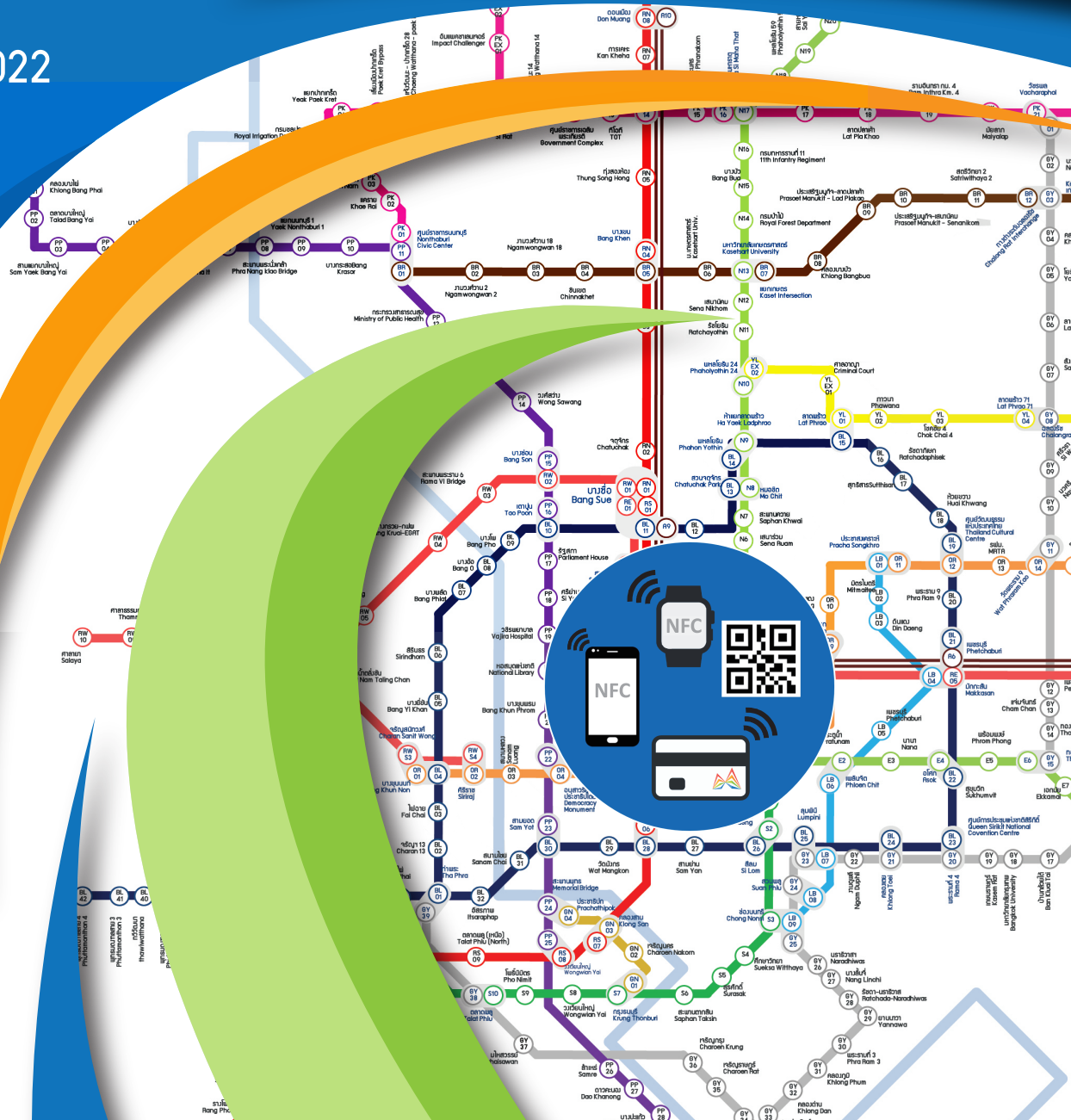




The Study of a Governance Plan for the Management of a Common Ticketing System

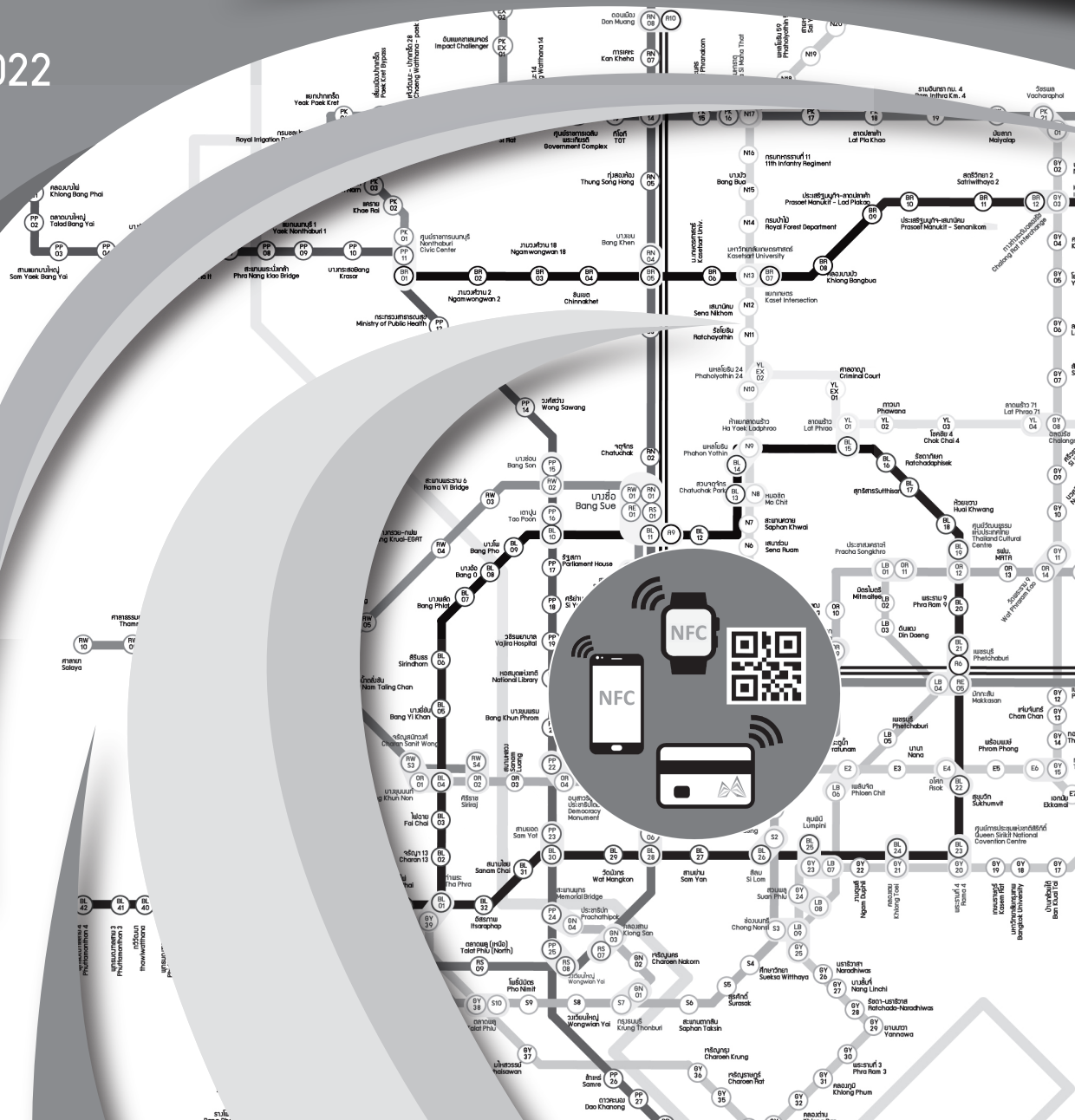
3rd Seminar
November 2022





The Study of a Governance Plan for the Management of a Common Ticketing System

3rd Seminar
November 2022



Agenda

3rd Seminar

“The Study of a Governance Plan for the Management of a Common Ticketing System”

Wednesday, 9 November 2022

At the Infinity Ballroom, Pullman Bangkok King Power Hotel

08.30 - 09.00 a.m.	Registration
09.00 - 09.15 a.m.	Opening Ceremony
	➤ Introduction Miss Tanyalak Srisuttiyakorn Chief of The Common Ticket System Management and Monitoring Group Office of Transport and Traffic Policy and Planning
	➤ Opening Remarks Mss Karuna Niamiam Director of the Common Ticketing Office Office of Transport and Traffic Policy and Planning
09.15 - 09.45 a.m.	Presentation: “The Governance Plan for the Management of a Common Ticketing System” Dr. Sompong Paksarsawan, Project Manager
09.45 - 10.00 a.m.	Coffee Break
10.00 - 11.30 a.m.	Forum: “The Governance for the Management of a Common Ticketing System” ➤ Ms.Duangchai Wongrak, Transport Technical Officer Rail Transport Regulation Division, Department of Rail Transport ➤ Mr. Surachai Burapanontachai, Expert on Maritime Human Resources Development, Acting Director of Planning Bureau, Marine Department ➤ Mr. Yos Kimsawatde, Head of Payment System Office (PSO), Thai Bankers Association ➤ Mr. Amarit Laorakpong, Executive Vice President Bank of Ayudhya Public Company Limited ➤ Dr. Sompong Paksarsawan, Project Manager Moderator: Dr. Sumet Ongkittikul Specialist in Mass Transit Fare Structure
11.30 a.m. - 12.30 p.m.	Q&A and Comments
12.30 p.m.	Closing Ceremony Buffet Lunch

Remarks: The schedule is subject to adjustment, as appropriate.

Summary of the Study

The Study of a Governance Plan for the Management of a Common Ticketing System

1. Background

The Ministry of Transport and Office of Transport and Traffic Policy and Planning (OTP) has pursued the Common Ticketing and Central Clearing House (CCH) Project, in accordance with a Cabinet resolution. This is aimed at increasing the efficiency of Mass Transit services by using a single ticket to travel on all transit systems, and promoting a change in travel behaviour towards the use of the Mass Transit system, rather than private vehicles, and in doing so reducing the traffic congestion problem and improving the Mass Transit system efficiency.

In the past, OTP has been prepared to implement the Common Ticketing System and Common Fare by developing the “Mangmoom Card” as a common ticket.

Nevertheless, the establishment of a Central Clearing House has not been successful, neither have formal business negotiations commenced amongst government agencies and transit operators on setting and promulgating a common fare structure for all transit operators who would participate in the Common Ticketing System.

OTP has, therefore, been developing a Governance Plan for the Management of a Common Ticketing System in order to provide guidelines for the implementation of common ticketing, in a manner that ensures a high degree of efficiency and completeness.

2. General Information about the Common Ticketing System and the Project Implementation

Common Ticketing Systems are implemented on Mass Transit systems in many major cities internationally, and used in conjunction with a Common Fare mechanism that enables the existing Mass Transit system in that city to operate as an integrated network. The management of the common ticketing system and common fare must be subject to a clear and fair governance plan and fare management process, with common objectives that provide convenience and savings for passengers and encourage an increased number of travellers to use the Mass Transit system.

Based on a review of international experience of Common Ticketing Systems, it is concluded that the key management objective of these international system implementations was to develop the mass rapid transit (MRT) system to be the main Mass Transit system within the urban area. In addition, the aim of many international cities was to develop concepts for applying the Common Ticketing System and Common Fare to other forms of Mass Transit systems. In many cases, these goals were achieved by having government agencies as investors, or holding shares, in the operating units (both directly and indirectly), and being a revenue manager, or being a major shareholder in the company that operates as the Central Clearing House (CCH).

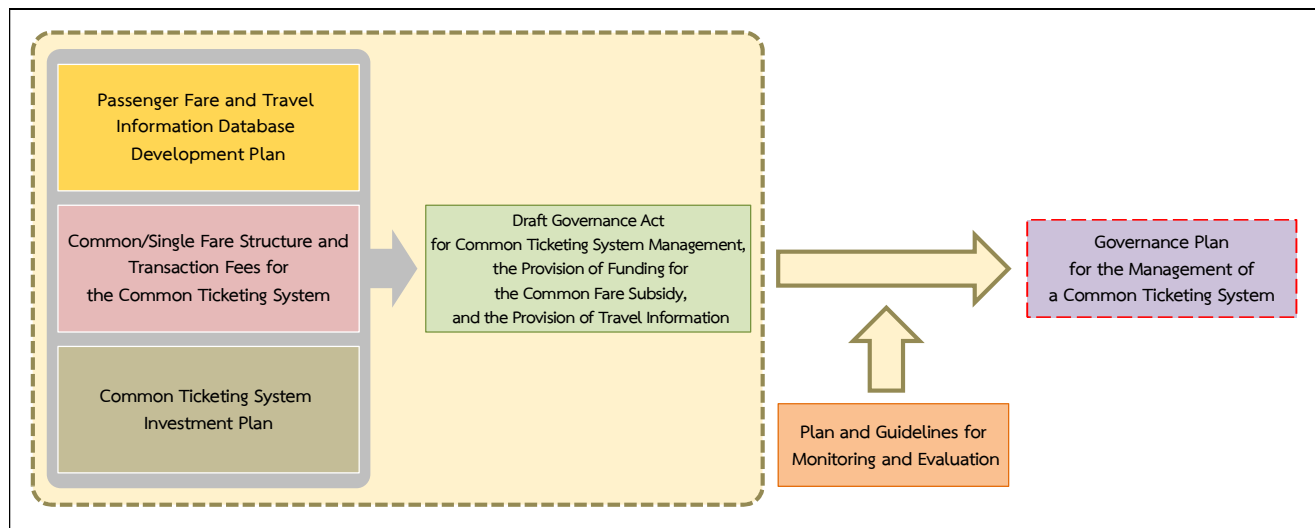
In addition, the successful application of Automatic Fare Collection (AFC) technology in various countries has gone through a similar development process of applying NFC technology, QR Code or e-Wallets (e.g. Alipay, LinePay, Apple Pay or Samsung Pay, etc.), resulting in a change, from purely smart card use, to use of a smartphone application that can be topped-up. These AFC systems have the flexibility of choosing a media for fare payment driven by the convenience of passengers and the ability to meet the system requirements of the particular city or country. Over the past 20 years, there has been significant trends in a broad range of payment technologies that have impacted fare collection systems. This has resulted in many transit operators changing their views on using a payment system, since they see that they can reduce costs by developing and exploiting related systems, as well as make significant savings in ticket issuing, system maintenance and personnel expenses.

Furthermore, analysis has found that, in practice, any future fare collection system will be required to support the use of various payment media, which must be able to link to a bank account and manage the users ticket account (e.g., top-up through online channels to bank account or e-Wallet).

As for the development of the common ticketing system in Thailand, at present each Transit operator has a different system for ticketing, settlement, and cash management, which causes some inconvenience for passengers who wish to transfer between Mass Transit systems on their journeys. This separation of systems is a limiting factor in the co-operation between the public and private sectors in reaching a mutual and appropriate conclusion for the development and operation of the public transport system.

Therefore, based on the Study of a Governance Plan for the Management of a Common Ticketing System, the key outputs and guidelines, that will ensure a high degree of efficiency and completeness, (Figure 1), are as follows:

- 1) Passenger Fare and Travel Information Database Development Plan,
- 2) Common/Single Fare Structure and Transaction Fees for the Common Ticketing System,
- 3) Common Ticketing System Investment Plan,
- 4) Draft Governance Act for Common Ticketing System Management, the Provision of Funding for the Common Fare Subsidy, and the Provision of Travel Information,
- 5) Plan and Guidelines for Monitoring and Evaluation, and
- 6) Governance Plan for the Management of a Common Ticketing System



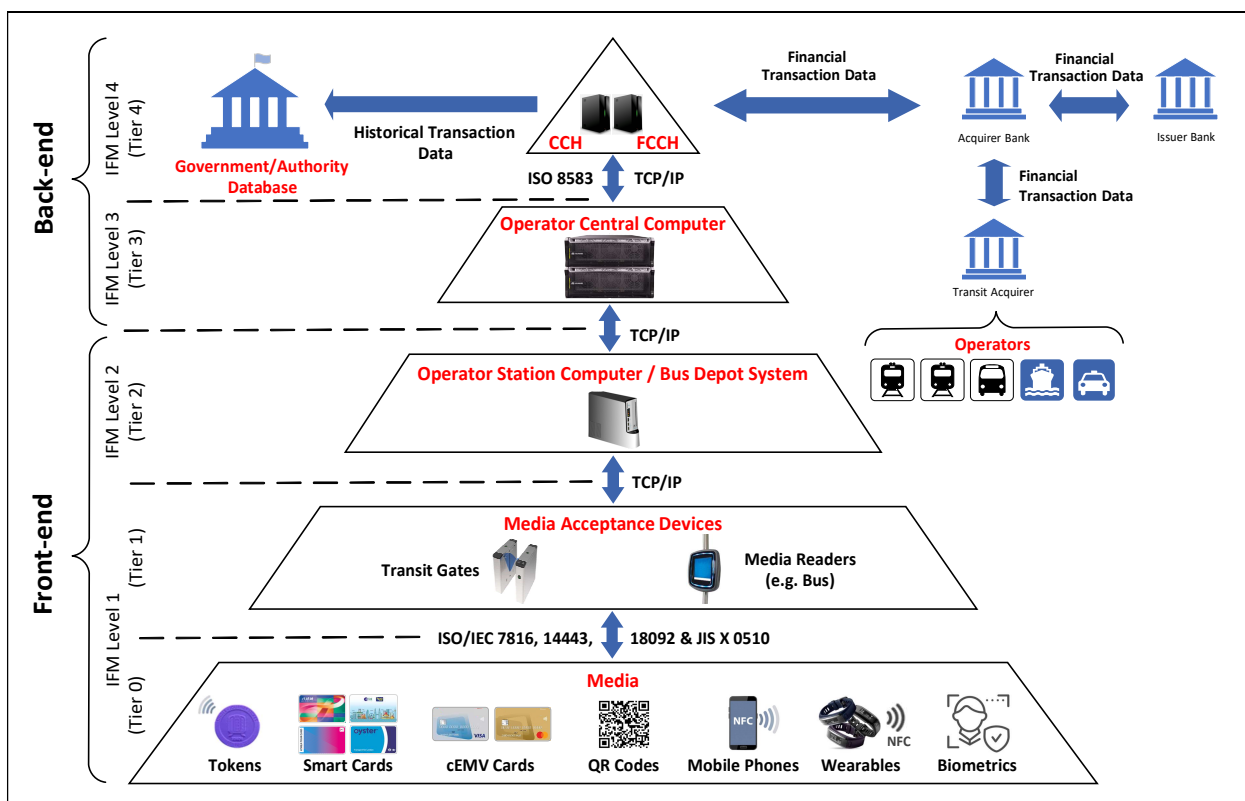
Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 1 Key Outputs of the Study

The details of the key outputs of the Study are as follows:

1) Passenger Fare and Travel Information Database Development Plan

The development of a passenger fare and travel information database requires an understanding of the entire Automatic Fare Collection (AFC) System (or Common Ticketing System Architecture) that relates to fare media, transit operators, financial institutions and related agencies, in order to be able to design the Functional Requirements of the Common Ticketing System and the Passenger Fare and Travel Information Database. The plan will ensure that the designed and implemented database meets international standards and is able to apply the collected data to policy formulation and planning for the development of the Common Ticketing System, transport infrastructure and services, including fare setting and planning for various transport modes (e.g., Bus Feeder routes), as shown in the Common Ticketing System Architecture (Figure 2).



- Remarks:
- ISO 8583: international standard for financial transaction card originated interchange messaging
 - ISO/IEC 7816: international standard related to electronic identification cards with contacts, especially smart cards, and more recently, contactless mobile devices,
 - ISO/IEC 14443: international standard for Identification cards - Contactless integrated circuit cards - Proximity cards is an international standard that defines proximity cards used for identification, and the transmission protocols for communicating with it
 - ISO/IEC 18092: international standard for defines communication modes for Near Field Communication Interface and Protocol (NFCIP 1) using inductive coupled devices operating at the centre frequency of 13, 56 MHz for interconnection of computer peripherals.
 - JIS x 0510: international standard for Automatic identification and data capture techniques - QR Code bar code symbology specification

Source: The Study of a Governance Plan for the Management of a Common Ticketing System

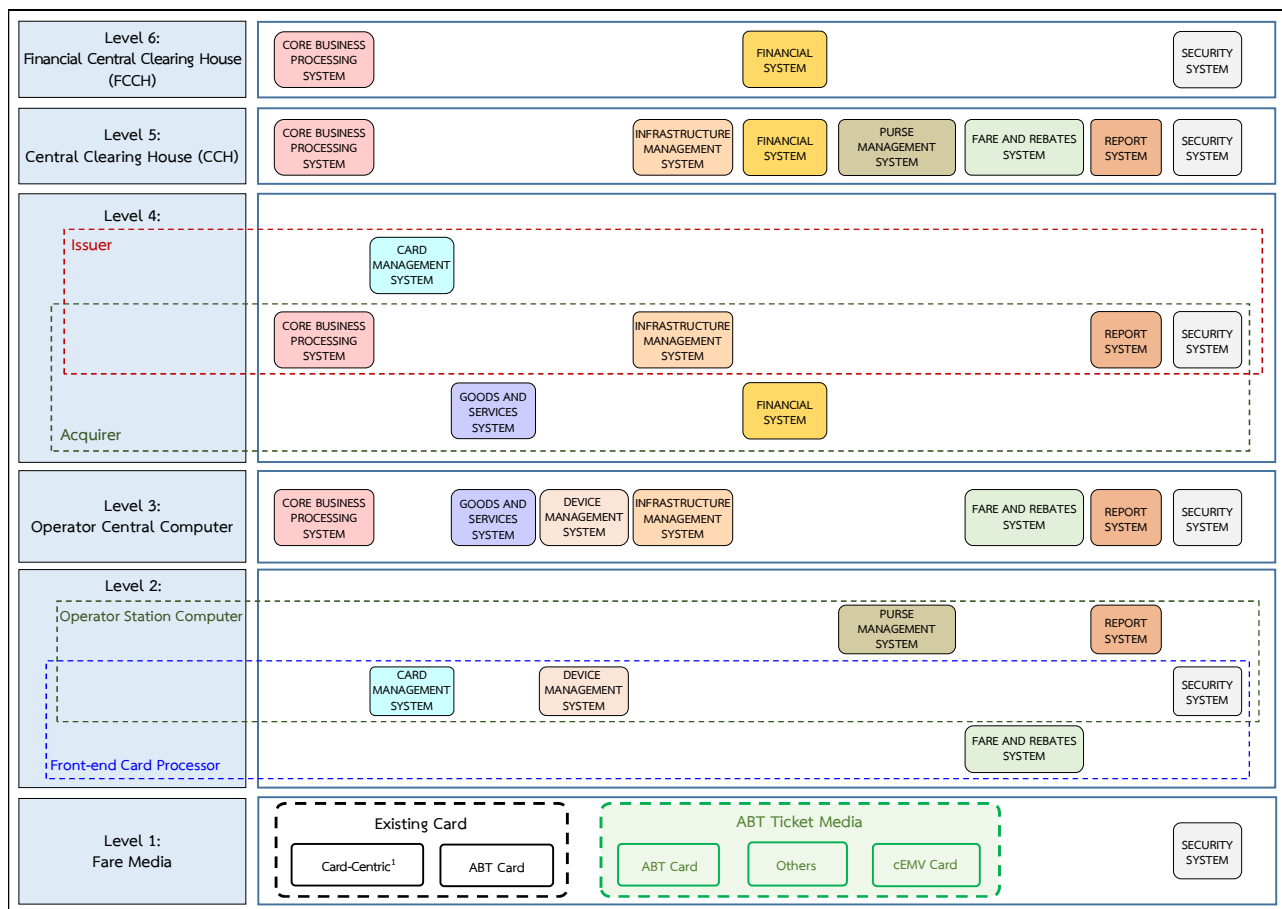
Figure 2 Common Ticketing System Architecture

The structure of the Common Ticketing System Architecture can be analysed and further expressed in processes and sub-systems, and can be divided, or classified, into 6 levels that assists the functional description for implementation. The structure, using these 6 levels for defining the functional requirements of the Common Ticketing System, together with the additional concepts for Account-Based Ticketing (ABT) and Contactless EMV (cEMV) is shown in Figure 3.

The Central Clearing House (CCH) is the heart of the Common Ticketing System, dealing with revenue collection, management and settlement that is linked to the central computer systems of each transit operator, Bank, or Non-Bank, and regulatory agents. The main functional structure related to the back-end database is divided into 2 parts: (1) Operator and (2) Clearing House, the latter is further divided into 2 main parts that work together, namely the Central Clearing House (CCH) and Financial Central Clearing House (FCCH).

The Operator must upgrade both their card reader system and software to be able to support the Common Ticketing System during the transition period. At that time, the current tickets will still be in use and the system will be concurrently developed to support ABT Ticket Media (including cEMV cards), that will be phased-in in the future. When fully implemented, the Operator must transmit the passenger transaction information for each period, yet to be defined, to the CCH and FCCH in order to process the revenue allocation of both the current tickets and ABT Ticket Media (including cEMV cards), as shown in Figure 4.

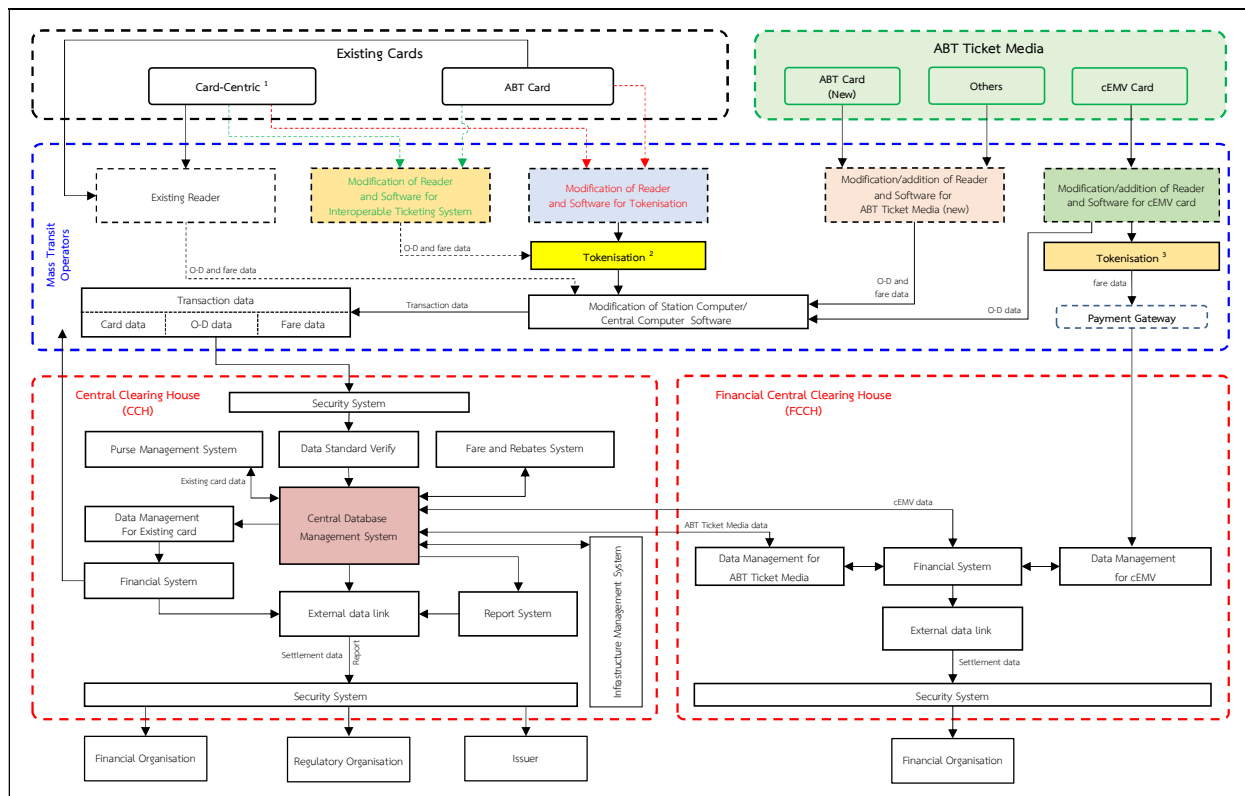
The passenger fare and travel information database system in the CCH is considered to be a significant Big Data asset essential for the management of the country, at both a micro and macro level. The database will contain important information on passenger fare and travel patterns, which will be obtained from fare payment transactions on the Mass Transit system and can be utilised by government agencies in policy formulation and planning for the development of the Common Ticketing System, transport infrastructure and services, including fare setting and planning for various transport modes, such as adjusting bus routes in accordance with people’s needs.



Remarks: ¹ Existing Card (Card-Centric) will be changed to ABT Ticket Media when the Common Ticketing and Common Fare implementation has been completed.

Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 3 Functional Requirements for the Common Ticketing System



Remarks: ¹ Existing Card (Card-Centric) will be changed to ABT Ticket Media when the Common Ticketing and Common Fare implementation has been completed.

² Tokenisation for ABT System

³ Tokenisation for EMV System

Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 4 Functional Requirements for the Central Database System of the Central Clearing House (CCH) and Financial Central Clearing House (FCCH)

It is estimated that the Passenger Fare and Travel Information Database Development Plan will be implemented in early 2027, to allow travel across different MRT systems using a common ticket. Further development of the system will follow, such that by mid-2027, it is estimated that the integration of common ticketing between other Mass Transit systems (e.g., Air-conditioned Buses and Passenger Boats) and mass rapid transit systems will be implemented. The implementation will be dependent upon the following responsible agencies, namely (1) Common Ticketing Company (CTC), (2) Common Ticketing Office, and (3) Transit Operators (subject to their readiness). Details of sub-tasks that need to be undertaken as part of the implementation are summarised as follows:

- 1) Pressing for the agreement of communication standards for e-Wallets, through negotiation with commercial banks and transit operators, as the responsible agencies, as well as pushing for communication standards for related equipment.
- 2) Upgrading of the card readers hardware (if appropriate) and software (by Transit Operators) to enable them to support ABT Ticket Media (including cEMV cards) and the transmission of passenger fare and travel information to the CCH.
- 3) In the initial phase, the CCH database system will be required to separately process current tickets and ABT Ticket Media (including cEMV cards) in order that the CCH and FCCH can operate without there being any significant impact on the current ticketing system.
- 4) The Passenger Fare and Travel Information data should be stored on one database for economy of scale and some travel information should be made available as Open Data to benefit the development of both public and private sector services.
- 5) Comply with Payment Card Industry Data Security Standard (PCI DSS) to protect cardholder data, which requires a tokenisation system to convert card number data into tokens that increases security.

2) Common/Single Fare Structure and Transaction Fees for the Common Ticketing System

(2.1) Concept of the Common/Single Fare Structure for the Common Ticketing System

Apart from the Common Ticketing System providing convenience for passengers that travel across all Mass Transit systems using various forms of ticket media and fare media, it is required to be used in conjunction with an efficient fare collection system, which includes a Common Fare.

There are many factors involved in fare setting, including cost and government support; however, the fare setting of the MRT systems at present is defined in the concession contracts, whereby each contract has a defined entry fee and inequitable fare per kilometre, including different fare adjustments.

Therefore, a model for fare setting of mass rapid transit systems in the urban area (excluding the SRT Red Line and Airport Rail Link, as they are suburban mass rapid transit systems and have a different fare structure from the urban MRT systems) is proposed by setting a common Fare Table for every MRT project to use, a maximum common fare rate and a common fare adjustment system, in order that the common fare policy is applied equitably.

In this regard, the proposed common/single fare structure, for MRT systems in Bangkok and its vicinity operated under the Common Ticketing System, will set the entry fee at 14 baht and the distanced-base fare at 2.15 baht per kilometre, including an exemption of the entry fee when changing between MRT systems. Fare adjustment will be applied by using the Consumer Price Index – without Foods and Beverages (CPI NFB) as shown in Table 1.

Table 1 Common/Single Fare Structure for the Mass Rapid Transit Systems in Bangkok and its Vicinity

Common Fare Structure	Year 2022	Year 2027	Year 2032	Year 2037
Entry Fee ¹	14.00	14.73	15.50	16.30
Distanced-base Fare/Kilometre ²	2.15	2.26	2.37	2.50

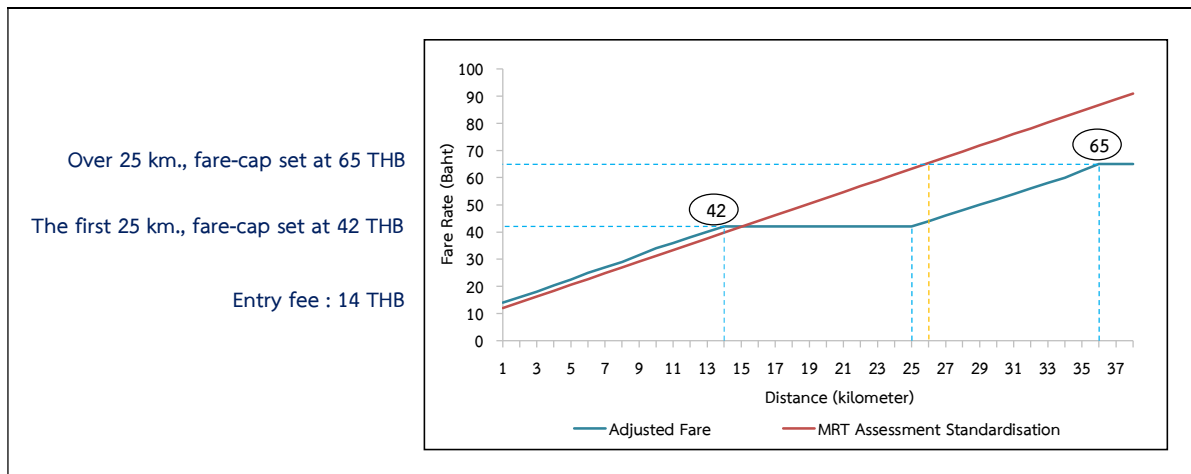
Remarks: ¹ Set the entry fee at 14 THB (equal to the entry fee of the Purple Line, Yellow Line and Pink Line), in accordance with the fare rate in current and future concession contracts of the mass rapid transit systems.

² Calculate according to Consumer Price Index without Foods and Beverages (CPI NFB) by assuming the inflation rate of CPI NFB at approximately 1.02% per year.

Source: The Study of a Governance Plan for the Management of a Common Ticketing System

To set the maximum fare, which is derived by considering passenger travel behaviour in Bangkok and its vicinity, in order to obtain a fare that will be acceptable to most passengers, a fare model with a 2-step fare-cap is considered optimal. That is, the fare starts at 14 baht and increases at 2.15 baht per kilometre, according to the distance travelled, up until the first 14 kilometres. The resulting fare rate, at 42 baht, will then become a flat fare (i.e., the first fare-cap) for journeys up until the 25th kilometre, which will cover more than 70% of total passenger journeys. Afterwards, a passenger will pay an additional fare per distance, at the same rate as previously applied (i.e., 2.15 baht per kilometre) to reflect the increased cost, until the fare reaches the second fare-cap at 65 baht for distances travelled beyond 36 kilometres (Figure 5).

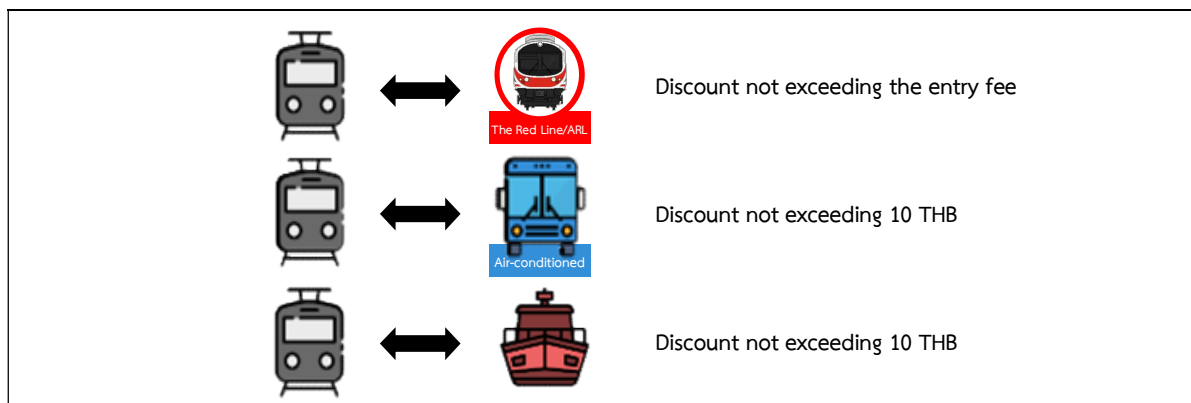
However, in order to enable all MRT projects to use a common Fare Table, it is recommended that consideration be given to amending the concession contracts, so that the public sector can subsidise the operators of the original concession contracts with respect to fare revenue differences. In addition, it is recommended that new concession contracts define the use of the common Fare Table, in accordance with the standard concession contract format, in order to preclude problems of integrating different fares and different systems in the future. Additionally, there should be a further study to produce guidelines for revenue allocation between the operators for transfer between MRT systems, since the common fare structure allows passengers to pay only once for an entry fee when travelling across more than one MRT system.



Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 5 The Proposed Common Fare Structure with a 2-step Fare-Cap

In the case of transfer between the MRT systems and other Mass Transit modes, if passengers were required to pay full fare on every mode, their journey costs would become too high. Therefore, it is suggested that Transfer Discounts should be applied for such transfer between the MRT systems and the SRT Red Line/ Airport Rail Link (ARL), air-conditioned buses and passenger boats (Figure 6).



Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 6 Transfer Discounts between the MRT Systems and other Mass Transit Modes

(2.2) Transaction Fees in the Common Ticketing System

The following describes the passenger fare and transaction fees collected when using the Common Ticketing System (i.e., ABT Ticket Media, including cEMV), which are classified by related agencies (Table 2):

- 1) Fare: a fare charged to a Passenger by an Operator,
- 2) Transaction Fee: the transaction fees in operation which consist of:
 - (1) Issuer Fee: the fees for the Issuer that are charged to a cardholder the first time the card is issued;
 - (2) Acquirer Fee: the fees incurred for accepting the payments on behalf of the transit operators involved for every payment, which consist of:
 - Merchant Discount Rate (MDR): the fees that the Financial Acquirer charges to an Operator for the operation costs, such as the employee wages, the rental fees for the communication system and the cost of the Financial Acquirer’s equipment investment,

- Interchange Fee: the fees that the Financial Acquirer pays to the Issuer by charging an Operator. This fee is divided by transaction type,
- Switching Fee / Card Scheme Fee (i.e., Network Fee or Assessment Fee): The costs paid by the Financial Acquirer to the Switching / Card Scheme depends on the transaction type and the country of payment, which can be divided into: (1) International Switching Card (Payable to either Visa, Mastercard, Union Pay, JCB or AMEX) and (2) Domestic Switching Card (Payable to either ITMX, PCC or TPN, depending on the card type),
- CCH Fee or Data Processing Fee: The fees paid by each Operator to the Central Clearing House (CCH) through the Financial Acquirer for the operation costs of data processing and revenue allocation to each Operator in accordance with their business agreement.

Table 2 Financial Transaction Flow from ABT Ticket Media (including cEMV Cards) Classified by Stakeholders

Items		Passenger	Issuer	Financial Acquirer	Switching/ Card Scheme	Operator	CCH
Fare							
Issuer Fee							
Acquirer Fee	Merchant Discount Rate (MDR)						
	Interchange Fee						
	Switching Fee / Card Scheme Fee						
	CCH Fee						
	(Data Processing Fee)						
Fare							
Issuer Fee							
Common Ticketing System Acquirer Fee							

Source: The Study of a Governance Plan for the Management of a Common Ticketing System

In order not to burden the operators and passengers, the control of Transaction Fees in the Common Ticketing System should be set in a framework of Transaction Fees in the Common Ticketing System, as shown in Table 3.

Table 3 The Proposed Transaction Fees in the Common Ticketing System

Card Type	Fee
ABT Card / Card-Centric (on transport system)	≤ 1.00% ¹
Domestic Debit Card (cEMV Card)	≤ 0.55% ²
Domestic Credit Card (cEMV Card)	≤ 0.80% ¹

Source: ¹ Primary Data, Secondary Data and analysed by the Consultant

² Bank of Thailand

(2.3) The Application of the Common Fare Structure and Transaction Fees

The action plan for the application of the Common Fare Structure and Transaction Fees consists of:

- An announcement of the rules for defining the Transaction Fees in the Common Ticketing System within the fourth quarter of Year 2023,
- A promulgation of the Common Fare for mass rapid transit systems within the fourth quarter of Year 2023, A promulgation of the Transfer Discounts for the transfer between the MRT systems and MRT Red Line/ Airport Rail Link (ARL), or the MRT systems and air-conditioned buses and passenger boats, within the first quarter of Year 2024

3) Common Ticketing System Investment Plan

The application of the Common Ticketing System and the Common Fare across the Mass Transit system, by defining a common/single fare structure, makes the actual fare for each passenger significantly lower, as the entry fee would be paid only once when travelling across different MRT systems. This will reduce journey costs for passengers and thus encourages more travellers to use the Mass Transit system. At the same time, it will also influence passenger's behaviour to move from using a single journey ticket to a common ticket, which will be more convenient and saves time, since it precludes waiting in line for exchanging coins and buying tickets.

At the beginning, the transit operators' revenue may decrease, but in the long run, it is anticipated they should earn higher revenue due to increased passenger numbers, which, in turn, will reduce the impact of decreased revenue when using the Common Fare. The long-term result is that the transit operators will tend to earn higher revenues when using the Common Fare than they would expect to earn without using it.

Therefore, it is necessary to establish the "Common Ticketing System Supporting Fund" to be a governmental tool to subsidise the investment in, and operation of, the transit operators who participate in the Common Ticketing System and the Common Fare. The reasons for the establishment of the "Common Ticketing System Supporting Fund", are as follows:

- To be a flexible financial mechanism for the public sector to help support the investment in the Common Ticketing System in order that the system can operate smoothly, as planned, and
- To be a financial mechanism to subsidise the operation of the private transit operators, to enable them to provide service continuity in order to maximise benefits to all passengers.

The Common Ticketing System Investment Plan, including the investment estimation, is considered in 2 parts; (1) the investment for the preparation of the Common Ticketing System operation, and (2) the expenses for supporting the operation of the Common Ticketing System (under the "Common Ticketing System Supporting Fund").

(3.1) The Investment for the Preparation of the Common Ticketing System Operation

The investment for the preparation of the Common Ticketing System operation consists of:

- (1) Investment in the development of the Central Clearing House (CCH) :** This refers to the development of the Common Ticketing System, ABT, and Passenger Fare and Travel Information Database. This investment must occur before the implementation of the Common Ticketing System; therefore, the government should support the budget for establishment of these dependent systems in order that the Common Ticketing System can be implemented in accordance with the development direction and specified timeframe.
- (2) Investment in upgrading parts of the transit operator systems:** This refers to the upgrading of the Automatic Fare Collection (AFC) system (Front-end and Back-end) of each transit operator so that they are able to support the Common Ticketing System. This investment may vary for each Mass Transit system due to the differences in the current fare collection system standards of each operator. Therefore, the government should support the investment by the transit operators (directly or indirectly), to ensure the installation of the upgraded systems before the implementation of the Common Ticketing System and the Common Fare (approximately 2 years).

(3.2) The Expenses for Supporting the Operation of the Common Ticketing System (under the “Common Ticketing System Supporting Fund”)

The expenses for subsidising the operation of the Common Ticketing System and the Common Fare are considered as the costs for supporting the operation, development and promotion of the management of the Common Ticketing System, including the operations of transit operators who are affected by their participation in the Common Ticketing System. It, therefore, consists of funds to support the upgrading of transit operators’ AFC systems, as mentioned above, and to subsidise the revenue difference (i.e., decrease) experienced by the MRT operators who currently provide services under the PPP Net Cost Agreement¹, which is divided into the following 2 scenarios:

- The proposed public sector policy is to subsidise the revenue difference, when the MRT systems use the Common Fare, calculated from the revenue obtained from the fare structure under the PPP Net Cost Agreement of each operator compared with the revenue that the operators obtain when using the Common Fare structure.
- The proposed public sector policy is to subsidise the revenue difference, when the MRT systems use the Common Fare, with regard to Transfer Discounts for the transfer between the MRT systems and the Airport Rail Link (ARL), air-conditioned buses and passenger boats, since this discount is deducted from the fare revenue of the MRT operators when passengers travel across the different systems. This subsidy is limited to MRT operators only.

The subsidies described for both scenarios are proposed guidelines for the public sector to consider when setting policies for the management of the Common Fare and Transfer Discounts, including defining the accountability of the Common Ticketing System Supporting Fund and weighing up the long-term burden for the public sector budget. In this regard, the direct subsidy from the public sector through the Common Ticketing System Supporting Fund should end when the current committed PPP Net Cost Agreements with the related government agencies end (around the year 2052).

Since the burden for supporting the revenue difference for operators using the Common Fare and the Transfer Discounts is a significant amount and a long-term commitment, the public sector is required to consider the comparison of benefits received by Mass Transit System passengers with the public sector burden of supporting the smooth implementation of the Common Ticketing System through the Common Ticketing System Supporting Fund. The expenditures of the Common Ticketing System Supporting Fund (from 2027-2052) are divided into 3 parts, as follows:

- (1) Approximately 2,400 million baht for supporting the investment in upgrading the AFC systems of transit operators who participate in the Common Ticketing System,
- (2) Approximately 43,120 million baht for subsidising the revenue difference of MRT systems, and
- (3) Approximately 14,840 million baht for subsidising the Transfer Discounts.

The implementation of support from the public sector through the Common Ticketing System Supporting Fund are considered in the following 2 scenarios:

1st Scenario: To support the MRT systems

The public sector gives financial support for:

- (1) The expenditures for supporting the investment in upgrading the AFC system of the transit operators who participate in the Common Ticketing System (if necessary), and
- (2) The expenditures for supporting transit operators for the revenue difference of the MRT systems.

The additional revenue from increased number of passengers (induced demand), will be deducted from the fund expenditure, thus reducing the overall expenditure to approximately 35,340 million baht or about 1,310 million baht per year on average.

¹ Consisting of the Green Line, Blue Line, Pink Line, and Yellow Line

2nd Scenario: To support the transfer between MRT Lines and other Mass Transit modes

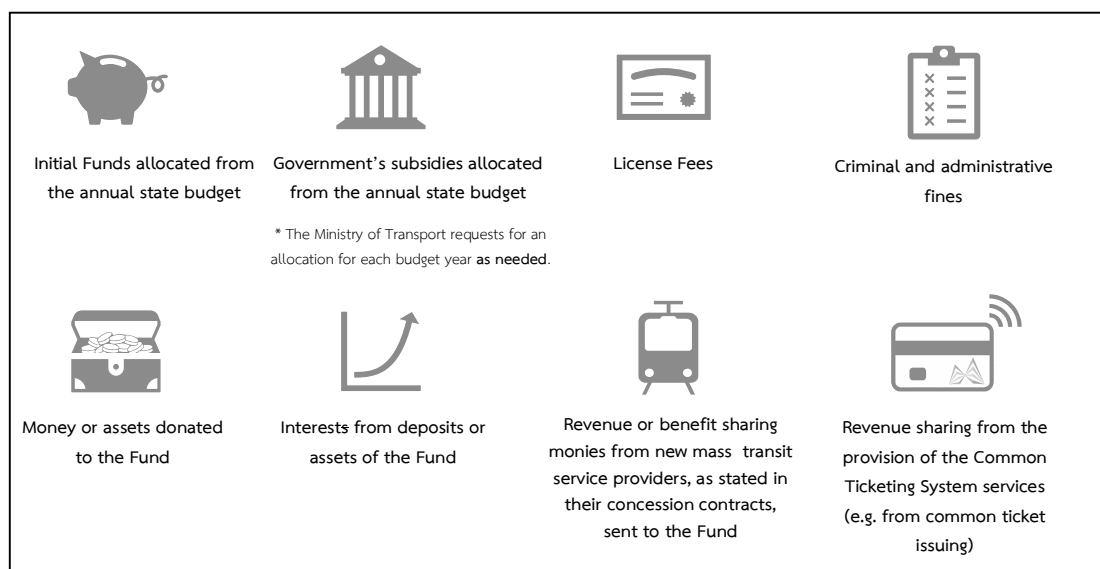
The public sector gives financial support for:

- (1) The expenditures for supporting the investment in upgrading the AFC system of the transit operators who participate in the Common Ticketing System (if necessary),
- (2) The expenditures for supporting the revenue difference of the MRT systems, and
- (3) The expenditures for supporting the Transfer Discounts for the transfer between MRT lines and the Airport Rail Link (ARL), air-conditioned buses and passenger boats.

The additional revenue from increased number of passengers (induced demand), will be deducted from the fund expenditure, thus reducing the overall expenditure to approximately 48,620 million baht or about 1,805 million baht per year on average.

(3.3) Possible Sources of Revenue for the Common Ticketing System Supporting Fund

The establishment of the Common Ticketing System Supporting Fund, under the Draft Common Ticketing System Management Act, B.E...., defines sources of revenue, as shown in Figure 7. However, it can be said that the size of such revenues is not significant enough to fully support all of the expenditures of the Common Ticketing System Supporting Fund. Therefore, additional sources of funds are required (Table 4).



Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 7 Sources of the Common Ticketing System Supporting Funds

Table 4 Feasibility of Other Revenues to Support the Operation of the Common Ticketing System Supporting Fund

Source of Revenue for the Common Ticketing System Supporting Fund	Short-term Feasibility	Long-term Feasibility
1. Internal source (inside the Ministry of Transport)	<ul style="list-style-type: none"> - Benefits that investors pay to the public sector according to the joint venture agreements of the MRT systems - Profit sharing of state enterprises within the Ministry of Transport - A sharing of taxes and fees related to the use of a personal vehicle paid to the Department of Land Transport 	<ul style="list-style-type: none"> - Revenue from the development of Transit-Oriented Development (TOD) - A share from the provision of information services - Benefits from future joint venture agreements with the MRT systems
2. External source (outside the Ministry of Transport)	<ul style="list-style-type: none"> - Annual budget (Initial fund and annual subsidy) 	<ul style="list-style-type: none"> - Revenue sharing from Road Pricing measures - Tax sharing from the land near the MRT stations

Source: The Study of a Governance Plan for the Management of a Common Ticketing System

From Table 4, it can be seen that the use of funds obtained from sources within the Ministry of Transport, especially those related to the MRT systems and transport within Bangkok and its vicinity, to support the Common Ticketing System Supporting Fund is the most reasonable approach. This is evident, since the purpose of the Common Ticketing System Supporting Fund is to support travel within Bangkok and its vicinity, through efficiency and lowering costs, compared to those at the present, as well as facilitating continuous and equitable Mass Transit systems services for the operators. However, the feasibility of using funds from various sources, as mentioned above, to support the Common Ticketing System Supporting Fund will require a change of policy at ministry level to direct the related agencies to give their co-operation. Although there are several appropriate and feasible alternatives to determine sources of revenue for the Common Ticketing System Supporting Fund, there are also restrictions on the allocation of funds from agencies that own the source of funds, and on the amount of revenue, which results in there not being sufficient funds to cover the expenditures of the Common Ticketing System Supporting Fund.

In this regard, the investment in the Common Ticketing System and the establishment of the Common Ticketing System Supporting Fund are required to gain full support and clear policy guidance, in order to enable related agencies in all sectors to focus on actions that will achieve the goals and benefits for the public, by specifying the objectives for the use of funds to support people through the transit operators (similar to the Public Transport Fund (PTF) of the Republic of Singapore (Singapore)). The objectives should clearly define the source of funds, fund raising activities, including the setting of conditions and necessary negotiations to support transit operators who will be affected by the implementation of the Common Ticketing System and the Common Fare system that will be completed within the third quarter of 2025. This is to match the timing for the commencement of the Common Ticketing System and Common Fare, as well as transfer discounts (if any), in 2027.

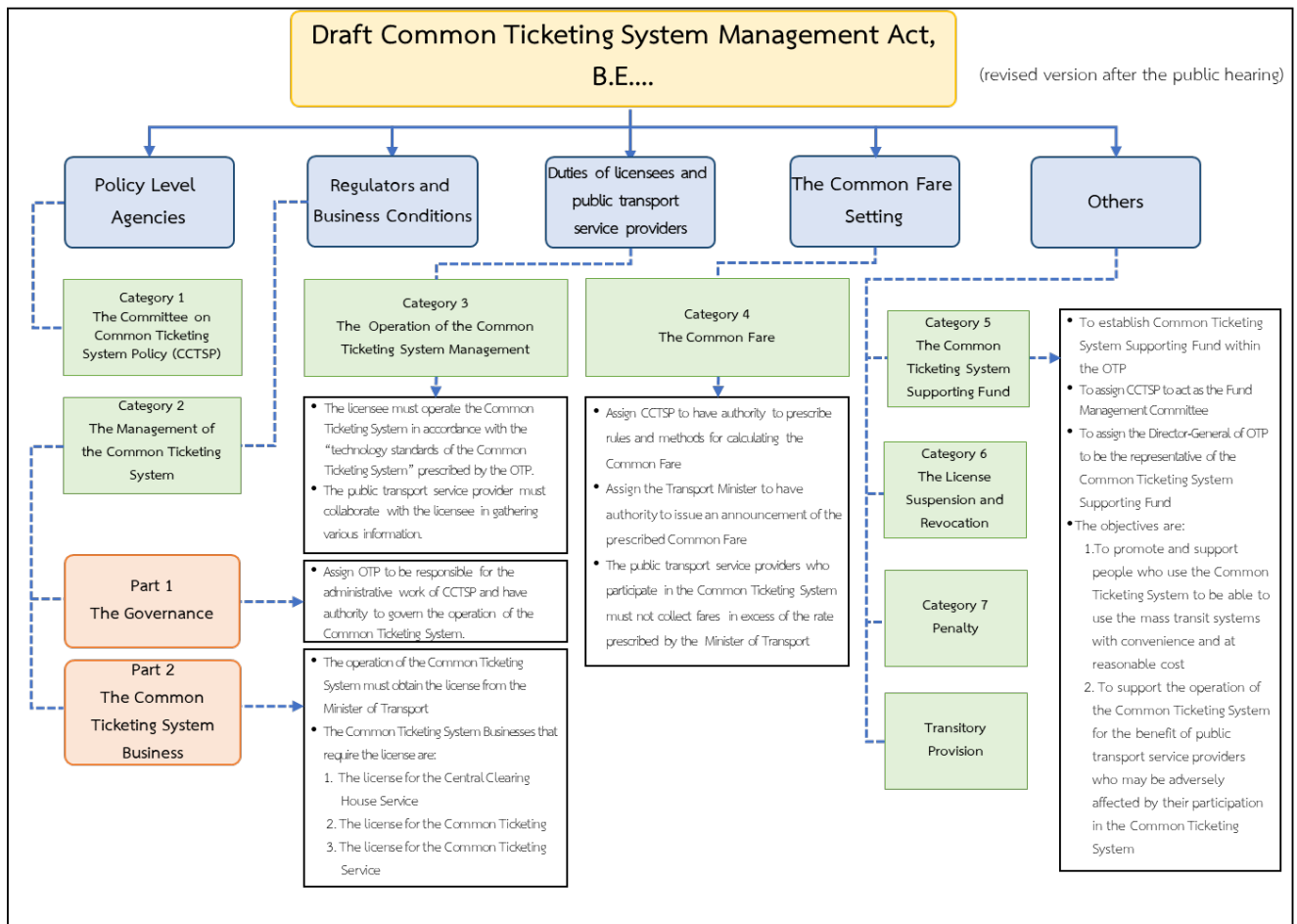
4) Draft Governance Act for Common Ticketing System Management, the Provision of Funding for the Common Fare Subsidy, and the Provision of Travel Information

As part of “The Study of a Governance Plan for the Management of a Common Ticketing System”, an analysis was undertaken and guidelines prepared for a Draft Governance Act for Common Ticketing System Management, which is consistent with the current situation and incorporates results and recommendations from the study. The Draft Act was prepared by updating the Draft Common Ticketing System Management Act, B.E...., and has been submitted to the Cabinet.

However, if the Common Ticketing System Management Act, B.E.... is to be effective, the governance of fares for the Common Ticketing System, whether they are for the MRT systems, buses or passenger boats, etc., will be undertaken by the Committee on Common Ticketing System Policy (CCTSP). This committee will be a policy level agency (Policy Maker) that has the authority to define policy for the management of the Common Ticketing System, to prescribe guidelines and operation periods, issue regulations and other matters necessary to achieve the true integration of the Common Ticketing System. Also, the Act defines the Regulator as the agency for governing the management of the Common Ticketing System.

In addition, the Common Ticketing System Management Act, B.E.... will also be important for establishing a Fund to help support the implementation, development and promotion of the management of the Common Ticketing System, as well as supporting people who use the Common Ticketing System or wider transportation system. The Act enables the Common Fare setting for all modes of the Mass Transit system, the exemption of the entry fees and the provision of travel information. Therefore, the study focused on considering the above issues and other important related matters.

Upon the review of laws related to the management of the Common Ticketing System, both domestically and internationally, including the suggestions obtained from the public hearing in accordance with Section 77 of the Constitution of the Kingdom of Thailand, it is recommended to improve the Draft Common Ticketing System Management Act, B.E.... for more clarity in the enforcement of law and creating a common understanding. The structure of the Draft Common Ticketing System Management Act, B.E...., revised version after the public hearing, under The Study of a Governance Plan for the Management of a Common Ticketing System, is shown in Figure 8.



Remarks: CCTSP : The Committee on Common Ticketing System Policy, OTP : Office of Transport and Traffic Policy and Planning,
Source: The Study of a Governance Plan for the Management of a Common Ticketing System

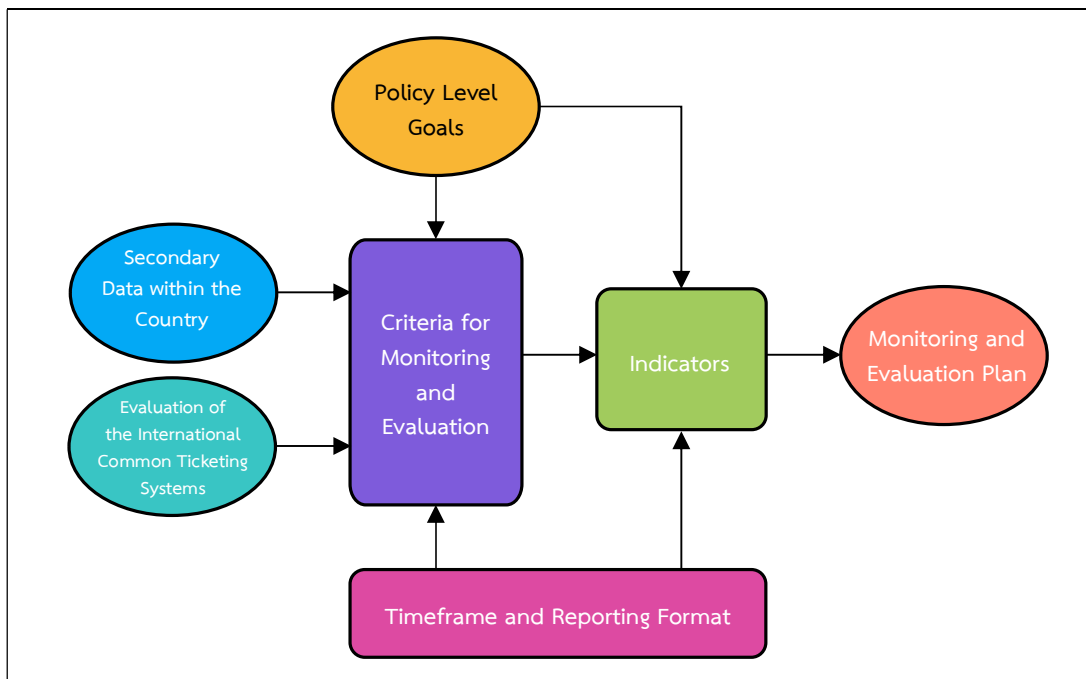
Figure 8 The Structure of (Draft) Common Ticketing System Management Act, B.E....
(revised version after the public hearing)

5) Plan and Guidelines for Monitoring and Evaluation

When the development of the Common Ticketing System is complete and it provides services to the public, a process of performance monitoring and evaluation is required to maintain the efficiency and quality of services, as well as to support further development in the future. In this regard, the conceptual framework for monitoring and evaluation with Key Performance Indicators (KPIs), as developed in this study, is summarised in Figure 9.

The defined KPIs should use the passenger volume information that is currently stored for immediate processing. When developing KPIs, comparable international KPIs shall be reviewed, as well as the goals and policies of the government and the Ministry of Transport. These will be incorporated in the Common Ticketing System KPIs, which will primarily be based on the number of passengers, adding KPIs on savings and the convenience of passengers using the Mass Transit systems, as follows:

- 1) Increased percentage number of passengers using the Mass Transit systems in Bangkok and its vicinity,
- 2) Decreased percentage of passengers' total travel cost comparing the periods before and after the project implementation, and
- 3) Percentage of passengers who pay fares via the Common Ticketing System.



Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 9 The Conceptual Framework for Monitoring and Evaluation

In this regard, the KPIs and targets applied should be periodically reviewed, in order to assess whether they remain appropriate for the prevailing situation (i.e., approximately every 3-5 years after project implementation). The Baseline Data (if any) should be used for the interviews of persons who are responsible for, or related to, each mode of transport by:

- 1) Considering the type and range of the data
- 2) Reviewing past data for at least 3 years, as long as there is the latest data to verify its consistency over the time series. If there is a period where there is missing data, the data values can be replaced with estimations.

However, the responsible body for the implementation of the monitoring and evaluation plan should be the Committee on Common Ticketing System Policy, with the Office of Transport and Traffic Policy and Planning (OTP) as secretary. In addition, there should be mutual agreement between all related agencies that they will be jointly responsible for the success of the indicators in the plan, by adopting them, or defining indicators that are consistent with the missions of the agencies and responsive to the objectives of the Committee on Common Ticketing System Policy and the Ministry of Transport.

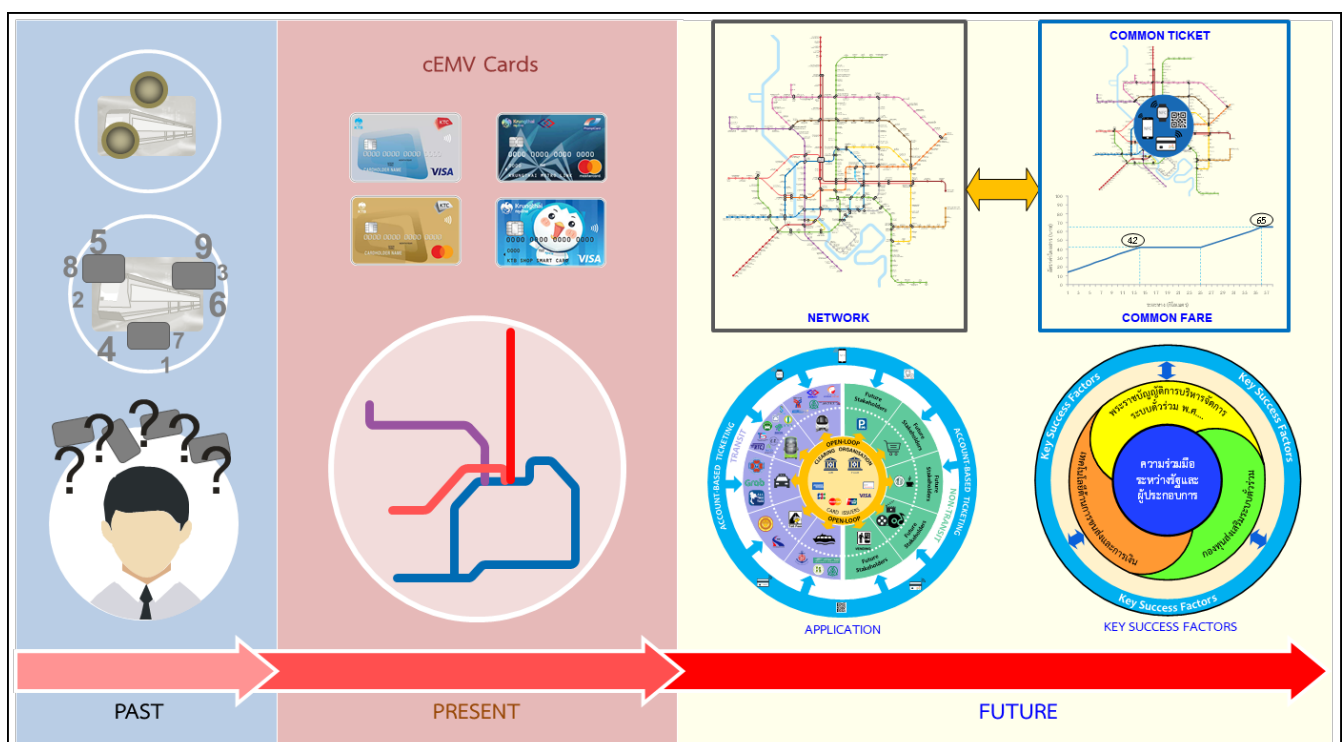
6) Governance Plan for the Management of a Common Ticketing System

The Governance Plan shall ensure the continuous and efficient management of the Common Ticketing System by using a Common Fare policy that encourages the transit operators to sustainably participate in the Common Ticketing System, and develops the travel information database and ABT systems (including cEMV cards). In addition, the Ministry of Transport and related agencies should formulate policies and plans for transport development, which are not redundant, provide savings in the annual government budget, increase income to the public sector and ultimately increase the convenience for people travelling on the Mass Transit systems, rather than private cars. This, in turn, will reduce traffic congestion problems and air pollution in the urban area. The scope of the Governance Plan for the Management of the Common Ticketing System is, therefore, required to encompass both transport technology and the financial sectors, including a law to support current and future development.

As for the structure for the management and governance of a Common Ticketing System in Thailand, when considering roles and responsibilities of the Mass Transit agencies related to the Common Ticketing System, the responsible government agencies are identified as (1) Policy Agencies, (2) Governing Agencies, (3) Service Provider Agencies, and (4) Infrastructure Development Agencies. Since their roles and responsibilities are complex, if there is no clear structure for the management and governance of a Common Ticketing System, it will be difficult to realise the aims of integrating the Common Fare structure and unifying policy decision making. The key actions that the public sector is required to deliver, in parallel with the development of the Common Ticketing System, are focused on the development of technical governance capability, which consists of technology, information and financial security, in order to build reliability, efficiency and governance into the Common Ticketing System. Therefore, the roles and responsibilities of the government agencies related to the Mass Transit system need to be reviewed, improved and defined in order that each agency is able to perform its roles and responsibilities clearly, contribute to the efficiency and effectiveness of the Common Ticketing System, and be consistent with the concept for its' development.

However, if the Common Ticketing System in Thailand employs an ABT system, exploits the benefits of contactless technology and utilises existing financial payment networks, it can benefit transit operators by reducing costs of procurement, ticketing and running various transactions, even though it may require an adjustment to appropriate procedures and fees. Moreover, in an open payment system scenario, the cardholder may also use their card for the purchase of goods/services in the non-transit sector. In this regard, the concept for the Governance Plan for the Management of a Common Ticketing System, which is consistent with the concept for the development of the Common Ticketing System, includes fare payment employing an ABT system, including cEMV cards, that supports future payments in the non-transit sector.

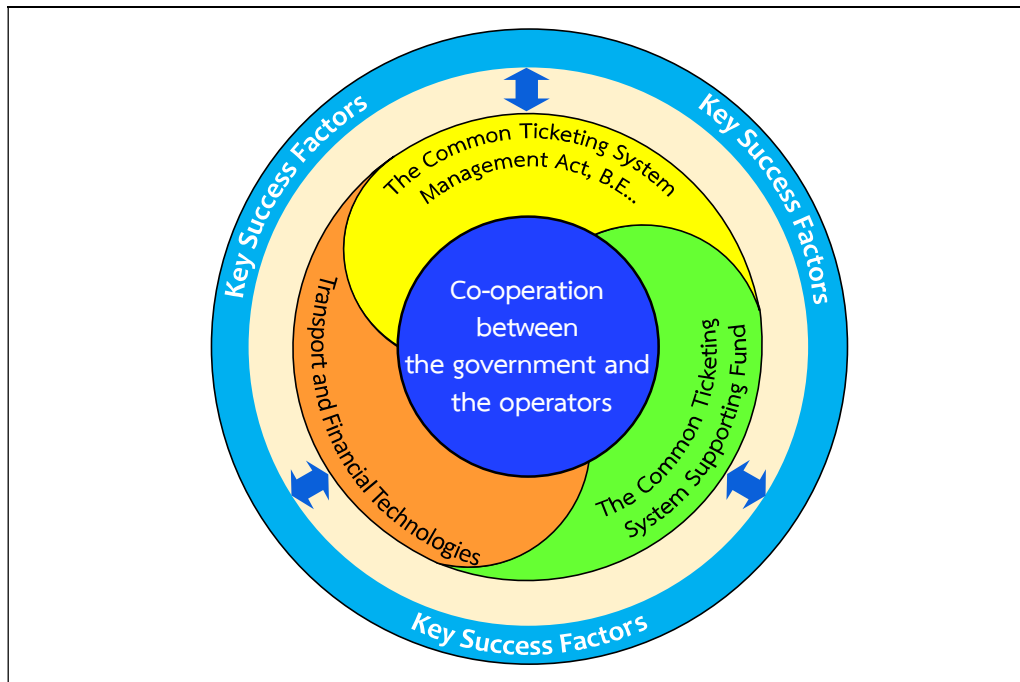
When examining the usage policy of cEMV cards by the Ministry of Transport, it is understood that people can already use cEMV cards on the Purple Line, Blue Line and SRT Red Line (i.e., within 2022), as shown in the concept for the development of the Common Ticketing System in Thailand (Figure 10). In addition, the concept shows that people will be able to use the ABT system and the Common Fare in various modes of the Mass Transit system, as well as other services, in the future.



Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 10 The Concept for the Development of the Common Ticketing System

However, the key success factors for the development of the Common Ticketing System, according to the above concept (see Figure 11), consist of (1) Transport and Financial Technologies, (2) the Common Ticketing System Supporting Fund (3), the Common Ticketing System Management Act, B.E...., and (4) co-operation between the government and the operators. When the key success factors related to technology, the fund and legislation are achieved and ready to support the Common Ticketing System, co-operation from many public and private agencies, especially the operators of the transport system/payment system, is needed for the efficient and effective implementation of the Common Ticketing System.



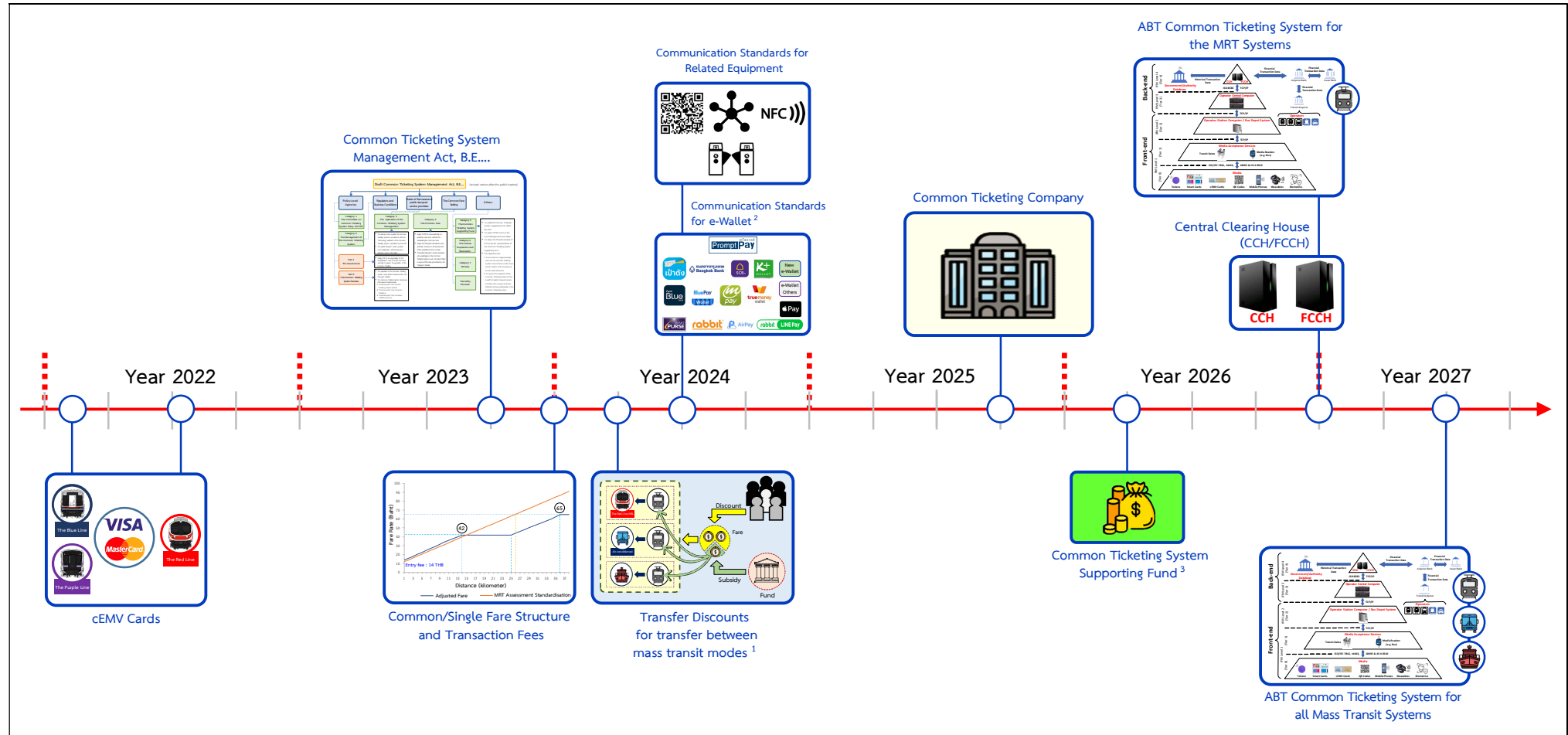
Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 11 Key Success Factors of the Common Ticketing System

All of the above concepts feed into the preparation of the Governance Plan for the Management of a Common Ticketing System in the form of a 3rd Level Plan, with the title of “The Action Plan for the Governance of the Management of a Common Ticketing System (2022-2027)”. The activities of the Governance Plan for the Management of a Common Ticketing System (2022-2027) have a single key output, that is, the ABT Common Ticketing System for the Mass Transit systems. The key outputs from the implementation of all activities are summarised in an integration plan for the development of the ABT Common Ticketing System (Figure 12) and are listed respectively, as follows:

- Use of cEMV cards (on the MRT Purple Line, Blue Line and SRT Red Line),
- The Promulgation of the Common Ticketing System Management Act, B.E....,
- The Promulgation of Common/Single Fare Structure and Transaction Fees,
- The Promulgation of Transfer Discounts for transfer between mass transit modes,
- Communication Standards Development for e-Wallets,
- The Promulgation of Communication Standards for Related Fare Equipment,
- The Establishment of the Common Ticketing Company (CTC),
- To set up the Common Ticketing System Supporting Fund,
- Central Clearing House (CCH/FCCH) development, and
- ABT Common Ticketing System development (1st Phase for the MRT Systems, 2nd Phase for all Mass Transit Systems)

However, the implementation period may be changed subject to the promulgation of the Common Ticketing System Management Act, B.E.



Remarks: ¹ Subject to the negotiation of a business agreement
² A setting of communication standards between e-Wallet and PromptPay systems applied in the Common Ticketing System
³ The time period may change subject to the promulgation of the Common Ticketing System Management Act

Source: The Study of a Governance Plan for the Management of a Common Ticketing System

Figure 12 Integration Plan for the Development of the ABT Common Ticketing System

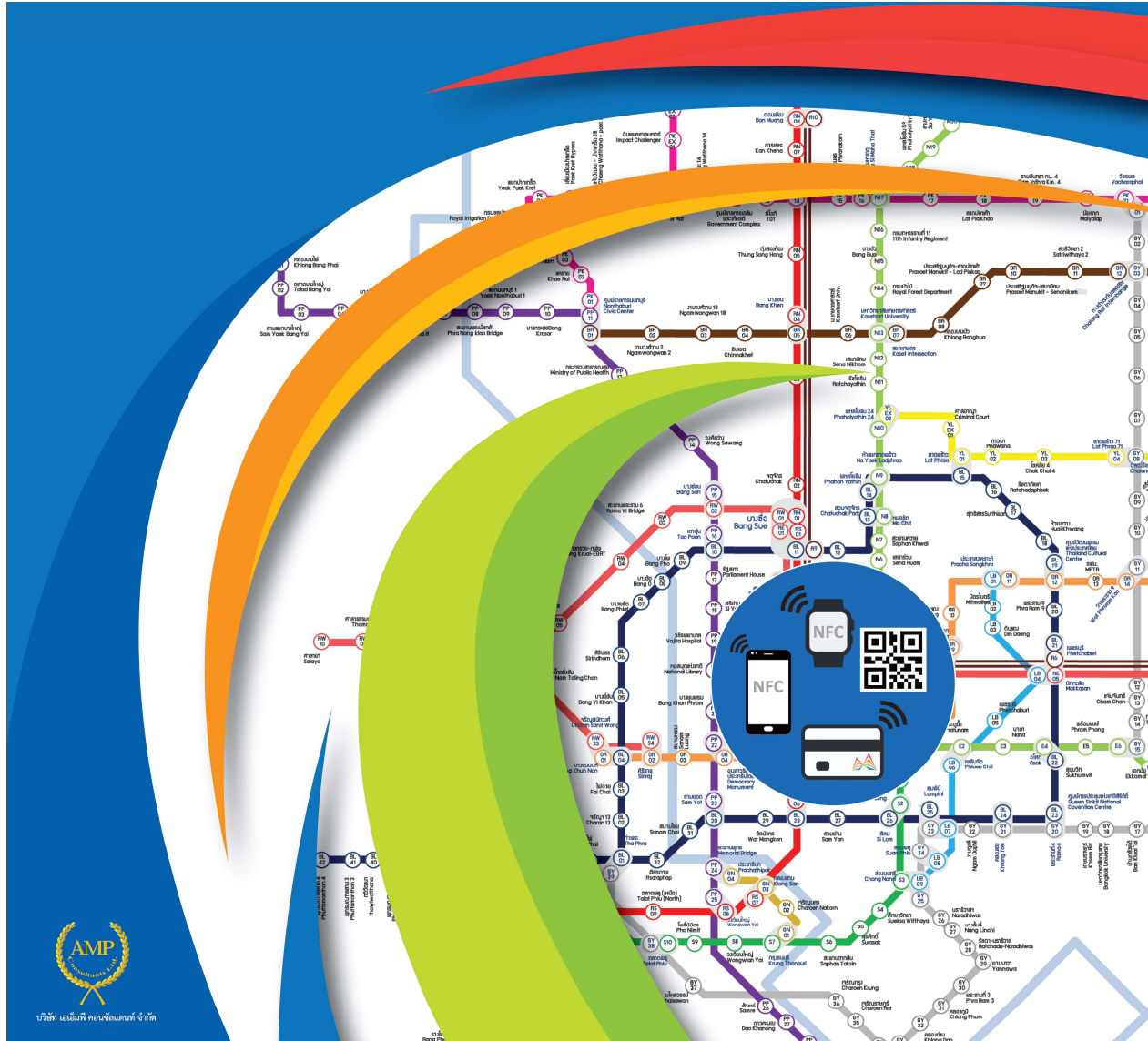
Supplementary Document



Ministry of Transport



Office of Transport and Traffic Policy and Planning



The Study of a Governance Plan for the Management of a Common Ticketing System

3rd Seminar
November 2022

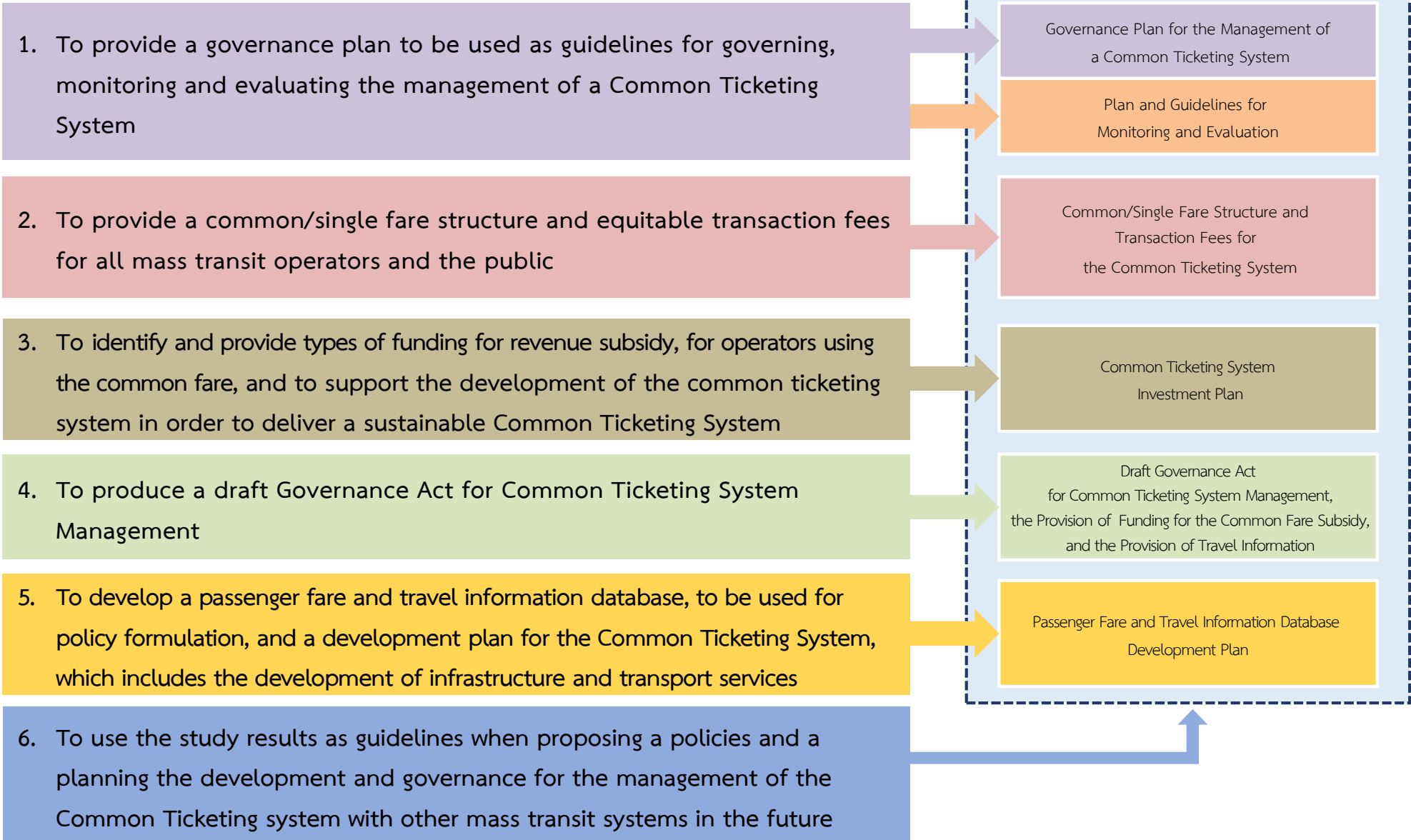


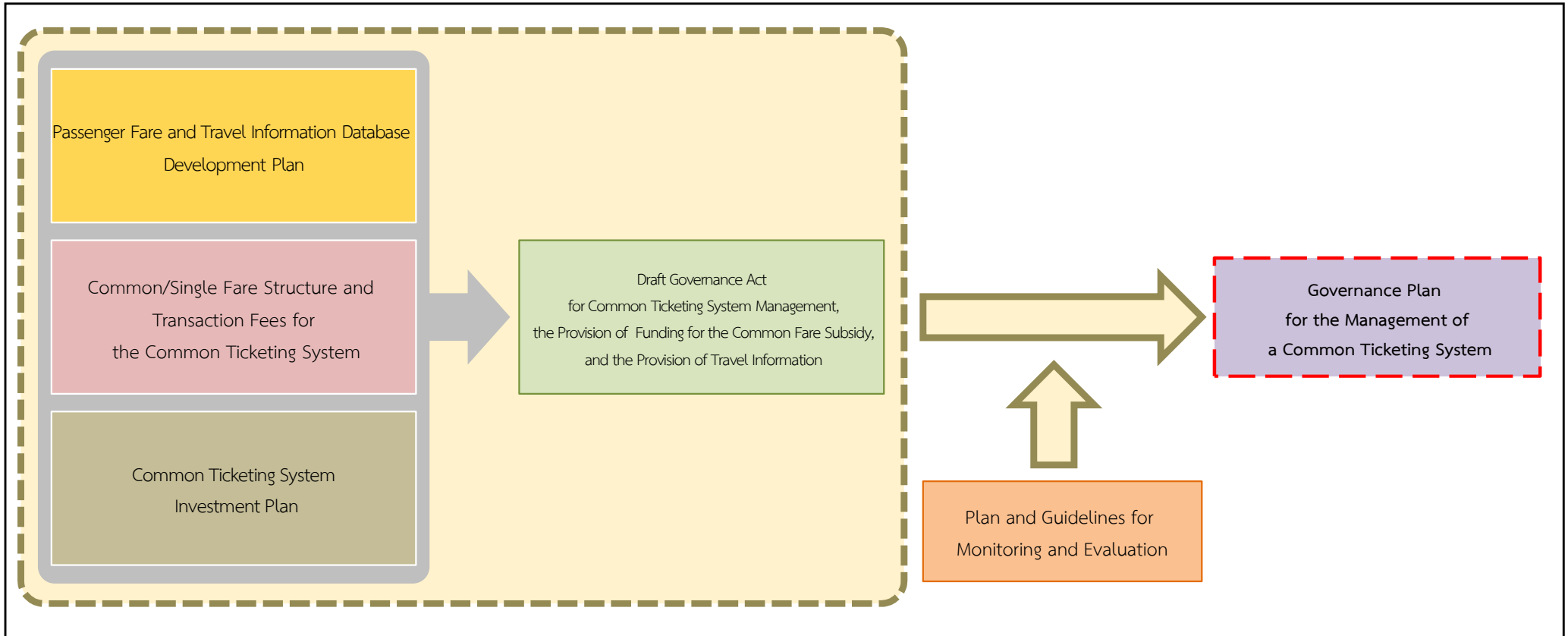
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Study Objectives

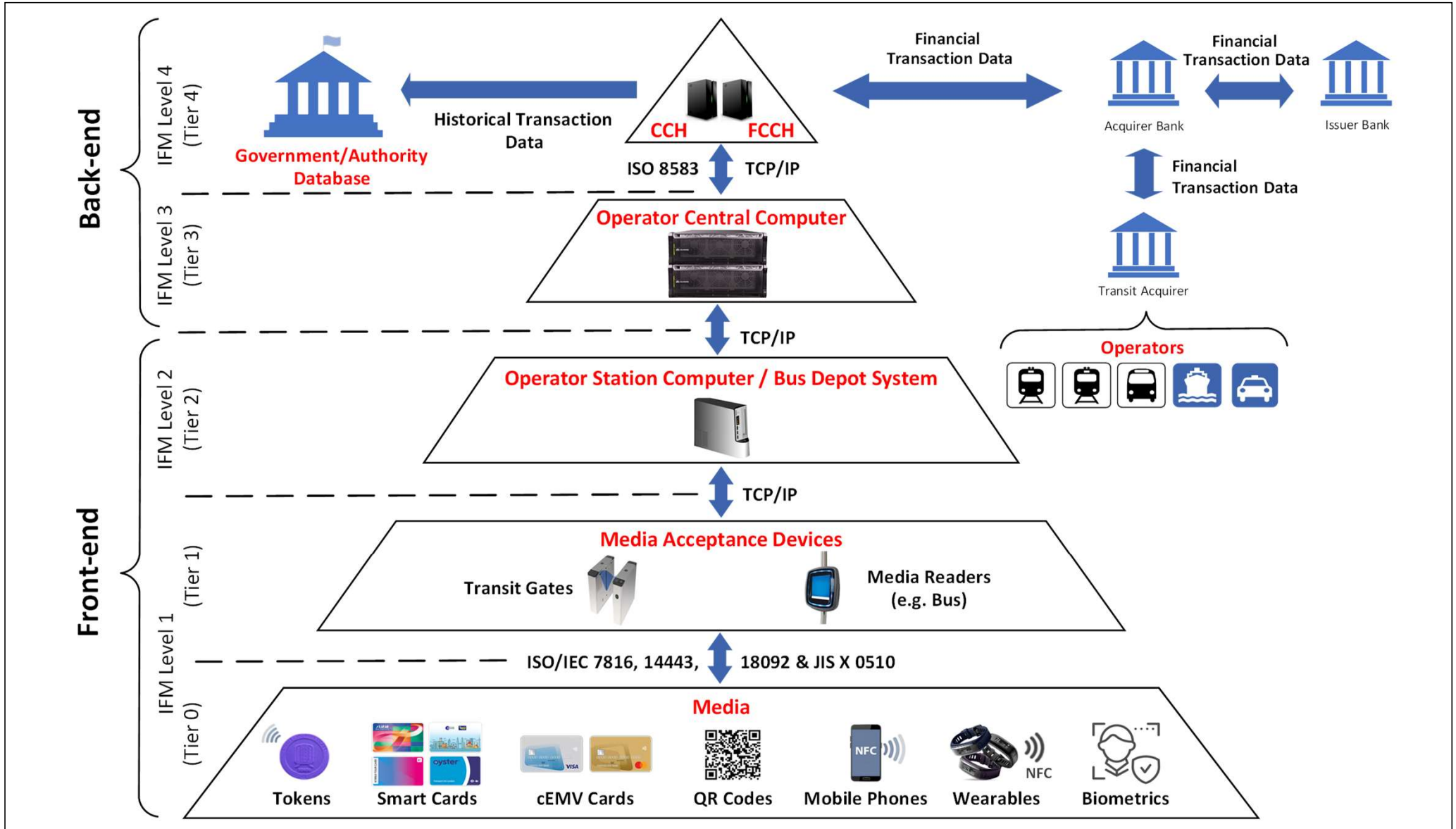
Key Outputs of the Study





Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning

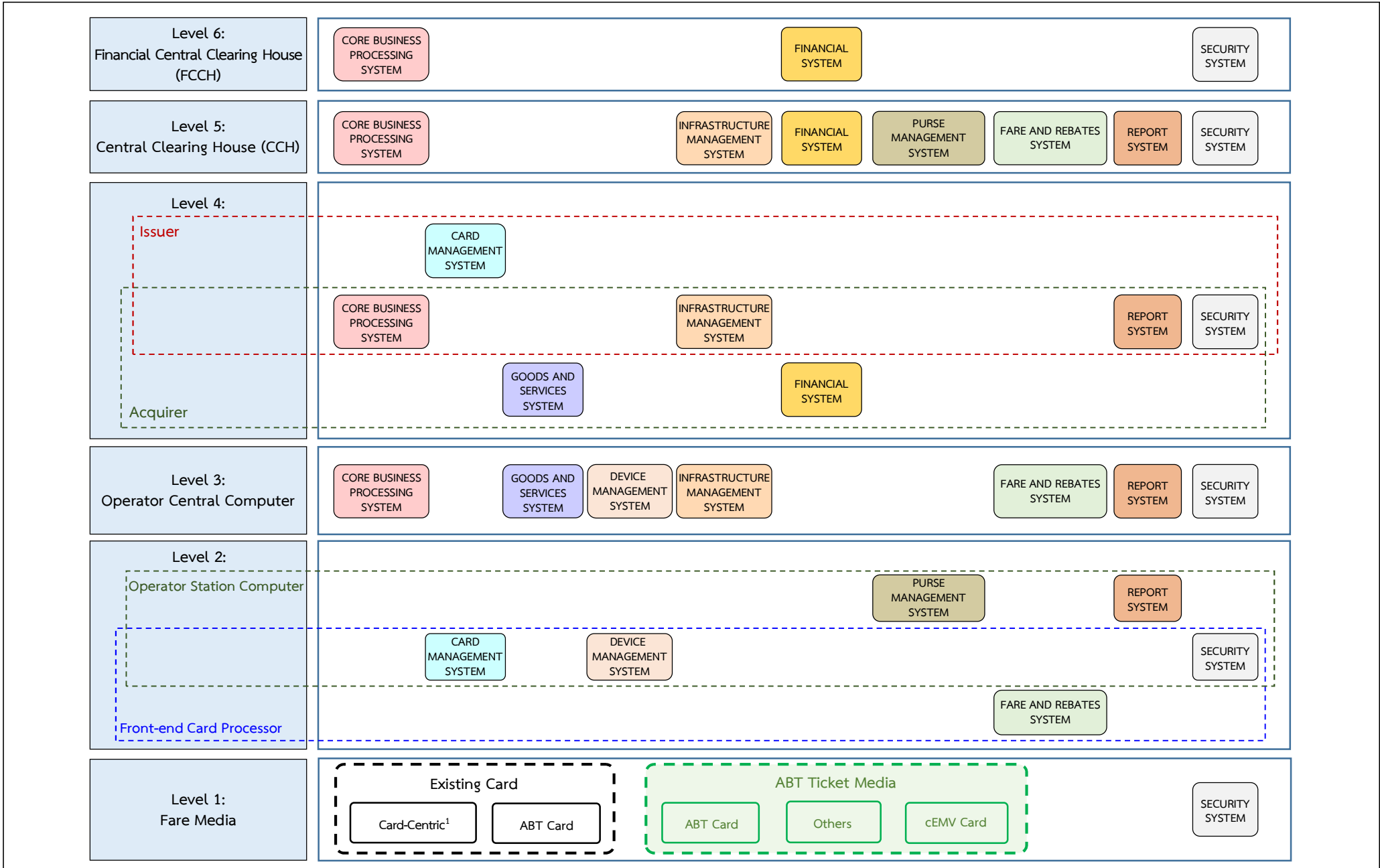
Key Outputs of the Study



- Remarks:
- ISO 8583 : international standard for financial transaction card originated interchange messaging
 - ISO/IEC 7816 : international standard related to electronic identification cards with contacts, especially smart cards, and more recently, contactless mobile devices,
 - ISO/IEC 14443 : international standard for Identification cards – Contactless integrated circuit cards – Proximity cards is an international standard that defines proximity cards used for identification, and the transmission protocols for communicating with it
 - ISO/IEC 18092 : international standard for defines communication modes for Near Field Communication Interface and Protocol (NFCIP 1) using inductive coupled devices operating at the centre frequency of 13,56 MHz for interconnection of computer peripherals.
 - JIS x 0510 : international standard for Automatic identification and data capture techniques - QR Code bar code symbology specification

Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

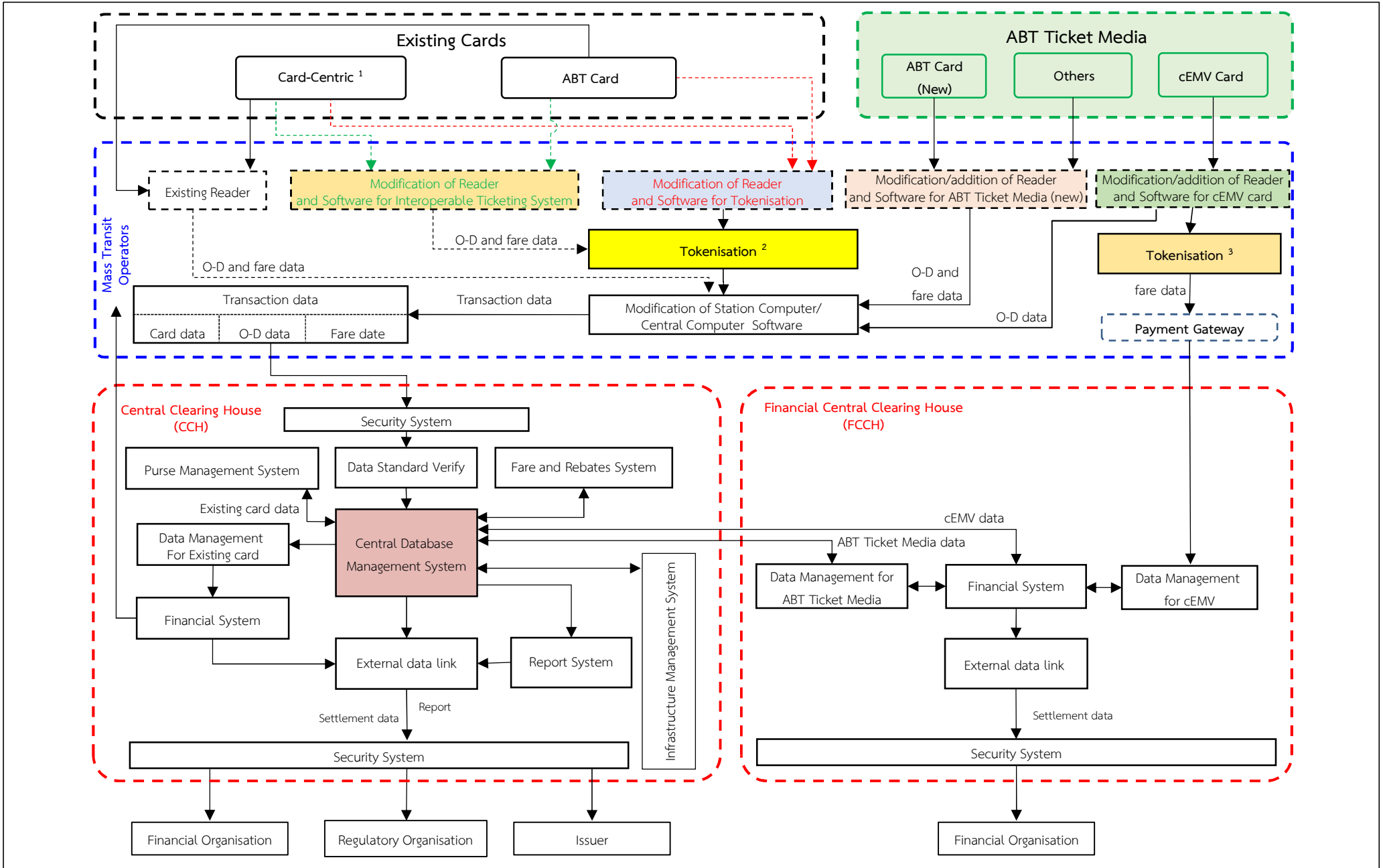
Common Ticketing System Architecture



Remarks: ¹ Existing Card (Card-Centric) will be changed to ABT Ticket Media when the Common Ticketing and Common Fare implementation has been completed.

Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Functional Requirements for the Common Ticketing System



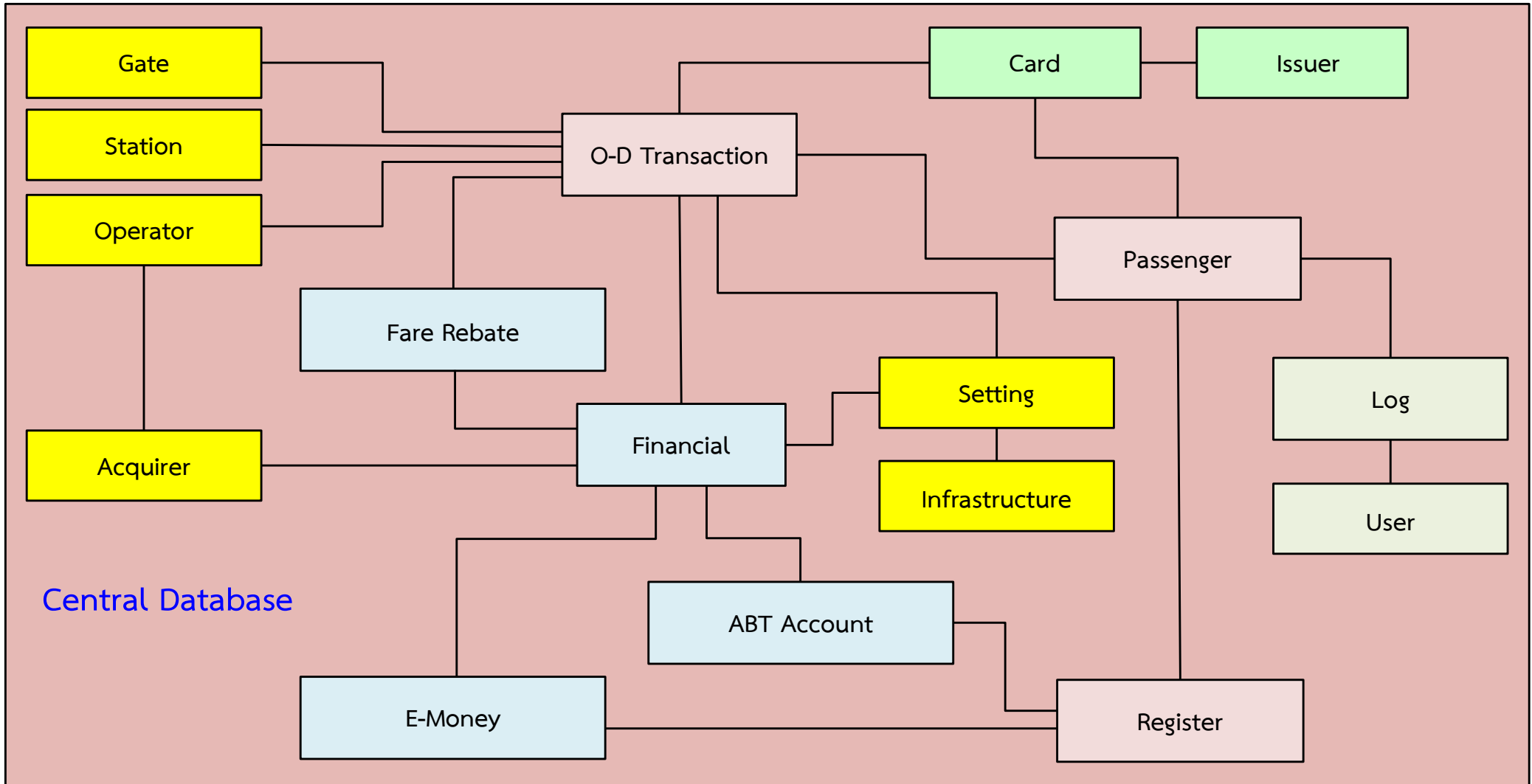
Remarks: ¹ Existing Card (Card-Centric) will be changed to ABT Ticket Media when the Common Ticketing and Common Fare implementation has been completed.

² Tokenisation for ABT System

³ Tokenisation for EMV System

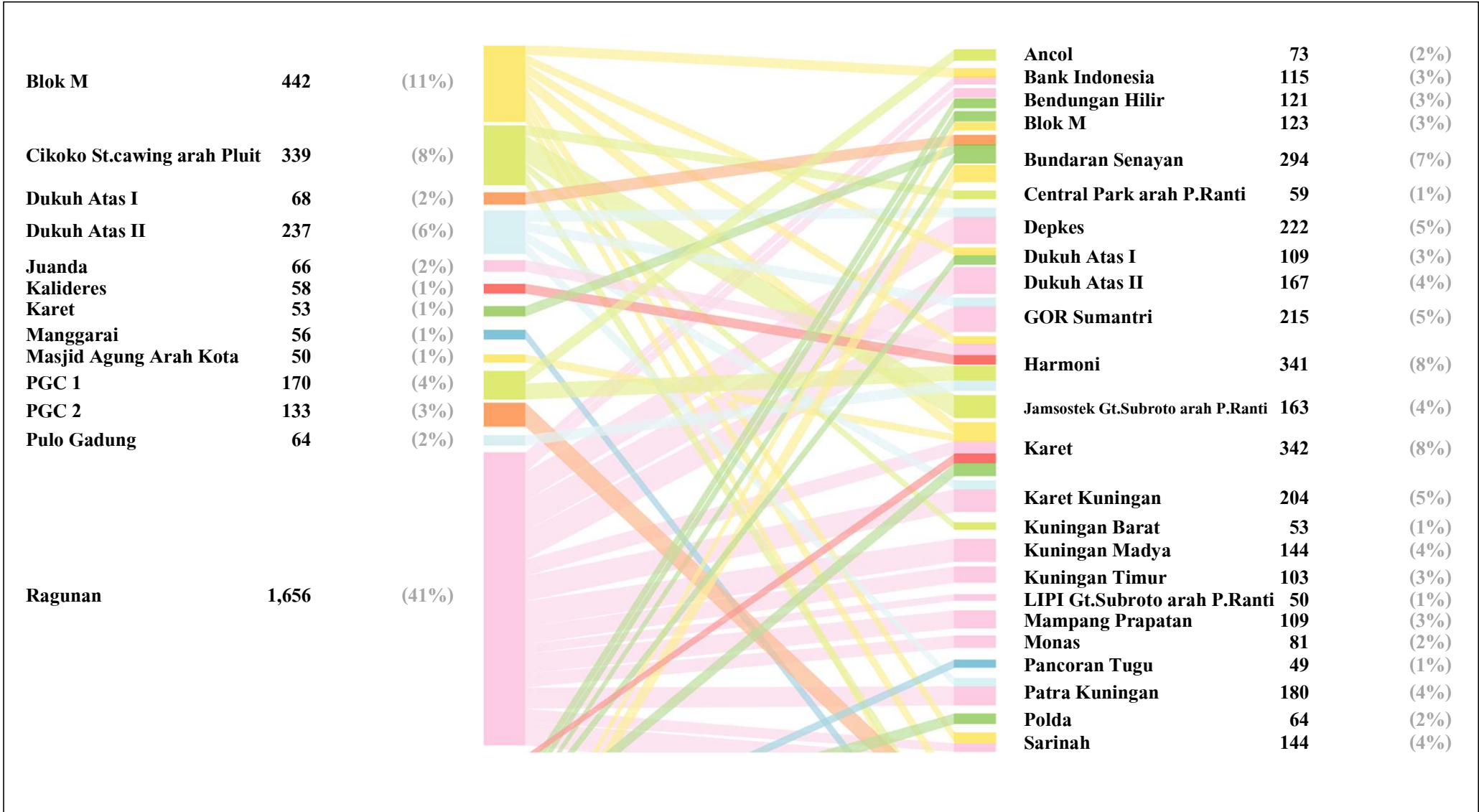
Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Functional Requirements for the Central Database System of the Central Clearing House (CCH) and Financial Central Clearing House (FCCH)



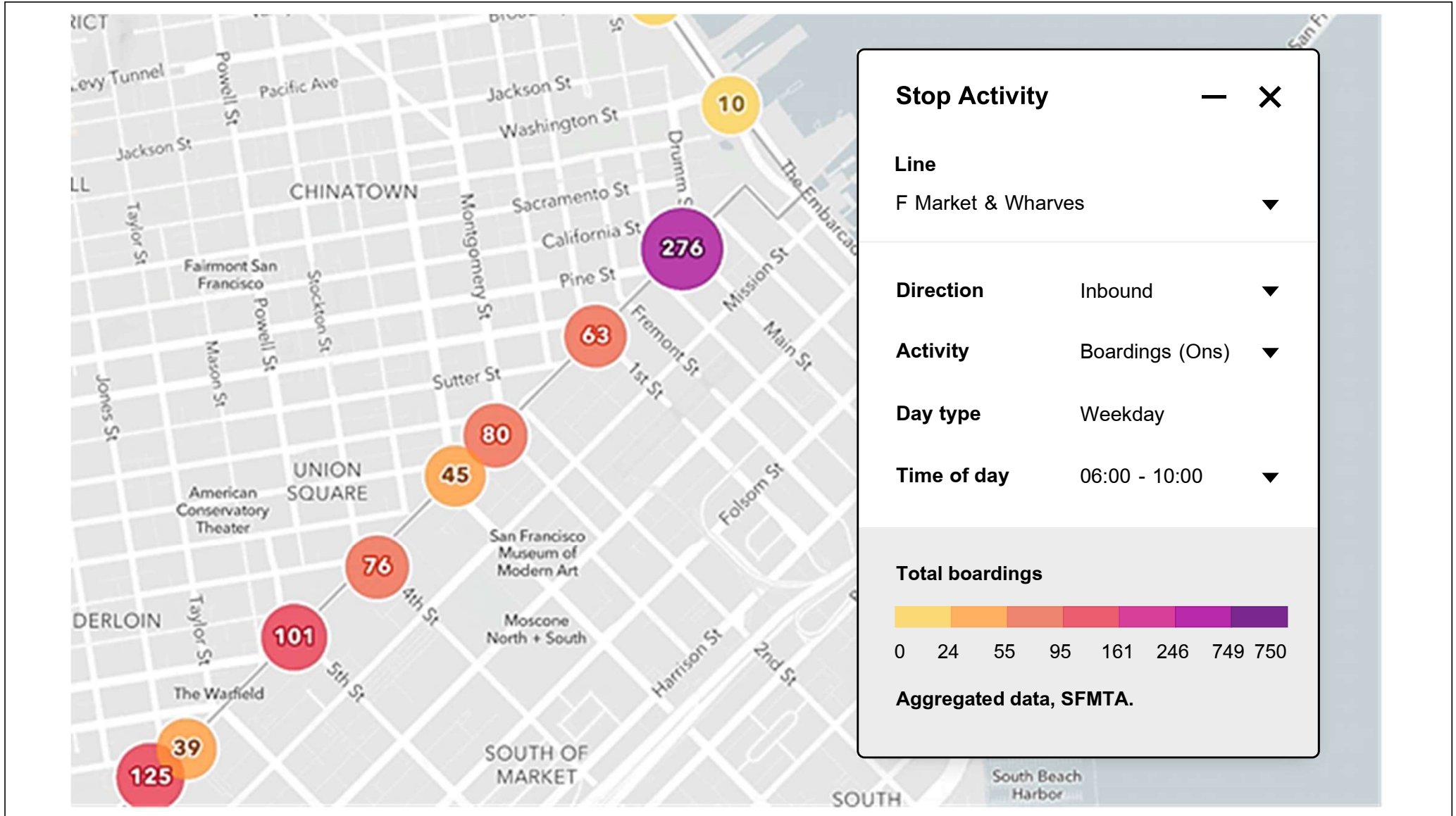
Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Entity Relationship for O-D and Fare Data System



Source: Updated from <https://pulselabjakarta.org/assets/uploadworks/2018-08-02-13-21-05.pdf>, 2018

Example of Data Analysis of Travel Demand between Stations

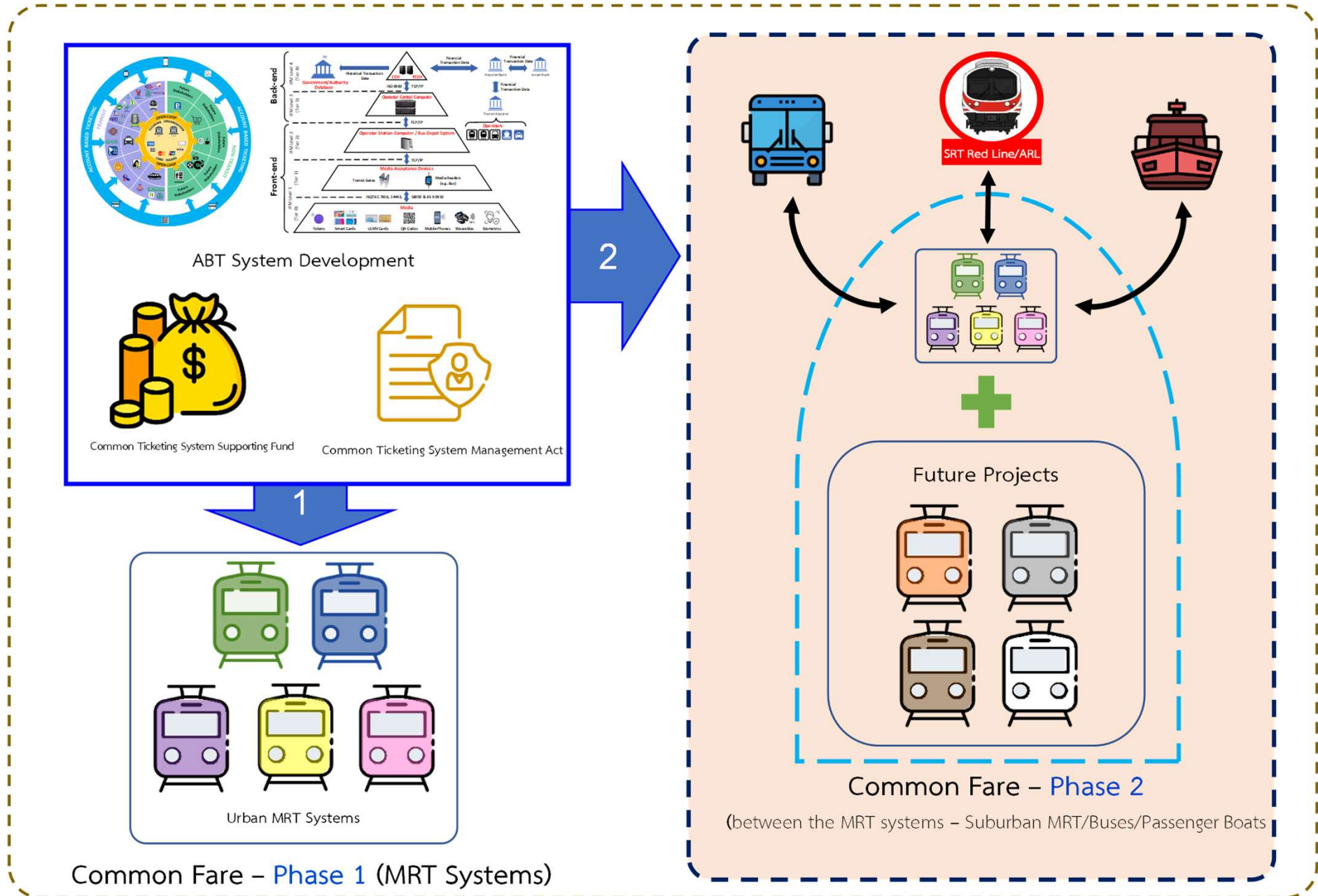


Source: <https://www.remix.com/blog/visualizing-transit-ridership-in-remix-our-design-process>, 2019

Example of Data Analysis of the Number of Passengers at Each Station



Guidelines for the Application of the Common Fare Structure



Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)



Common/Single Fare Structure for MRT systems in Bangkok and its vicinity

Unit: THB

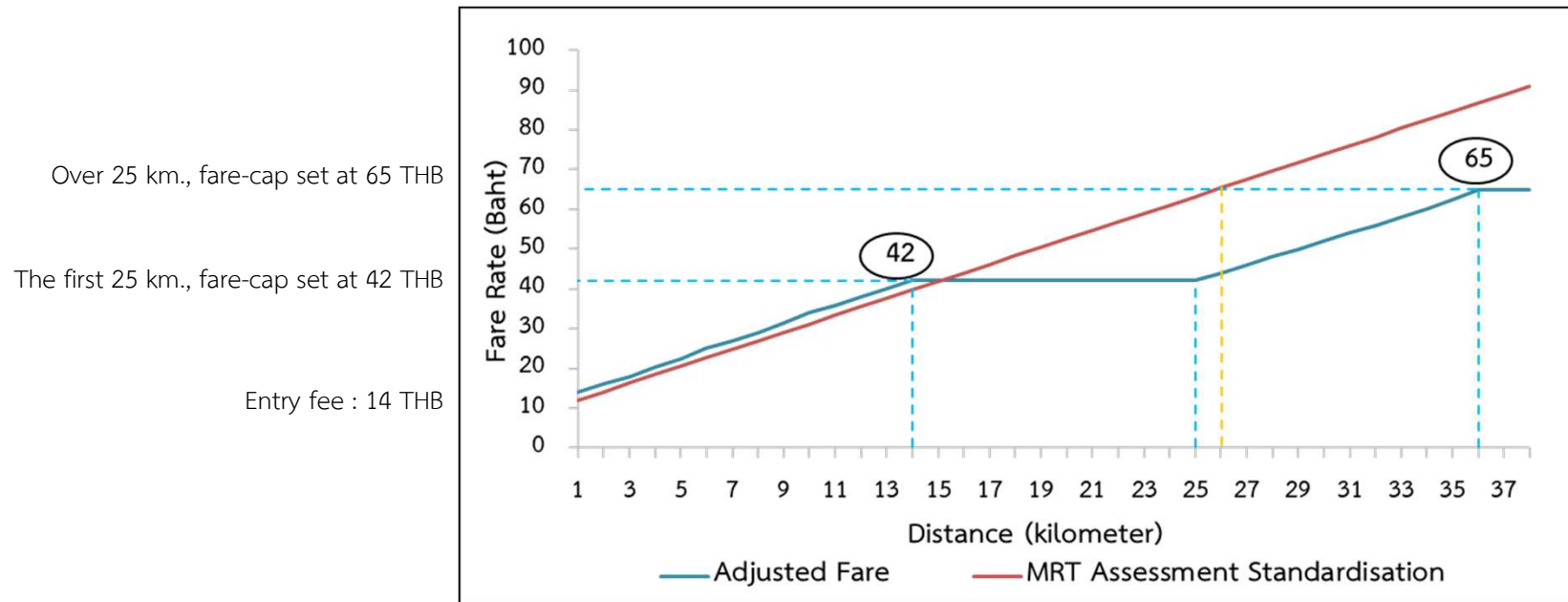
Common Fare Structure	2022	2027	2032	2037
Entry Fee ¹	14.00	14.73	15.50	16.30
Fare Rate per Kilometer ²	2.15	2.26	2.37	2.50

Remarks: ¹ Set the entry fee at 14 THB (equal to the entry fee of the Purple Line, Yellow Line and Pink Line), in accordance with the fare rates in current and future concession contracts of mass rapid transit systems.

² Calculated according to Consumer Price Index without Foods and Beverages (CPI NFB) by assuming the inflation rate of CPI NFB at approximately 1.02% per year.

Source: The Study of a Governance Plan for the Management of a Common Ticketing System

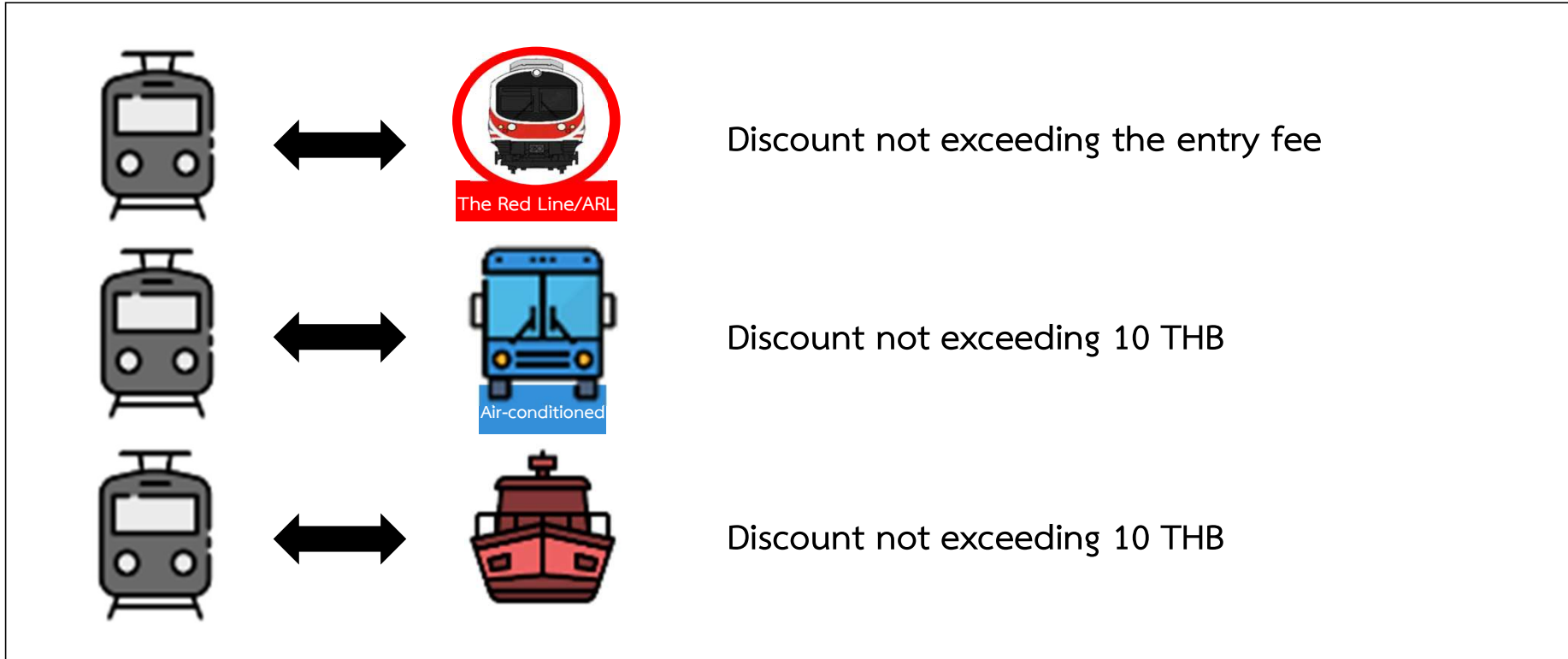
The Proposed Common Fare Structure with a 2-step Fare-Cap



Source: Primary Data, Secondary Data and analysed by The Study of a Governance Plan for the Management of a Common Ticketing System



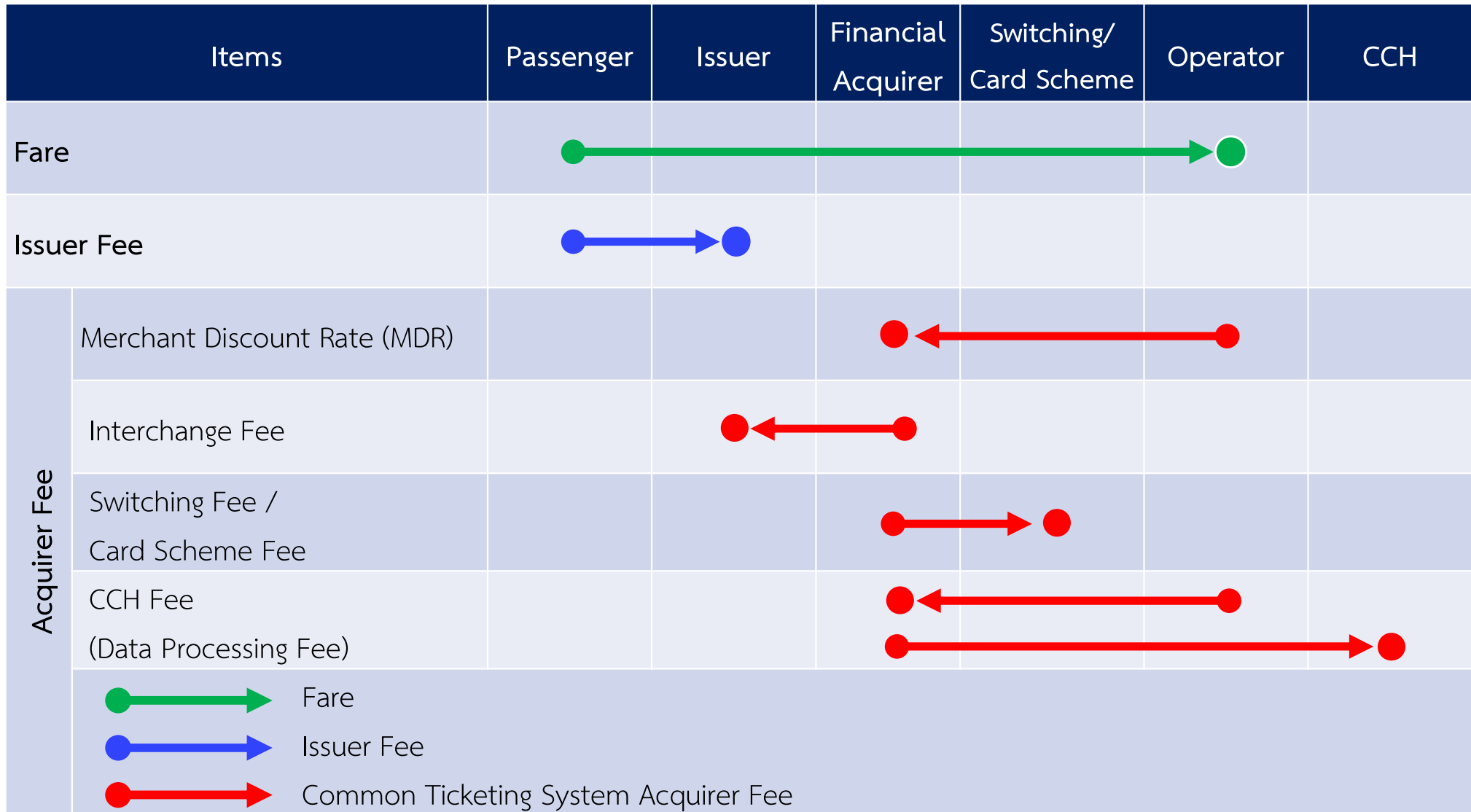
Transfer Discounts between MRT Systems and other Mass Transit Modes



Source: The Study of a Governance Plan for the Management of a Common Ticketing System



Financial Transaction Flow from ABT Ticket Media (including cEMV Cards) Classified by Stakeholders



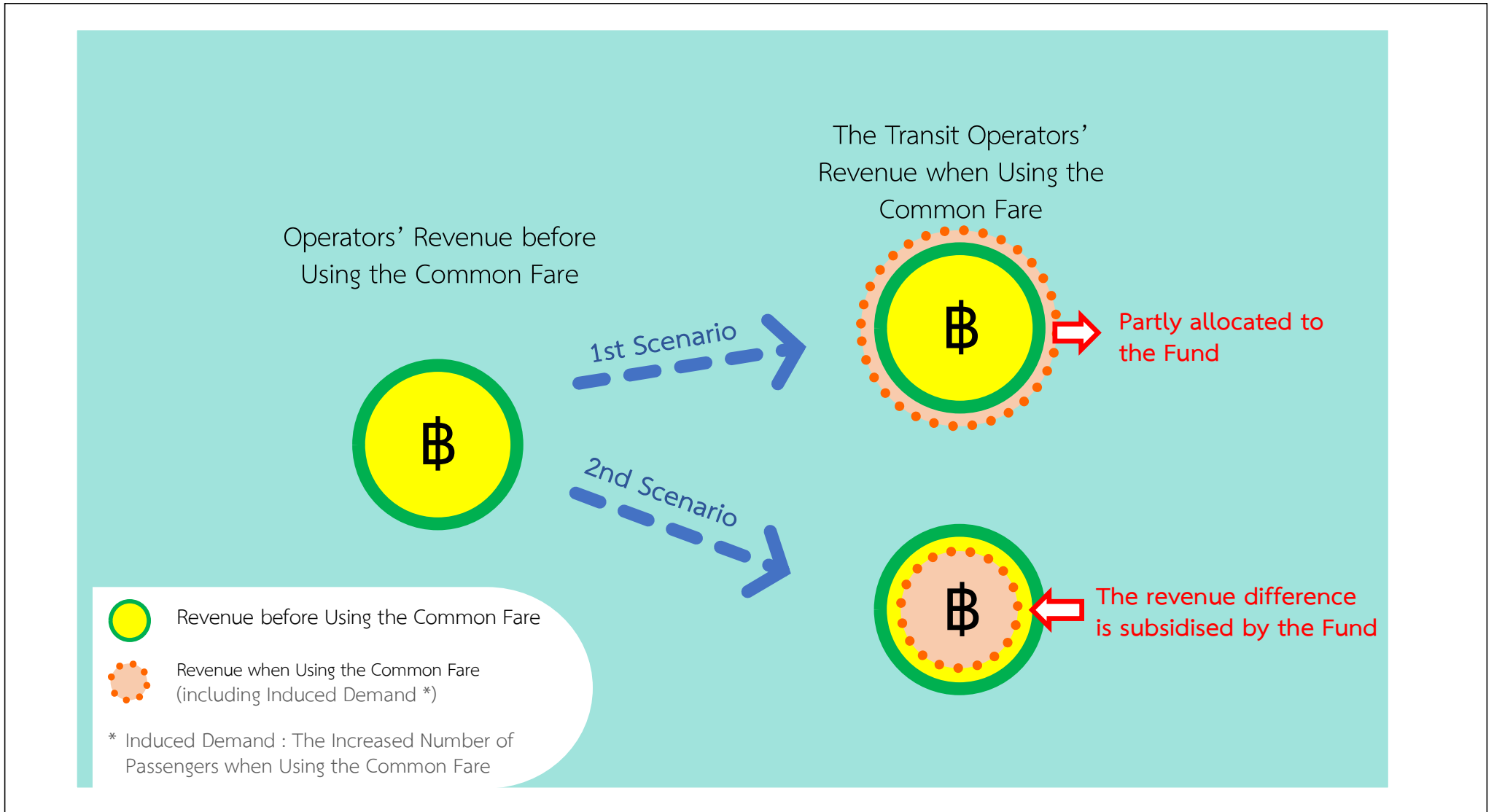


The Proposed Transaction Fee in the Common Ticketing System

Card Type	Fee
ABT Card / Card-Centric (on transport system)	$\leq 1.00\%$ ¹
Domestic Debit Card (cEMV Card)	$\leq 0.55\%$ ²
Domestic Credit Card (cEMV Card)	$\leq 0.80\%$ ¹

Remarks: ¹ Primary Data, Secondary Data and analysed by The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

² Bank of Thailand

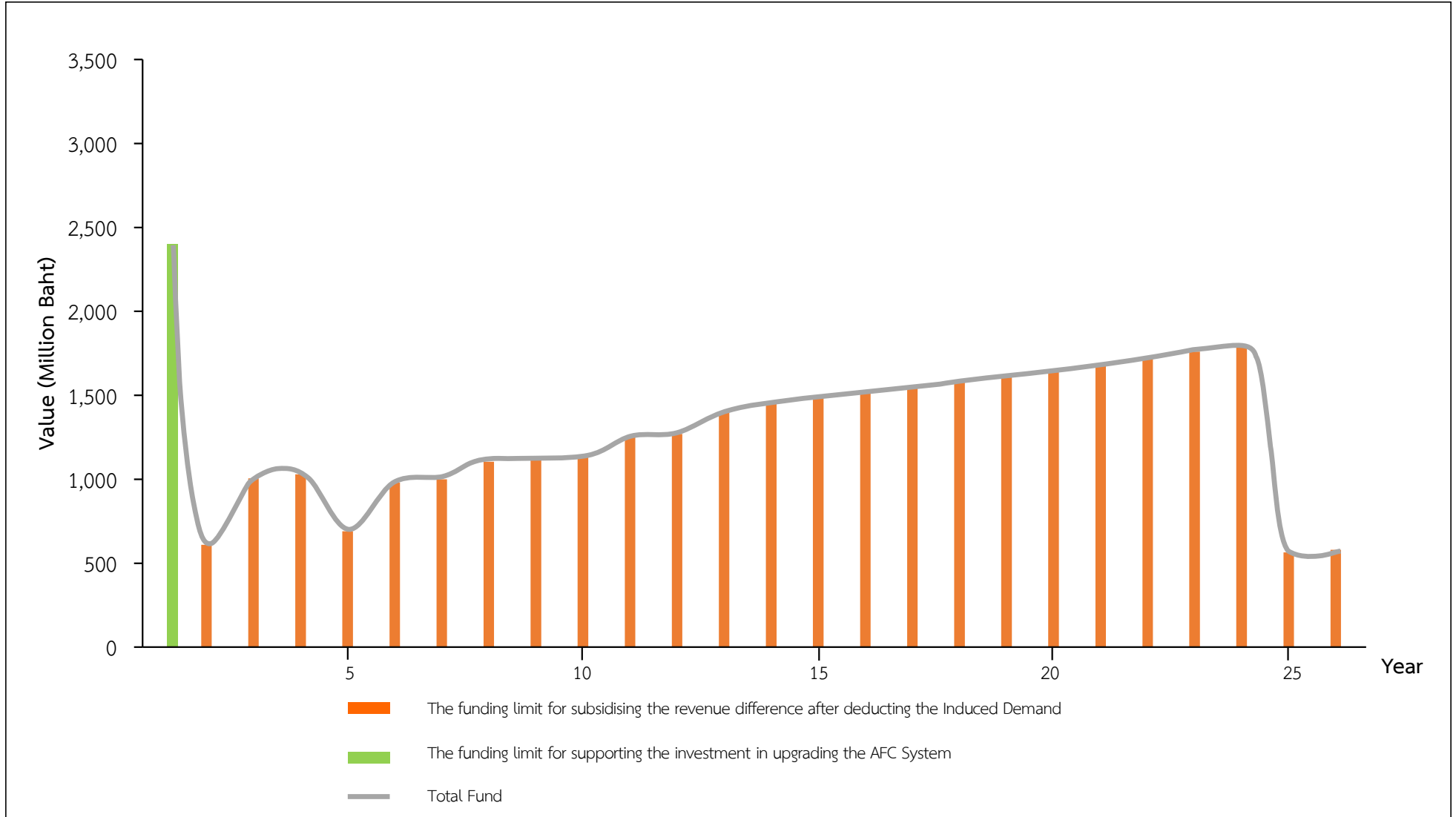


Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Mechanism for Subsidising the Fare Revenue Difference by the Fund when Using the Common Fare



Estimation of Required Funding for the Common Ticketing System Supporting Fund (for the case when Supporting the Mass Rapid Transit Systems)

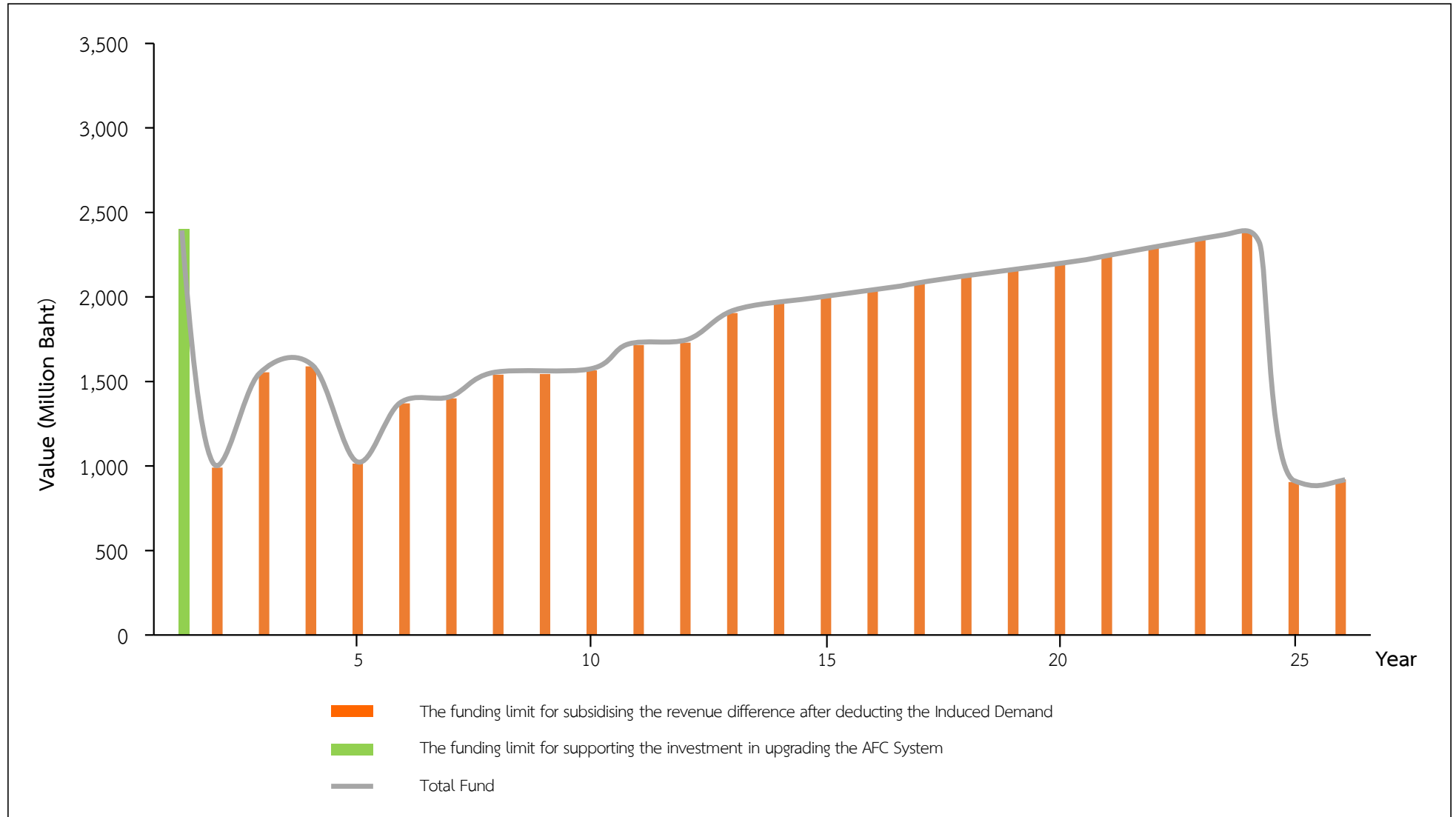


Remarks: The term of the Common Ticketing System Supporting Fund is expected to be about 26 years (2027-2052)

Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)



Estimation of Required Funding for the Common Ticketing System Supporting Fund (for the case when Supporting the Mass Rapid Transit Systems, including Transfer between MRT Lines and other Mass Transit Modes)



Remarks: The term of the Common Ticketing System Supporting Fund is expected to be about 26 years (2027-2052)

Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)



Sources of Funds for the Common Ticketing System Supporting Fund



Initial Funds allocated from the annual state budget



Government's subsidies allocated from the annual state budget



License Fees



Criminal and administrative fines

* The Ministry of Transport requests for an allocation for each budget year as needed.



Money or assets donated to the Fund



Interests from deposits or assets of the Fund



Revenue or benefit sharing monies from new mass transit service providers, as stated in their concession contracts, sent to the Fund

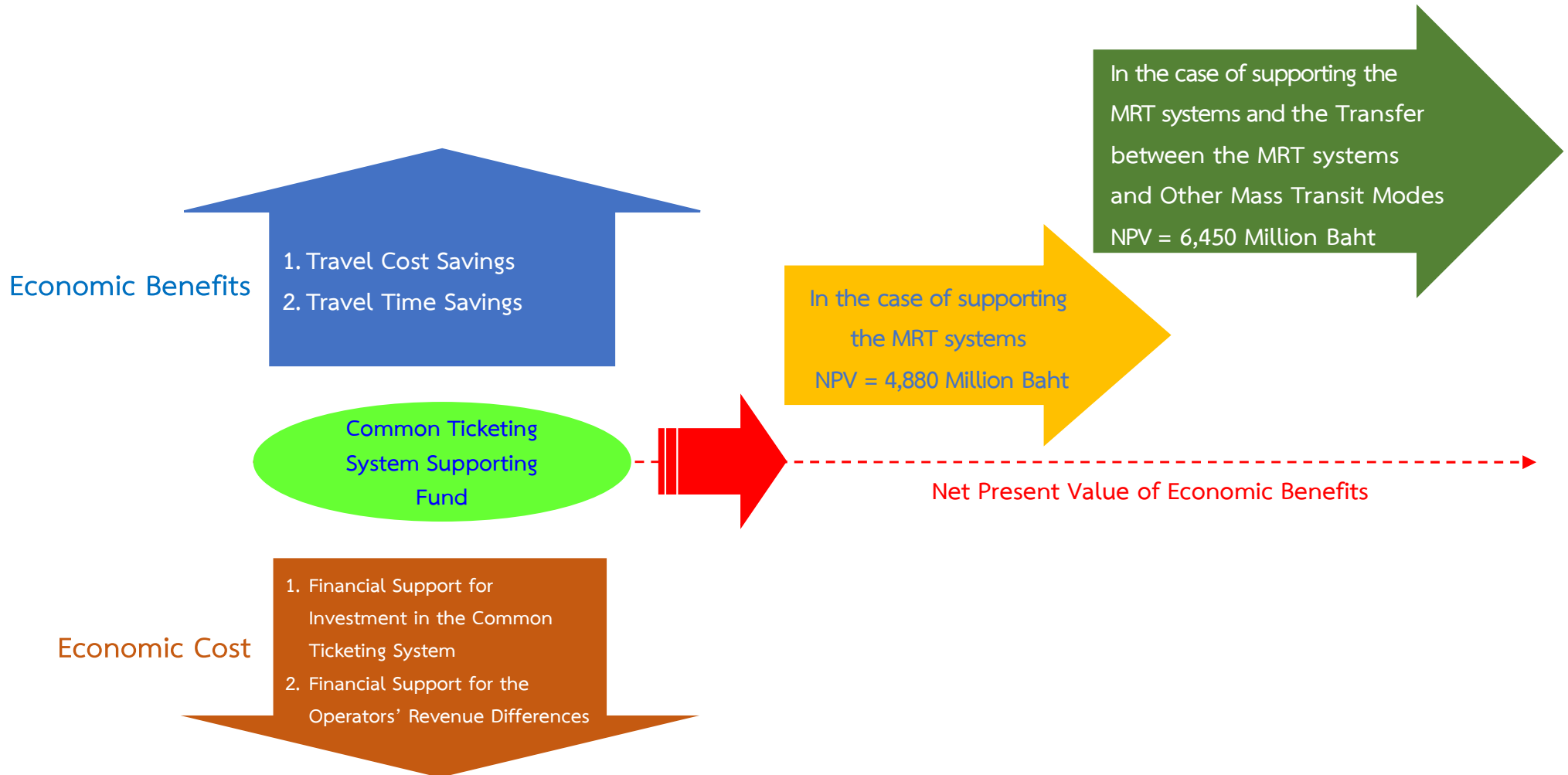


Revenue sharing from the provision of the Common Ticketing System services (e.g. from common ticket issuing)



Economic Worthiness of the Common Ticketing System Supporting Fund

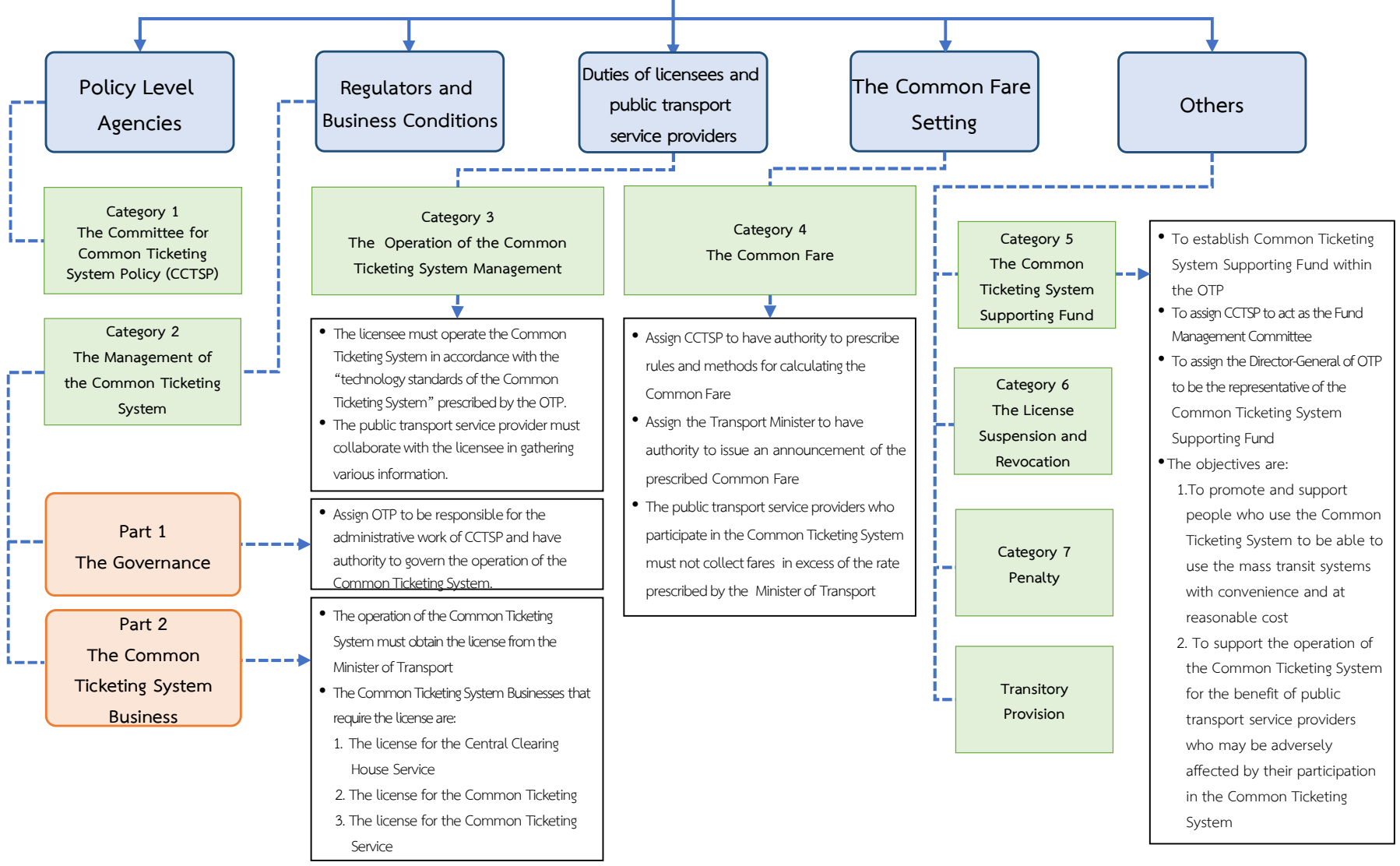
Fund's Term : 26 Years (2027-2052)





Draft Common Ticketing System Management Act, B.E....

(revised version after the public hearing)



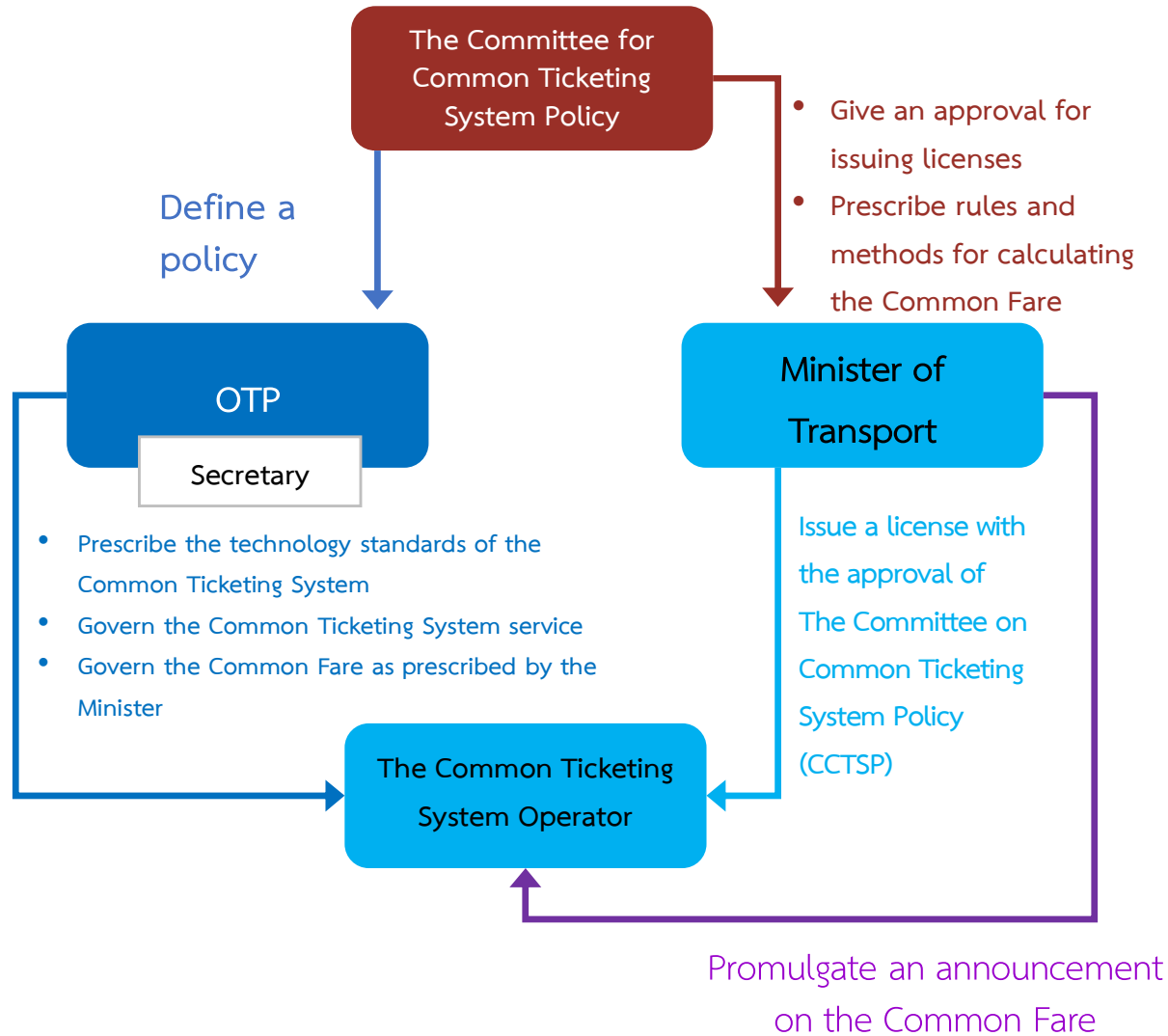
Remarks: CCTSP : The Committee on Common Ticketing System Policy, OTP : Office of Transport and Traffic Policy and Planning

Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

The Structure of the (Draft) Common Ticketing System Management Act, B.E.... (revised version after the public hearing)



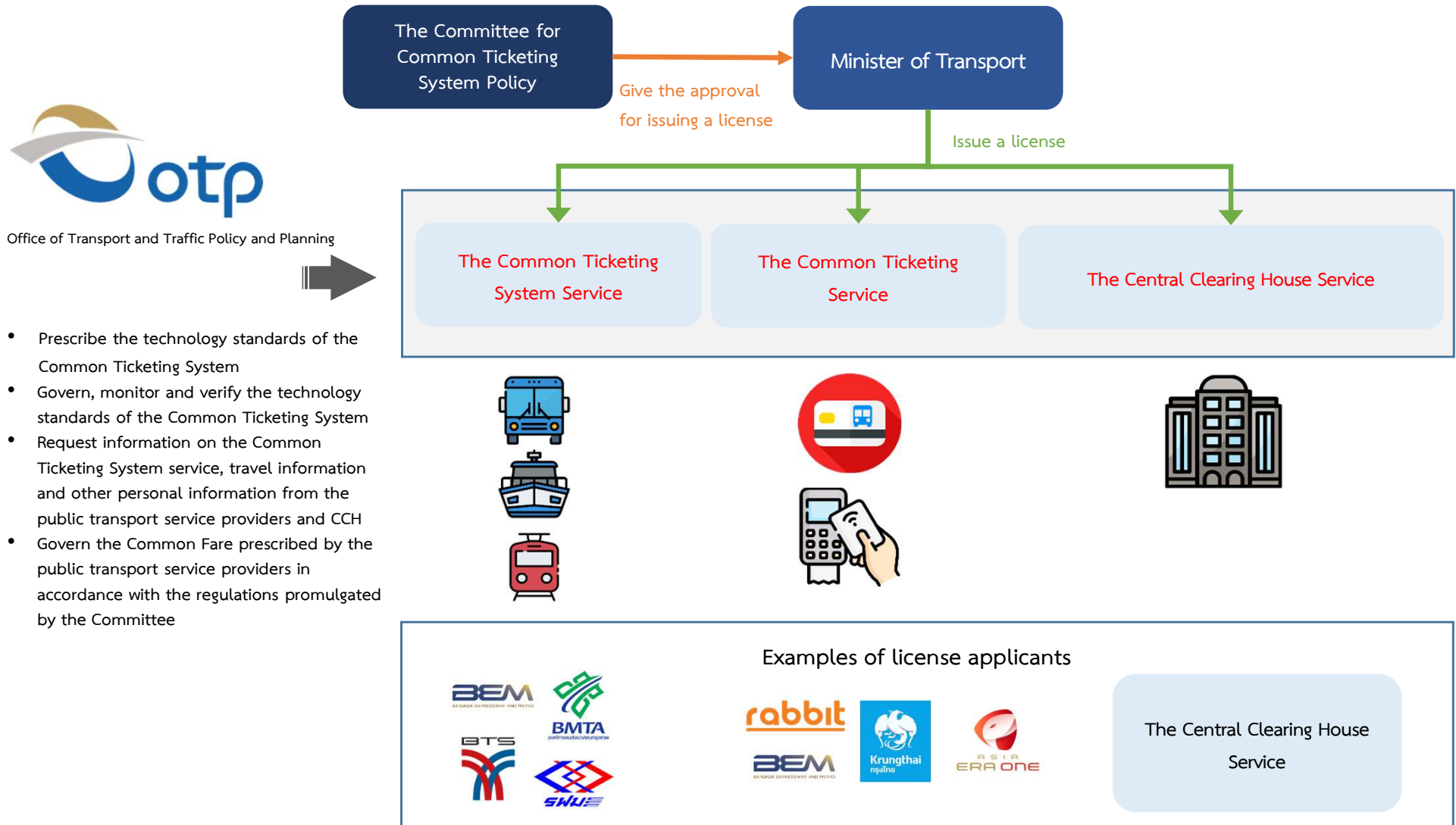
The Improvement of the Common Ticketing System Management Structure



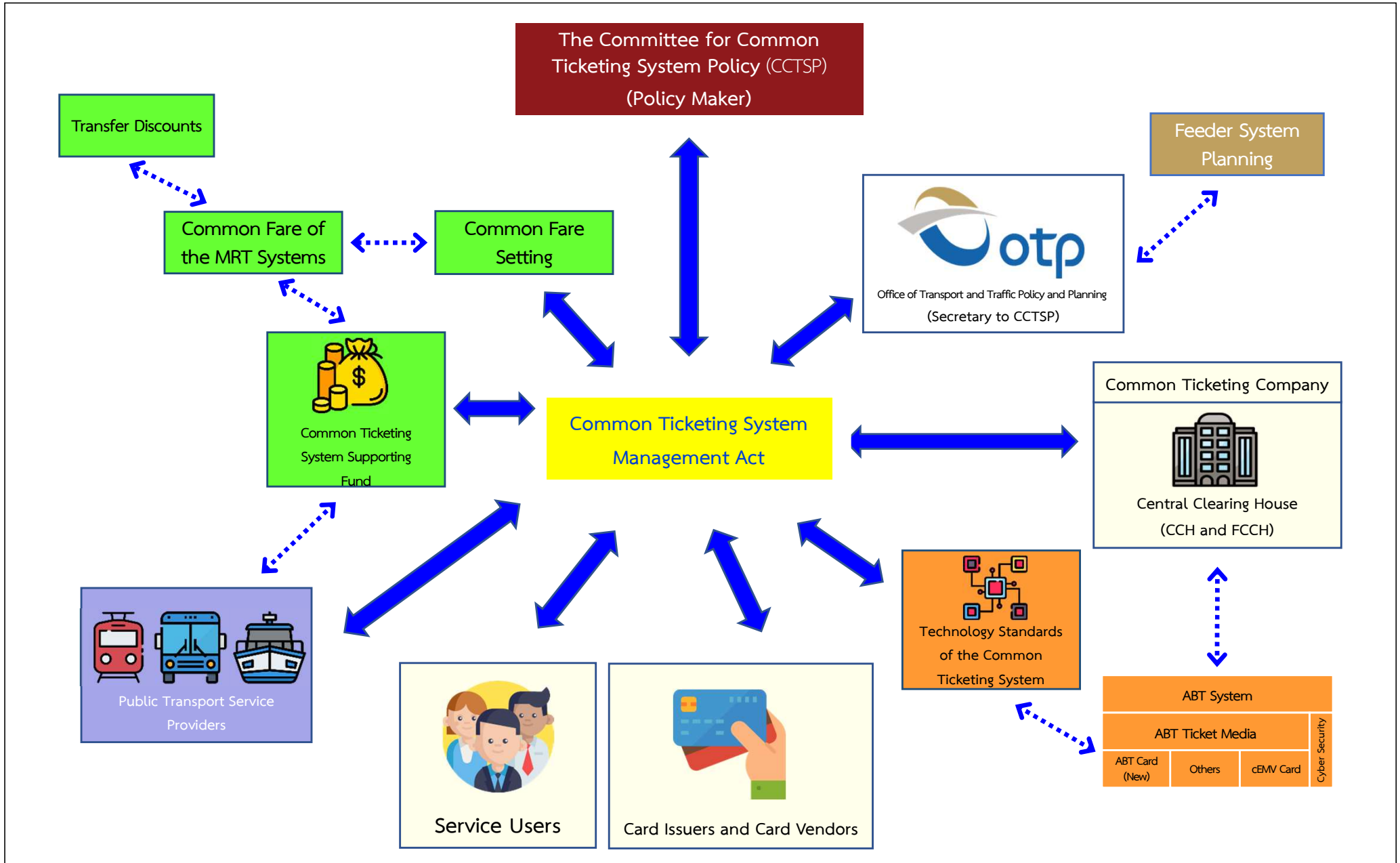


The Operation of the Common Ticketing System (Section 15)

- The revised draft act prescribes the use of a licensing system in the governance of the Common Ticketing System in the following 3 parts:
 - The Central Clearing House Service
 - The Common Ticketing Service, and
 - The Common Ticketing System Service
- The Common Ticketing System Operator must obtain the license from the Minister of Transport with the approval of the Committee on Common Ticketing System Policy (CCTSP)



- Prescribe the technology standards of the Common Ticketing System
- Govern, monitor and verify the technology standards of the Common Ticketing System
- Request information on the Common Ticketing System service, travel information and other personal information from the public transport service providers and CCH
- Govern the Common Fare prescribed by the public transport service providers in accordance with the regulations promulgated by the Committee



Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

The Application of the Common Ticketing System Management Act, B.E....



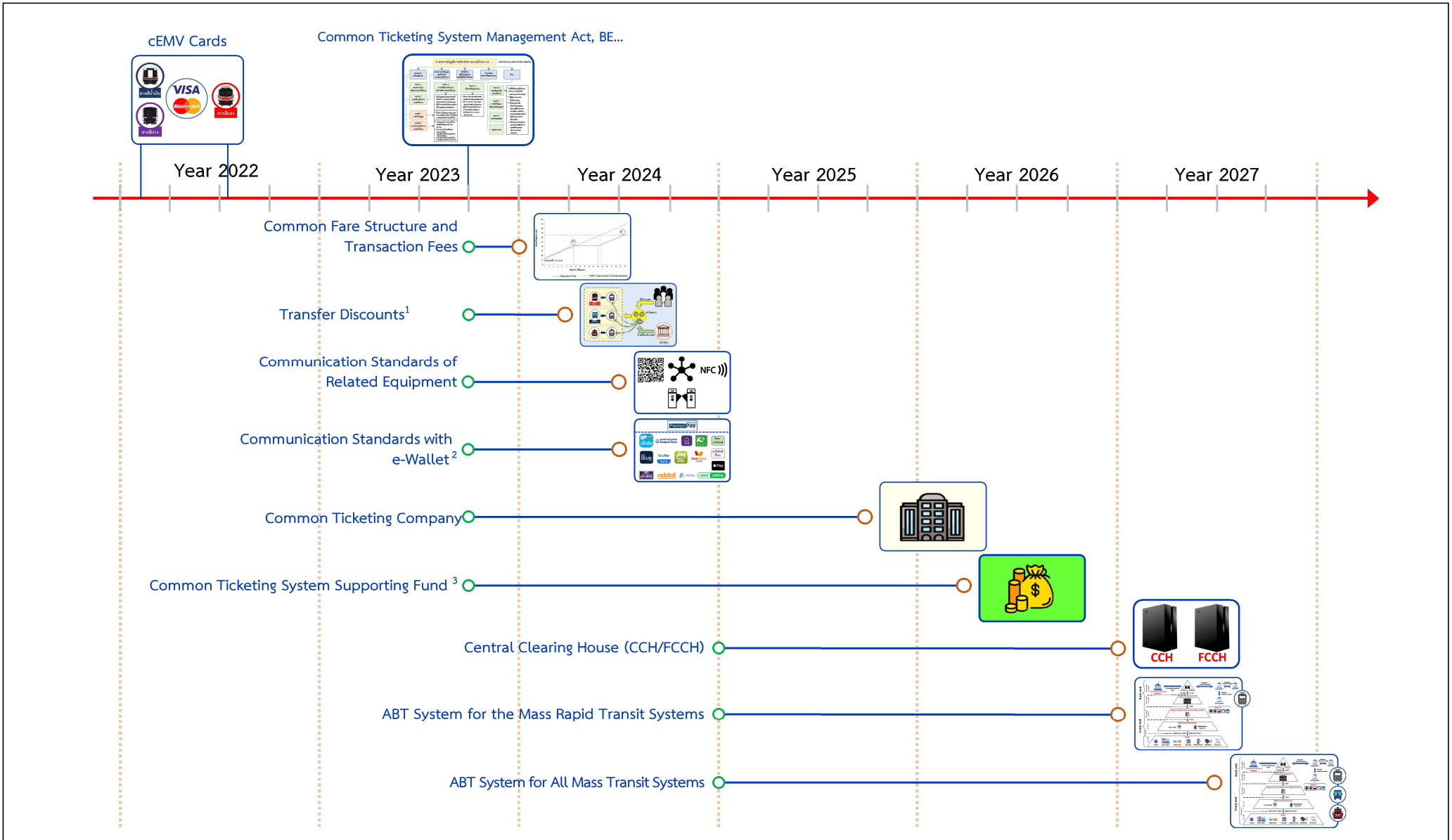
Examples of KPIs Target Configuration

KPIs	Responsible Agencies	Target Year 2027*	Baseline Data*			Next Year Target*		
			Year 2024	Year 2025	Year 2026	Year 2028	Year 2029	Year 2030
1. Increased percentage number of passengers using the Mass Transit systems in Bangkok and its vicinity (Unit: Percentage) (Increased average percentage compared to base year)	The Committee for Common Ticketing System Policy / Office of Transport and Traffic Policy and Planning (OTP)	X+Y	1.16	2.57	X	X+2Y	X+2.5Y	X+3Y
2. Decreased percentage of passengers' total travel cost comparing the periods before and after the project implementation (Unit: Percentage) (Decreased average percentage compared to base year)	The Committee for Common Ticketing System Policy / Office of Transport and Traffic Policy and Planning (OTP)	X+Y	2.00	2.50	X	X+2Y	X+2.5Y	X+3Y
3. Percentage of passengers who pay fares via the Common Ticketing System (Unit: Percentage) (Percentage each year)	The Committee for Common Ticketing System Policy / Office of Transport and Traffic Policy and Planning (OTP)							
(1) MRT System		X+Y	6.36	11.74	X	X+2Y	X+3Y	X+4Y
(2) Train System		X+Y	9.22	10.11	X	X+2Y	X+2Y	X+2Y
(3) Bus		X+Y	3.54	4.52	X	X+2Y	X+3Y	X+4Y
(4) Passenger Boat		X+Y	4.88	5.23	X	X+2Y	X+2Y	X+2Y

Remarks: * Assumed numbers used for explanation

X : Operational performance on base year (2026) Y : Operational performance difference of assessed year compared to base year

Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)



Remarks: ○ : Origin ○ : Destination

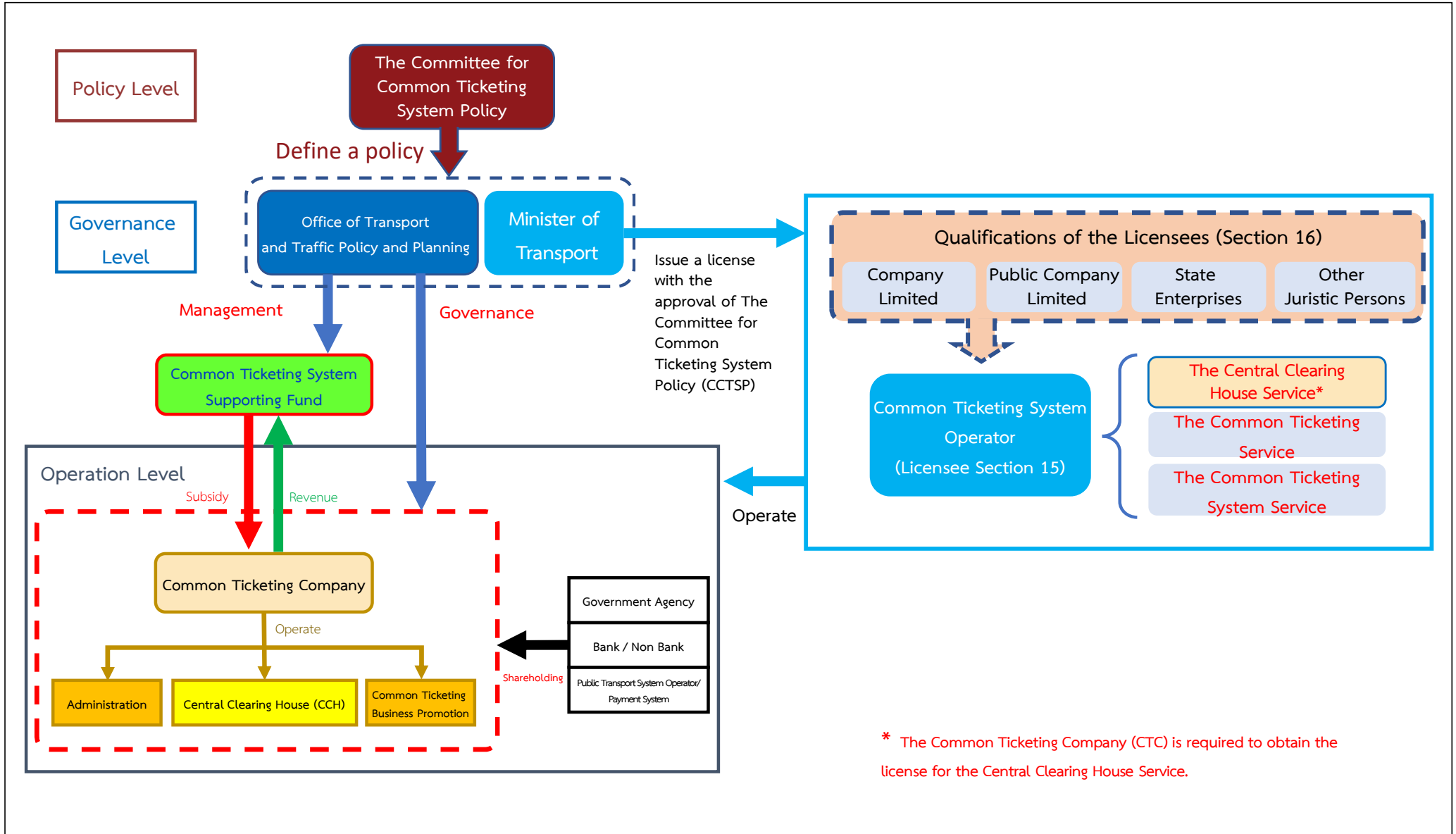
¹ Subject to the negotiation of a business agreement

² A setting of communication standards between e-Wallet and PromptPay systems applied in the Common Ticketing System (in cooperation with the Bank of Thailand)

³ The time period may change subject to the promulgation of the Common Ticketing System Management Act, BE...

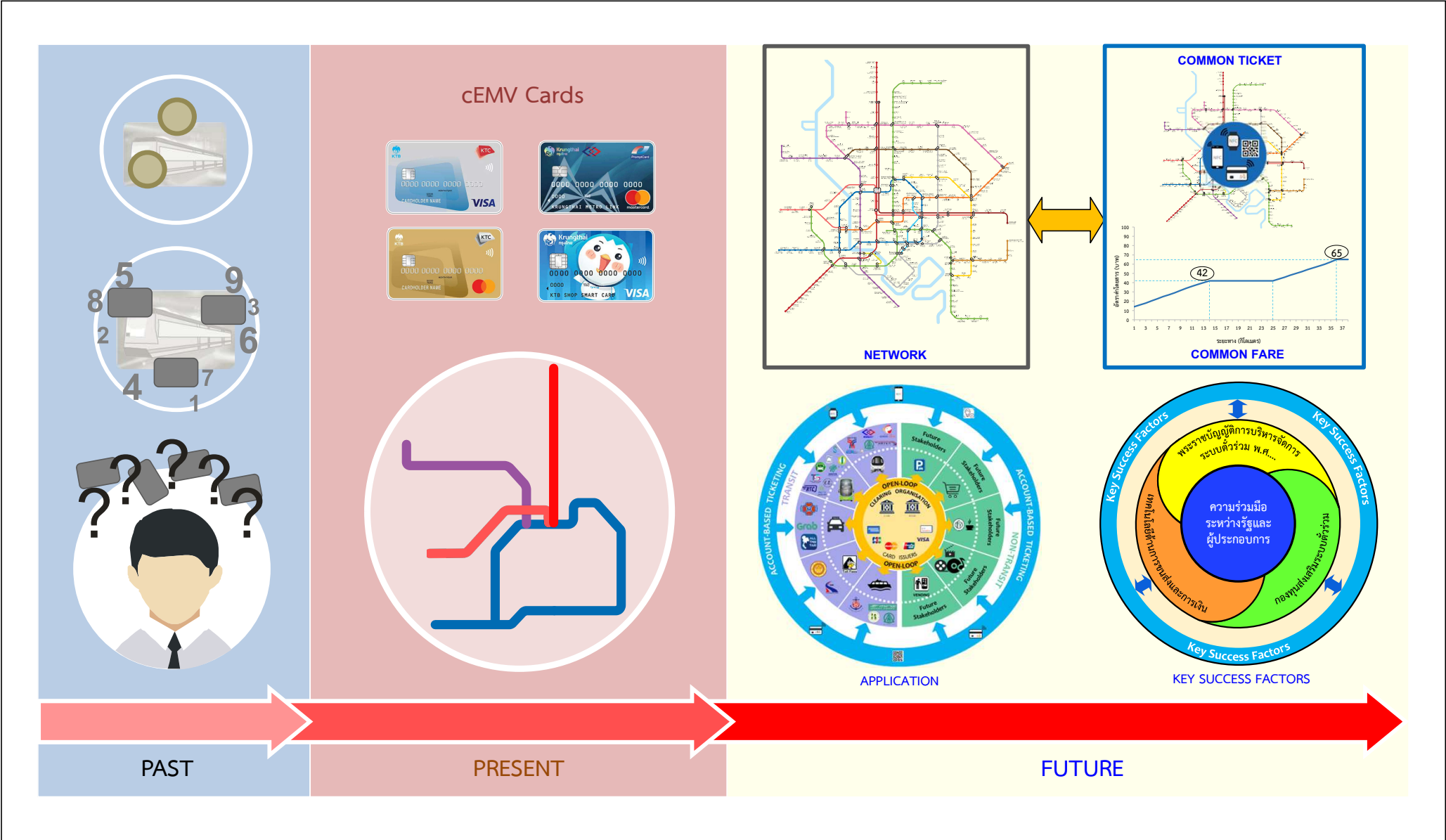
Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

The Monitoring Plan of Key Activities for the Development of the ABT Common Ticketing System



Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

The Common Ticketing System Management Agencies (Common Ticketing Company)



Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Concept for the Development of the Common Ticketing System

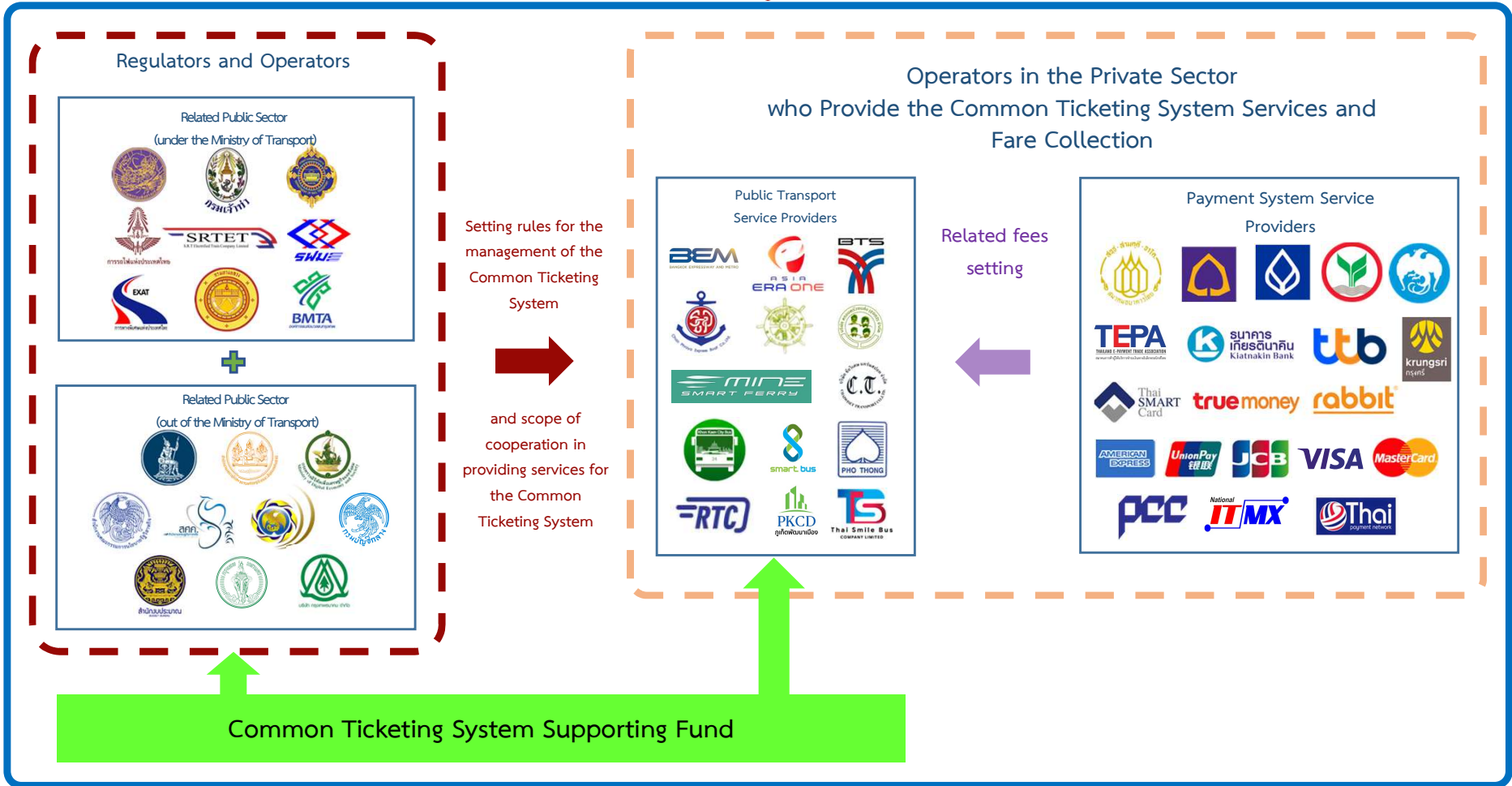


Ministry of Transport

The Committee for Common Ticketing System Policy (CCTSP)

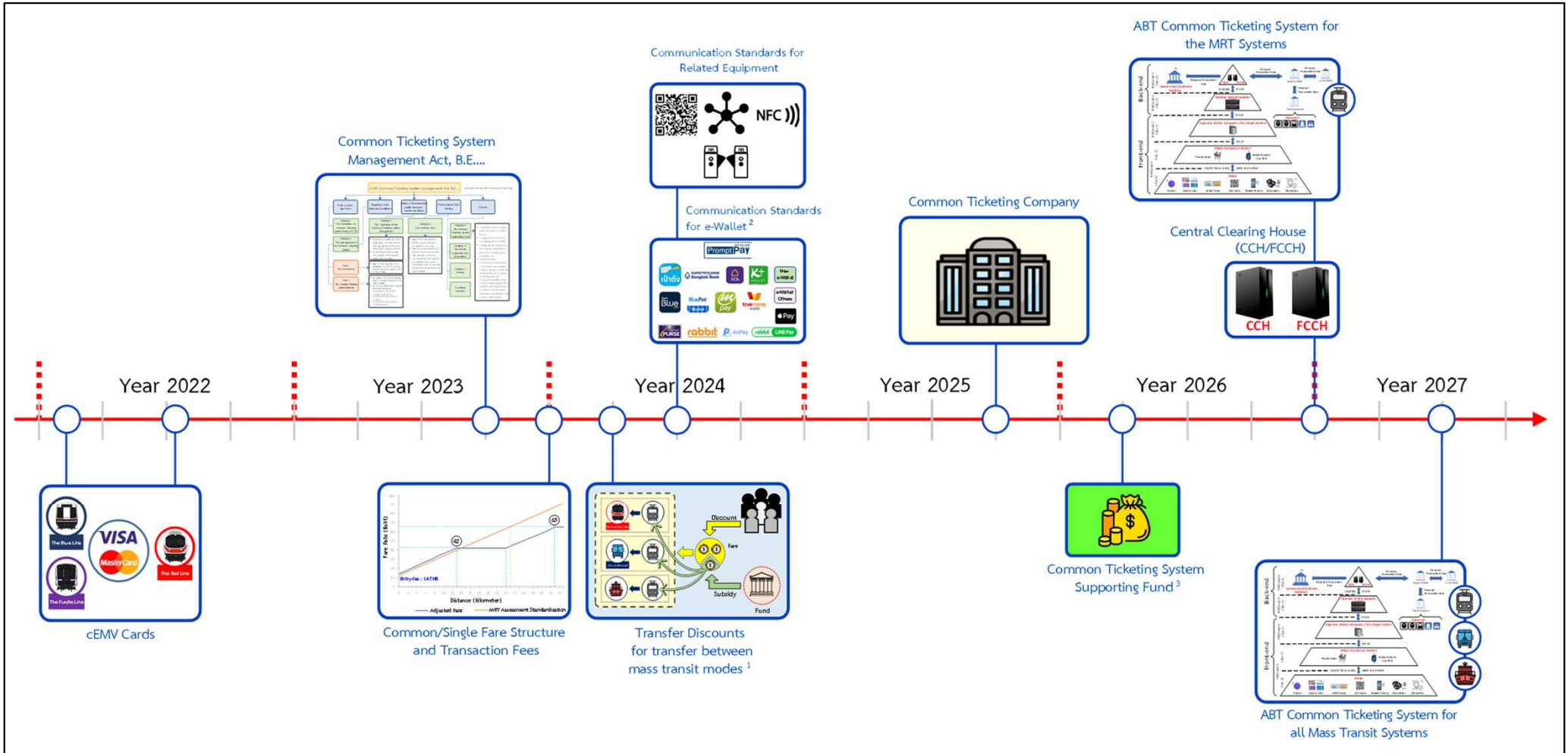


Office of Transport and Traffic Policy and Planning



Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Cooperation between the Public Sector and the Operators



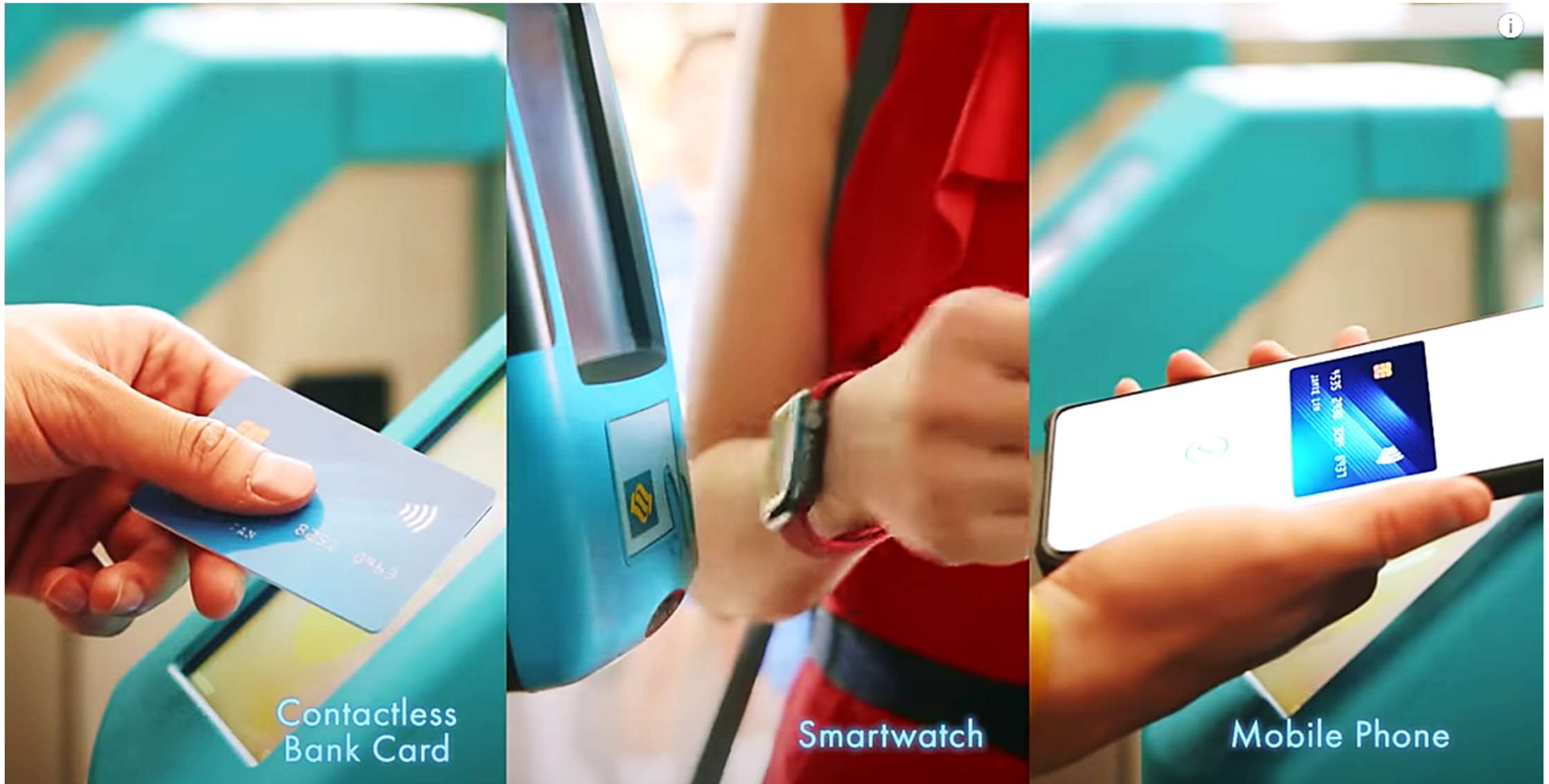
Remarks ¹ Subject to the negotiation of a business agreement

² A setting of communication standards between e-Wallet and PromptPay systems applied in the Common Ticketing System

³ The time period may change subject to the promulgation of the Common Ticketing System Management Act, BE...

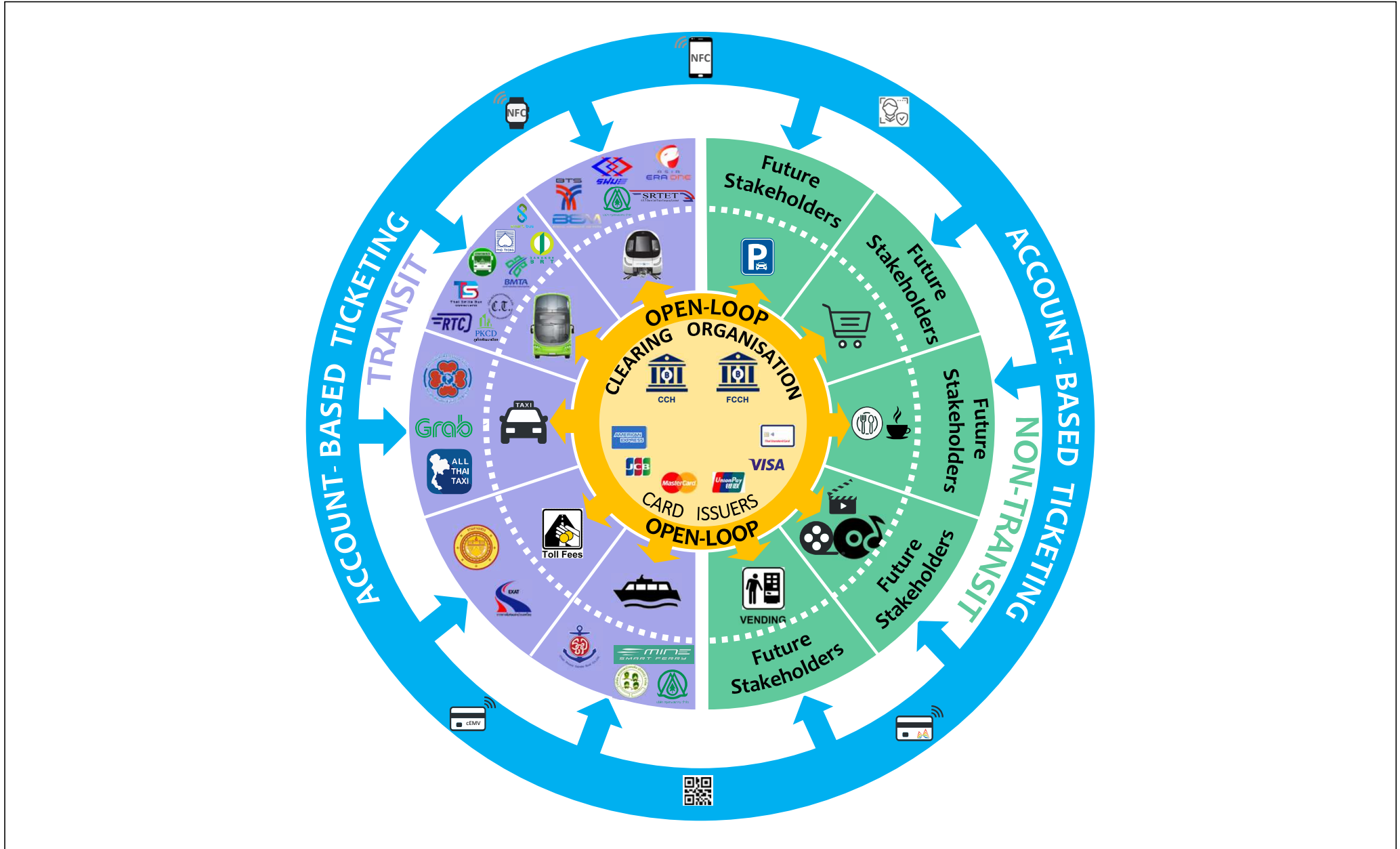
Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Integration Plan for the Development of the ABT Common Ticketing System



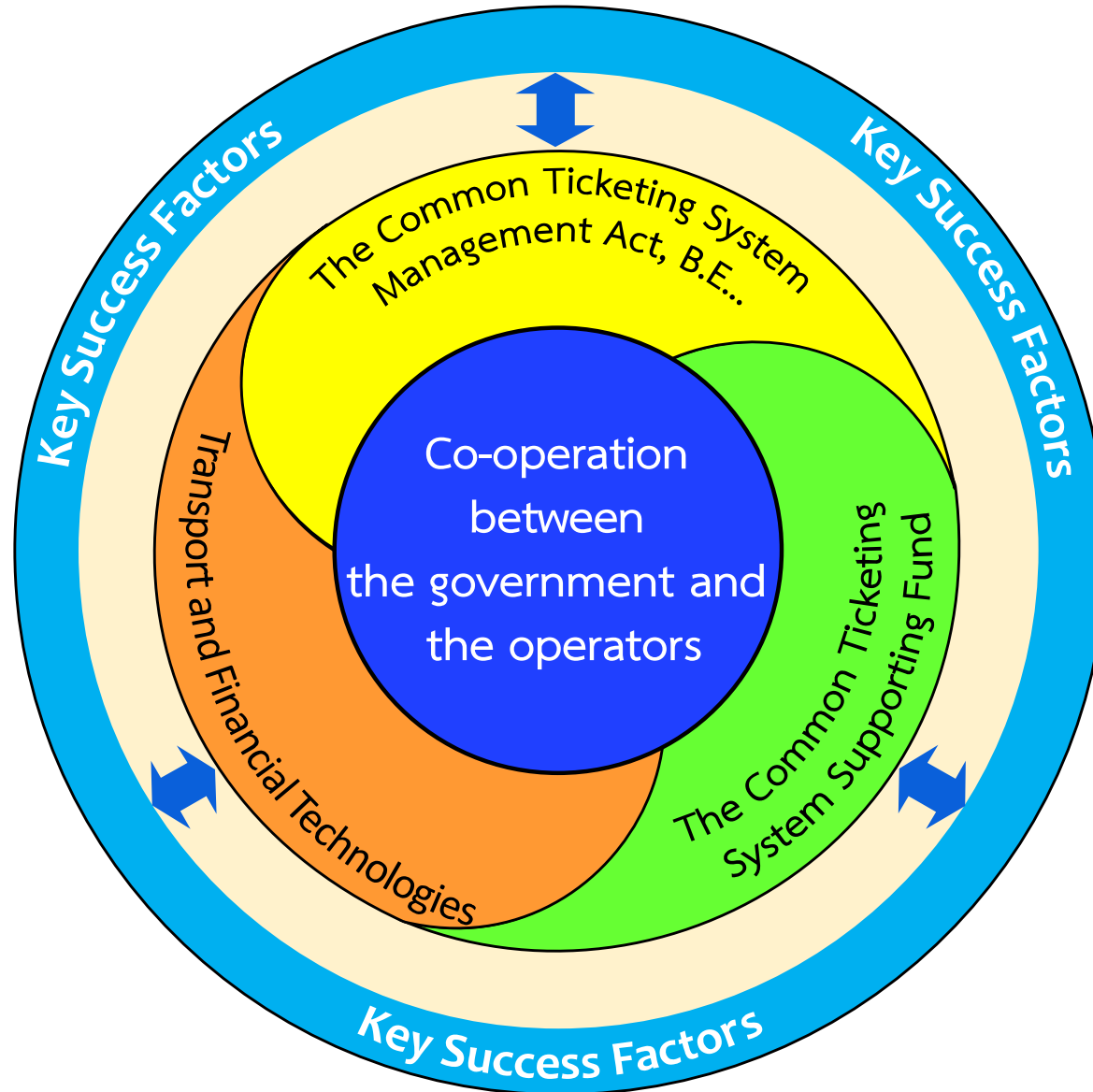
Source: <https://www.youtube.com/watch?v=WoDc1uHN3Z0>

Examples of ABT Ticket Media Usage



Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Conceptual Framework for the Application of the ABT System with the Common Ticketing System



Source: The Study of a Governance Plan for the Management of a Common Ticketing System, Office of Transport and Traffic Policy and Planning (OTP)

Key Success Factors of the Common Ticketing System