

SMART CITY: GLOBAL TREND AND THE MOVE OF THAILAND

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Abstract Smart city is innovative city management derived from scholars and city development phenomenon. The ideas as such are changing as dynamics of knowledge and technology. Smart city, therefore, can be described as city or community focusing on the development entirely, creatively with sustainability including the element of information technology. City's characteristics reflect the way of life in digital era emphasizing on future, speed, and smartness. However, indicators of smart city are varying due to the city's context and need. Presently, global trend on smart city is interested in smart city's architectures and its scenario. In case of Thailand, the country looks at smart city as a tool leading the nation to Thailand 4.0 policy. Hence, smart city can be seen as the idea to create city or community with sustainability on economics, society, and environment under Thailand Master's Plan aiming to reserve diversity and difference. Currently the pilot smart city of Thailand is Phu Ket province. However, challenges regarding progress of smart city in Thailand still exist in the areas of legal issues, multidisciplinary idea, and lack of knowledge among citizens.

Index Terms - Urban Management, Smart City, Digital City, Wireless City, Knowledge-Based City

1. INTRODUCTION

Smart cities are the idea of development and phenomenon at global stage, especially for 21st century. There is a doubt about the word 'smart' to describe cities since we are quite familiar with the way this word explain 'human'. Smart cities existed in many countries and are different in details. However, the outstanding idea of smart city is to utilize high technology in order to enhance quality, performance and interactivity of urban services including reduce costs and resource consumption plus to increase contact between state and citizens. The concept of smart cities is involved with climate change, economic restructuring, the move to online retail and entertainment, aging populations, urban population growth and pressure on public finances [1]. Example of smart city are Amsterdam, Barcelona, Dublin, Madrid, Malts etc. In Thailand, smart city is one among other crucial projects of Digital Ministry of Thailand. Therefore, the country is willing to support program on smart city's design aiming to fulfill Thailand 4.0 idea by the government so that government agency, local authorities, university, private agency [2]. Thus, the objectives of this research is to (1) study global trend of smart city and (2) study the move of Thailand regarding smart city.

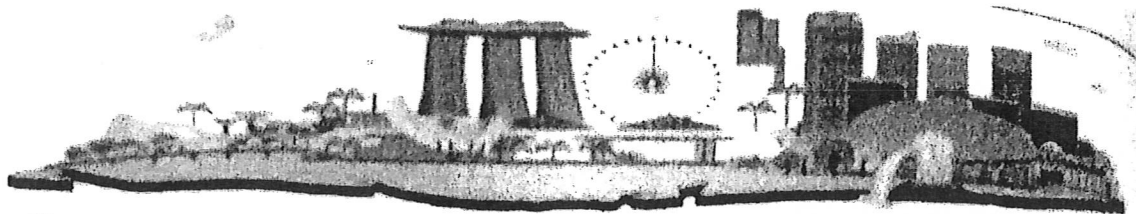
II. REVIEW LITERATURE

A. Smart City : Global Trend

The development of smart city can be separated in two categories. The first one derived from Repeo in 2012 [3] who provide timeline of smart city in four step. First step is to the reintroduction of partnership

between government and private agency. In the book named Transforming the Public Sector of Osborne and Gaebler in 1998, it suggested that government should change management method by mimicking private sector. The book stated that government agency should be decentralized and citizens should be seen as customers. Later on, this idea is the ground concept of smart city in present. Second step, in 1995, article named Boling alone: America's declining social capital stated that social capital need to be created. In other words, it means to bring the city to live by using ICT in order to enhance interaction among people. Nowadays, the concept is one key performance of being smart city. Third step is economic development. The example of this step is Singapore. The country paid attention to economic development and intelligent value chain so that it became intelligent island in 2007.

Step four, the idea of a creative class was introduced. The book named the rise of the creative class stated that creativity and variety were the trigger of economic progress. Therefore, state should provide policy focusing on young adults, minority, or LGBTB to the community in order to bring innovation to the society. The second one derived from empirical study of the city by Anthopoulos in 2017 [4]. In the beginning, around 1994-1998, smart city had been seen as virtual city which increased interaction among people. At the same time, it also decreased citizen separation. Later on, it was the rise of digital city. The outstanding evidence is the form of information city such as Amsterdam. The city that brought about intimate communication in community by providing city with as seen in the pic below:



DIGITALLY-ENABLED POPULATION

ta.gov.sg
 DIGITAL GOVERNANCE
 8,800 GOVERNMENT SERVICES
 100% DIGITAL GOVERNANCE

map
 DIGITAL MAPS
 100% DIGITAL MAPS

Govt Inbox
 DIGITAL GOVERNANCE
 100% DIGITAL GOVERNANCE

ACCESS TO GOVERNANCE
 97% DIGITAL GOVERNANCE
 100% DIGITAL GOVERNANCE

97% DIGITAL GOVERNANCE
 100% DIGITAL GOVERNANCE

SKILLED TECH TALENT
 148,000 SKILLED TECH TALENT

VIBRANT TECH INDUSTRY & STARTUP ECOSYSTEM
 \$5.8 billion Digital Transformation Fund

TECHNOLOGY-ENABLED SECTORS

Source: <http://smartisland.com/singapore-the-smart-island-smart-nation/smart-nation/>

Smart City here we come!

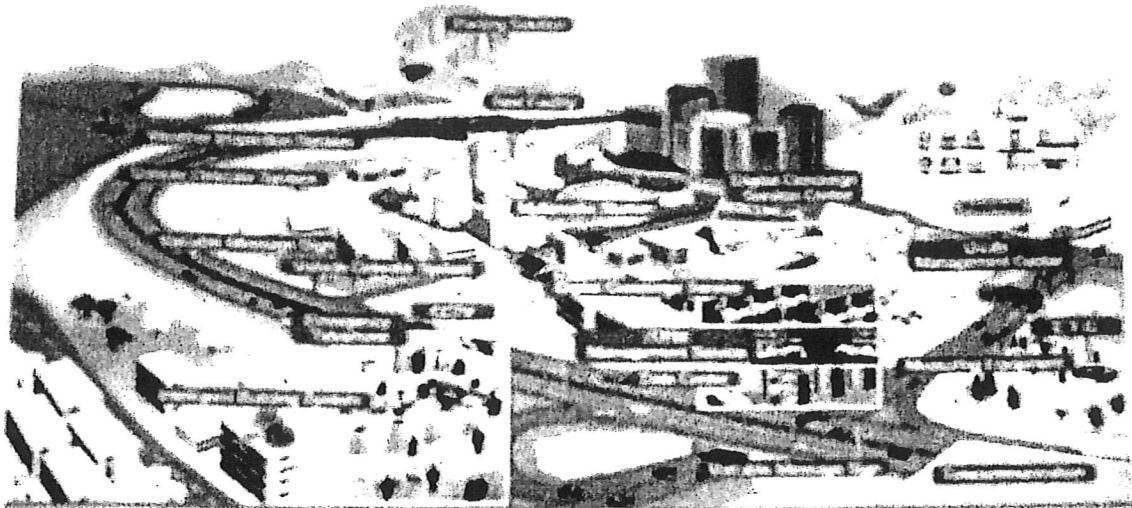
amsterdam city

130+ ... 90+ ...

Source: <https://www.amsterdamsmartcity.com/usc-two-pager-0416>

After digital city, there was ubiquitous city which came from South Korea. It means the city that provided amenity whether in network or structure for citizen. The outstanding phenomenon is the construction of basic infrastructure. At this time, the word intelligent city come into effect and focus on capacity of the city.

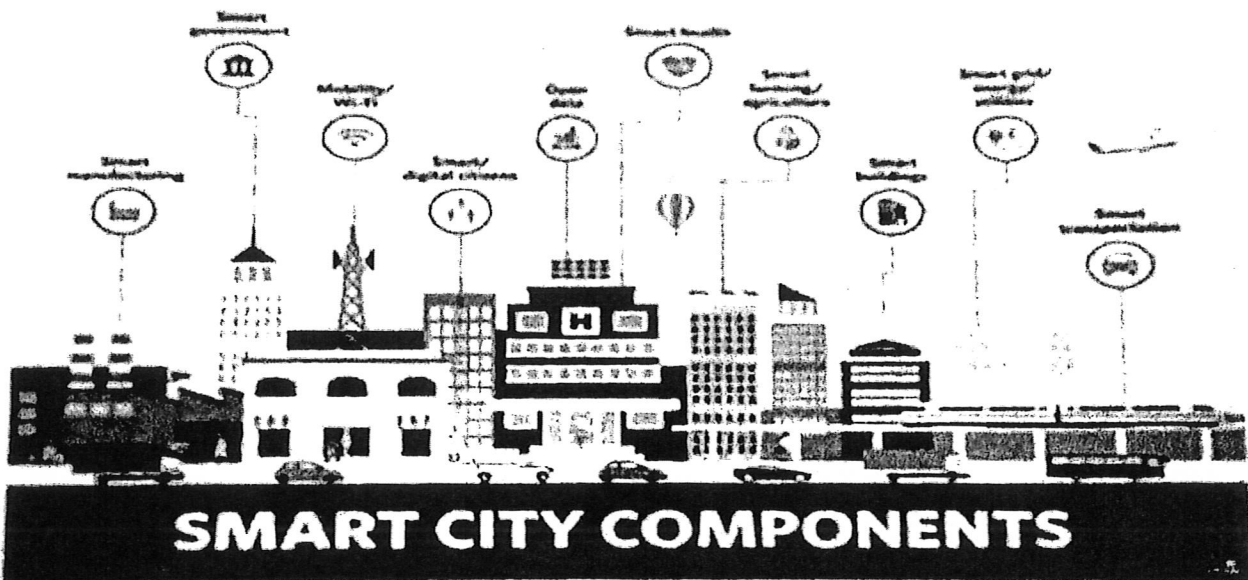
Ubiquitous City



UMC (U-UM Management Center)

Source: <https://www.arenas.org/2016/09/26/city-are-trails-of-urban-planning-in-korea>

From 2009, it seemed that the movement of smart city is to Benchmark between the cities through academic researchers who are willing to create the list of smart city components.



SMART CITY COMPONENTS

Source: <https://internetofthingsagenda.techtarget.com/definition/smart-city>

As indicated in the picture, the components of smart city consists of ICT's usage, co-operation between government and private organization, urban development by various stakeholders, ecosystem concerning, and local authorities management.

It can be seen in the timeline that the movement of smart city is not static but dynamic. There are countless practice which depends on context of particular city.

B. Smart City : Thailand

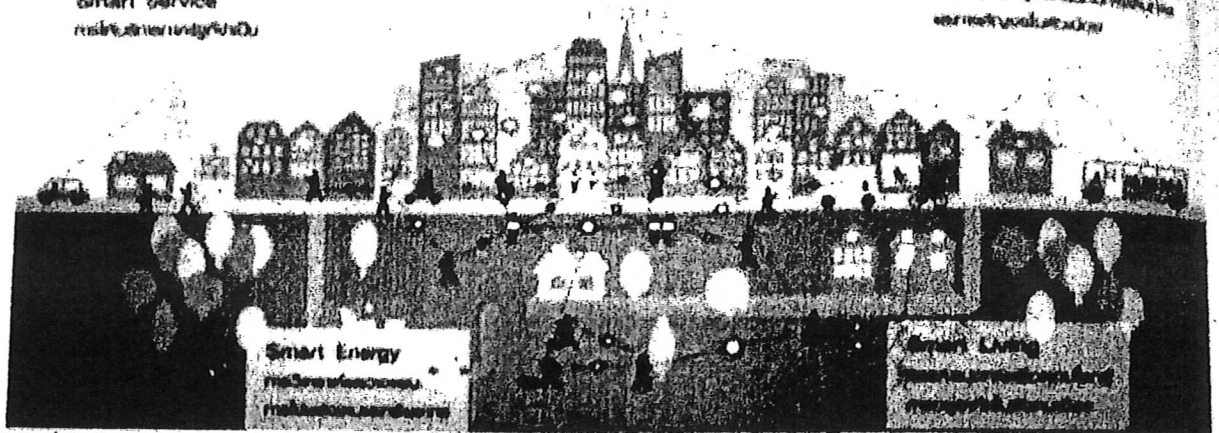
In Thailand, smart city is one of the procedure to push the country to the main goal called Thailand 4.0. The idea focus on sustainability on economic, social, and environment under diversity (5)

Smart City Smart Thailand

Smart Value
 ความคุ้มค่าของการลงทุนในโครงการ Smart City
 การวัดผลตอบแทนจากการลงทุนในโครงการ Smart City
 การวัดผลตอบแทนจากการลงทุนในโครงการ Smart City

Smart Service
 บริการ Smart City

Smart Mobility
 การเดินทาง Smart City



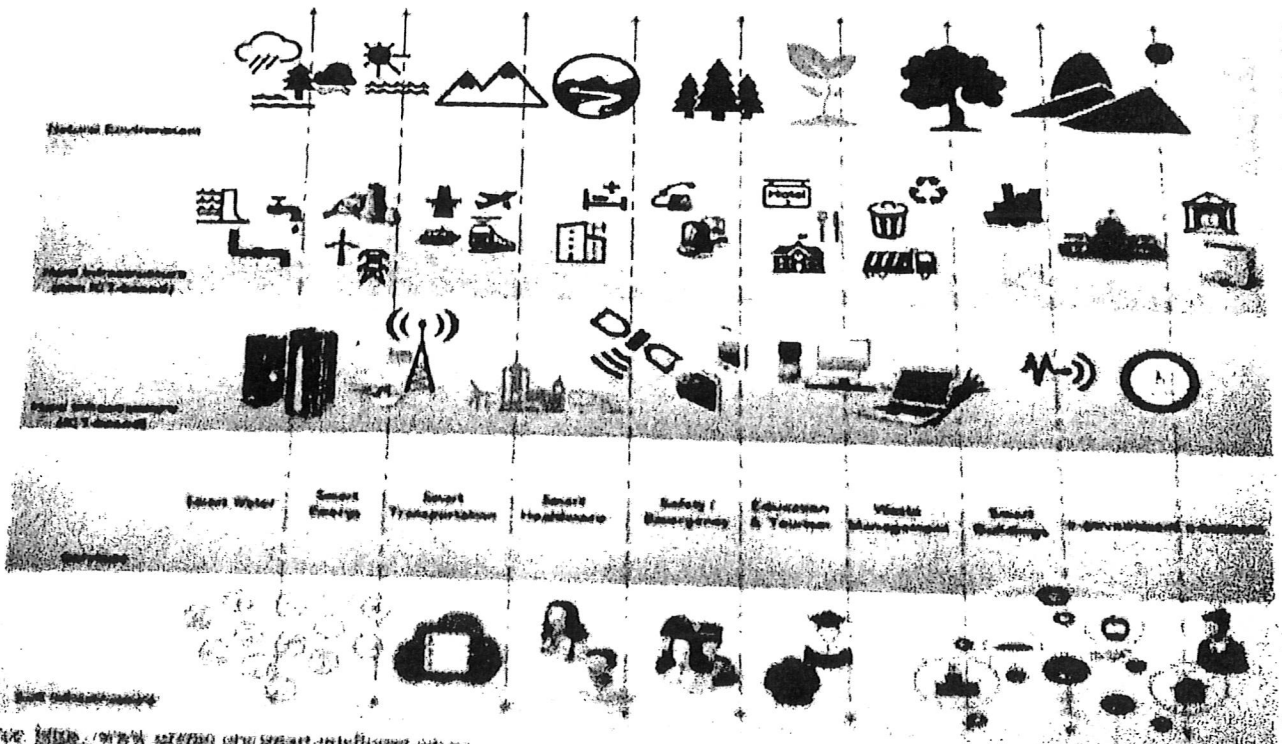
Source <http://www.samongthailand.com/uncategorized/samong-thailand-%E0%B8%AA%E0%B8%99%E0%B8%B1%E0%B8%9A%E0%B8%AA%E0%B8%99%E0%B8%B8%E0%B8%99-thailand-4-0/>

The movement of Smart city Thailand can be categorized in 4 concepts. First is the policy planning. The country emphasized on 2 pinpoints: (1) quantities of smart city (2) satisfaction on public services providing by government agency. In this event, activities to drive smart city separated in 6 domains ; (1) smart city contest (2) particular agency for smart city support (3) smart city law reform (4) open source for smart city (5) national and international seminar in smart city and (6) smart city support by research and innovation [6].

III. RESULTS

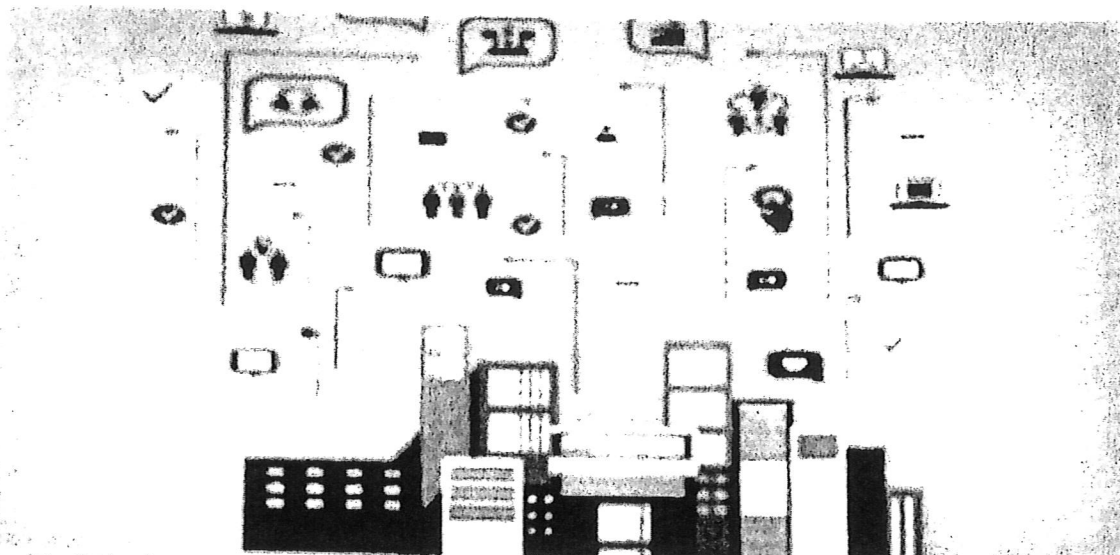
A. Future of Smart city : Global view

The future of smart city lies on two point of view. First is smart city architecture. Second is scenario of smart city. With regards to smart city architecture. In 2003, Perks and Beveridge [7] attempted to look at smart city as physical infrastructure which include information technology and management. In 2014, International Telecommunication Union or ITU presented architecture scale of smart city.



Source: <http://www.samongthailand.com/uncategorized/samong-thailand-%E0%B8%AA%E0%B8%99%E0%B8%B1%E0%B8%9A%E0%B8%AA%E0%B8%99%E0%B8%B8%E0%B8%99-thailand-4-0/>

- First Stage - Natural Environment
 - Second Stage - Hard Infrastructure (non-IT based)
 - Third Stage - Services (IT based)
 - Fourth Stage - Soft Infrastructure (Smart services such as services on transportation, education, health care, security, etc.)
 - Fifth Stage - The development of law or legal framework and other related standard
- The initial scenario of smart city is the idea of thinkers 50

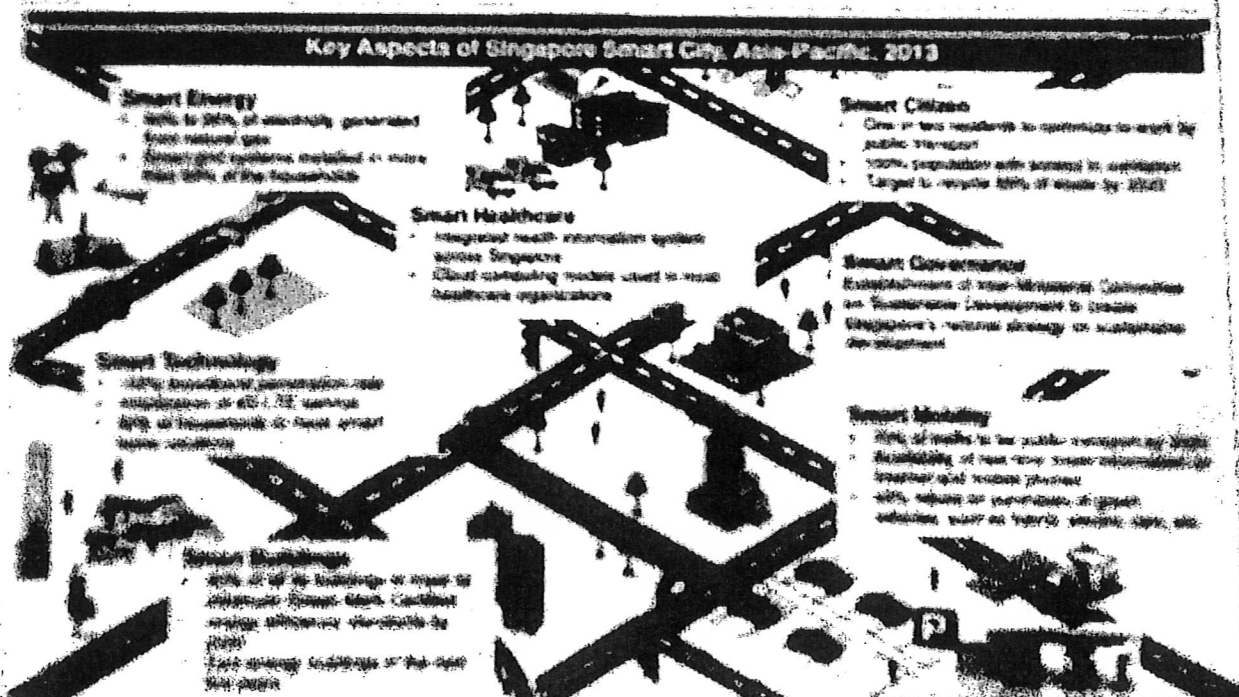


Source: [unclear], [unclear] with [unclear] looking ahead.

It stated that smart city consists of (1) smartphone detection (2) smart home (3) smart road (4) traffic congestion (5) renewable energy (6) smart grid (7) smart light (8) smart thermal and electrical (9) smart sewage. The representation in the global view of smart city is Singapore. The latest scenario is the Next Generation smart city in 2030.

Singapore—The Next-generation Smart City

Singapore aims to have 80% of all its buildings meet its minimum Green Mark Certified energy efficiency standards by 2030.



In 2030, Frost and Sullivan [8] is planning on Singapore's scenario that the key parameters of the country's consisting of (1) smart energy (2) smart technology (3) smartbuilding (4) smart health care (5) smart citizens (6) smart urban management (7) smart transportation.

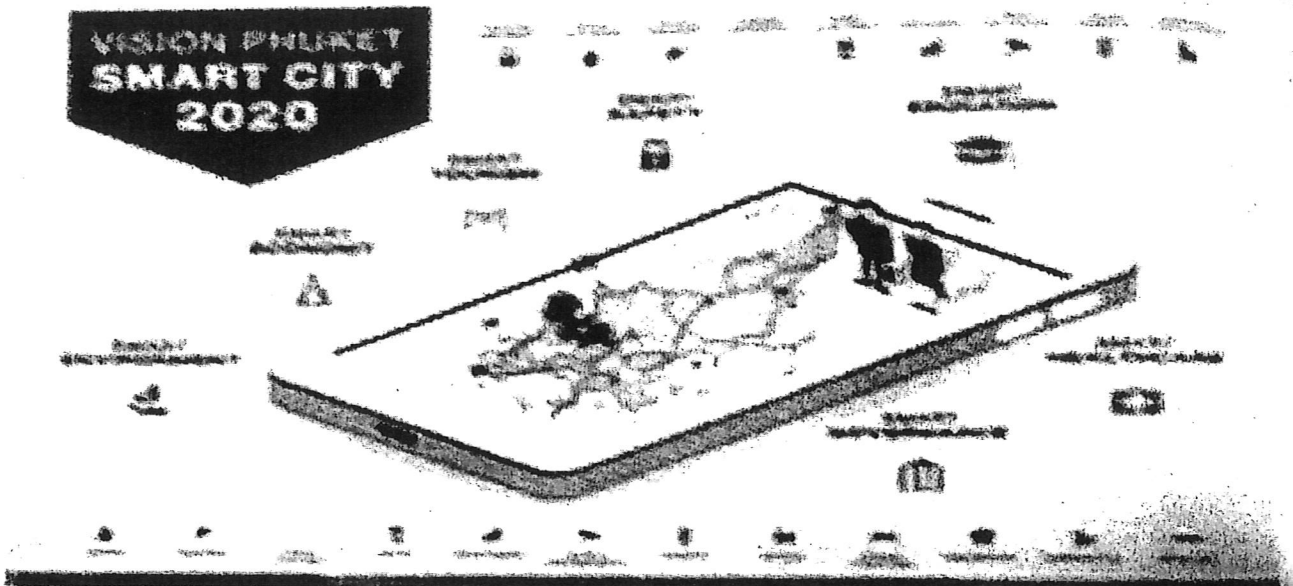
B. The movement of smart City in Thailand

The empirical movement of smart city in Thailand lies in Phu-keet province. It is the pilot city using technology in urban development [9].

In 2016, Phu-keet city development was established under vision Greenery Phu-Keet. There was financial support from publics and private sector around 600 million baht. The province pushed on the project with

regards to transportation consists of electricity train and domestic bus-line.

Within 2020, Phu-Keet is aiming to smart city as Smile Smart and Sustainable Phu-Keet.



Source: <https://technomag.com/2016/09/16/sipa-phuket-smart-city-news/>

IV. CONCLUSION AND RECOMMENDATIONS

Though Thailand is willing to develop smart city, the country need to prompt to encounter obstacles and challenges along the way. So, researchers recommend that

- 1) Government should reduce limitation which discourage the development.
- 2) Public agencies should be co-operated
- 3) State should make citizens recognized the importance of being smart city

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