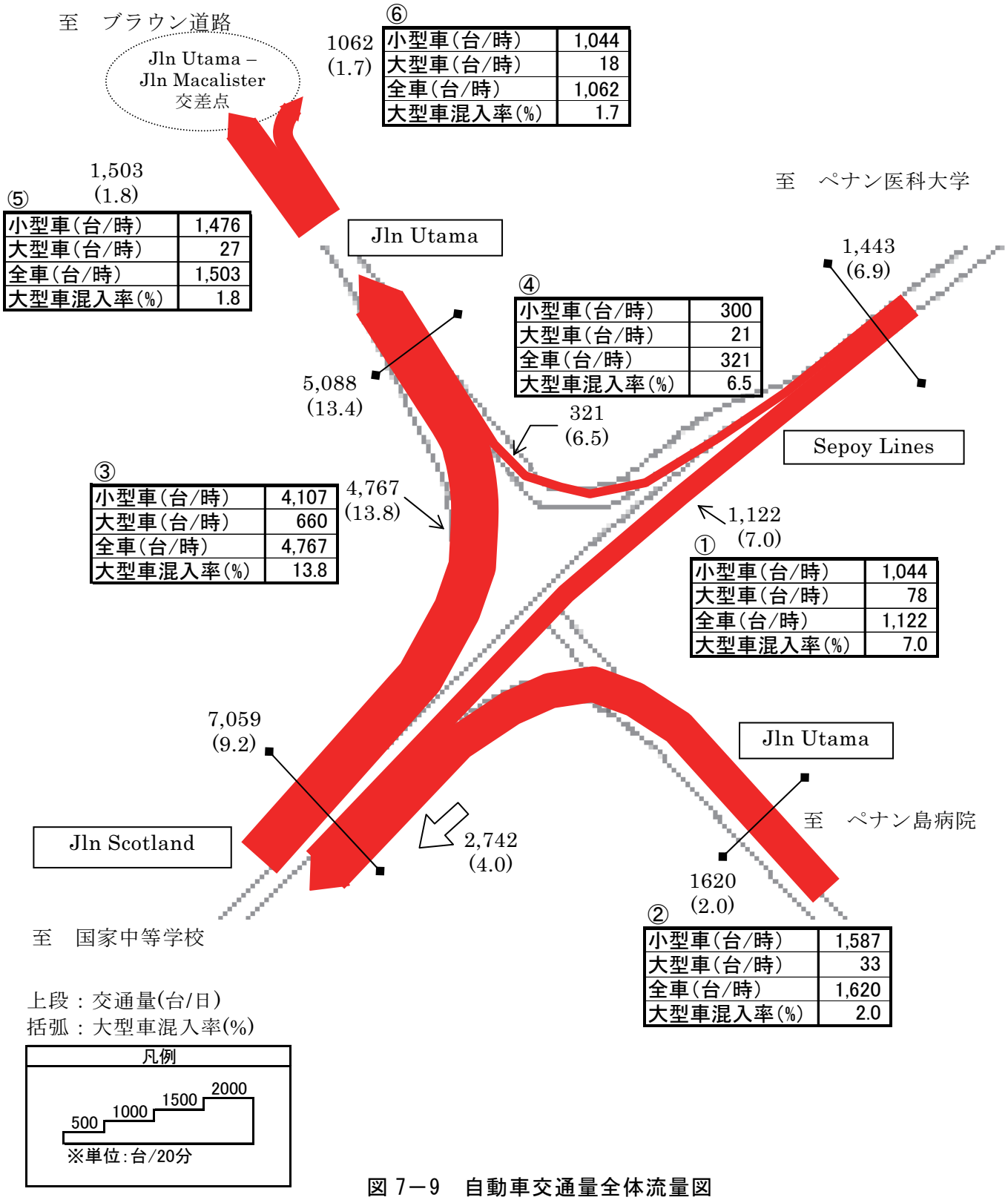


図 7－9　自動車交通量全体流量図

③ 地点速度調査

ペナン医科大学方面からの右折車と国家中等学校からの左折車の合流地点における速度差は 5.9km/h である。それに対しペナン島病院方面からの左折車とペナン医科大学方面からの直進車の合流地点における速度差は 13.2km/h であり、合流時の速度差が大きい。

ペナン島病院方面からの左折車は交差点流入時の 43.6km/h から流出時には 29.2km/h と 14.4km/h 減少し、国家中等学校方面からの左折車は 49.8km/h から 35.3km/h に 14.5km/h 減少している。カーブでの減速度合いは同じであるが、進入速度が速い国家中等学校方面が流出速度が高い。

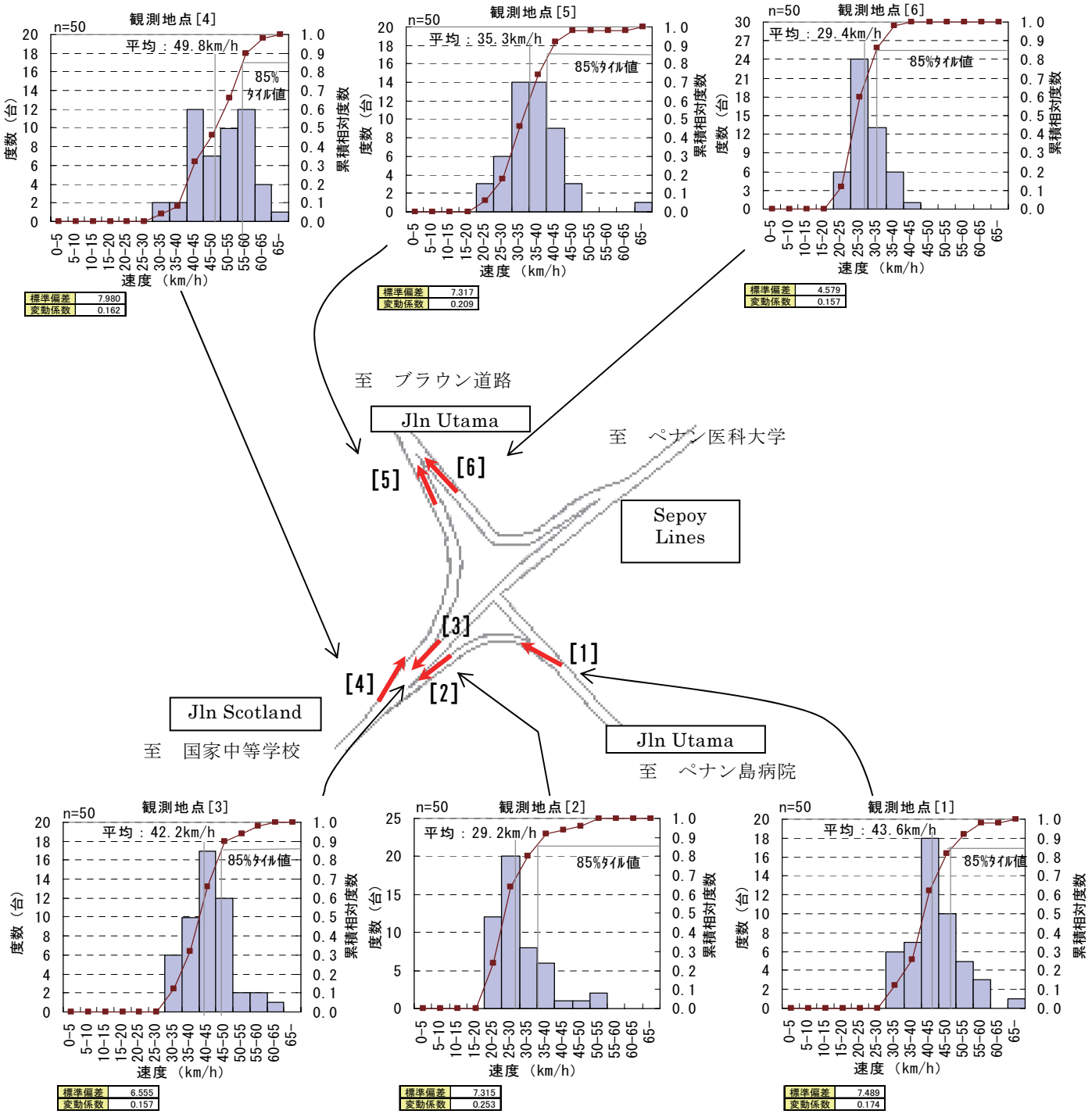


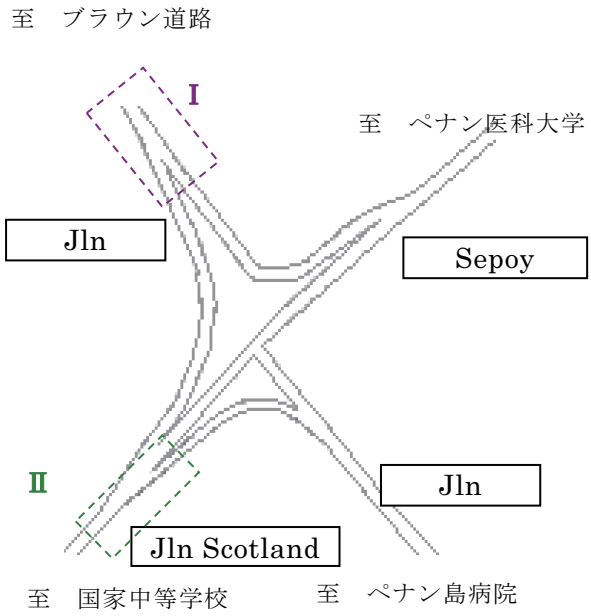
図 7－10　地点速度調査結果

④　コンフリクト調査

車線変更時にハンドルやブレーキの操作による危険回避行動が発生した回数をカウントした。

国家中等学校方面からの左折車が、ペナン医科大学方面からの右折車との合流部において車線変更禁止区間内でのコンフリクトが最も多く、第 1 車線で 58 回、第 2 車線で 91 回である。次いで同箇所の車線変更可能区間の第一車線が多い。

また、ペナン島病院からの左折車とペナン医科大学からの直進車の合流部においては、車線変更禁止区間の第 3 車線でのコンフリクトが多くなっている



Ⅰ

車線1　B区間　(回/時)

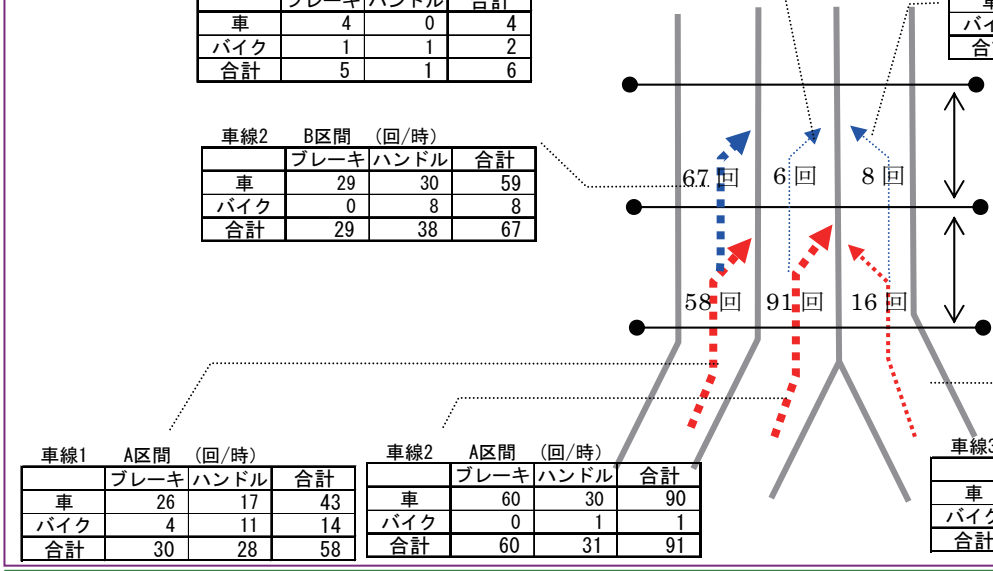
	ブレーキ	ハンドル	合計
車	4	0	4
バイク	1	1	2
合計	5	1	6

車線2　B区間　(回/時)

	ブレーキ	ハンドル	合計
車	29	30	59
バイク	0	8	8
合計	29	38	67

車線3　B区間　(回/時)

	ブレーキ	ハンドル	合計
車	5	0	5
バイク	0	4	4
合計	5	4	8



車線1　A区間　(回/時)

	ブレーキ	ハンドル	合計
車	26	17	43
バイク	4	11	14
合計	30	28	58

車線2　A区間　(回/時)

	ブレーキ	ハンドル	合計
車	60	30	90
バイク	0	1	1
合計	60	31	91

車線3　A区間　(回/時)

	ブレーキ	ハンドル	合計
車	6	8	14
バイク	0	1	1
合計	6	10	16

Ⅱ

車線3　B区間　(回/時)

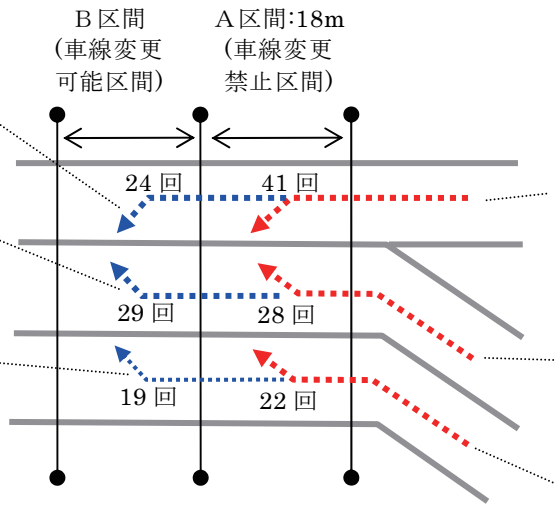
	ブレーキ	ハンドル	合計
車	15	8	23
バイク	1	0	1
合計	16	8	24

車線2　B区間　(回/時)

	ブレーキ	ハンドル	合計
車	15	11	26
バイク	1	2	3
合計	16	13	29

車線1　B区間　(回/時)

	ブレーキ	ハンドル	合計
車	13	5	18
バイク	1	0	1
合計	14	5	19



車線3　A区間　(回/時)

	ブレーキ	ハンドル	合計
車	28	7	35
バイク	6	0	6
合計	34	7	41

車線2　A区間　(回/時)

	ブレーキ	ハンドル	合計
車	9	12	21
バイク	3	4	7
合計	12	16	28

車線1　A区間　(回/時)

	ブレーキ	ハンドル	合計
車	9	8	17
バイク	1	4	5
合計	10	12	22

凡例
10 回以下
11～20 回
21～50 回
51 回以上

図 7－11　コンフリクト調査結果

（4）事故要因の特定と交通安全対策案の策定

① 現況調査・ヒヤリ状況から見る問題点の抽出

・交差点周辺部に低木が植栽されているため、地点ⅲと地点ⅴの見通しが悪い。
また、地点ⅲでの速度が高い。

・地点ⅰ，ⅱの区間での車線変更による錯綜が著しい。

・ペナン島病院方面から交差点に流入するまでの区間は直線であるため、地点ⅴへの流入速度が高い。また、ⅳの出口合流部での事故が多い。

② 交通実態調査結果による問題点と課題

・国家中等学校方面からの交通量は多く、進入速度が高い傾向にある。

・国家中等学校方面からの左折車とペナン医科大学方面からの右折車が合流する地点において、車線変更禁止区間内での車線変更車両が多く、それに伴う危険回避行動の回数が著しい。

・ペナン医科大学方面からの直進車とペナン島病院からの左折車の合流地点においては、車線変更車両は少ないが両車両の速度差が大きい。

③ 交通安全対策の考え方

表 7−1　対策方針と対策案

対策の方針	対策案
①ブラウン道路へ右左折する運転者の視界を確保	沿道に植樹されている低木を剪定もしくは伐採
②ペナン医科大学方面からの右折車と国家中等学校方面からの左折車の合流地点と合流後の錯綜の抑制	・主交通動線を国家中等学校からブラウン道路方面への左折道路とする。 ・ペナン医科大学方面からブラウン道路方面へ通行する際は非優先とし合流処理を行う。
③ペナン医科大学方面からの直進車とペナン島病院方面からの左折車の合流地点と合流後の錯綜の抑制	・合流箇所を速度差が小さくなる区間にする。
④交差点への流入速度を抑制	・薄層舗装（段差舗装）

④ 対策（案）図

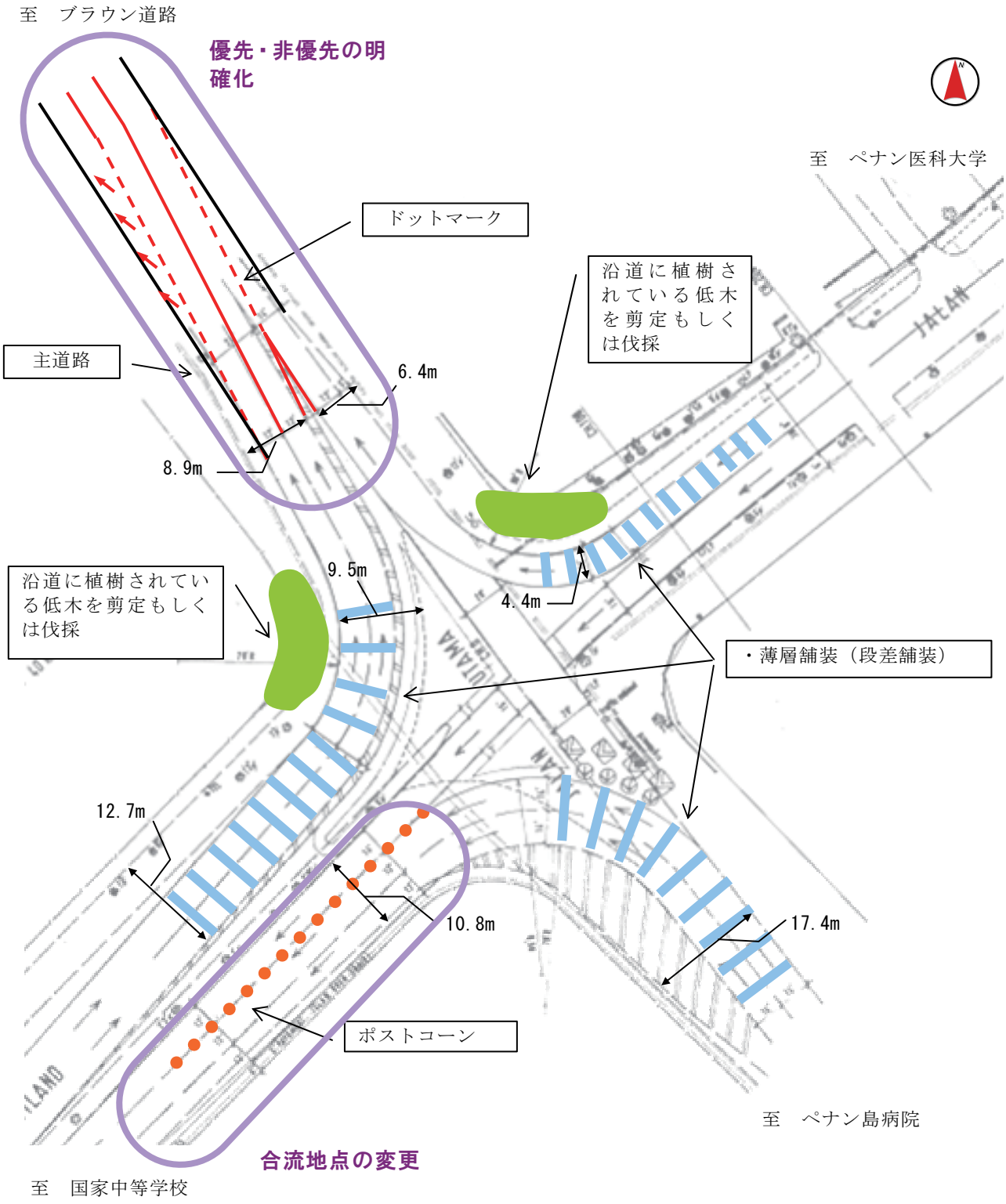


図 7－12　対策案図

(5) まとめ

このスコットランド道路とセポイライン道路が交差する交差点を、ヒヤリハット体験の指摘箇所のうち、指摘の数が最大の箇所として抽出した。そして、前項までに交通安全対策案を示したが、対策を示すことが本意ではない。ヒヤリハット体験という個人の主観的な情報を多く集め、ＧＩＳ手法を応用して客観的な情報処理に変換する。さらに対応すべき箇所の優先順位を明らかにし、対策箇所が特定できた後は「①道路・交通状況の調査および観察」「②必要な項目の交通実態調査の実施（今回は交通量調査、地点速度調査、コンフリクト調査、隣接交差点までの交通流の調査)」「③その結果に基づく対策の検討・策定」というプロセスを示すことができた。

なお、対策案はペナン市の現行の予算枠と財源を考慮し、最小限の費用を用いることを考慮した交通安全対策案を考えた。対策については、土地買収を考えての大掛かりの対策から、今回示した一部道路・交通管理で対処できる方策まで、弾力的に対応できるシステムであることを示す証左となった。

可能であれば、この対策案を実施し、その後の評価（交通流・交通現象の変化、ヒヤリ体験・交通事故の減少、および費用対効果値）まで実施すれば全プロセスになる。

残念ながら 2 年間の研究費が認められなかったので、ここまでのシステム実行提示で終わった。

8. 今後の課題

8－1 課題

① 技術的課題

・情報技術の課題は少ない

・道路・交通技術は英米豪日の技術が混在、統一性がないところも見られる

②市民参加型の課題

・“ヒヤリハット”データを市職員(一般市民として)以外に、限定的だが、バス、タクシー運転手というプロドライバーから新規の情報収集源を実施活用したが、大変有効な手段であると判断出来た。しかし、市民がヒヤリハット箇所およびその体験をした状況を思い出すことが、交通事故を未然に防ぐことになる認識が十分伝えられていないため、一般市民の協力を得られるところまでは来ていない。

③自治体の行政上の課題

・本システムは現在、ペナン市担当部署のコンピュータにインストールされ利用できる状態になっているが、これを今後交通事故データの更新やヒヤリハットデータの追加など継続的に利用して行くには、担当部局でのしっかりとした維持管理体制(担当者、予算）が必要である。この点に関しては、本調査に高い関心を示していた市長が交代したことなどもあり予算執行が実施できず、市議会での再審議を待たなければならない状況である。

・現地警察関係者もマレーシア警察本部からの制約はあるものの、交通事故関連資料の提供を積極的に行って協力してくれた。なお、事故データの本格的活用には、マレーシア警察本部の許可が必要である。

・ペナン市当局においては、これまで交通安全を専門とする交通技術者はいなかった。現在、担当技術者が、当該活動を通じて交通安全に関わる専門技術の習得過程にある。今後、市議会や警察への対応などのノウハウを獲得するための教育期間も必要である。

8－2 まとめ

・本システムをペナン市に導入するためには、当初想定していた英語への対応に加え、マレー語、中国語等の複数言語の対する言語パックの準備等の対応が必要であるとの認識を得た。本調査ではその一環としてヒヤリ体験システムと事故分析システムに対する複数言語パックを開発した。また、開発した言語パックを活用してヒヤリ体験情報を収集した。事故分析システムに事故データを登録し、稼働させた。この結果、本システムの多言語化は技術的には十分に可能であると判断できた。

・調査やデータを利用して、交通安全対策を立案する対策対象箇所を抽出し、交通安全対策を科学的に検討・立案する方法を指導することができた。

・これらのことから市民参加型交通安全対策支援システムが海外においても実務的に利

用可能であることを確認した。

・加えて日本の国際技術協力活動の新たなあり方を示せたのではないかと考える。

8－3　今後の展望

(1) 現地での展開

ペナン市においては、現在、担当局を中心に自立して当該プログラムを活用する方法を模索している。それに対する支援を日本から行うと同時に、次の点についての方策の検討と実施に向けた取組方法を模索していく。

・今後さらに、警察関係者や市議会への説明、対応等の交通安全事業を進める上で必要となる担当者のノウハウの習熟が望まれるところである。今後、これらの教育の尽力する方策がペナン市での展開には不可欠である。

・ペナン市においては、渋滞対策・駐車対策などに重きが置かれ、交通安全対策の重要性についての認識が高いとは言い難い。財源があれば両者同時の対策も可能であるが、その財源を海外援助に依存していた傾向があるので、市の財政能力の範囲で実施できる本システムの意味を理解させる必要がある。それにも増して、交通安全対策を二の次と考えていると思われるので、交通安全対策への取組みの重要性について継続的な啓蒙が必要である。

・前章で記したように、ペナン市における市民参加については、残念ながら広く一般市民から恒常的に協力を得られるところまで来ていない。さらなる時間と段階が必要であると考えている。

(2) 今回の活動を踏まえた今後の展開

今回の活動では、国際的な技術貢献の方策として箱モノの援助的な方法ではなく、専門技術をシステム化し、事業の実施プログラムを移植する事に取り組んできた。結果として、現地の受け入れ機関からは、この手法への高い評価を得ることができたと考えている。これらを踏まえ、次のことに取り組んでいきたい。

・シティネットなどの国際交流組織を通じ、本取組について、他の近隣国、韓国、中国などへ広報活動を行う。同時に、それらの国々への展開方法を模索する予定である。なかでも、韓国においては韓国交通研究院の協力で、ソウル市の郊外都市で事例研究が始まり、その地でも導入が検討されている。

・国内においても、道路・交通関連の学会誌などを通じ国際技術協力活動の新たな展開方法として、本取組を広く紹介していく予定である。

THE RESEARCH FOR TRAFFIC SAFETY PROGRAM

BY TSMSS (TRAFFIC SAFETY MEASURES SUPPORT SYSTEM)

IN PENANG, MALAYSIA

FINAL REPORT

SUMMARY
AND
RECOMMENDATIONS

MARCH 2010

INTERNATIONAL ASSOCIATION OF TRAFFIC AND SAFETY SCIENCES

PREFACE

In Malaysia, making to automotive society is moving ahead with economic growth in recent years. It accompanies to that and the increase of the traffic jam and the traffic accident becomes a social problem. Consciousness which demands their compatible is rising. Japan seems to contribute including the following for the motorization in Malaysia to develop. It is the introduction of the increase of the Japanese car which included a motorcycle, road maintenance, the traffic control and surveillance system. The technology in Japan should contribute to the traffic safety measure, too, greatly.

It aimed at the following and a main research was implemented. One is to apply “Traffic Safety Measures Support System”[TSMSS] which was studied and developed in the independent research of “International Association of Traffic and Safety Sciences” [IATSS] to Penang City in 2nd of Malaysia. Another is to develop the technique of the new international cooperation for the Asian countries that making to automotive society is moving ahead and so on.

In this research, It was possible to make us advance favorably below. It is cooperation with the local staff of the field survey with five times and so on, the collection of the accident data and Hiyari experience data, the implementation of the traffic actual condition survey, the working-out of a measures for accidents plan. We confirmed that TSMSS could be used overseas by the practice as a result of these matches. We think that we could show the new ideal way of the international technical cooperation activity in Japan.

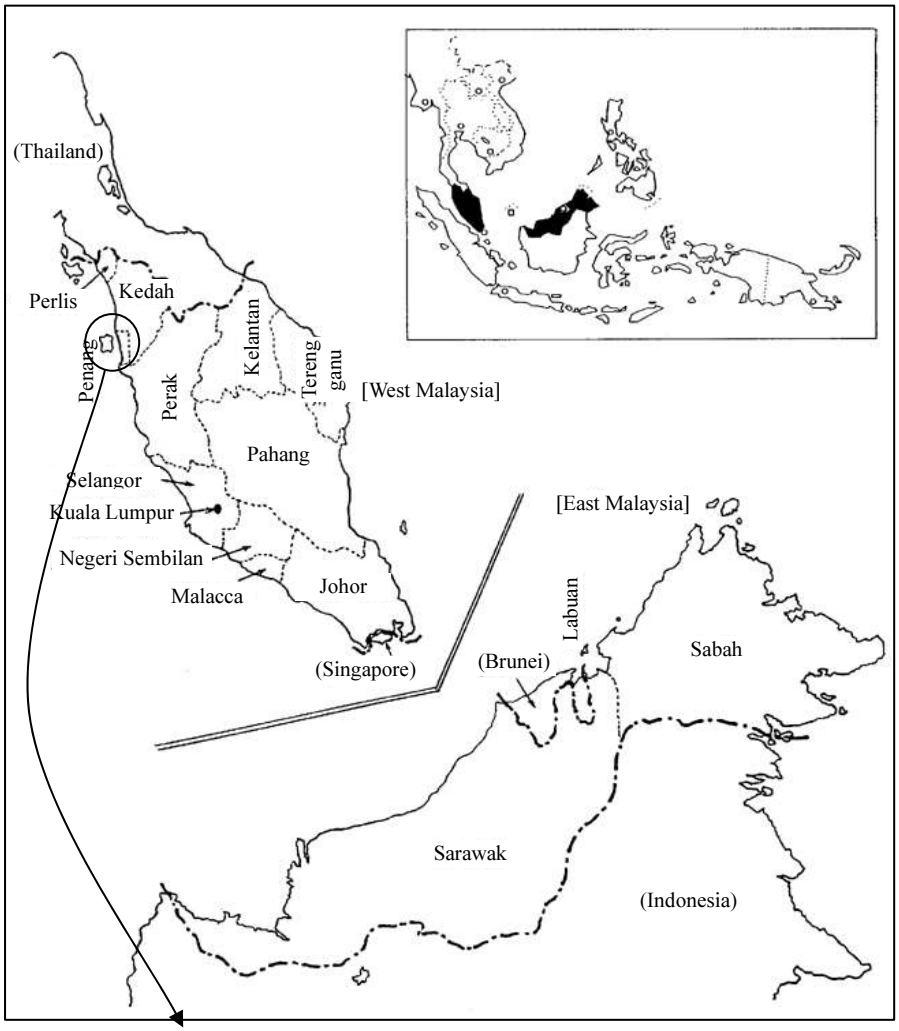
In the main research, the cooperation of Municipal Council of Penang Island and the Police Head-Quarter was above the assumption. We noticed expectations to the height of the interest in Municipal Council of Penang Island, and the experience and the results in Japan more strongly than this thing. We ask for the following. It is to get to proceed with the road safety business in the new viewpoint in Penang and Malaysia, reviewing the direction which utilizes this program, boiling Pilot investigation this time by the chance.

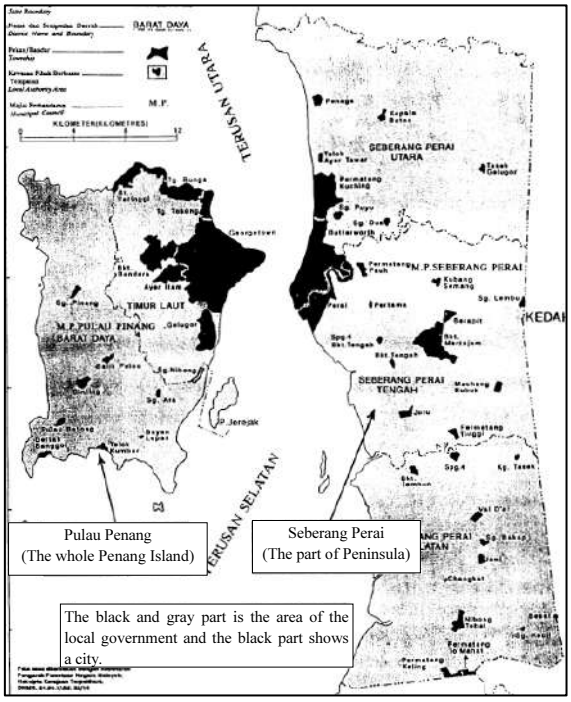
We show gratitude for Municipal Council of Penang Island relation section which implemented at the site investigation cooperatively.

March, 2010

Kunimichi TAKADA
Professor of Nihon University

LOCATION MAP





CONTENTS

OUTLINE OF THE STUDY

Background

In Malaysia, making to automotive society is moving ahead with economic growth in recent years. It accompanies to that and the increase of the traffic jam and the traffic accident becomes a social problem. The accident rates in 2005 in Malaysia are 12.6[per 1,000] and the number of the dead persons is 2.4[per 10,000]. It is twice and the quintuple degree of Japan respectively and it is quite high. Consciousness which demands their compatible is rising. Japan seems to contribute including the following for the motorization in Malaysia to develop. It is the introduction of the increase of the Japanese car which included a motorcycle, road maintenance, the traffic control and surveillance system. The technology in Japan should contribute to the traffic safety measure, too, greatly.

By the activity to being left in Penang city, the technical communication and the systematization are progressing with Municipal Council of Penang Island and the Police Head-Quarter already. It presupposes the building of the traffic safety measure which applied TSMSS. This system is applied to the area where the culture, the social-system and the language and so on are different from Japan and shows a cooperative effect. For its purpose, further thorough research and the system development are necessary.

Objective

The purpose of this investigation is the following. One is to apply “Traffic Safety Measures Support System”[TSMSS] which was studied and developed in the independent research of “International Association of Traffic and Safety Sciences” [IATSS] to Penang City in 2nd of Malaysia. Another is to develop the technique of the new international cooperation for the Asian countries that making to automotive society is moving ahead and so on.

Specifically, it reviews about the following.

[1] The reviewing of the applicability of more than one linguistic pack to the system

[2] The reviewing of the possibility of the international data sharing which is due to the Internet

[3] The diversification and the generalization of the data acquisition way and the contents from the citizen

Organization

Study Person in Charge

Project Leader Dr. Kunimichi TAKADA: Professor of Nihon University

Dr. Hirokazu AKAHANE: Professor of Chiba Institute of Technology

Dr. Tomoo KIDO: Traffic Analyst

Dr. Seiichi HORIE: Representative of Specified Nonprofit Corporation OFFICE TAPE, Adviser of CHODAI CO.,LTD

Mr. Toshihiko OYAMATSU: Technical Adviser of KG CONSULTANT CO.,LTD

Dr. Satoru KOBAYAKAWA: Associate Professor of Nihon University

Extraordinary Member of a committee

Mr. Khoo Say Boon: Director of Engineering Department, Municipal Council of Peneng Island, Malyasia

Research Collaboration Person

Mr. Shigeki NANBU : Chief Executive Officer of TRAFFICPLUS CO.,LTD

Mr. Hee Seon OH : Graduate Student of Nihon University

The Person Concerned in Penang

Ar.Hajah Patahiyah Bt.Ismail：the Mayor of Municipal Council of Penang Island

Sr.Tan Cheng Chui : the Pre-mayor of Municipal Council of Penang Island

Engineering Department

Mr.Ang Aing Thye : the Deputy Mayor of Municipal Council of Penang Island, Ex-deputy Director of Engineering Department, Municipal Council of Penang Island

Mr.Addnan Bin Mohd Razali；Senior Engineer of Traffic & Public Transport, Engineering Department, Municipal Council of Penang Island

Mr.A. Rajendran: Traffic & Transport Engineer of Traffic & Public Transport, Engineering Department, Municipal Council of Penang Island

Planning & Development Department

Mdm.Maimunah Mohd Shariff : Director of Planning & Development Department , Municipal Council of Penang Island

Mr. Mohd Shaari : Engineer of Planning & Development Department , Municipal Council of Penang Island

Officer of Penang Police Head-Quarter

DSP Loh Hang Seng : North-East Area、Manager of Public Order Division

1. INTRODUCTION

1.1 Overview of Traffic Safety Measures Creating of the Citizens Participation Type Program

(1) Overview of the program

It proceeds with “The Program for Create of Traffic Safety Measures of the Citizens Participation” as follows. First, it collects the accident data and the danger which is necessary to create a measure for the road safety, implementing the participation of the citizen in addition to the administration. Then, in the base of the data, it implements a traffic safety measure by the consensus building with the citizen.

It is the characteristic of this program.

[1] Scientific analysis by traffic accident data and Hiyari experience

[2] Information exchange and sharing in “the citizen and the administration“ or “among the citizen”

[3] The grasp of Measures effect

[4] The training and inflection of specialty engineers

The scheme of this program is shown in figure 1-1. This basic element is composed of the following item.

1) Participant of The Program

Road User, The person in charge of the road traffic administration , Traffic Expert

2) Program Support System

[1] Web System of Traffic Safety Information

・Hiyari experience input sub system (HEISS)

It reports the Hiyari experience which the road user experienced actually and it creates Hiyari map. (Possible to use both the internet and printed paper)

・Web site of traffic safety information system

Hiyari experience, the accident information and the security measures and so on can be published in the Internet. Also the citizen can send an opinion.

[2] Traffic Safety Measures Support System

The system integrates and manages of traffic accident data and Hiyari experience by GIS. Also it is a system with map display, search and made total.

3) Workshop

The area resident, the road traffic administration and the expert implement an exchange of views many times. Then, it reviews and it drafts a traffic safety measure. The resident can improve an interest in the road traffic safety. Then, they becomes accessible the understanding about the measure implementation.

(2) Characteristic of the program

The matters for which it is easy to become a problem when drafting a road traffic safety policy can be supported. It is the following.

[1] It doesn't become clear about where is a road dangerous part in the city.

[2] There is not a material to grasp the information to do a road dangerous part in the measure. It is “What is dangerous?”, “What measure is it good?” and “The cause of the traffic accident”.

[3] Information disclosure about the road traffic safety isn't done.

[4] It doesn't have the channel to hear the opinion (needs) of the citizen about the road traffic safety. So There is a difference of the recognition among the road traffic administration, the expert and the resident and being behind in the implementation of the business

This program has the following characteristic to these problems.

[1] The occurring place (according to intersection, road and area) and the contents (quantity, quality and so on) of the traffic accident which occurs frequently in the city can be searched. Then, it is possible to use for the traffic safety measure.

[2] When implementing a traffic safety measure, it specifies an accident-generation factor based on the contents of the traffic accident and Hiyari experience which occurred at the measure part and the accurate measure can be implemented.

[3] Because it makes road traffic safety information with the Web site, the consciousness uplift to the traffic safety of the citizen can be attempted.

[4] Because Hiyari experience can be collected for 24 hours through the Internet, the dangerous information at the road can be real-time collected.

[5] Moreover, to use a Web site, the communication channel to the road traffic safety between the citizen and the road traffic administration can be established.

(3) Results and Effectiveness

This program was basically developed by International Association of Traffic and Safety Sciences (IATSS). After that, we proceeded with the practical use of the program in Ministry of Land, Infrastructure, Transport and Tourism, Japan on the Program of "The technical development of new road"(2005-2007).

In Japan, it is already implemented in Kamagaya City, Ichikawa City, Shiroi City which citys are located near Tokyo and the effectivness of the traffic safety measure by this program is confirmed about the business operation, the cost performance.

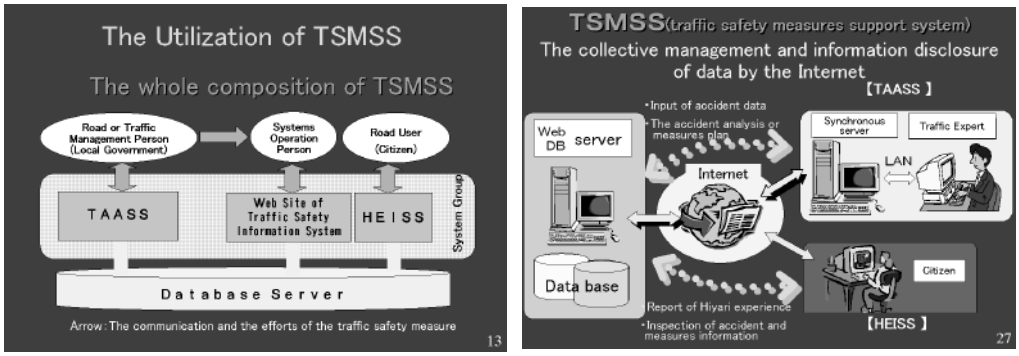


Figure 1-1 : Overview of traffic safety measures support system

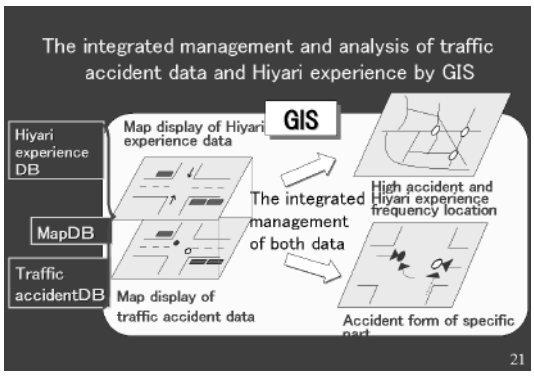


Figure 1-2 : Integrated management and analysis of traffic accident data and Hiyari experience by GIS

1.2 Occurrence Status of The Traffic Accident in Malaysia and Municipal Council of Penang Island

(1) Traffic Accident in Malaysia

In recent years, in Malaysia, the traffic accident increases remarkably and the traffic accident is increasing until 2007. The number of the traffic accidents in 2007 is 363,000 and is increasing more by 10% than 2005. The population of Malaysia is about 20% of Japan. However, the accident resulting in injury or death in 2007 is 149 per 10,000 people and is about 2.3 times Japan. (65 in Japan) Also, as for the death toll (the dead within 30 days) in Malaysia, in 2005 was 6,200. It faced to that and the death toll in Japan was 6,871(the dead within 24 hours) in the same year and was 6,023(the dead within 30 days) in 2009. In other words, it is the same number approximately. It thinks that the actual state is more serious because the car number is about 20 percent of Japan and also a lot of leakage of the accident report still exists. The people and the government recognize as the big social problem. In 2007, “Malaysian Institute of Road Safety Research” (MIROS) is established from such a thing and consciousness to the road traffic safety rises.

Table 1-1 : Comparison of traffic accident status of Malaysia and the Penang state

	Malaysia*1	Penang State (Rate)*2
Area [k ㎡]	330,252	1,030(0.3%)
Population [10000 people]	2,613	150(5.7%)
Car Ownership number [10000]	1,503	—
Road Extension[km]	71,814	—
Road Accidents	328,264	—
Road Casualties	47,012	—
Road Deaths	6,200	—

*1 It is the data in 2005. Data from the car ownership number to the dead person number was a temporary value and excerpted from the ESCAP report. (Sorce of traffic accident data: Royal Malaysian Police)
*2 It excerpted from the home page of Penang state.

Table 1-2 : Comparison of the Traffic Accident Generation Status in Malaysia and Japan

	Malaysia[1)] (2005)	Japan[2)] (2007)
Area [k ㎡]	330,252	377,923
Population [10000 people]	2,613	12,777
Road Extension[km]	71,814	1,257,000
Road Accidents （ per 1000 people)	328,264 (12.6)	886,864 (6.9)
Road Casualties	47,012	1,098,199
Road Deaths （per 10000 people)	6,200 (2.4)	6,352 (0.5)

Sorce 1) Mohamad Nizam Mustafa, Overview of Current Road Safety Situation in Malaysia, UNESCAP, 2006
2) The Ministry of Internal Affairs and Communications, Bureau of Statistics HP, http://www.stat.go.jp/

(2) Situation of traffic accident in Municipal Council of Penang Island

1) Traffic accident casualties

It organized the traffic accident status of Municipal Council of Penang Island to table 2-3. The time-series data can not be gotten but it finds the following. The number of the fatal accidents is decreasing but in 2008, the dead is increasing substantially. However, the accident rates except the fatal accident are about 2-3 times the serious injury accident. It is very few. (Recent Japan is equal to or more than 100 times.) This is imagined as being the purpose that a lot of accidents except the major accident aren't reported.

Table 1-3 : Traffic accidents, Death , Injured person (2007 －2008)

STATISTICS OF ACCIDENTS AND DEATH 2007－2008TYPE OF ACCIDENT	PERIOD		(-+) %
	2007	2008	
ACCIDENTS INVOLVING DEATH	97	87	-10
SERIOUS INJURY ACCIDENTS	104	156	+50
LIGHT INJURY ACCIDENTS	277	338	+22
DAMAGE TO VEHICLES ONLY	13,278	12,927	-2.3
TOTAL	13,756	13,508	-1.8

2) Generation status by type of road

Quite many accidents which occurred at the street in the city were equal to or more than 80% and occurred. It imagine that many fatal accidents are caused on the trunk road in the city. This time, the material could not be gotten

Table 1-4 : Generation status by type of road

TYPE OF ROAD	PERIOD		(-+) %
	2007	2008	
TOWN COUNCIL ROADS	11,474	11,041	-3.7
EXPRESS WAYS	381	425	+11
STATE ROADS	509	533	+4.7
FEDERAL ROADS	724	834	+15
PARKING INSIDE BUILDING	142	137	-3.5
PARKING OUTSIDE BUILDING	456	478	+4.8
HOUSING SCHEMES	65	52	-20
USM CAMPUS	5	8	+60
TOTAL	13,756	13,508	-1.8

3) Generation status by structure of road

The accident with the T-intersection is more conspicuous than the intersection above the 4 way or 5way intersection. Also, the accident near the parking space or the parking space is conspicuous , too.

Table 1-5 : Generation status by structure of road

ROAD DESIGN	PERIOD		(-+) %
	2007	2008	
ROUND ABOUT	113	92	-18
PARKING AREA	788	660	-16
STRAIGHT ROAD	8,257	8,502	+2.9
CORNER	981	879	-10
FOUR ARM JUNCTION OR MORE	994	967	-2.7
T-JUNCTION	2,568	2,331	-9.2
STAGGERED JUNCTION	2	0	-100
ELEVATED JUNCTION	0	6	-100
OTHER ROADS	49	65	+32
TOTAL	13,756	13,508	-1.8

4) Number of the accident by the day of the week

There are few numbers of the occurrence on Sunday and Friday is many tendencies in being few.

Table 16 : Traffic accident by the day of the week

DAY	PERIOD		(-+) %
	2007	2008	
SUNDAY	1,703	1,691	-0.7
MONDAY	2,069	1,954	-5.5
TUESDAY	1,940	2,006	+3.4
WEDNESDAY	1,912	1,955	+2.2
THURSDAY	1,973	1,854	+6.0
FRIDAY	2,190	2,144	-2.1
SATURDAY	1,969	1,904	-3.3
TOTAL	13,756	13,508	-1.8

5) Number of accident by the type of the car

The most occurrence about the motorcar occurs. However, it is generating about 1/3 of the motorcar accidents of the motorcycle relation, too. On the other hand, few accidents of the track relation occur. Also, there are few pedestrian-accidents. However, because many accidents in the city street occur in table 2-5, there may be many pedestrian-accidents in the fact, too.

Table 1-7 : Number of accident by the type of the car

TYPE OF VEHICLE	TEMPOH		(- +) %
	2007	2008	
MOTOR BUS	356	401	+12
BICYCLE	37	36	-2.7
TRISHAW	4	1	-75
JEEP / 4WD	477	426	-10
LORRY	697	665	-4.5
CAR	17,685	17,147	-3.0
MOTORCYCLE	5,130	5,132	+0.03
PEDESTRIAN	213	234	+9.8
TAXI / HIRED CAR	212	178	-16
MOTOR VAN	421	345	-18
OTHERS	81	85	+4.9
TOTAL	25,313	24,650	-2.6

6) Casualties by the party

The accident of the motorcycle relation (Operation, the riding together) accounts for about 70 percent of the casualty accident. Few motorcar drivers are few % and there are few. Also, the rate of the pedestrian is about 15%.

Table 1-8 : Casualties by the party

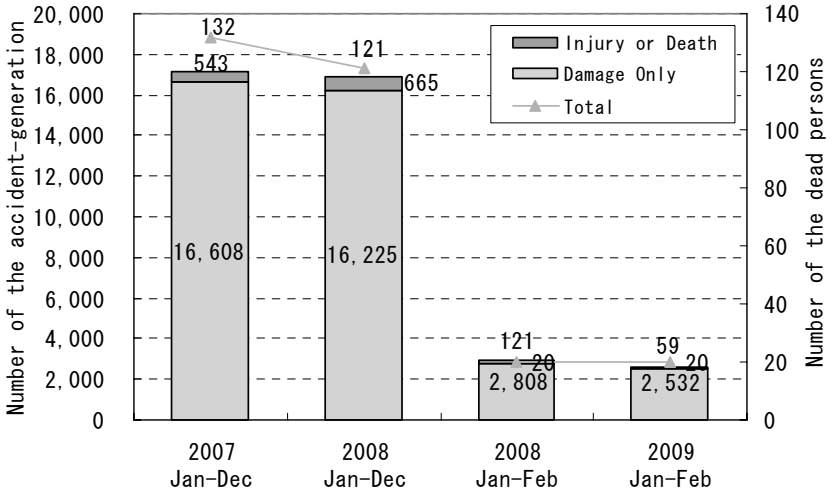
TYPE OF USER	2007				2008				(-+)
	D	S	L	TOT	D	S	L	TOT	%
MOTORCYCLIST	59	75	205	339	56	1116	258	340	+26
MOTORCYCLE PILLION	2	11	22	38	4	14	19	37	-2.6
CAR DRIVER	4	6	19	29	7	13	14	34	+17
M/KAR PASSEN-GER	2	2	6	10	1	3	8	12	+20
M / JEEP DRIVER	1			1			1	1	-
M/VAN DRIVER		1	1	2			1	1	-50
M/VAN PASSEN-GER			1	1		1		1	-
BICYCLE RIDER	4		7	11	1	5	6	12	+9.0
BICYCLE FEL-LOW PASSENGER			1	1					-100
LORRY PASSEN-GER			1	1		1		1	-
BUS PASSENGER	1			1		1	2	3	+200
PEDESTRIAN	21	19	39	79	17	10	43	70	-11
TOTAL	97	114	302	513	87	164	351	602	+17

D:Death S:Serious Injury L:Light Injury

(2) Overview of The Traffic Accident in Penang city

1) The accident resulting in injury or death and the damage only accident

It compared occurrence's number of the accident resulting in injury or death and the damage only accident in 2007 and in 2008. 120 accidents resulting in injury or death increase and 380 damage only accidents are decreased. Also, 10 numbers of the dead persons are decreased.

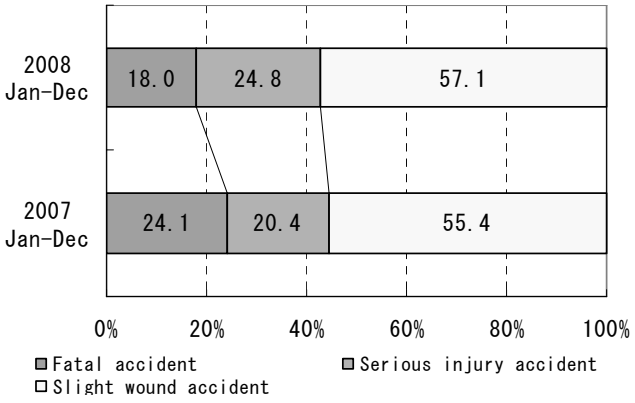


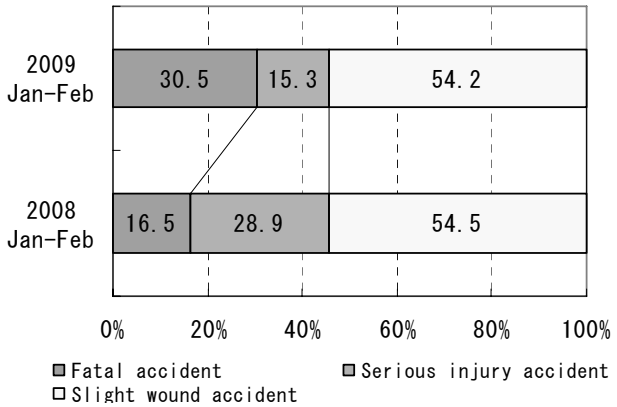
	2007 Jan-Dec (Matter)	2008 Jan-Dec (Matter)	Fluctuation (Matter)	Rate of change (%)	2008 Jan-Feb (Matter)	2009 Jan-Feb (Matter)	Fluctuation (Matter)	Rate of change (%)
Injury or Death	543	665	122	22	121	59	-62	-51
Damage Only	16,608	16,225	-383	-2	2,808	2,532	-276	-10
Total	17,151	16,890	-261	-2	2,929	2,591	-338	-12

2) The number of the accident classification

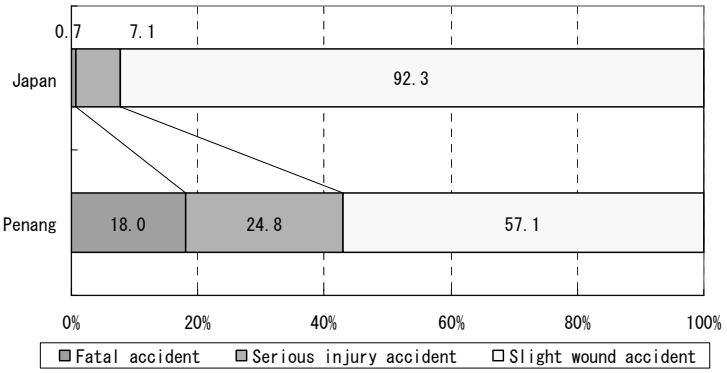
It organized the change of the accident rates of the accident classification by the Penang city in 2007 and in 2008.A fatal accident is 8% decreased but the serious injury accident is increasing by 49%.

Also, it compared with the accident rates of Japan's accident classification. It doesn't fill 10% even if Japan adjusts a fatal accident and a serious injury accident. However, The direct rate compared with Japan and it is high in the Penang city. The fatal accident is 18% and the serious injury accident is 25%.





	2007 Jan-Dec (Matter)	2008 Jan-Dec (Matter)	Fluctuation (Matter)	Rate of change (%)	2008 Jan-Feb (Matter)	2009 Jan-Feb (Matter)	Fluctuation (Matter)	Rate of change (%)
Fatal accident	131	120	-11	-8	20	18	-2	-10
Serious injury accident	111	165	54	49	35	9	-26	-74
Slight wound accident	301	380	79	26	66	32	-34	-52

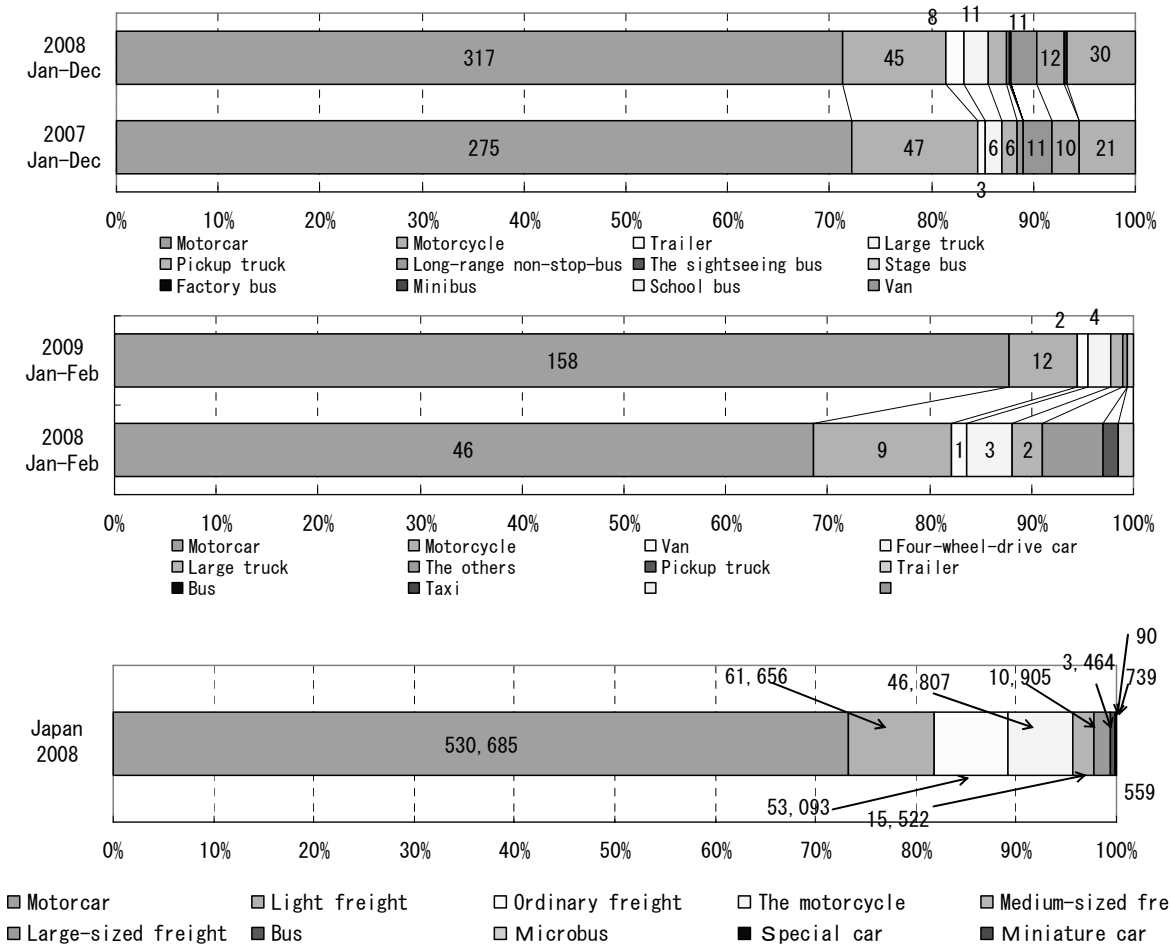


	Penang	Japan
Fatal accident	120	5,025
Serious injury accident	165	54,325
Slight wound accident	380	706,797

3) The number of the type of the car another incidents

It organized accident rates according to the type of the car in 2007 and in 2008. Most types of the car were the motorcar which accounts for 70%. Next, a lot of accidents of the motorcycle occur.

As for either, in 2008, the accident rates are dwindling. Also, when comparing with the accident rates according to the type of the car in Japan, there are in the same way most mini-cars in Japan, too, with 70%.



	2007 Jan-Dec (Matter)	2008 Jan-Dec (Matter)	Fluctuation (Matter)	Rate of change (%)	2008 Jan-Feb (Matter)	2009 Jan-Feb (Matter)	Fluctuation (Matter)	Rate of change (%)
Motorcar	275	317	42	15	46	158	112	243
Motorcycle	47	45	-2	-4	9	12	3	33
Trailer	3	8	5	167	1	1	0	0
Large truck	6	11	5	83	2	2	0	0
Pickup truck	6	8	2	33	1	0	-1	-100
Long-range non-stop-bus	2	1	-1	-50	0	0	0	0
The sightseeing bus	0	1	1	0	0	0	0	0
Stage bus	0	0	0	0	0	0	0	0
Factory bus	0	0	0	0	0	0	0	0
Minibus	0	0	0	0	0	0	0	0
School bus	0	0	0	0	0	0	0	0
Van	11	11	0	0	1	2	1	100
Four-wheel-drive car	10	12	2	20	3	4	1	33
Taxi	0	1	1	0	0	0	0	0
The others	21	30	9	43	4	1	-3	-75
Total	381	445	64	17	67	180	113	169

2. PURPOSE OF THE STUDY

It aimed at the following and a main research was implemented. One is to apply “Traffic Safety Measures Support System”[TSMSS] which was studied and developed in the independent research of “International Association of Traffic and Safety Sciences” [IATSS] to Penang City in 2nd of Malaysia. Another is to develop the technique of the new international cooperation for the Asian countries that making to automotive society is moving ahead and so on.

Specifically, it reviews about the following.

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[2] The reviewing of the possibility of the international data sharing which is due to the Internet

[3] The diversification and the generalization of the data acquisition way and the contents from the citizen

3. CONTENTS OF THE STUDY

(1) Item of The Study

[1] The application to the Penang city of TSMSS

- While assuming propriety operation in the Penang city about following year since then, it drafts the execution plan of the general technology transfer. In it, it assumes following [2], [3] and [4] as the research task with current year.
- The following technology transfer is included in the application of TSMSS. It is “the transplant and the operations support of the system” ,“the surveying plan drafting which is based on the analysis information which is gotten by the system and so on” and “the support for the traffic safety measure drafting”.

[2] The reviewing of the possibility of the applicability of the linguistic pack and the international data sharing which is due to the Internet

- It develops Traffic accident analysis sub system (TAASS) and HEISS which it is possible to use in the type language of 1 byte (English and so on) and the type language of 2 bytes (Japanese and so on) and it builds those DB. Then, it reviews those applicability.
- It does the building of the Web site which it is possible to share the road safety information internationally and the reviewing of an applicability.

[3] It tries “The optimization with accident data item”, “The data acquisition way from the citizen” and “The diversification of the contents”.

- It does the detailed reviewing of the traffic accident DB of the system in the place and a data conversion to TAASS. In the process, it reviews about the optimization and the way of the data elements of generalizing.
- It applies HEISS and it implements the following. It develops the way of collecting information about the parking on the street and the traffic jam from the citizen and it reviews an applicability. It is necessary to review a traffic safety measure.

[4] The application to the process of the security measures drafting in the administration system that the form is different from Japan

- The reviewing of the increase in efficiency means of the data entry by the positional-information merit in the accident-generation place
- The reviewing of the utilization means of the traffic safety measure drafting manual

(2) Flow of The Study

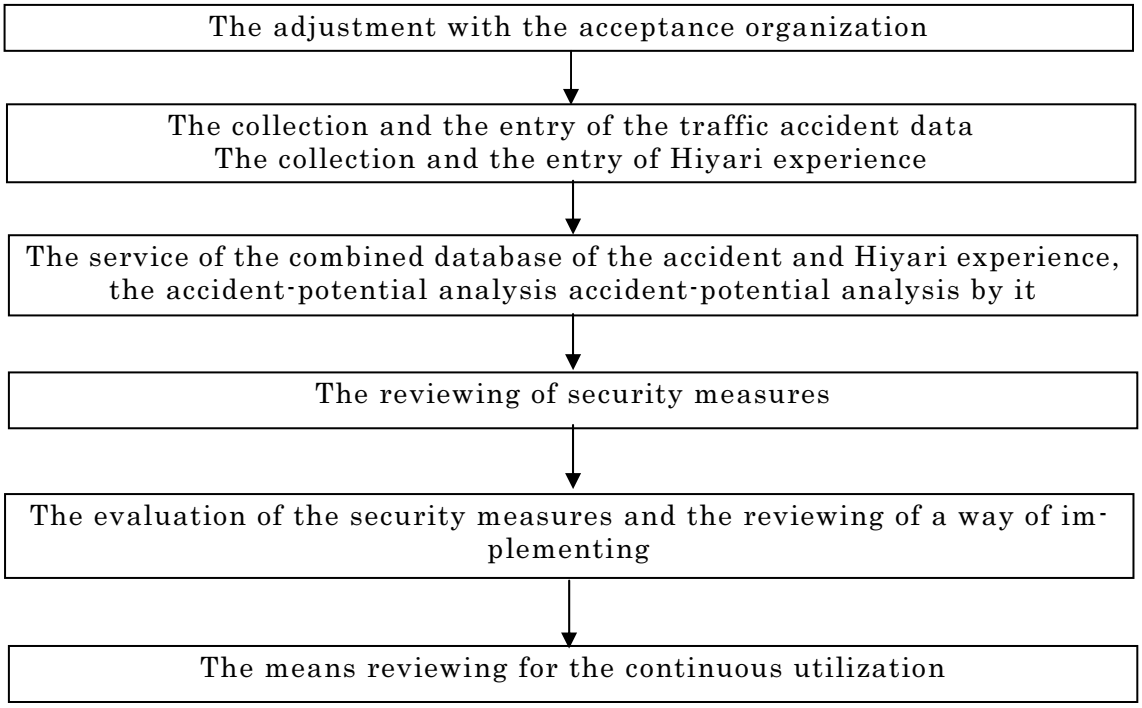


Figure 3-1 : Flow of The Study

4. APPLICATION OF THE PROGRAM FOR CREATE OF TRAFFIC SAFETY MEASURES OF THE CITIZENS PARTICIPATION IN MUNICIPAL COUNCIL OF PENANG ISLAND MALAYSIA

4.1 Preparation Status of The Study

It has confirmed the following from the result of the investigation about “THE INTERNATIONAL COOPERATION ACTIVITY WITH THE ROOT OF THE GRASS IN THE CONSTRUCTION FIELD” in 2008 (Ministry of Land, Infrastructure, Transport And Tourism).

[1] The active cooperation can be gotten from all of the departments which are related as the reporter releasing by Penang Mayor symbolizes.

[2] It got the sample of traffic accident data from the traffic police and it reviewed the detailed contents of the data. As a result, it confirmed an available thing to the measures for accidents.

[3] As a result of the meeting with Planning & Develpoment Department, Munipal of Council of Penang Island introduced GIS already and the electronic map confirmed an available thing by TAASS.

[4] As a result of the meeting with the System Department, the LAN or the environment of the internet in the agency and the use environment of the system which is serviced in Municipal Council of Penang Island are comparable more than Japan-domestic, too.

4.2 Acceptance organization

The department of Municipal Council of Penang Island which cooperated about this study is as the following.

(1) The acceptance organization

Municipal Council of Penang Island, Malaysia

(2) The related organization

Economic Planning Unit Penang State, Penang State Police Dept. Police H.Q, Penang State, Highway Planning Unit Ministry of Public Works

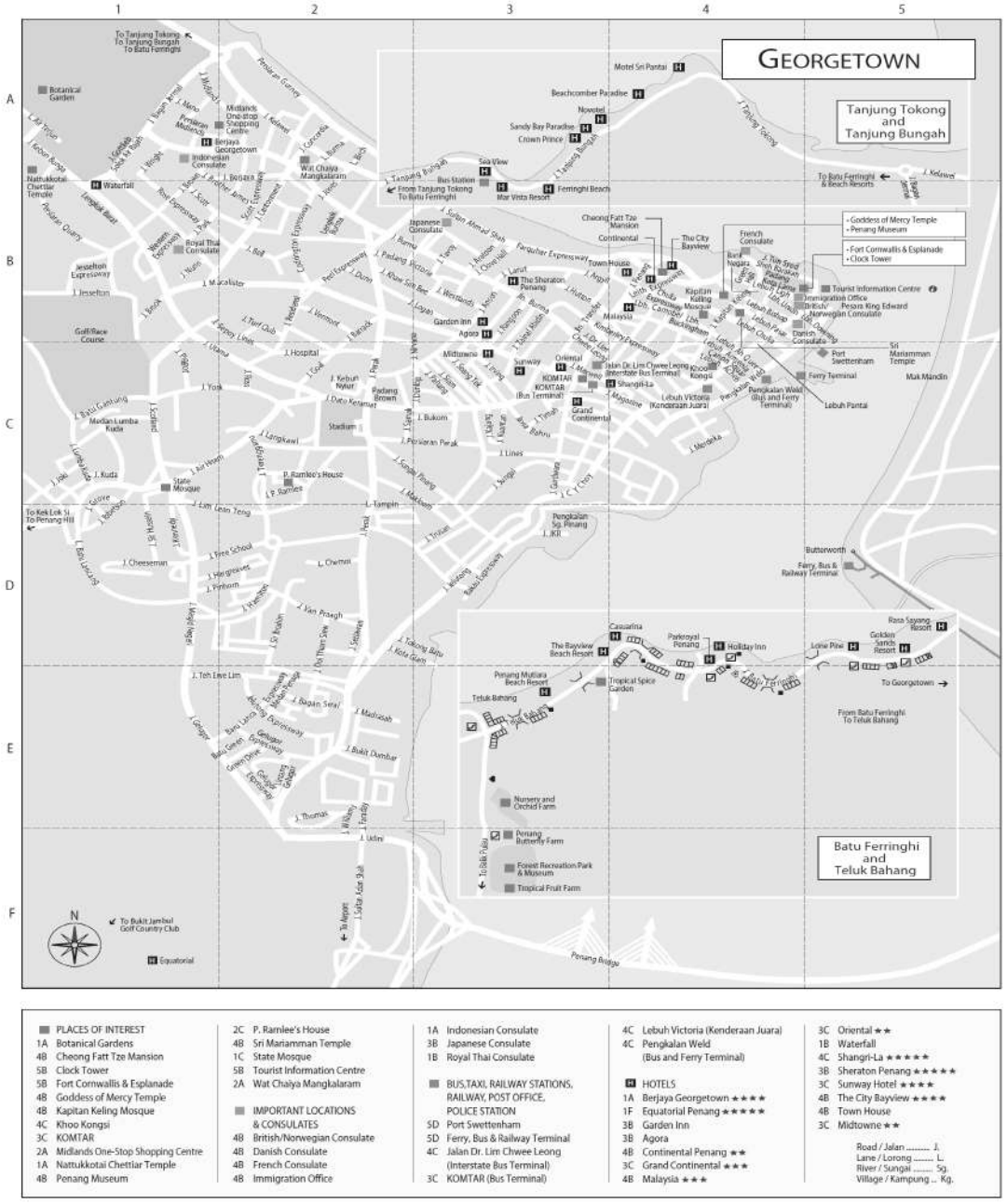


Figure 4-1 : City Map

5. STATUS OF THE STUDY

Study Team was dispatched five times to Municipal Council of Penang Island and they implemented a workshop and investigation at the site. Moreover, It supported the person in charge in Municipal Council of Penang Island from Japan-domestic using the e-mail and Skype..

	Schedule	Study Contents
1st Voyage	09/05/31 - 09/06/04	- The outline explanation and the report of the results of Pilot investigation (The workshop) - The confirmation of the investigation schedule and the propriety introduction policy - The budget request and the system confirmation
2nd Voyage	09/07/12 - 09/07/16	- Briefing with the Penang mayor and the report of the results of Pilot investigation - The confirmation and the adjustment of the system propriety introduction - The discussion of the way of collecting an associated data (Hiyari experience, the traffic accident, GIS)
3rd Voyage	09/09/01 - 09/09/05	- The meeting about the method of the collection of the accident data and an input - The explanation and the cooperation request of Hiyari experience questionnaire implementation (The workshop)
4th Voyage	09/12/06 - 09/12/14	- The selection of the measure object part - It arranges beforehand way a traffic actual condition survey. - The field survey at the measure object part
5th Voyage	10/01/26 - 10/01/30	- The guide of the traffic survey way - The reviewing of a traffic safety measure at the measure object part

5.1 Study Overview in 1st Technical Visit

[1] The outline explanation and the report of the results of Pilot investigation (The workshop)

The report of the results of Pilot investigation and the tendency of this research were described to the city person in charge.

[2] The confirmation of the investigation schedule and the propriety introduction policy

It confirmed the schedule of this research and it confirmed the policy to have paid to the propriety introduction by the system.

[3] The budget request and the system confirmation

It confirmed the request of the necessary budget and the implementation system of this research.

5.2 Study Overview in 2nd Technical Visit

[1] Briefing with the Penang Mayor and the report of the results of Pilot investigation

It implemented briefing to the Penang Mayor and it reported the result of Pilot investigation.

[2] The confirmation and the adjustment of the system propriety introduction

It implemented a meeting with the person in charge in Municipal Council of Penang Island and it implemented the confirmation of the propriety introduction by the system and the adjustment to have paid to the introduction.

[3] The discussion of the way of collecting an associated data (Hiyari experience, the traffic accident, GIS)

It implemented a meeting about the way of collecting the data which is necessary for the system and the measures for accidents.

5.3 Study Overview in 3rd Technical Visit

[1] The meeting about the method of the collection of the accident data and an input.

It implemented a meeting about the collection of the accident data and the input method with the person in charge and the law official.

[2] The explanation and the cooperation request of Hiyari experience questionnaire implementation

It implemented a workshop in bus company "Rapid Penang", Hiyari experience questionnaire was explained and it did a meeting about the way of implementing.

5.4 Study Overview in 4th Technical Visit

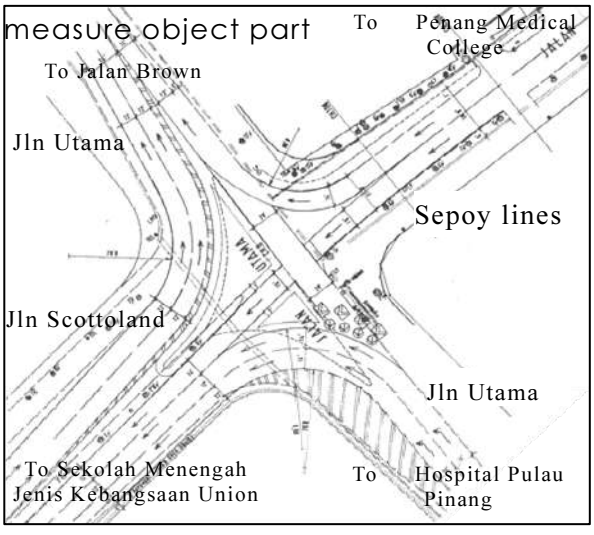
[1] The selection of the measure object part

It selected a measure object part from collected Hiyari experience.

[2] It arranges beforehand way a traffic actual condition survey.

It did a meeting about the way of implementing a traffic actual condition survey with the city person in charge.

[3] The field survey at the measure object intersection. It visited a measure object intersection and it implemented a field



survey.

5.5 Study Overview in 5th Technical Visit

[1] The guide of the traffic survey way

It guided an examination method to the person in charge to classify investigation.

[2] The reviewing of a traffic safety measure at the measure object intersection

It reviewed a measure at the measure object intersection based on the collected Hiyari experience data, the accident data and the traffic actual condition survey result. Then, it worked out a proposed measure.

6. RESULT OF THE STUDY

After implementing investigation this time, it developed more than one linguistic pack of HEISS and TAASS, and it utilized them and it did the collection and the subscription of the data.

The field survey and measure drafting process could be shown by selecting a measure object part based on this data.

Then, it confirmed that TSMSS could be used overseas by the practice.

The ideal way that the international technical cooperation activity is newer than this could be shown.

6.1 Technical Development for Transplant of Traffic Safety Measures Support System

(1) The development of many language version HEISS

[1] The service of the many language display feature

It is connected with the language choice by the initial-screen to display many languages and it reads a multi-lingual pack. Then, it changed a program in the item to display to do multi-lingual compatible dynamically. (Figure 6-1 reference)

[2] The building of many languages entry compatible and many languages frighteningly a business data base.

As for the existence system, free Word assumed a Japanese entry. Therefore, in other languages entry, it was assumed that the problems such as the garbage occur.

It did the entry of the many languages in the column of free Word, the change of the program which gets for the reading of the data to be possible and the redesigning of a data base.

[3] The addition of the translation system ability of the detailed screen-display

When free Word in the detailed screen which is displayed when clicking Hiyari icon on Google map was different from the display language which is chosen at present, it added the feature to re-translate into the chosen display language.

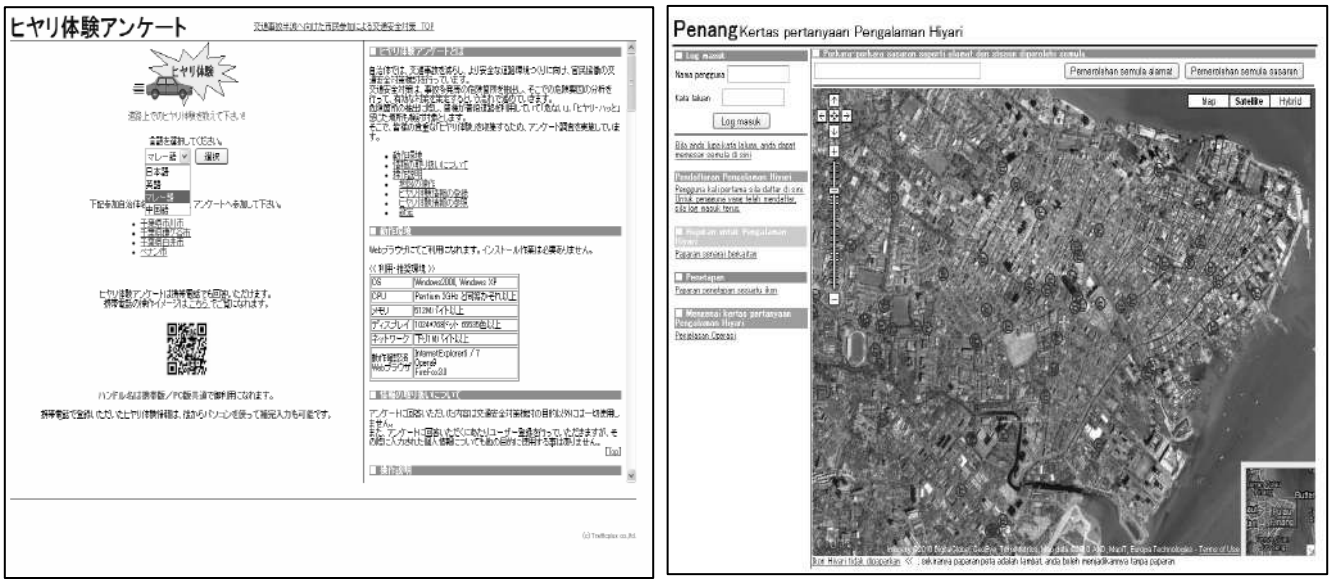


Figure 6-1 : The screen of many language version HEISS

(2) The development of TAASS of English (1byte) compatible

[1] The English display of the display item

It did compatible to English (1 byte) display about the item which is displayed in Japanese (2 bytes). (Figure 6-2 reference)

[2] Compatible to the traffic accident report in Malaysia

It built the entry screen and the data base which supported to the accident report item of the place. It added the display style of the accident icon. (Figure 6-2 reference)

[3] The development of the automatic-registration feature of the accident position

The accident-generation position can be automatically subscribed in using the crash scene photograph to have taken the photograph with the GPS camera. Then, it developed the feature to display by making a site photograph and accident detailed data be connected.

[4] The collection of the traffic accident data and the subscription to the data base

It collected traffic accident data from the police and it serviced an accident data base in Pilot area.

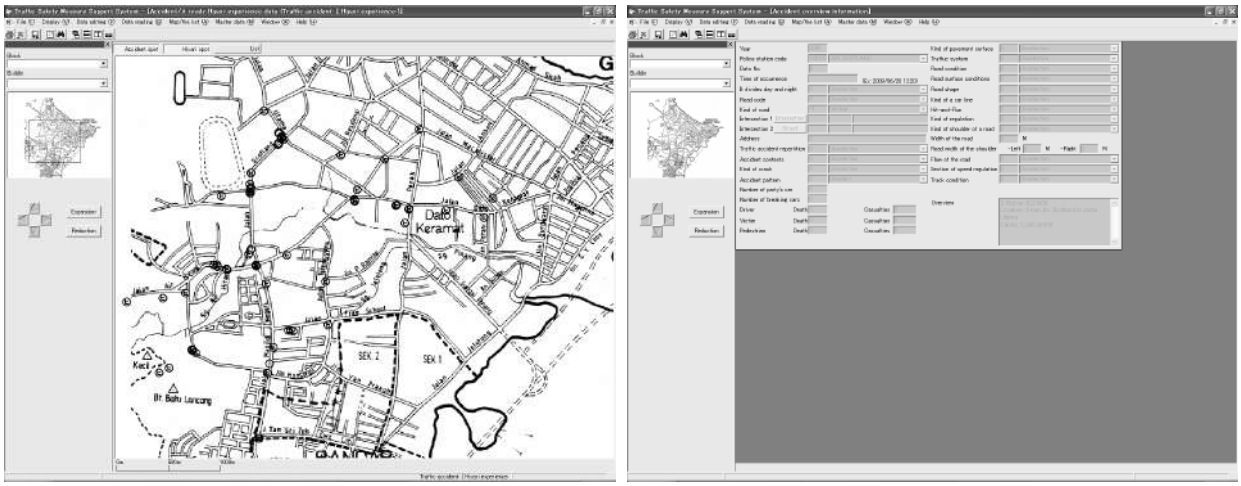


Figure 6-2 : The screen of many language version TAASS

(3) The development of many language versions Web Site of Traffic Safety Information

[1] The service of the many language display feature

It is connected with the language choice by the initial-screen to display many languages and it reads a multi-lingual pack. Then, it changed a program in the item to display to do multi-lingual compatible dynamically. (Figure 6-3 reference)

[2] It is compatible to the sharing of the international data.

Because the entrance at the site separated every local government, the information sharing by present "Web Site of Traffic Safety Information " among the local governments was difficult. It built the Web site which gets for the sharing of information about more than one country and on more than one local government to be possible. (Figure 6-3 reference)

[3] The update of the hazard map content

Because it is the content the purpose of which was to feed back into the citizen, the hazard map needs the update of the intermittent information. (Figure 6-4 reference)

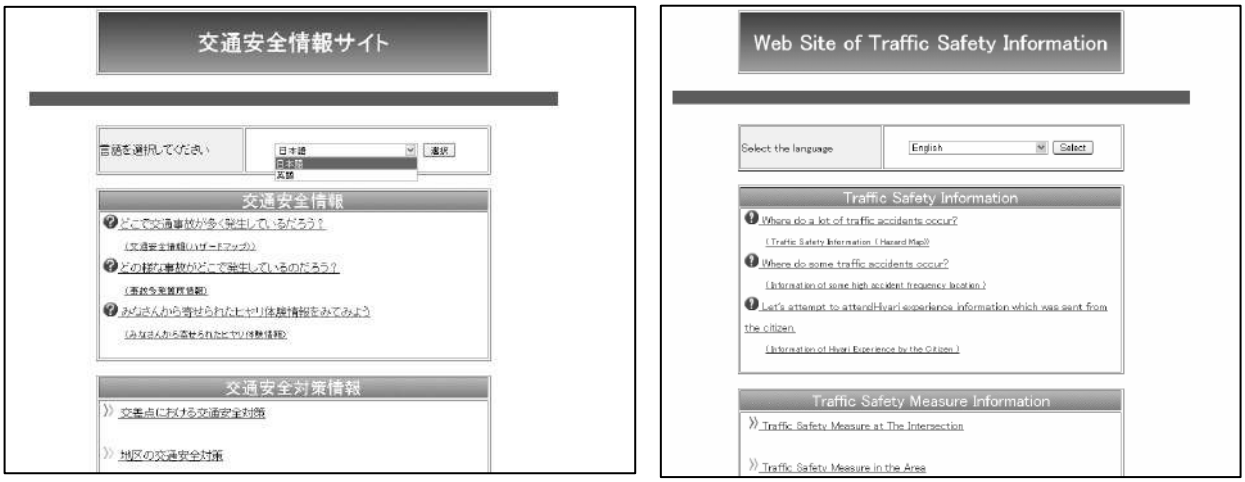
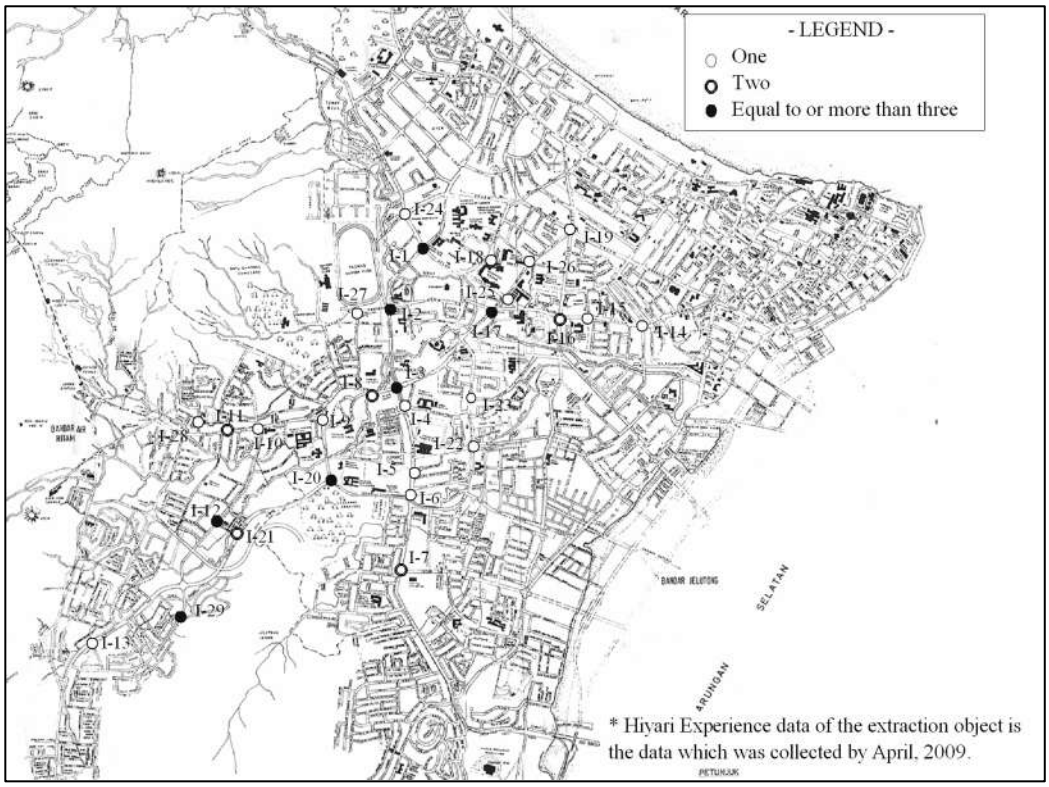


Figure 6-3 : The screen of many language version Web Site of Traffic Safety Information

【INTERSECTION】



【STREET】

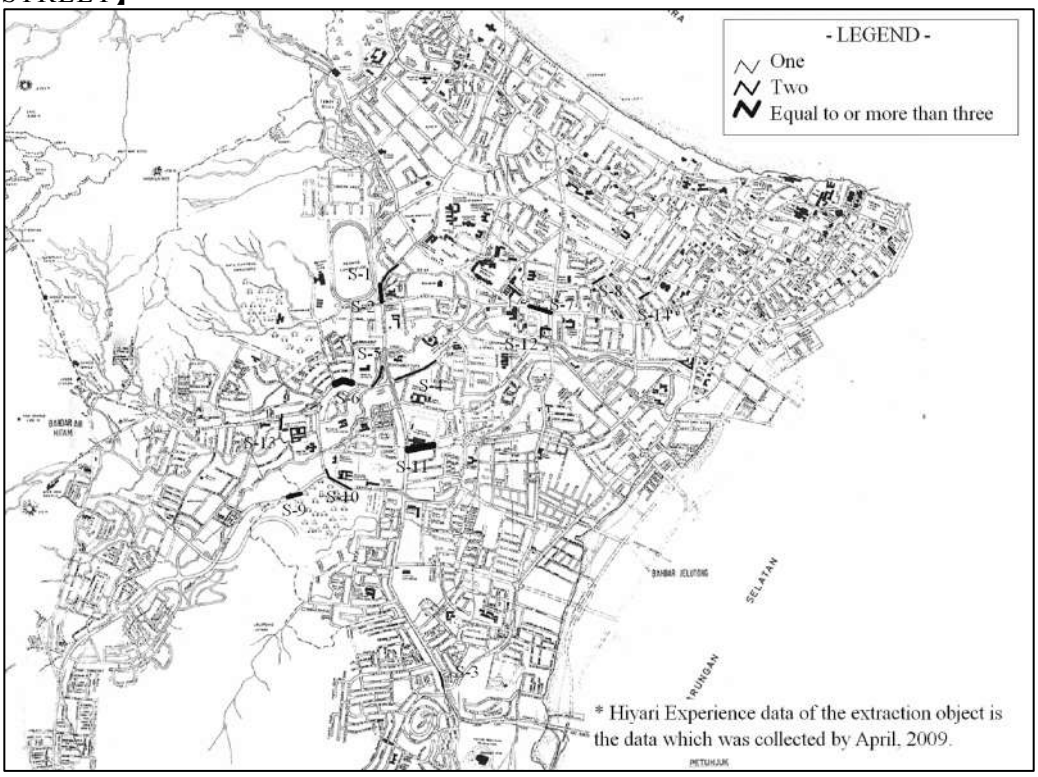


Figure 6-4 : Hazard Map of George Town, Penang

6.2 Report about The Application to Scotland Road

It selected a measure reviewing part at the Scotland road which is Pilot area and it implemented a traffic actual condition survey. Then, it implemented the analysis of the

accident-generation factor and the reviewing of a measure. The details are as follows.

(1) The selection of the measure object part

Based on Hiyari, it selected a measure object part. Jalan Utama, Jalan Scotland and Sepoy lines are an intersection. Jalan Utama is the road which links Jalan Brown area and Hospital Pulau Pinang area. Jalan Scotland and Sepoy lines are the road which links Penang Medical College area and Sekolah Menengah Jenis Kebangsaan Union area.

It is an intersection from the four directions but there is a direction of the one-way traffic, too. The direction which it is possible to pass is only the 4 directions which are shown in Fig.1. The lane from Penang Medical College area Sekolah Menengah Jenis Kebangsaan Union area, from Penang Medical College area to Jalan Brown area is 1 lane. The lane from Hospital Pulau Pinang area Sekolah Menengah Jenis Kebangsaan Union area, from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area is 2 lanes.

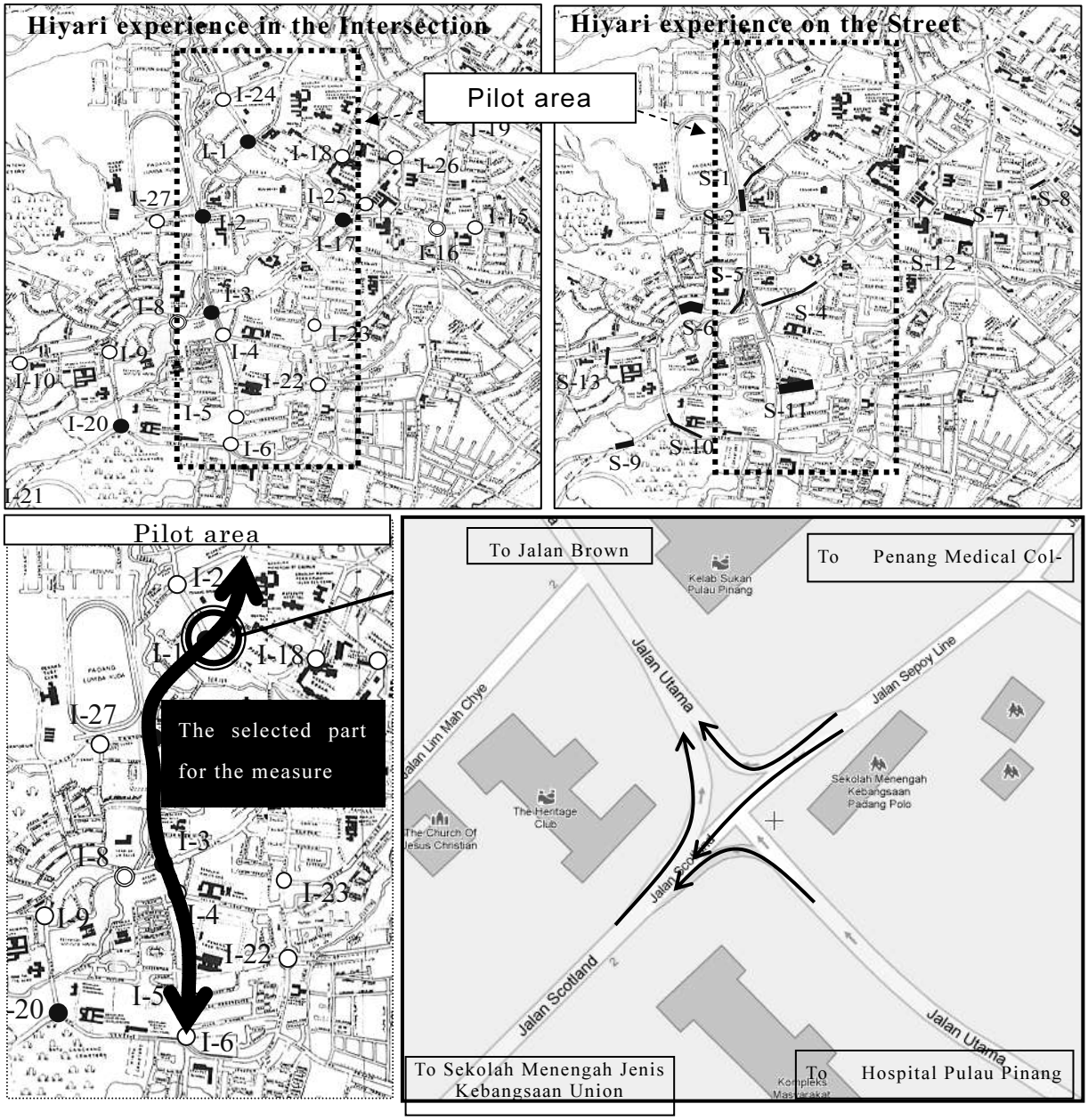


Figure 6-5 : The measure object part

(19)

(2) The generation status of Hiyari experience and the traffic accident

[1] Hiyari experience

All Hiyari experiences in this intersection are the report of the motorist and the contents are as follows.

a. When turning right from Penang Medical College area, it ran at the speed with the high car of the partner.

b. Sight is interrupted with the roadside tree, and the right turn car from Penang Medical College area is careful and is running.

c. When running from Sekolah Menengah Jenis Kebangsaan Union area, the roadside tree interrupts sight. Therefore, to collide with the in front car gets to seem.

d. When running from Hospital Pulau Pinang area, to collide with the walkway gets to seem.

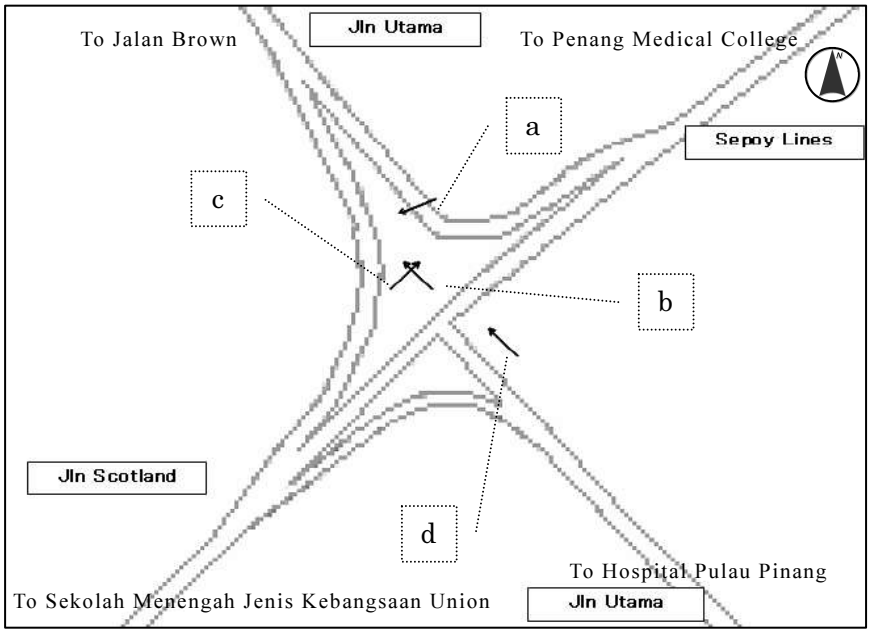


Figure 6-6 : Hiyari experience combat-sketch

[2] The traffic accident

The report of the traffic accident in this intersection is 19. It gathered an occurring place and contents next.

Spot A : The accident centers in the spot which the vehicle from the different direction joins. They are a left turn from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area and a right turn from Penang Medical College area to Jalan Brown area. The mutual accident of the vehicle is three and the vehicle independence is four. The independent accident of the vehicle is caused by the action to evade touch with the other vehicle.

Spot B : When turning left from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area, the accident in passage of the curve section occurs.

Spot C : The accident centers in the spot which the vehicle from the different direction joins. They are a left turn from Hospital Pulau Pinang to Sekolah Menengah Jenis Kebangsaan Union area and a going-straight from Penang Medical College area to Se-

kolah Menengah Jenis Kebangsaan Union. The mutual accident of the vehicle is five and the vehicle independence is two. The independent accident of the vehicle is caused by the action to evade touch with the other vehicle.

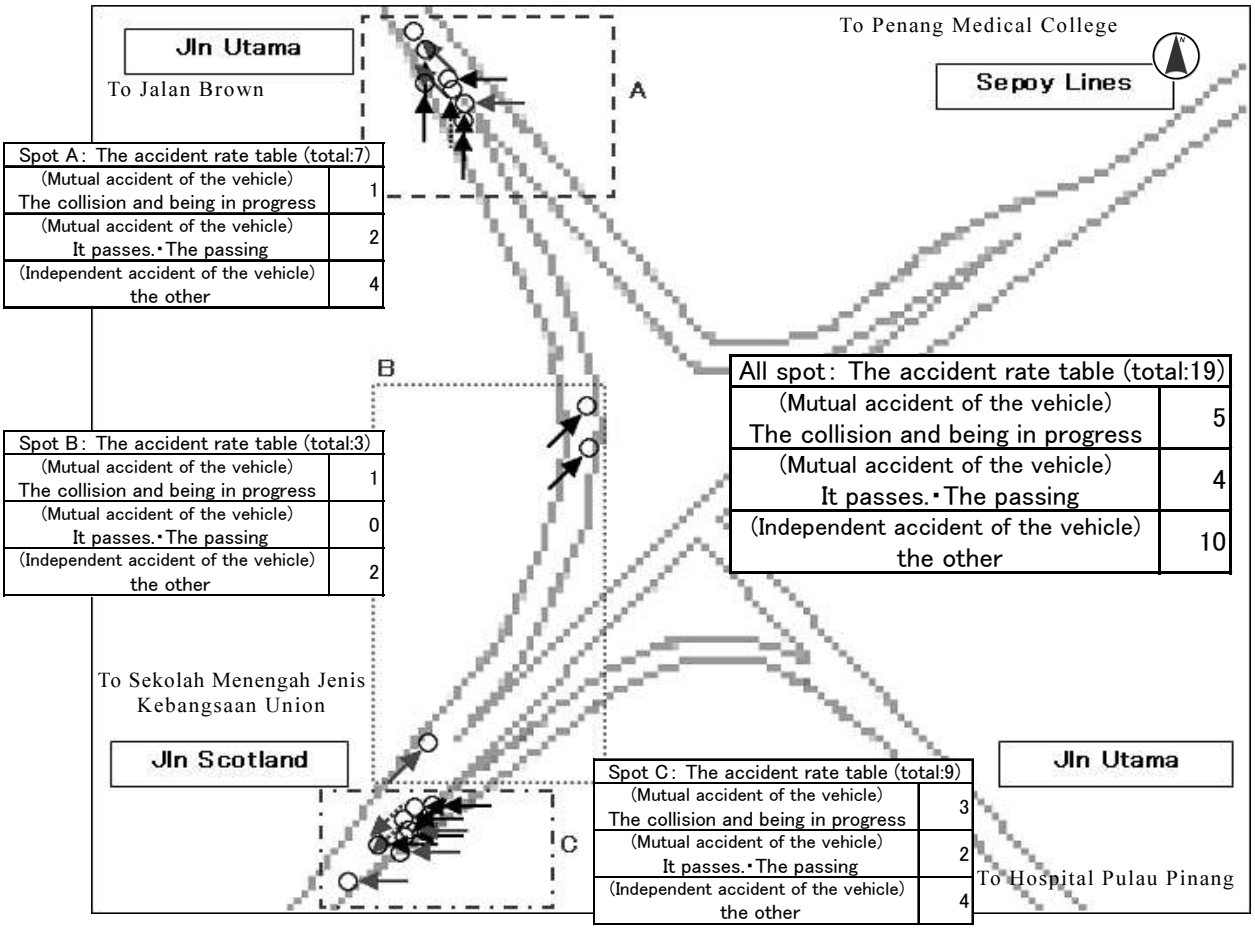


Figure 6.7 : The generation status of the traffic accident

(3) The result of the traffic actual condition survey

[1] Field reconnaissance

It organized the result of the field reconnaissance.

Spot ⅰ : There is a difference in their speed in the spot which the vehicle from the different direction joins. They are a left turn from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area and a right turn from Penang Medical College area to Jalan Brown area. (Photograph [7][10] in the next-page.)

Spot ⅱ : There are much complication by the changing lane occurs in the section which the vehicle from the different direction joins. They are a left turn from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area and a right turn from Penang Medical College area to Jalan Brown area. (Photograph [8][9] in the next-page.)

Spot ⅲ : When turning a Jalan Brown area from Sekolah Menengah Jenis Kebangsaan Union area being left, it cannot see very far ahead along this road.
(Photograph [5][6] in the next-page.)

Spot iv : When turning a Sekolah Menengah Jenis Kebangsaan Union area from Hospital Pulau Pinang area being left, The speed to enter a curve is high. (Photograph [3][4][11] in the next-page.)

Spot v : When turning a Jalan Brown area from Penang Medical College area being right, it cannot see very far ahead along this road.
(Photograph [1][2] in the next-page.)

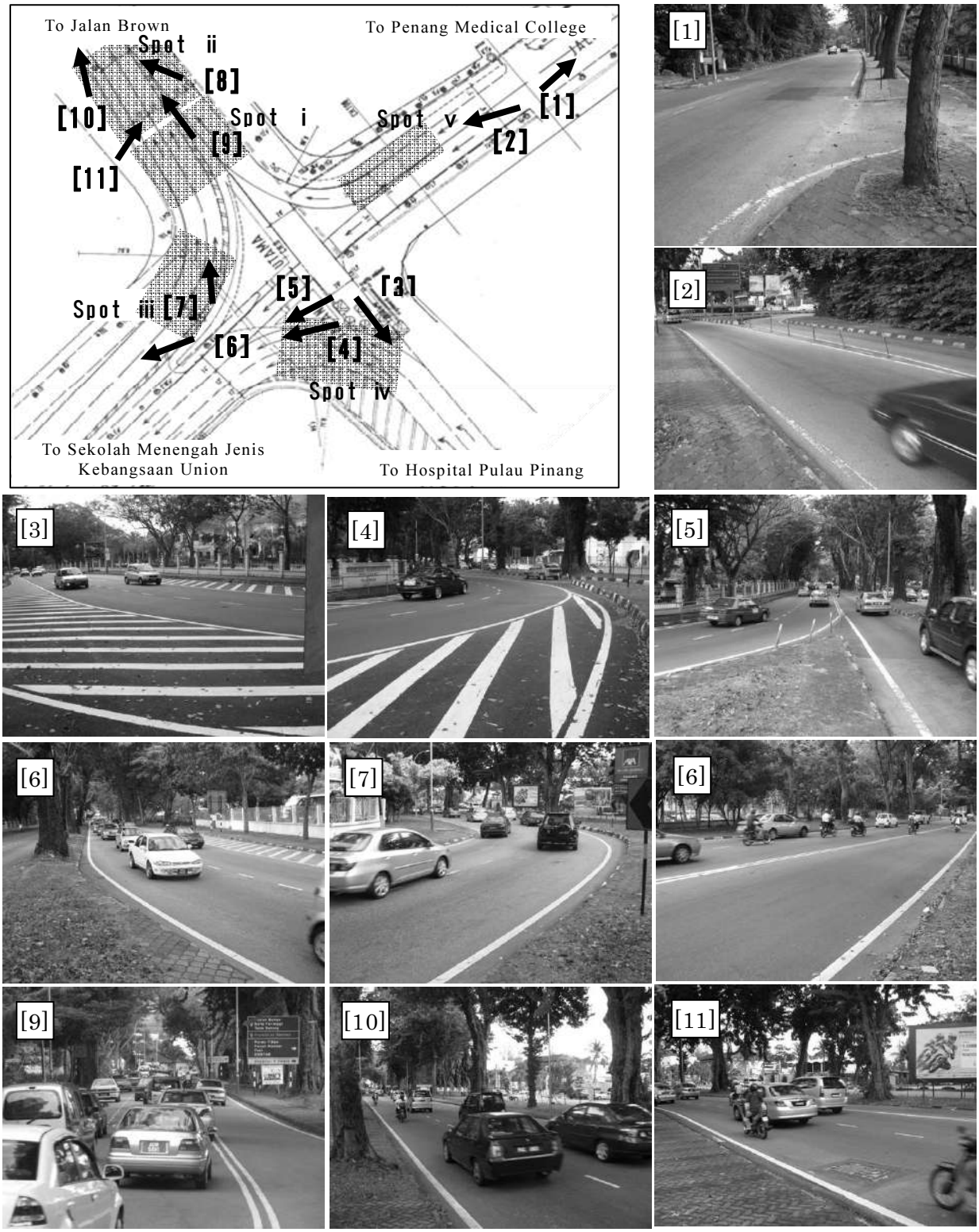


Figure 6-8 : The traffic status of the measure part

[2] The traffic quantity investigation

There were most 7,509 section traffic in the Sekolah Menengah Jenis Kebangsaan Union area at the time and the section traffic in Jalan Brown area was 5,088.

When attending according to the direction, most many left-turning vehicles from Sekolah Menengah Jenis Kebangsaan Union are 4,767, and it is extreme compared with the other direction and there are they. Also, the commercial vehicles ratio in the same direction is higher than the other direction.

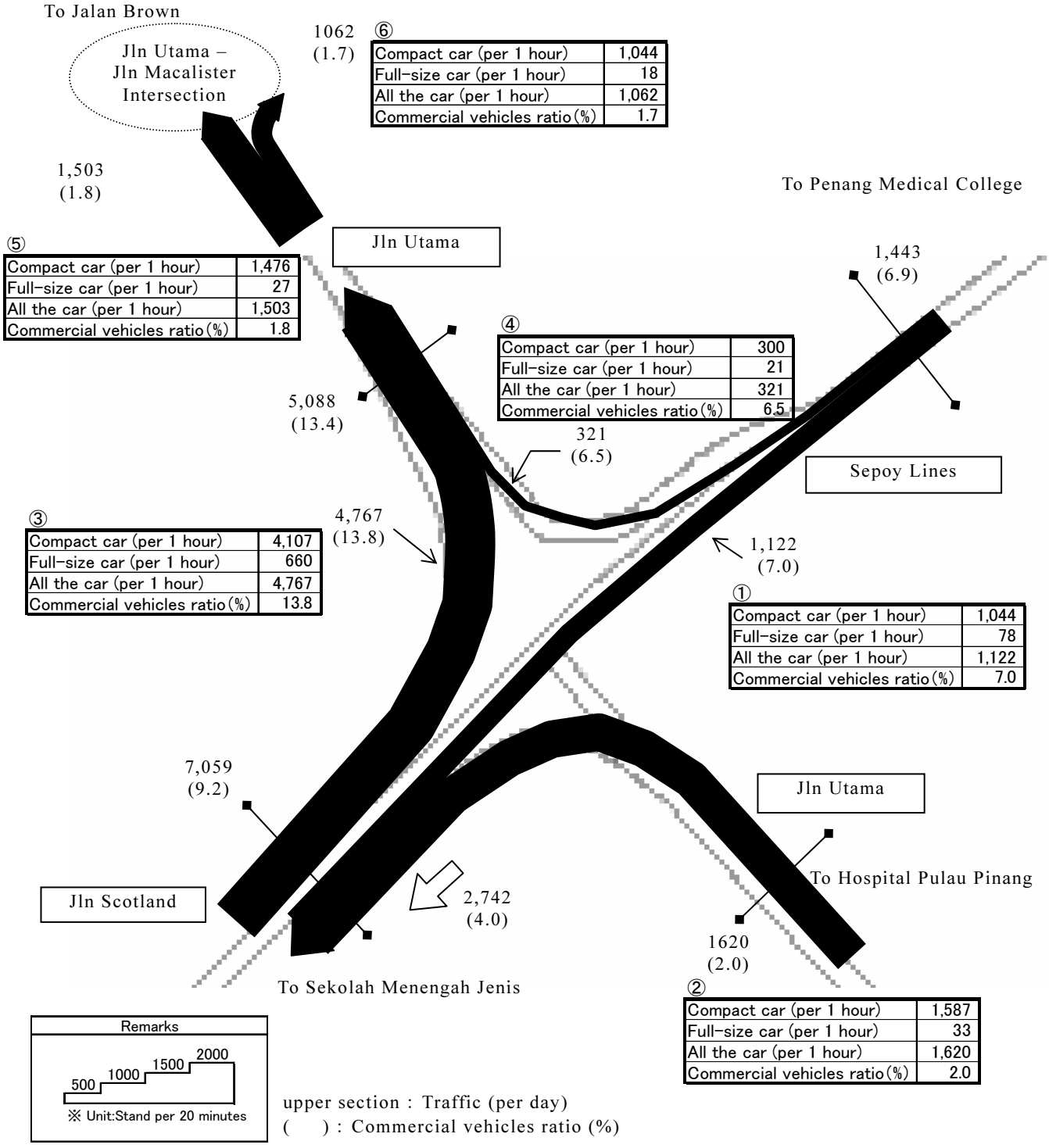


Figure 6-9 : The traffic discharge diagram

[3] The spot speed investigation

The right turn car from Penang Medical College area and the speed-difference in the spot of the joining of the left-turning vehicle from Sekolah Menengah Jenis are 5.9 km/h. Also, the speed-difference in the spot of the joining of the going-straight car from Penang Medical College area and the left-turning vehicle from Hospital Pulau Pinang area is 13.2 km/h and the speed-difference in case of joining is big.

The vehicle from Hospital Pulau Pinang left-turning area flows in to the intersection at 43.6 km/h and is flowing at 29.2 km/h and is 14.4 km/h decreased. The left-turning vehicle from Sekolah Menengah Jenis area is 14.5 km/h decreased from 49.8 km/h to 35.3 km/h. The degree of the deceleration by the curve is the same but the exit velocity is high in the Sekolah Menengah Jenis area where the threshold-speed is fast.

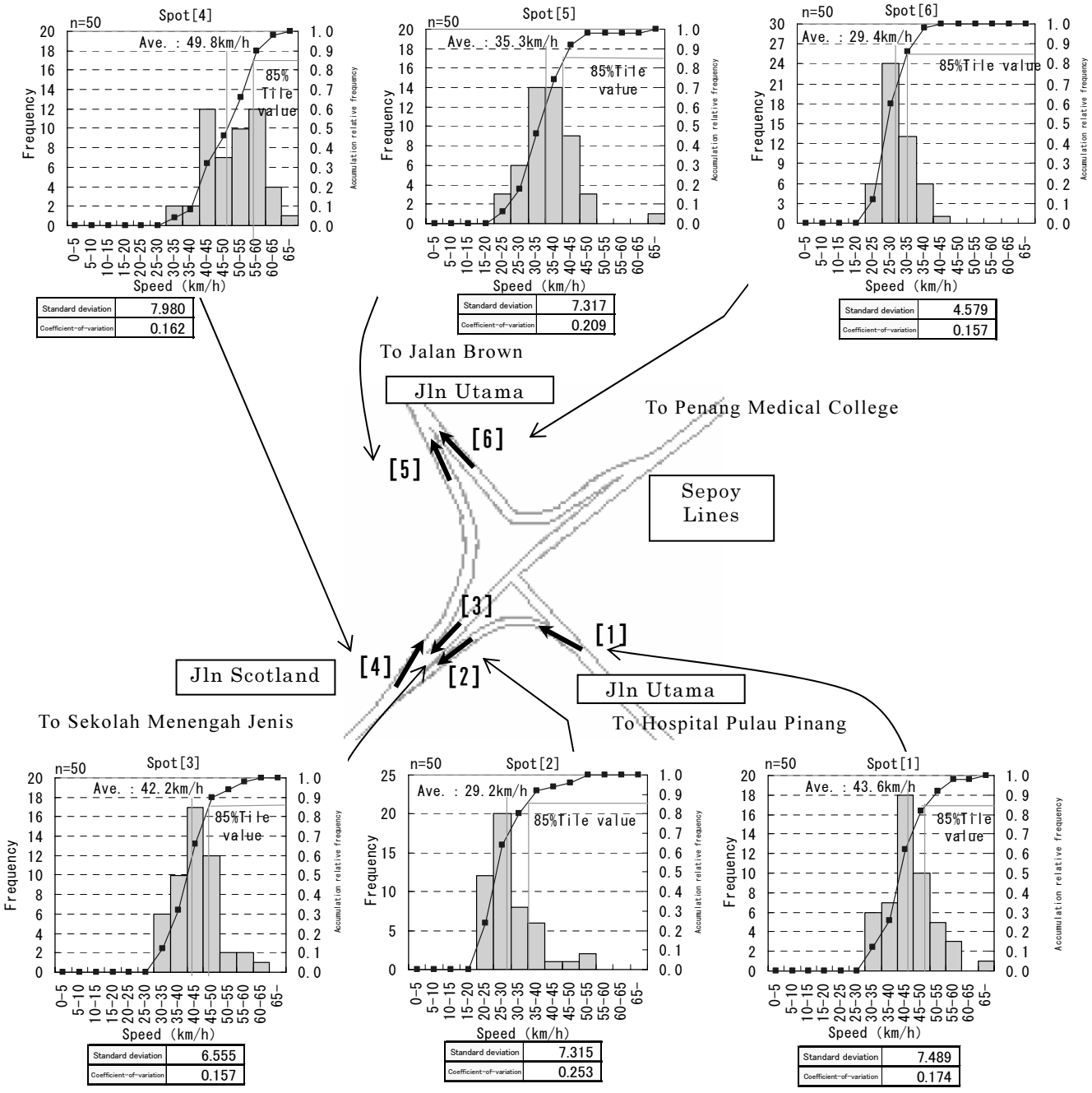
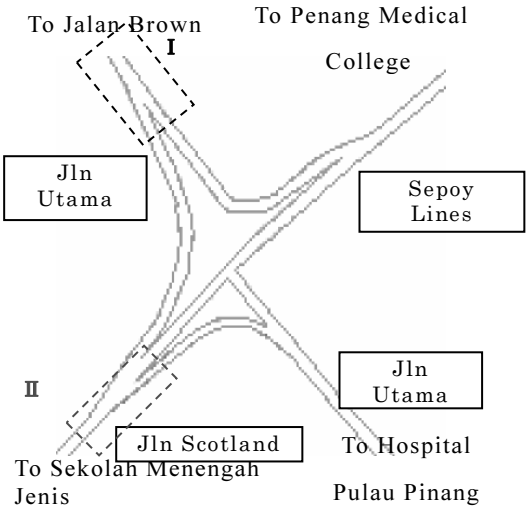


Figure 6-10 : Spot speed Research Result

[4] Conflict investigation

It counted the number of times which the risk hedge action by the operation of the handle and the brake occurred to at the time of the changing lane. There are most conflicts of the left-turning vehicle from the Sekolah Menengah Jenis area in the changing lane ban section of the merging section with the right turn car from Penang Medical College area. It is 91 times at the 2nd lane in 58 times at the 1st lane. Next, the changing lane possible section at the same part has many first lanes. Also, the conflict in the 3rd lane of the changing lane ban section increases in the left-turning vehicle from Hospital Pulau Pinang and the merging section of the going-straight on car from Penang Medical College.



I

Lane 1 B Section

	Brake	Handle	Total
Car	4	0	4
Motorcycle	1	1	2
Total	5	1	6

Lane 2 B Section

	Brake	Handle	Total
Car	29	30	59
Motorcycle	0	8	8
Total	29	38	67

Lane 3 B Section

	Brake	Handle	Total
Car	5	0	5
Motorcycle	0	4	4
Total	5	4	8

B section (Changing lane possible section)

A section:45.5m (Changing laneban section)

67 6 8

58 91 16

Lane 1 A Section

	Brake	Handle	Total
Car	26	17	43
Motorcycle	4	11	14
Total	30	28	58

Lane 2 A Section

	Brake	Handle	Total
Car	60	30	90
Motorcycle	0	1	1
Total	60	31	91

Lane 3 A Section

	Brake	Handle	Total
Car	6	8	14
Motorcycle	0	1	1
Total	6	10	16

II

Lane 3 B Section

	Brake	Handle	Total
Car	15	8	23
Motorcycle	1	0	1
Total	16	8	24

Lane 2 B Section

	Brake	Handle	Total
Car	15	11	26
Motorcycle	1	2	3
Total	16	13	29

Lane 1 B Section

	Brake	Handle	Total
Car	13	5	18
Motorcycle	1	0	1
Total	14	5	19

B section (Changing lane possible section)

A section:18m (Changing laneban section)

24 41

29 28

19 22

Lane 3 A Section

	Brake	Handle	Total
Car	28	7	35
Motorcycle	6	0	6
Total	34	7	41

Lane 2 A Section

	Brake	Handle	Total
Car	9	12	21
Motorcycle	3	4	7
Total	12	16	28

Lane 1 A Section

	Brake	Handle	Total
Car	9	8	17
Motorcycle	1	4	5
Total	10	12	22

Remarks
0～10
11～20
21～50
51～

Figure 6-11 : Conflict Research Result

(4) Accident-generation factor's being specific and The working-out of a traffic safety measure plan

[1] It is the extraction of the problem based on the present state investigation and the status Hiyari with

- Because a bush is planted, the prospect of place point iii and place point v is bad for the intersection penumbra. Also, the speed in place point iii is high.
- The complication by the changing lane in the section of place point i , ii is remarkable.
- As for the section which flows in from Hospital Pulau Pinang area to the intersection, because it is a straight line, the inflow speed to place point v is high. Also, many accidents in the exit merging section of iv occur.

[2] The problem and the problem by the traffic actual condition survey result

- There is much traffic from Sekolah Menengah Jenis area and the tendency with high threshold-speed has it.
- There are many changing lane vehicles in the changing lane ban section in the spot which the right turn car from the left-turning vehicle and Penang Medical College area from Sekolah Menengah Jenis area joins and the number of times of the to that accompanying risk hedge action is remarkable.
- There are few changing lane vehicles but in the spot of the joining of the left-turning vehicle from the going-straight on car and Hospital Pulau Pinang from Penang Medical College area, the speed-difference of both vehicles is big.

[3] The way of thinking of the traffic safety measure

Table 6-1 : The measure policy and the proposed measure

Policy of the measure	Proposed measure
[1] It secures the sight of the driver who does in the right and left occasion to Jalan Brown.	It prunes or fells the bush which is planted into the passage.
[2] The restraint of the complication after the spot of the joining of the left-turning vehicle from Sekolah Menengah Jenis area and the right turn car from Penang Medical College area joining	- It makes a main traffic stream line a road of turning left to To Jalan Brown from Sekolah Menengah Jenis. - The lane to pass from Penang Medical College area to Jalan Brown area processes in the joining as the non-priority.
[3] The restraint of the complication after the spot of the joining of the left-turning vehicle from Hospital Pulau Pinang area and the going-straight car from Penang Medical College area joining	- The speed-difference makes a joining part the section which becomes small.
[4] It restrains inflow speed to the intersection.	- The thin pavement（The difference in rank pavement）

[4] The measure figure (Plan)

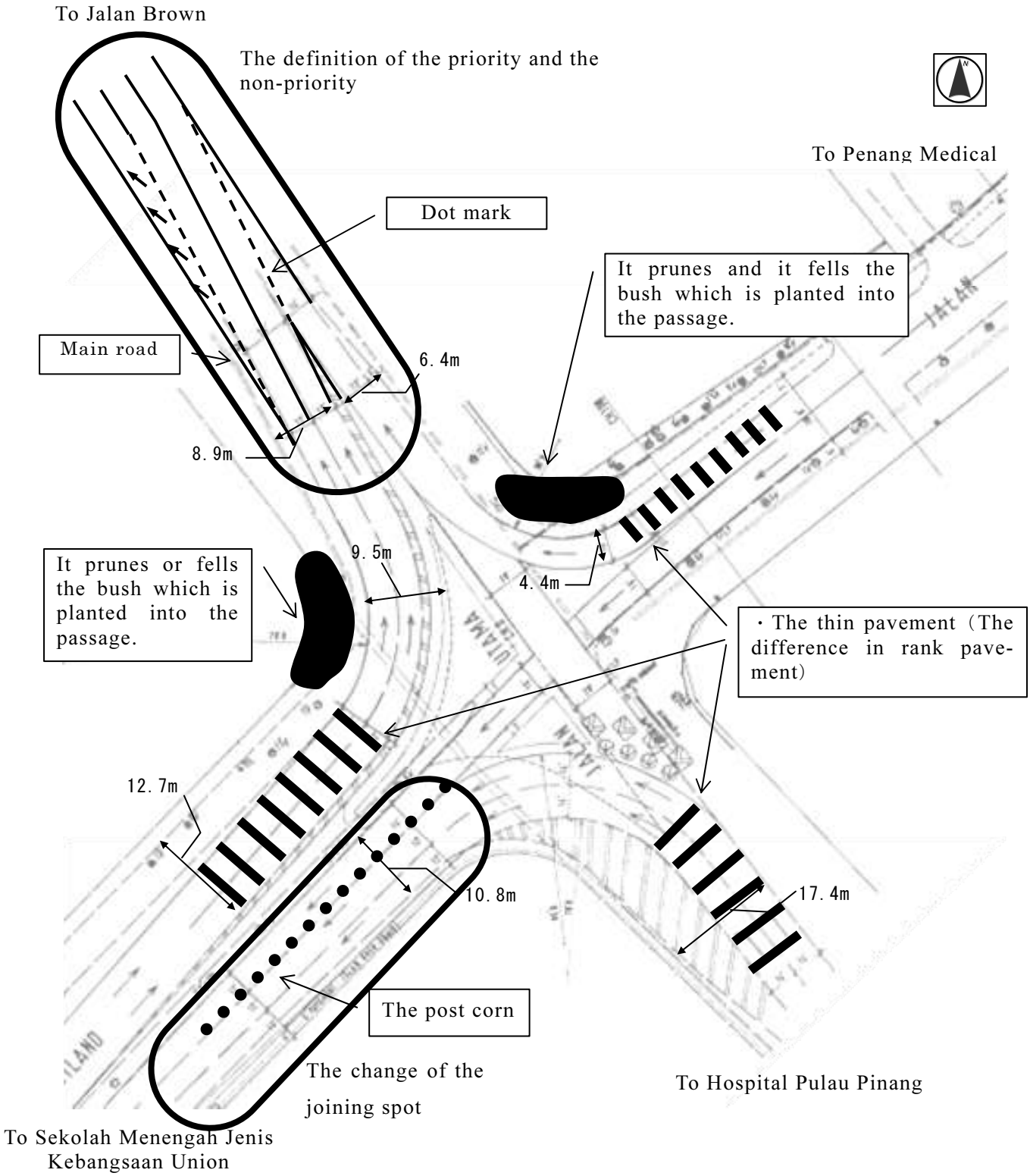


Figure 6-12 : The proposed measure

7. PROBLEM IN THE FUTURE

7.1 Problem

[1] The technical problem

- Few problems of the information technology occur.
- The road traffic technology in British, America, Australia and Japan intermingles and there is not system.

[2] The citizen participation type problem

- It was determinative but it utilized a new information collection source for the people except Municipal Council of Penang Island officer in the implementation from the professional driver (the bus, the taxi) in the Hiyari data. As a result, it was possible to judge that it was an extremely valid means. However, it is not the status which can get cooperation of the citizen and further time and the step are necessary.

[3] The problem of the executive of the local government

- At present, this system is installed in the computer at the taking charge section in Municipal Council of Penang Island and becomes the condition which can be used. To use this continuously as the addition of the update of the traffic accident data and Hiyari experience data, and so on, in the future, the reliable maintenance system in the taking charge department is necessary. (The person in charge, the budget) As for this point, the Mayor who this investigation had a high interest had alternated, and so on, and the budget implementation could not be implemented. It is the status that the re-deliberation in the City Council must be waited for.
- There was an agreement from the Malaysian Police Head-Quartor, but the law official in the place, too, did the offer of the traffic accident reference document actively and cooperated. Incidentally, to utilize an accident data in earnest, the permission at the Malaysian Police Head-Quartor is necessary.
- There was not enough as traffic engineer the specialty of which is road safety for “Traffic Safety Measures Support System(TSMSS) so far in Municipal Council of Penang Island. At present, the engineer-in-charge acquires expertise about the road safety through this activity. It is necessary in the period of the education to win the know-how of compatible to the City Council and the Police Head-Quartor and so on in the future, too.

7.2 Conclusion

- It recognized that compatible such as the preparation of the linguistic pack of more than one language such as Malay and Chinese was necessary in addition to compatible to English which was assumed at first to introduce this system into Municipal Council of Penang Island. As the part, it developed more than one linguistic pack to HEISS and TAASS in this investigation. Also, it utilized a developed linguistic pack and it collected Hiyari experience information. Then, it subscribed an accident data to TAASS and it made it operate. As a result, it was possible to judge that it was possible to make this system a multi-lingual

sufficiently technically.

- We could guide the way of reviewing a traffic safety measure scientifically and drafting it by extracting the part which drafts a traffic safety measure using Research Result and the data.
- We confirmed the thing for which TSMSS is available practically in the foreign countries from these things.
- It adds and it thinks that we can have shown the new ideal way of the international technical cooperation activity in Japan.

7.3 View of the Future

(1) Spreading out at the site

- At present, Municipal Council of Penang Island is independent mainly in the taking in charge Department and being groping about the way of utilizing this program. It gropes about the match way to have paid to the reviewing and the implementation of the means about the following point at the same time as doing to that facing support from Japan.
- The explanation and compatible to the future, and moreover the Law Official and the City Council and so on become necessary. That the person in charge masters necessary know-how when proceeding with the road safety is wanted. In the future, it thinks of the means for where these education makes efforts.
- In Penang city, a congestion measure and a parking measure and so on are esteemed. The recognition about the importance of the traffic safety measure isn't high. The continuous enlightenment about the importance of the match to the traffic safety measure is necessary.
- As the writing-down by the preceding chapter, therefore, it isn't constantly gotten from a lot of citizens regrettably in the cooperation to the citizen participation in Penang city. We think that further time and the step are necessary.

(2) The spread of the future based on the activity this time

The activity this time is not a helping way at the building as the means of the international technology contribution. It tackled to systematize expertise and to transplant the implementation program of the business. It thinks that the high evaluation from the acceptance organization in the place to this technique could be gotten as the result. These are based and we want to tackle the following.

- Through the association alternating current organization at CITY NET and so on, it does a pair to the other nearby country, Korea and China and so on and it does the information activities of this match. At the same time, it plans to grope about the method-of-development to those various countries. Specifically, Korea Transport Institute in Korea introduction is reviewed.
- Through the academic journal of the road and traffic relation and so on, as the new method-of-development of the international technical cooperation activity, it plans to introduce this match widely in Japan, too.

資　料　編

H189「交通安全対策支援システムのペナン市への展開」

第１回　渡航報告書

作成日	2009年6月8日（月）	作成者	親松俊彦
期間	2009年5月31日（日）～2009年6月4日（木）、～6月7日（日）親松		
渡航メンバー	堀江清一、親松俊彦、南部繁樹		
概要	ペナン市の受入れ機関、関連機関との会議・ワークショップを開催し、「住民参加型の交通安全対策支援システム」の導入に関する調査結果についてプレゼンテーションを実施した。 今年度のIATSS自主研究「交通安全対策支援システムのペナン市への展開」の計画内容及び組織概要の説明を実施。 支援システムの本格実施に伴う、関連事業の予算確保、システム維持管理について打合せを実施。		

日時		実施内容
5/31（日）		マレーシア国ペナン市へ渡航
6/1（月）	午前	・ペナン市技術局のKhoo局長と2日の会議・ワークショップについて事前打ち合わせ ・「住民参加型の交通安全促進調査業務報告書」提出 ・IATSSの研究計画について打合せ
	午後	・ペナン市の道路施設等について現地踏査
6/2（火）	午前	・ワークショップを開催（参加者：ペナン市担当技術者、警察等） ・「住民参加型の交通安全対策支援システム」の導入に関する調査報告結果についてプレゼンテーションを実施 ・IATSS 自主研究「交通安全対策支援システムのペナン市への展開」の計画内容及び組織概要の説明を実施 ・交通事故データの収集・入力方法等について打合せ ・ヒヤリ体験アンケート調査の解析結果のサンプルを説明 ・システムの本格実施区域の候補エリアの決定（ジョージタウンを対象区域とする）
	午後	・ペナン市ジョージタウン区域の道路・交通状況の踏査
6/3（水）	午前	・ペナン市技術局のKhoo局長と打合せ 第２回のペナン市の派遣について 新市長Sr.Tan Cheng Chuiへの表敬、ブリーフィングについて 事前打合せ支援システムの本格実施に伴う関連事業の予算確保、システム維持管理について
	午後	・道路施設等について現地踏査

6/4 （木）		・マレーシア国ペナン市より帰国（堀江、南部） ・ペナン市技術局の Khoo 局長と打合せ システムの継続性維持について JICA の ODA 案件への検討(在マレーシア日本国大使館、JICAKL 事務所) ・ペナン市技術局のRajendranエンジニアと打合せ 予算確保の手続き及び参考資料（報告書等）の追加について打合せ CCTV システムとの連携について 技術局予算項目の資料を次回までに準備依頼
6/5 （金）		・ペナン市技術局のAng局次長と打合せ 予算確保について。メンテナンス費とすることで問題なし。 ・ペナン市技術局のLeong部長、Addnan課長と打合せ システム本格実施に伴う事業予算確保について ・ペナン市計画局のMaimunah局長と打合せ システムの地図情報の多目的利用について 研究メンバーに加わりたい→検討する
6/6 （土）		・ペナン市計画局のTan元局長と打合せ システムの多目的利用の Crime（犯罪）対策の可能性について 次回に打合せを行う
6/7 （日）		マレーシア国ペナン市より帰国（親松）

備　考

The Research for Traffic Safety Program by TSMSS(Traffic Safety Measures Support System) in Penang, Malaysia

The Research Plan

June 2009

International Association of Traffic and Safety Sciences

The Research Committee Member

Dr. Kunimichi TAKADA: Project Leader, Professor of Research Institute of Nihon University

Dr. Hirokazu AKAHANE: Professor of Chiba Institute of Technology

Dr. Tomoo KIDO: Traffic Analyst

Dr. Seiichi HORIE: Representative of Specified Nonprofit Corporation OFFICE TAPE

Mr. Toshihiko OYAMATSU: Technical Adviser of KG CONSULTANT CO.,LTD

Dr. Satoru KOBAYAKAWA: Associate Professor of Nihon University

Mr. Khoo Say Boon: Director of Engineering Department, Municipal Council of Peneng Island, Malyasia

The Research Collaboration Person

Mr. Shigeki NANBU: Chief Executive Officer of TRAFFICPLUS CO.,LTD

Mr. Hee Seon OH: Graduate Student of Nihon University

1. The Research Purpose

In Malaysia, the age of automobiles is moving ahead with economic growth in recent years. The number of the accident in 2005 in Malaysia are 12.6 (per 1,000 people) , the number of the dead persons is 2.4 (per 10,000 people) and is twice and the quintuple degree of Japan respectively. Therefore, consciousness which demands compatible is rising. Japan contributes for the motorization in Malaysia to develop. It is the increase of the Japanese car including the motorcycle, the road improvement, the introduction of the traffic control and surveillance system and so on. These situation are not an immediate cause but it can no longer be ignored the frequent occurrence of the traffic accident beforehand. Japan should contribute to the traffic safety measure greatly.

In this research, it applies "Traffic Safety Measure Support System" which was studied and developed in the independent research of this association to Penang city which scale of population is 2nd of Malaysia. With it, it aims to develop the technique of the new international cooperation for the various countries in Asia which the age of automobiles is moving ahead and so on.

2. The Way of The Research

This system integrates management the traffic accident data and the Hiyari (near accident cases) experience data to collect from the citizen using the WebGIS technology. Then, it is one characteristic to rationalize and efficiency the planning and the drafting of the safety measures. Also, it used the Internet and it shared collected information with the citizen and it accomplished the function to promote related consensus building, too. This system is developed and applied as the tool of the core about the safety measures scheme in Chiba Prefecture Kamagaya City and giving a practical effect by it in the reduction of the traffic accident. Moreover, it succeeded in the transplant to Ichikawa City and Shiroi City which neighbors Kamagaya City and it won the excellent prize of the development and the technical study in "the technical conference of new road" of the Ministry of Land, Infrastructure, Transport and Tourism in 2008. But, it is necessary still more to research and develop to apply this system in ASEAN area where different from Japan in the culture, the social system and the language and so on and to show a cooperative effect

Through the support system process of the application to Penang city, it specifically implements the following. They are “[1] the reviewing of the applicability of some languages pack”, “[2] the reviewing of the possibility of the international data sharing which is due to the Internet “, “[3] The diversification and the generalization of the data gathering way and the contents from the citizen “ and “[4] The application to the process of the safety measures drafting in the administration system with Japan and different form “.

3. The Research Contents

[1] The technology transfer to Penang city of Traffic Safety Measure Support System

- It drafts the execution plan of the general technology transfer which assumed propriety operation in Penang city following year since then. In it, it assumes following [2], [3], [4] s the research task with current year.
- The technology transfer includes the following contents. It is support for the survey planning, the traffic safety measure drafting which is based on the transplant and the operations support of this system and the analysis information which is gotten by the concerned system and so on.

[2] The reviewing of the applicability of the linguistic pack and the possibility of the international data sharing which is due to the Internet

- It develops the accident analysis system and Hiyari experience input system for which it is possible to use a 1-byte type language (English and so on) and a 2-byte type language (Japanese and so on). And it builds DB. Then, it reviews those applicability.
- It builds the Web site of the traffic safety information which is possible to share internationally and it reviews the applicability.

[3] It tries the optimization of the accident data item, and diversification of the data gathering way from the citizen and the contents.

- It does the detailed reviewing of the traffic accident DB of the local system and does a data conversion to Traffic Safety Measure Support System. In the process, it reviews about the optimization and the way of the data elements of generalizing.
- It develops the way of applying Hiyari Experience Input Sub System and collecting the information from the citizen about the parking on the street and the traffic jam which is necessary to review a traffic safety measure.

[4] The application to the process of the safety measures planning about the administration system with Japan and ASEAN cities.

- The reviewing of the means which becomes the increase in efficiency of the data input by the positional information merit in the accident occurrence place
- The reviewing of the utilization means of the traffic safety measure planning manual

4. The Whole Flow of The Research

It refers to a separate sheet1.

5. The Research Process

It refers to a separate sheet2.

6. The Voyage Plan

(1) 1st Voyage (May 31, 2009 – June 4,2009) [Dr.HORIE, Mr. OYAMATSU, Mr. NANBU]

- The outline explanation the Research and the report of the results of Pilot Study (The workshop)
- The confirmation of the research schedule and the full-scale introduction policy
- The budget request and the system confirmation
- The technical expert training

(2) 2nd Voyage (July 12, 2009 – July 16, 2009) [Prof. TAKADA, Mr. OYAMATSU, Mr. NANBU]

- The confirmation of the progress status
- The briefing to the Mayor of Municipal Council of Penang Island and the report of the results of Pilot Study
- The confirmation and the adjustment of the full-scale introduction of the system (The Internet, the PC in Municipal Council of Penang Island)
- The discussion of the way of collecting an associated data (Hiyari experience, a traffic accident, GIS)
- The technical expert training

(3) 3rd Voyage (The last 10 days in October 2009, for 5 days) [Prof. AKAHANE, Dr. KOBAYAKAWA, Mr. NANBU]

- The system installation and the full-scale operation stating
- The DB building of an accident data and Hiyari experience data
- The confirmation and the adjustment of the effectively and the way of utilizing about this programming and the scheme such as the citizen participation
- The introduction of this scheme and the reviewing of a technology transfer
- The adjustment of the road and traffic actual condition survey
- The technical expert training

(- The reviewing of a proposed measure in Pilot Plan area)

(4) 4th Voyage (The middle in December 2009, for 5 days) [Prof. AKAHANE, Mr. NANBU]

- The confirmation of the progress status
- The confirmation about the collection of Hiyari experience and the accident data
- The confirmation about the result of the road and traffic actual condition survey
- The effectively and the way of utilizing about this programming and the scheme such as the citizen participation

・ The technical expert training

(・ The confirmation of the measure in Pilot Plan area)

(5) 5th Voyage (The middle in February 2010, for 5 days) [Prof. TAKADA, Mr. OYAMATSU, Mr. NANBU]

・ The evaluation of the achievement status and the future prospect

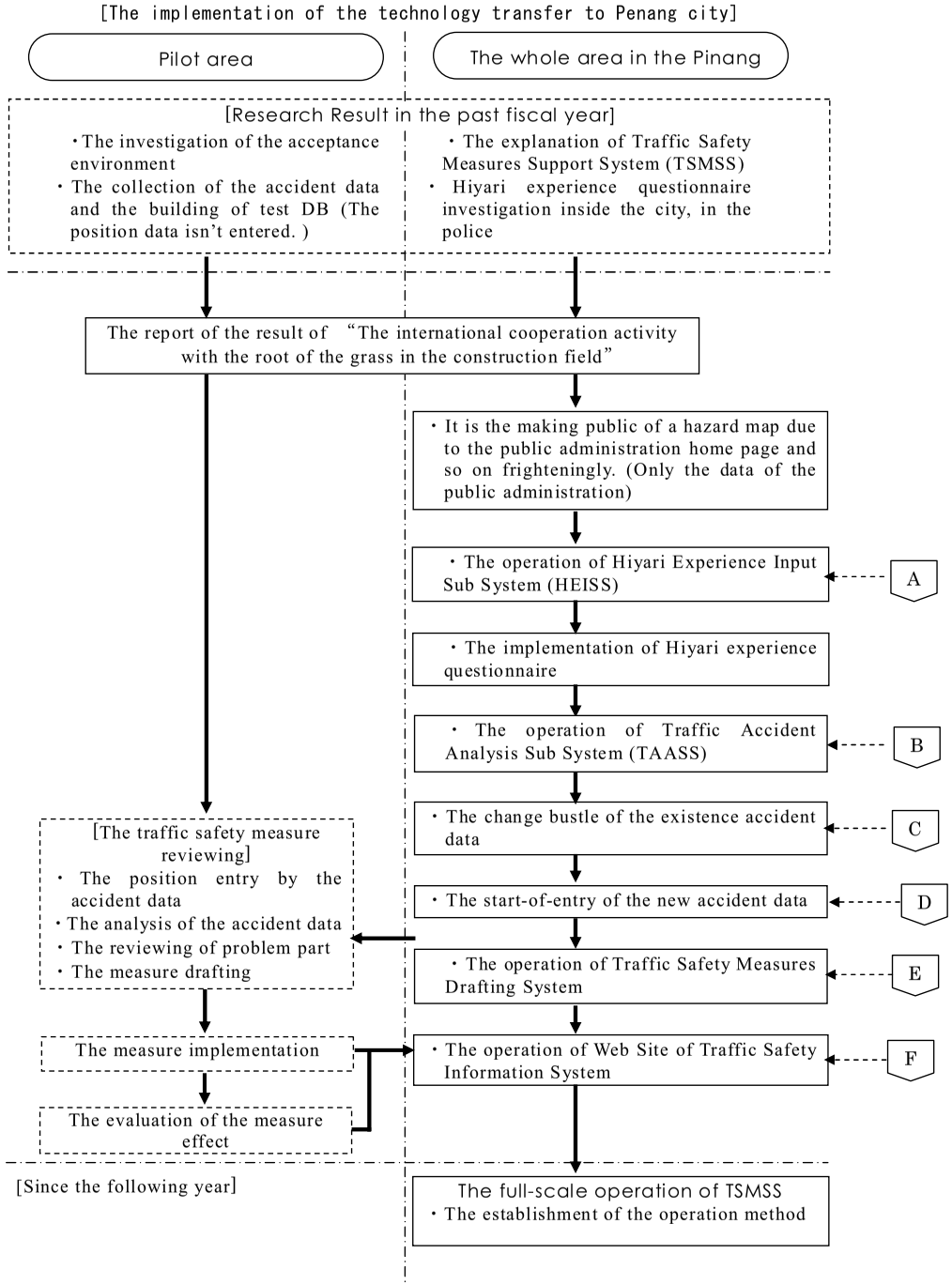
・ The confirmation of the way of utilizing and continuing about this programming and the scheme such as the citizen participation

・ The confirmation about the problem of the introduction of this scheme and the view of the technology transfer

・ The technical expert training

(・ The confirmation of the ex post fact evaluation result in Pilot Plan area)

The Research Flow for Traffic Safety Program by TSMSS(Traffic Safety Measures Support System) in Penang, Malaysia



The research task (The contents of the system development work)

A

○The development of HEISS of the some languages version
・The building of the data base which used 1 byte type and 2-byte type (*1)
・The creating of the interface to support some languages (*2)

B

○The development of TAASS of the some language version
・The creating of a base map (Change of the electronic map)
・The reviewing of a master data of the street and the block and so on
・The reviewing of the item which enters an accident data in the place, The reviewing of the countermeasure method of the system
・*1,*2

C

○The development of the conversion tool of existence accident DB
・The reviewing of the structure and item contents of local accident DB
・The reviewing of the way of the change and the taking of the accident data
・The development of the conversion tool

D

○The development of the accident data position entry support-system
・The reviewing of investigation contents about the accident in the place
・The reviewing of an effective coordinates acquisition way
・The development of the taking system of the accident position
・*1,*2

E

○The development of Traffic Safety Measures Drafting System of the some language version
・The reviewing of a way of utilizing by the measure manual (Japan version)
・*1,*2

F

○The development of W eb Site of Traffic Safety Information System of the some language version
・The reviewing and the selection of the making public contents
・The creating of making public content such as the hazard map
・The development of the Web site, and the searching, the display function
・*1,*2

Separate Sheet 2

The Research Process

The implementation item of the technology transfer	2009 May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2010 Jan	Feb	Mar	Remarks
The local voyage		1st	2nd			3rd		4th		5th		
1. The report of Research Result about the past fiscal year												
2. It is the making public of a hazard map due to the public administration home page and so on frighteningly.												
3. The operation of Hiyari Experience Input Sub System		A										A: The development of HEISS of the some languages version
4. The implementation of Hiyari experience questionnaire												* After the questionnaire survey implementation, it continues to collect Hiyari data.
5. The operation of Traffic Accident Analysis Sub System			B									B: The development of TAASS of the some language version
6. The change bustle of the existence accident data					C							C: The development of the conversion tool of existence accident DB
7. The start-of-entry of the new accident data						D						D: The development of the accident data position entry support-system
8. The operation of Traffic Safety Measures Drafting System							E					E: The development of Traffic Safety Measures Drafting System of the some language version
9. The operation of Web Site of Traffic Safety Information System								F				F: The development of Web Site of Traffic Safety Information System of the some language version
(Reference) The measure reviewing, the implementation and the evaluation in Pilot area				Data Input	Reviewing		Implementation		Evaluation			

PILOT STUDY OF TRAFFIC SAFETY PROGRAM BY TSMSS

(Traffic Safety Measures Support System)

IN PENANG, MALAYSIA

SPECIFIED NONPROFIT CORPORATION ***OFFICE TAPE***

June.1, 2009

Investigation Person in Charge

Head Hirokazu AKAHANE
(Professor of Chiba Institute of Technology)

Shigeki NANBU
(Chief Executive Officer of TRAFFICPLUS CO.,LTD)

Toshihiko OYAMATSU
(Technical Adviser of K.G CONSULTANT CO.,LTD)

Seiichi HORIE
(Representative of Specified Nonprofit Corporation OFFICE TAPE, Adviser of CHODAI CO.,LTD)

Issei IKEDA
(Road Traffic Planning Department , CHODAI CO.,LTD)

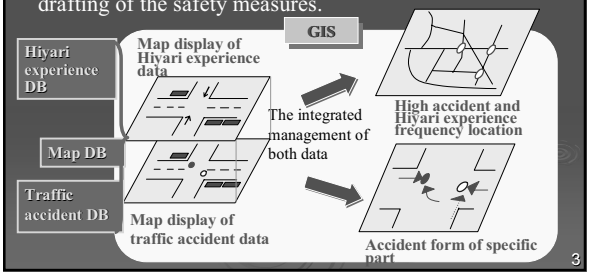
Investigation Cooperator

Kunimichi TAKADA
(Professor of Nihon University)

2

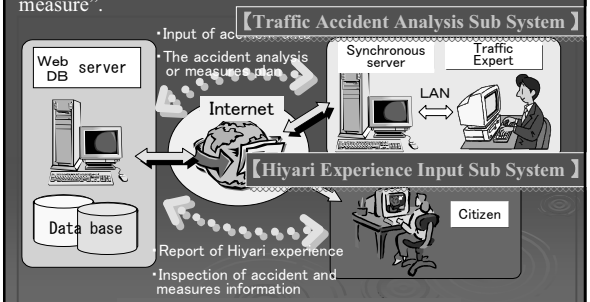
Overview of Traffic Safety Measures Creating of The Citizens Participation Type Program

This system integrates management the traffic accident data and the Hiyari experience data to collect from the citizen using the WebGIS technology. Then, it makes a base to rationalize and streamline the planning and the drafting of the safety measures.



3

This program has the function to publish collected information in the Internet and do the following function. The functions are “the improvement of the consciousness to the traffic safety of the citizen” and “the promotion of the consensus building which relates to the drafting and the implementation of the traffic safety measure”.



4

The results in Japan of “Traffic Safety Measures Support System”

- This program began a spadework by International Association of Traffic and Safety Sciences (IATSS) from 1997.
- It applies to the intersection, the street and the area in Chiba Prefecture Kamagaya City and it is getting good results of the reduction of the traffic accident.
  - The support object of the society experiment of the Ministry of Land, Infrastructure and Transport (2001)
  - The support object of “the zone of the road in the living” of the Ministry of Land, Infrastructure and Transport (2003)
- It succeeded in the transplant to Ichikawa City and Shiroi City which neighbors Kamagaya City, too.
  - It won the excellent prize of the development and the technical study in "the technical conference of new road" of the Ministry of Land, Infrastructure, Transport and Tourism in 2008.

5

Background (1)

The increase of the traffic accident becomes a social problem in Malaysia in recent years.

	Malaysia (2005)	Japan (2007)
Area [km²] (90 % of Japan)	330,252	377,923
Population [10000 people] (20 % of Japan)	2,613	12,777
Road Extension[km] (6% of Japan)	71,814	1,257,000
Road Accidents (per 1000 people) (Twice Japan)	328,264 (12.6)	886,864 (6.9)
Road Casualties	47,012	1,098,199
Road Deaths (per 10000 people) (5 times Japan)	6,200 (2.4)	6,352 (0.5)

6

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Malaysian Institute of Road Safety Research (MIROS) is established in 2007 and it implements research activities about the road safety in earnest.

7

Background (2)

◆As for Penang city which is a city in 2nd of Malaysia, The increase of the traffic accident makes a social problem, and the utilization an experience and a result in Japan.

- The following is in the root. They are the international cooperation of JICA, Yokohama city and so on for many years and the technical cooperation at "root of the grass" of the individual expert .

◆The introduction of TSMSS and the results.

◆The necessity of the technical assistance about the application in Penang city. .

◆By the application to the foreign countries of the program, it aims to develop the technique of the new international cooperation for the various countries in Asia which the age of automobiles is moving ahead and so on.

8

Purpose

1. It reviews the possibility that "the traffic safety measure support-system" can be applied to Penang city which is the core tool to promote a traffic safety measure by the citizen's participation.
2. It reviews and organizes a problem about the possibility and the way to transfer the expertise which is necessary to draft a traffic safety measure with Penang municipality.

9

Flow

The adjustment with the acceptance organization

↓

The introduction of TSMSS

↓

The reviewing of the system introduction and operation plan

↓

The implementation of Pilot investigation in the model district

↓

The evaluation of the system introduction possibility
The reviewing of the problem when proceeding with the efforts

⇩

The reviewing of a road safety policy

The spread of the future

10

Acceptance organization

The acceptance organization (Penang city)	Municipal Council of Penang Island, Malaysia
The related organization (Traffic Police etc)	Economic Planning Unit Penang State, Penang State Police Dept. Police H.Q, Penang State, Highway Planning Unit Ministry of Public Works

11

Status of The Investigation

○It voyaged three times to Penang city and it implemented a workshop and investigation at the site.

○Moreover, it did a follow-up from Japan to the person in charge in Penang city using E-mail .

	Schedule	Investigation Contents
1st Voyage	09/01/12 ～09/01/15	・Courtesy call to the mayor of Penang, Briefing ・Workshop ・Visit to the police ・The spot survey
2nd Voyage	09/02/10 ～09/02/14	・The supplementary explanation of the traffic safety measure by the citizen's participation (Workshop) ・The confirmation and the adjustment of the environment for the introduction the system ・The spot survey (Pilot investigation object area)
3rd Voyage	09/03/08 ～09/03/12	・The confirmation of the achievement status of the investigation, the collection status of the data ・It arranges beforehand about the future prospect and the problem of the program for Create of Traffic Safety Measures of the Citizens Participation.

12

After the interview with the mayor, reporter releasing was done and television news and a newspaper were reported.

Japanese help on traffic woes

Group volunteers to conduct studies on safety measures for Penang roads

13

We implemented the workshop with the city person in charge and the police and so on. And we implemented a main point explanation and case introduction.

14

15

It did detailed investigation about the practice about the accident processing by the accident report and so on and the accident data entry system.

16

17

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18

It did the supplementary explanation at the workshop and it deepened understanding.

19

We implement the investigation of the system environment of LAN in the agency and the internet environment and so on.

20

We investigated the traffic status of the model district.

21

22

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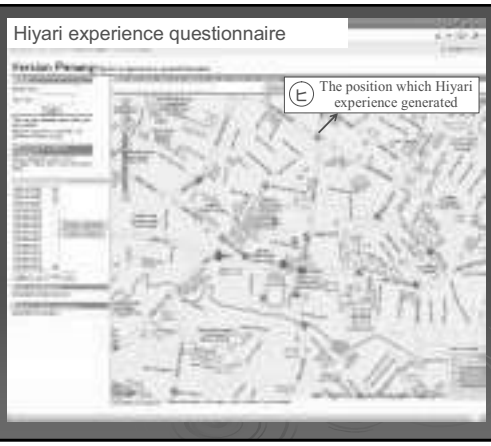
23

It confirmed the achievement status of the pilot investigation.

24

Hiyari experience questionnaire



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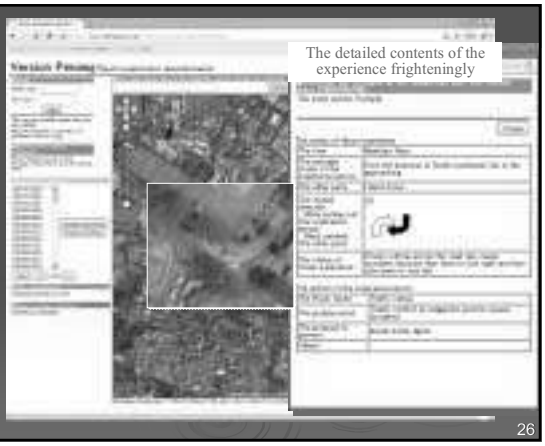


26

The meeting about the problem to the efforts and the follow-up way in the future.

27

Result of The Investigation

- The active cooperation could be gotten from all of the departments which are related as the reporter releasing by Penang mayor symbolizes.
- It got traffic accident data from the traffic police and it reviewed the detailed contents of the data. As a result, it confirmed an available thing to the measures for accidents.
- As a result of the meeting with City Bureau, Penang city introduced GIS already and the electronic map confirmed an available thing by TAASS.
- As a result of the meeting with the system department bureau, the LAN or the environment of the internet in the agency and the use environment of the system which is serviced in Penang city are comparable more than Japan-domestic, too.

28

Result of The Investigation

- It implemented the Hiyari experience questionnaire which used the Internet for the object and it collected data of the staff in the city and the police.
- It implemented a meeting with the technology bureau and the relation organization of the taking charge and we could get enough understanding. 。
- To review a problem while doing a specific activity, it selected a model district and it implemented Pilot investigation.

⇩

・The confirmation of the thing that TSMSS is applicable .
・The service of the system which accepts expertise

29

Problem in The Future

In Penang city, the citizen participation doesn't penetrate. The participation form which suited environment in the place must be reviewed.

－In the main research, it implemented Hiyari experience questionnaire in Penang city and the traffic police staff as the introduction initial stage of the citizen participation.

－These precede-input data becomes "calling water" in case of Hiyari experience information collection from Citizen in the future.

➡ Based on the experience of the questionnaire, it is presented the active opinion of “How about making the NGO of the road safety relation and the driver of the bus an investigation object?” and so on from the technology bureau in Penang city already.

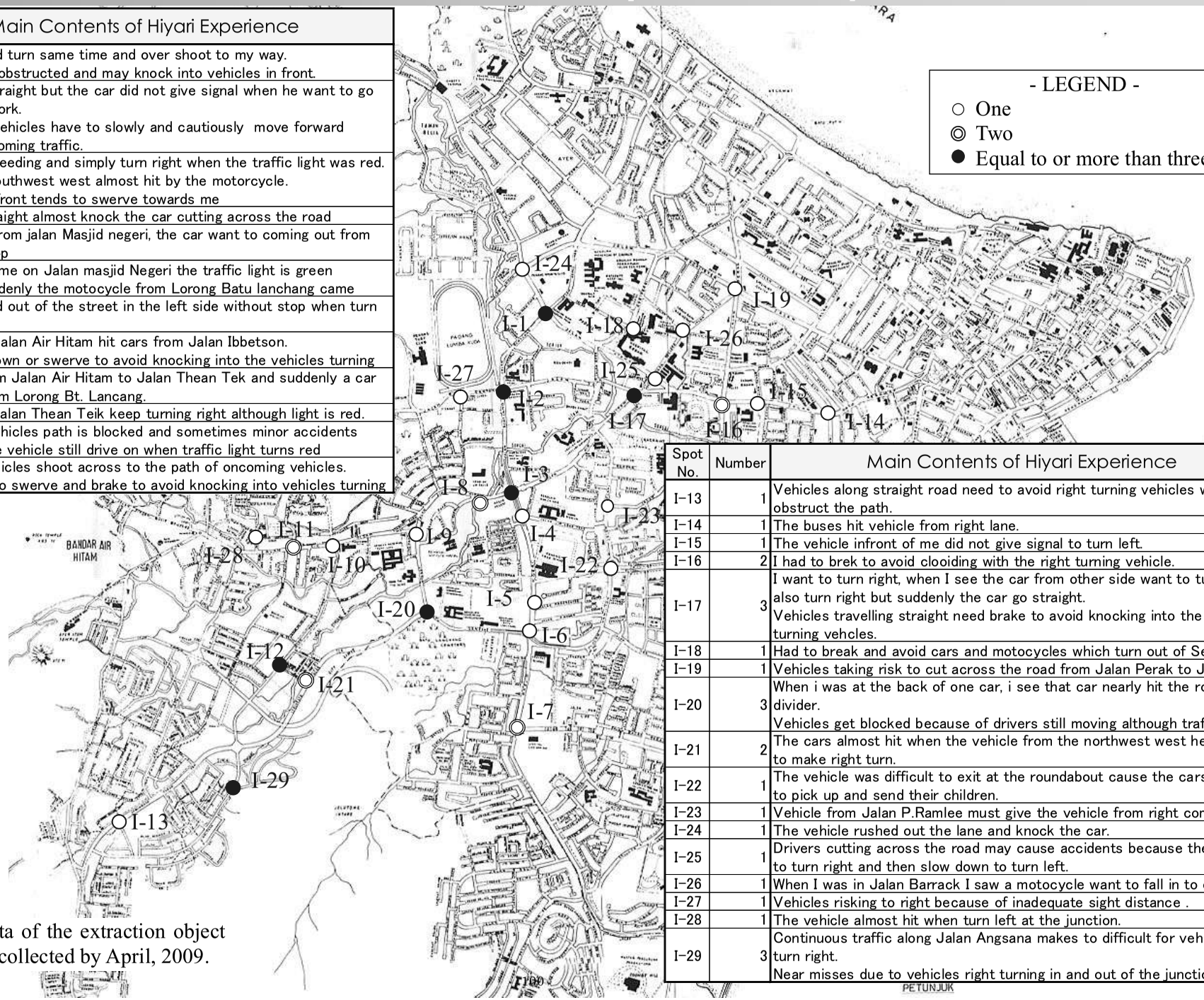
－In the future, the reviewing must be proceeded with about the form of the citizen participation with the reviewing step of the road safety policy, too.

30


END
31

HAZARD MAP of HIYARI EXPERIENCE in PENANG CITY [INTERSECTION]

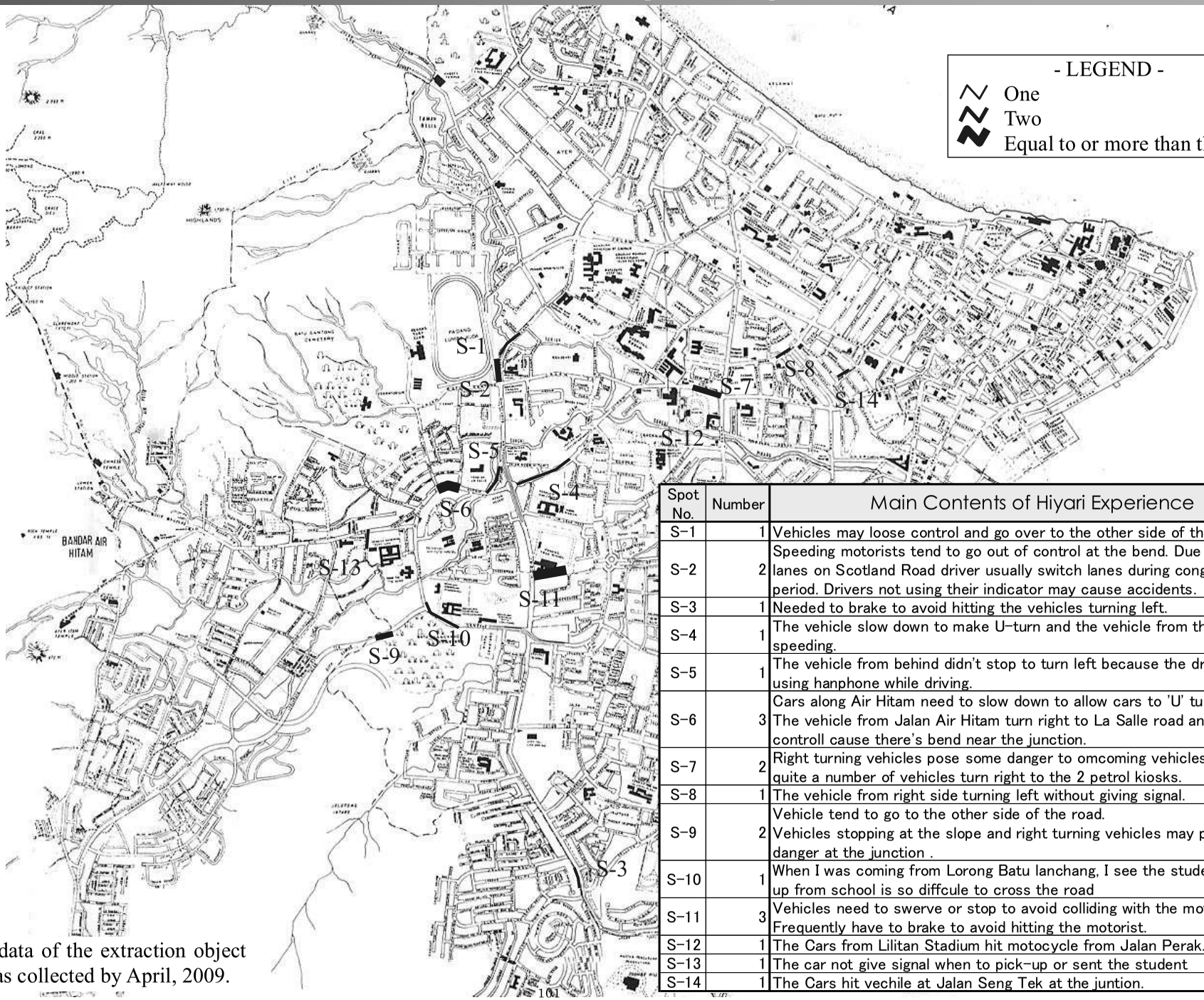
Spot No.	Number	Main Contents of Hiyari Experience
I-1	4	・The car rushed turn same time and over shoot to my way. ・Driver view is obstructed and may knock into vehicles in front.
I-2	5	・I want to go straight but the car did not give signal when he want to go right to Jalan York. ・Right turning vehicles have to slowly and cautiously move forward because of oncoming traffic.
I-3	3	・The vehicle speeding and simply turn right when the traffic light was red. The car from southwest west almost hit by the motorcycle. ・The vehicle infront tends to swerve towards me
I-4	1	・Cars going straight almost knock the car cutting across the road
I-5	1	・When I come from jalan Masjid negeri, the car want to coming out from Shell do not stop
I-6	1	・When I was come on Jalan masjid Negeri the traffic light is green emediately, suddenly the motocycle from Lorong Batu lanchang came
I-7	2	・The car rushed out of the street in the left side without stop when turn right.
I-8	2	Vechicle from Jalan Air Hitam hit cars from Jalan Ibbetson. Have to slow down or swerve to avoid knocking into the vehicles turning
I-9	1	The vehicle from Jalan Air Hitam to Jalan Thean Tek and suddenly a car came ahead from Lorong Bt. Lancang.
I-10	1	Vehicles from Jalan Thean Teik keep turning right although light is red.
I-11	2	Right turning vehicles path is blocked and sometimes minor accidents happen because vehicle still drive on when traffic light turns red
I-12	3	Left turning vehicles shoot across to the path of oncoming vehicles. Vehicles need to swerve and brake to avoid knocking into vehicles turning



Spot No.	Number	Main Contents of Hiyari Experience
I-13	1	Vehicles along straight road need to avoid right turning vehicles which obstruct the path.
I-14	1	The buses hit vehicle from right lane.
I-15	1	The vehicle infront of me did not give signal to turn left.
I-16	2	I had to brek to avoid clooiding with the right turning vehicle.
I-17	3	I want to turn right, when I see the car from other side want to turn left I also turn right but suddenly the car go straight. Vehicles travelling straight need brake to avoid knocking into the right turning vehcles.
I-18	1	Had to break and avoid cars and motocycles which turn out of Sepoy
I-19	1	Vehicles taking risk to cut across the road from Jalan Perak to Jalan
I-20	3	When i was at the back of one car, i see that car nearly hit the road divider. Vehicles get blocked because of drivers still moving although traffic lights
I-21	2	The cars almost hit when the vehicle from the northwest west hesitation to make right turn.
I-22	1	The vehicle was difficult to exit at the roundabout cause the cars stop by to pick up and send their children.
I-23	1	Vehicle from Jalan P.Ramlee must give the vehicle from right come first.
I-24	1	The vehicle rushed out the lane and knock the car.
I-25	1	Drivers cutting across the road may cause accidents because they have to turn right and then slow down to turn left.
I-26	1	When I was in Jalan Barrack I saw a motocycle want to fall in to open
I-27	1	Vehicles risking to right because of inadequate sight distance .
I-28	1	The vehicle almost hit when turn left at the junction.
I-29	3	Continuous traffic along Jalan Angsana makes to difficult for vehicles to turn right. Near misses due to vehicles right turning in and out of the junction.

* Hiyari Experience data of the extraction object is the data which was collected by April, 2009.

HAZARD MAP of HIYARI EXPERIENCE in PENANG CITY [STREET]



Spot No.	Number	Main Contents of Hiyari Experience
S-1	1	Vehicles may loose control and go over to the other side of the road.
S-2	2	Speeding motorists tend to go out of control at the bend. Due to four lanes on Scotland Road driver usually switch lanes during congested period. Drivers not using their indicator may cause accidents.
S-3	1	Needed to brake to avoid hitting the vehicles turning left.
S-4	1	The vehicle slow down to make U-turn and the vehicle from the back is speeding.
S-5	1	The vehicle from behind didn't stop to turn left because the driver was using hanphone while driving.
S-6	3	Cars along Air Hitam need to slow down to allow cars to 'U' turn. The vehicle from Jalan Air Hitam turn right to La Salle road and lost controll cause there's bend near the junction.
S-7	2	Right turning vehicles pose some danger to omcoming vehicles because quite a number of vehicles turn right to the 2 petrol kiosks.
S-8	1	The vehicle from right side turning left without giving signal.
S-9	2	Vehicle tend to go to the other side of the road. Vehicles stopping at the slope and right turning vehicles may pose some danger at the junction .
S-10	1	When I was coming from Lorong Batu lanchang, I see the student coming up from school is so diffcule to cross the road
S-11	3	Vehicles need to swerve or stop to avoid colliding with the motorcycles. Frequently have to brake to avoid hitting the motorist.
S-12	1	The Cars from Lilitan Stadium hit motocycle from Jalan Perak.
S-13	1	The car not give signal when to pick-up or sent the student
S-14	1	The Cars hit vechile at Jalan Seng Tek at the juntion.

* Hiyari Experience data of the extraction object is the data which was collected by April, 2009.

H189「交通安全対策支援システムのペナン市への展開」

第２回　渡航報告書

作成日		2009 年 7 月 17 日（月）	**作成者**	親松俊彦
期間		2009 年 7 月 12 日（日）～2009 年 7 月 16 日（木）、		
渡航メンバー		高田邦道、親松俊彦、南部繁樹		
概要		ペナン市の受入れ機関、関連機関との会議・ワークショップを開催し、「住民参加型の交通安全対策支援システム」の導入に関する調査結果についてプレゼンテーションを実施した。 新任のペナン市長を表敬し、今年度の IATSS 自主研究「交通安全対策支援システムのペナン市への展開」の計画内容及び組織概要の説明を実施。 支援システムの本格実施に伴う、関連事業の予算確保、システム維持管理について打合せを実施。		
日時		**実施内容**		
7/12（日）		マレーシア国ペナン市へ渡航		
7/13（月）	午前	・ペナン市技術局の Khoo 局長と 14 日の会議・ワークショップについて事前打ち合わせ ・「住民参加型の交通安全促進調査業務報告書」の修正版を提出 ・IATSSの研究計画について打合せ		
	午後	・ペナン市の道路施設等について現地踏査		
7/14（火）	午前	・ペナン市長 Tan Cheng Chui 氏を表敬、 IATSS 自主研究「交通安全対策支援システムのペナン市への展開」の計画内容及び組織概要の説明を実施。 ・ワークショップを開催（参加者：ペナン市担当技術者、警察等） ・「住民参加型の交通安全対策支援システム」の導入に関する調査報告結果についてプレゼンテーションを実施 ・IATSS 自主研究「交通安全対策支援システムのペナン市への展開」の計画内容及び組織概要の説明を実施 ・交通事故データの収集・入力方法等について打合せ ・ヒヤリ体験アンケート調査の解析結果のサンプルを説明 ・システムの本格実施区域の候補エリアの決定(ｸﾞﾚｲﾀｰｼﾞｮｰｼﾞﾀｳﾝ区域をシステムとしてカバーするが、ジョージタウンを対象区域とする)		
	午後	・ペナン市ジョージタウン区域の道路・交通状況の踏査		
7/15（水）	午前	・ペナン市技術局のKhoo局長と打合せ 第３回のペナン市の派遣について せ支援システムの本格実施に伴う関連事業の予算確保、システム維持管理について		

7/15 （水）	午後	・道路施設等について現地踏査 ・ペナン市技術局の Khoo 局長と打合せ システムの継続性維持について JICA の ODA 案件への検討(在マレーシア日本国大使館、JICAKL 事務所) ・ペナン市技術局のRajendranエンジニアと打合せ 予算確保の手続き及び参考資料（報告書等）の追加について打合せ CCTV システムとの連携について 技術局予算項目の資料を次回までに準備依頼
7/16 （木）		・マレーシア国ペナン市より帰国（堀江、南部）

備　考

The Meeting Matters

1. Confirmation of the Research Plan (Revised Edition)

- About the addition and the change

2. The implementation of Hiyari experience questionnaire study

- The study period
- The object and the way of the study
- The procedure for utilized of HEISS, the hazard map
- The translation into Malay

3. The traffic accident data

- The confirmation of the input item of CARS
- The way of extracting the data from the file of CARS
- About the getting of an accident report
- About the preceding work of the data for the traffic safety measure

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＜The Related URL＞

¦ HEISS of the some languages version

http://www.trafficplus.co.jp/hiyari/ml/

¦ Hazard Map of Penang city

http://www.trafficplus.co.jp/penang/infomenu3.asp

The Research for Traffic Safety Program by TSMSS(Traffic Safety Measures Support System) in Penang, Malaysia

Revised Edition

The Research Plan

July 2009

International Association of Traffic and Safety Sciences

The Research Committee Member

Dr. Kunimichi TAKADA: Project Leader, Professor of Research Institute of Nihon University

Dr. Hirokazu AKAHANE: Professor of Chiba Institute of Technology

Dr. Tomoo KIDO: Traffic Analyst

Dr. Seiichi HORIE: Representative of Specified Nonprofit Corporation OFFICE TAPE

Mr. Toshihiko OYAMATSU: Technical Adviser of KG CONSULTANT CO.,LTD

Dr. Satoru KOBAYAKAWA: Associate Professor of Nihon University

Mr. Khoo Say Boon: Director of Engineering Department, Municipal Council of Peneng Island, Malyasia

Mdm. Maimunah Mohd Sharif: Director of Planning & Development Department, Municipal Council of Peneng Island, Malyasia

The Research Collaboration Person

Mr. Shigeki NANBU: Chief Executive Officer of TRAFFICPLUS CO.,LTD

Mr. Hee Seon OH: Graduate Student of Nihon University

1. The Research Purpose

In Malaysia, the age of automobiles is moving ahead with economic growth in recent years. The number of the accident in 2005 in Malaysia are 12.6 (per 1,000 people) , the number of the dead persons is 2.4 (per 10,000 people) and is twice and the quintuple degree of Japan respectively. Therefore, consciousness which demands compatible is rising. Japan contributes for the motorization in Malaysia to develop. It is the increase of the Japanese car including the motorcycle, the road improvement, the introduction of the traffic control and surveillance system and so on. These situation are not an immediate cause but it can no longer be ignored the frequent occurrence of the traffic accident beforehand. Japan should contribute to the traffic safety measure greatly.

In this research, it applies "Traffic Safety Measure Support System" which was studied and developed in the independent research of this association to Penang city which scale of population is 2nd of Malaysia. With it, it aims to develop the technique of the new international cooperation for the various countries in Asia which the age of automobiles is moving ahead and so on.

2. The Way of The Research

This system integrates management the traffic accident data and the Hiyari (near accident cases) experience data to collect from the citizen using the WebGIS technology. Then, it is one characteristic to rationalize and efficiency the planning and the drafting of the safety measures. Also, it used the Internet and it shared collected information with the citizen and it accomplished the function to promote related consensus building, too. This system is developed and applied as the tool of the core about the safety measures scheme in Chiba Prefecture Kamagaya City and giving a practical effect by it in the reduction of the traffic accident. Moreover, it succeeded in the transplant to Ichikawa City and Shiroi City which neighbors Kamagaya City and it have got the excellent prize of the development and the technical study in "the technical conference of new road" of the Ministry of Land, Infrastructure, Transport and Tourism, Japan in 2008. But, it is necessary still more to research and develop to apply this system in ASEAN country where different from Japan in the culture, the social system and the language and so on and to show a cooperative effect

Through the support system process of the application to Penang Malaysia, it specifically implements the following. They are “[1] the reviewing of the applicability of some languages pack”, “[2] the reviewing of the possibility of the international data sharing which is due to the Internet “, “[3] The diversification and the generalization of the data gathering way and the contents from the citizen “ and “[4] The application to the process of the safety measures drafting in the administration system with Japan and different form “.

3. The Research Contents

[1] The technology transfer to Municipal Council of Peneng Island, Malyasia of Traffic Safety Measure Support System

- It drafts the execution plan of the general technology transfer which assumed propriety operation in Municipal Council of Peneng Island, Malyasia following year since then. In it, it assumes following [2], [3], [4] s the research task with current year.
- The technology transfer includes the following contents. It is support for the survey planning, the traffic safety measure drafting which is based on the transplant and the operations support of this system and the analysis information which is gotten by the concerned system and so on.

[2] The reviewing of the applicability of the linguistic pack and the possibility of the international data sharing which is due to the Internet

- It develops the accident analysis system and Hiyari experience input system for which it is possible to use a 1-byte type language (English and so on) and a 2-byte type language (Japanese and so on). And it builds DB. Then, it reviews those applicability.
- It builds the Web site of the traffic safety information which is possible to share internationally and it reviews the applicability.

[3] It tries the optimization of the accident data item, and diversification of the data gathering way from the citizen and the contents.

- It does the detailed reviewing of the traffic accident DB of the local system and does a data conversion to Traffic Safety Measure Support System. In the process, it reviews about the optimization and the way of the data elements of generalizing.
- It develops the way of applying Hiyari Experience Input Sub System and collecting the information from the citizen about the parking on the street and the traffic jam which is necessary to review a traffic safety measure.

[4] The application to the process of the safety measures planning about the administration system with Japan and ASEAN cities.

- The reviewing of the means which becomes the increase in efficiency of the data input by the positional information merit in the accident occurrence place
- The reviewing of the utilization means of the traffic safety measure planning manual

4. The Whole Flow of The Research

It refers to a separate sheet1.

5. The Research Process

It refers to a separate sheet2.

6. The Technical Visit Plan

(1) 1st Technical Visit (May 31, 2009 – June 4,2009) [Dr.HORIE, Mr. OYAMATSU, Mr. NANBU]

- The outline explanation the Research and the report of the results of Pilot Study (The workshop)
- The confirmation of the research schedule and the full-scale introduction policy
- The budget request and the system confirmation
- The technical expert training

(2) 2nd Technical Visit (July 12, 2009 – July 16, 2009) [Prof. TAKADA, Mr. OYAMATSU, Mr. NANBU]

- The confirmation of the progress status
- The briefing to the Mayor of Municipal Council of Penang Island and the report of the results of Pilot Study
- The confirmation and the adjustment of the full-scale introduction of the system (The Internet, the PC in Municipal Council of Penang Island)
- The discussion of the way of collecting an associated data (Hiyari experience, a traffic accident, GIS)
- The technical expert training

(3) 3rd Technical Visit (September 22, 2009 – September 26, 2009) [Prof. AKAHANE, Dr. KOBAYAKAWA, Mr. NANBU]

- The system installation and the full-scale operation stating
- The DB building of an accident data and Hiyari experience data
- The confirmation and the adjustment of the effectively and the way of utilizing about this programming and the scheme such as the citizen participation
- The introduction of this scheme and the reviewing of a technology transfer
- The adjustment of the road and traffic actual condition survey
- The technical expert training

(・ The reviewing of a proposed measure in Pilot Plan area)

(4) 4th Technical Visit (The middle in December 2009, for 5 days) [Prof. AKAHANE, Mr. NANBU]

- The confirmation of the progress status
- The confirmation about the collection of Hiyari experience and the accident data
- The confirmation about the result of the road and traffic actual condition survey

・ The effectively and the way of utilizing about this programming and the scheme such as the citizen participation

・ The technical expert training

(・ The confirmation of the measure in Pilot Plan area)

(5) 5th Technical Visit (The middle in February 2010, for 5 days) [Prof. TAKADA, Mr. OYAMATSU, Mr. NANBU]

・ The evaluation of the achievement status and the future prospect

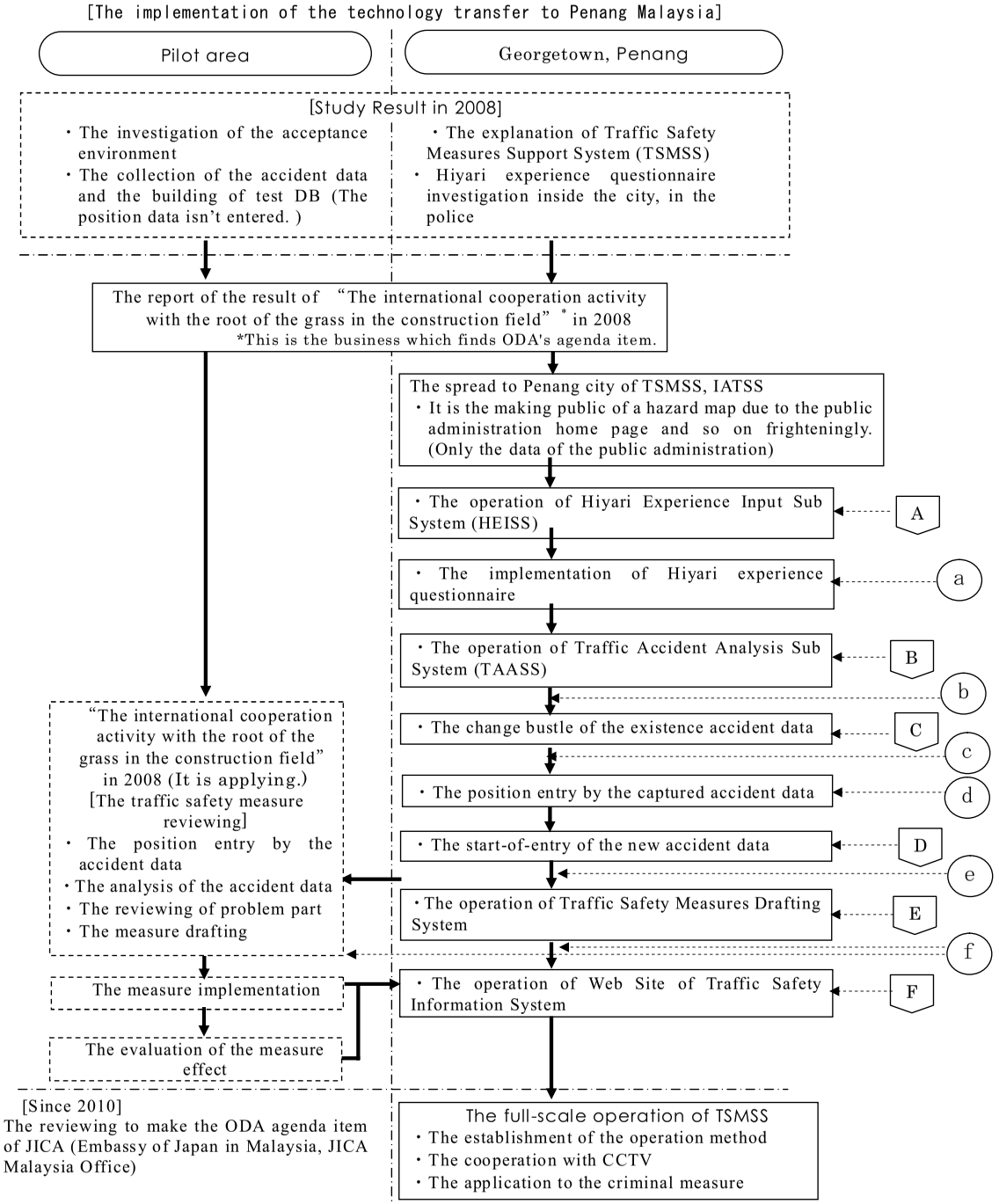
・ The confirmation of the way of utilizing and continuing about this programming and the scheme such as the citizen participation

・ The confirmation about the problem of the introduction of this scheme and the view of the technology transfer

・ The technical expert training

(・ The confirmation of the ex post fact evaluation result in Pilot Plan area)

The Research Flow for Traffic Safety Program by TSMSS(Traffic Safety Measures Support System) in Penang, Malaysia



The research task (The contents of the system development work)

A
○The development of HEISS of the some languages version
・The building of the data base which used 1 byte type and 2-byte type (*1)
・The creating of the interface to support some languages (*2)

B
○The development of TAASS of the some language version
・The creating of a base map (Change of the electronic map)
・The reviewing of a master data of the street and the block and so on
・The reviewing of the item which enters an accident data in the place, The reviewing of the countermeasure method of the system
・*1,*2

C
○The development of the conversion tool of existence accident DB
・The reviewing of the structure and item contents of local accident DB
・The reviewing of the way of the change and the taking of the accident data
・The development of the conversion tool

D
○The development of the accident data position entry support-system
・The reviewing of investigation contents about the accident in the place
・The reviewing of an effective coordinates acquisition way
・The development of the taking system of the accident position
・*1,*2

E
○The development of Traffic Safety Measures Drafting System of the some language version
・The reviewing of a way of utilizing by the measure manual (Japan version)
・*1,*2

F
○The development of Web Site of Traffic Safety Information System of the some language version
・The reviewing and the selection of the making public contents
・The creating of making public content such as the hazard map
・The development of the Web site, and the searching, the display function
・*1,*2

The implementation contents in Engineering Department, Municipal Council of Peneng Island

a
○The implementation of Hiyari experience questionnaire
・The reviewing of a way of implementing of Hiyari experience questionnaire
・The selection of the object of Hiyari experience questionnaire
・The implementation of Hiyari experience questionnaire

b
○The investigation of existing accident DB
・The investigation about the overview of existing accident system
・The investigation about the file format of existing accident DB
・The investigation about the format of existing accident DB

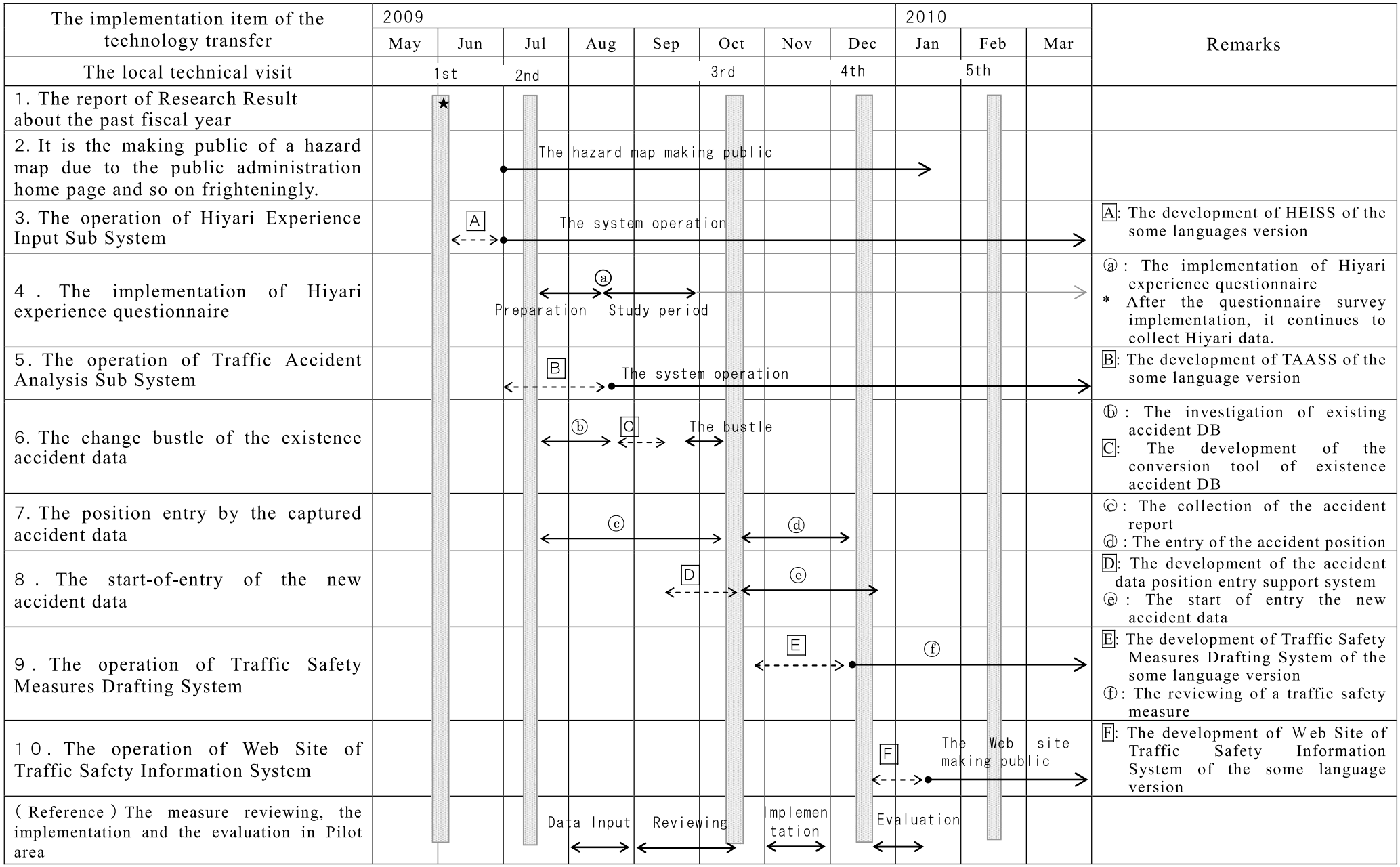
c
○The collection of the accident report
・The collection of the accident report of the captured existence accident data

d
○The entry of the accident position
・It uses TAASS, it consults a collected accident report and it enters an accident position.

e
○The start of entry the new accident data
・It begins the entry of the accident data which used a camera with the GPS feature.

f
○The reviewing of a traffic safety measure
・The reviewing of the traffic safety measure which used Traffic Safety Measures Drafting System

The Research Process



ⓐ～ⓕ：Compatible in Engineering Department, Municipal Council of Peneng Island
A～F：The system development work

The Research for Traffic Safety Program by TSMSS(Traffic Safety Measures Support System) in Penang, Malaysia

Malaysia becomes a motorized society and the traffic accident is becoming a social problem. I think that the experience in Japan which faced terrible difficulty in this thing often becomes reference. In Japan, the number of death toll was 16,000 about 30 years before. After that, about became quintuple about the number of the car but as a result of a wide range of traffic safety policies, the present death toll falls below 6,000. Moreover, we continue an effort in the goal below 5,000.

Recently, as one of these traffic safety policies, “the road safety promotion program of the citizen's participation type” which used a daily operating experience and the data of the experience that the resident noticed danger in the daily life was developed. In Japan, this policy is expected when it gets big excellent results as the new efforts. Then, this is already implemented in some cities and the accident reductioeffect was confirmed.

The increase of the traffic jam and the traffic accident is making a social problem in Penang, Malaysia. It thought whether or not this program wasn't valid with the Penang city. As for “PILOT STUDY OF TRAFFIC SAFETY PROGRAM BY TSMSS IN PENANG, MALAYSIA”, “SPECIFIED NONPROFIT CORPORATION OFFICE TAPE” and Municipal Council of Penang Island were jointly implemented. This research got support of the Ministry of Land, Infrastructure, Transport and Tourism which is doing a road safety policy in Japan in the core. As the result of the research, the application of " the road safety program of the citizen's participation type " in Penang city confirmed that the possible thing is both, too. Also, the necessity of further technical cooperation in the future became clear.

Based on above-mentioned Research Result, the investigation this time implements the following. First, it introduces "Traffic Safety Measure Support System: TSMSS" into Municipal Council of Penang Island, and it builds a related data base.. First, it introduces "Traffic Safety Measure Support System: TSMSS" into Municipal Council of Penang Island, and it builds a related data base. It aims for " the road safety program of the citizen's participation type " to implement e propriety in Municipal Council of Penang Island. These efforts get support of International Association of Traffic and Safety Sciences.

If this full-scale system and the technology transfer can be implemented, it thinks that the service of the safe road environment in Penang city can be roughly con-

tributed to.

■ The Program for Create of Traffic Safety Measures of the Citizens Participation

It proceeds with this program as follows. First, it collects the accident data and the danger which is necessary to create a measure for the road safety, implementing the participation of the citizen in addition to the administration. Then, in the base of the data, it implements a traffic safety measure by the consensus building with the citizen.

We implement investigation using the Internet and GIS, create the data base of the traffic accident and Hiyari experience information and analyze it scientifically. Then, we will be able to show the effect and the fee and so on when introducing into the Penang city.

■ PILOT STUDY OF TRAFFIC SAFETY PROGRAM BY TSMSS IN PENANG, MALAYSIA

・Research Period : December, 2008～March, 2009
・Enforcement organization : SPECIFIED NONPROFIT CORPORATION OFFICE TAPE
・Supporting aircraft Seki : the Ministry of Land, Infrastructure, Transport and Tourism
※For the details, refer to the final report of "PILOT STUDY OF TRAFFIC SAFETY PROGRAM BY TSMSS IN PENANG, MALAYSIA".

■ The Research Schedule

In this investigation, we plan to visit five times by the beginning in February 2010 including the visit to the Penang city this time. Then, we plan to implement the workshop with the related organization and the joint work with the technical expert and the specialist.

The administration person in charge, the road user and the traffic specialist plan to participate in the program. We look forward to that Penang city utilizes this system (TSMSS) and becomes a model as the exemplary city of the traffic safety in Malaysia.

■ Assumed the acceptance organization and the related organization

1) The acceptance organization
Municipal Council of Penang Island, Malaysia
2) The related organization
Economic Planning Unit Penang State, Penang State Police Dept. Police H.Q, Penang State, Highway Planning Unit Ministry of Public Works

The Present Situation of the Traffic Accident in Malaysia

・The population of Malaysia is about 20% of Japan. However, the accident rates to have divided by the population are twice and the number of the dead persons by the traffic accident is the same number almost.

・MIROS （Malaysian Institute of Road Safety Research) is established in 2007 and the research activities about the traffic safety go into full swing.

Table The Comparison of the Traffic Accident Generation Status in Malaysia and Japan

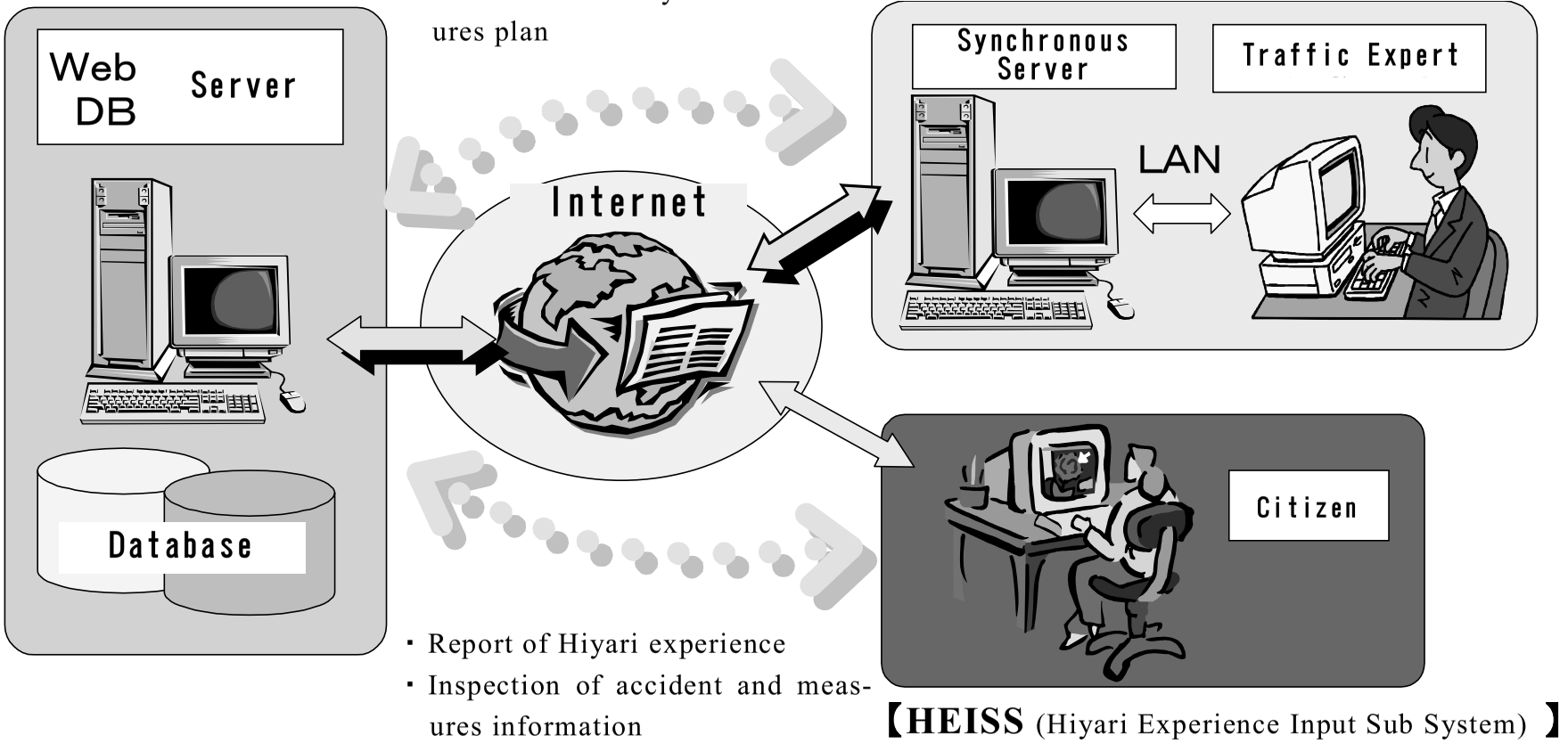
	Malaysia[1)] (2005)	Japan[2)] (2007）
Area [k ㎡]	330,252	377,923
Population [million people]	2,613	12,777
Road Extension[km]	71,814	1,257,000
Road Accidents （ per 1000 people)	328,264 （12.6）	886,864 （6.9）
Road Casualties	47,012	1,098,199
Road Deaths	6,200	6,352

Sorce

1) Mohamad Nizam Mustafa, Overview of Current Road Safety Situation in Malaysia, UNESCAP, 2006

2) The Ministry of Internal Affairs and Communications, Bureau of Statistics HP, http://www.stat.go.jp/

Schematic of TSMSS (Traffic Safety Measures Support System)



The Research Process

The implementation item of the technology transfer	2009 May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2010 Jan	Feb	Mar	Remarks
The local technical visit		1st	2nd			3rd		4th		5th		
1. The report of Research Result about the past fiscal year		★										
2. It is the making public of a hazard map due to the public administration home page and so on frighteningly.			The hazard map making public →									
3. The operation of Hiyari Experience Input Sub System		Ⓐ <---	The system operation →									Ⓐ: The development of HEISS of the some languages version
4. The implementation of Hiyari experience questionnaire			ⓐ Preparation	Study period →								ⓐ: The implementation of Hiyari experience questionnaire * After the questionnaire survey implementation, it continues to collect Hiyari data.
5. The operation of Traffic Accident Analysis Sub System			Ⓑ <---	The system operation →								Ⓑ: The development of TAASS of the some language version
6. The change bustle of the existence accident data			ⓑ	Ⓒ <--- The bustle ↔								ⓑ: The investigation of existing accident DB Ⓒ: The development of the conversion tool of existence accident DB
7. The position entry by the captured accident data			ⓒ →			ⓓ →						ⓒ: The collection of the accident report ⓓ: The entry of the accident position
8. The start-of-entry of the new accident data					Ⓓ <---	ⓔ →						Ⓓ: The development of the accident data position entry support system ⓔ: The start of entry the new accident data
9. The operation of Traffic Safety Measures Drafting System							Ⓔ <---	ⓕ →				Ⓔ: The development of Traffic Safety Measures Drafting System of the some language version ⓕ: The reviewing of a traffic safety measure
10. The operation of Web Site of Traffic Safety Information System								Ⓕ <--- The Web site making public →				Ⓕ: The development of Web Site of Traffic Safety Information System of the some language version
(Reference)The measure reviewing, the implementation and the evaluation in Pilot area				Data Input ↔	Reviewing ↔		Implementation ↔		Evaluation ↔			

ⓐ～ⓕ：Compatible in Engineering Department, Municipal Council of Peneng Island
Ⓐ～Ⓕ：The system development work

PILOT STUDY OF TRAFFIC SAFETY PROGRAM BY TSMSS

(Traffic Safety Measures Support System)

IN PENANG, MALAYSIA

SPECIFIED NONPROFIT CORPORATION ***OFFICE TAPE***

June.1, 2009

Investigation Person in Charge

Head Hirokazu AKAHANE
(Professor of Chiba Institute of Technology)

Shigeki NANBU
(Chief Executive Officer of TRAFFICPLUS CO.,LTD)

Toshihiko OYAMATSU
(Technical Adviser of K.G CONSULTANT CO.,LTD)

Seiichi HORIE
(Representative of Specified Nonprofit Corporation OFFICE TAPE, Adviser of CHODAI CO.,LTD)

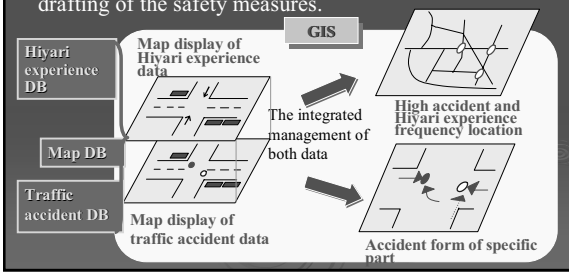
Issei IKEDA
(Road Traffic Planning Department , CHODAI CO.,LTD)

Investigation Cooperator

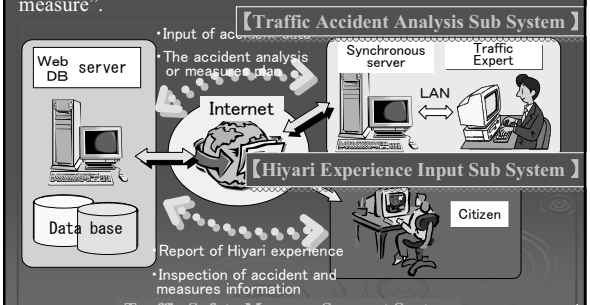
Kunimichi TAKADA
(Professor of Nihon University)

Overview of Traffic Safety Measures Creating of The Citizens Participation Type Program

This system integrates management the traffic accident data and the Hiyari experience data to collect from the citizen using the WebGIS technology. Then, it makes a base to rationalize and streamline the planning and the drafting of the safety measures.



This program has the function to publish collected information in the Internet and do the following function. The functions are “the improvement of the consciousness to the traffic safety of the citizen” and “the promotion of the consensus building which relates to the drafting and the implementation of the traffic safety measure”.



The results in Japan of “Traffic Safety Measures Support System”

- This program began a spadework by International Association of Traffic and Safety Sciences (IATSS) from 1997.
- It applies to the intersection, the street and the area in Chiba Prefecture Kamagaya City and it is getting good results of the reduction of the traffic accident.
  - The support object of the society experiment of the Ministry of Land, Infrastructure and Transport (2001)
  - The support object of “the zone of the road in the living” of the Ministry of Land, Infrastructure and Transport (2003)
- It succeeded in the transplant to Ichikawa City and Shiroi City which neighbors Kamagaya City, too.
  - It won the excellent prize of the development and the technical study in "the technical conference of new road" of the Ministry of Land, Infrastructure, Transport and Tourism in 2008.

Background (1)

The increase of the traffic accident becomes a social problem in Malaysia in recent years.

	Malaysia (2005)	Japan (2007)
Area [km²] (90 % of Japan)	330,252	377,923
Population [10000 people] (20 % of Japan)	2,613	12,777
Road Extension[km] (6% of Japan)	71,814	1,257,000
Road Accidents (per 1000 people) (Twice Japan)	328,264 (12.6)	886,864 (6.9)
Road Casualties	47,012	1,098,199
Road Deaths (per 10000 people) (5 times Japan)	6,200 (2.4)	6,352 (0.5)

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Malaysian Institute of Road Safety Research (MIROS) is established in 2007 and it implements research activities about the road safety in earnest.

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Background (2)

◆As for Penang city which is a city in 2nd of Malaysia, The increase of the traffic accident makes a social problem, and the utilization an experience and a result in Japan.

- The following is in the root. They are the international cooperation of JICA, Yokohama city and so on for many years and the technical cooperation at "root of the grass" of the individual expert .

◆The introduction of TSMSS and the results.

◆The necessity of the technical assistance about the application in Penang city. .

◆By the application to the foreign countries of the program, it aims to develop the technique of the new international cooperation for the various countries in Asia which the age of automobiles is moving ahead and so on.

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Purpose

1. It reviews the possibility that "the traffic safety measure support-system" can be applied to Penang city which is the core tool to promote a traffic safety measure by the citizen's participation.
2. It reviews and organizes a problem about the possibility and the way to transfer the expertise which is necessary to draft a traffic safety measure with Penang municipality.

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Flow

The adjustment with the acceptance organization

↓

The introduction of TSMSS

↓

The reviewing of the system introduction and operation plan

↓

The implementation of Pilot investigation in the model district

↓

The evaluation of the system introduction possibility
The reviewing of the problem when proceeding with the efforts

⇩

The reviewing of a road safety policy

The spread of the future

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Acceptance organization

The acceptance organization (Penang city)	Municipal Council of Penang Island, Malaysia
The related organization (Traffic Police etc)	Economic Planning Unit Penang State, Penang State Police Dept. Police H.Q, Penang State, Highway Planning Unit Ministry of Public Works

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Status of The Investigation

○It voyaged three times to Penang city and it implemented a workshop and investigation at the site.

○Moreover, it did a follow-up from Japan to the person in charge in Penang city using E-mail .

	Schedule	Investigation Contents
1st Voyage	09/01/12 ～09/01/15	・Courtesy call to the mayor of Penang, Briefing ・Workshop ・Visit to the police ・The spot survey
2nd Voyage	09/02/10 ～09/02/14	・The supplementary explanation of the traffic safety measure by the citizen's participation (Workshop) ・The confirmation and the adjustment of the environment for the introduction the system ・The spot survey (Pilot investigation object area)
3rd Voyage	09/03/08 ～09/03/12	・The confirmation of the achievement status of the investigation, the collection status of the data ・It arranges beforehand about the future prospect and the problem of the program for Create of Traffic Safety Measures of the Citizens Participation.

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After the interview with the mayor, reporter releasing was done and television news and a newspaper were reported.

Japanese help on traffic woes

Group volunteers to conduct studies on safety measures for Penang roads

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We implemented the workshop with the city person in charge and the police and so on. And we implemented a main point explanation and case introduction.

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It did detailed investigation about the practice about the accident processing by the accident report and so on and the accident data entry system.

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It did the supplementary explanation at the workshop and it deepened understanding.

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We implement the investigation of the system environment of LAN in the agency and the internet environment and so on.

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We investigated the traffic status of the model district.

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It confirmed the achievement status of the pilot investigation.

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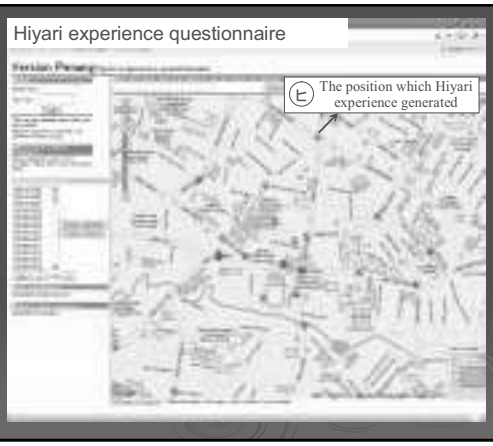
Hiyari experience questionnaire



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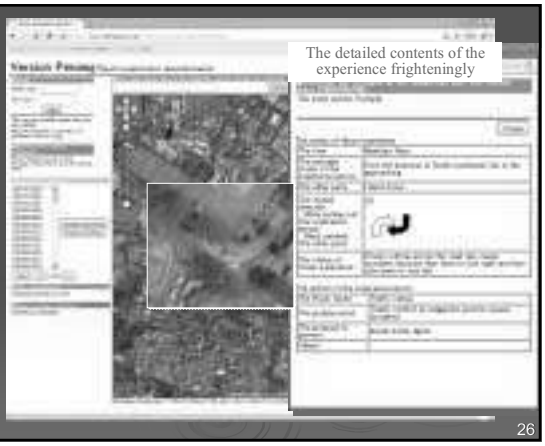

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The meeting about the problem to the efforts and the follow-up way in the future.

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Result of The Investigation

- The active cooperation could be gotten from all of the departments which are related as the reporter releasing by Penang mayor symbolizes.
- It got traffic accident data from the traffic police and it reviewed the detailed contents of the data. As a result, it confirmed an available thing to the measures for accidents.
- As a result of the meeting with City Bureau, Penang city introduced GIS already and the electronic map confirmed an available thing by TAASS.
- As a result of the meeting with the system department bureau, the LAN or the environment of the internet in the agency and the use environment of the system which is serviced in Penang city are comparable more than Japan-domestic, too.

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Result of The Investigation

- It implemented the Hiyari experience questionnaire which used the Internet for the object and it collected data of the staff in the city and the police.
- It implemented a meeting with the technology bureau and the relation organization of the taking charge and we could get enough understanding. 。
- To review a problem while doing a specific activity, it selected a model district and it implemented Pilot investigation.

⇩

・The confirmation of the thing that TSMSS is applicable .
・The service of the system which accepts expertise

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Problem in The Future

In Penang city, the citizen participation doesn't penetrate. The participation form which suited environment in the place must be reviewed.

－In the main research, it implemented Hiyari experience questionnaire in Penang city and the traffic police staff as the introduction initial stage of the citizen participation.

－These precede-input data becomes "calling water" in case of Hiyari experience information collection from Citizen in the future.

➡ Based on the experience of the questionnaire, it is presented the active opinion of “How about making the NGO of the road safety relation and the driver of the bus an investigation object?” and so on from the technology bureau in Penang city already.

－In the future, the reviewing must be proceeded with about the form of the citizen participation with the reviewing step of the road safety policy, too.

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END
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The Scenario of the Reporter Releasing

1. The Study Result of "The International Cooperation Activity with The Root of The Grass about The Construction Field"

(1) The overview of the activity : Engineering Department, Municipal Council of Penang Island

(2) The study result : OFFICE TAPE

2. About the Study Continuation by this Year

(1) The overview of the new study : the Mayor of Municipal Council of Penang Island (Briefing material)

(2) The grasping of the traffic safe needs of the resident (About Hiyari experience questionnaire) : IATSS

- It creates a hazard map from the study result in the previous year.
- The policy of the investigation in this year

The Collection and the Entry of the Traffic Accident Data

1. Purpose

To implement the traffic accident measure which utilized TAASS (Traffic Accident Analysis Sub System), the collection and the entry of the traffic accident data become necessary. It confirms about the accident data and the entry contents to get and it reviews about the application way in the future.

2. The Way of Investigation

It collects the accident data which the police are managing in CARS (Computerized Accident Reporting System) when implementing investigation. Then, it adds the position which the accident generated and it builds a data base.

(1) Data Collection

①The information detailed of the accident: It clarifies the item which is necessary to analyze and it gets the detailed information of the accident in the electronic data.

②The occurrence position of the accident: It gets an accident data output sheet and it confirms an occurrence position.

※Object period: 1 year of the pasts

※Object scope：It makes the accident data which occurred with the road and the peripheral road in the target district of Pilot investigation.

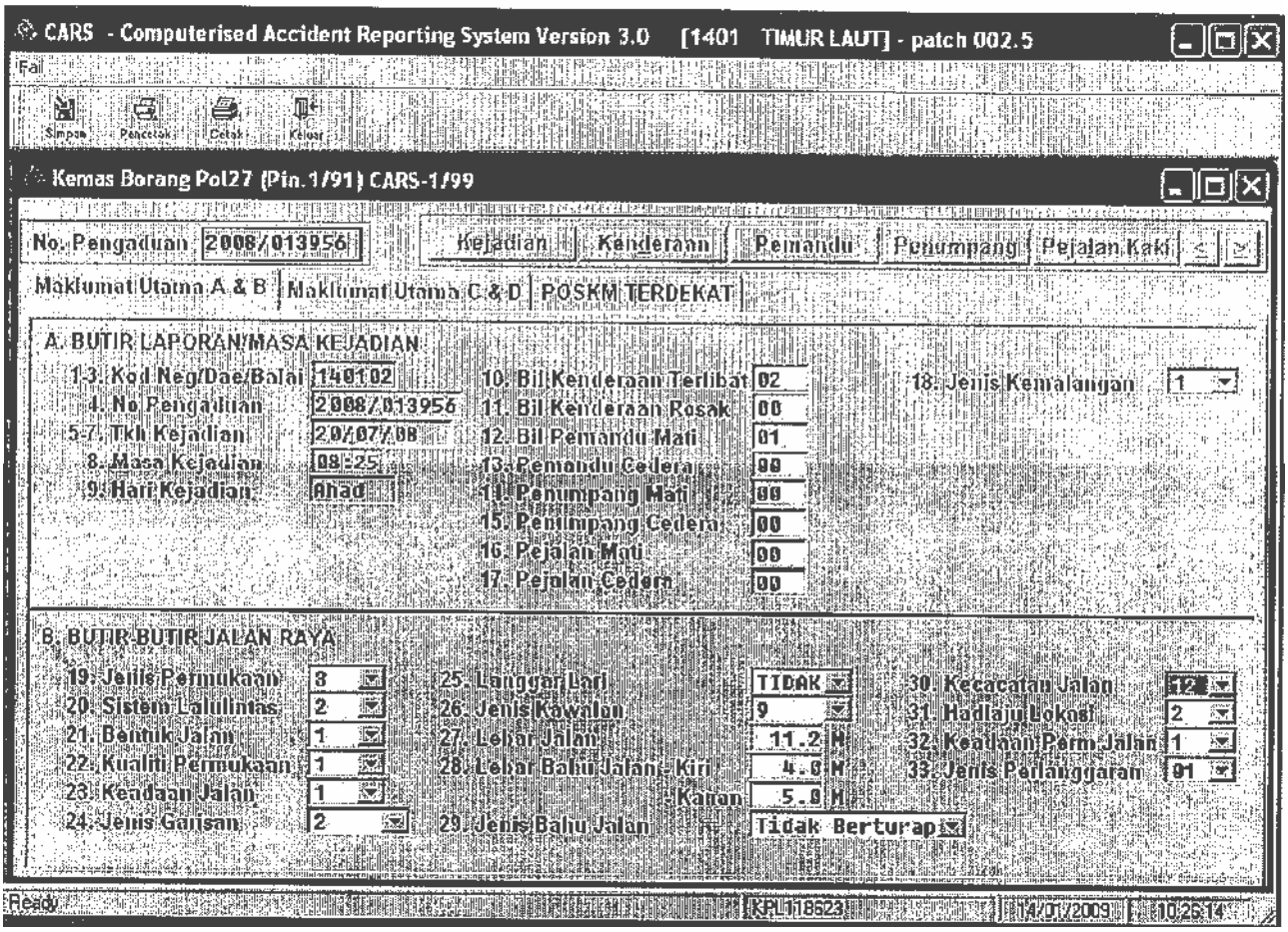

Fig. Screen of CARS

(2) Data Entry

①The information detailed of the accident: It changes gotten electronic data inside Japan and it subscribes it to the data base.

②The occurrence position of the accident: It uses TAASS for Pilot investigation, and the person in charge in the Penang city consults adds an accident-generation position to the accident data in an accident data output sheet.

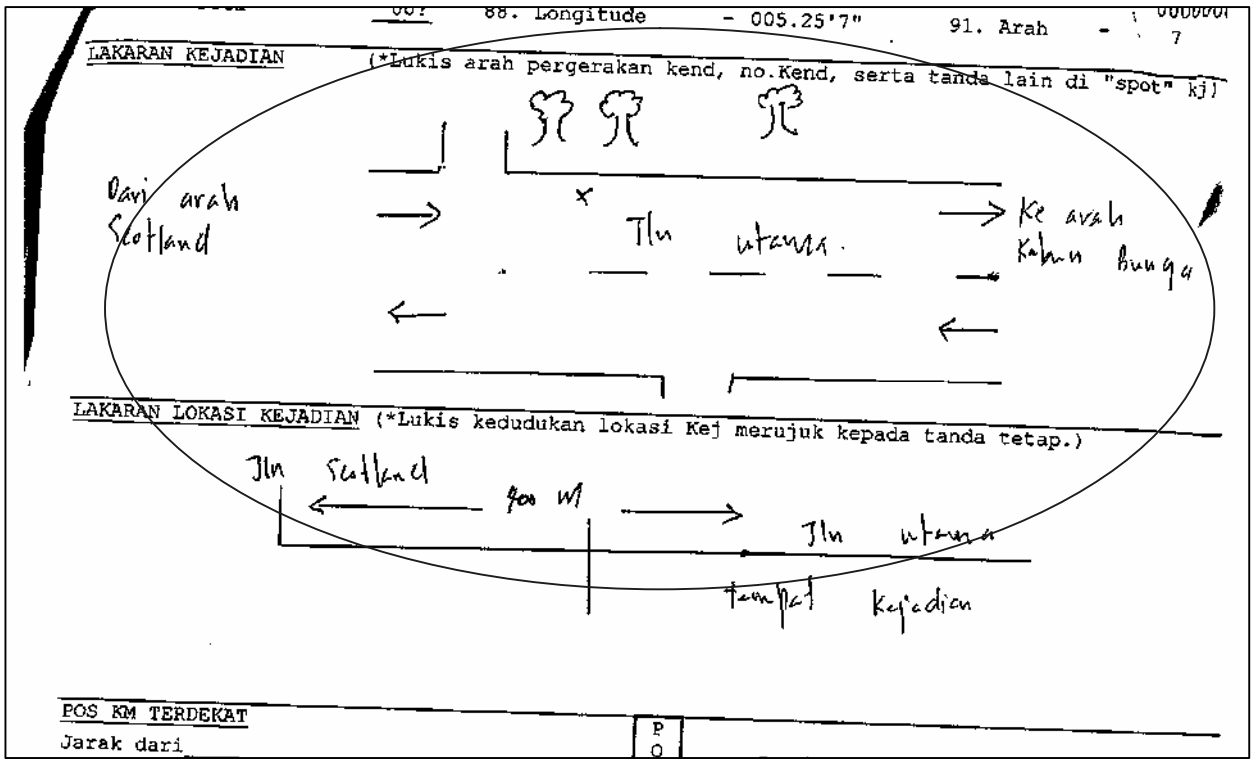

Fig. Accident Data Output Sheet

*Confirmation point

1. What accident definition is it?

2. What accident data format is it?

3. How to investigate the accident data.

4. How to publish the data about accidents.

5. CARS Item
   References :Confirmation point_2

Some items of [CARS] seem not to be displayed from material.
Please, tell the list item of the combo box.

Item No.	Item Name	Content
18	Jenis Kemalangan	The kind of the displayed list is uncertain.
23	Keadaan Jalan	The kind of the displayed list is uncertain.
24	Jenis Garisan	As for the list, only a part is displayed.
25	Langgar Lari	The kind of the displayed list is uncertain.
30	Kecacatan Jalan	As for the list, only a part is displayed.
33	Jenis Perlanggaran	As for the list, only a part is displayed.

・CARS Combo List

No	ItemName	ComboItem
#	Jenis Kemalangan	
#	Jenis Permukaan	1:BATU
		2:BERTURAP BATA
		3:BERTURAP BITUMIN/TAR
		4:BERTURAP KONKRIT
		5:TANAH
#	Sistem lalulintas	1:SEHALA
		2:DUA HALA
		3:TIGA LORONG
		4:BERKEMBAR ATAU LEBIH
#	Bentuk Jalan	1:LURUS
		2:SELEKOH
		3:BULATAN
		4:SIMPANG EMPAT ATAU LEBIH
		5:SIMPANG TIGA ATAU Y
		6:SIMPANG STAGGERED
#	Kualiti Permukaan	1:RATA
		2:MENDAP
		3:BERLUBANG
		4:BEROMBAK
#	Keadaan Jalan	
#	Jenis Garisan	1:GARISAN KEMBAR
		2:GARISAN TENGAH BERTANDA
		3:JALAN SEHALA
		4:PEMISAH JALAH
		5:PUSINGAN U
#	Langgar Lari	
#	Jenis Kawalan	1:POLIS
		2:AGENSI LUAR
		3:BERLAMPU ISYARAT
		4:LINTASAN JALAN KAKI
		5:LINTASAN JALAN KAKI BERLAMPU
		6:LINTASAN KERETAPI
		7:GARIS LINTANG KUNING
		8:KOTAK KUNING
		9:TIADA KAWAKAN
#	Jenis Bahu Jalan	Berturap
		Tidak Berturap
#	Kecacatan Jalan	1:BAHU JALAN RENDAH/TINGGI
		2:MENHOLE RENDAH/TINGGI
		3:BATU LONGGAR
		4:JALAN BERDEBU
		5:JALAN BERLUBANG
		6:JALAN LICIN
		7:KEROSAKAN LAMPU ISYARAT
		8:LINTASAN KERETAPI SEMPIT
		9:JAMBATAN SEMPIT
		10:TIADA GUARD RAIL
		11:TIADA/KURANG LAMPU JALAN
#	Hadlaju Lokasi	1:50 KML
		2:70 KMJ
		3:80 KMJ
		4:90 KMJ
		5:110 KMJ
		6:LAIN-LAIN
#	Keadaan Perm Jalan	1:KERING
		2:BANJIR
		3:BASAH
		4:BERMINYAK
		5:BERPASIR
		6:SEdANG DIPERBAIKI
#	Jenis Perlanggaran	01:DEPAN DENGAN DEPAN
		02:LANGGAR BELAKANG
		03:LANGGAR RUSUK TEPAI
		04:LANGGAR SEBELAH TEPAI
		05:BERGESEL
		06:TERHIMPIT

Questionnaire Survey of Hiyari Experience

1. Investigation Purpose

To utilize TAASS (Traffic Accident Analysis Sub System), you must get the traffic accident data, the map information and the Hiyari experience data. Hiyari experience is the spot and the contents to have felt not to have become a traffic accident but that was dangerous. This is information on the factor to extract a road dangerous part and an accident dangerous part. This time, when implementing Hiyari experience questionnaire for the staff at the Penang government office as Pilot investigation, We review about the understanding of a way of collecting Hiyari experience data and an input method and the application way in the future.

2. Investigation Overview

The period, the object scope and the object of the investigation are as follows.

(1) Investigation Period

We are planning one week as for an executive period of a questionnaire survey. After selecting an investigation object area, the investigation must be begun at once.

(2) Investigation Object Range

It considers the following point and it selects.

- It is desirable that Jurisdiction police station which is related is one station.
- It is the area and the road which a lot of staff use.
- It is a narrow range and moreover the area of the group.

(3) Investigation Object People

①The staff at the Penang government office

②The specification monitor: Professional Driver (Bus Drivers) * There is a proposal from the police when the first voyages.

(4) Investigation Item and Contents

The investigation item is as follows.

Item	Contents
Attribute of the respondent	Gender, Age, Address (Name, E-mail Address)
Place of Hiyari experience	Position, Direction of movement of the party
Contents of Hiyari experience	Date and Time, Weather, Means of transportation, Other party's attribute, Factor, Status, Proposal

(5) Investigation Method

It distributes a questionnaire form and a sample form. And After entering Hiyari experience, it collects during the investigation period and after the ending. The details are as follows.

①The person in charge brings the section and each supplier to distribute a questionnaire form. Then, it

does the explanation of the way to enter, a contact in the collection due date and so on.

②The police requests a specification monitor from.

③During the investigation period, the person in charge supports a question about the investigation.

④After the investigation ends, it does the section and the supplier of the object a direct visit and so on and it collects an answer form.

⑤The person in charge uses HEISS (Hiyari Experience Input Sub System) and enters data.

(6) Handout Material

A questionnaire form, a sample form are shown in the attached material.

Hiyari Experience Questionnaire Form

Hiyari Experience is . . . ?
Have you ever felt "dangerous !" when you walk or drive the car or ride the motorcycle and so on at the road? In this way, Hiyari experience is the experience which you may have a traffic accident almost. This questionnaire is “Hiyari experience”
This questionnaire collects information on such " Hiyari experience " and information on the place to feel that is dangerous in the daily life.

【Question 1】About Yourself

【GENDER】	【ADDRESS / NAME】
1.Man 2.Woman	We request the entering of your address and a zip code. [ADDRESS]_____[ZIP CODE]_____ ([NAME]_____ [E-MAIL]_____) *There is a case where the reviewing of an traffic accident prevention measure cooperates In the base of the questionnaire result. In the case, we request that the one for which it is possible to understand a contact from the city enter your detailed address and your name or your e-mail address. Incidentally, because it doesn't leak the personal information which you enter to the outsider, we manage strictly.
【AGE】	
( )	

【Question 2】About The Place of "*Hiyari Experience*"

Please enter your Hiyari experience place to map of attached paper. (You can answer the plural experience.)
Enter the place in the map and answer question 3 about the detailed contents of Hiyari experience. Incidentally, in the case with plural Hiyari experience places, enter the number in each spot and answer question 3 every spot.

【Question 3】About The Contents of “Hiyari Experience”

When there is other party, answer.

Spot No.	1) Weekday/ Holiday	2) Time Zone	3) Weather	4) Month	5) Day	6) Day of Week	7) Your Means of Transportation	8) Jender and Age of Other Party	9) Other Party's Transportation	10) Mutural Position ※You may enter in the map to have entered in Question 2.	11) Factor of “Hiyari Experience”	12) Status of “Hiyari Experience”	13) Proposal of Measure
①	1.Weekday 2.Holiday 3.Always 4.Unclear	( ) [AM / PM] When unclear, choose from the following. 1.Morning 2.Noon 3.Night 4.Midnight 5.Always 6.Unclear	1.Sunny 2.Cloudiness 3.Rain 4.Fog 5.Snow 6.Always 7.The others 8.Unclear	( ) When unclear, choo from the following. 1.Always 2.Unclear	( ) When unclear, choo from the following. 1.First 10 days 2.Middle 10 days 3.Last 10 days 4.Always 5.Unclear	1.Monday 2.Tuesday 3.Wednesday 4.Thursday 5.Friday 6.Saturday 7.Sunday 8.Always 9.Unclear	1.Car 2.Truck 3.Motorcycle 4.Bicycle 5.Walker 6.Bus 7.Large size Truck 8.The others	1.Man 2.Woman 3.Unclear 1.Advanced age 2.Middle age 3.Youth 4.Child 5.Unclear	1.Unclear 2.Car 3.Truck 4.Motorcycle 5.Bicycle 6.Walker 7.Bus 8.Large size Truck 9.The others				
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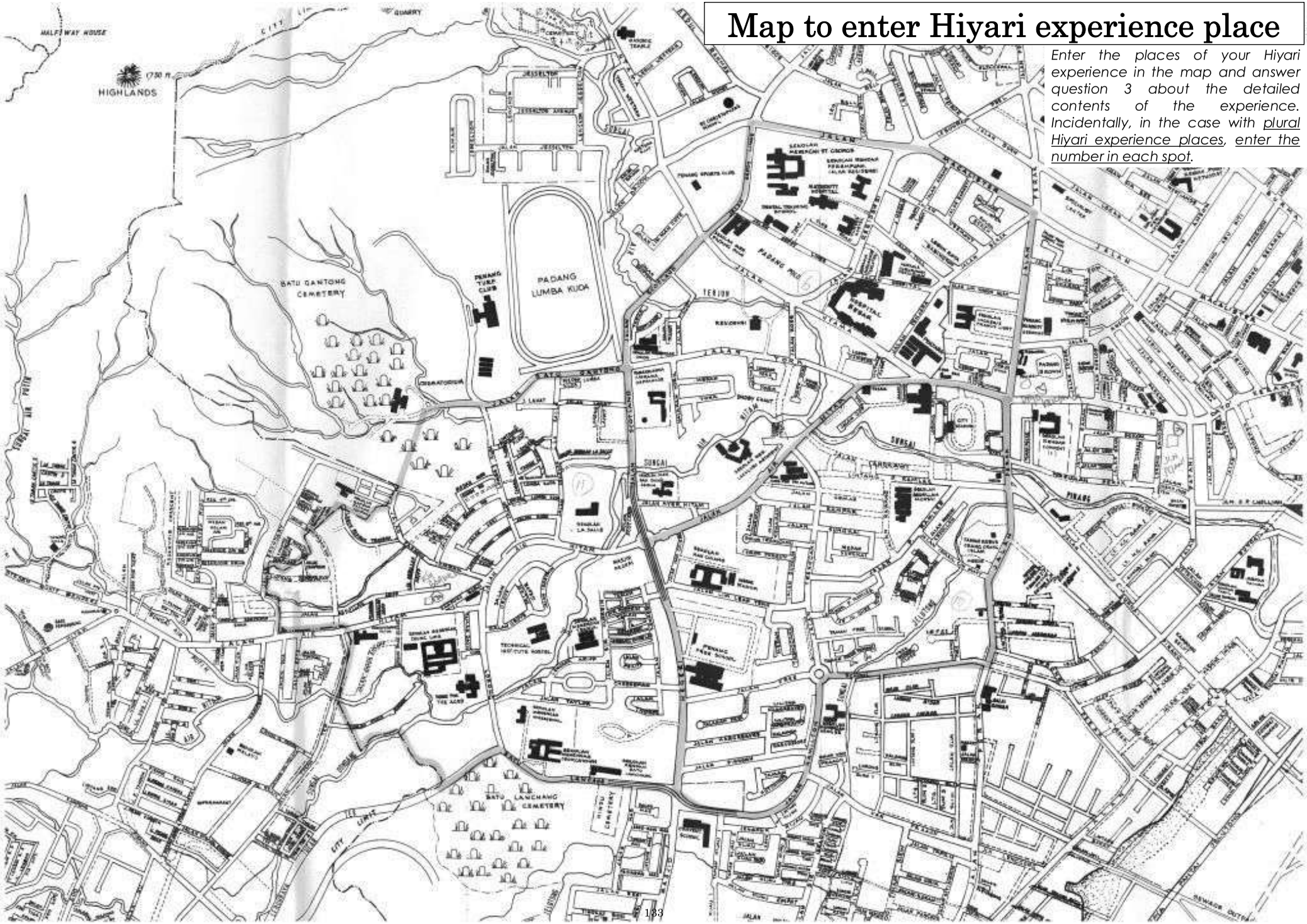
Thank You for Cooperation!

Map to enter Hiyari experience place

Enter the places of your Hiyari experience in the map and answer question 3 about the detailed contents of the experience. Incidentally, in the case with plural Hiyari experience places, enter the number in each spot.



Hiyari Experience Questionnaire Form

Entry points (Sample)

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【AGE】	
( )	

Back is the sample form of the map

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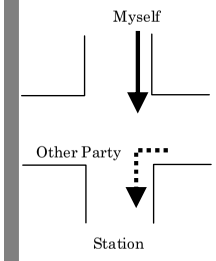
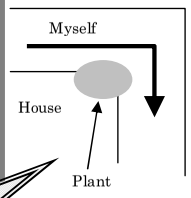
Spot No.	1) Weekday/ Holiday	2) Time Zone	3) Weather	4) Month	5) Day	6) Day of Week	7) Your Means of Transportation	8) Jender and Age of Other Party	9) Other Party's Transportation	10) Mutural Position ※You may enter in the map to have entered in Question 2.	11) Factor of "Hiyari Experience"	12) Status of "Hiyari Experience"	13) Proposal of Measure
①	1.Weekday 2.Holiday 3.Always 4.Unclear	(4) [AM / PM] When unclear, choose from the following. 1.Morning 2.Noon 3.Night 4.Midnight 5.Always 6.Unclear	1.Sunny 2.Cloudiness 3.Rain 4.Fog 5.Snow 6.Always 7.The others 8.Unclear	(7) When unclear, choo from the following. 1.Always 2.Unclear	(21) When unclear, choo from the following. 1.First 10 days 2.Middle 10 days 3.La[illegible] 4.Al[illegible] 5.U[illegible]	1.Monday 2.Tuesday 3.Wednesday 4.Thursday 5.Friday [illegible] 9.Unclear	1.Car 2.Truck 3.Motorcycle 4.Bicycle 5.Walker [illegible] 8.The others	1.Man 2.Woman 3.Unclear 1.Advanced age 2.Middle age 3.Youth 4.Child 5.Unclear	1.Unclear 2.Car 3.Truck 4.Motorcycle 5.Bicycle 6.Walker 7.Bus 8.Large size Truck 9.The others		The car rushed to the road way.	The car rushed out of the street in the east from when walking to South to the station in the east side a[illegible] at the [illegible]	It makes to bring to a halt.
②	1.Weekday 2.Holiday 3.Always 4.Unclear	( ) [AM / PM] When unclear, choose from the following. 1.Morning 2.Noon 3.Night 4.Midnight 5.Always 6.Unclear	1.Sunny 2.Cloudiness 3.Rain 4.Fog 5.Snow 6.Always 7.The others 8.Unclear	( ) When unclear, choo from the following. 1.Always 2.Unclear	( ) When unclear, choo from the following. 1.First 10 days 2.Middle 10 days 3.Last 10 days 4.Always 5.Unclear	1.Monday 2.Tuesday 3.Wednesday 4.Thursday 5.Friday 6.Saturday 7.Sunday 8.Always 9.Unclear	1.Car 2.Truck 3.Motorcycle 4.Bicycle 5.Walker 6.Bus 7.Large size Truck 8.The others	1.Man 2.Woman 3.Unclear 1.Advanced age 2.Middle age 3.Youth 4.Child 5.Unclear	1.Unclear 2.Car 3.Truck 4.Motorcycle 5.Bicycle 6.Walker 7.Bus 8.Large size Truck 9.The [illegible]		Plant leads to a road. There isn't a light. So it is very dark when becoming at night.	When turning at the corner, I'm fearful that the person or the bicycle seem to rush out of the end.	The pruning of planting The installation of the street lamp
③	1.Weekday 2.Holiday 3.Always 4.Unclear	( ) [AM / PM] When unclear, choose from the following. 1.Morning 2.Noon 3.Night 4.Midnight 5.Always 6.Unclear	1.Sunny 2.Cloudiness 3.Rain 4.Fog 5.Snow 6.Alwa[illegible] 7.The other[illegible] 8.Unclear	( )	( )	1.Monday	1.Car	1.Man	[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] 9.The others				

Enter both Jender and age

Enter the direction of movement of you and other party. Also, enter circumference facilities and a facility name and so on, too.

Your Progressive Direction →
Other Progressive Direction ⋯→

Hiyari Experience Example

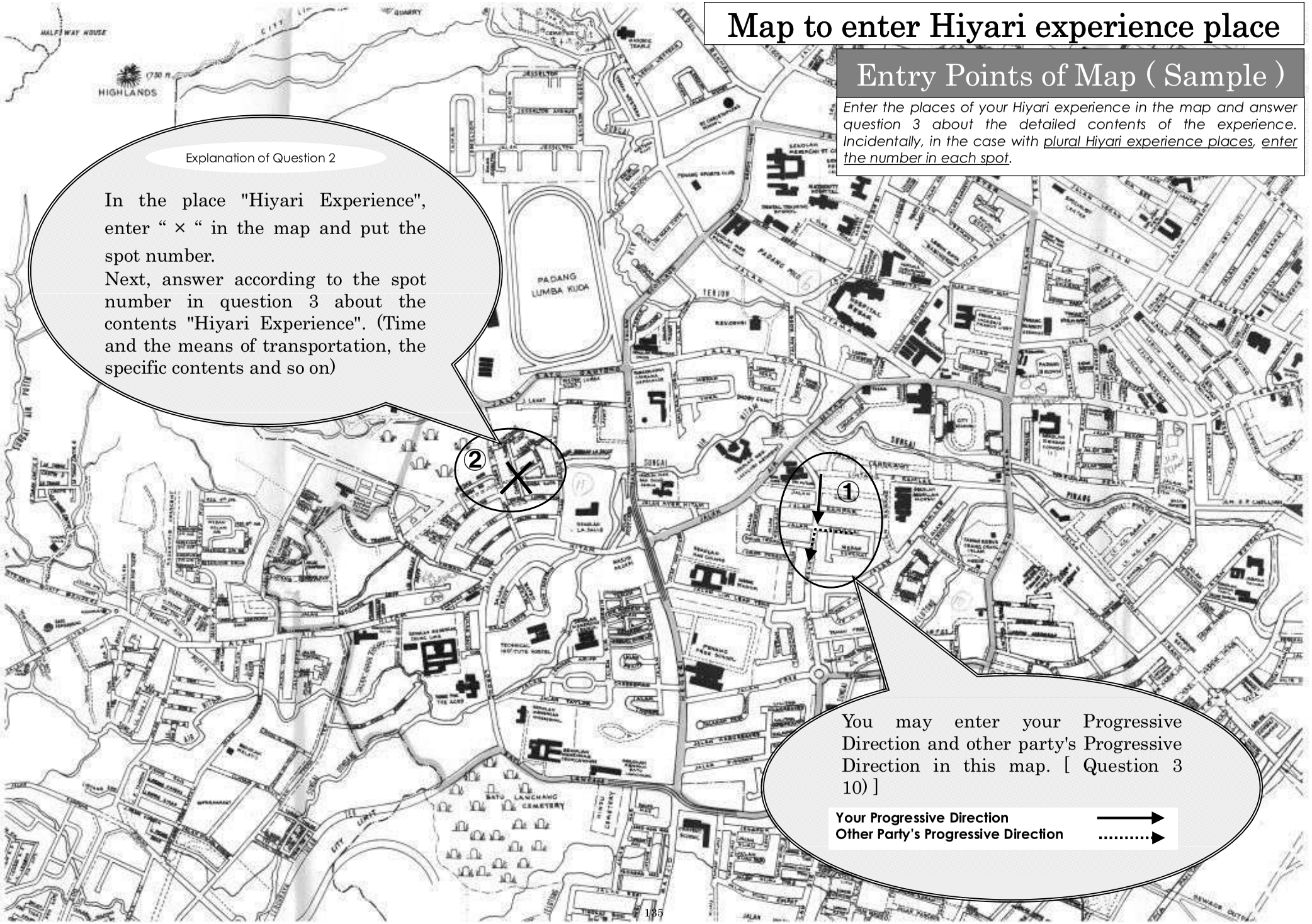
Pointing-out Example at The Dangerous Part

Thank You for Cooperation!

Map to enter Hiyari experience place

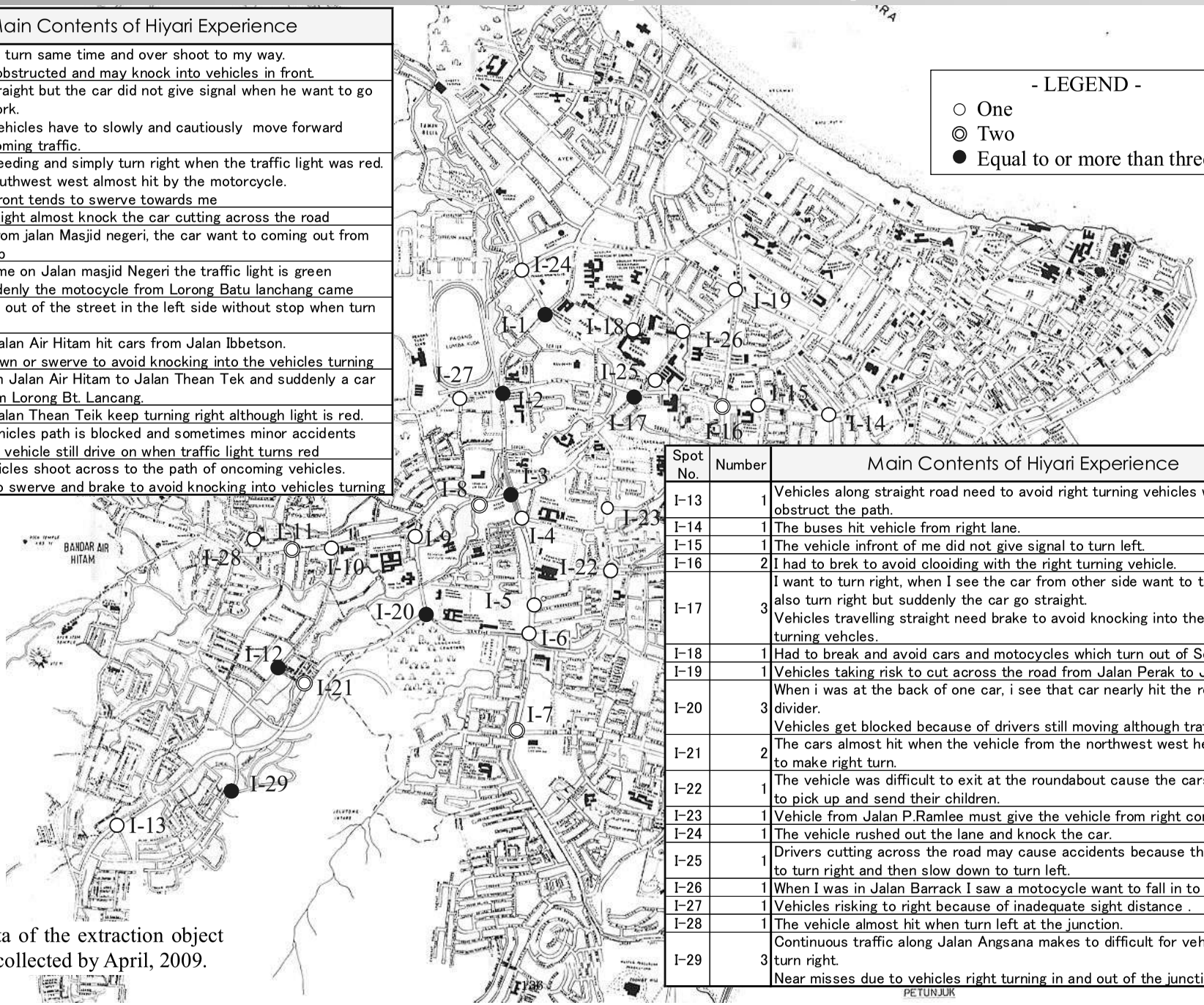
Entry Points of Map (Sample)

Enter the places of your Hiyari experience in the map and answer question 3 about the detailed contents of the experience. Incidentally, in the case with plural Hiyari experience places, enter the number in each spot.



HAZARD MAP of HIYARI EXPERIENCE in PENANG CITY [INTERSECTION]

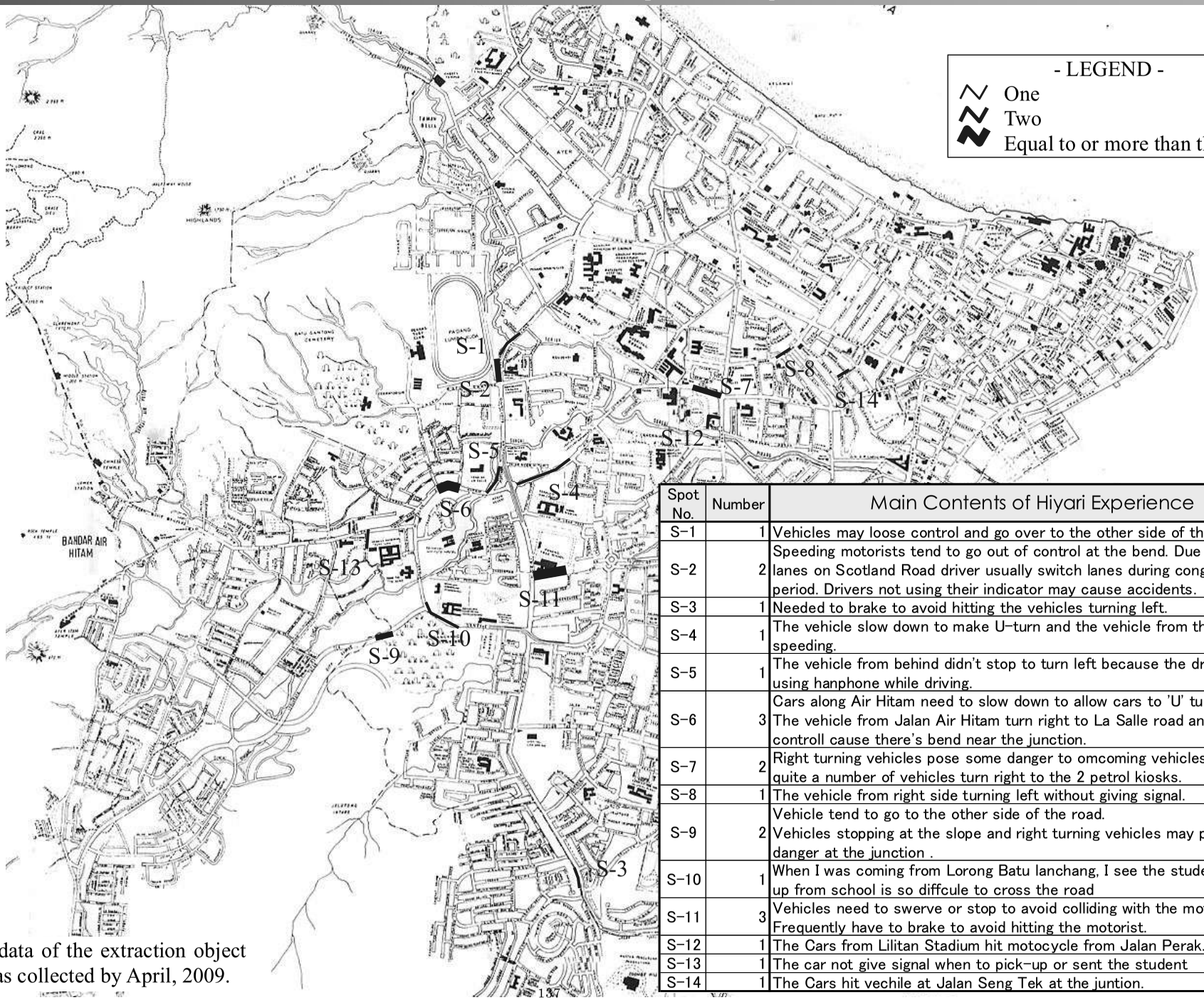
Spot No.	Number	Main Contents of Hiyari Experience
I-1	4	・The car rushed turn same time and over shoot to my way. ・Driver view is obstructed and may knock into vehicles in front.
I-2	5	・I want to go straight but the car did not give signal when he want to go right to Jalan York. ・Right turning vehicles have to slowly and cautiously move forward because of oncoming traffic.
I-3	3	・The vehicle speeding and simply turn right when the traffic light was red. The car from southwest west almost hit by the motorcycle. ・The vehicle infront tends to swerve towards me
I-4	1	・Cars going straight almost knock the car cutting across the road
I-5	1	・When I come from jalan Masjid negeri, the car want to coming out from Shell do not stop
I-6	1	・When I was come on Jalan masjid Negeri the traffic light is green emediately, suddenly the motocycle from Lorong Batu lanchang came
I-7	2	・The car rushed out of the street in the left side without stop when turn right.
I-8	2	Vechicle from Jalan Air Hitam hit cars from Jalan Ibbetson. Have to slow down or swerve to avoid knocking into the vehicles turning
I-9	1	The vehicle from Jalan Air Hitam to Jalan Thean Tek and suddenly a car came ahead from Lorong Bt. Lancang.
I-10	1	Vehicles from Jalan Thean Teik keep turning right although light is red.
I-11	2	Right turning vehicles path is blocked and sometimes minor accidents happen because vehicle still drive on when traffic light turns red
I-12	3	Left turning vehicles shoot across to the path of oncoming vehicles. Vehicles need to swerve and brake to avoid knocking into vehicles turning



Spot No.	Number	Main Contents of Hiyari Experience
I-13	1	Vehicles along straight road need to avoid right turning vehicles which obstruct the path.
I-14	1	The buses hit vehicle from right lane.
I-15	1	The vehicle infront of me did not give signal to turn left.
I-16	2	I had to brek to avoid clooiding with the right turning vehicle.
I-17	3	I want to turn right, when I see the car from other side want to turn left I also turn right but suddenly the car go straight. Vehicles travelling straight need brake to avoid knocking into the right turning vehcles.
I-18	1	Had to break and avoid cars and motocycles which turn out of Sepoy
I-19	1	Vehicles taking risk to cut across the road from Jalan Perak to Jalan
I-20	3	When i was at the back of one car, i see that car nearly hit the road divider. Vehicles get blocked because of drivers still moving although traffic lights
I-21	2	The cars almost hit when the vehicle from the northwest west hesitation to make right turn.
I-22	1	The vehicle was difficult to exit at the roundabout cause the cars stop by to pick up and send their children.
I-23	1	Vehicle from Jalan P.Ramlee must give the vehicle from right come first.
I-24	1	The vehicle rushed out the lane and knock the car.
I-25	1	Drivers cutting across the road may cause accidents because they have to turn right and then slow down to turn left.
I-26	1	When I was in Jalan Barrack I saw a motocycle want to fall in to open
I-27	1	Vehicles risking to right because of inadequate sight distance .
I-28	1	The vehicle almost hit when turn left at the junction.
I-29	3	Continuous traffic along Jalan Angsana makes to difficult for vehicles to turn right. Near misses due to vehicles right turning in and out of the junction.

* Hiyari Experience data of the extraction object is the data which was collected by April, 2009.

HAZARD MAP of HIYARI EXPERIENCE in PENANG CITY [STREET]



Spot No.	Number	Main Contents of Hiyari Experience
S-1	1	Vehicles may loose control and go over to the other side of the road.
S-2	2	Speeding motorists tend to go out of control at the bend. Due to four lanes on Scotland Road driver usually switch lanes during congested period. Drivers not using their indicator may cause accidents.
S-3	1	Needed to brake to avoid hitting the vehicles turning left.
S-4	1	The vehicle slow down to make U-turn and the vehicle from the back is speeding.
S-5	1	The vehicle from behind didn't stop to turn left because the driver was using hanphone while driving.
S-6	3	Cars along Air Hitam need to slow down to allow cars to 'U' turn. The vehicle from Jalan Air Hitam turn right to La Salle road and lost controll cause there's bend near the junction.
S-7	2	Right turning vehicles pose some danger to omcoming vehicles because quite a number of vehicles turn right to the 2 petrol kiosks.
S-8	1	The vehicle from right side turning left without giving signal.
S-9	2	Vehicle tend to go to the other side of the road. Vehicles stopping at the slope and right turning vehicles may pose some danger at the junction .
S-10	1	When I was coming from Lorong Batu lanchang, I see the student coming up from school is so diffcule to cross the road
S-11	3	Vehicles need to swerve or stop to avoid colliding with the motorcycles. Frequently have to brake to avoid hitting the motorist.
S-12	1	The Cars from Lilitan Stadium hit motocycle from Jalan Perak.
S-13	1	The car not give signal when to pick-up or sent the student
S-14	1	The Cars hit vechile at Jalan Seng Tek at the juntion.

* Hiyari Experience data of the extraction object is the data which was collected by April, 2009.

H189「交通安全対策支援システムのペナン市への展開」

第３回　渡航報告書

期間		2009年9月1日（火）～2009年9月5日（土）
渡航メンバー		赤羽弘和、親松俊彦、南部繁樹
概要		ペナン市の受入れ機関、関連機関との会議・ワークショップを開催し、「TSMSS を利用した交通安全対策調査の進め方」についてのプレゼンテーションを実施。併せて、支援システムの本格運用開始、ヒヤリ体験アンケートの実施、および今後の事業展開について打合せを実施した。
日時		実施内容
9/1 （火）		マレーシア国ペナン市へ渡航
9/2 （水）	午前	○ペナン市技術局のKhoo局長と会議･ワークショップについて事前打合せ ○ワークショップを開催（参加者：ペナン市担当技術者、警察等） ・「TSMSSを利用した交通安全対策調査の進め方」について赤羽先生よりプレゼンテーションを実施 ・システムの本格運用方法について打合せ ・ヒヤリ体験アンケート調査の実施方法を説明 ・DBの構築方法について説明 ・データ入力後の安全対策立案に向けた取り組みについて説明
	午後	○バス会社ラピッドペナンを対象にワークショップを開催（参加者：ペナン市担当技術者、ラビットペナン職員５名） ・「TSMSSを利用した交通安全対策調査の進め方」について赤羽先生よりプレゼンテーションを実施 ・ヒヤリ体験アンケート調査の実施方法を説明 ・バスドライバーに対するアンケートについて協力依頼 ・市ジョージタウン区域の道路・交通状況の踏査
9/3 （木）	午前	○ペナンタクシー協会の代表者を対象にワークショップを開催（参加者：ペナン市担当技術者、タクシー協会役員等） ・「TSMSSを利用した交通安全対策調査の進め方」について赤羽先生よりプレゼンテーションを実施 ・ヒヤリ体験アンケート調査の実施方法を説明 ・質問書への回答について協力依頼
	午後	○ペナン市技術局の担当エンジニアと打合せ ・PCの環境設定と最新版の交通事故分析システムのインストール ・交通事故分析システムの使用方法について、問題点の把握と対応法について説明･ヒヤリ体験アンケートの実施方法について詳細内容を確認

9/4 （金）	午前	○ペナン市技術局のKhoo局長と打合せ ・お礼と今後について ○市長Sr.Tan Cheng Chuiへの表敬 ・支援システムの本格実施に伴う関連事業の予算確保、システム維持管理について
	午後	○ペナン市の道路施設等について現地踏査
9/5 （土）		マレーシア国ペナン市より帰国

備　考

The Research for Traffic Safety Program by TSMSS(Traffic Safety Measures Support System) in Penang, Malaysia

The Meeting Matters

1. The Beginning of The Full-Scale Operation of The System

1) HEISS [Hiyari Experience Input Sub System]

[1] It created the system to have supported English and Malay.

[2] In the future, it links to the Web site of Municipal Council of Penang Island and it begins operation.

- Hiyari Experience Input Sub System
  http://www.trafficplus.co.jp/hiyari/ml/
- Web site of Municipal Council of Penang Island
  http://www.mppp.gov.my/web/guest/home

2) TAASS [Traffic Accident Analysis Sub System]

[1] It builds DB which created and adjusted the system to have supported English to the data elements of CARS. It completes the system of Penang city version.

[2] This time, it does the installation of the system to the PC and environment setting by the PC and it begins operation.

(Environment setting of the object PC)

It makes the compatible to the package of the language for Japanese and the use of the ports "1433" possible.

[3]The reviewing of the way of collecting the coordinates data using the digital photography to have taken the photograph at the accident site.

（The confirmation of the operating manual of CARS or the confirmation of the taking-in way of the digital photography）

3) Hazard Map of Traffic Safety

[1] It has created the hazard map of the English version.

[2] In the future, it links to the Web site of Municipal Council of Penang Island and it begins operation.

- Hazard Map of Traffic Safety in Penang
  http://www.trafficplus.co.jp/penang/infomenu3.asp
- Web site of Municipal Council of Penang Island
  http://www.mppp.gov.my/web/guest/home

2． The Construction of Data Base

1) Data of Hiyari experience

[1] About the way of collecting Hiyari experience data (The attached material 1)

[2] The system for the collection beginning of Hiyari experience data

2) TAASS

[1] It registers the position of the traffic accident data to have collected and registered at the time of the beginning of thisl year investigation. (The attached material 2)

[2] About the procedure to get the traffic accident data of CARS in the electronic data

(The confirmation of the operating manual of CARS and so on)

3． The Action for The Implementation of The Traffic Safety Measure

(The reviewing of the measure which used already entered data)

[1] The confirmation of the reviewing procedure of the traffic safety measure which utilized this program (The attached material 3)

[2] The confirmation of the way of the citizen participation

[3] About the road and traffic actual condition survey

[4] The system for the introduction of this program

That’s all.

Engineering Department of Municipal Council of Peneng Island
International Association of Traffic and Safety Sciences

The Collection Beginning of Hiyari Experience Information

1. Purpose of The Collection of Hiyari Experience Information

It utilizes “traffic safety measures creating of the citizens participation type” program in Penang city and it promotes a traffic safety measure. It utilizes Hiyari experience by the citizen in addition to the traffic accident data for the case. Hiyari experience is the experience which wasn't actually made a traffic accident. It is the general term of the experience to have felt dangerous when driving and walking at the road. This information is plainly valid information when extracting a dangerous part at the road and clarifying the origin of the traffic accident.

Already, it implemented Hiyari experience survey for the staff of Penang city and the Penang police as Pilot study from January, 2009 to March. We reviewed Penang city about the way of collecting Hiyari experience data. Based on the result, this time, it begins the collection of Hiyari experience data in earnest for the citizen.

2. Method of The Collection of Hiyari Experience Information

The following is described below. They are the time of beginning the collection, the collection target area, the object, the questionnaire contents, the way of questioning about Hiyari experience information.

[1] The Time of Beginning The Collection

It begins questionnaire collection promptly if preparations are complete after implementing this briefing.

Specifically, it supposes that 2 months at the time of the start is a period of the reinforcement of the questionnaire collection. Then, it attempts to announce to the citizen widely through the public relations and the NGO and so on among it.

[2] The Collection Target Area

Greater George Town

[3] The Object

1. The staff and the member of NGO
2. The Professional Driver (The bus driver and so on)
3. School
4. The citizen

[4] The Way of The Collection of The Information

It collects Hiyari experience information in the following two ways.

1) The Information Collection by Web Site of Traffic Safety Information System (It always collects).

It makes link the Web Site of Traffic Safety Information System to the Web site in Municipal Council of Peneng Island. Then, it makes the condition about which it is always possible to enter.

Specifically, it distributes the entry point of HEISS [Hiyari Experience Input Sub System] to the above object during the campaign period.

* Municipal Council of Peneng Island *http://www.mppp.gov.my/web/guest/home*

* Web site of Traffic Safety Information System *http://www.trafficplus.co.jp/hiyari/*

2) The Information Collection by Hiyari Experience Questionnaire Form (During the reinforcement period)

It distributes Hiyari experience questionnaire form and a sample form. Then, it collects during the reinforcement period and after the ending.

The details about the distribution and the collection are as follows.

1. The person in charge brings the section and each supplier a questionnaire form and describes a way to fill in. Then, he adjusts a collection due date.
2. It requests a professional driver to question from the police.
3. It installs a questionnaire form and a collection box in Municipal Council of Peneng Island, the police and the other public place.
4. During the study period, the person in charge supports a question about the study.
5. The person in charge inputs data to HEISS after collection in the questionnaire form.

[5] The Contents of The Collection of The Information

It describes the information to collect.

"How to input the data for HEISS", "Hiyari experience questionnaire form", the sample form are shown in the attached material..

Item	Contents
The attribute of the respondent	Sex, Age ,Address , (Name, E-mail address)
The place of Hiyari experience	Position、Direction of movement of the party
The contents of Hiyari experience	Date, Time, Weather, The means of transportation, The other party's attribute, Factor, Status, Free answer

Fig. The implementation case in Japan (Dec. 2006)

How to Input the data for HEISS

1. Access to Web Site

Address of web site [http://www.trafficplus.co.jp/hiyari/ml/]

It selects “Penang”.

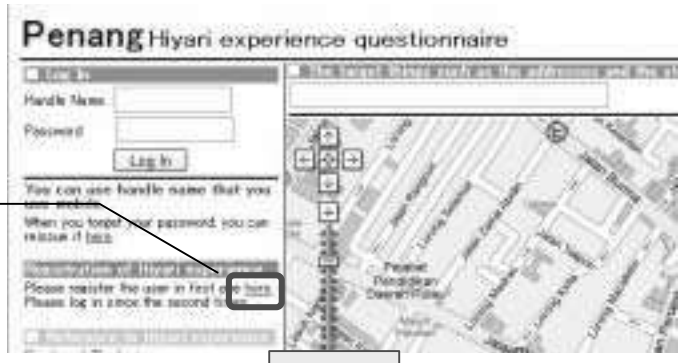
The person who have not done user registration ⇨ Do user registration.

* See "2. User Registration".

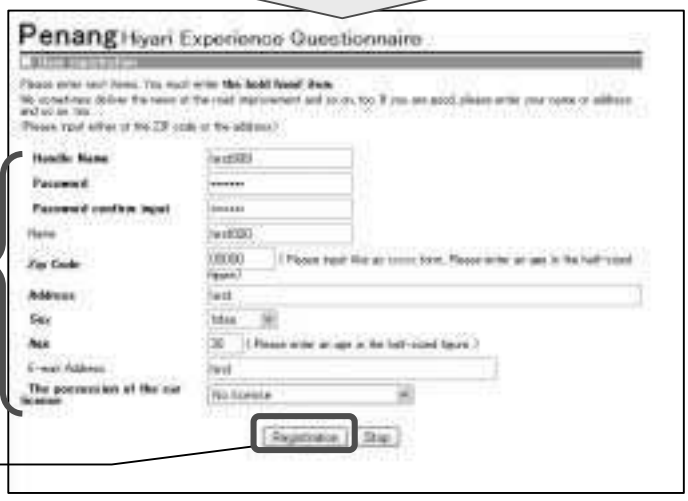
The person who have done user registration ⇨ Enter your handle name and your password, and log in.

* See "3. Report of Your Hiyari Experience".

2. User Registration



[1] Click "here" and it moves to the subscription screen.

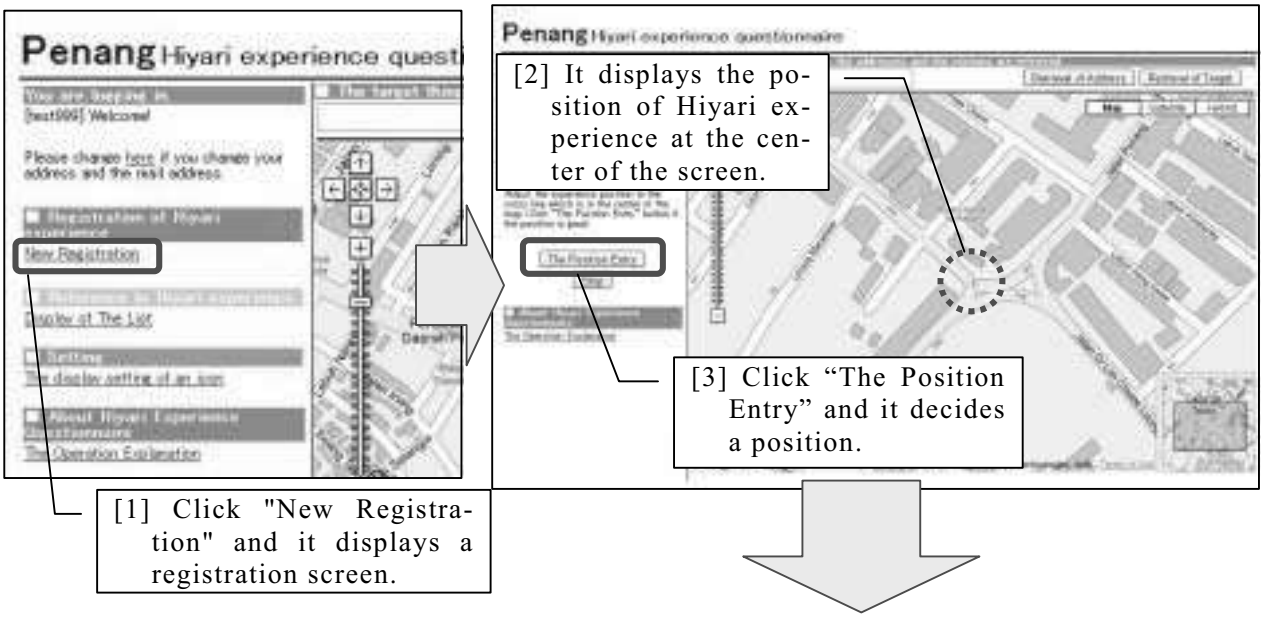


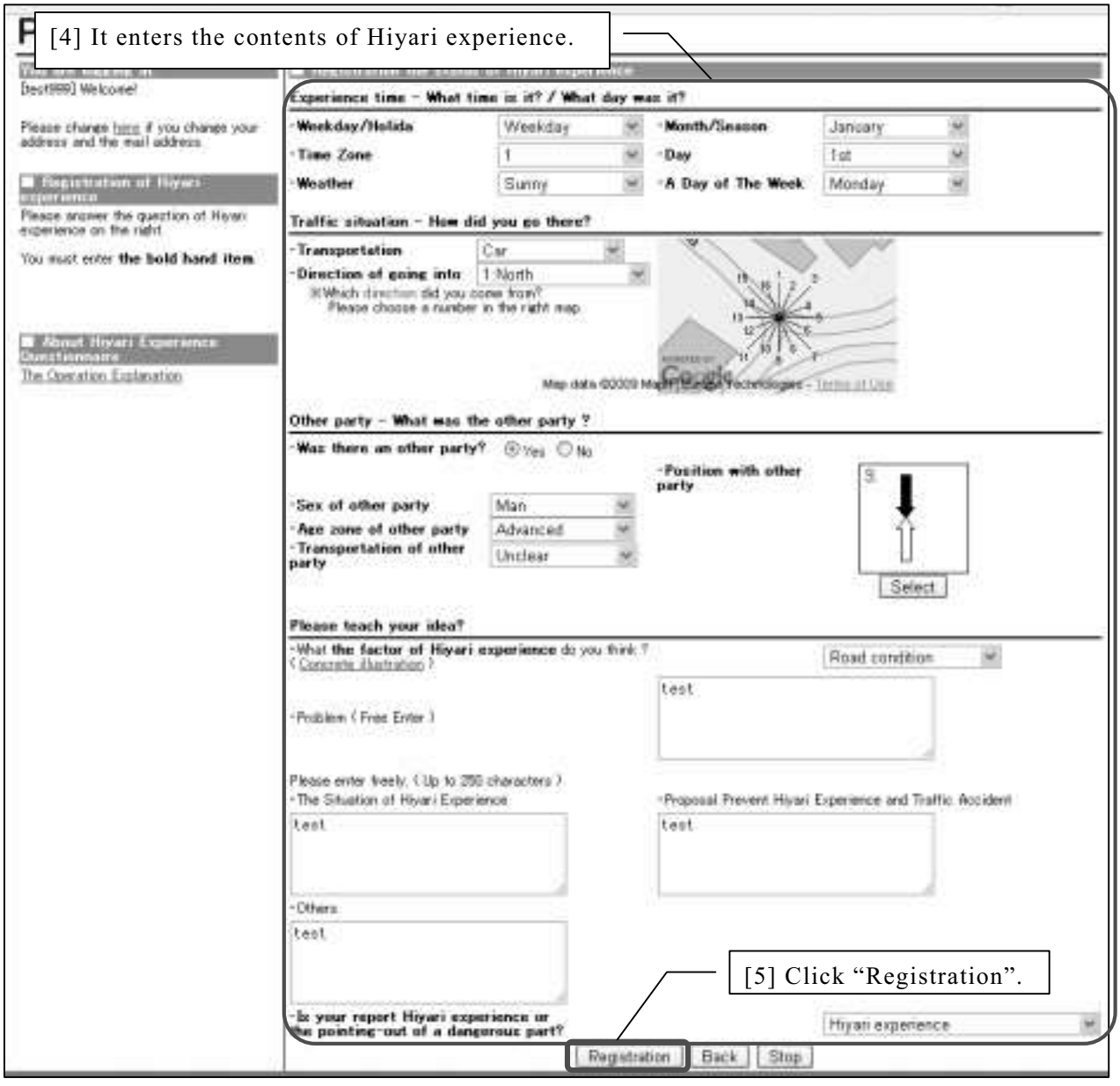
[2] Enter user information.

* The item of the thick character always type in.

[3] Click "Registration" if the entry completes.

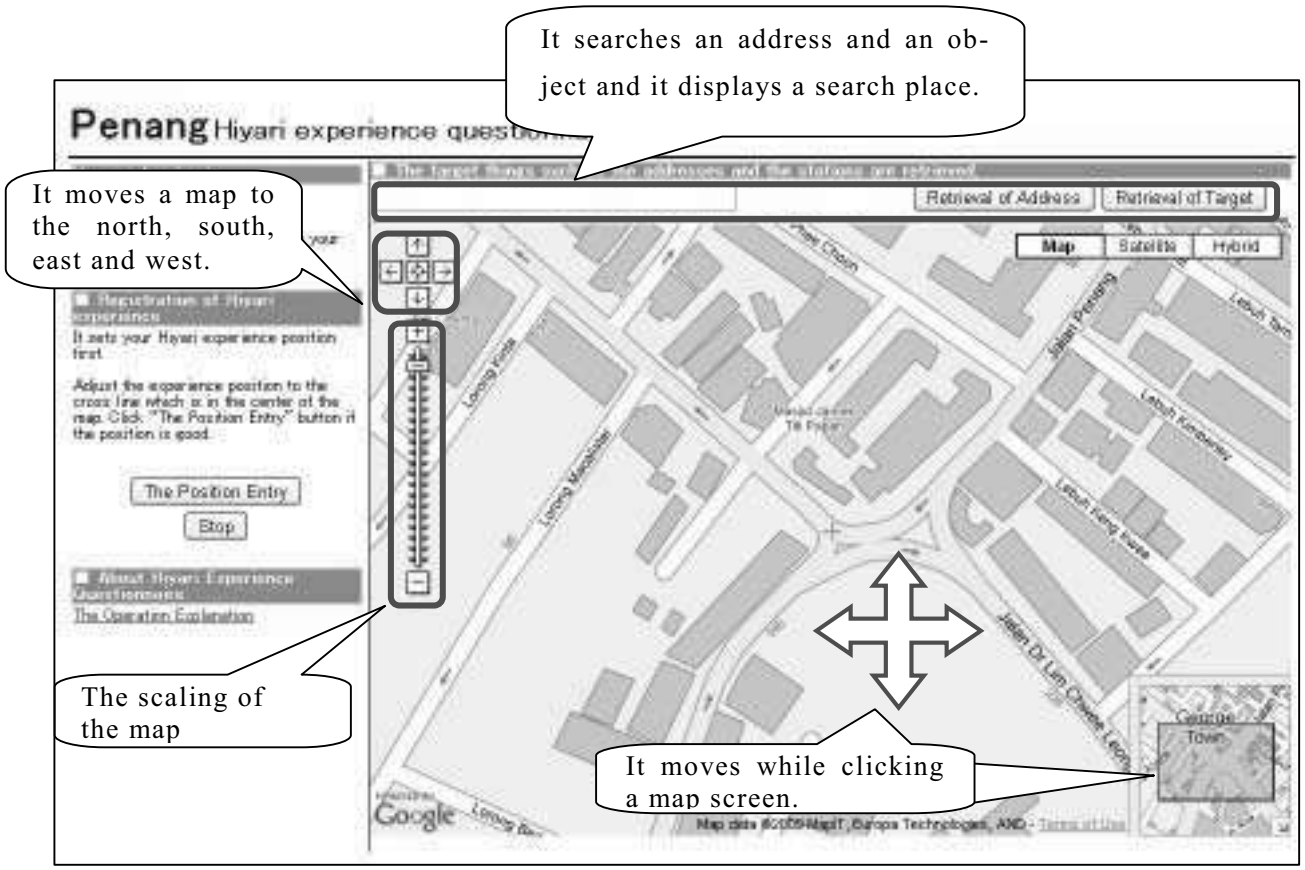
3. Report of Hiyari experience



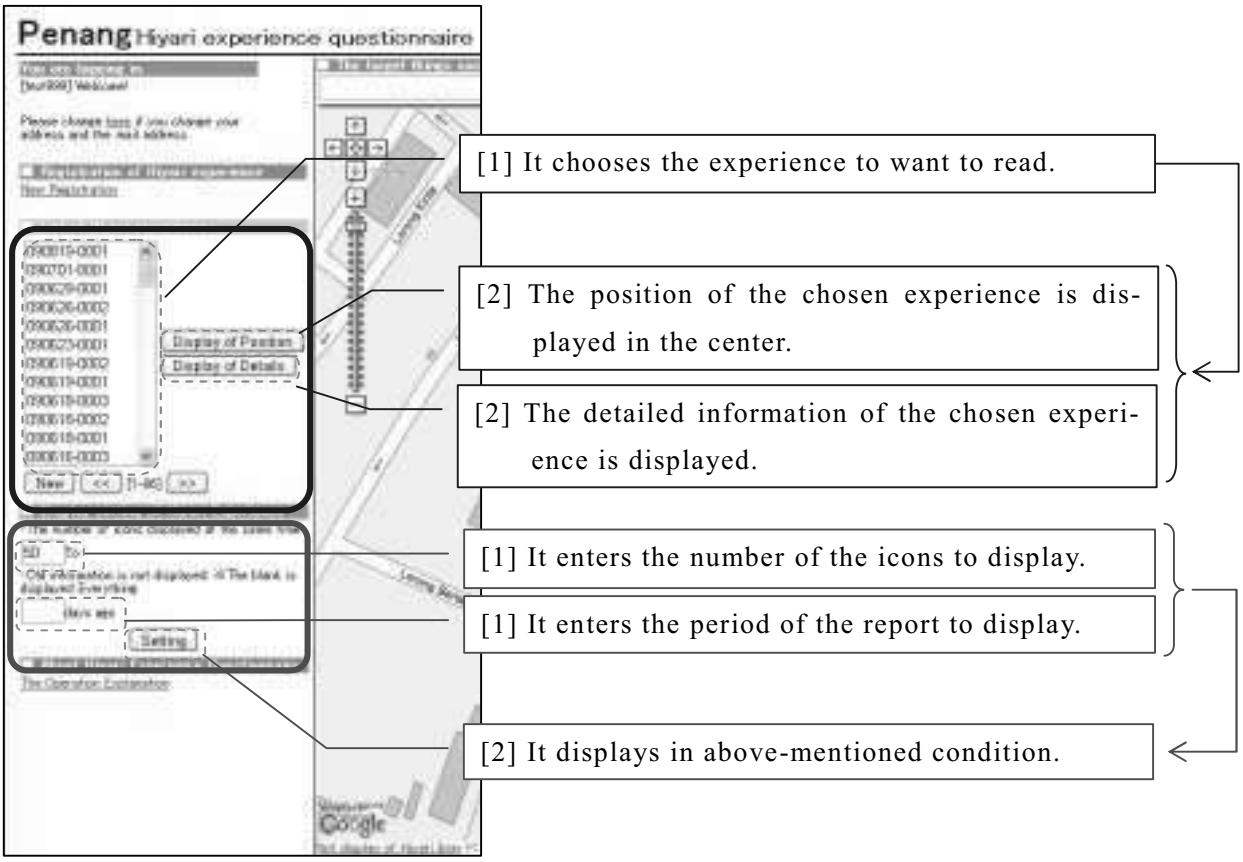


4. The Operating Method of The Map and The Reading of Hiyari Experience

(1) The Operating Method of The Map



(2) The Reading of Hiyari Experience



Borang Pertanyaan Pengalaman Hiyari

BANDARAYA GEORGE TOWN

Pengalaman Hiyari adalah ….. ?

Adakah anda terasa atau mengalami keadaaan 'bahaya'! apabila anda berjalan atau memandu kenderaan di atas jalan? Sekiranya anda melalui keadaan ini, ianya diistilahkan sebagai Pengalaman Hiyari di mana anda mungkin telah terlibat dalam kemalangan. Borang pertanyaan ini adalah bertujuan mengumpul butir-butir Pengalaman Hiyarai yang telah anda lalui supaya analisa dapat dibuat untuk meningkatkan keselamatan di jalan raya.

[SOALAN1] Mengenai diri anda

JANTINA	ALAMAT / NAMA
1.Lelaki 2.Perempuan	Sila isikan alamat dan nombor poskod. [ADDRESS]_____[POSKOD]_____ ([NAMA]_____ [E-MEL]_____) * Anda mungkin dihubungi untuk penyemakan semula maklumat, menganalisa dan mendapat maklumat lanjut mengenai butir-butir dan cadangan langkah penyelesaian/ penambahbaikan yang telah diberikan oleh anda. Ini adalah tujuan alamat dan e-mel diperlukan oleh kami. Semua butir-butir ini adalah selamat dalam simpanan kami dan akan diurus dengan sebaik-baiknya.
UMUR	
( )	

[SOALAN 2] Mengenai lokasi Pengalaman Hiyari

Sila tandakan lokasi berlakunya Pengalaman Hiyari di atas peta yang disertakan. (Dua Pengalaman Hiyari dapat diisi dalam borang ini. Sekiranya terdapat lebih daripada 2 Pengalaman Hiyarai, borang tambahan dapat digunakan.)
Selepas lokasi ditandakan di atas plan, sila isikan Soalan 3 mengenai butir-butir terperinci Pengalaman Hiyari. Sekiranya terdapat lebih daripada satu Pengalaman Hiyari, sila tandakan nombor lokasinya di atas plan dan jawab soalan untuk setiap lokasi Pengalaman Hiyari berkenaan.

[SOALAN 3] Mengenai butir-butir Pengalaman Hiyari

Soalan/ Bilangan	Nombor Lokasi	
	①	②
1) Hari minggu/ Kelepasan Am	1.Hari Minggu 2.Kelepasan Am 3.Selalu 4.Tidak pasti	1.Hari Minggu 2.Kelepasan Am 3.Selalu 4.Tidak pasti
2)Masa Kejadian/ Pengalaman	( )[AM / PM] Sekiranya tidak pasti, pilih daripada yang berikut. 1.Pagi 2.Tengahari 3.Malam 4.Tengah malam 5.Selalu 6.Tidak pasti	( )[AM / PM] Sekiranya tidak pasti, pilih daripada yang berikut. 1.Pagi 2.Tengahari 3.Malam 4.Tengah malam 5.Selalu 6.Tidak pasti
3)Cuaca	1.Bercahaya matahari 2.Berawan 3.Hujan 4.Berkabus 5.Bersalji 6.Selalu 7.Lain-lain 8.Tidak pasti	1.Bercahaya matahari 2.Berawan 3.Hujan 4.Berkabus 5.Bersalji 6.Selalu 7.Lain-lain 8.Tidak pasti
4)Bulan	( ) Sekiranya tidak pasti, pilih daripada yang berikut. 1.Selalu 2.Tidak pasti	( ) Sekiranya tidak pasti, pilih daripada yang berikut. 1.Selalu 2.Tidak pasti
5)Hari dalam Bulan	( ) Sekiranya tidak pasti, pilih daripada yang berikut. 1. 10 hari pertama 2. 10 hari berikutnya (pertengahan) 3. 10 hari akhir 4.Selalu 5.Tidak pasti	( ) Sekiranya tidak pasti, pilih daripada yang berikut. 1. 10 hari pertama 2. 10 hari berikutnya (pertengahan) 3. 10 hari akhir 4.Selalu 5.Tidak pasti
6)Hari dalam Minggu	1.Isnin 2.Selasa 3.Rabu 4.Khamis 5.Jumaat 6.Sabtu 7.Ahad 8.Selalu 9.Tidak pasti	1.Isnin 2.Selasa 3.Rabu 4.Khamis 5.Jumaat 6.Sabtu 7.Ahad 8.Selalu 9.Tidak pasti
7)Cara/ Mod Pengangkutan Anda	1.Kereta 2.Lori Kecil 3.Motosikal 4.Basikal 5.Berjalan kaki 6.Bas 7.Lori Besar 8.Lain-lain	1.Kereta 2.Lori Kecil 3.Motosikal 4.Basikal 5.Berjalan kaki 6.Bas 7.Lori Besar 8.Lain-lain
8)*Jantina dan Umur Pihak Lain	1.Lelaki 2.Perempuan 3.Tidak pasti 1.Warga tua 2.Orang Dewasa 3.Remaja 4.Kanak-kanak 5.Tidak pasti	1.Lelaki 2.Perempuan 3.Tidak pasti 1.Warga tua 2.Orang Dewasa 3.Remaja 4.Kanak-kanak 5.Tidak pasti
9)* Cara/ Mod Pengangkutan Pihak Lain	1.Tidak pasti 2.Kereta 3.Lori Kecil 4.Motosikal 5.Basikal 6.Berjalan kaki 7.Bas 8.Lori Besar 9.Lain-lain	1.Tidak pasti 2.Kereta 3.Lori Kecil 4.Motosikal 5.Basikal 6.Berjalan kaki 7.Bas 8.Lori Besar 9.Lain-lain
10)Kedudukan Anda dan Pihak Lain ※Anda boleh mengisi seperti peta dalam Soalan 2.		
11)Faktor "Pengalaman Hiyari"		
12)Status "Pengalaman Hiyari"		
13)Cadangan Meningkatkan Keselamatan		

*Jawab apabila terdapat pihak lain

Terima Kasih ke atas Kerjasama Anda!

SAMPLE

Peta untuk Mengisi Lokasi Pengalaman Hiyari

BANDARAYA GEORGE TOWN

Tandakan lokasi-lokasi Pengalaman Hiyari anda di atas peta dan jawab Soalan 3 mengenai butir-butir terperinci pengalaman anda. Sekiranya terdapat lebih daripada satu lokasi pengalaman Hiyari, sila nyatakan nombornya pada setiap lokasi di atas peta.

Borang Pertanyaan Pengalaman Hiyari

**BANDARAYA GEORGE TOWN*

Entry points (Sample)

Pengalaman Hiyari adalah ….. ?

Adakah anda terasa atau mengalami keadaaan 'bahaya'! apabila anda berjalan atau me… kin telah terlibat dalam… pertanyaan ini adalah bertu… ui supaya analisa dapat dibuat untuk meningkatkan keselamatan di jal…

Please choose a form in the area to report, because it creates by area,

[SOALAN1] Mengenai diri anda

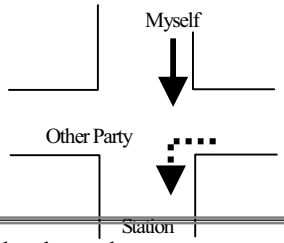
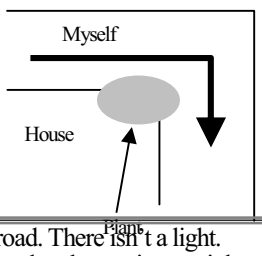
JANTINA	ALAMAT / NAMA
1.Lelaki 2.Perempuan	Sila isikan alamat dan nombor poskod. [ADDRESS]_____[POSKOD]_____ ([NAMA]_____ [E-MEL]_____)
UMUR	* Anda mungkin dihubungi untuk penyemakan semula maklumat, menganalisa dan mendapat maklumat lanjut mengenai butir-butir dan cadangan langkah penyelesaian/ penambahbaikan yang telah diberikan oleh anda. Ini adalah tujuan alamat dan e-mel diperlukan oleh kami. Semua butir-butir ini adalah selamat dalam simpanan kami dan akan diurus dengan sebaik-baiknya.
( )	

[SOALAN 2] Mengenai lokasi Pengalaman Hiyari

Back is the sample form of the map

Sila tandakan lokasi berlakunya Pengalaman Hiyari di atas peta yang disertak… ini.
Sekiranya terdapat lebih daripada 2 Pengalaman Hiyarai, borang tambahan dapat digunakan.)
Selepas lokasi ditandakan di atas plan, sila isikan Soalan 3 mengenai butir-butir terperinci Pengalaman Hiyari. Sekiranya … lebih daripada satu Pengalaman Hiyari, sila tandakan nombor lokasinya di atas plan dan jawab soalan untuk setiap lokasi Pengalaman Hiyari berkenaan.

[SOALAN 3] Mengenai butir-butir Pengalaman Hiyari

Soalan/ Bilangan	Nombor Lokasi	
	①	②
1) Hari minggu/ Kelepasan Am	1.Hari Minggu 2.Kelepasan Am 3.Selalu 4.Tidak pasti	1.Hari Minggu 2.Kelepasan Am 3.Selalu 4.Tidak pasti
2)Masa Kejadian/ Pengalaman	(4)[AM / PM] Sekiranya tidak pasti, pilih daripada yang berikut. 1.Pagi 2.Tengahari 3.Malam 4.Tengah malam 5.Selalu 6.Tidak pasti	( )[AM / PM] Sekiranya tidak pasti, pilih daripada yang berikut. 1.Pagi 2.Tengahari 3.Malam 4.Tengah malam 5.Selalu 6.Tidak pasti
3)Cuaca	1.Bercahaya matahari 2.Berawan 3.Hujan 4.Berkabus 5.Bersalji 6.Selalu 7.Lain-lain 8.Tidak pasti	1.Bercahaya matahari 2.Berawan 3.Hujan 4.Berkabus 5.Bersalji 6.Selalu 7.Lain-lain 8.Tidak pasti
4)Bulan	(7) Sekiranya tidak pasti, pilih daripada yang berikut. 1.Selalu 2.Tidak pasti	( ) Sekiranya tidak pasti, pilih daripada yang berikut. 1.Selalu 2.Tidak pasti
5)Hari dalam Bulan	(21) Sekiranya tidak pasti, pilih daripada yang berikut. 1. 10 hari pertama 2. 10 hari berikutnya (pertengahan) 3. 10 hari akhir 4.Selalu 5.Tidak pasti	( ) Sekiranya tidak pasti, pilih daripada yang berikut. 1. 10 hari pertama 2. 10 hari berikutnya (pertengahan) 3. 10 hari akhir 4.Selalu 5.Tidak pasti
6)Hari dalam Minggu	1.Isnin 2.Sela… 5.Jumaat 6.S…	1.Isnin 2.Selasa 3.Rabu 4.Khamis
7)Cara/ Mod Pengangkutan Anda	1.Kereta 2.Lo… 5.Berjalan kaki 6.Bas 7.Lori Besar 8.Lain-lain	
8)*Jantina dan Umur Pihak Lain	1.Lelaki 2.Perempuan 3.Tidak pasti 1.Warga tua 2.Orang Dewasa 3.Remaja 4.Kanak-… pasti	…anak-kanak 5.Tidak pasti
9)* Cara/ Mod Pengangkutan Pihak Lain	1.Tidak pasti 2.Kereta 3.Lori Kecil 4.Motosik… 6.Berjalan kaki 7.Bas 8.Lori Besar 9.Lain-lain	…Motosikal 5.Basikal …-lain
10)Kedudukan Anda dan Pihak Lain ※Anda boleh mengisi seperti peta dalam Soalan 2.		
11)Faktor "Pengalaman Hiyari"	The car rushed to the road way.	Plant leads to a road. There isn't a light. So it is very dark when becoming at night.
12)Status "Pengalaman Hiyari"	The car rushed out of the street in the east from when walking to South to the station in the east side avenue at the station.	When turning at the corner, I'm fearful that the person or the bicycle seem to rush out of the end.
13)Cadangan Meningkatkan Keselamatan	It makes to bring to a halt.	The pruning of planting The installation of the street lamp

When there is other party, answer.

Enter both Sex and age

Enter the direction of movement of you and other party. Also, enter circumference facilities and a facility name and so on, too.

Your Progressive Direction →
Other Progressive Direction ⇢

*Jawab apabila terdapat pihak lain

…ih ke atas Kerjasama Anda!

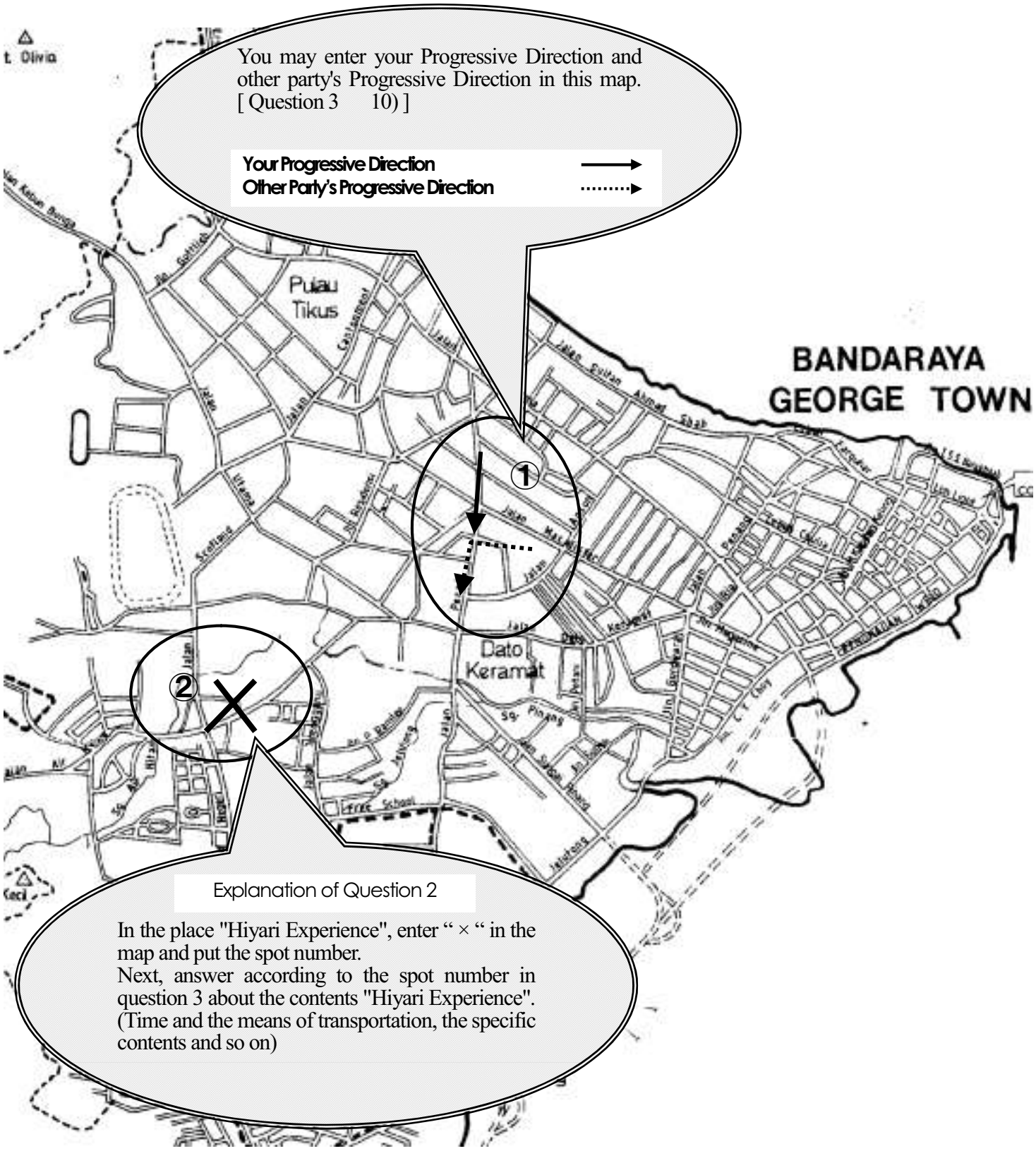
Hiyari Experience Example

Pointing-out Example at The Dangerous Part

Peta untuk Mengisi Lokasi Pengalaman Hiyari

Entry Points of Map (Sample)

Tandakan lokasi-lokasi Pengalaman Hiyari anda di atas peta dan jawab Soalan 3 mengenai butir-butir terperinci pengalaman anda. Sekiranya terdapat lebih daripada satu lokasi pengalaman Hiyari, sila nyatakan nombornya pada setiap lokasi di atas peta.



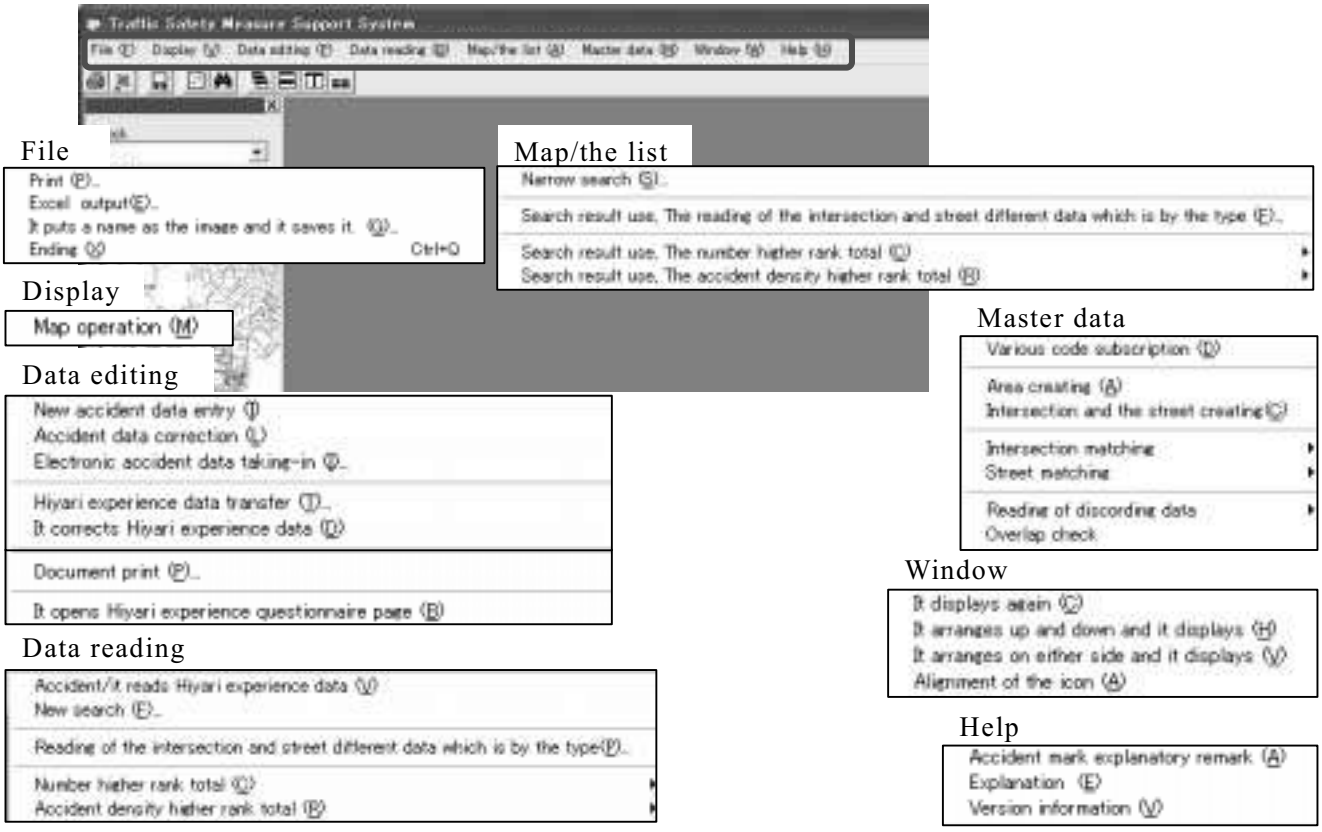
International Association of Traffic and Safety Sciences
Engineering Department of Municipal Council of Peneng Island

How to Enter The Traffic Accident Data

to Traffic Accident Analysis Sub System

1. Basic Feature of the System

1-1 Introduction of The Feature



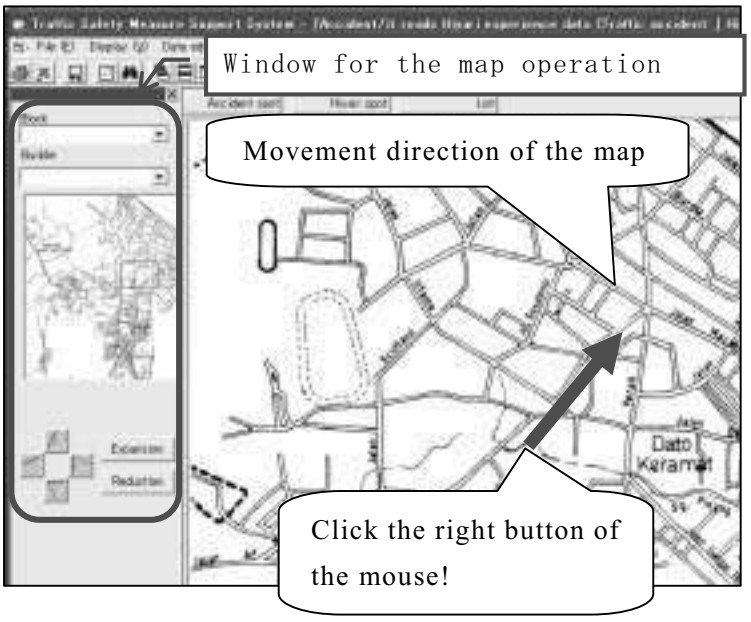
1-2 The Way to Move the Map

a) Using a map operation window

It can do the following when using the window for the map operation. It is the movement of the display position of the map and the scaling of the map.

b) Moving a display position with the mouse

When clicking the right button of the mouse on the map, it can move the display position of the map. While pushing the right button of the mouse, it continues to move.



2. The Enter of the accident data

Click “New accident data entry” of “Data editing” menu, the accident overview information window is displayed.

<The procedure of the creating of an accident data>

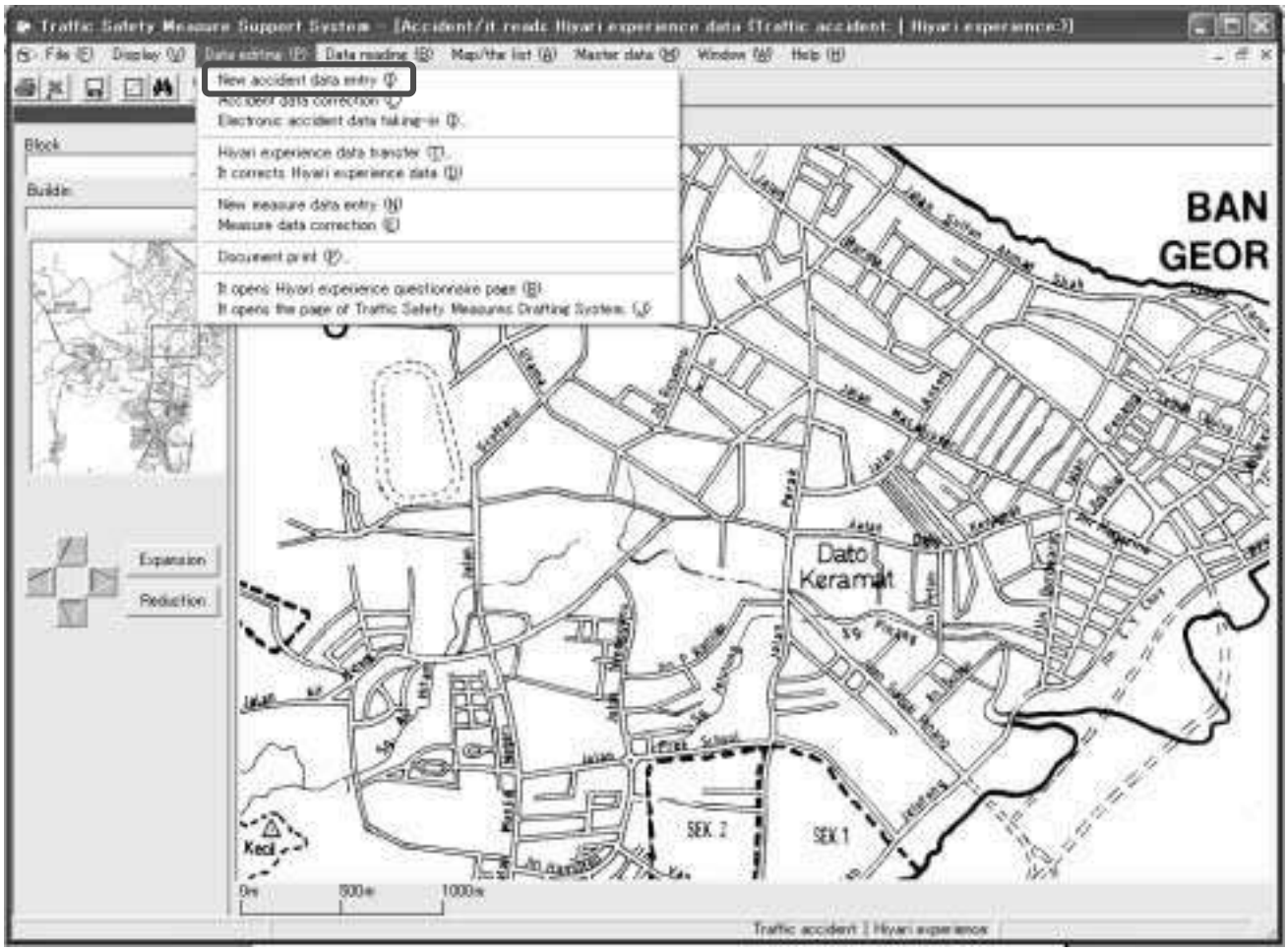
2-1. The enter of the accident overview information

↓

2-2. The enter of the accident spot

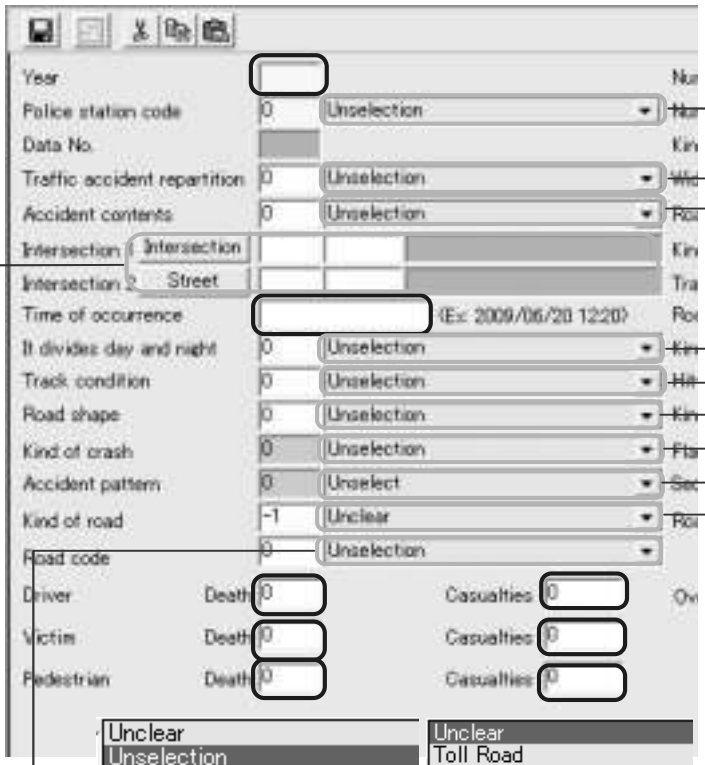
↓

2-3. Save the data



2-1 The enter of the accident overview information

Direct Entry　　Choice Entry



Unclear
Unselection
Police2
Police3

Unclear
Unselection
Accident resulting in injury or death
Damage only accident

Unclear
Unselection
MEMALANGAN MAUT
MEMALANGAN CEDERA PARAH
MEMALANGAN CEDERA RINGAN
MEMALANGAN ROSAK SAHAJA
BUKAN KEMALANGAN

Unclear
Unselection
Day
Night

Unclear
Unselection
KERING
BANJIR
BASAH
BERMINYAK
BERPASIR
SEDANG DIPERBAIKI

Unclear
Unselection
LURUS
SELEKOH
BULATAN
SIMPANG EMPAT ATAU LEBIH
SIMPANG TIGA ATAU Y
SIMPANG STAGGERED

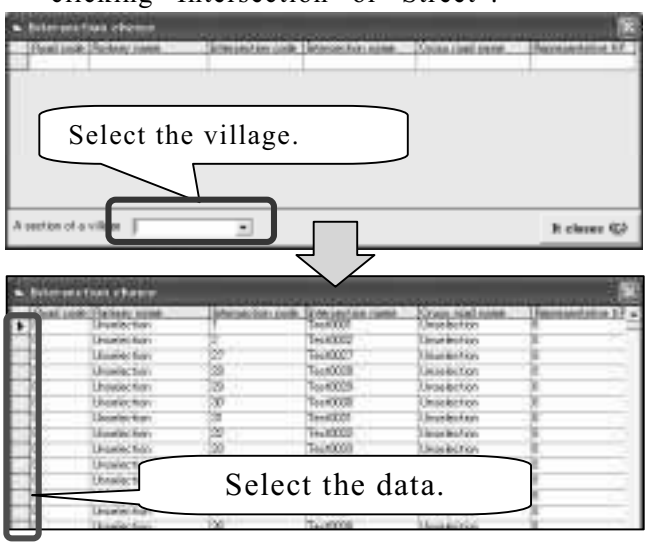
Unclear
Unselection
DEPAN DENGAN DEPAN
LANGGAR BELAKANG
LANGGAR RUSUK TEPAT
LANGGAR SEBELAH TEPI
BERGESEL
TERHIMPIT
LANGGAR BINATANG
LANGGAR OBJEK DALAM JALAN
LANGGAR OBJEK LUAR JALAN
LANGGAR PEJALAN KAKI
TERBALIK
TERBABAS
CERMIN PECAH SAHAJA
LAIN-LAIN
KENDERAAN TENRBAKAR
LANGGAR BECA/BASIKAL
TIDAK BERKENAAN

Unclear
Unselect
During meeting passage
During the back passage
Crossing(side)
Crossing(turn left)
Crossing(turn right)
The other on the road
Head-on collision
Rear-end collision
Meeting head
Pass
Pass each other
Turn left
Turn right
Back
Vehicle independence
Deviation out of the route
Fall
The others

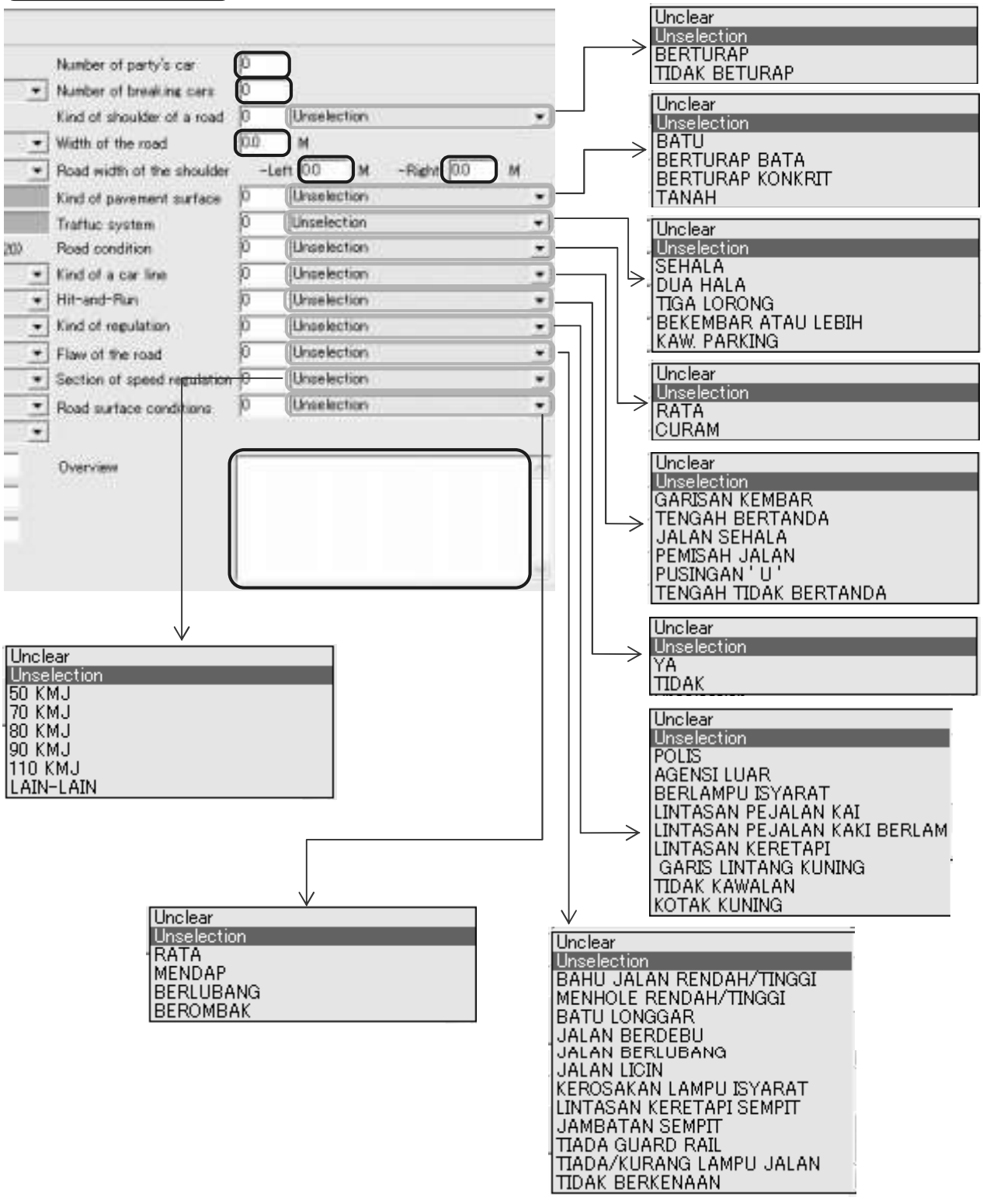
Unclear
Unselection
Toll Road
National Road
Principal Local Road
Prefecture highway
Municipal road
Driveway
The Others

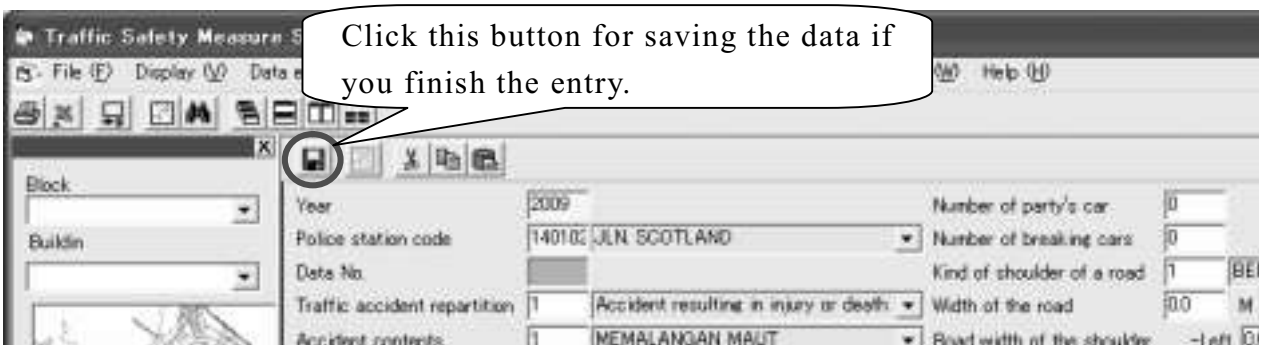
Unclear
Unselection
Jalan Sepoy Line
Jalan Utama
Jalan Piggot
Jalan Skipton
Jalan Batu Gantung
Jalan Scotland
Jalan York
Jalan Lahat
Jalan Air Hitam
Jalan Han Chiang
Jalan Lim Lean Teng
Jalan Free School
Jalan Cheeseman
Jalan Hargreaves
Jalan Pinhorn
Jalan Masjid Negeri
Lorong Batu Laucang
Jalan Tan Sri Teh Hwe Lim
Lorong Lahat

* The following screen is displayed when clicking “Intersection” or “Street”.



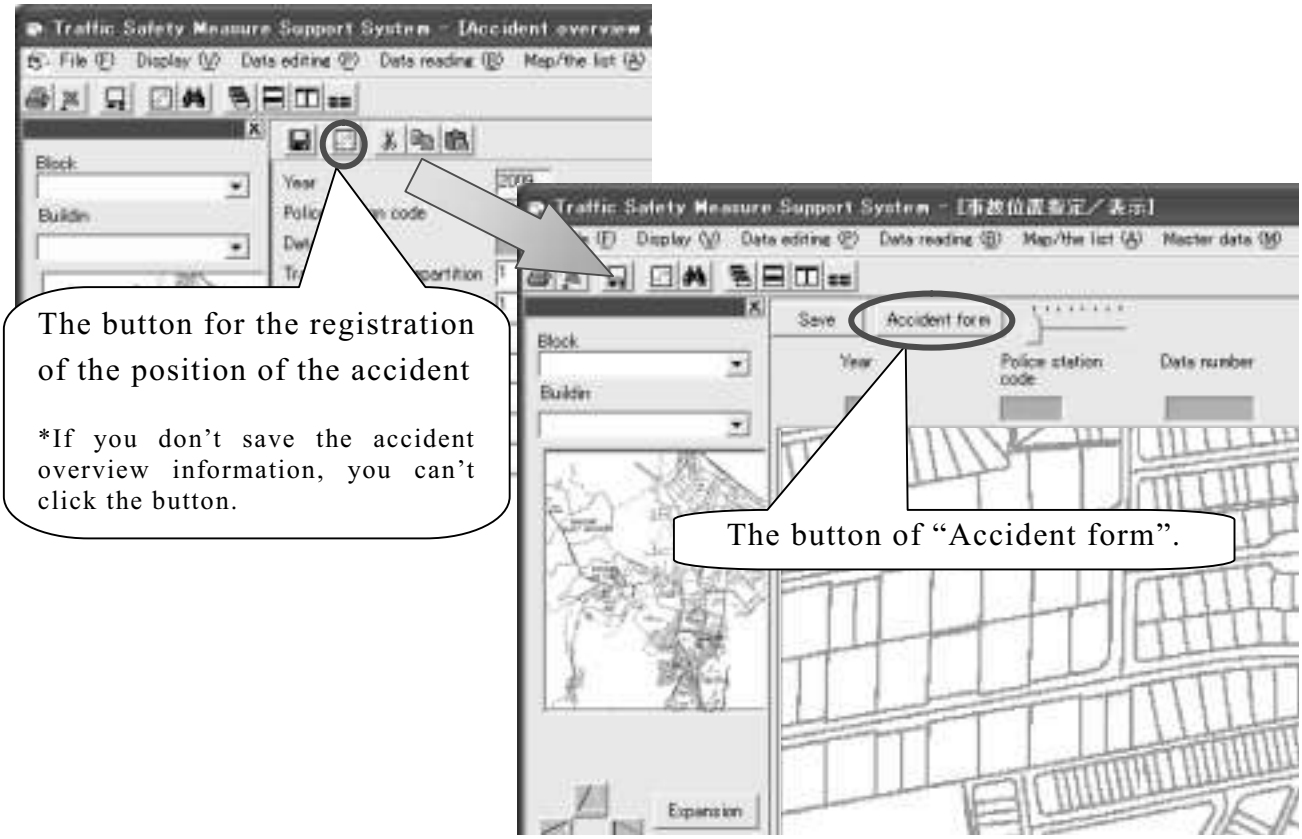
Direct Entry | Choice Entry



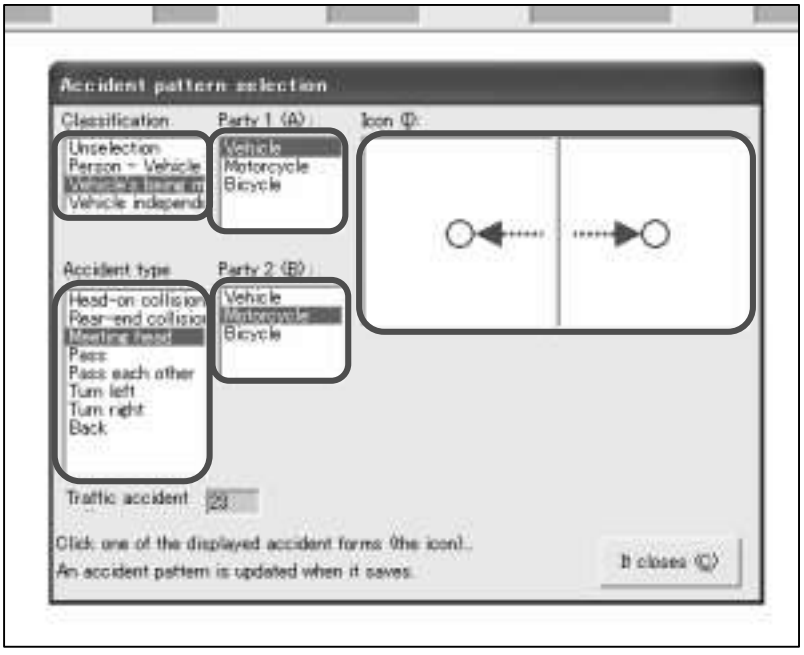


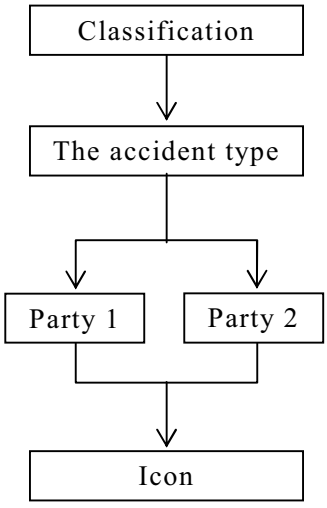
2-2 The enter of the accident spot

[1] It clicks the button for the registration of the position and it saves the information of the accident overview. Then, click "the accident form" button to register the position of the accident.



[2] Select "Classification" , "accident type" , "Party 1" , "Party 2" and "Icon".

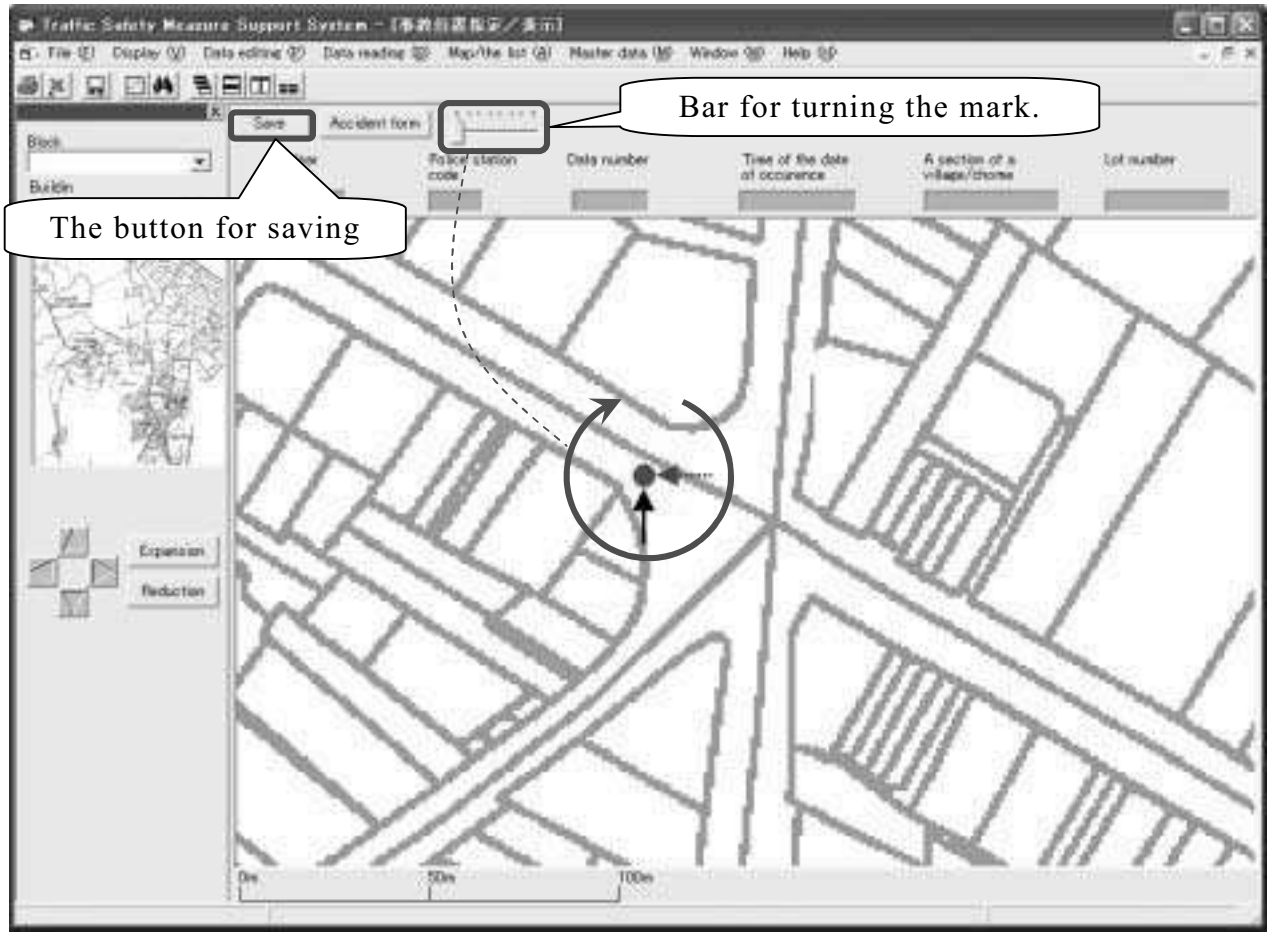




* When choosing "Unselect" in "Classification" and "Accident type", ○ is displayed in "Icon".

[3] Turns the mark when moving a bar to either side and can correct the direction.

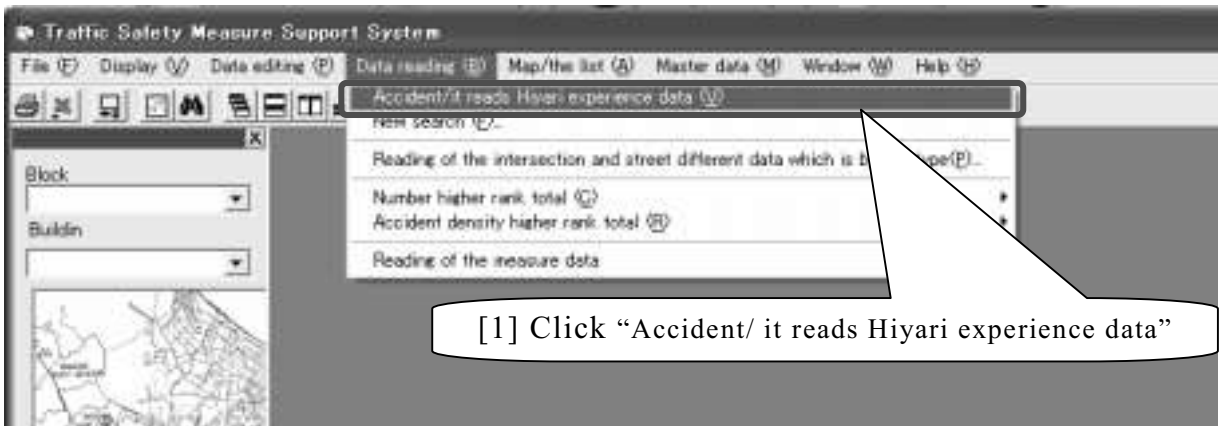
[4] Click “Save” if the direction is okay.



3. The Confirmation of the accident data

3-1 The reading of data

[1] Click “Accident/ it reads Hiyari experience data” of “Data reading” menu.

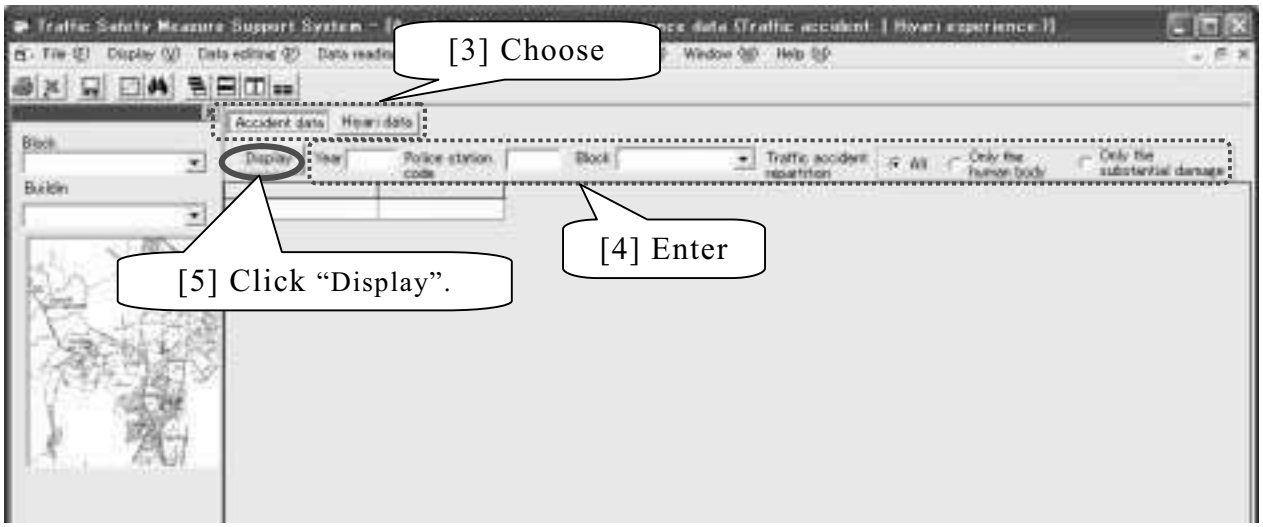


[2] Click “List” for selection the data.

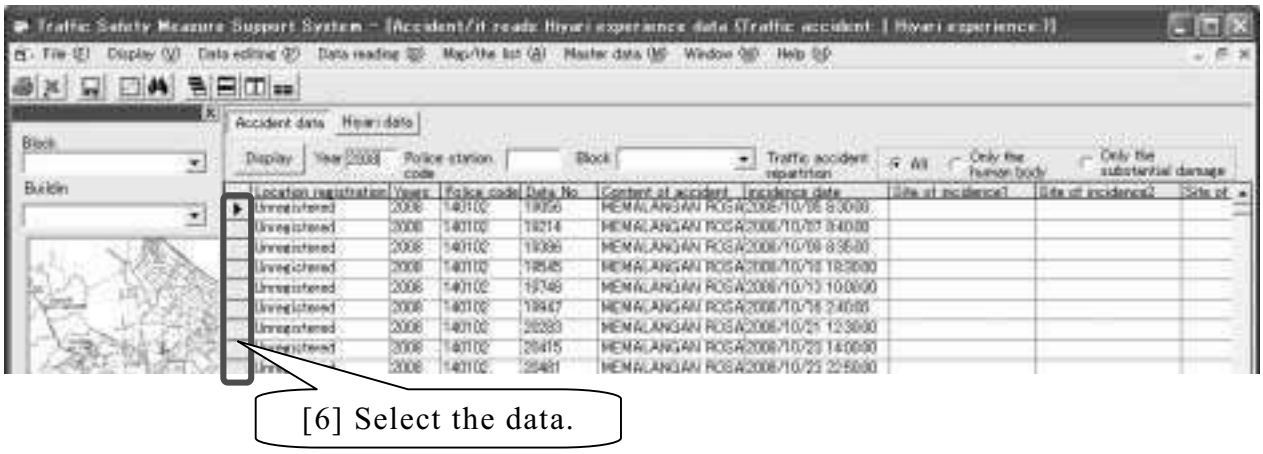
[3] Choose “Accident data” or “Hiyari data”.

[4] Enter some conditions.

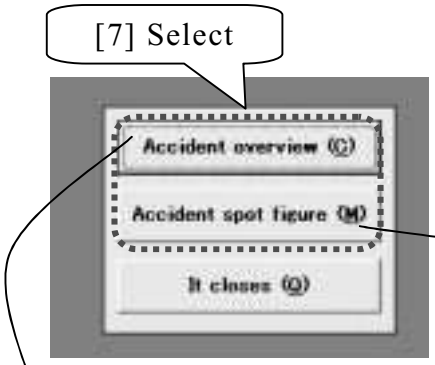
[5] Click “Display”.

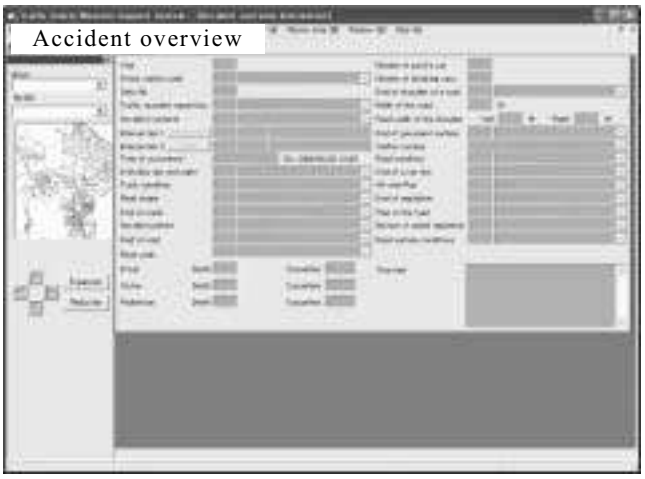


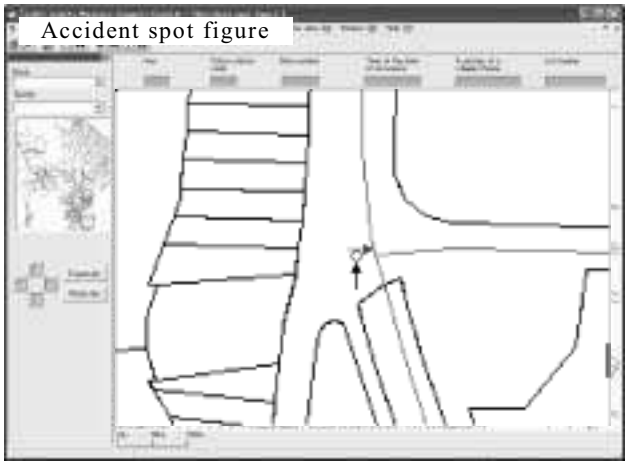
[6] Select the accident data to read.



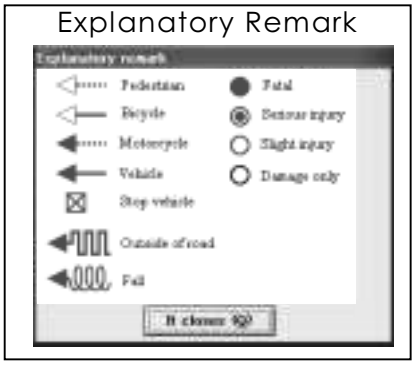
[7] Select the information to read.





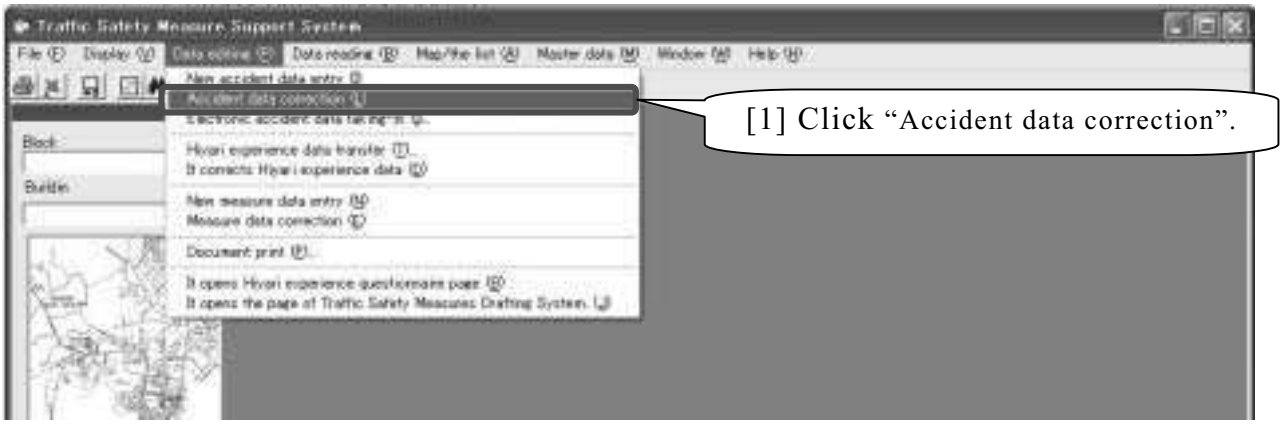


Explanatory Remark



3-2 The correction of data

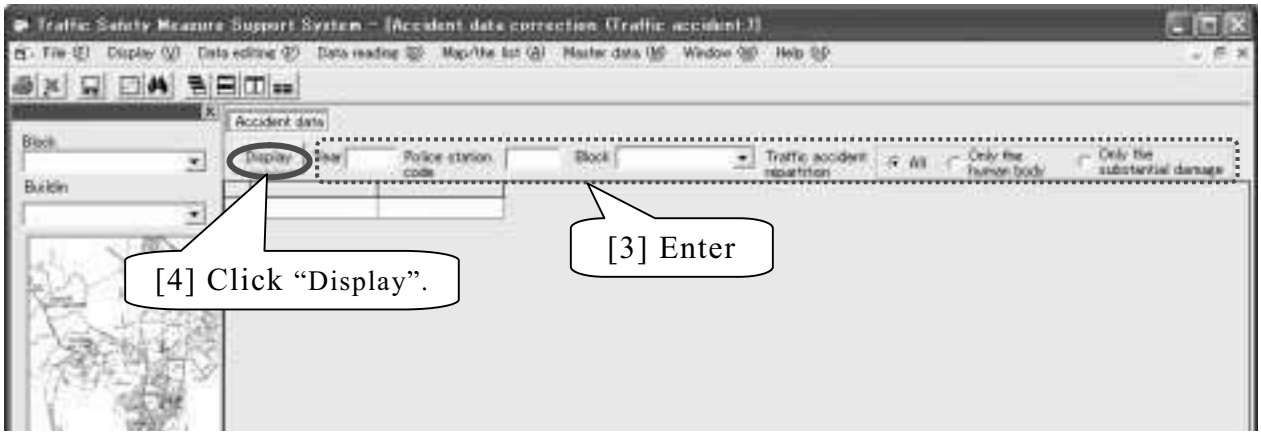
[1] Click “Accident data correction” of “Data editing” menu.



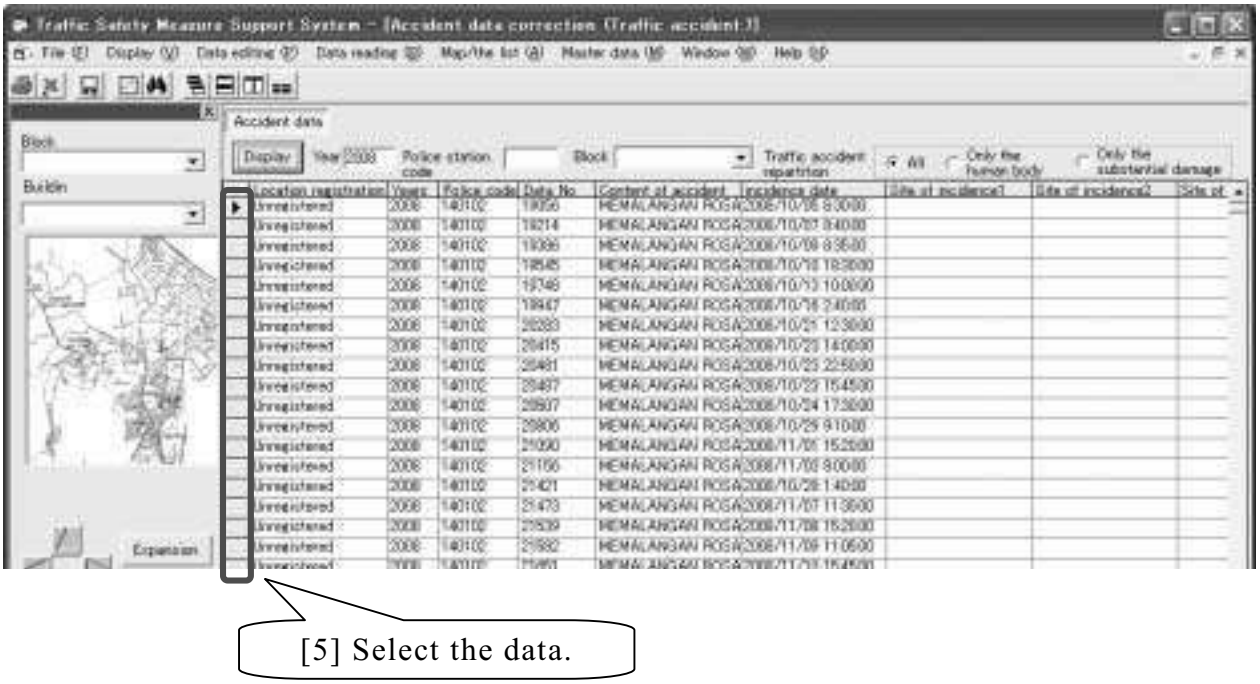
[2] Click “List” for selection the data.

[3] Enter some conditions.

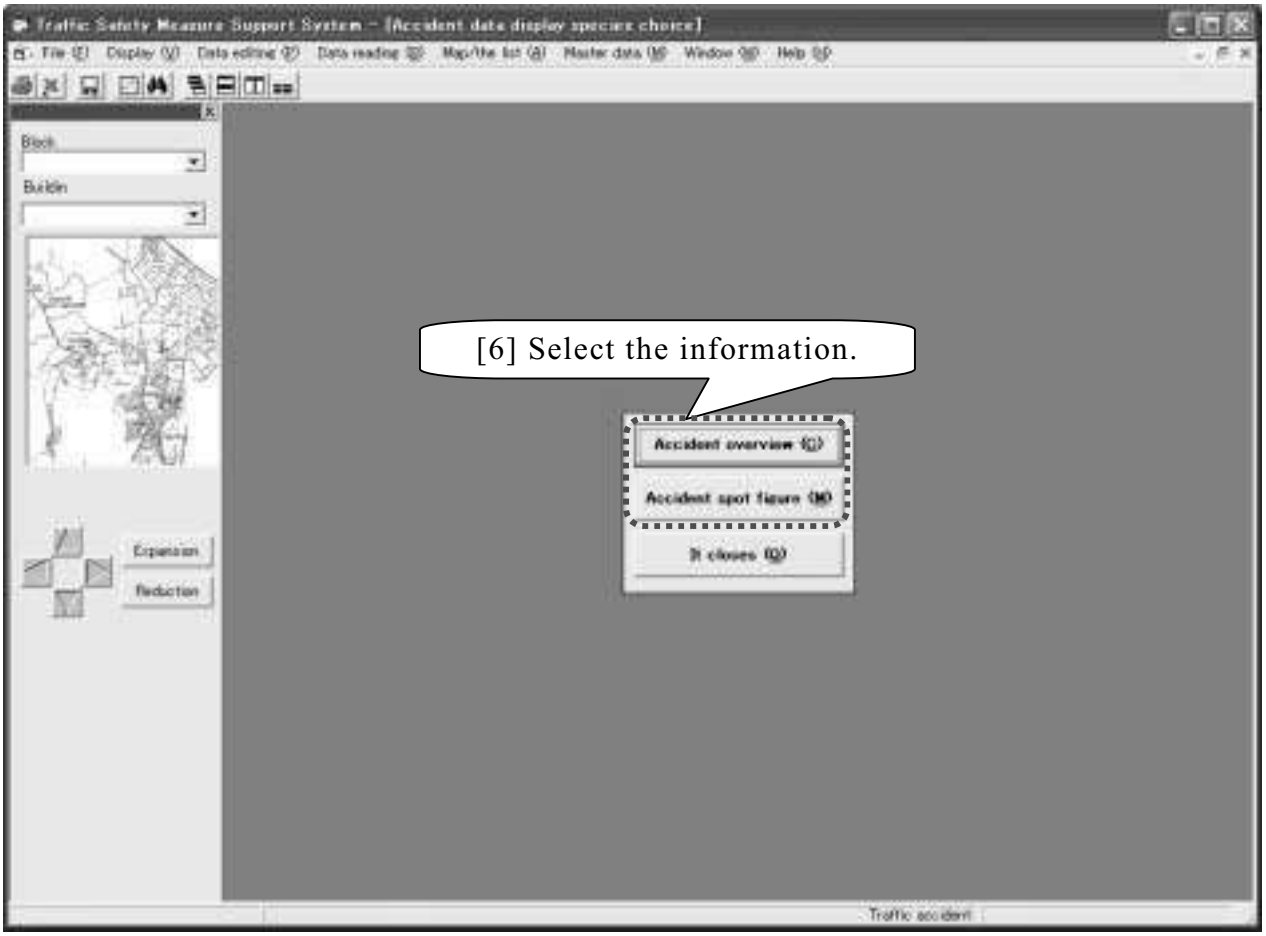
[4] Click “Display”.



[5] Select the accident data to correct.

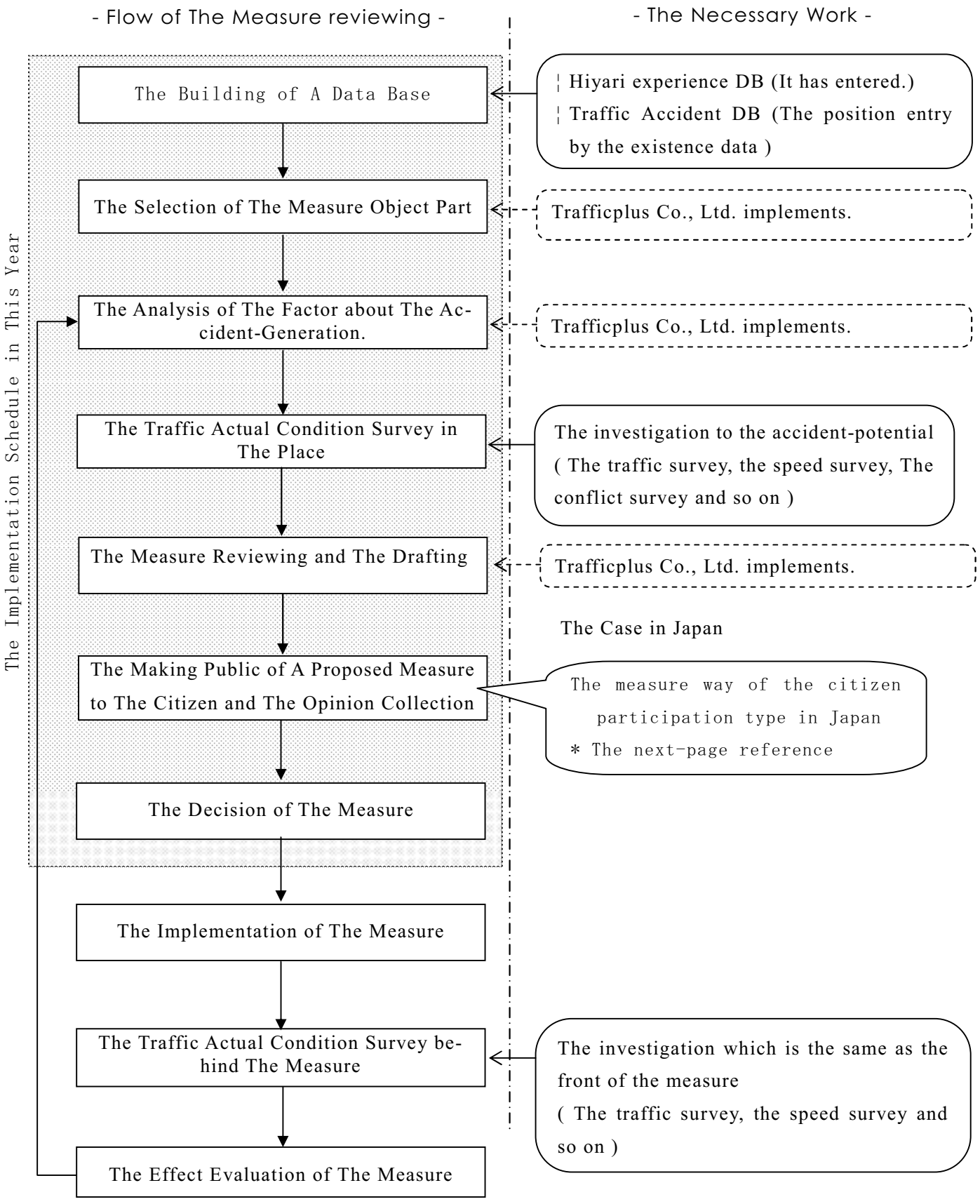


[6] Select the information to correct.



You select the information that you want to correct. Please see the page of the new entry in the modification method.

The Reviewing Procedure of The Traffic Safety Measure



The Case of The Measure Reviewing of The Citizen Participation Type in Kamagaya City, Japan

1. The Measure for The Intersection

The way of the citizen participation	Questionnaire	Measure Examination meeting	The information disclosure by the Web site
The object	・Hiyari experience report person ・ The neighborhood self-governing body around the measure intersection	・The representative of the neighborhood self-governing body around the measure intersection ・PTA	The citizen
The implementation Contents	The evaluation of the measure contents	The evaluation of the proposed measure	・The report such as the measure process ・The proposed measure ・ The questionnaire result
Effective point	・After working out a proposed measure ・After implementing a measure	After working out a proposed measure	・When working out a measure ・After working out a proposed measure ・After implementing a measure

2. The Measure for The Road

The way of the citizen participation	Questionnaire	Work Shop	The information disclosure by the Web site
The object	The neighborhood self-governing body around the measure road	The representative of the neighborhood self-governing body around the measure road	The citizen
The implementation Contents	The evaluation of the measure contents	The evaluation of a proposed measure	・The report such as the measure process ・The proposed measure ・ The questionnaire result
Effective point	When working out in the measure	The process to the working-out of a proposed measure from after selecting the part of the measure object	・After working out a proposed measure ・After implementing a measure

3. The Measure for The Area

The way of the citizen participation	Questionnaire	Work Shop	Participates in the traffic study	The information disclosure by the Web site
The object	· The neighborhood self-governing body of the measure Area · The road user	· The representative of the neighborhood self-governing body of the measure Area · The teaching staff	· The representative of the neighborhood self-governing body of the measure Area · The teaching staff body and so on	The citizen
The implementation Contents	· The evaluation of the proposed measure · The evaluation of the implemented measure	The reviewing of a proposed measure	The implementation of the traffic survey	· The report such as the measure process · The proposed measure · The questionnaire result
Effective point	· When proposed measure reviewing · After the measure implementation	The process to the working-out of a proposed measure from after selecting the part of the measure object	When reviewing an accident-generation factor	· After working out a proposed measure · After implementing a measure

The Collection Beginning of Hiyari Experience Information
- The Research for Traffic Safety Program by TSMSS (Traffic Safety Measures Support System) in Penang, Malaysia -

The proceeding order

1. The Date and Time

3rd of September in 2009, Thursday, 9：30～

2. The Attendee

・Municipal Council of Penang Island

Engineering Department

Mr. Khoo Say Boon: Director

Mr. Ang Aing Thye: Deputy Director

Mr. Addnan Bin Mohd Razali: Senior Engineer of Traffic & Public Transpor

Mr. A. Rajendran: Traffic & Transport Engineer of Traffic & Public Transpor

Planning & Development Department

Mdm. Maimunah Mohd Shariff: Director

Mr. Mohd. Shaari: Engineer

・Officer of Penang Police Head Quartor

・NGO Representative

・The observer: IATSS Research Team member

Prof. Hirokazu AKAHANE; Professor of CHIBA Institute of Technology

Mr. Shigeki MANBU; President of Traffic Plus Co., Ltd.

Mr. Toshihiko OYAMATSU; Technical Advisor of KG Consultant Co., Ltd.

3. The Topics

[1] Opening address (Mr. Khoo Say Boon)

[2] Briefing about Traffic Safety Program in Penang, Malaysia (Mr. Khoo Say Boon)

[3] Presentation for Traffic Safety Program by TSMSS [Traffic Safety Measures Support System] (Prof. Hirokazu AKAHANE)

[4] Explanation for the way of filling in Questionnaire of Hiyari experience (Mr. A. Rajendran)

[5] Q&A (All participant)

[6] Closing remarks (Mr. Khoo Say Boon)

The Above

H189「交通安全対策支援システムのペナン市への展開」

第４回　渡航報告書

作成日		2009 年 12 月 11 日	作成者	南部繁樹
期間		2009 年 12 月 6 日（日）～2009 年 12 月 10 日（木）		
渡航メンバー		親松俊彦・南部繁樹		
概要		ペナン市の受入れ機関との会議を開催し、ヒヤリ体験データ等のデータベースへのデータ登録状況等、これまでの進捗状況の確認と発生した問題点への対応策について議論を行った。 さらに、ペナン市における市民参加型の交通安全対策の実施に向け、対策対象箇所の選定を行うとともに、交通調査の企画などの具体的な取り組みを開始した。		
日時		実施内容		
12/ 6 （日）		マレーシア国ペナン市へ渡航		
12/ 7 （月）	午前	○ペナン市技術局の Khoo 局長と会議についての事前打ち合わせを行う。 ・「マレーシアにおける住民参加型の交通安全対策プログラム実施支援調査」の進捗状況、今回の渡航の主目的等に関して意見交換 ・マレーシアでの交通安全対策実施時の、自治体と警察の管轄範囲についてヒアリング ○ペナン市技術局の Addnan 課長と打合せ ・マレーシアの道路構造令、道路交通法等関連する法規に関する情報収集		
	午後	○関連法規、要領等の資料の確認と収集		
12/ 8 （火）	午前	○ペナン市技術局メンバーとの会議を開催。 ・ヒヤリ体験アンケート調査の収集状況の確認と問題点について議論 ・交通事故データの収集、登録に関して議論 ・交通安全対策の検討方法について手順、工程について詳細内容の確認 ・ヒヤリ体験データの分析結果を基に対策検討対象箇所について議論 ・昨年のパイロット地区内の交差点を対策箇所として選定 ・対策対象箇所の交通状況に関する調査方法について打合せ ・対策（案）決定過程への市民参加方法について、日本の事例紹介と現地の実態について議論		
	午後	○ペナン市技術局の担当エンジニアであるRajendranと打合せを行う。 ・収集したヒヤリ体験アンケートデータの内容について質疑、合わせてシステムの使い勝手等について確認 ・交通状況の調査方法について、詳細概要の打合せ		
12/9 （水）	午前	○対策対象箇所の現地にて、担当エンジニアであるRajendranと打合せを行う。 ・調査の目的、調査主旨等現地の状況を踏まえた詳細の説明		

		・ビデオの設置場所、撮影方向等について確認
	午後	○ペナン市にて、打合せと資料収集を行う。 ・調査の実施日、結果の受け渡し方法等の確認 ・調査での注意事項等の確認 ・現地の図面等関連資料の収集
12/10 （木）		マレーシア国ペナン市より帰国
		備　考  ヒヤリ体験アンケート入力状況

The Research for Traffic Safety Program by TSMSS(Traffic Safety Measures Support System) in Penang, Malaysia
The meeting material

1. DB construction of TSMSS

(1) Hiyari experience data

It wants to increase the number of the collection and the entries of Hiyari experience data a little more. It reviews a specific countermeasure with Municipal Council of Penang Island.

[1] The strengthening measure of a data collection process

・An improvement of the data collection process from Rapid Penang Co., Ltd. and Penang Taxi Association

→The implementation of the data collection and the substitute entry by the interview surveyor

・The collection the data from other NGOs

・Public presentation about the result of data collection

→The public presentation , the distributing to the questionnaire object and the public relations with WEB of the Hazard Map

[2] The strengthening measure of the data input method

・The data entry help in Municipal Council of Penang Island

→Arrangements for data input staff and the implementation of the entry

(2) Traffic accident data

In case of utilization of existing accident electronic data, it is necessary the information about the manual of CARS and the format of the file. It isn't possible to do the public presentation of the information of the security on the relation in the Malaysian police headquarters. It reviews countermeasure with Municipal Council of Penang Island.

・Can investigation about PC used at the Penang Police be conducted?

→If possible, the contents about the system files will be investigated in the place and it will work on measures.

2. Examination of traffic safety measure in Pilot Area

(1) The check about safety-measures planning (Another material)

・Work sequence, the contents and a process, division of roles

(2) The check of the accident data about Pilot Area

・Does it get the report that the position of the subscribed data can be confirmed? (The number of the data is 193.)

→It arranges beforehand about the data reduction way and the work share if getting.

→It reviews about the way of collecting a future if it isn't possible to get.

(3) Check about the other data used for measure planning

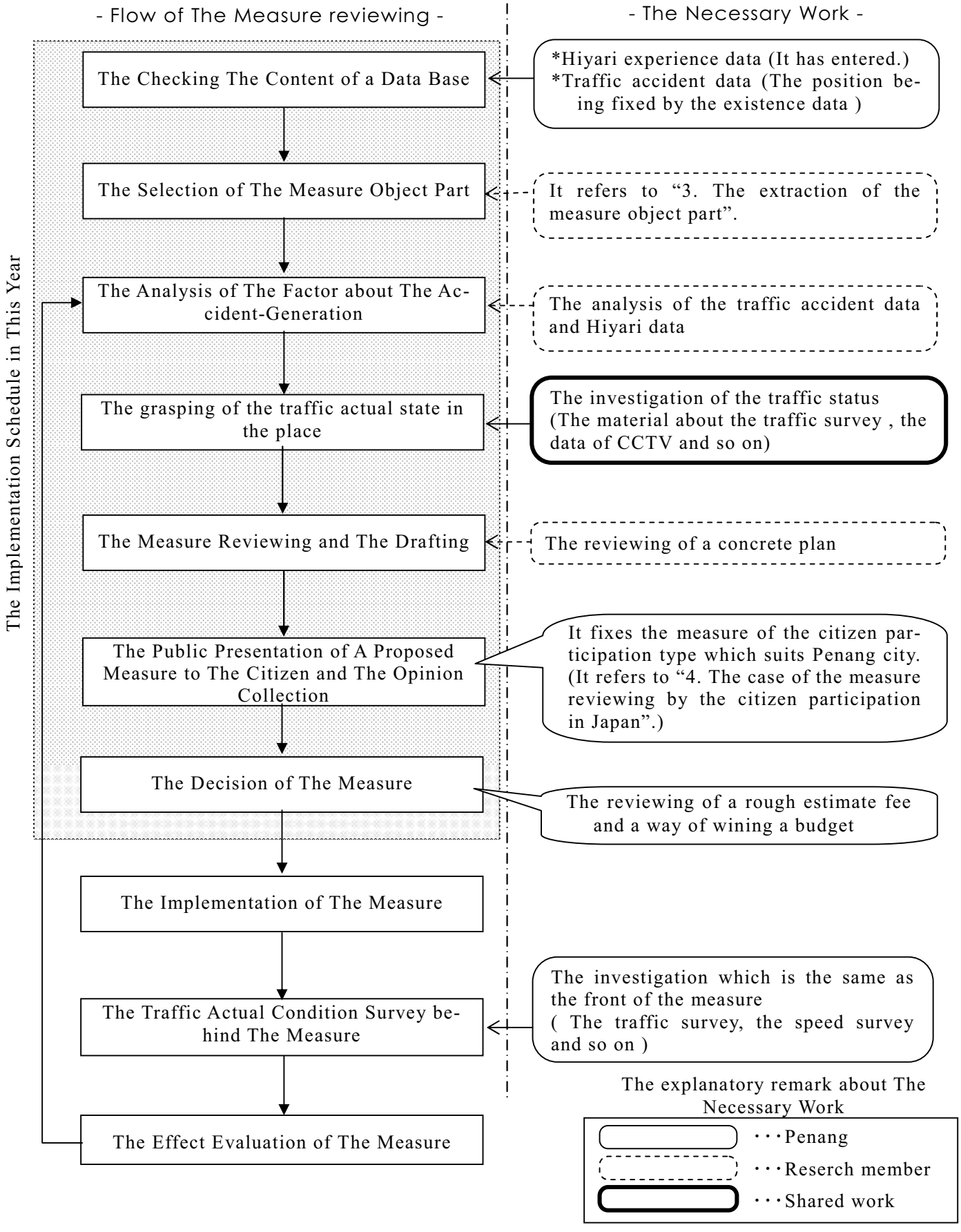
・The traffic relation, the CCTV data , “Road Structure Ordinance” , “Road Traffic Law” (The information on the traffic sign display and so on), “Rules of the Road” and so on

(4) The confirmation about the citizen participation way in the process of the measure drafting

・The introduction of the case in Japan (Another material)

The Reviewing Procedure of The Traffic Safety Measure in Pilot Area

1.The reviewing procedure and the sharing of roles



2. Work Schedule

The Item for Reviewing About The Measure in Pilot Area	2009	2010	
	December	January	February
The local technical visit	4th		
1. The Checking The Content of a Data Base	↔		
2. The Selection of The Measure Object Part	↔		
3. The Analysis of The Factor about The Accident-Generation	⟷		
4. The grasping of the traffic actual state in the place	⟷		
5. The Measure Reviewing and The Drafting	⟷	⟷	
6. The Public Presentation of A Proposed Measure to The Citizen and The Opinion Collection		⟷	
7. The Decision of The Measure			↔

3. The extraction of the measure object part

(1) Hiyari Experience Data (The time of December 1st in 2009)

The number of Hiyari experience : 140

Intersection

Ranking	Spot No.	Number
1	I-2	5
2	I-1	4
3	I-3	3
3	I-12	3
3	I-17	3
3	I-20	3
3	I-29	3
8	I-7	2
8	I-8	2
8	I-11	2
8	I-14	2
8	I-16	2
8	I-21	2
8	I-75	2
8	I-77	2

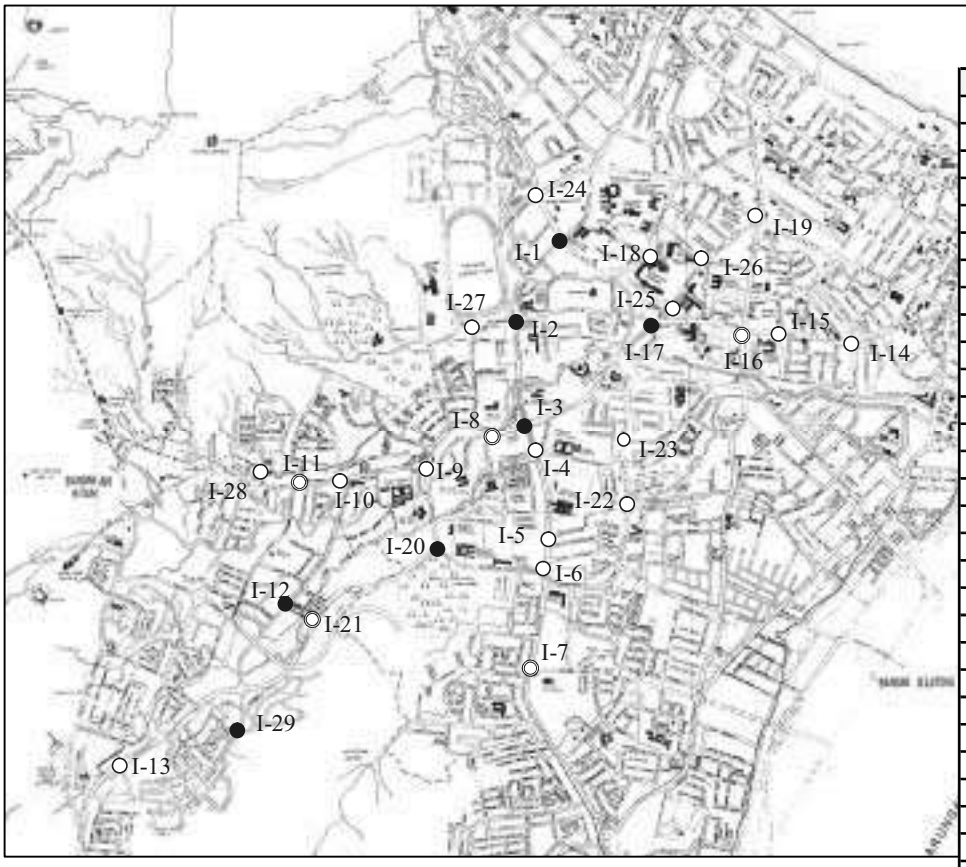
Street

Ranking	Spot No.	Number
1	S-6	3
1	S-11	3
1	S-26	3
4	S-2	2
4	S-7	2
4	S-9	2

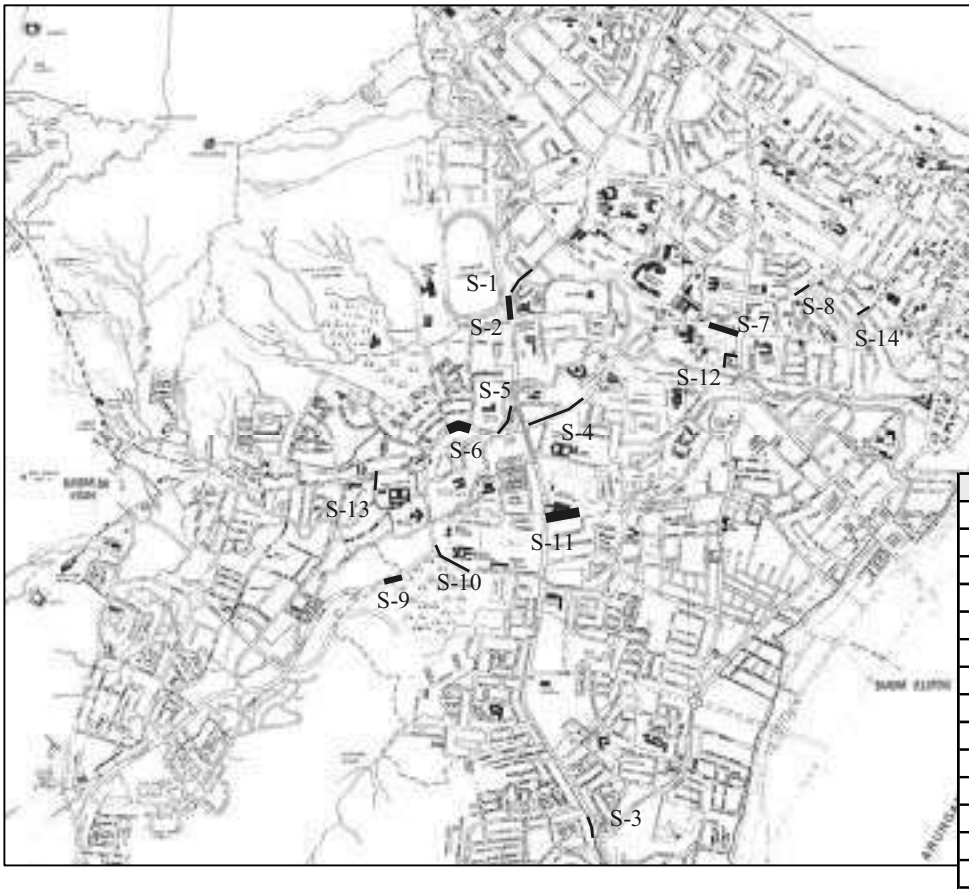
The report number of Hiyari experience in spot I-2 was five and there were these most spots. Next, the number of the reports in spot I-1 was four. It selects the object part of the traffic safety measure from these 2 spots.

(2) Hiyari Experience Data (The time of March in 2009)

The number of Hiyari experience : 72



Ranking	Spot No.	Number
1	I-2	5
2	I-1	4
3	I-3	3
3	I-12	3
3	I-17	3
3	I-20	3
3	I-29	3
8	I-7	2
8	I-8	2
8	I-11	2
8	I-16	2
8	I-21	2
13	I-4	1
13	I-5	1
13	I-6	1
13	I-9	1
13	I-10	1
13	I-13	1
13	I-14	1
13	I-15	1
13	I-18	1
13	I-19	1
13	I-22	1
13	I-23	1
13	I-24	1
13	I-25	1
13	I-26	1
13	I-27	1
13	I-28	1



Ranking	Spot No.	Number
1	S-6	3
1	S-11	3
3	S-2	2
3	S-7	2
3	S-9	2
6	S-1	1
6	S-3	1
6	S-4	1
6	S-5	1
6	S-8	1
6	S-10	1
6	S-12	1
6	S-13	1
6	S-14	1

(3) The position of Hiyari experience and the status of the spot of the measure object part

I-1

I-2

4. The case of the measure reviewing by the citizen participation in Japan (The intersection)

Step	Contents	Method	Object
Before working out a proposed measure	The collection of Hiyari experience data	The questionnaire	The citizen
	The dissemination about the parts where there are many the accident and Hiyari experiences	The information disclosure in the paper	The citizen
		The information disclosure by the Web site	The citizen
During working-out of a proposed measure	The public presentation of the measure process and a proposed measure The opinion collection about the proposed measure	The meeting which reviews a measure	the neighborhood self-governing body around / PTA
		The questionnaire	Hiyari experience report person / the neighborhood self-governing body around
		The information disclosure by the Web site	The citizen
After implementing a measure	The opinion collection about the implemented measure The publication of the evaluation of the measure	The questionnaire	Hiyari experience report person / the neighborhood self-governing body around
		The information disclosure by the Web site	The citizen

H189「交通安全対策支援システムのペナン市への展開」

第５回　渡航報告書

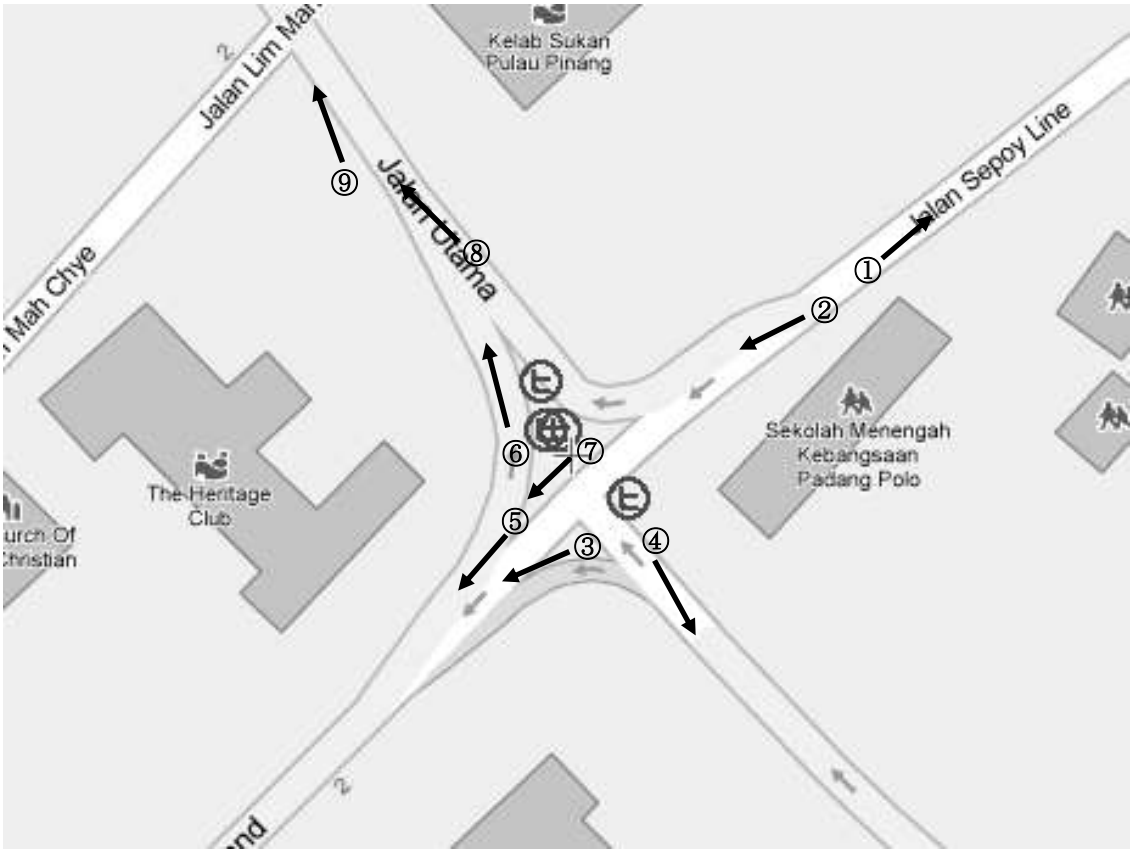
作成日	2010年2月1日	作成者	親松俊彦　南部繁樹
期間	2010年1月 26日（火）～2010年1月30日（土）		
渡航メンバー	高田邦道・堀江清一・親松俊彦・南部繁樹		
概要	ペナン市の受入れ機関との会議を開催し、ヒヤリ体験データ等の登録状況等、これまでの進捗状況の確認と発生した問題点への対応策について議論を行った。 さらに、市民参加型の交通安全対策の実施に向け、対策対象箇所（ｽｺｯﾄﾗﾝﾄﾞ・ｳﾀﾏ交差点）の交通調査等を指導した。また、具体的な交通安全対策について議論を行った。		

日時		実施内容
1/ 26（火）		マレーシア国ペナン市へ渡航
1/ 27（水）	午前	○ペナン市技術局の技術者に対策対象箇所（ｽｺｯﾄﾗﾝﾄﾞ・ｳﾀﾏ交差点）の交通調査等を指導 ・交通状況ビデオ撮影、スピード調査、交差点構造調査、走行調査、ﾌﾞﾚｰｷﾝｸﾞ頻度調査について現地指導および、調査実施
	午後	○交差点交通量調査を現地指導、調査実施 ○ペナン市技術局Mr.Addnan課長と支援システムの継続性について議論
1/ 28（木）	午前	○ペナン市技術局・警察のメンバーとのワークショップを開催 ・「マレーシアにおける住民参加型の交通安全対策プログラム実施支援調査」の進捗状況、今回の渡航の主目的等に関して意見交換 ○マレーシアにおける交通安全対策実施時の、自治体と警察の管轄範囲について議論 ○パイロット地区内の（ｽｺｯﾄﾗﾝﾄﾞ・ｳﾀﾏ）交差点の交通安全対策の検討 ・ヒヤリ体験アンケート調査の収集状況の確認 ・交通事故データの収集、登録情況の確認 ・交通安全対策の検討方法について手順、工程について詳細内容 ・ヒヤリ体験データ・事故データの分析結果を基にした対策案について ・対策対象箇所の交通状況に関する調査方法・暫定集計結果について ・対策（案）決定過程への市民参加方法について、日本の事例紹介と現地の実態について議論
	午後	○ペナン市技術局の担当エンジニアMr.Rajendranと打合せ ・マレーシア・ペナン州・ペナン市の交通事故統計データ収集の有無の確認及び入手について ・交通状況の調査方法について、詳細の打合せ

1/29 （金）	午前	○対策対象箇所の周辺地域の午前ピーク、昼食時ピークの走行調査実施 ○ペナン市技術局長Mr.Khooと支援システムの継続性を確保するための手法について議論 ・市議会ｲﾝﾌﾗ･ﾄﾗﾌｨｯｸ委員会へのﾌﾟﾚｾﾞﾝﾃｰｼｮﾝの実施について ・ペナン州のRoad Safety Council との協働による市民参加への可能性について
	午後	○ペナン市にて資料収集 ・道路行政関連資料の刊行状況 ・現地の図面等関連資料の収集
1/30 （土）		マレーシア国ペナン市より帰国

備　考

対策対象箇所の状況


Kelab Sukan
Pulau Pinang
Jalan Lim Mah Chye
Jalan Utama
Jalan Sepoy Line
Sekolah Menengah
Kebangsaan
Padang Polo
The Heritage
Club
①
②
③
④
⑤
⑥
⑦
⑧
⑨


①


②


③


④


⑤


⑥


⑦


⑧


⑨

Accident-potential analysis
by JALAN UTAMA × JALAN SCOTLAND INTERSECTION

1. The characteristic of the spot

Jalan Utama, Jalan Scotland and Sepoy lines are an intersecting intersection. Jalan Utama is the road which links Jalan Brown area and Hospital Pulau Pinang area.Jalan Scotland and Sepoy lines are the road which links Penang Medical College area and Sekolah Menengah Jenis Kebangsaan Union area.

It is an intersection from the four directions but there is a direction of the one-way traffic, too. The direction which it is possible to pass is only the 4 directions which are shown in Fig.1. The lane from Penang Medical College area Sekolah Menengah Jenis Kebangsaan Union area, from Penang Medical College area to Jalan Brown area is 1 lane. The lane from Hospital Pulau Pinang area Sekolah Menengah Jenis Kebangsaan Union area, from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area is 2 lanes.

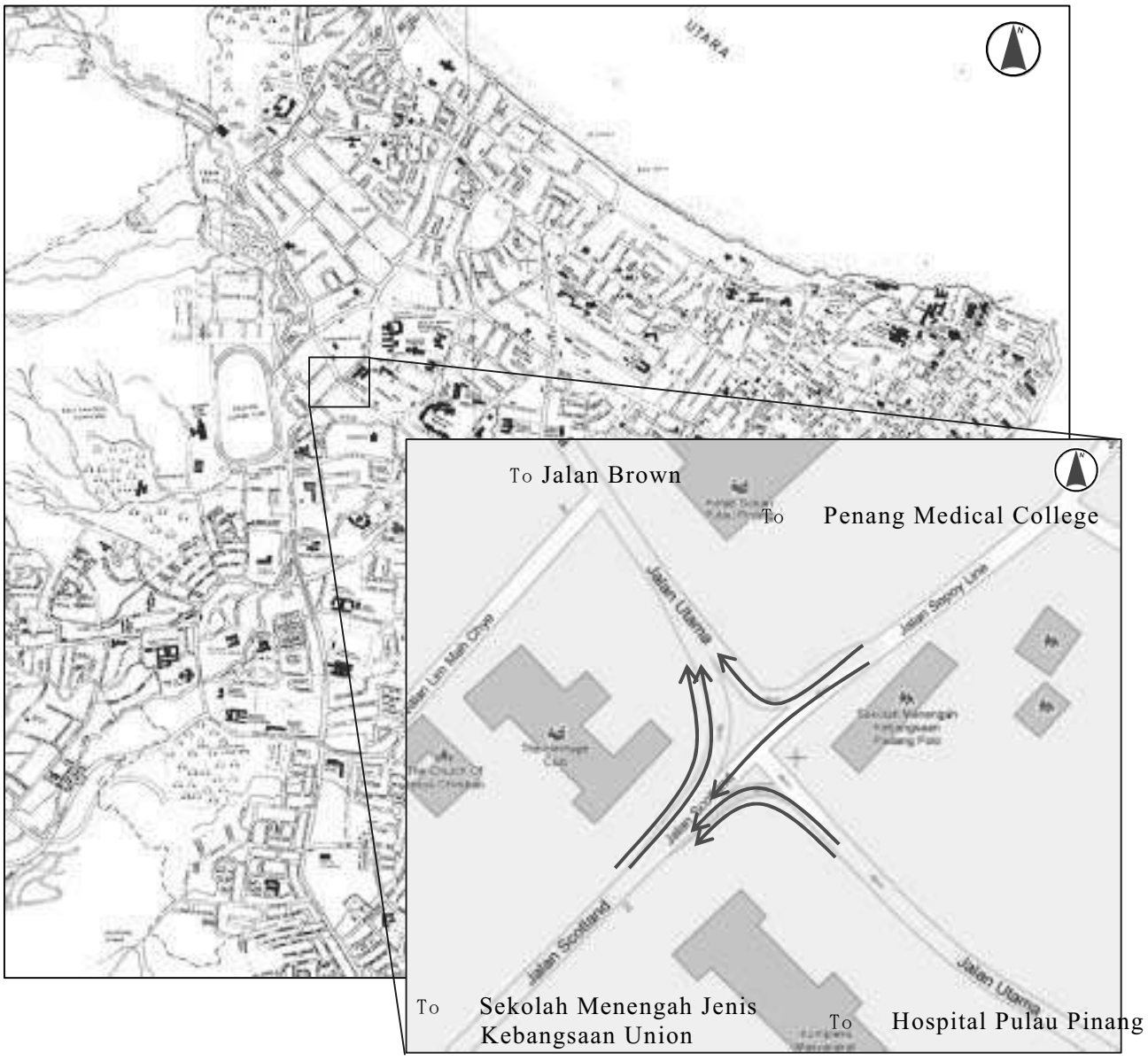
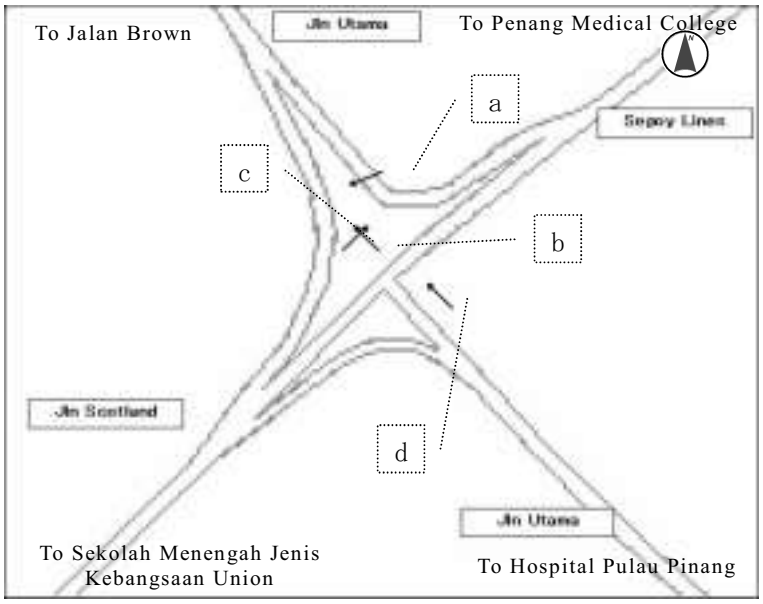


Fig.1 The measure object part

2. Hiyari experience status

All Hiyari experiences in this intersection are the report of the motorist and thecontents are as follows.



a. When turning right from Penang Medical College area, it ran at the speed with the high car of the partner.

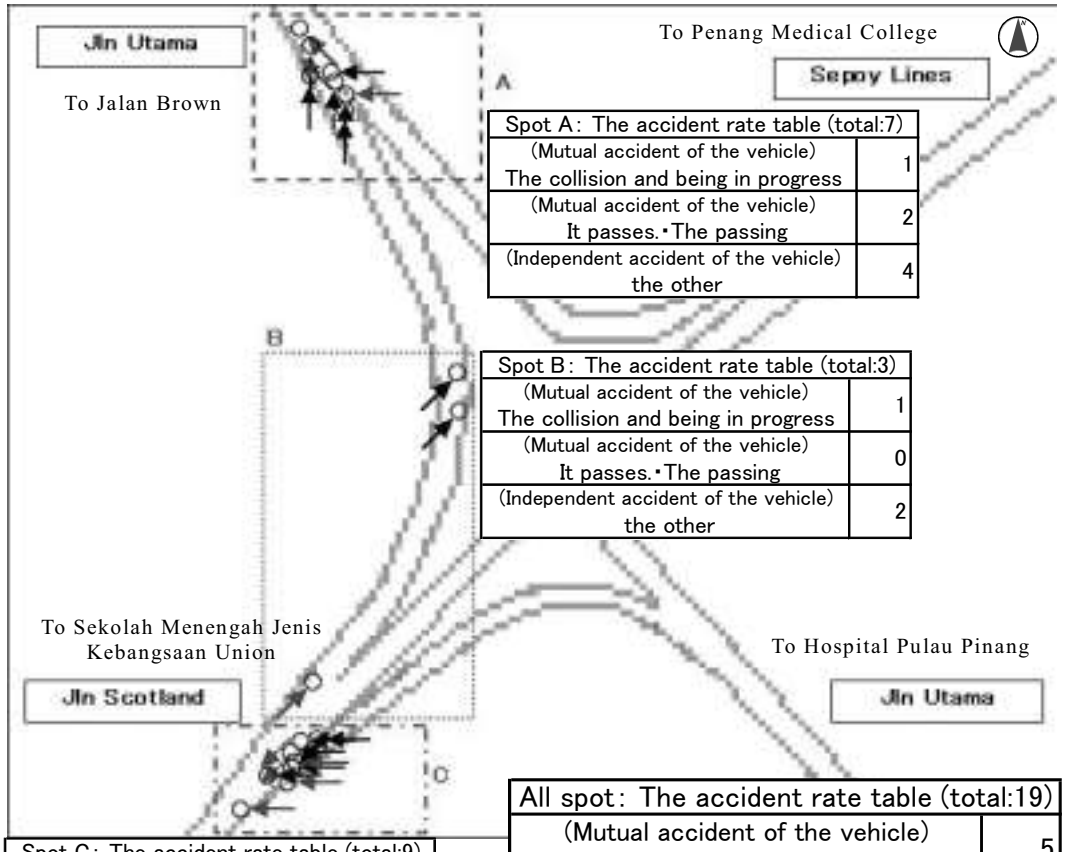
b. Sight is interrupted with the roadside tree, and the right turn car from Penang Medical College area is careful and is running.

c. When running from Sekolah Menengah Jenis Kebangsaan Union area, the roadside tree interrupts sight. Therefore, to collide with the in front car gets to seem.

d. When running from Hospital Pulau Pinang area, to collide with the walkway gets to seem.

3. The generation status of the traffic accident

The report of the traffic accident in this intersection is 19. It gathered an occurring place and contents next.



Spot A: The accident rate table (total:7)	
(Mutual accident of the vehicle) The collision and being in progress	1
(Mutual accident of the vehicle) It passes.・The passing	2
(Independent accident of the vehicle) the other	4

Spot B: The accident rate table (total:3)	
(Mutual accident of the vehicle) The collision and being in progress	1
(Mutual accident of the vehicle) It passes.・The passing	0
(Independent accident of the vehicle) the other	2

Spot C: The accident rate table (total:9)	
(Mutual accident of the vehicle) The collision and being in progress	3
(Mutual accident of the vehicle) It passes.・The passing	2
(Independent accident of the vehicle) the other	4

All spot: The accident rate table (total:19)	
(Mutual accident of the vehicle) The collision and being in progress	5
(Mutual accident of the vehicle) It passes.・The passing	4
(Independent accident of the vehicle) the other	10

Spot A : The accident centers in the spot which the vehicle from the different direction joins. They are a left turn from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area and a right turn from Penang Medical College area to Jalan Brown area. The mutual accident of the vehicle is three and the vehicle independence is four. The independent accident of the vehicle is caused by the action to evade touch with the other vehicle.

Spot B : When turning left from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area, the accident in passage of the curve section occurs.

Spot C : The accident centers in the spot which the vehicle from the different direction joins. They are a left turn from Hospital Pulau Pinang to Sekolah Menengah Jenis Kebangsaan Union area and a going-straight from Penang Medical College area to Sekolah Menengah Jenis Kebangsaan Union. The mutual accident of the vehicle is five and the vehicle independence is two. The independent accident of the vehicle is caused by the action to evade touch with the other vehicle.

4. The present state investigation result

(1) Field reconnaissance

It organized the result of the field reconnaissance.

Spot ⅰ : There is a difference in their speed in the spot which the vehicle from the different direction joins. They are a left turn from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area and a right turn from Penang Medical College area to Jalan Brown area. (Photograph [7][10] in the next-page.)

Spot ⅱ : There are much complication by the changing lane occurs in the section which the vehicle from the different direction joins. They are a left turn from Sekolah Menengah Jenis Kebangsaan Union area to Jalan Brown area and a right turn from Penang Medical College area to Jalan Brown area. (Photograph [8][9] in the next-page.)

Spot ⅲ : When turning a Jalan Brown area from Sekolah Menengah Jenis Kebangsaan Union area being left, it cannot see very far ahead along this road.
(Photograph [5][6] in the next-page.)

Spot ⅳ : When turning a Sekolah Menengah Jenis Kebangsaan Union area from Hospital Pulau Pinang area being left, The speed to enter a curve is high. (Photograph [3][4][11] in the next-page.)

Spot ⅴ : When turning a Jalan Brown area from Penang Medical College area being right, it cannot see very far ahead along this road.
(Photograph [1][2] in the next-page.)


[9]


[8]


[7]


[10]


[1]


[6]

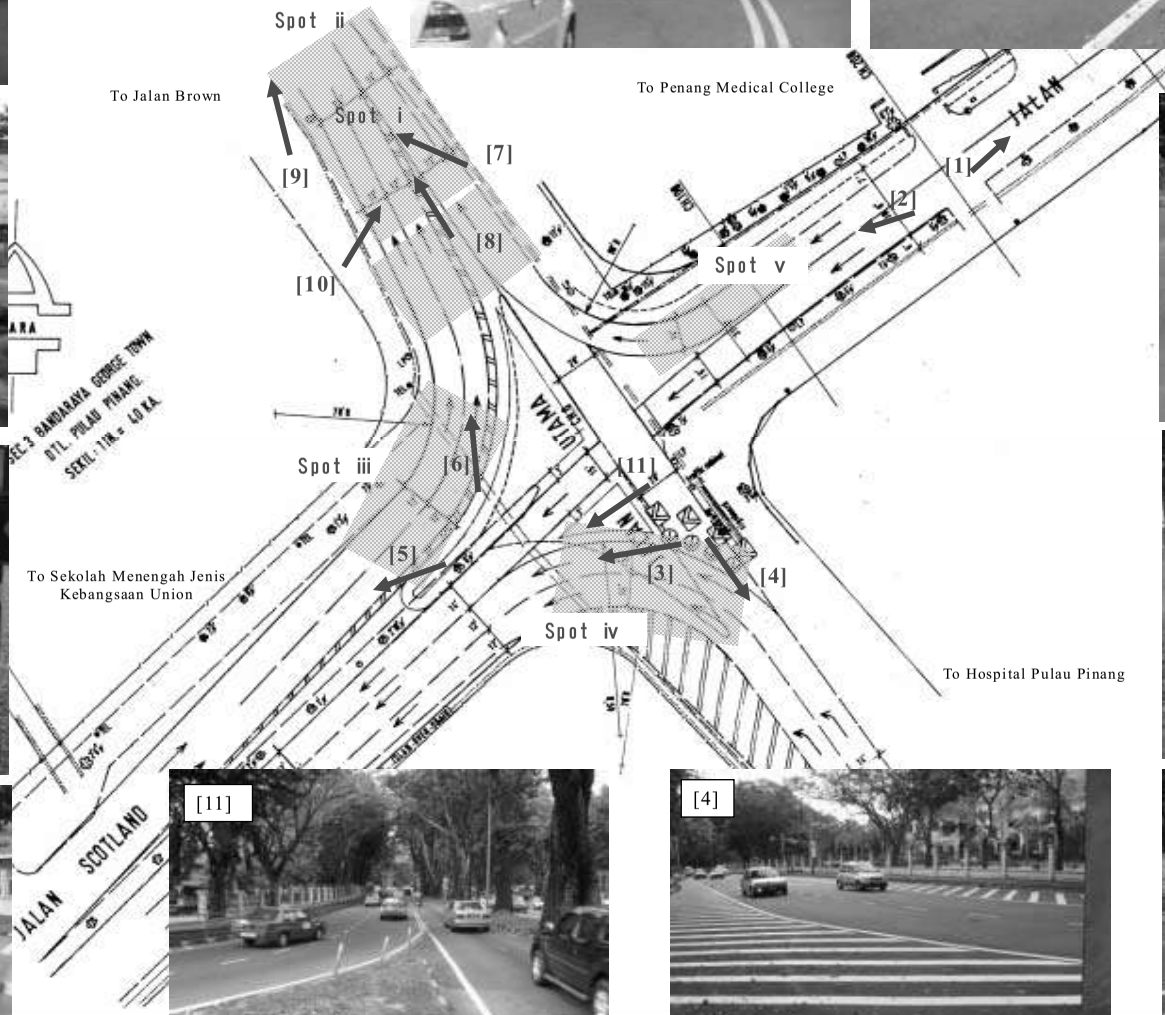

[2]


[5]


[11]


[4]


[3]


Spot ii
Spot i
Spot iii
Spot iv
Spot v
[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8]
[9]
[10]
[11]
To Jalan Brown
To Penang Medical College
To Sekolah Menengah Jenis Kebangsaan Union
To Hospital Pulau Pinang
JALAN SCOTLAND
JALAN

(2) The traffic survey of the car

It investigates traffic according to the direction which is entered in the figure below.

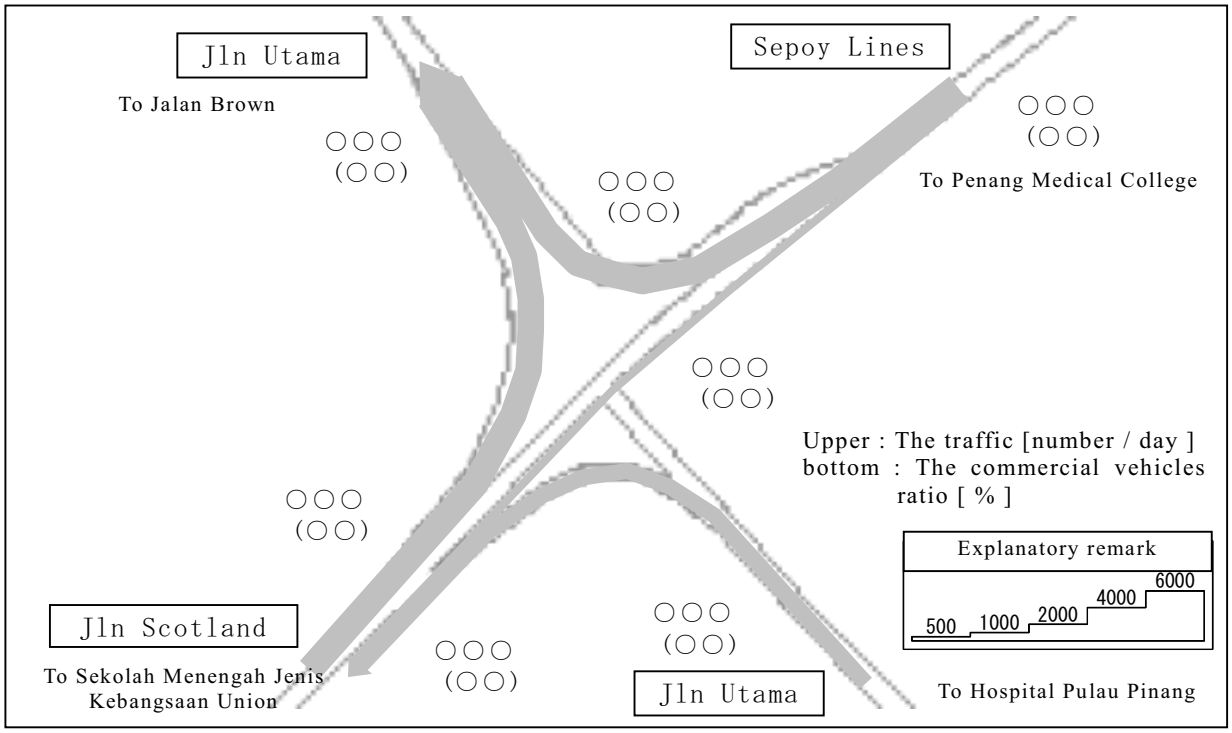
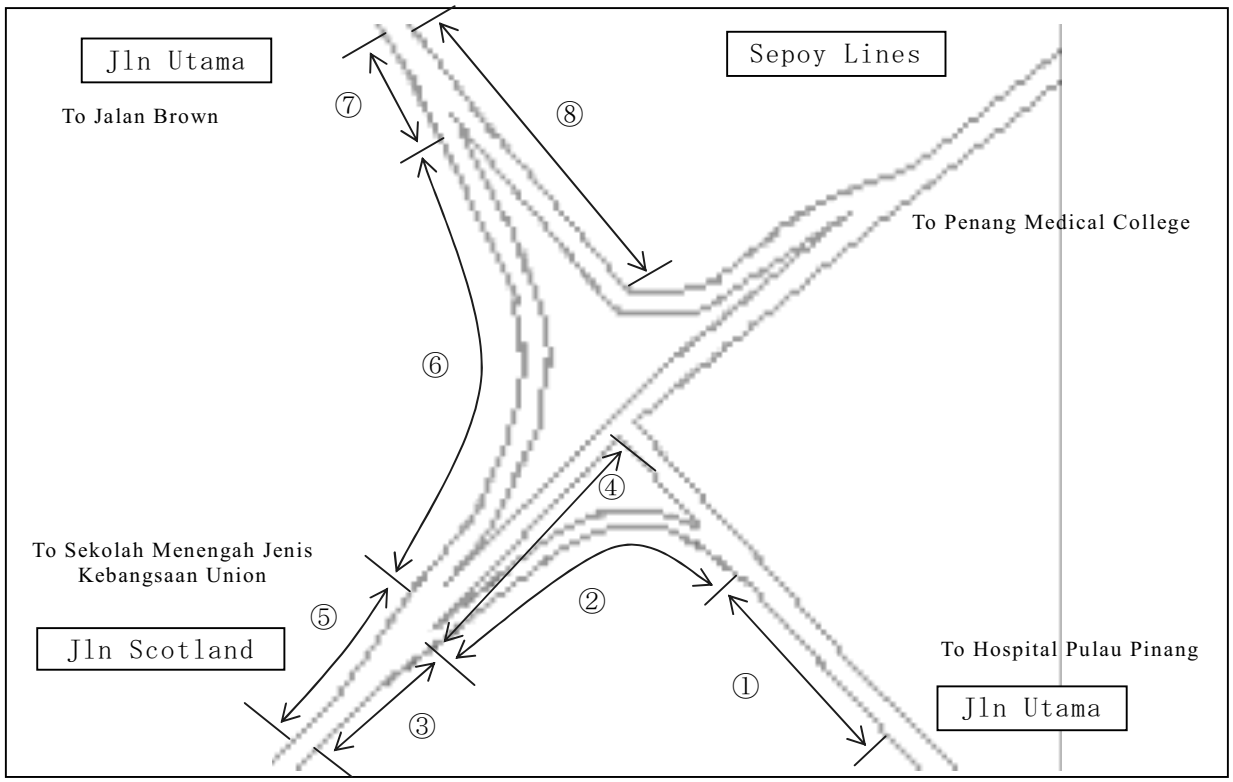


Fig.2 whole traffic discharge diagram (The image)

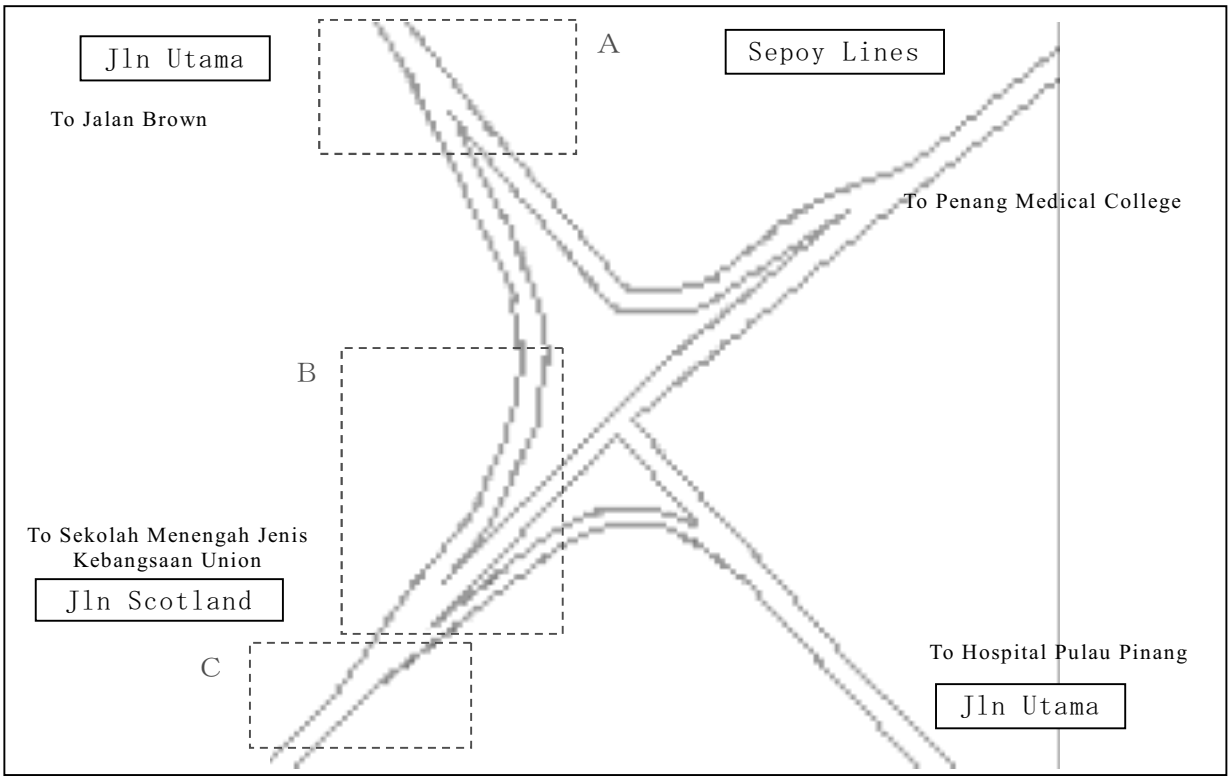
(3) The spot speed survey

It investigates about the spot of the figure below.



(4) The conflict survey

It investigates about the spot of the figure below. The reviewing after data getting.



5. The extraction of the problem and the problem

(1) The extraction of the problem by the present state investigation and Hiyari experience status

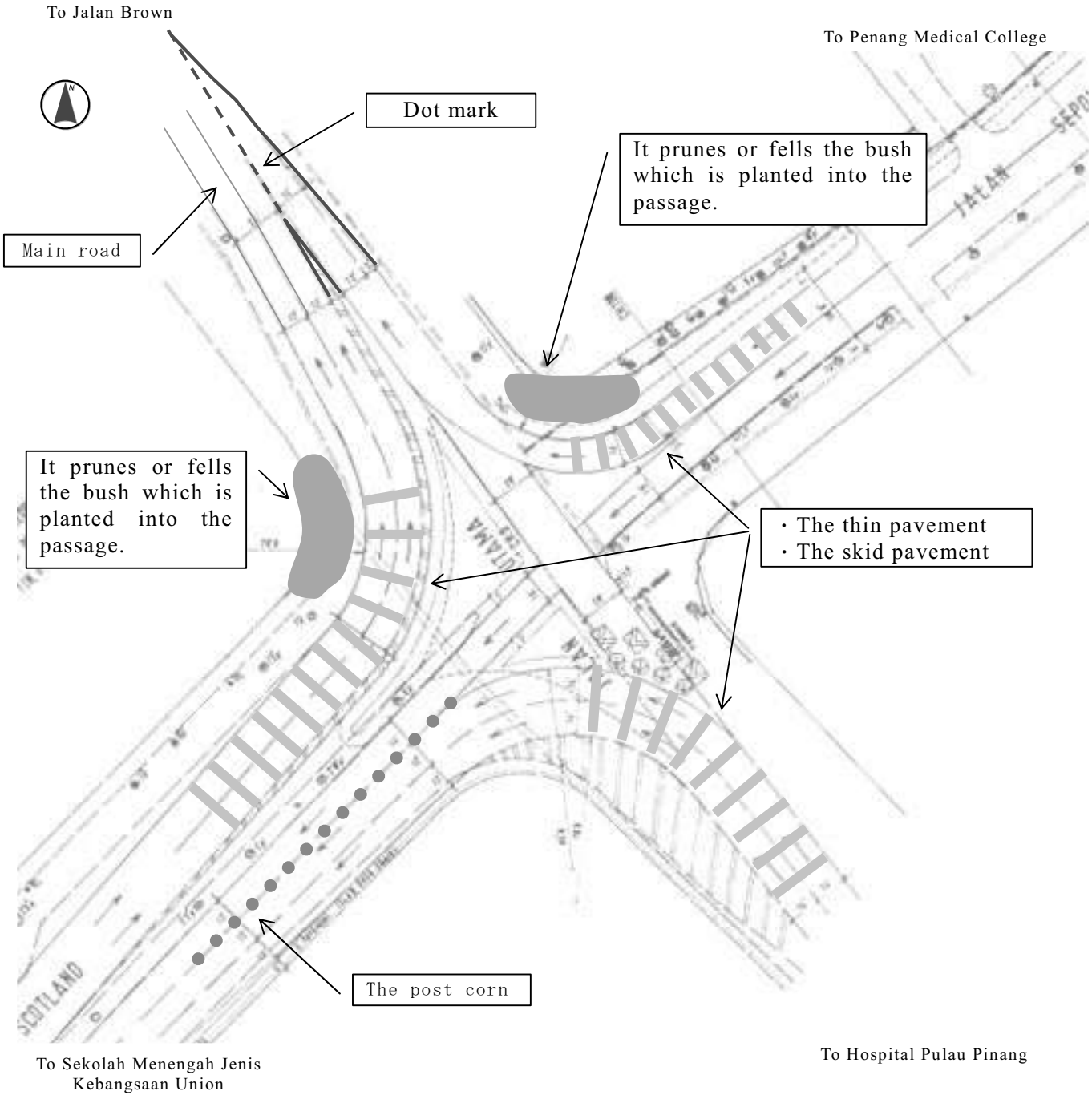
- Because a bush is planted, it cannot see very far ahead in Spot iii and Spot iv. Also, the speed in place Spot iii is high.
- There are much complication by the changing lane in the section of Spot i and Spot ii occurs.
- The section which flows in from Hospital Pulau Pinang area to the intersection is a straight line. Therefore, the inflow speed to place Spot v is high. Also, many accidents occur in the merging section at the exit of Spot iv.

(2) The way of thinking of the traffic safety measure

Plicy of the measure	Poposed measure
[1] It secures the sight of the driver who does in the right and left occasion to Jalan Brown.	It prunes or fells the bush which is planted into the passage.
[2] The restraint of the complication after the joining spot and joining	・It makes the road by which the main traffic stream line turns a Jalan Brown area from Sekolah Menengah Jenis Kebangsaan

	Union area being left. ・When passing from Penang Medical College area to Jalan Brown area, it makes non-priority and it joins.
[3] It restrains inflow speed to the intersection.	・The thin pavement ・The skid pavement
[4] The restraint of the complication after the joining spot and joining	・It makes a joining part an in front position.。

The measure figure (Plan)



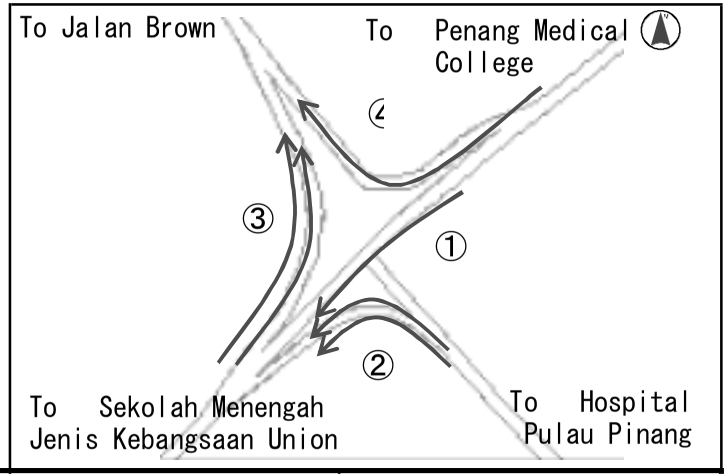
Traffic survey in Penang

Day of January, 2010

Spot JALAN UTAMA × JALAN SCOTLAND INTERSECTION

Position

Time ～



Time	Direction:	①		Direction:	②		Direction:			Remarks
	Compact Car	Big Car	Motorcycle	Compact Car	Big Car	Motorcycle	Compact Car	Big Car	Motorcycle	
0:00 ～ 0:10										
0:10 ～ 0:20										
0:20 ～ 0:30										
0:30 ～ 0:40										
0:40 ～ 0:50										
0:50 ～ 1:00										
0:00 ～ 0:10										
0:10 ～ 0:20										
0:20 ～ 0:30										
0:30 ～ 0:40										
0:40 ～ 0:50										
0:50 ～ 1:00										
Memo										

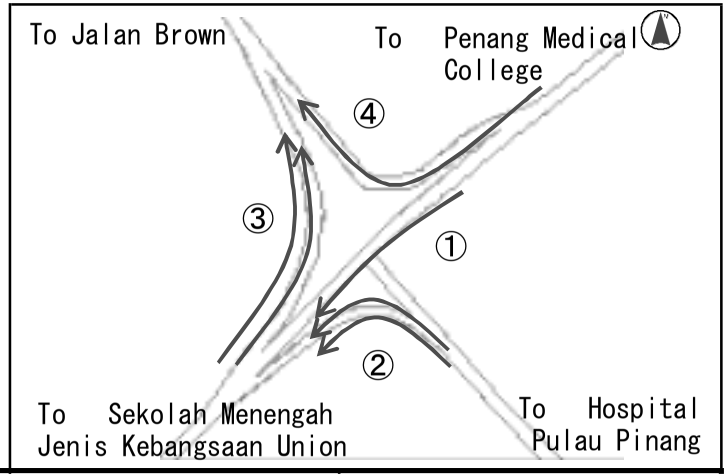
Traffic survey in Penang

Day of January, 2010

Spot JALAN UTAMA × JALAN SCOTLAND INTERSECTION

Position

Time ～



Time	Direction:	③		Direction:	④		Direction:			Remarks
	Compact Car	Big Car	Motorcycle	Compact Car	Big Car	Motorcycle	Compact Car	Big Car	Motorcycle	
0:00 ～ 0:10										
0:10 ～ 0:20										
0:20 ～ 0:30										
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0:40 ～ 0:50										
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0:40 ～ 0:50										
0:50 ～ 1:00										
Memo										

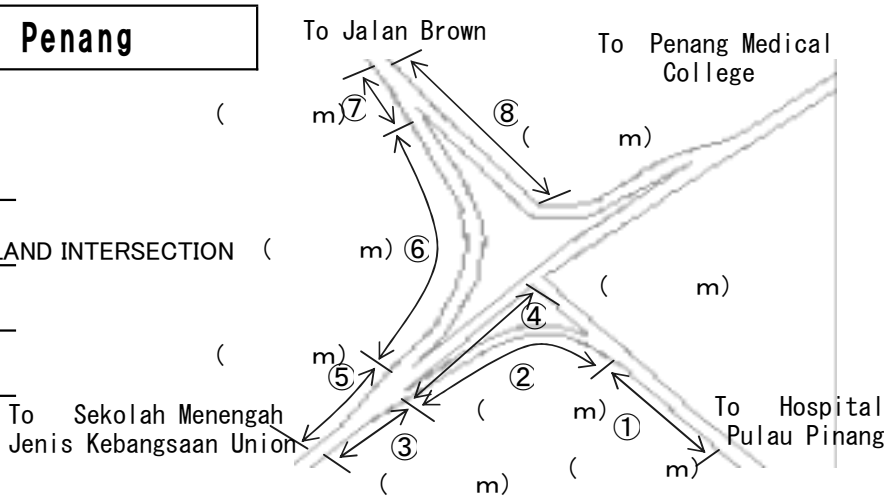
Spot speed survey in Penang

Day of January, 2010

Spot JALAN UTAMA × JALAN SCOTLAND INTERSECTION

Position

Time ～



No	Type	Direction	Pass time	Speed	Remarks
1	Compact・Big・Motoycle				
2	Compact・Big・Motoycle				
3	Compact・Big・Motoycle				
4	Compact・Big・Motoycle				
5	Compact・Big・Motoycle				
6	Compact・Big・Motoycle				
7	Compact・Big・Motoycle				
8	Compact・Big・Motoycle				
9	Compact・Big・Motoycle				
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44	Compact・Big・Motoycle				
45	Compact・Big・Motoycle				
46	Compact・Big・Motoycle				
47	Compact・Big・Motoycle				
48	Compact・Big・Motoycle				
49	Compact・Big・Motoycle				
50	Compact・Big・Motoycle				

H189「交通安全対策支援システムのペナン市への展開」

第６回　渡航報告書

作成日	2010 年 4 月 19 日	**作成者**	親松俊彦
期間	2010 年 4 月 12 日（月）～2010 年 4 月 16 日（金）		
渡航メンバー	高田邦道・親松俊彦		
概　要	ペナン市の受入れ機関との会議を開催し、高田教授によるシステムの運用事例についてプレゼンテーションを行い、研究の最終報告書を説明し確認した。また、ヒヤリ体験データ等の登録状況等の確認と継続する作業について議論を行った。 新市長への表敬と研究の最終報告を行ない「市民参加型の交通安全対策支援システム」の継続運用を提言した。 また、市議会インフラ・トラフィック委員会において、システム運用事例のプレゼンテーションを行い、最終報告書の説明と共にシステム運用について一定の理解を得られた。更に、すでに立ち上がっている支援システムの継続運用を提言した。 州議会のペナントラフィック委員会（PTC）委員長に同様のプレゼンテーションを行ない、運用について YES との回答を得られた。 この結果、自主研究の成果及び提言は、ペナン州知事に市長・PTC 委員長の両者から説明される予定となった。 対策対象箇所（ｽｺｯﾄﾗﾝﾄﾞ・ｳﾀﾏ交差点）の交通状況等を再度確認すると共に小中学生の教育施設「ペナン交通公園」を踏査した。		

日　時		**実施内容**
4/ 12 （月）		マレーシア国ペナン市へ渡航
4/ 13 （火）	午前	○　ペナン市技術局の技術者・警察のスタッフにシステムの運用事例についてプレゼンテーションを行ない、自主研究の最終報告書により対策対象箇所（ｽｺｯﾄﾗﾝﾄﾞ・ｳﾀﾏ交差点）の詳細解析結果を説明した。 ○　ヒヤリ体験データの収集継続を確認した。
	午後	○対象交差点の交通状況を再確認、視距調査実施。 ○小中学生向けの交通安全教育ペナン交通公園を踏査。 ○ペナン市技術局Mr.Khoo局長と支援システムの継続性について議論。
4/ 14 （水）	午前	○新ペナン市長 Ar.H.Patahiya 女史への表敬と研究の最終報告を行ない「市民参加型の交通安全対策支援システム」の運用継続について強く提言した。 市長が直接州知事へ報告を行なうとの回答を得た。 ○市議会インフラ・トラフィック委員会において、システムの運用事例についてプレゼンテーションを行い、最終報告書の説明により支援システムの運用について一定の理解を得られた。

		委員の半数以上からの質問と活発な議論が展開され、委員会予定時間の半分1.5時間を使う結果となった。 質問事項は次の通り ① このシステムを実施するにはどれだけの予算が必要か？ ② ペナン市の事故データは少ないが何故だ。ちゃんと調べたのか？ ③ マレーシア人の性格・振る舞いを知っているのか？ ④ ペナン市に何回、何日くらい滞在したのか？ ⑤ 交通安全は、交通教育を含めいろいろあるのでは？ ⑥ 速度が240km/hrも出る車を作っているのはおかしいのでは？ 車が増えて困っているが。 ⑦ 公共交通との関係をどう考えているのか？ ⑧ 渋滞問題のほうが深刻だ。沿道利用の買い物渋滞も問題だ。 ⑨ これだけのデータで言い切れるのか。 ⑩ このプログラムをペナン市全域に拡大できないのか。
	午後	○ペナン市技術局の担当エンジニアMr.Rajendranと打合せ ・支援システムの継続運用について議論。 ヒヤリ体験データ収集は現在約270件になっている。 ・データ収集対象を大学・ﾛｰﾄﾞｾｲﾌﾃｨ委員会に拡大する可能性を検討。
4/15 （木）	午前	○ペナン市にて情報・資料収集 ○ペナン市技術局長Mr.Khooと支援システムの継続性を確保するための手法について議論 ・ペナン州のRoad Safety Council との協働による市民参加への可能性について→ヒヤリ体験データの収集をキャンペーン開催時に行うことは可能。
	午後	○州議会のペナントラフィック委員会（PTC）委員長YB Tuan議員にシステムの運用事例についてプレゼンテーションを行い、最終報告書の説明を実施。支援システムの運用はYESとの回答を得られた。
4/16 （金）		マレーシア国ペナン市より帰国
まとめ		今回の派遣では、当初予定の市長表敬・会議に加え市議会のインフラ・トラフィック委員会への出席や、ペナン州議会のペナントラフィック委員会（PTC）委員長へのプレゼンテーションが急遽依頼されました。 市長からは、リサーチの結果を州知事へ直接説明するとのお話をいただき、平行して事務レベルでの州知事への説明をPTCのリーダー議員を通して行うこととなりました。 市長・州議員ともに、今回の自主研究の成果、支援システムが有用であるとの高い評価を受けることができました。 市長への表敬・報告は予定の２０分を大幅に超過し５０分間話し合うことができました。 市議会の委員会では、全体で３時間・１２議題の予定の中で、１時間３０分を高田先生のプレゼンテーション・質疑応答に使われるほど活発な議

	論となりました。 　州の PTC 委員長の議員への説明も 1 時間に及び、このシステムの運用は YES との回答を得られました。 　今後の支援システム運用の継続については、ペナン市技術局の確約を得られていることや、市議会の一定の理解を得られたこと、市長から州知事への説明がなされる予定であること等により、システムの運用範囲がペナン州全体に広がること等が期待できる展開となっています。

備　考

市議会ｲﾝﾌﾗ・ｽﾀﾝﾃﾞｨﾝｸﾞ委員会

市議会ｲﾝﾌﾗ・ｽﾀﾝﾃﾞｨﾝｸﾞ委員会

州議会ﾍﾟﾅﾝﾄﾗﾌｨｯｸ委員長説明

州議会ﾍﾟﾅﾝﾄﾗﾌｨｯｸ委員長説明

ペナン市交通公園

ペナン市交通公園

CCTV カメラ

ｽｺｯﾄﾗﾝﾄﾞ・ｳﾀﾏ交差点踏査（視距ﾁｪｯｸ）

非売品

交通安全対策支援システムのペナン市への展開
報 告 書

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発行所　財団法人 国際交通安全学会
東京都中央区八重洲 2-6-20　〒104-0028
電話/03(3273)7884　FAX03(3272)7054

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