PRELIMINARY DEVELOPMENT OF INTELLIGENT TRANSPORTATION SYSTEM (ITS) IN THAILAND

Tuenjai Fukuda[1)], Atsushi Fukuda[2)], Kumropluk Surasawadee[3)], and Padet Praditphet [4)]

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1) Graduate School of Science and Technology, Department of Civil Engineering, Chuo University, 1-13-27 Kasuga, Bunkyo-ku, Tokyo 112-8551 Japan Tel. (81) 03-3817-1817 Fax. (81) 03-3817-1803
E-mail: noynoifukuda99@yahoo.com and fukuda@civil.chuo-u.ac.jp

2) College of Science and Technology, Dept. of Transportation Engineering and Socio-Technology, Nihon University, 7-24-1 Narashinodai, Funabashi, Chiba 274-8501, Japan E-mail: fukuda@trpt.cst.nihon-u.ac.jp

3) Director of Office of Transport and Traffic Policy and Planning (OTP), Office of Transport and Traffic Policy and Planning (OTP), Ministry of Transport, 35 Petchaburi Rd., Phayathai, Ratchatevi, Bangkok 10400, Thailand
Tel. (66-2) 215-4545 Fax. (66-2) 216-7395 E-mail: kumropluk@otp.go.th

4) Office of Transport and Traffic Policy and Planning (OTP), Ministry of Transport, 35 Petchaburi Rd., Phayathai, Ratchatevi, Bangkok 10400, Thailand Tel. (66) 02-215-1515 ext. 4018 Fax. (66) 02-215-4656
E-mail: p_praditphet@yahoo.com and p_praditphet@otp.go.th

Presentation Outline

Introduction
- Thailand & Bangkok Characteristics
- Previous studies on ITS in Thailand

Major Organizations Involved in the Current Development of ITS
- BMA, OTP, RTP, ETA, and BMTA

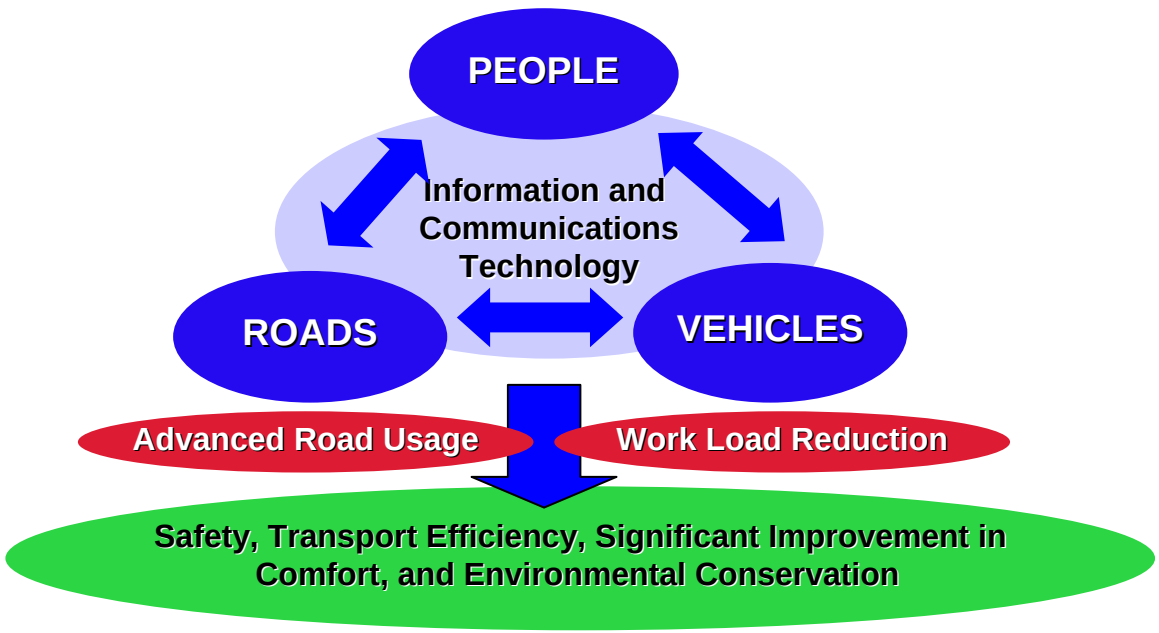
Deriving the Master Plan of Information and Communication Technology
- ICT Master Plan of MOT
- ICT Master Plan of OTP

ITS Directions from other Governmental Organizations Perspective
- BTS, MRTA, SRT, DOH, and DLT

Conclusion

Introduction

- Thailand & Bangkok Characteristics
- Previous studies on ITS in Thailand



Introduction

Lost Productivity and energy consume

- Traffic accidents
- Congestion and delays

In a ITS society,

- Safety
- Transport Efficiency and Comfort
- Environmental Conservation

Intelligent Transport System (ITS) has become an important issue for many cities

- ITS Master plan

“All join together to meet the needs of ITS today For needs of ITS tomorrow”

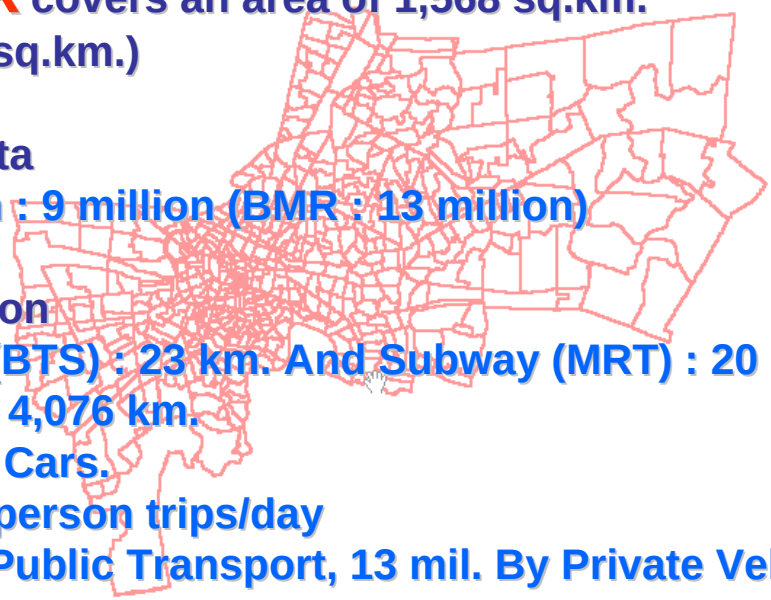
Thailand & Bangkok Characteristics

Thailand covers an area of 514,000 sq.km.

Planning Data
- Population : 65 million, Density : 127 persons / sq.km.
- Growth rate : 0.9 % , Life expectancy : 71.4 years
- Birth rate : 16.0/1,000 persons, Infant mortality rate : 21.1/1,000 persons

Transportation
- Railway length : 4,071 km.
- Highway : 64,600 km.
- Waterways : 4,000 km.
- 26.4 million Cars.

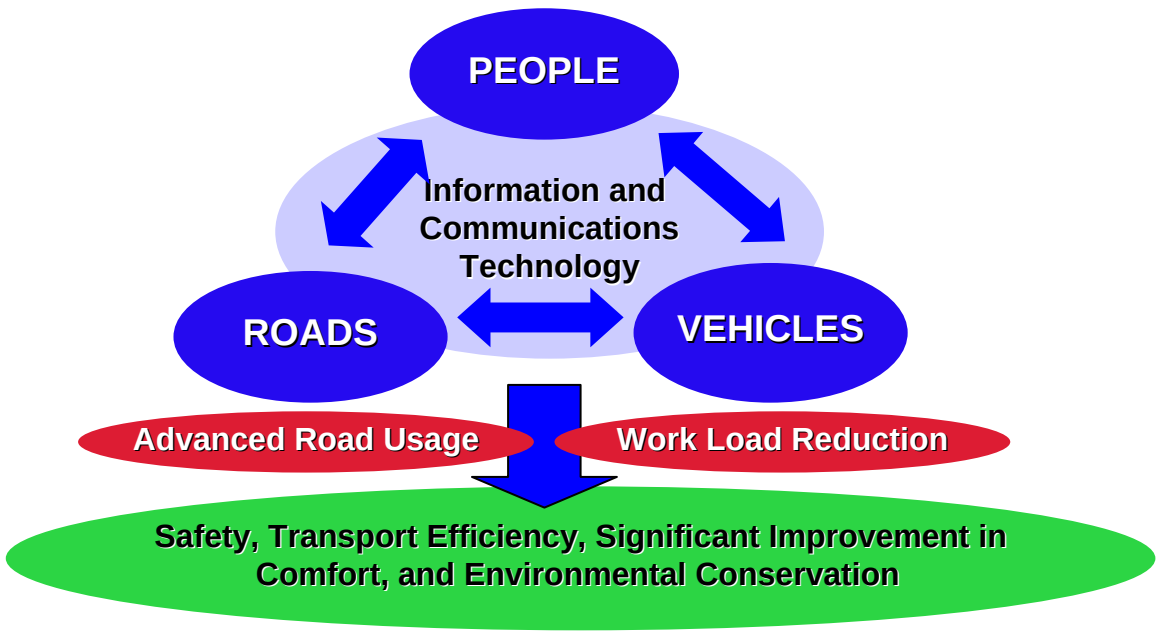
Bangkok covers an area of 1,568 sq.km.
(BMR 9,269 sq.km.)



Planning Data
- Population : 9 million (BMR : 13 million)

Transportation
- Sky Train (BTS) : 23 km. And Subway (MRT) : 20 km.
- Roadway : 4,076 km.
- 5.5 million Cars.
- 23 million person trips/day
  (9 mil. By Public Transport, 13 mil. By Private Vehicle)

Previous studies on ITS in Thailand



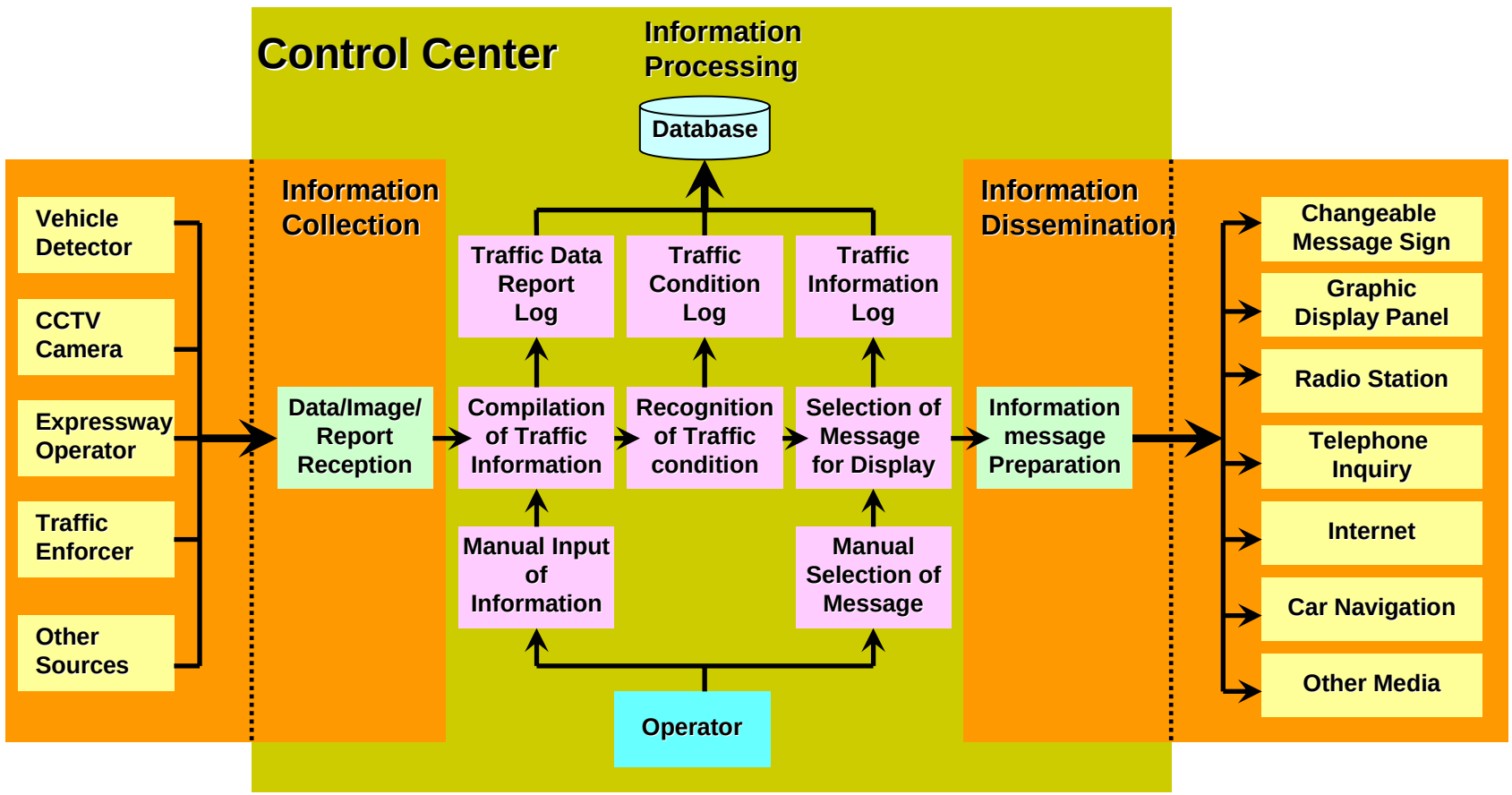
1. The Feasibility study on ITS Implementation Project in Thailand

By JATRO, Japan & OTP, Thailand (March 1999)

Proposed 3 system functions

- Information collection (e.g. Vehicle detector, CCTV, Radio & Telephone com.)
- Information processing (e.g. Queue length, Incident info., Congestion level)
- Information dissemination (e.g. CMS, GDP, Radio, Telephone & Internet)

- Functions of Traffic Information System -

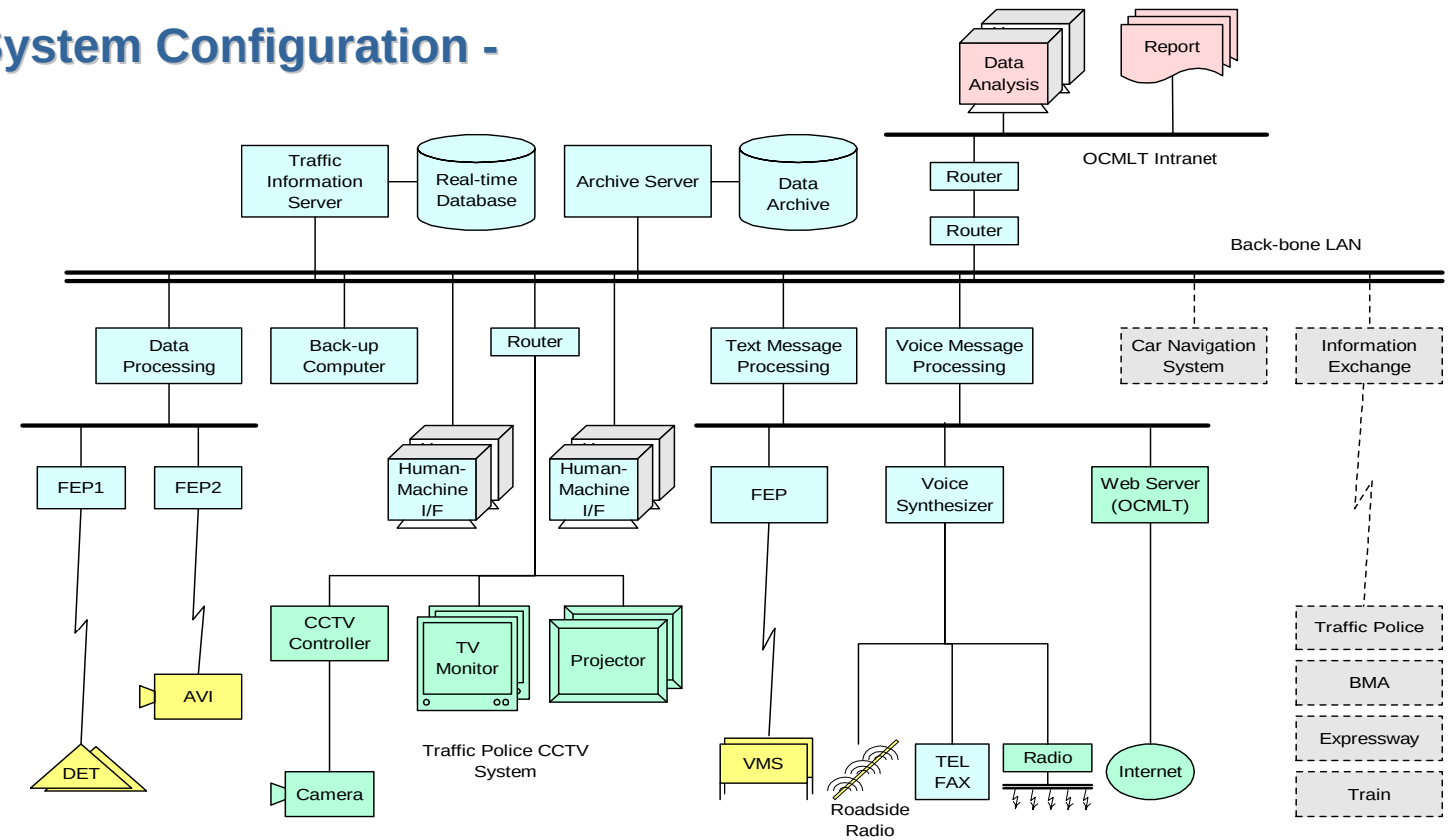


2. Feasibility study on the introduction of traffic information system in Bangkok By MITI, Japan & OTP, Thailand (March 2000)

Proposed 4 system functions

- Information collection (e.g. Image sensor, AVI detector, TV monitor)
- Information processing (e.g. Queue length, Incident info., Travel time cal.)
- Information dissemination (e.g. VMS, Roadside radio, Mobile traffic info.)
- Support for traffic management (e.g. Info. exchange, Storage, Report)

- System Configuration -

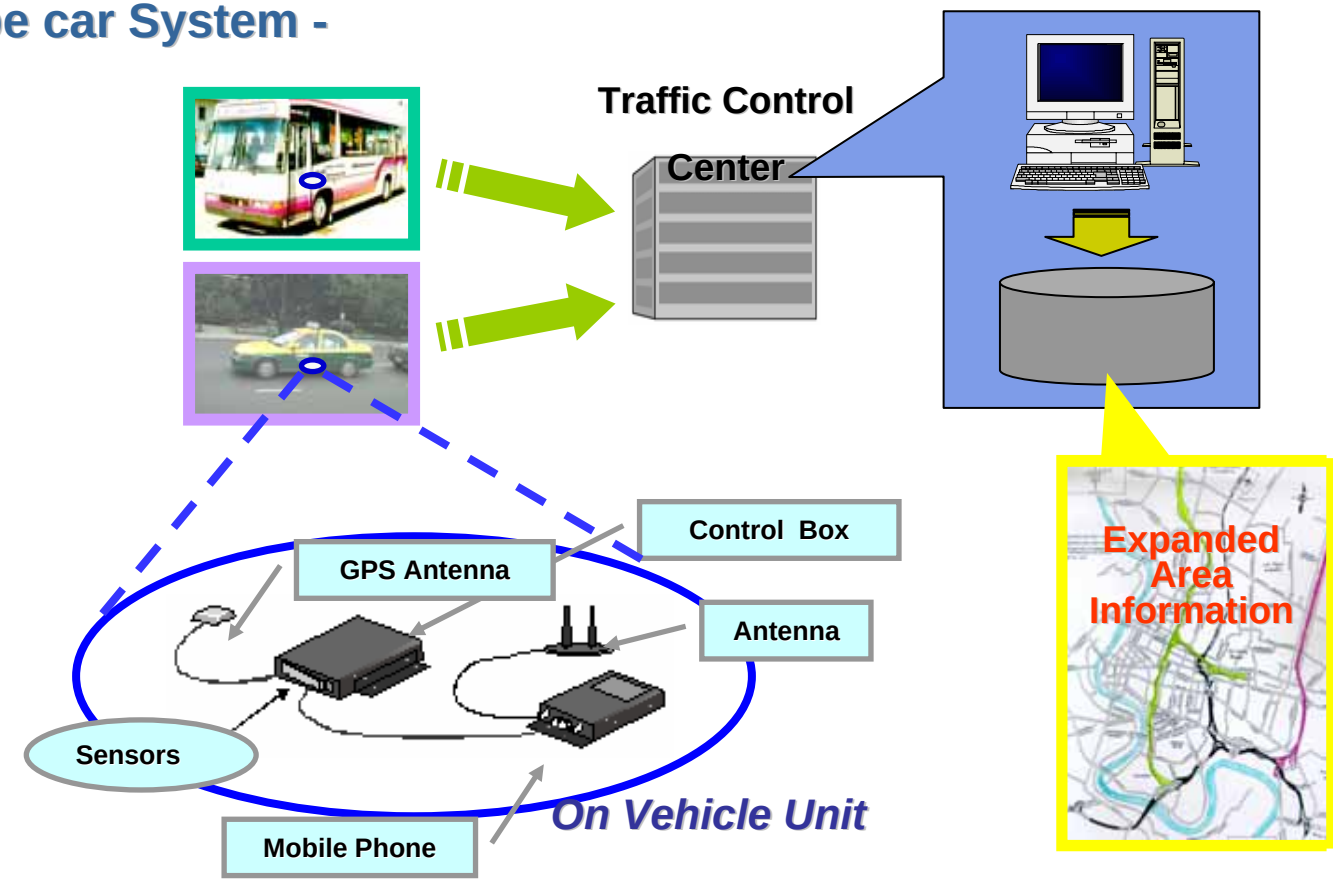


3. Study on the Probe car information system in Bangkok

By ITS Japan , OTP and Chulalongkorn University Thailand (2001)

Proposed Probe car information system & Run test

- Probe car System -



Addition with.. Dynamic Route Guidance System (DRGS) through utilizing a large-scale Probe-Vehicle (with GPS antenna and sensors on Vehicle)

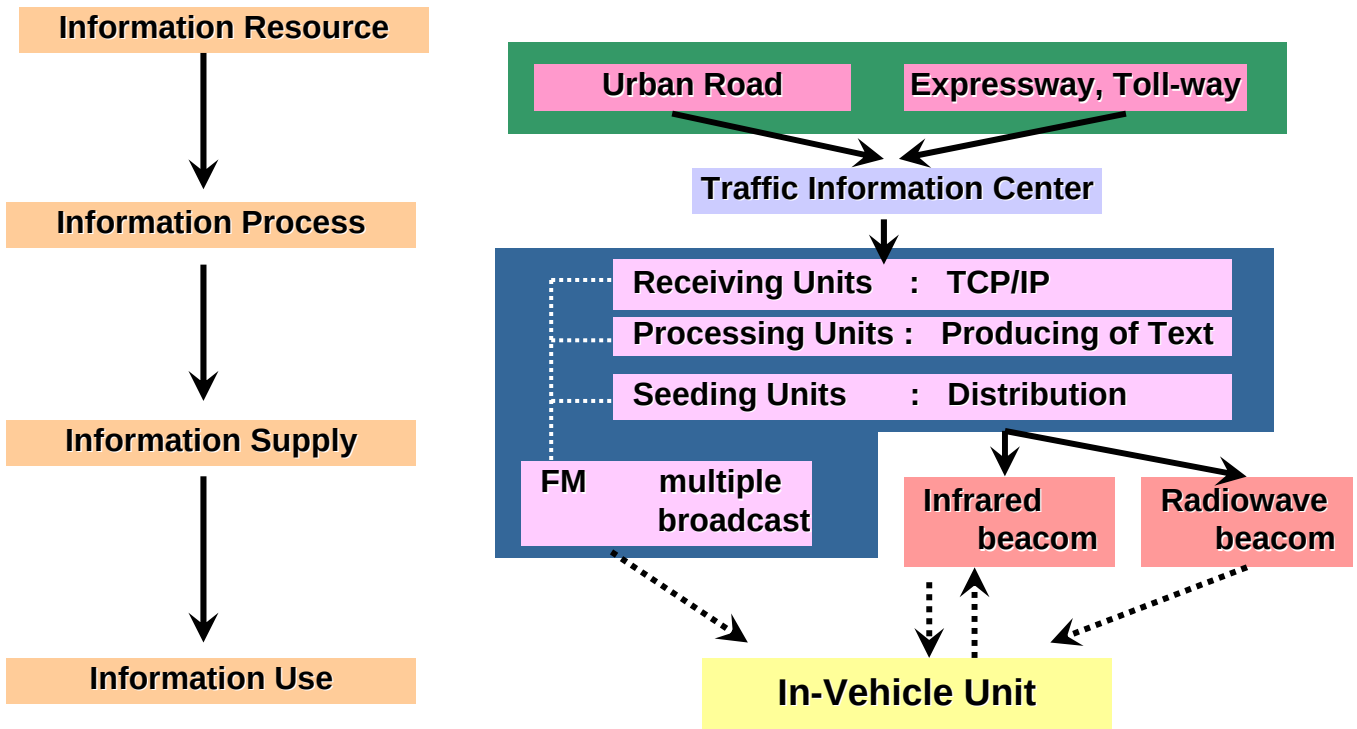
4. Strategy for application of ITS and VICS for the Asia-Pacific region (Strategy for application ITS for typical Asian city)

By APT Study Question 3.2 (August 2002)

Proposed 3 steps for development

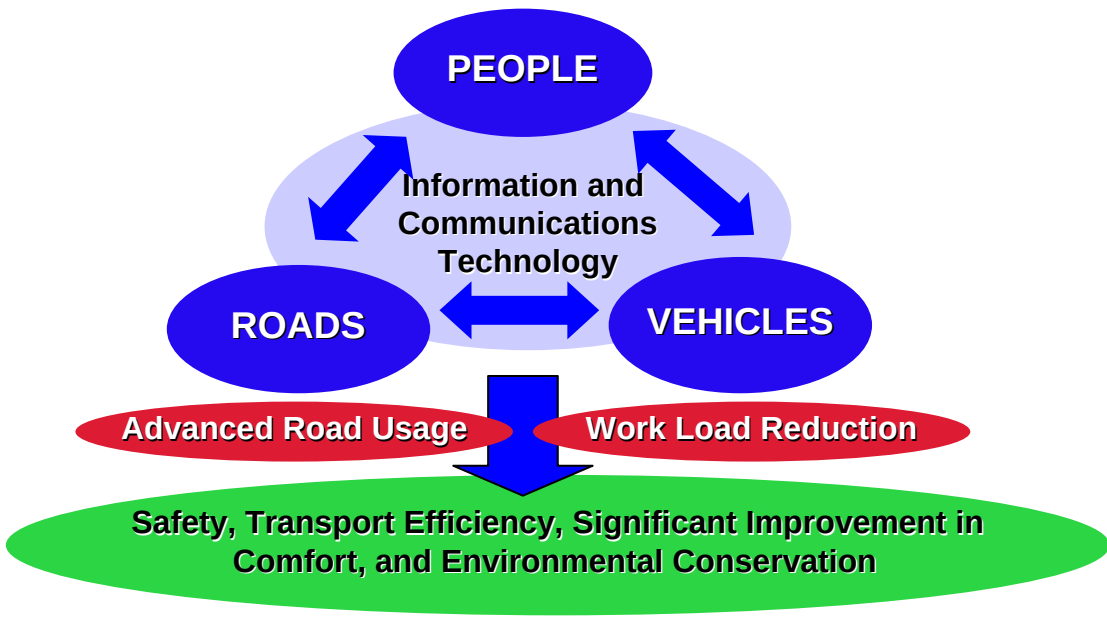
- Implement ATIS (e.g. Simple graphic & Text service by Mobile & Internet com.)
- Review and Selection in-vehicle services (e.g. VICS in Japan)
- Introduce VICS concept

- System Configuration VICS -

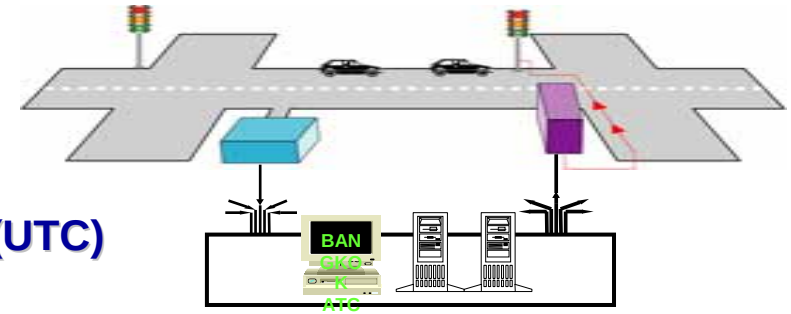


Major Organizations Involved in the Current Development of ITS

- BMA
- OTP
- RTP
- ETA
- BMTA



Bangkok Metropolitan Administration (BMA)



Advance Traffic Management System (ATMS)

Area Traffic Control (ATC) or Urban Traffic Control (UTC) (SCOOT System)

- ATC Phase 1 (31 sq.km. / 143 intersections) Installed
- ATC Phase 2 (150 sq.km. / 226 intersections) On going
- ATC Phase 3 (Cover BMR area / 230 intersections) On Plan

Close Circuit Television (CCTV) for Surveillance

Traffic signal count-down & reversible Lane

BMA

Traveler information

First step install 40 Sets

(Industrial Kiosk Enclosure)

User Friendly with GUI : Graphic User Interface

And Touch Screen

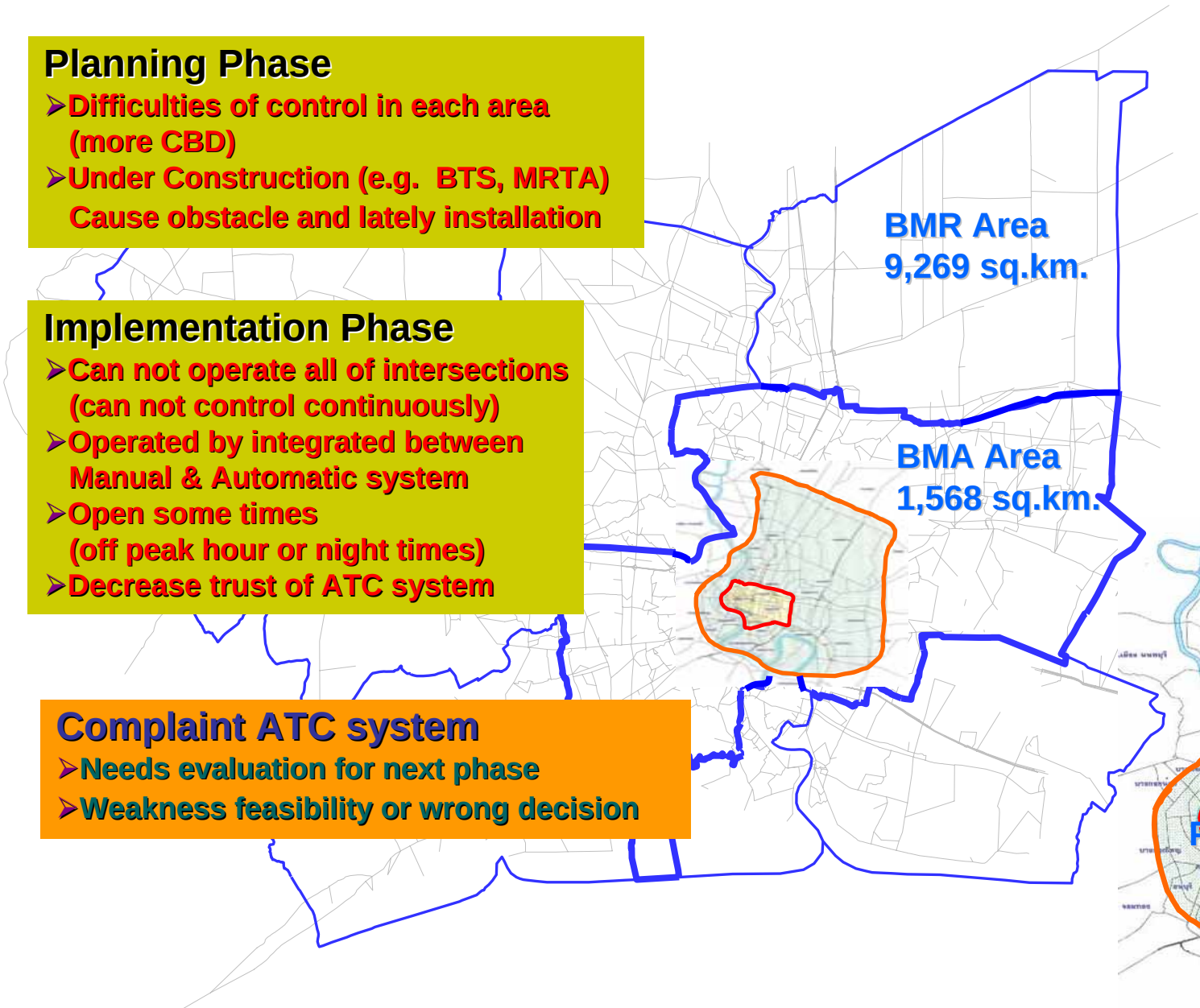
Car Parking Management

Difficulties of ATC system in Bangkok

Planning Phase
- Difficulties of control in each area (more CBD)
- Under Construction (e.g. BTS, MRTA) Cause obstacle and lately installation

Implementation Phase
- Can not operate all of intersections (can not control continuously)
- Operated by integrated between Manual & Automatic system
- Open some times (off peak hour or night times)
- Decrease trust of ATC system

Complaint ATC system
- Needs evaluation for next phase
- Weakness feasibility or wrong decision

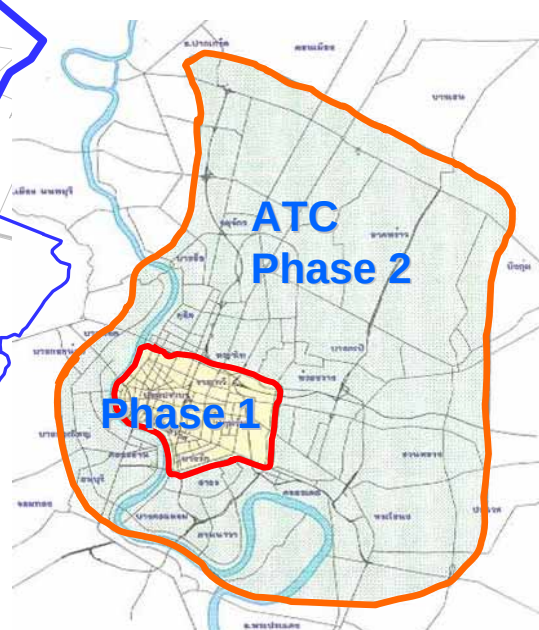


ATC Phase 1
- 31 sq.km.
- 143 intersections

ATC Phase 2
- 150 sq.km.
- 226 intersections

ATC Phase 3
- Cover BMR area
- 230 intersections

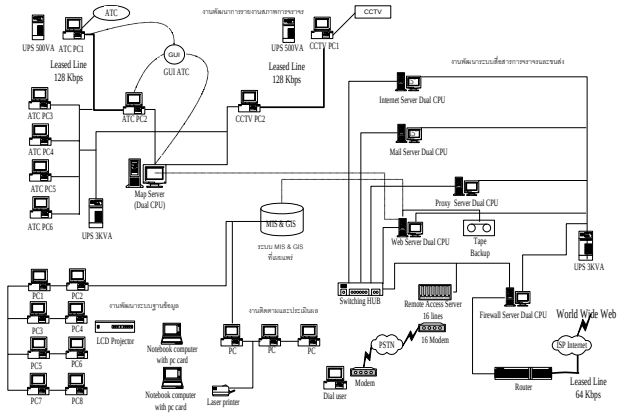
(SCOOT System)

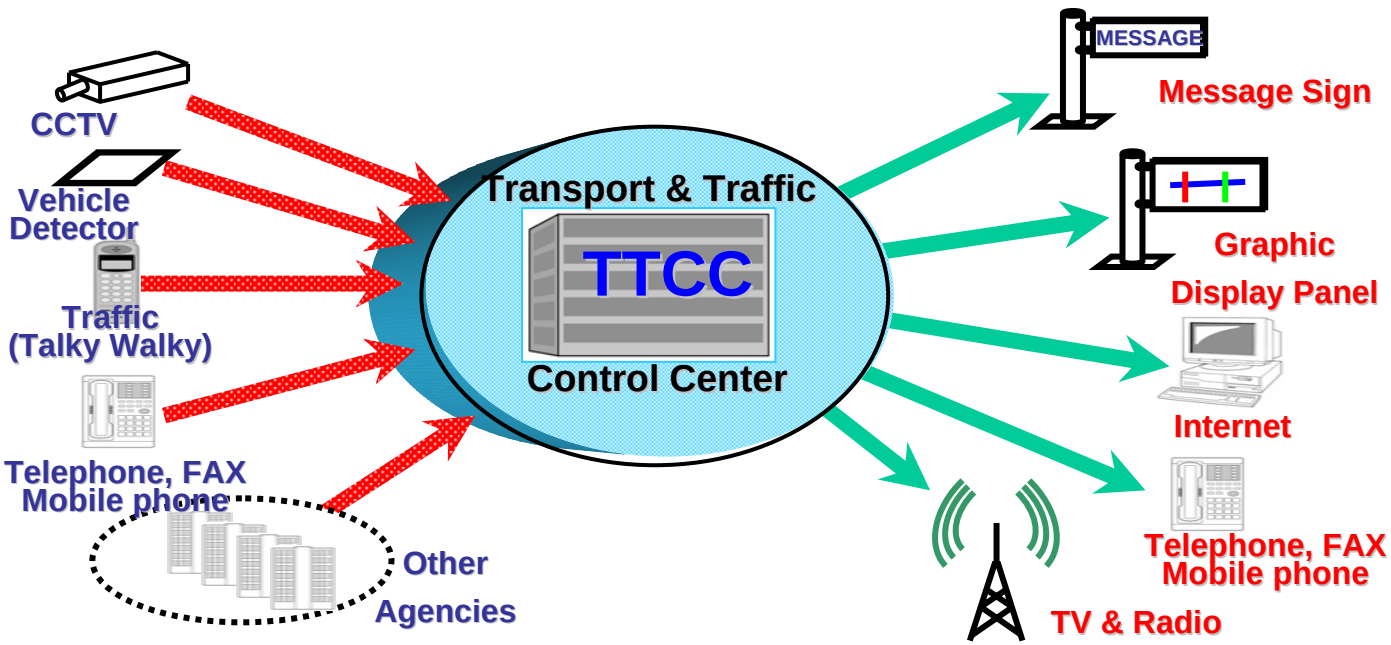


Transport & Traffic Control Center (TTCC)

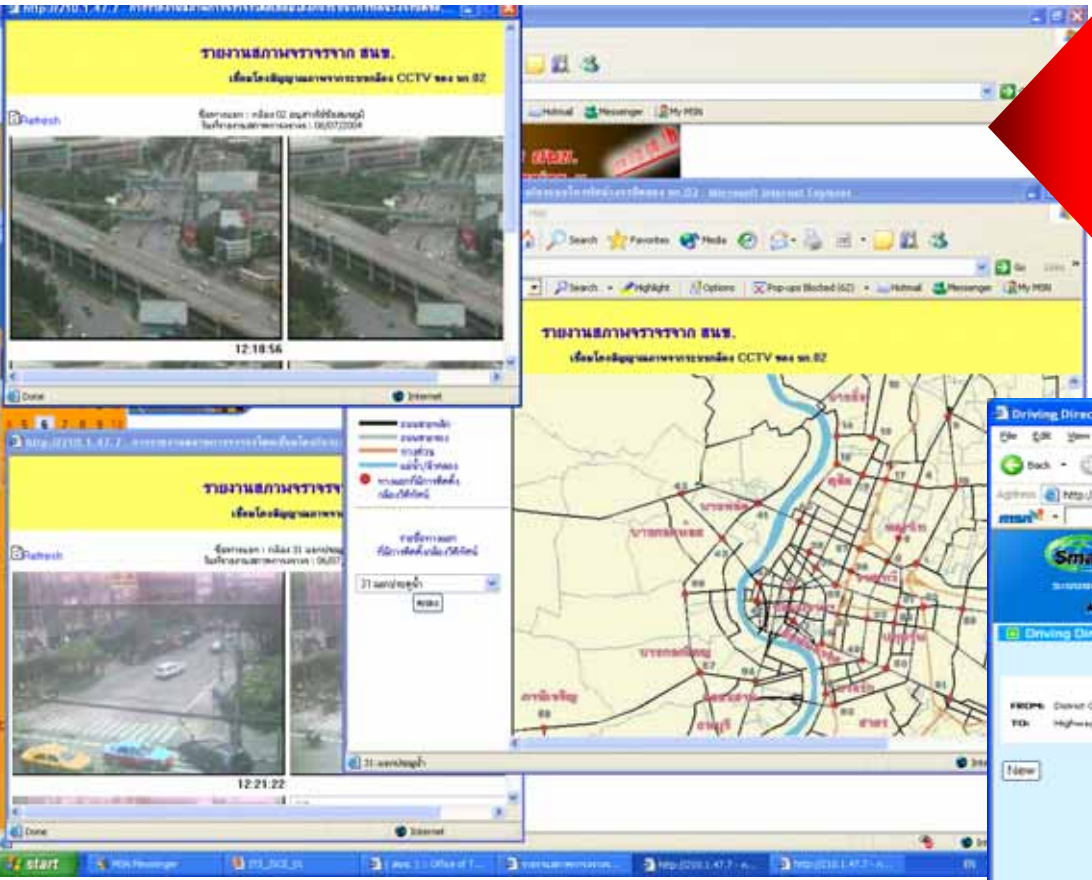
- Transport & Traffic Database & Modeling
- Traffic Report or Traffic Information

Development of Real-Time Traffic Information System



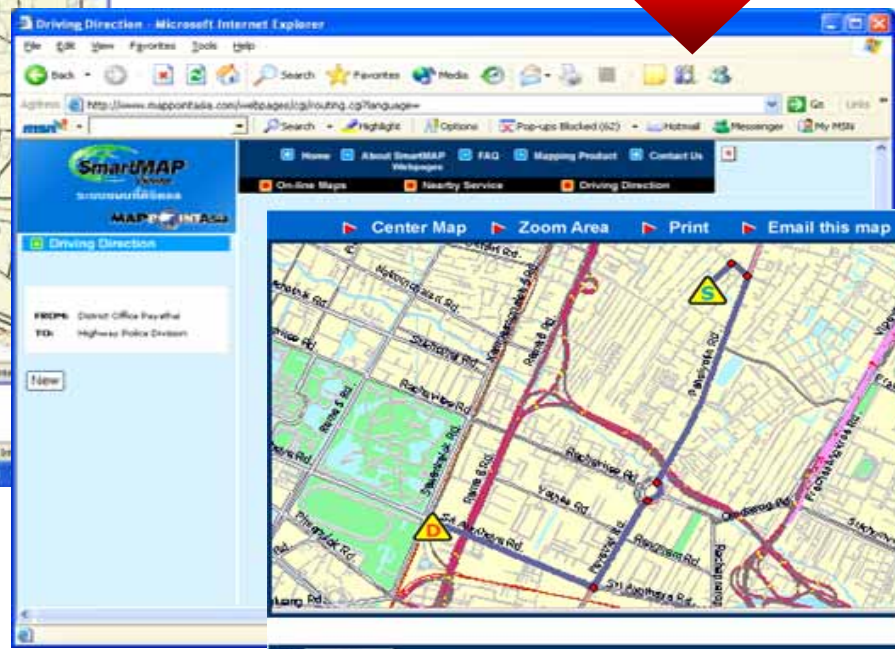



สำนักงานนโยบายและแผนการขนส่งและจราจร
Office of Transport and Traffice Policy and Planning


รายงานสภาพจราจรจาก สนข.
12:18:56
รายงานสภาพจราจรจาก สนข.
12:21:22


cctv


OTP.GO.TH
SmartMAP


Driving Direction - Microsoft Internet Explorer
SmartMAP
Center Map
Zoom Area
Print
Email this map
Panning
Zoom In
Original
Zoom Out

www.otp.go.th

Royal Thai Police (RTP)

Traffic Control Center (TCC)

Operated mainly by

- CCTV
- Traffic Police
  (Talky-Walky Communication)

Traffic Control Center

Traffic Management

Operated mainly by

- Traffic Police
- Traffic Signal & Sign
- Speed Control
- Traffic Congestion Warning System
- VMS

http://www.trafficpolice.go.th/

Call 1197

FM radio broadcasting & TV.

Traffic News FM.91 MHz (SVP 91)
http://www.trafficbkk.com/ Call 1644

ITV
TTV 1
(AM & PM Peak)

Traffic News FM. 100 MHz (JS 100)
http://www.js100.com/ Call 1137

SMS

mAlert91.com

http://www.mAlert91.com/
Send SMS to 85191

Expressway and Rapid Transit Authority (ETA)

Management

- TCC
- CCTV
- Emergency Telephone
- Air quality measurements

Sign

- Overhead Sign
- Matrix Signs
- Variable Message Sign
- Graphic Sign

Payment

- Open System : Cash, Coupon, Toll Automatic Gate (TAG) or Electronic Toll Collection System (ETC)
- Close System : IC Card

Bangkok Mass Transit Authority (BMTA)

Traveler Information

The time of Bus coming and arriving.

Plan to Connected Ticket

Which can use with BMTA’ s bus, BTS and MRTA.

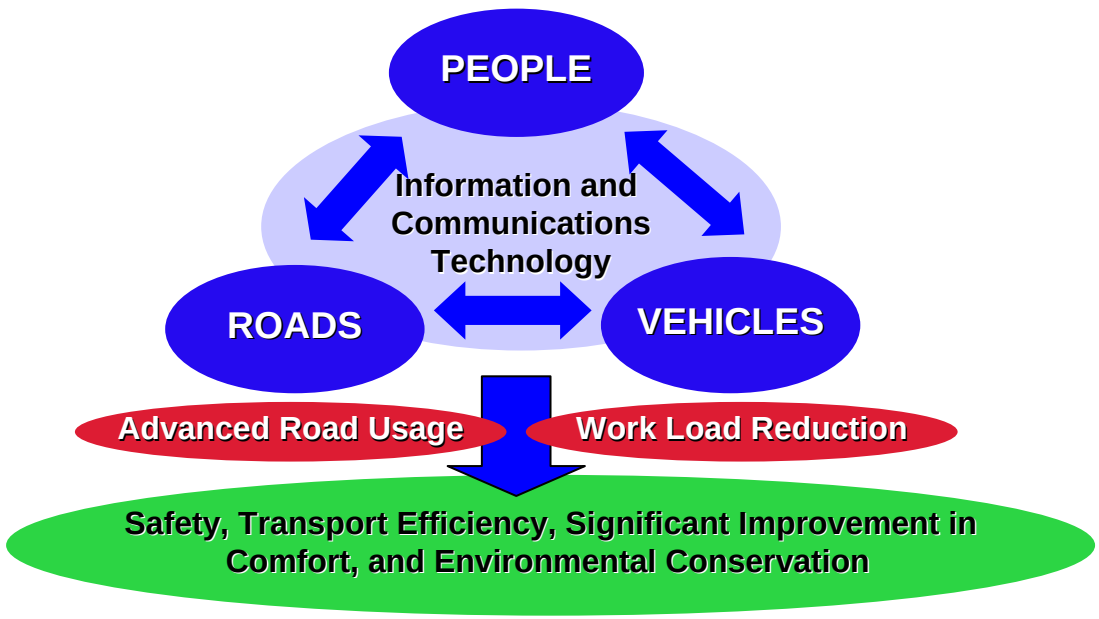
Plan to Operate Bus Services guarantees

The time of coming and arriving between a starting point - a destination and crowed passenger point

Plan to install GPS or Sensors in the Bus or Automatic Vehicle Location (AVL)

Deriving the Master Plan of Information and Communication Technology

- ICT Master Plan of MOT
- ICT Master Plan of OTP



Deriving the Master Plan of Information and Communication Technology

Thai Cabinet's resolution on 25th September, 2003, Established ICT National Master Plan of Thailand (2003–2007)

- Respond with the robust existing growth of information technology, particularly, utilizing advanced innovation technology
- Severe traffic congestion in Bangkok and other big cities

ICT Master Plan of MOT (2004-2006)

Cover proper descriptive traffic and transport missions

Focus on adoption of qualitatively and safely advanced information and communication technologies

- Development of administrative management and public service systems

Aims to create innovative services to satisfy serviced users

ICT Master Plan of OTP (2004-2006)

Establish the Commission for development of traffic information technology and ITS

- Focal point to manage ITS for generating a mutual cooperation between public and private sectors to adopt ITS technology efficiently and effectively

ITS development and implementation as follows:

Development framework for the first ITS Master Plan in Thailand

- Study area cover BMA area.
- Project will implement from May 2004 to February 2005

Development of real time traffic information system (1st Phase)

- Covering major roads near Ratchadapisek Ring Road
- Project will implement from May 2004 to February 2005

Installation of 200 CCTVs (2nd Phase)

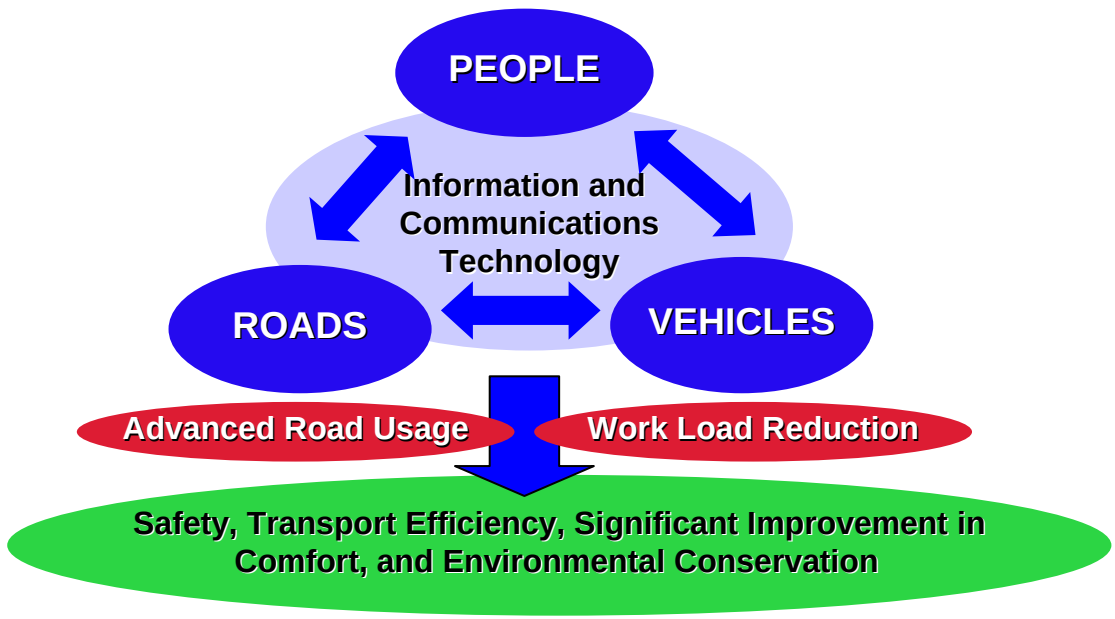
- 77 intersections in BMA area
- The duration of installation is 2 years

Installation of Red-Light Camera (3rd Phase)

- Major intersections to detect the traffic violators
- 2 years of installation

ITS Directions from other Governmental Organizations Perspective

- DOH
- DLT
- BTS
- MRTA
- SRT



Department of Highways (DOH)

Electronic Toll System (ETS)

- Motorway system

Vehicle Actuated

- Cable Link System from Detector
- Real time
- Reversible Lane
- Solar Cell

Traveler Information

- Climate & Smog Warning
- Route information
- Rest Area

Department of Land Transport (DLT)

Navigation System

- Vehicle system
- GPS

Freight Transport System

- Truck Terminal
- Inter-City Bus Terminal

Transport Pollution Analysis System

- Special Hazardous and Poisonous Material Transport System

Transport Accident System

- Warning system

Bangkok Mass Transit System Public Company Limited (BTS)

CENTRALIZED TRAFFIC CONTROL (CTC)

AUTOMATIC TRAIN PROTECTION (ATP)

CCTV

POLLUTION MONITORING

TOKEN VENDING MACHINE: TVM

- Ticketing
- Smart Card

Mass Rapid Transit Authority (MRTA)

CENTRALIZED TRAFFIC CONTROL (CTC)

AUTOMATIC TRAIN PROTECTION (ATP)

CCTV

POLLUTION MONITORING

TOKEN VENDING MACHINE: TVM

- Ticketing
- Smart Card

State Railway of Thailand (SRT)

CENTRALIZED TRAFFIC CONTROL (CTC)

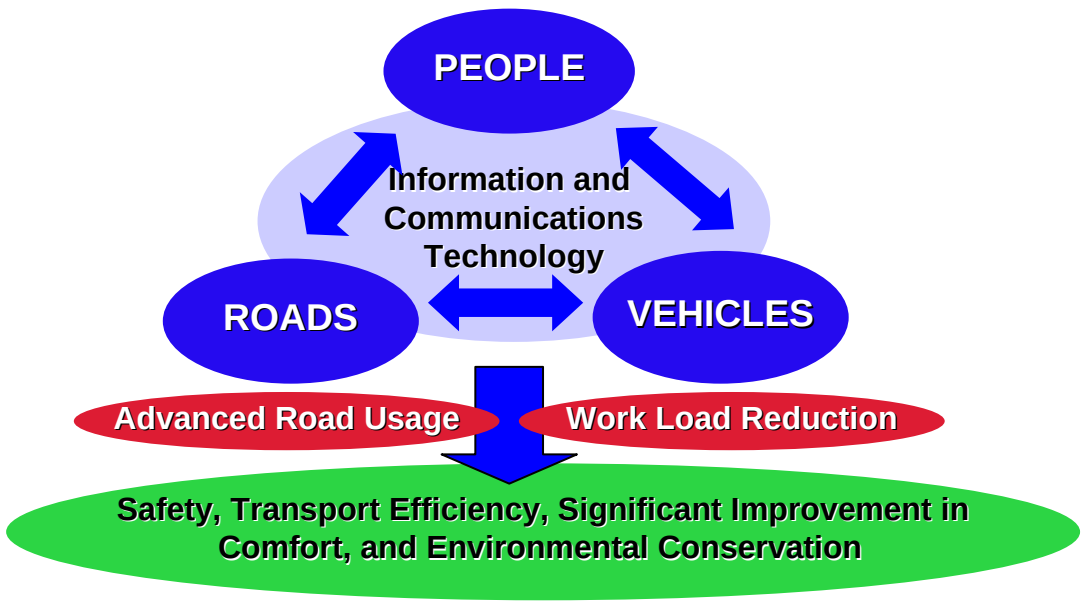
- On – line Control Terminal: CT
- On – line Management Terminal: MT
- On – line Reservation Terminal: RT
- Ticketing Terminal: TT

AUTOMATIC TRAIN PROTECTION (ATP)

Centralized Reservation System (CRS)

- Seat Ticketing and Reservation System: STARS

Conclusion


PEOPLE
Information and Communications Technology
ROADS
VEHICLES
Advanced Road Usage
Work Load Reduction
Safety, Transport Efficiency, Significant Improvement in Comfort, and Environmental Conservation

Conclusion

Set-up the ITS Master Plan (for 5-10 years)

Integrated and Clarify the ITS Technologies

- ITS Activities & Application & Time Frame
- Responsible agency (Government & Private sector)
- Budget for Development and Maintenance
- Benefits

Significant potential of ITS Technologies

- Government paid attention to Developing ITS for Traffic Planning and Management such as…
  - BMA and RTP establishing the ATC, CCTV, VMS or CMS
  - OTP developing the Real-Time Traffic Information
  - BMTA and BMA interested the system support Public Transport (e.g. CCTV, AVI and other electronic devices)
  - DOH and ETA have a planned to adopt ETC (Expressway & Toll roads)
- In-Vehicle navigator system (GPS and GIS)
- Route specific traffic warnings beam to Cell phones (e.g. Traffic update)
- Multi-Use Transit Smart cards
- Weather information system

Conclusion

Area of ITS for Thailand	What has been done? Adequate / Inadequate	What needs to be done ? Are the skills available?	What outcomes To inform ITS strategies?	What benefits Gained?
Safety (Incident)	Much	More on strengths technique	Warning & Avoidance strategies	Level of incident Statistic
Traffic Information	More	More Traveler Information	Understanding for travel	Social-Personal economic benefit
Traffic Management	More studies & More system	More ATC development	Need for new ATC	Important for both traffic management & efficiency
Environment Conservation	More	More on contributing factors	Decrease Emission loads	Non-health impacts
ITS Master Plan	Much	Long term (5-10 years)	Need for ITS implementation	Individual & Society benefit
Other	Some – Small studies	Larger & Long term	Need for new development	Social comfort and equity

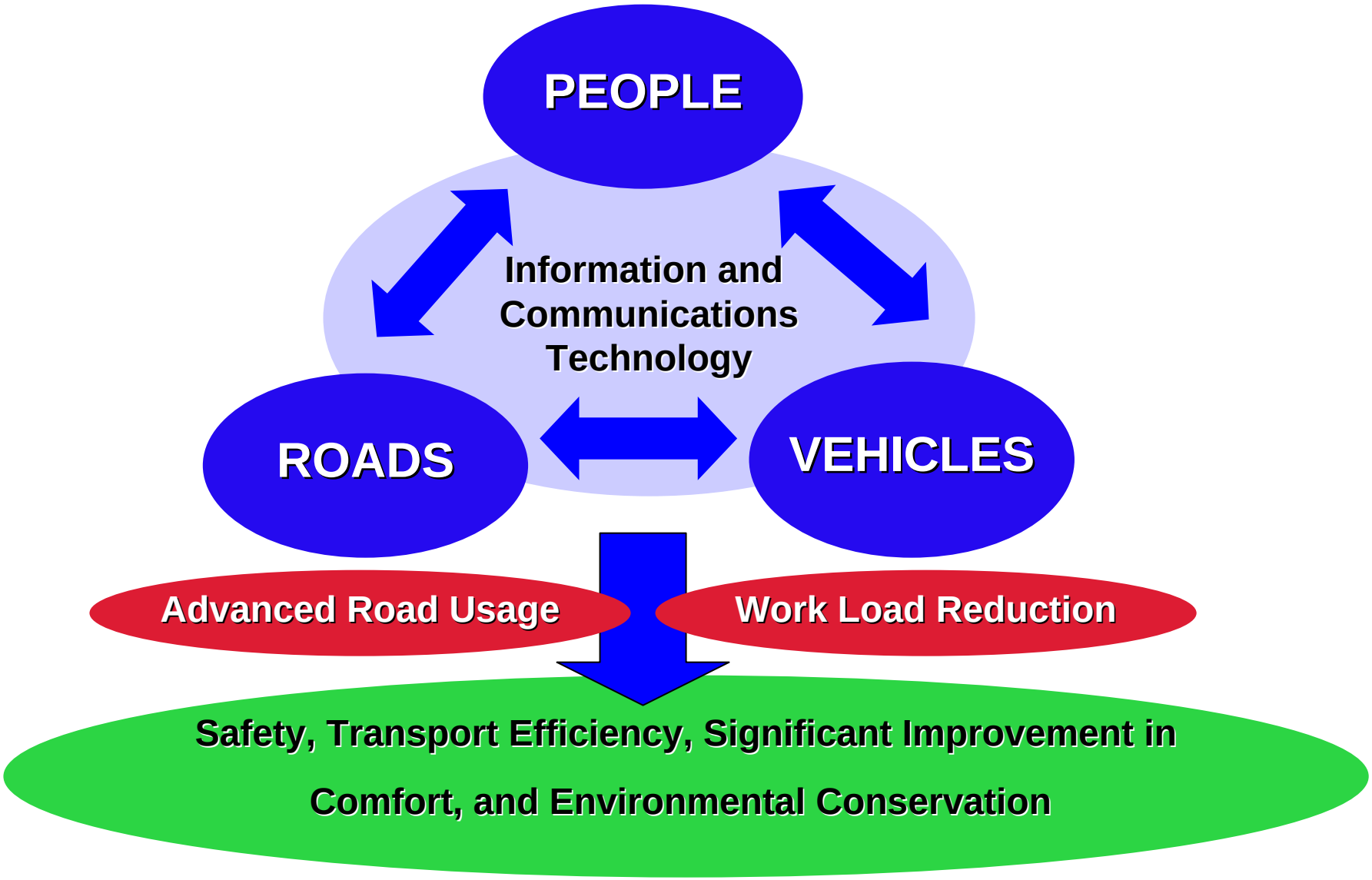
Acknowledgements

Sincere thanks to *JSCE* and *its Director* and also in particular to *Dr. Atsushi Fukuda* Session chairperson from Nihon U. and *Dr.Tuenjai Fukuda* from Chuo U. for providing the opportunity to visit and presented today

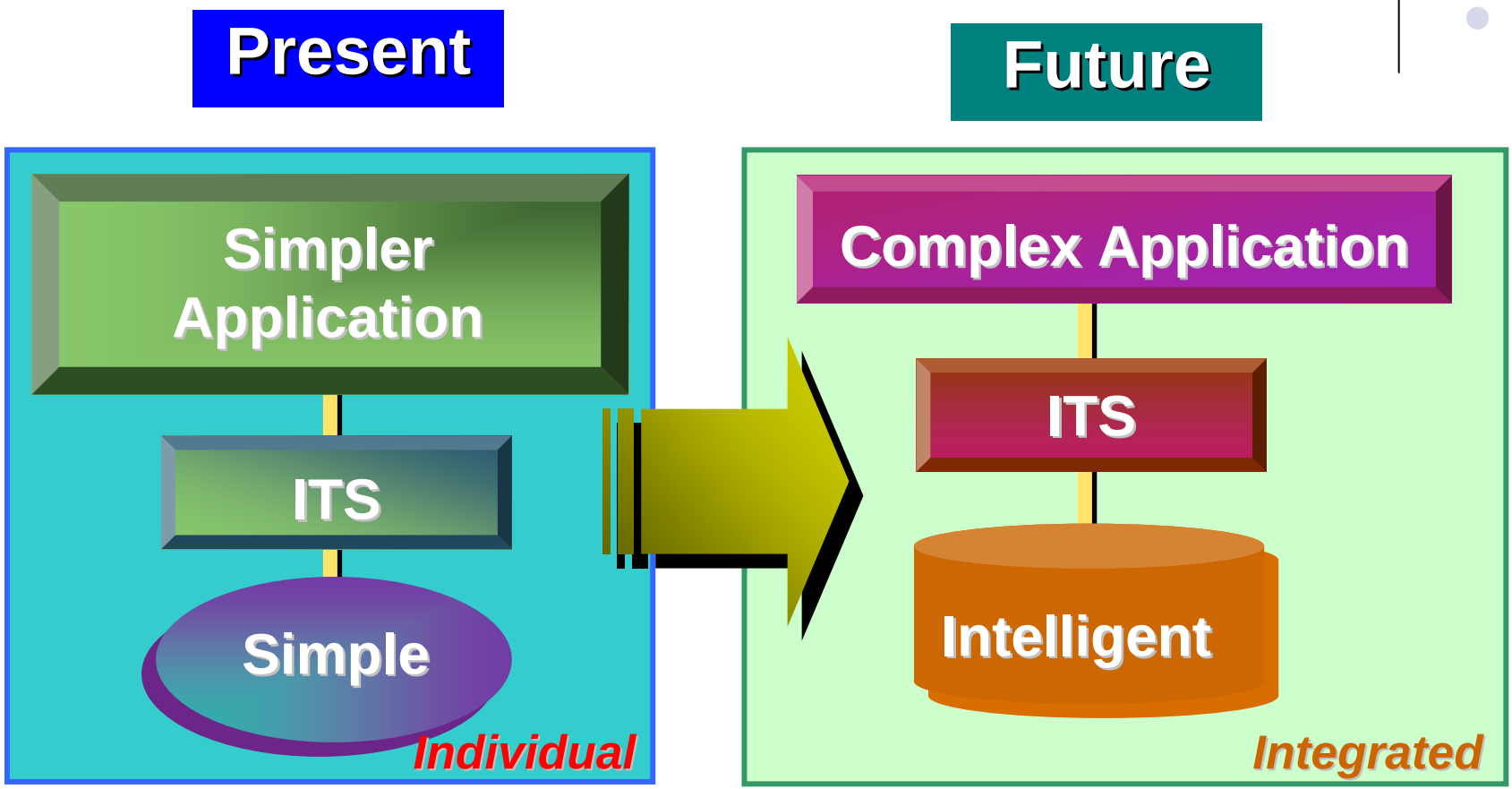
Thank You

Thank You

CONCEPT OF ITS MODEL

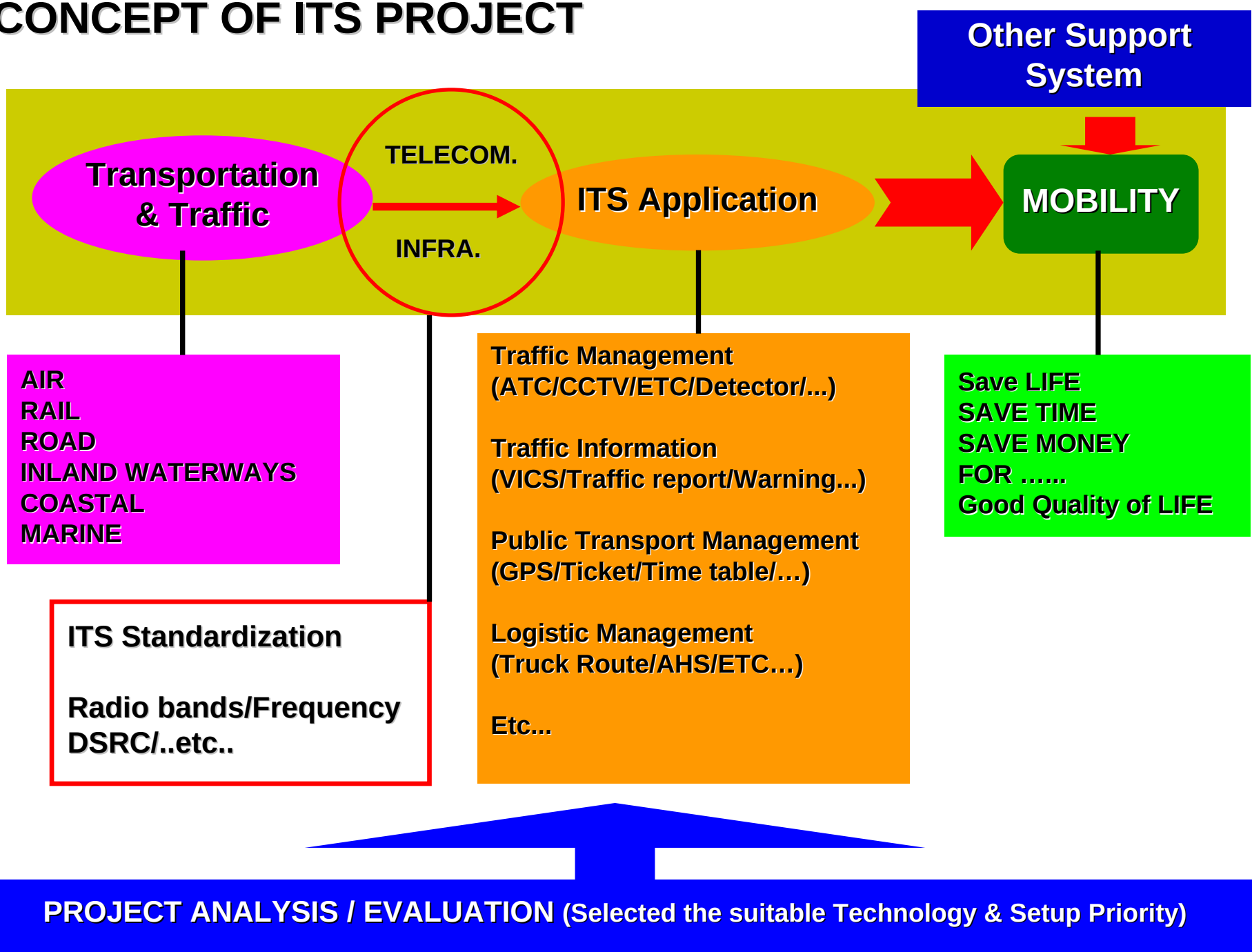


ITS development



Needs more integrated &
more application development

CONCEPT OF ITS PROJECT



Harbour Department

CCTV

GIS

GPS

EXPRESS TRANSPORTATION ORGANIZATION (ETO)

ELECTRONIC DATA INTERCHANGE (EDI)

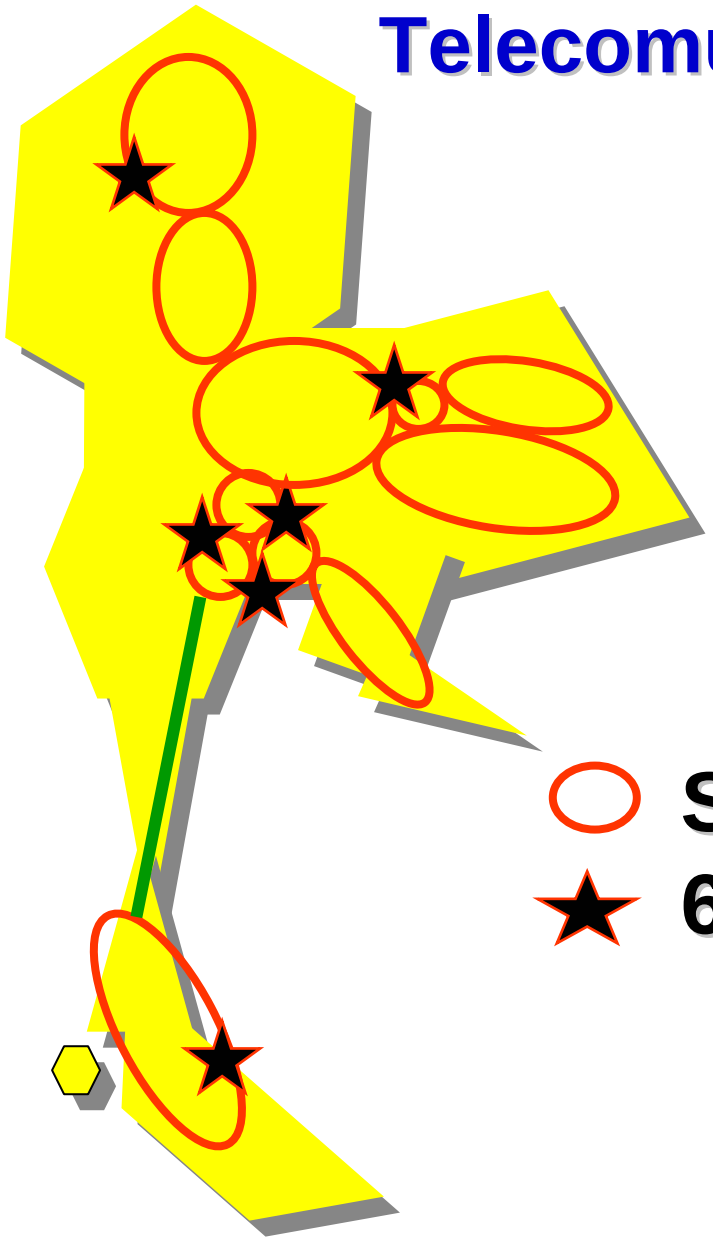
ELECTRONIC WAYBILL DECLARATION A1 (EWD A1)

COMMON BASE RADIO (CBR)

Asean Collaboration Logistic Organization

- Internet EDI
- Chief Logistic Officer (CLO)
- Thailand Transport Exchange
- Electronic Toll Collection System (ETC)

Telecomunication Network



SDH (Fiber optic 21 Rings)

6 ATM