



SMART CITY DEVELOPMENT in Thailand

by **Chaiwat Thongkamkoon**
Permanent Secretary
Ministry of Transport

9 October 2019

SMART CITY DEVELOPMENT as NATIONAL AGENDA

National Smart City Committee

Deputy Prime Minister



Minister of Transport



Minister of Digital Economy and Society



Minister of Energy



Permanent Secretary
Ministry of Finance



Permanent Secretary
Ministry of Transport



Permanent Secretary
Ministry of Digital Economy and Society



Permanent Secretary
Ministry of Energy



Permanent Secretary
Ministry of Science and Technology



Permanent Secretary
Ministry of Interior



Permanent Secretary
Ministry of Tourism and Sports



Permanent Secretary
Ministry of Public Health



Permanent Secretary
Ministry of Education



Permanent Secretary
Ministry of Natural Resources and Environment



Director
Bureau of Budget



Secretary General
Office of the National Economic and Social Development Board



Secretary General
Office of the National Broadcasting and Telecommunications Commission



Secretary General
Office of the Council of State



Secretary General
The Eastern Economic Corridor Policy Committee



Permanent Secretary
Ministry of Foreign Affairs



Director General
Department of Public Works and Town and Country Planning



Secretary General
Thailand Board of Investment



Secretary General
Natural Resources and Environmental Policy and Planning

Co-secretariat



President/CEO
Digital Economy Promotion Agency



Director
The Office of Transport and Traffic Policy and Planning



Director
Energy Policy and Planning Office

Experts

Economic Affairs Experts

Social Affairs Experts

Telecommunication Experts

Smart City Master Plan and Roadmap

Smart City Project Management and Driven Subcommittee

7 Smarts Subcommittee



Thailand's Smart City definition and dimensions

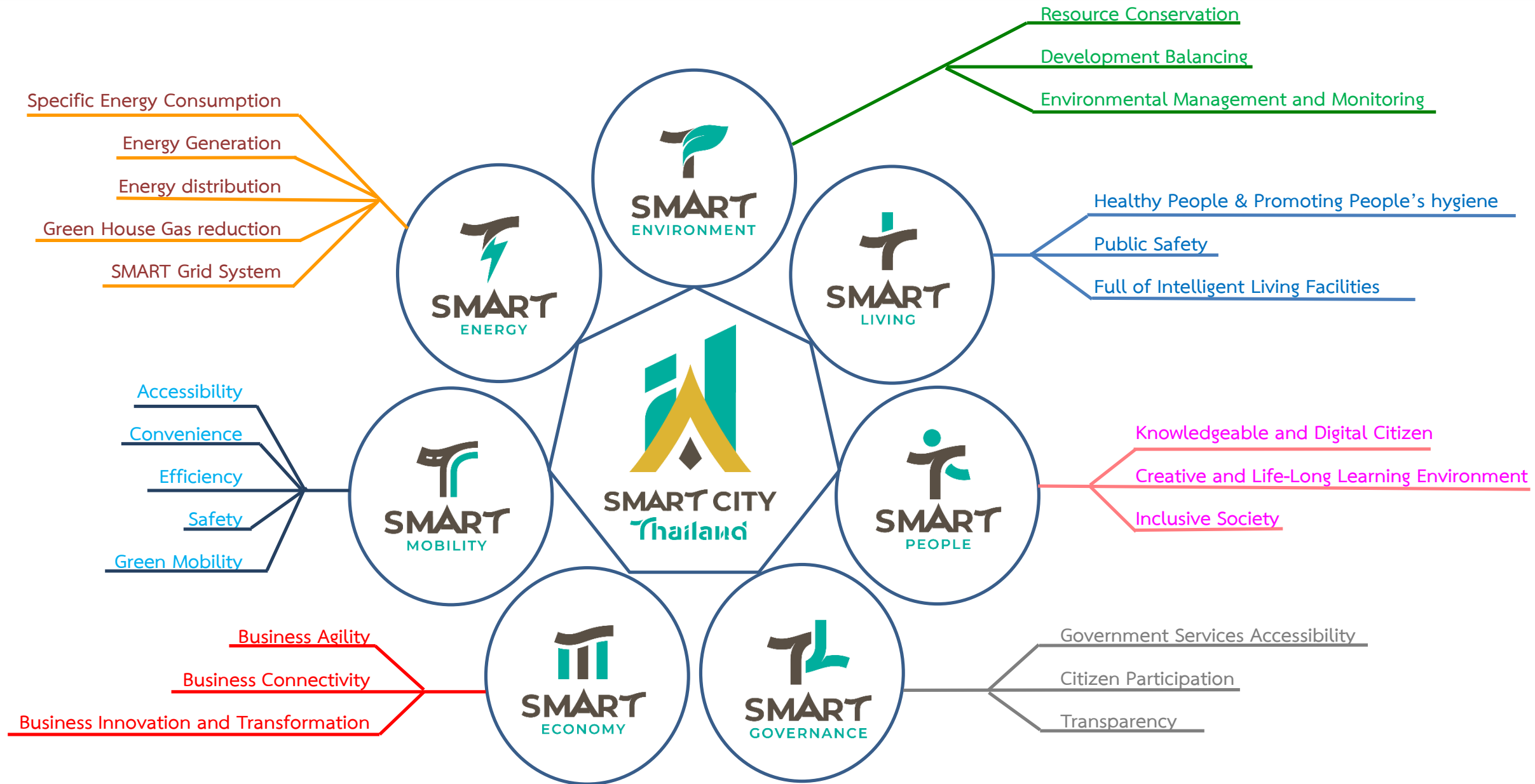
“ A city that leverages technology, innovation, and good design to increase efficiency, cut costs, and innovate in relation to smart city management and service provision in order to achieve citizen's quality of life, happiness, and sustainability ”



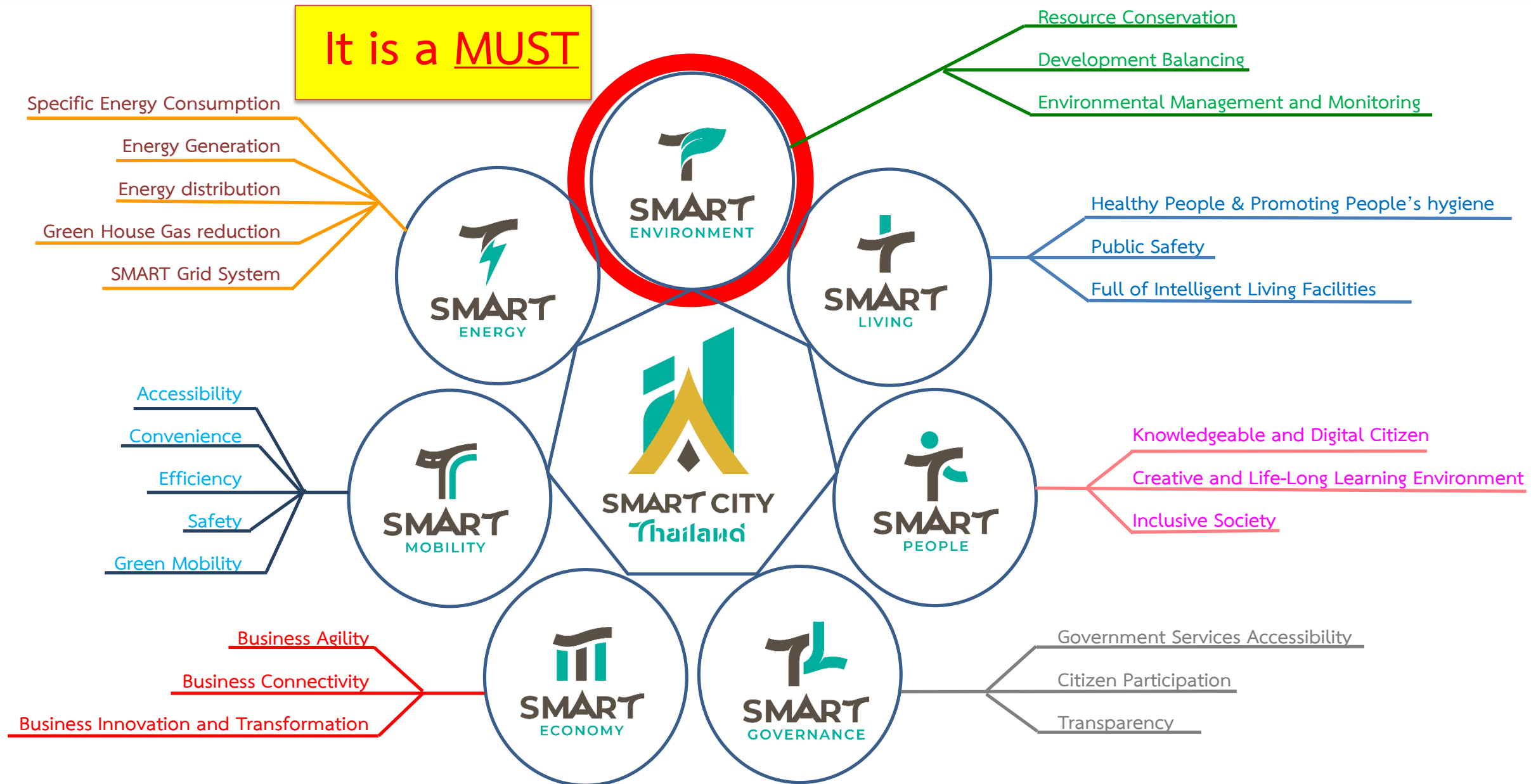
SMART
LIVABLE CITY

SMART
NEW CITY

Criteria of Thailand Smart City



Criteria of Thailand Smart City

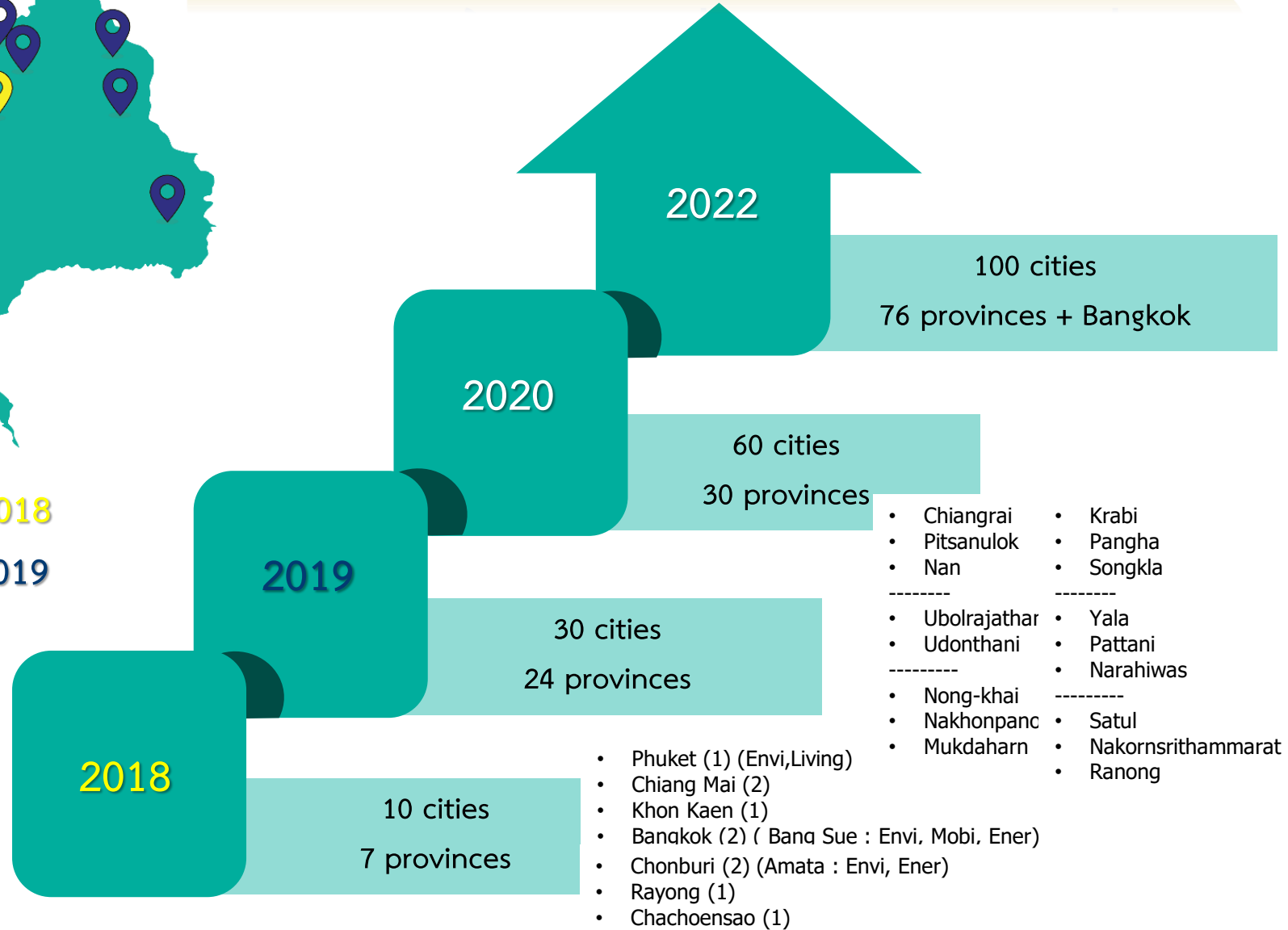


Smart City Development Roadmap



2018

2019



Benefit BOI

Area Development

SMART ENVI. (must) + other SMART (at least 1)

- All 7 SMARTS : Tax Exemption for 8 years (Max. Limit)
- 2 - 6 SMARTS : Tax Exemption for 5 years

Supporting System in SMART CITY AREA

- All 7 SMARTS : Tax Exemption for 8 years
- 2 - 6 SMARTS : Tax Exemption for 5 years (Max. Limit)



OFFICIAL WEBSITE



www.smartcitythailand.or.th

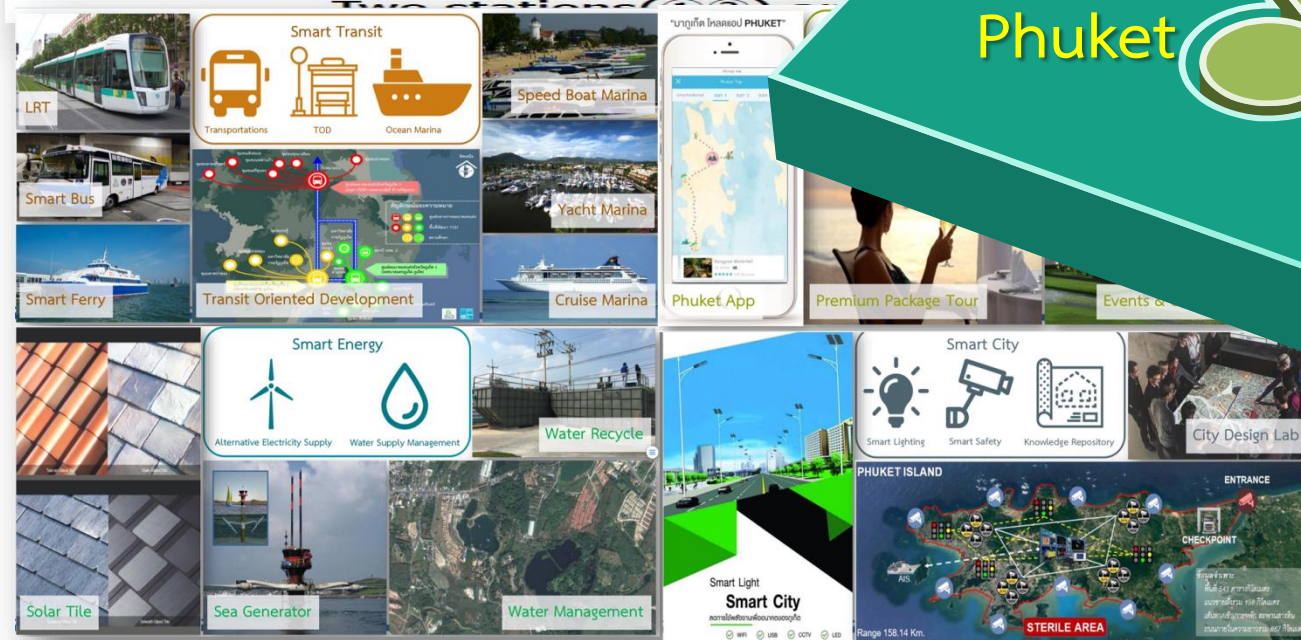
ASEAN Smart Cities of THAILAND



Bang Sue (Bangkok)

Phuket

Amata City (Chonburi)

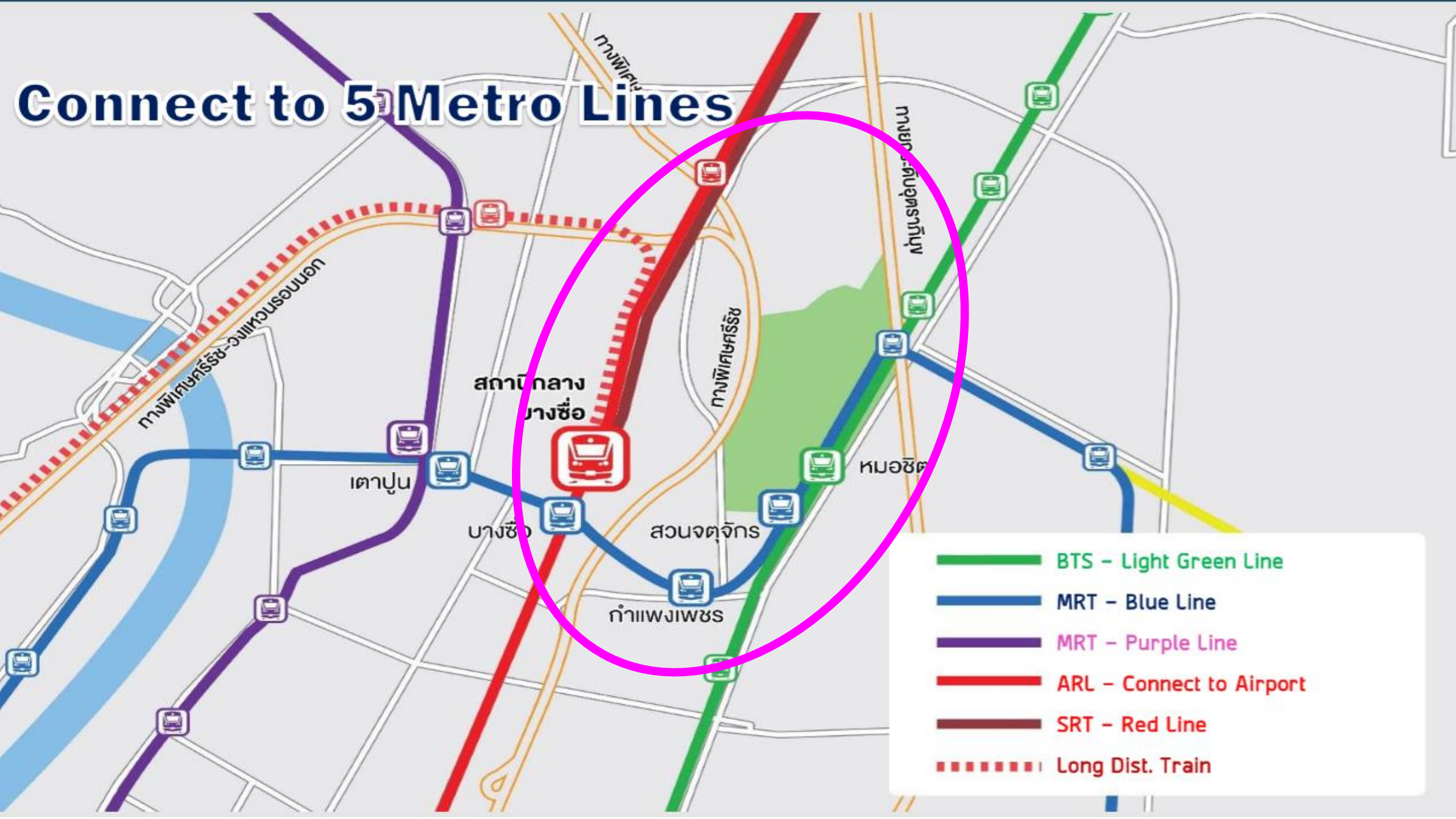


Bang Sue Grand Station

**The beginning of a new journey
with a rail system**



Connect to 5 Metro Lines

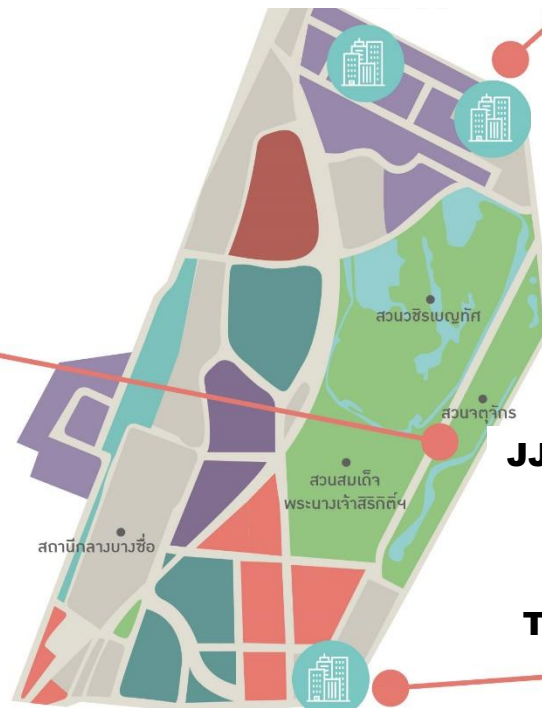


372 Hectares (2,325 Rais)

Golden Location



**SCG
Chemical**



**KM.11
(SRT Residential)**

**Energy
Complex**

Central Lad-Praw (Shopping Mall)

**Union Mall
(Shopping Mall)**

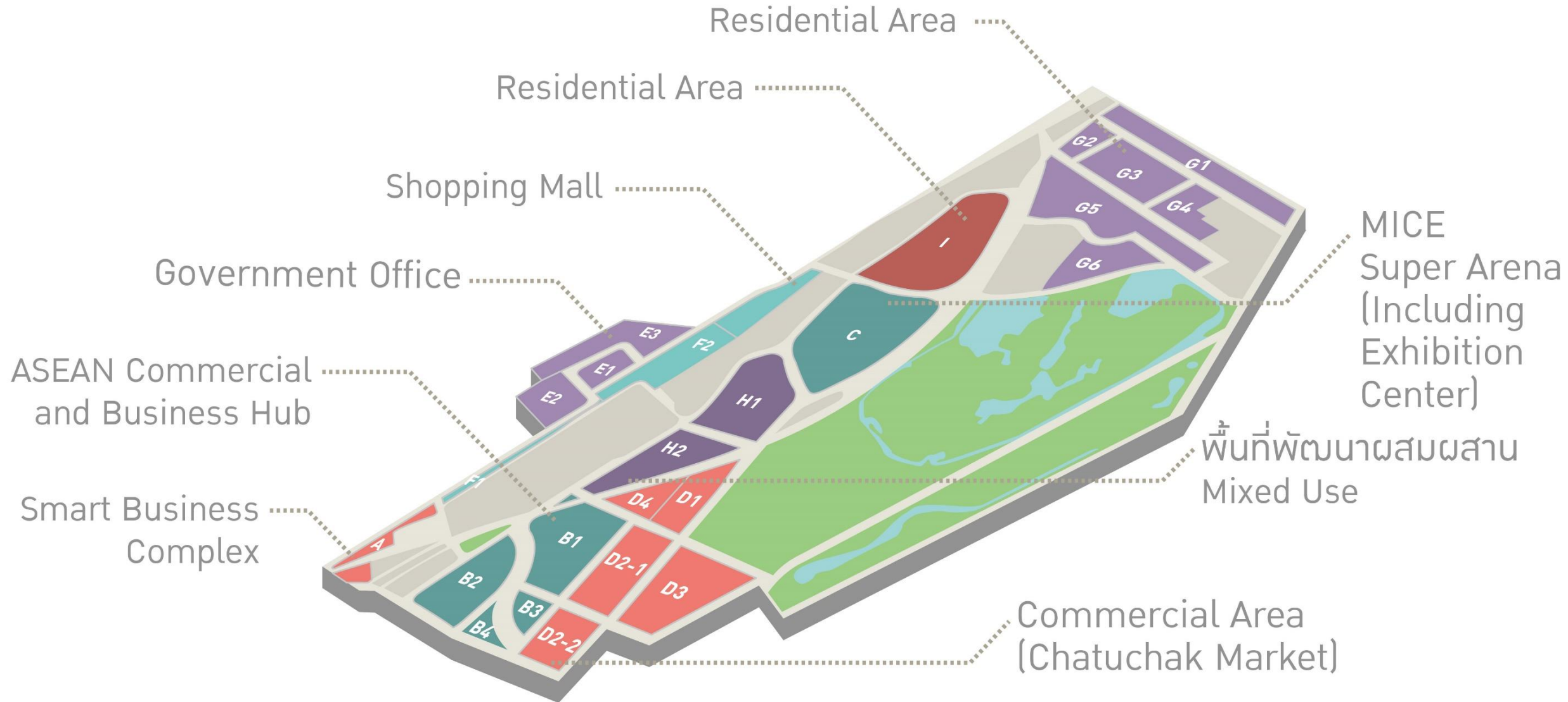
JJ Park

Thai Airways

JJ Market



Bang Sue Grand Station = New CBD



From Bang Sue Grand Sta. toward all areas of Thailand

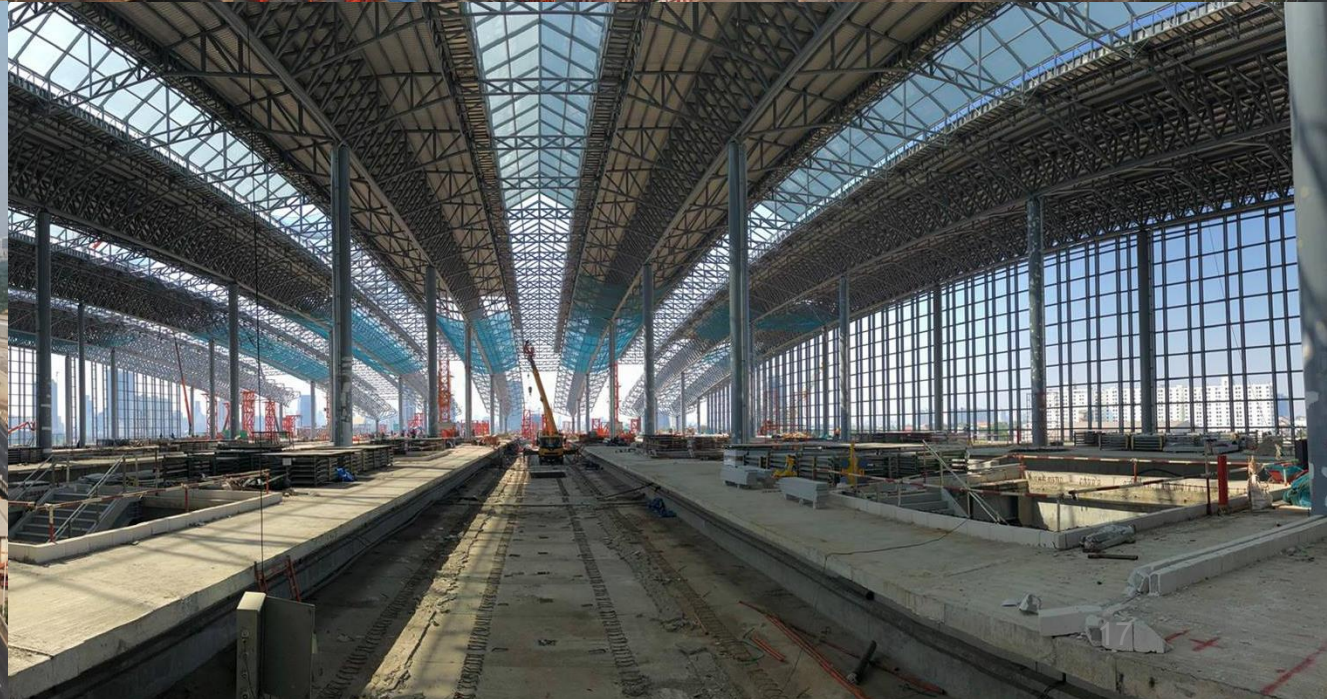


Floor 3 : HSR Platforms

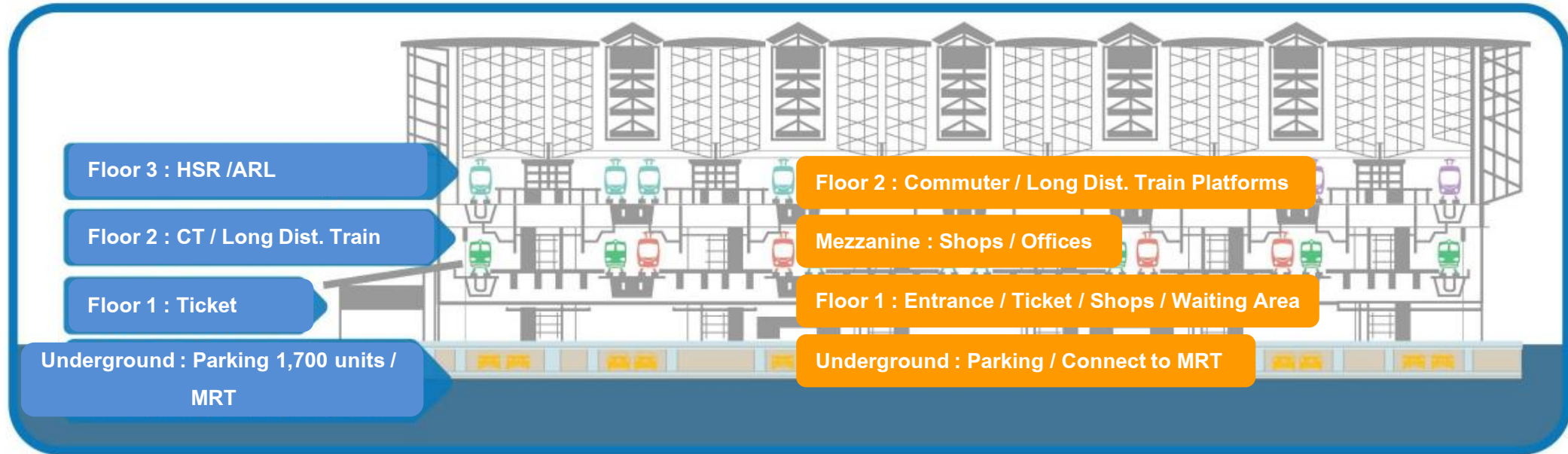


Floor 2 : Commuter / Long Dist. Train Platforms





2021 Opening of New Transport Hub



Area **264,862** sq.m.

4 Platforms for CT

8 Platforms for Long Dist. Train



10 Platforms for HSR

2 Platforms for Airport Rail Link

Bang Sue Grand Station : New CBD



Skywalk connects Office Towers and stations (① ③)

Two stations (① ②) are connected each other through Shopping Mall and water path

PHUKET

SMART CITY



PHUKET SMART CITY

Smart City Data Platform

3 Intelligent

Tourism IoT Env. Sensors + Safety Real Estate



2 Interconnected

Data Integration + Analytic → Services



Gov. Open Data



Social Analytic



Data from Instrumental (Near Real time)

1 Instrumental (Near Real time)



City Application



Wast lot



Public WiFi



City + Marine Safety



Env. Sensors



Transport

Smart Safety

Now :- CCTV Integration 700 of 1,300 cameras

- LPR (8 Installation point, 37 cameras, Detected > 59.38 M plate)
- Face recognition (3 Fixed cameras, 8 Smartphone Detected > 1.49 M)
- Traffic law enforcement (5 Installation point, 41 cameras, Detected > 41 M, 620 K Offenders)
- CCTV Command Centre
- Vessel Tracking and Monitoring System (23 Radar + AIS Stations)
- Maritime Safety (1 Pier UAT, 4 Piers expend)
- Guide / Job order System

New :- Integrate data with Smart City Data Platform
- 3,500 cameras for Complete CCTV

Smart Healthcare

Now :- Project plan

Smart Economy

Now :- Smart City Innovation Park (IoT Lab, Co Creation Space, Investment OSSC)

- 200 SMEs participated Digital transform Courses
- 28 BOI Digital Cluster, 156 M Invest
- 5 x 500 K Fund for Smart City Startups

New :- Digital OSS for Startups + SMEs
- 200 SMEs to Digital transform
- 50 Startups

Smart Tourism

Now :- PHUKET App. for FIT

- Support Tourism Startups
- Public free WiFi (1,000 AP / >1.3 M Accounts > 40 K Connected per day)
- LoraWAN Network (35 base, > 500 sq.km)

New :- Collaborate PRSThailand for content + PR on PHUKET App.
- Integrate data with Smart City Data Platform

Smart Environment

Now :- 10 IoT sensors stations (CO, DO, Water levels, etc.)

- 16 IoT sensors stations (Rain, Temperature, Humidity)
- Traffic Waste Platform (10 Installation point in Patong)

New :- 5 IoT sensors station on NB-IoT

- Integrate data with other sensors platforms
- Integrate data with Smart City Data Platform

Smart Education

Now :- Project plan

Smart Governance

Now :- Smart City Data Platform

New :- Phuket Intelligent Command Center



Phuket City Data Platform Framework



End User

- Prime Minister
- Minister
- Management
- Governor
- Mayor



End User

- Investor
- Entrepreneur
- Startup
- People
- Tourist

Intelligence

Use Case Data
Analytic Services

Tourist
Behaviour

Safety /
Environment

Investor
Information

Phuket City Data Platform



Interconnection



Report & Analytic Tool



Government Open Data

Social Analytics

OPEN DATA



Admin & Support



Cloud Server

Data Source (Near Real Time IoT Data Capture)

Smart City Services



City Application



Public
Wi-Fi



Tourist
Data

Tourism



IoT Environment
Sensors

Environment



Marine
Monitoring



City Safety/
Security

Safety



Energy
Reports



depa

Develop Application for Tourism

 ภาพรวม

 จราจร

 ขยะ

 ปริมาณน้ำฝน

2 ส.ค. 2561 15:57:46

 13/14

ความหนาแน่นการจราจร

 8/8

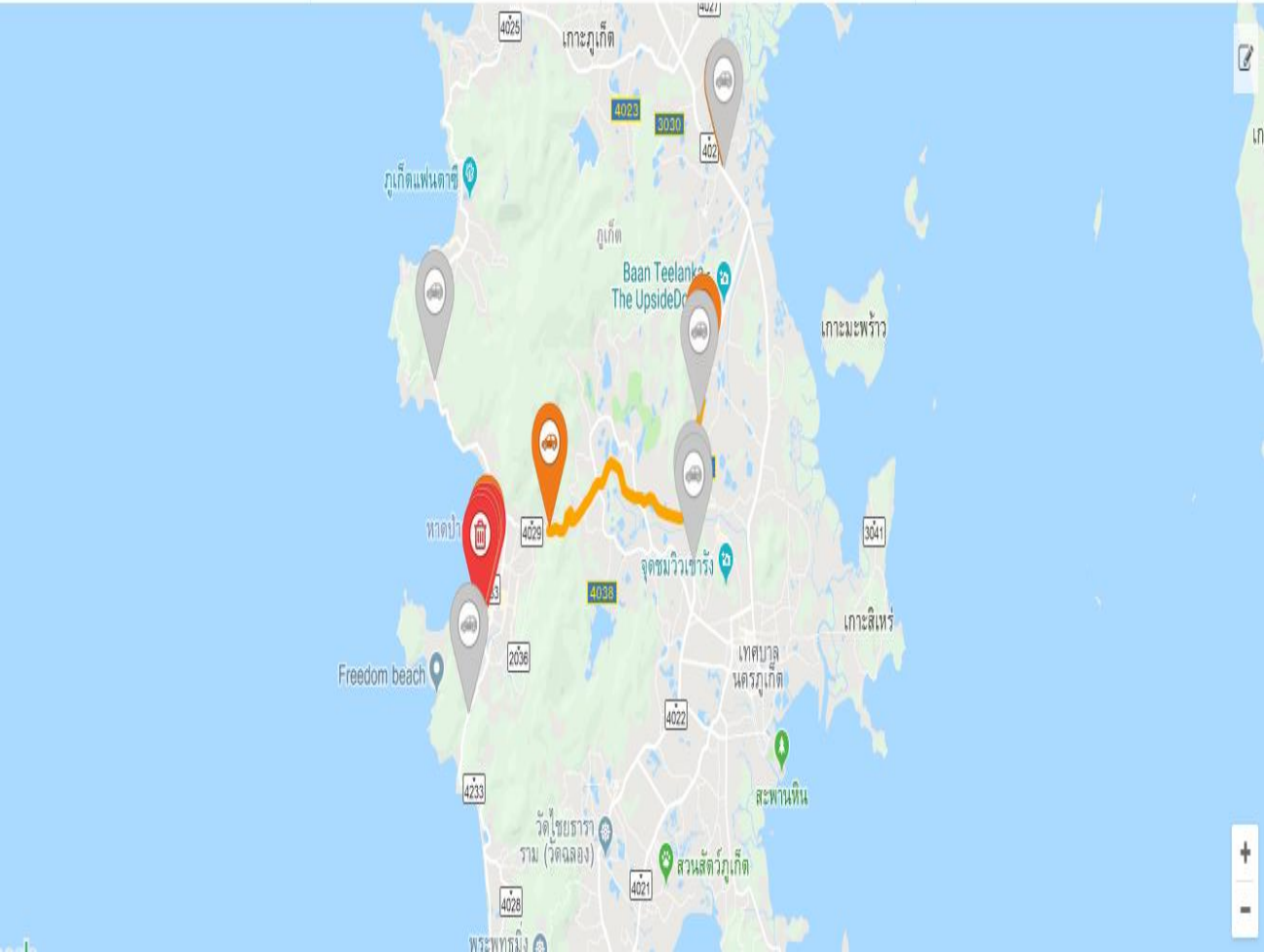
ปริมาณขยะในถัง

 0/21

น้ำฝนสะสมต่อชั่วโมง

 1/22

น้ำฝนสะสม 24 ชั่วโมง



 ภาพรวม

 จราจร

 ขยะ

 ปริมาณน้ำฝน

2 ส.ค. 2561 15:55:24

21 สถานีทั้งหมด

 น้ำฝนสะสมต่อชั่วโมง

21 ปกติ

0 เฝ้าระวัง

0 เตือนภัย

 น้ำฝนสะสม 24 ชั่วโมง

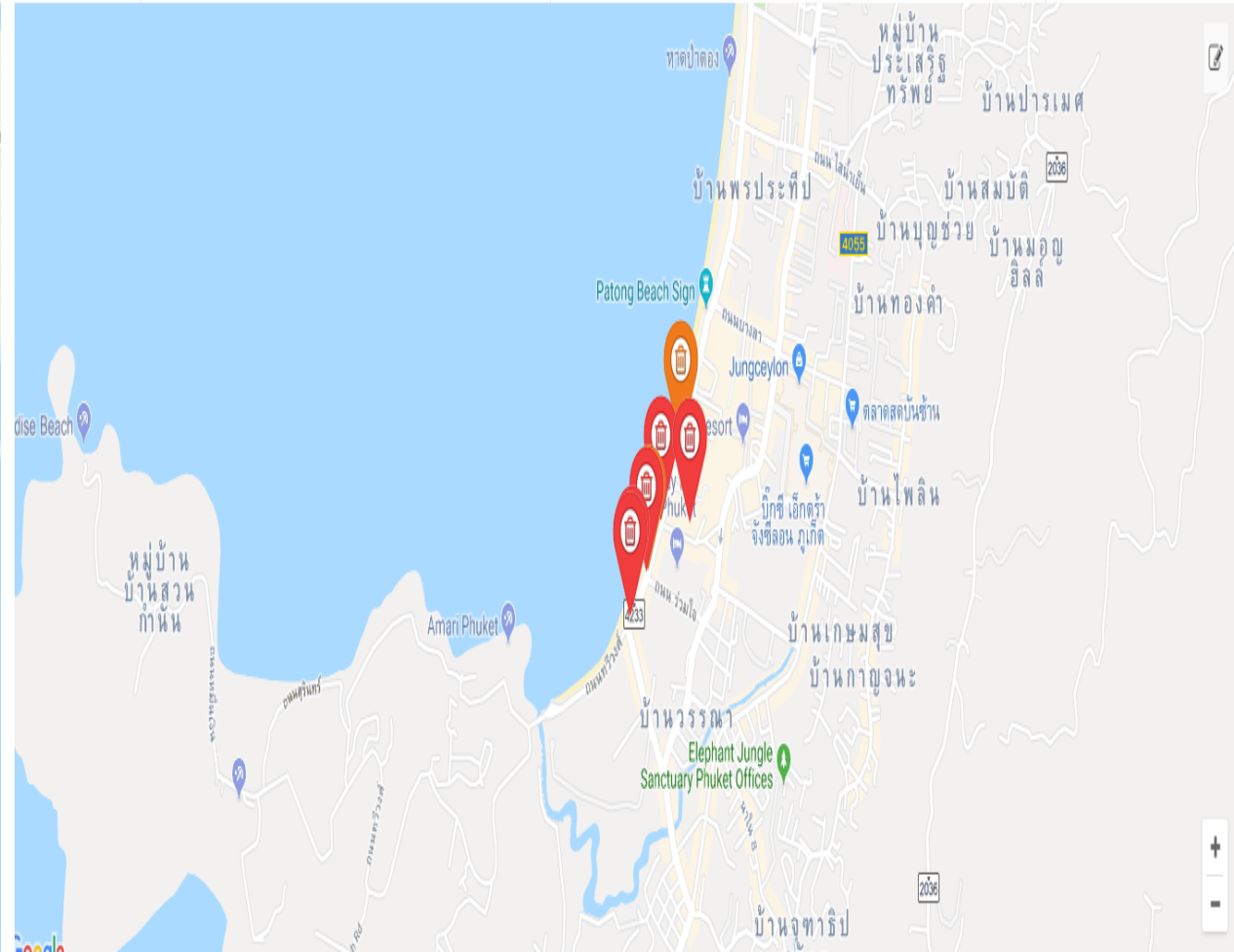
21 ปกติ

0 เฝ้าระวัง

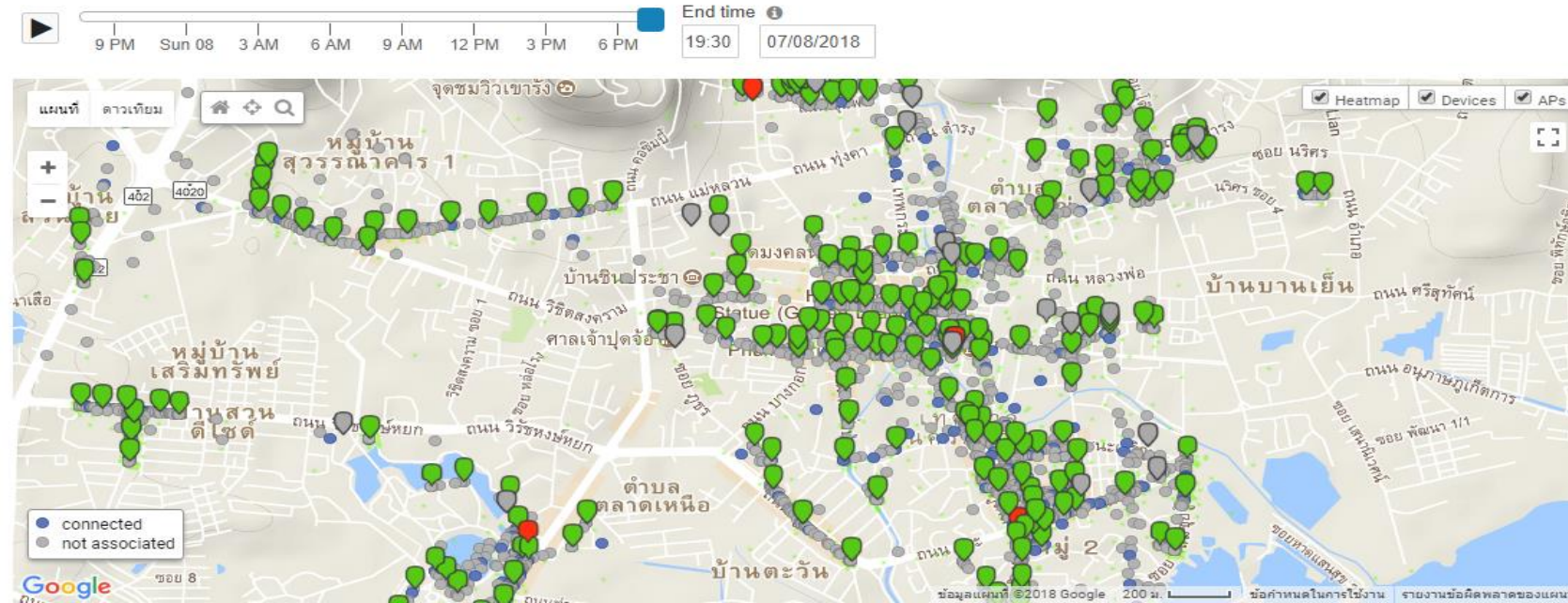
0 เฝ้าระวัง

1 เตือนภัย

 เปิดพื้นที่ปิด



Develop Application for Tourism



Free WiFi Tourist Behavior analysis

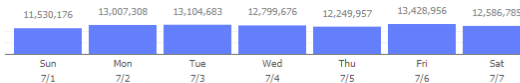
Clients with high usage

1 clients used more than 100.00 GB
'DESKTOP-LVN60EJ'

Usage stats

TOTAL DATA TRANSFERRED 25.56 TB
TOTAL DATA DOWNLOADED 23.33 TB
TOTAL DATA UPLOADED 2.23 TB

Number of sessions over time



Top SSIDs by usage

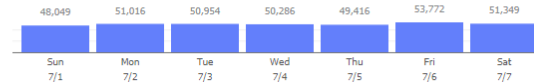
Name	Encryption	# Clients	Usage	% Usage
@ SmartCity-Free-WiFi-byCAT	Unknown	68640	21.16 TB	82.78%
@TH Wi-Fi_phuket by MDES	Unknown	65349	4.4 TB	17.22%

Top devices

Client stats

TOTAL UNIQUE CLIENTS 111179
AVERAGE # OF CLIENTS PER DAY 50691
AVERAGE USAGE PER CLIENT 241.1 MB

Clients per day



Splash page

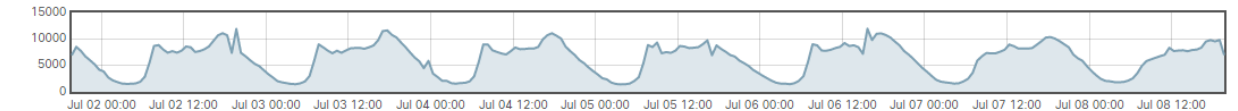
NUMBER OF CLIENTS TO REQUEST PAGE 51621
NUMBER OF CLIENTS GRANTED ACCESS 15897

Top clients by usage

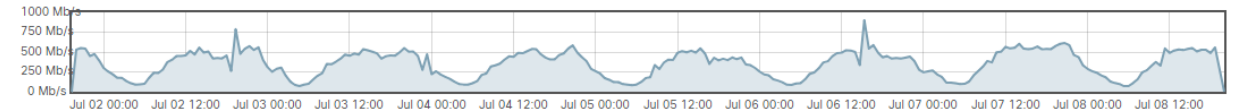
Description	Usage	% Usage
DESKTOP-LVN60EJ	122.07 GB	0.47%
DESKTOP-GVTOE3E	71.69 GB	0.27%
SCSOB3KPCORME8Y	69.97 GB	0.27%
DESKTOP-TENDVVB	64.62 GB	0.25%

Traffic analytics for the last week on all SSIDs

Client counts approximately 120104 unique clients



Usage 25.6 TB (+23.36 TB, +2.24 TB)

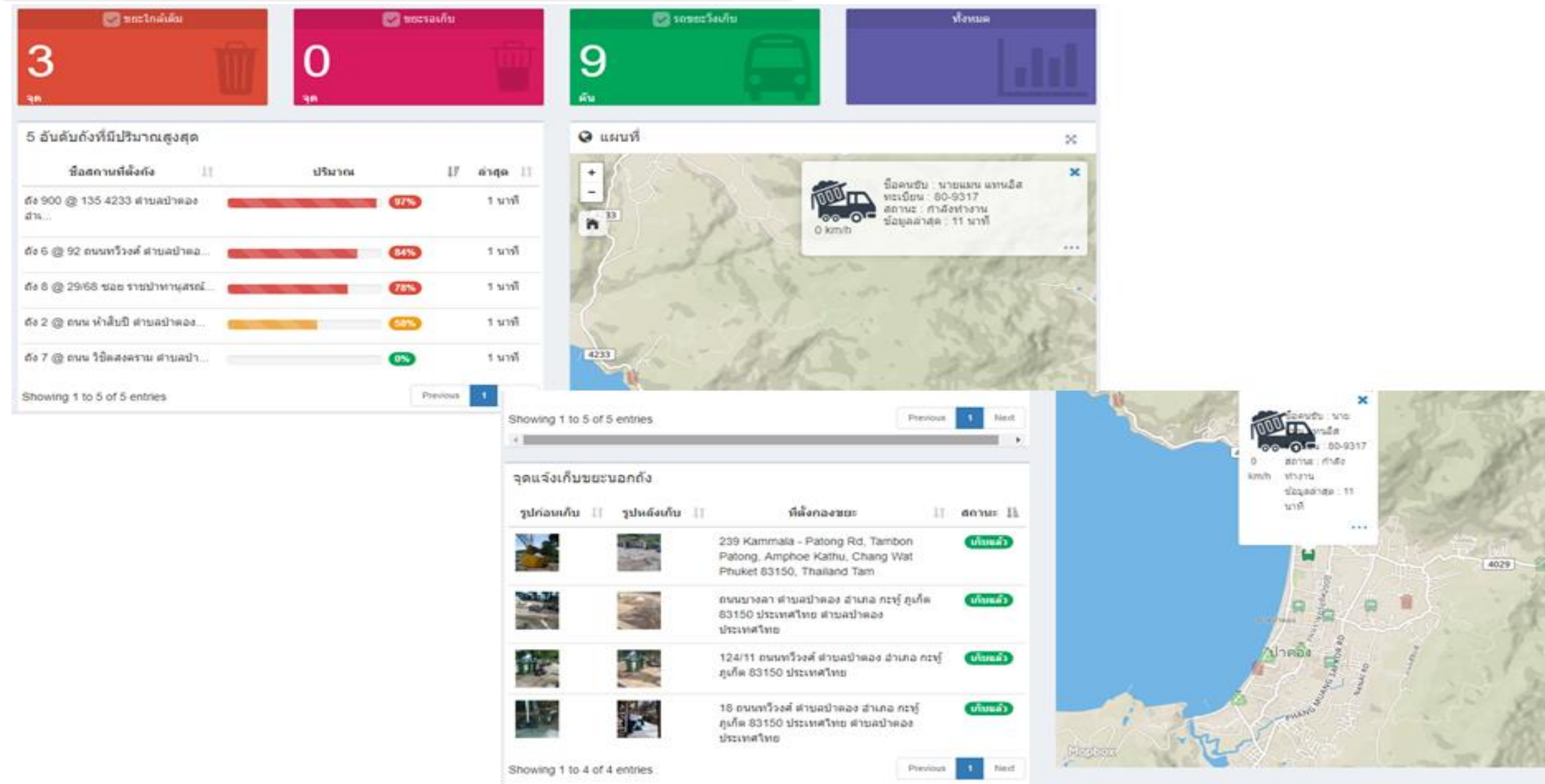


Application	Destination	Protocol	Port	% Usage	Usage	Sent	Received	Flows	Active time	# clients
YouTube	-	-	-	33.1%	8.46 TB	139.42 GB	8.33 TB	3924240	36 months	25828
Facebook	-	-	-	28.4%	7.28 TB	280.36 GB	7.00 TB	9933476	111 months	51607
Google HTTPS	-	-	-	2.3%	605.16 GB	374.92 GB	230.24 GB	6381975	72 months	54035
Line	-	-	-	1.7%	451.23 GB	29.69 GB	421.54 GB	1602692	24 months	27770
iTunes	-	-	-	1.3%	334.67 GB	5.36 GB	329.32 GB	223589	3.3 months	10095
iCloud	-	-	-	1.1%	285.30 GB	234.40 GB	50.90 GB	463760	3.1 months	9249
Miscellaneous secure web	tv-line.pstatic.net	TCP	443	0.9%	234.08 GB	3.07 GB	231.01 GB	24942	11 days	352
Netflix	-	-	-	0.9%	232.48 GB	3.25 GB	229.23 GB	42845	9 days	632
Miscellaneous web	wifi.getturnstyle.com	TCP	80	0.7%	188.79 GB	12.58 GB	176.21 GB	2677939	21 months	51201
Miscellaneous secure web	obs.line-scdn.net	TCP	443	0.5%	140.28 GB	2.36 GB	137.92 GB	170153	9 weeks	14213

Environment : Sewage / Wastewater



Environment : Garbage Collection



Safety : CCTV

Smart
Safety,

Now: CCTV Integration 700 of 1300 cameras
for 8 police station + 3 local government

Phuket

การบูรณาการกล้อง CCTV
และประมวลผลภาพเพื่อป้องกัน
อาชญากรรมเชิงรุก



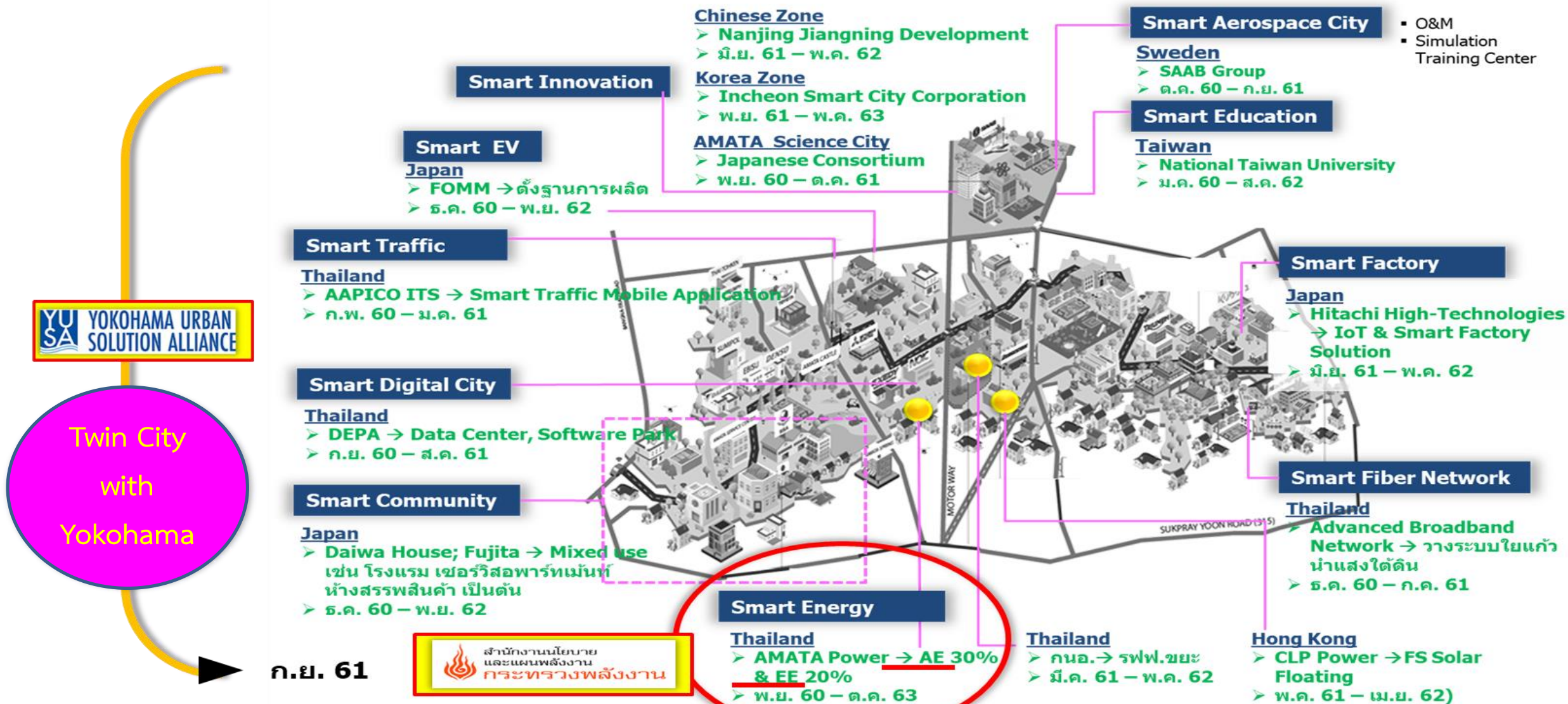
- มี ระบบรู้จำป้ายทะเบียน ตรวจสอบและติดตามรถยนต์ที่เป็นป้ายทะเบียนต้องสงสัยได้ สามารถอ่านป้ายทะเบียนได้ทั้ง ไทย-อังกฤษ
- สามารถคำนวณความเร็วเฉลี่ยของรถผ่านกล้อง ๒ กล้องที่อยู่บนเส้นทางเดียวกันได้
- ระบบประมวลผลรู้จำใบหน้าบุคคลเพื่อตรวจจับใบหน้าของผู้ต้องสงสัย ที่แฝงตัวมากับผู้โดยสารบนรถยนต์ / รถตู้ / รถบัส



AMATA CITY

SMART CITY







Aims

1. RE 30%
2. EE 20%
3. GHG 30%



Engineering design & financial modeling
Micro smart grid: High RE & ESS & etc.

Zero Net?

Independence grid

- ไม่เป็นภาระกริดใหญ่
- ช่วยกริดใหญ่นำมาจ่ายเงิน

Feasibility

2

1

AMATA
SANDBOX

HOW?

Single Grid

3

New
innovation

- ESS
- EMS
- AMI
- Big data
- ML
- Blockchain
- ...

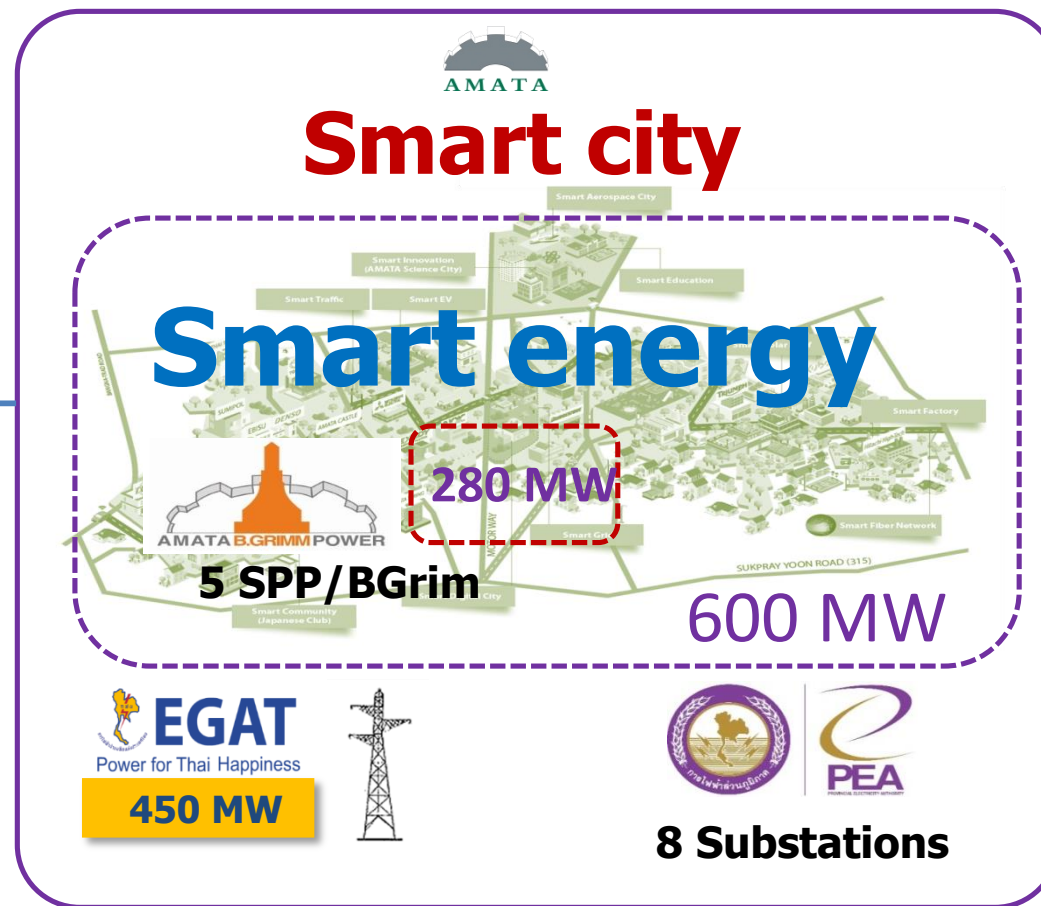
4

DR Business

5

Release Law &
Regulations

- P2P
- Realtime pricing
- CRP pricing
- TPA
- ...



AMATA
PDP



THANK YOU



Thailand SMART CITY

