

SOCIALIST REPUBLIC OF VIET NAM
DEPARTMENT OF TRANSPORTATION,
HANOI PEOPLE'S COMMITTEE

**PROJECT FOR SUPPORTING
DEVELOPMENT OF INTEROPERABLE
SMART CARD SYSTEM FOR PUBLIC
TRANSPORTATION IN HANOI**

Project Completion Report

April 2021

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

**ALMEC CORPORATION
East Japan Railway Company
Tokyo Metro Co., Ltd.
Nishi-Nippon Railroad Co., Ltd.
JR EAST MECHATRONICS CO., LTD.**

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Abbreviations

ABT	Account-based Ticketing
ADB	Asian Development Bank
AFC	Automated Fare Collection
BRT	Bus Rapid Transit
CBT	Card-based Ticketing
COVID-19	Novel Coronavirus Disease
DAC	Development Assistance Committee
DG/TS	Design Guideline and Technical Specifications
FMC	Fare Management Center
HAPI	Hanoi Authority for Planning and Investment
HCMC-DOT	Ho Chi Minh City Department of Transport
HDOF	Hanoi Department of Finance
HDOIC	Hanoi Department of Information and Communication
HDOST	Hanoi Department of Science and Technology
HDOT	Hanoi Department of Transport
HMC	Hanoi Metro Company
HPC	Hanoi People's Committee
IC card	Integrated Circuit Card
IT	Information Technology
ITS	Intelligent Transport System
JCC	Joint Coordinating Committee
JET	JICA Expert Team
JICA	Japan International Cooperation Agency
MAUR	Management Authority for Urban Railways
MLIT	Ministry of Land, Infrastructure, Transport and Tourism, Japan
MM	Man-month
MOIC	Ministry of Information and Communication
MOST	Ministry of Science and Technology
MOT	Ministry of Transport
MS	Microsoft
NAPAS	National Payment Corporation of Vietnam
OECD	Organization for Economic Co-operation and Development
PDM	Project Design Matrix
PO	Plan of Operation
R/D	Record of Discussion
SAPI	Special Assistance for Project Implementation

SBV	State Bank of Viet Nam
SPC	Special Purpose Company
TOR	Terms of Reference
TRAMOC	Hanoi Urban Transport Management and Operation Center
TRANSERCO	Hanoi Transport and Service Corporation
UMRT	Urban Mass Rapid Transit
WB	World Bank
WG	Working Group

Part 1. Basic Information of the Project

1.1 Target Country

The Socialist Republic of Viet Nam

1.2 Title of the Project

Project for Supporting Development of Interoperable Smart Card System for Public Transportation in Hanoi

1.3 Duration of the Project

Planned: from December 2017 to December 2019

Actual: from December 2017 to May 2021

The duration of the project was extended for one (1) year and five (5) months due to the following reasons.

- Despite the agreement on the establishment of working groups (WGs) at the first Joint Coordination Committee (JCC) meeting held on 2 February 2018, WG members had not been fixed until the end of March 2018 stipulated by the Decision No. 341/QD-SGTVT dated 29 March 2018. This caused two-month delay in the launch of the project.
- The Design Guideline and Technical Specifications (DG/TS), which is an output of the activity 1, has been premised on the card-based ticketing (CBT) system. Therefore, in compliance with the Decision 3978/QD-UBND issued by Hanoi City, the project team submitted to the Hanoi Department of Transport (HDOT) the outline of DG/TS based on the CBT system on 17 January 2019. On the other hand, Hanoi City requested the project team to take account-based ticketing (ABT) system into consideration as a response to new technology toward a smart city concept. Hence, Hanoi City, Japan International Cooperation Agency (JICA), and JICA Expert Team (JET) conducted a comparative study between CBT and ABT systems, and agreed on adoption of the CBT system. This discussion hindered the approval process: the outline of DG/TS was finally approved on 26 April 2019, approximately three (3) months after the submission.
- Determining all technical items in the DG/TS takes a long time. For efficient and smooth work, working groups discussed the best options to develop the DG/TS without waiting for the final decision on all technical matters. After submission of the draft DG/TS, Hanoi City requested the project team to revise it so that fares can be deducted at boarding instead of alighting. JICA and JET discussed and accepted this request. In addition, the global coronavirus disease (COVID-19) pandemic prevented JET from conducting activities in Hanoi since March 2020. Taking this situation into consideration, the project period was extended for one (1) year.

1.4 Background of the Project

Japan has implemented various approaches to introducing a transportation IC card system in Viet Nam, including the following:

- September 2011: proposed an interoperable automated fare collection (AFC) system for the Vietnamese government at the second Japan-Viet Nam Transport Vice-Ministerial Meeting
- April-November 2012: conducted a survey on a necessary framework for introducing the interoperable AFC system at JICA SAPI (Establishment of an Organization for the Operation and Maintenance of Metropolitan Railway Lines in Hanoi City)
- May 2012: The Ministry of Land, Infrastructure, Transport and Tourism conducted a seminar on the AFC system in Hanoi hosted by the Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
- December 2012-March 2013: MLIT conducted Survey on the AFC System to Realize Interoperable IC Card and Common Fare System among multiple lines in Viet Nam
- February 2013: MLIT proposed draft common technical specifications for IC card usage among multiple lines to the Science and Technology Department, Ministry of Transport, Viet Nam. The public-private mission explained importance of the interoperable use and advantages of the Japanese system to the Hanoi People's Committee (HPC).
- 2013: conducted a pilot project for introduction of the IC card system as a part of the Project for Improving Public Transportation in Hanoi conducted by JICA

It is notable that the pilot project in the Project for Improving Public Transportation in Hanoi by JICA contributed to deep recognition of IC cards in the field of public transportation by introducing 200,000 Japanese-style IC cards. Although Hanoi City has since prepared for full-scale introduction, the system has not been implemented due to limited budget and lack of development and operation structure.

On the other hand, the AFC system has been considered in the construction of urban mass rapid transit (UMRT) system. Each line funded by different donors is going to introduce different types of IC card: Line No. 1 and 2 funded by Japan is to adopt FeliCa, while Line No. 2A funded by China and Line No. 3 funded by France and Asian Development Bank (ADB) will apply MIFARE and Calypso, respectively. In this context, Hanoi City requested this project with the aim of formulating technical standards to develop a system for interoperable use of IC cards.

The survey for formulating detailed plans for this project was conducted in 2015. Since then, HPC with a new structure and leader has been implementing smart city policies, in which introduction of smart card (IC card) system to public transportation is considered one of the most urgent issues. In June 2017, HPC instructed Hanoi Transport and Service Corporation (TRANSERCO, a public bus operator in Hanoi) and Viettel (a major telecommunication company) to develop IC cards with a view to introducing them to Bus Rapid Transit (BRT) Line No. 1 and bus services. These two companies developed the system according to this order. However, although the pilot project for BRT services was launched, the system has not been actually implemented. In this regard, DG/TS for the interoperable use of IC cards is expected to serve as a basis of IC card introduction in Hanoi.



Source: JICA Project Team

Figure 1.4.1 Target Area of the Project

1.5 Project Outline

1.5.1 Overall Goal

Interoperable Smart Card Systems are developed for the public transportation in Hanoi.

1.5.2 Project Purpose

Technical and management capacities of counterpart agencies under Hanoi People’s Committee (HPC) are improved for the development of interoperable smart card system for public transportation in Hanoi.

1.5.3 Expected Outputs and Activities

The following are the expected outputs at the end of the project.

Output 1: ‘Design Guideline and Specifications’ for interoperable smart card system are developed.

Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The activities corresponding to the outputs above are shown in Table 1.5.1.

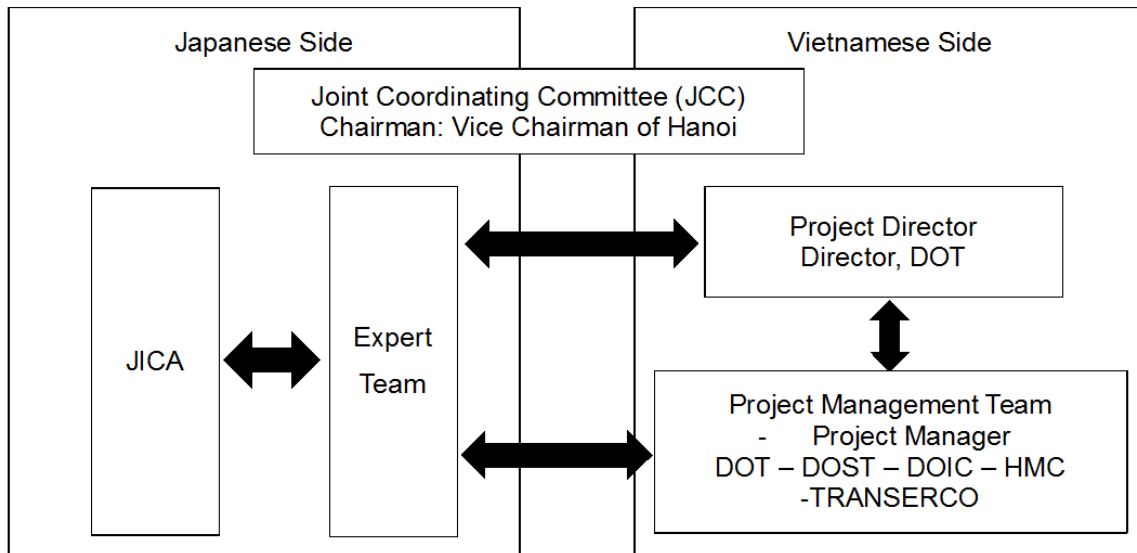
Table 1.5.1 Project Activities

Outputs		Activities
1	‘Design Guideline and Specifications’ for interoperable smart card system are developed.	1-1. Collect and analyze information on the existing and approved smart card systems for the public transportation system in Hanoi 1-2. Prepare an outline of ‘Design Guideline and Specifications’ and fare policy 1-3. Consult with the relevant authorities and finalize the outline of the ‘Design Guideline and Specifications’ and fare policy 1-4. Draft a ‘Design Guideline and Specifications’ with fare policy 1-5. Consult with the relevant authorities and finalize the ‘Design Guideline and Specifications’ 1-6. Conduct seminar(s) to introduce the draft ‘Design Guideline and Specifications’ and fare policy
2	Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.	2-1. Define the scope of work to be performed by the proposed Fare Management Center (Division) (as a management model for Hanoi Interoperable AFC) 2-2. Define tasks and responsibilities of each unit under the Fare Management Center (Division) 2-3. Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division) 2-4. Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements

1.6 Project Organization

1.6.1 Implementing Structure of the Project

The implementing organization of the project is shown in Figure 1.6.1. HPC assigned HDOT as a main counterpart of this project, as well as Hanoi Department of Science and Technology (HDOST), Hanoi Department of Information and Communication (HDOIC), Hanoi Metro Company (HMC), TRANSERCO, and so on, as relevant organizations.



Source: JICA Project Team

Figure 1.6.1 Implementing Structure of the Project

1.6.2 Counterpart

Counterparts are assigned as driving members of this project, and divided into working groups (WGs) according to the expected output. Detailed information on WGs is explained in 1.7 Basic Approach for Project Implementation.

a. Name of Working Group

- 【Activity 1】 Working Group 1 : discussion on fare system
- Working Group 2 : discussion on operation system
- Working Group 3 : discussion on technical specifications
- 【Activity 2】 Working Group 4 : discussion on fare management center (FMC)

b. Members

1. JCC members:

1. Mr. Nguyen The Hung, Vice Chairman of HPC, Chairman of JCC
2. Mr. Vu Van Vien, Director of HDOT, Vice Chairman of JCC, Project Director
3. Mr. Vu Ha, Deputy Director of HDOT, Standing Deputy Director of the Project
4. Mr. Tran Ngoc Nam, Deputy Director of HAPI, member
5. Mr. Nguyen Viet Ha, Deputy Director of DOF, member
6. Mr. Pham Trung Chinh, Deputy Director of DoST, member
7. Mr. Nguyen Xuan Quang, Deputy Director of DoIC, member
8. Mr. Nguyen Cong Nhat, Deputy Director General of TRANSERCO, member
9. Mr. Vu Hong Truong, President of Members Council and Director General of HMC, member
10. Mr. Nguyen Hoang Hai, Director of TRAMOC, member
11. Mr. Tran Huu Bao, Head of Planning – Finance Division under HDOT, member
12. Mr. Dao Viet Long, Head of Transport Management Division under HDOT, member

2. Working Group 01:

No.	Name	Organization	Title	Position in WG
1	Mr. Duong The Binh	HDOT	Deputy Head of Transport Infrastructure Management Division (former Vice Director of TRAMOC)	Leader
2	Ms. Tran Thi Kim Khue	TRAMOC	Head of Organization – General Affairs Dept	Deputy Leader
3	Ms. Pham Thi Thanh Huong	HDOT	Officer of Planning and Financial Division	Deputy Leader
4	Mr. Nguyen Tuyen	HDOT	Deputy Head of Transportation Management Division	Member
5	Mr. Nguyen Dinh Chien	HDOT	Deputy Head of Planning and Financial Division	Member

3. Working Group 02:

No.	Name	Organization	Title	Position in WG
1	Mr. Thai Ho Phuong	TRAMOC	Vice Director	Leader
2	Mr. Pham Van Viet	TRAMOC	Officer in Science and Technology Division	Deputy Leader
3	Ms. Pham Thi Thanh Huong	HDOT	Officer of Planning and Financial Division	Deputy Leader
4	Mr. Nguyen Tuyen	HDOT	Deputy Head of Transportation Management Division	Member
5	Mr. Nguyen Huu Tuyen	HDOIC, IT Master	Head of Technical and Service Development Division- Hanoi Information Technology and Communication Training Center	Member
6	Mr. Tran Chung	TRANSERCO	Head of IT Division, Technical Department	Member
7	Mr. Tran Tuan Hung	HMC Company	Deputy Head of Engineering-Infrastructure Division	Member

4. Working Group 03:

No.	Name	Organization	Title	Position in WG
1	Mr. Pham Thanh Lam	TRAMOC	Deputy Head of Science and Technology Dept	Leader
2	Mr. Bui Van Dung	TRAMOC	Officer of Science and Technology Division	Deputy Leader
3	Ms. Pham Thi Thanh Huong	HDOT	Officer of Planning and Financial Division	Deputy Leader
4	Mr. Tran Chung	TRANSERCO	Head of IT Division, Technical Department	Member
5	Mr. Nguyen Huu Tuyen	HDOIC, IT Master	Head of Technical and Service Development Division- Hanoi Information Technology and Communication Training Center	Member
6	Mr. Le Tran Phong	HDOST	Officer of Technology Division	Member

5. Working Group 04:

No.	Name	Organization	Title	Position in WG
1	Ms. Tran Thi Phuong Thao	TRAMOC	Vice Director	Leader
2	Ms. Tran Thi Van Huong	TRAMOC	Head of Ticket Management Division	Deputy Leader
3	Ms. Pham Thi Thanh Huong	HDOT	Officer of Planning and Financial Division	Deputy Leader
4	Ms. Dinh Thi Hong Sim	TRAMOC	Head of Accounting Division	Member
5	Mr. Ngo Duc Linh	TRAMOC	Deputy Head of Ticket Management Division	Member
6	Mr. Tran Chung	TRANSERCO	Head of IT Division, Technical Department	Member
7	Mr. Nguyen Huu Tuyen	HDOIC, IT Master	Head of Technical and Service Development Division- Hanoi Information Technology and Communication Training Center	Member

1.6.3 JICA Project Team

JICA Project Team was dispatched to conduct the project, which consists of 16 experts (18 experts including substitution of members).

No.	Name	Designation	WG
1	Mr. TAKAGI Michimasa	Team Leader/Urban Public Transport	PO
2	Dr. OTSUKI Tatsuo	Deputy Team Leader/AFC Technical Management	PO/WG3
3	Mr. HORIUCHI Satoru Mr. SAITO Ryota	Public Transport Fare Policy (Railway)	WG1
4	Mr. KUMAI Tsuyoshi	Public Transport Fare Policy (Bus)	WG1
5	Mr. UMEKAWA Tomohiko	Interoperable Smart Card Plan	WG2
6	Mr. MIZOGUCHI Naoki	Smart Card Data Management and Utilization	WG2
7	Mr. FUKATSU Tomoi	Interoperable Smart Card System (Railway)	WG2/WG4
8	Mr. TANAKA Akihiko	Interoperable Smart Card System (Bus) 1	WG2

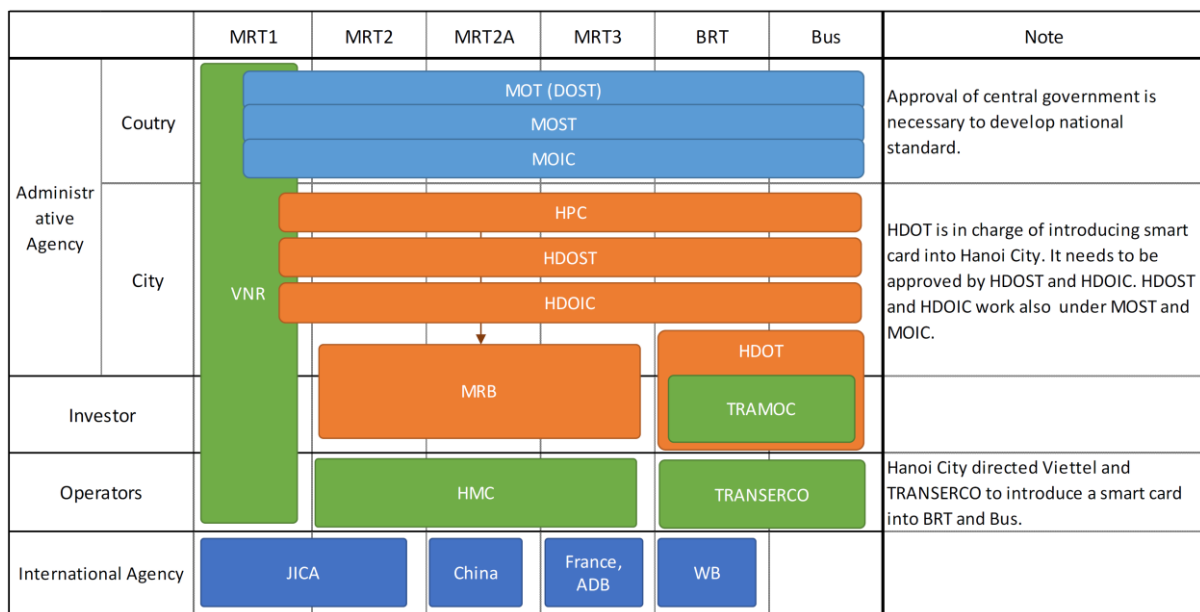
9	Mr. MIYAHARA Hidenori	Interoperable Smart Card System (Bus) 2	WG2
10	Mr. HONDA Koya:	Communication System	WG1
11	Mr. KUWANO Hideki Mr. WATABE Yasumasa	Fare Management System (AFC Technical Spec.) 1	WG3
12	Mr. HIRAMATSU Kotaro	Fare Management System (AFC Technical Spec.) 2	WG3
13	Mr. NAKAMURA Kenichi	Fare Management System (Smart Card Reader Writer Technical Spec.)	WG3
14	Mr. SAKUMA Atsushi	Organization Institution	WG4
15	Ms. SAKAMOTO Yukari	Fare Management System (Host System)	WG3
16	Mr. OHNO Manabu	Monitoring/Training in Japan/Coordination	PO

Note: PO: Project Operation

1.7 Basic Approach for Project Implementation

1.7.1 Coordination with Relevant Projects and Organizations

In order for the DG/TS developed for Hanoi City to be utilized in other cities in Viet Nam, such as Ho Chi Minh City, cooperation with the central government, including Ministry of Transport (MOT), Ministry of Science and Technology (MOST), and Ministry of Information and Communication (MOIC) is required. Furthermore, coordination and cooperation with other international organizations that assists construction of UMRT, such as World Bank (WB), Asian Development Bank (ADB) and French Agency, as well as with companies developing the AFC system under these organizations is needed. Therefore, while the project team collaborated with counterparts related to Hanoi City through daily activities, it also ensured communication with other agencies including national and international organizations through seminars and other opportunities.

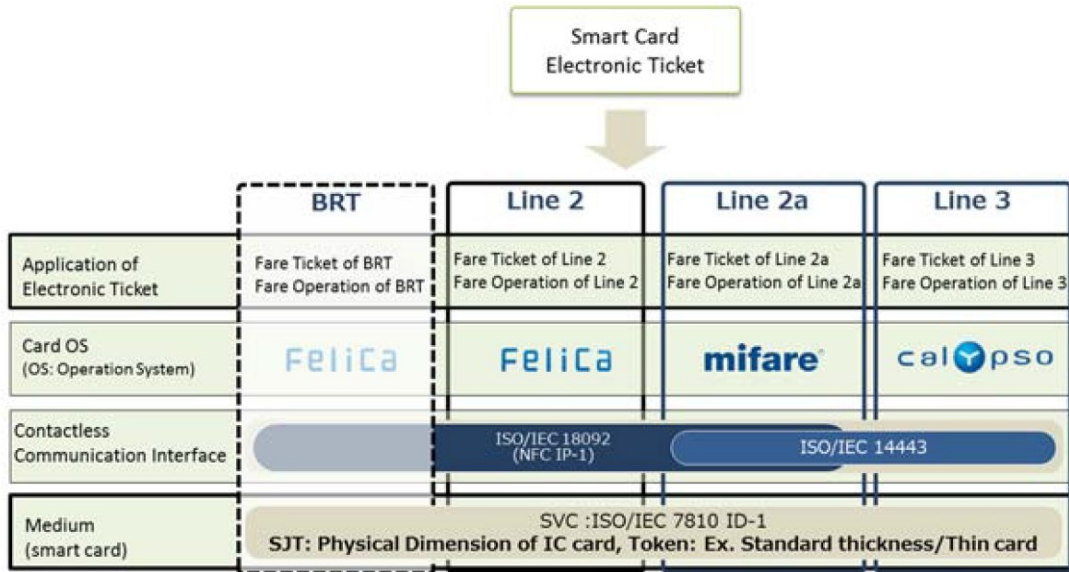


Source: JICA Project Team

Figure 1.7.1 Organizations Involved in the Project

1.7.2 Coordination with IT Companies in Hanoi

Under the direction of Hanoi City, a group of private companies (Viettel, a major telecommunication company and TRANSERCO, a bus operator) has been developing AFC system for BRT and bus services. coordination with this group is also significant to conduct the project efficiently and smoothly. In this project, experts in IT companies in Hanoi also joined the project members to develop the DG/TS. The planned AFC system is illustrated in Figure 1.7.2.

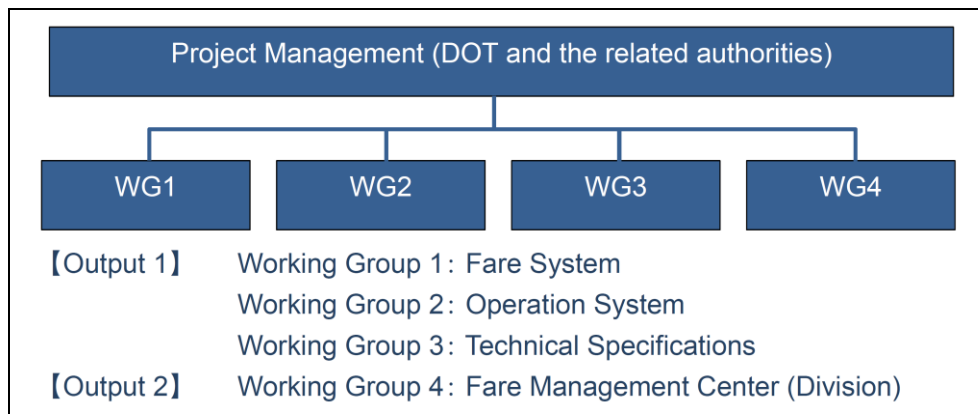


Source: JICA Project Team

Figure 1.7.2 Introduction Plan of AFC System in Hanoi

1.7.3 Set-up of Working Group

To utilize the output of this project, it should be noted that each organization should acquire different expertise. For instance, there should be an organization that inspects system design in detail, an organization that operates and manages the DG/TS, and an organization that use and manage the system as an operator, and so on. Therefore, the following working groups (WGs) were established for technical transfer. The project was proceeded through specific and detailed discussion in WG meetings, enhancing understanding of the counterpart agencies. The number of WG meetings was as many as 189 in total.



Source: JICA Project Team

Figure 1.7.3 Structure of Working Group in this Project

Part 2. Results of the Project

2.1 Results of the Project

2.1.1 Input by Japanese Side

2.1.1.1 Experts

JICA Expert Team (JET) consisting 16 experts were dispatched to Hanoi to conduct project activities. By the end of May 2021, the end of the project period, JET spent 67.30 mon-months (MMs).

Table 2.1.1 Input of Japanese Experts

Designation	Name	No. of MM	
		Plan	Actual
Team Leader/ Urban Public Transport	Mr. TAKAGI Michimasa	7.70	8.70
Deputy Team Leader/AFC Technical Management	Dr. OTSUKI Tatsuo	10.60	10.60
Public Transport Fare Policy (Railway)	Mr. HORIUCHI Satoru	2.92	2.92
	Mr. SAITO Ryota	3.58	2.58
Public Transport Fare Policy (Bus)	Mr. KUMAI Tsuyoshi	3.00	3.00
Interoperable Smart Card Plan	Mr. UMEKAWA Tomohiko	1.20	1.22
Smart Card Data Management and Utilization	Mr. MIZOGUCHI Naoki	1.00	0.00
Interoperable Smart Card System (Railway)	Mr. FUKATSU Tomoi	5.00	5.02
Interoperable Smart Card System (Bus) 1	Mr. TANAKA Akihiko	3.50	3.50
Interoperable Smart Card System (Bus) 2	Mr. MIYAHARA Hidenori	3.00	3.00
Communication System	Mr. HONDA Koya	3.50	3.50
Fare Management System (AFC Technical Spec.) 1	Mr. KUWANO Hideki	0.57	0.57
	Mr. WATABE Yasumasa	9.03	10.03
Fare Management System (AFC Technical Spec.) 2	Mr. HIRAMATSU Kotaro	0.50	0.50
Fare Management System (Smart Card Reader Writer Technical Spec.)	Mr. NAMAKURA Kenichi	1.00	0.00
Organization Institution	Mr. SAKUMA Atsushi	1.50	1.50
Fare Management System (AFC Host System)	Ms. SAKAMOTO Yukari	1.00	1.50
Monitoring/Training in Japan/Coordination	Mr. OHNO Manabu	8.70	9.16
	Total MMs	67.30	67.30

2.1.1.2 Equipment

The following equipment was purchased and used for conducting project activities. These were handed over to the counterpart (HDOT) after the project completion.

Table 2.1.2 Purchased and Used Equipment

Equipment	Quantity
Projector	1
Desktop Computer with Microsoft Software	2
Monitor	2
Antivirus Software	3
Laptop	2
Wi-Fi Router	1
Webcam	2
Speaker	1
Portable Charger	1

2.1.2 Input by Vietnamese side

2.1.2.1 Input of Counterparts

As explained in Section 1.6.2, 29 persons were assigned as counterpart members of the project.

2.1.2.2 Working Environment Preparation

The counterparts provided a working space with necessary equipment for JICA Project Team.



Project office



Meeting room in the project office

Source: JICA Project Team

Figure 2.1.1 Provided Working Space

2.1.2.3 Project Expenses

HDOT provided the following expenses:

- Personnel expenses of the counterparts

- Management cost of the project office
- Others (domestic travel costs of Vietnamese members, etc.)

2.1.2.4 JCC and Working Group Meetings

During the project implementation, five (5) Joint Coordination Committees (JCC) meetings and regular working group (WG) meeting are held.

Table 2.1.3 Joint Coordination Committee and Working Group Meetings
Joint Coordination Committee Meeting

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	First JCC meeting	2 February 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Outline of Work Plan (Draft) 2) Confirmation of the Undertakings by Vietnamese Side
2	Second JCC Meeting	22 August 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project 2) Proposal from WG 3) Items to be confirmed by Hanoi-city 4) Activity plans
3	Third JCC Meeting	7 November 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Achievements in the 1st Year 2) Explanation for Outline of 'Design Guideline and Specifications 'and Fare Policy 3) Activities in Next Period
4	Fourth JCC Meeting	29 August 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Report about Project Implementation 2) Remaining Items 3) Plan/Procedure to obtain appraisal, approval on Design Guidelines and Technical Specifications 4) Proposal on AFC system implementation under the city bus network (applying Project outputs) 5) Proposal about Project extension
5	Fifth JCC Meeting	25 March 2021	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) JICA Project Evaluation 2) Presentation on the Project Results 3) Development for Smart Card System for Public Transportation in Hanoi City

Meeting among WGs/Meeting with Originations

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	1st WG Leader Meeting	23 August 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Ideal AFC Model in Hanoi 2) Confirmation of 2nd JCC
2	2nd WG Leader Meeting	4 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project since last JCC meeting 2) Response to the notice by HPC 3) Confirmation of the materials and preparations for the seminar

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
3	3rd WG Leader Meeting	6 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Reflection of the seminar for the formulation of Outline Report 2) Site Visit at TRAMOC (Bus Operator) Demo for Bus unit
4	JICA-JET meeting for the fourth JCC meeting	23 August 2019	JICA Headquarters, JICA Viet Nam Office, JICA Expert Team	1) Topics and materials in JCC meeting
5	Inter-Working Group Meeting	29 August 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Transfer discount 2) Valid period of season passes
6	Inter-Working Group Meeting (JET only)	3 October 2019	JICA Expert Team	1) Confirmation of draft DG/TS
7	Inter-Working Group Meeting	3 October 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Confirmation of remaining items
8	Orientation Meeting	4 October 2019	JICA Headquarters, JICA Viet Nam Office, JICA Expert Team	1) Confirmation on how to develop outputs and schedule
9	General Meeting with JICA	7th October 2019	JICA Headquarters, JICA Expert Team	1) Contents of outputs and the seminar
10	Inter-Working Group Meeting (JET only)	27th November 2019	JICA Expert Team	1) Review of the seminar and orientation
11	Meeting with HDOT	29th November 2019	HDOT, JICA Expert Team	1) Schedule of the project
12	Meeting with HDOT and TRAMOC	25th December 2019	HDOT, TRAMOC, JICA Expert Team	1) Schedule of the project 2) Confirmation on remaining items 3) Training in Japan
13	Meeting at Ho Chi Minh City	16th January 2020	HCMC-DOT, MAUR, HCMC-Metro, JICA, WB, NJPT, JICA Expert Team	1) Opinion exchange about interoperable use of IC card
14	JET Meeting	13th February 2020	JICA Expert Team	1) Confirmation of revision policy of the DG/TS
15	Meeting with HDOT	12th August 2020	HDOT, JICA Expert Team	1) Revision of RD, project schedule, etc. caused by change in project period
16	Inter-Working Group Meeting (JET only)	1st September 2020	JICA Expert Team	1) Confirmation of revision of the DG/TS by each Working Group 2) Confirmation on topics to be discussed among WGs 3) Confirmation on schedule

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
17	WG1-WG3 meeting (JET only)	3rd September 2020	WG1 and WG3 members of JICA Expert Team	1) Confirmation on how to deal with the case where passengers alight buses without tapping their IC cards
18	WG1-WG3 meeting (JET only)	15th September 2020	WG1 and WG3 members of JICA Expert Team	1) Final confirmation on revised parts of the DG/TS

Seminar

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	1st Seminar	5 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Project Overview and Introduction of Basic Approach on Interoperable Smart Card System for Public Transportation in Hanoi
2	2nd Seminar	27th November 2019	HDOT, HDOF, HDOST, HDOIC, SBV, HMC, TRANSERCO, MOT, TRAMOC. Construction Association, BIDV, IT Agribank, Vietcombank, Viettel, MK Group, ITD, VNPT, NAPAS, ADB, WB, ABeam Consulting (Vietnam), Viet Nam Tokyo Metro, TOPPAN FORMS, Sony Imaging Products & Solutions, Sony Electronics Vietnam, JCB International	1) Overview of the draft DG/TS

Working Group 1 Meeting

No.	Date	Subject
1	16th Apr, 2018	<ul style="list-style-type: none"> Outline of the expected output of WG1 Confirmation of the activity schedule
2	29rd May, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in Japan
3	30th May, 2018	<ul style="list-style-type: none"> Discussion on the feasibility to install each system into Hanoi
4	5th Jun, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in other countries
5	25th Jul, 2018	<ul style="list-style-type: none"> Clarification of the items to be discussed Discussion on the reporting to the 2nd JCC
6	19th Sep, 2018	<ul style="list-style-type: none"> Confirmation of the contents of outline report
7	20th Sep, 2018	<ul style="list-style-type: none"> Explanation of transfer discount in other countries
8	28th Nov, 2018	<ul style="list-style-type: none"> Confirmation of the contents of seminar Confirmation of items to be discussed in the upcoming WG1
9	7th Dec, 2018	<ul style="list-style-type: none"> Confirmation of distance-based fare Discussion on ticket type
10	14th Jan, 2019	<ul style="list-style-type: none"> Discussion on the way of transfer discount
11	17th Jan, 2019	<ul style="list-style-type: none"> Discussion on ticket types and information on card surface
12	22nd Jan, 2019	<ul style="list-style-type: none"> Confirmation of the result of discussion and table of contents of the output
13	26th Feb, 2019	<ul style="list-style-type: none"> Confirmation of contents of fare system guideline (proposed)
14	14th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the comment from Vietnamese side against fare system guideline (proposed)
15	20th Mar, 2019	<ul style="list-style-type: none"> Reconfirmation of the whole structure of outputs in line with the work plan Confirmation of the tasks from April
16	25th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the response toward the comments from Vietnamese side against fare system guideline (proposed)
17	13rd Jun, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline

18	18th Jun, 2019	• Leader meeting with Mr. Binh (vice director of TRAMOC)
19	16th Jul, 2019	• Discussion on how to deal with fare system guideline
20	23rd Aug, 2019	• Discussion on how to deal with fare system guideline
21	4th Oct, 2019	• Discussion and Confirmation on draft technical cooperation outputs
22	24th Oct, 2019	• Confirmation on outputs with WG3 (JICA Expert Team only)
23	31st Oct, 2019	• Arrangement and material of the seminar (JICA Expert Team only)
24	25th Nov, 2019	• Discussion on contents of the seminar
25	20th Aug, 2020	• Confirmation on revision policy of the DG/TS and schedule
26	26th Aug, 2020	• Confirmation on draft revision of the DG/TS and schedule

Working Group 2 Meeting

No.	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> • Procedure on WG2 activities “Development of Operational Specification” • Explanation of the draft proposal of the list of Operational Specification • Outline of the expected final output of WG2 • Confirmation of the activity schedule
2	13rd Apr, 2018	<ul style="list-style-type: none"> • Outline of the expected final output of the Operational Specification • Confirmation of the activity schedule
3	30th May, 2018	<ul style="list-style-type: none"> • Explanation of the draft proposal of the list of Operational Specification • Re-issue and re-issue registration (Assignment) • Card life cycle
4	31st May, 2018	• Boarding and Alighting from railway, BRT and bus
5	21st June, 2018	• Discussion on the Operational Specification
6	5th July, 2018	• Interview about operation of railway, BRT and bus
7	21st Aug, 2018	• Confirmation of the contents of outline report
8	6th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
9	8th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
10	4th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
11	18th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
12	22nd Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
13	24th Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
14	26th Mar, 2019	• Discussion on the operational flow in the use of interoperable IC card
15	29th May, 2019	• Discussion on the operational flow in the use of interoperable IC card
16	26th Jun, 2019	• Discussion on the operational flow in the use of interoperable IC card
17	24th Jul, 2019	• Discussion on the operational flow in the use of interoperable IC card
18	28th Aug, 2019	• Discussion on the operational flow in the use of interoperable IC card
19	30th Oct, 2019	• Discussion on the DG/TS regarding the use of interoperable IC card
20	31st Oct, 2019	• Discussion on the DG/TS regarding the use of interoperable IC card
21	26th Nov, 2019	• Discussion on contents of the seminar
22	19th Dec, 2019	• Discussion on the fare deduction method
23	14th Jan, 2020	• Discussion on the fare deduction method
24	27th Aug, 2020	• Discussion on revision policy of the DG/TS and schedule

No.	Date	Subject
25	22th Sep, 2020	<ul style="list-style-type: none"> Confirmation on revision of the WG2 documents via email

Working Group 3 Meeting

No	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> Discussion on WG3 activity planning <ul style="list-style-type: none"> ➤ Confirmation on WBS, operation plan ➤ Sharing the target deliverables of WG3 (AFC technical specification) ➤ Review on AFC system interoperable use
2	13th Apr, 2018	<ul style="list-style-type: none"> Lecture for understanding of AFC system, basic terms and structure Review and discussion on Hanoi AFC technical framework (3978) from interoperable perspective.
3	21st May, 2018	<ul style="list-style-type: none"> Explanation of AFC survey report on public transportation interoperability in Hanoi City. (BRT, Line2A, Line3, laws and regulations) Review on overview on AFC technical specification and IC card issuance process Procedure on WG3 activities and planning for upcoming 3 months
4	22nd May, 2018	<ul style="list-style-type: none"> Understanding of AFC technical specification <ul style="list-style-type: none"> ➤ Explanation and discussion on each AFC technical specification item. (ticket media, R/W, Smartcard IC format, encoding process/format, common code, ticket validation, transaction data and set value, black list, trip pattern, host system)
5	23rd May, 2018	
6	24th May, 2018	
7	25th May, 2018	
8	28th May, 2018	
9	29th May, 2018	
10	30th May, 2018	
11	4th June, 2018	<ul style="list-style-type: none"> Review of proposal of FMC by TRAMOC (2015):
12	8th June, 2018	<ul style="list-style-type: none"> Framework of Technical Specification for Host System
13	11th June, 2018	<ul style="list-style-type: none"> Clarification key points of AFC interoperable technical specification for Hanoi <ul style="list-style-type: none"> ➤ Acquire the important key point for AFC technical specification to be introduced in Hanoi city ➤ Listing up the discussion items with other WGs.
14	13th June, 2018	
15	15th June, 2018	
16	19th June, 2018	
17	26th June, 2018	
18	27th June, 2018	
19	29th June, 2018	
20	4th July, 2018	
21	27th June, 2018	<ul style="list-style-type: none"> MK smart factory visit for IC card manufacturing tour and study on interoperable bus R/W.
22	19th July, 2018	<ul style="list-style-type: none"> Review of Drafted outline of AFC technical specification. <ul style="list-style-type: none"> ➤ Create and review draft version of outline of AFC technical specification.
23	23rd July, 2018	
24	23rd July, 2018	<ul style="list-style-type: none"> Visit to HMC <ul style="list-style-type: none"> ➤ Technical Information of Line 2A ➤ Communication with HMC
25	24th July, 2018	<ul style="list-style-type: none"> Review of Drafted outline of AFC technical specification.
26	31st July, 2018	<ul style="list-style-type: none"> Review of BRT document from Viettel (rev3.2)

No	Date	Subject
27	31st July, 2018	<ul style="list-style-type: none"> Review Host system of Drafted outlines of Technical Specification (ver. 0.12)
28	24th July, 2018	<ul style="list-style-type: none"> Review BRT AFC document from Viettel On site review of demonstration of AFC system for pilot test and confirmation of technical details with Transerco-Viettel BRT project members Review on summary of main point discussed and Study of coping plan Joint meeting with WG1, WG2 and WG4 to shaping consensus on main point discussed proposed by WG3
29	27th July, 2018	
30	8th Aug, 2018	
31	10th Aug, 2018	
32	14th Aug, 2018	
33	16th Aug, 2018	
34	21st Aug, 2018	<ul style="list-style-type: none"> Confirmation of the contents to be reported in JCC (Discussion on role sharing in formulation of the technical specifications)
35	24th Aug, 2018	<ul style="list-style-type: none"> Discussion on host system specifications
36	7th Sep, 2018	<ul style="list-style-type: none"> Discussion on contents and sharing of work between Japanese and Vietnamese sides in formulation of the technical specifications (common code)
37	3rd Oct, 2018	<ul style="list-style-type: none"> Discussion on common code
38	5th Oct, 2018	<ul style="list-style-type: none"> Discussion on common code and Blacklist
39	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus company(1). Investigation was conducted in terms of infrastructure related to system and network and amount of data to be dealt with at each depot, for the purpose of establishment of AFC system suitable for the actual bus operation. : Nam Ha Noi Bus company,
40	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus companies(2): Cau Buou bus company (142 bus, 11 line)
41	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus company (3): Tan Dat bus company (68 bus, 5 line))
42	6th Nov, 2018	<ul style="list-style-type: none"> Confirmation of contents of JCC meeting Discussion on technical specifications (Ticket media)
43	8th Nov, 2018	<ul style="list-style-type: none"> Discussion on proposed AFC system structure suitable for bus services
44	9th Nov, 2018	<ul style="list-style-type: none"> Site visit at Line 2A. Inspection of installed AFC facility, IC card and operation, and investigation for tasks to be tackled for formulation of common specifications are conducted. Survey of actual AFC trial operation in BRT
45	9th Nov, 2018	<ul style="list-style-type: none"> Discussion on JCC 3rd result in WG3
46	20th Nov, 2018	<ul style="list-style-type: none"> Discussion on common code and gate access log
47	28th Nov, 2018	<ul style="list-style-type: none"> Discussion on specifications for common code, which is used to process data in interoperable use
48	7th Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
49	17th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
50	19th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
51	21st Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
52	25th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
53	11th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (common code, format)
54	16th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (reader/writer)
55	17th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (encode process)
56	22nd Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (trip pattern)
57	24th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (host system)
58	28th Jan, 2019	<ul style="list-style-type: none"> Discussion on schedule of further WG3 activities

No	Date	Subject
59	19th Feb, 2019	<ul style="list-style-type: none"> • Discussion on installation of IC card in buses with TRANSERCO
60	20th Feb, 2019	<ul style="list-style-type: none"> • Discussion on work plan and role sharing in 2019 • Confirmation of list of tasks and role sharing in formulation of technical specifications
61	20th Feb, 2019	<ul style="list-style-type: none"> • Review of project with Mr. Hai (extension of project and other discussions)
62	20th Feb, 2019	<ul style="list-style-type: none"> • Interview with NAPAS about how to apply IC card to other transport • Discussion with Ms. Huong on tasks and solutions in the process of project
63	17th Apr, 2019	<ul style="list-style-type: none"> • Site visit at Payoo Corporation to survey the situation of Fintech, which is used for ABT system • Site visit at pilot trial at Ho Chi Minh bus, in which ABT system is installed (create an account of ZaloPay, apply for UniPass, issue IC card, take a bus) • Sharing opinion with iTD Company, one of the most promising IT company in Vietnam, about ABT and CBT in the structure of AFC system
64	19th Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of progress in outline (to be tackled after conclusion of HPC meeting)
65	22nd Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of items, schedule and role sharing ➢ Vietnamese side raised a problem in lack of resources to be used for contents confirmation
66	24th Apr, 2019	<ul style="list-style-type: none"> • Sharing opinion with R&D sector, NAPAS
67	28th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
68	30th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
69	4th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code and Encode Format
70	6th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Format
71	11th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Format
72	13th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Media
73	18th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for R/W and Ticket Validation
74	20th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
75	2nd July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
76	4th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
77	9th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
78	18th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
79	23rd July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
80	25th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
81	30th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
82	6th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data
83	8th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data
84	20th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications (Station code) on request of Hanoi member
85	22th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications (Station code) on request of Hanoi member
86	27th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data and Trip Pattern
87	10th Sep, 2019	<ul style="list-style-type: none"> • Discussion on project planning
88	10th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Host System and Trip Pattern
89	12th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Trip Pattern
90	17th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Trip Pattern
91	19th Sep, 2019	<ul style="list-style-type: none"> • Explanation contents and structure of Main report

No	Date	Subject
92	24th Sep, 2019	• Review report of Host System
93	1st Oct, 2019	• Discussion on bus stop code
94	3rd Oct, 2019	• Review main report of WG3
95	15th Oct, 2019	• Pre-discussion on bus stop code (JICA Expert Meeting only)
96	17th Oct, 2019	• Discussion on bus stop code
97	5th Nov, 2019	• Discussion on contents of the seminar in WG3
98	12th Nov, 2019	• Preparation and review on seminar material
99	26th Nov, 2019	• Rehearsal of the seminar and check of the contents
100	26th Dec, 2019	• Bus stop code structure and confirmation on reflection of the comments at the seminar
101	18th Aug, 2020	• Confirmation on revision of the DG/TS (revised parts, basic concept)
102	20th Aug, 2020	• Confirmation on revised contents of the DG/TS (confirmation on involved member in the revision and schedule with Ms. Huong (HDOT))
103	27th Aug, 2020	• Confirmation on revised contents of the DG/TS (encode format and ticket validation)
104	3rd Sep, 2020	• Confirmation on revised contents of the DG/TS (encode data)
105	10th Sep, 2020	• Confirmation on revised contents of the DG/TS (transaction data format and transaction data encode)
106	17th Sep, 2020	• Confirmation on revised contents of the DG/TS (trip pattern)
107	24th Sep, 2020	• Confirmation on revised contents of the DG/TS (main body of the DG/TS) • Q&A about the DG/TS

Working Group 4 Meeting

No.	Date	Subject
1	21st Aug, 2018	• Confirmation of contents of outline report
2	5th Nov, 2018	• Discussion on organizational structure and staffing requirements under FMC
3	6th Dec, 2018	• Discussion on organizational structure and staffing requirements under FMC
4	19th Dec, 2018	• Discussion on organizational structure and staffing requirements under FMC
5	21st Dec, 2018	• Discussion on contents of outline report
6	23rd Jan, 2019	• Discussion on organizational structure and staffing requirements under FMC
7	27th Mar, 2019	• Discussion on organizational structure and staffing requirements under FMC
8	30th May, 2019	• Discussion on organizational structure and staffing requirements under FMC
9	27th Jun, 2019	• Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
10	25th Jul, 2019	• Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
11	28th Aug, 2019	• Discussion on staffing requirement of FMC
12	26th Sep, 2019	• Discussion on staffing requirement of FMC
13	19th Dec, 2019	• Confirmation on Organizational TOR of FMC

2.1.2.5 Training in Japan

During the project implementation, the counterpart participated in two (2) training in Japan programs. The details are explained below:

a. The first training in Japan was held from 6 May 2018 to 17 May 2018 for the purpose of grasping the present situation of interoperable IC card use in Japan, as well as learning challenges of interoperability and solutions implemented by operators. The participants are as follows:

- Mr. Vu Ha - HDOT, Deputy General Director
- Mr. Nguyen Hoang Hai - TRAMOC, General Director
- Mr. Nguyen Thai Dong - HDPI, General planning department, Deputy Director
- Mr. Le Tran Phong - HDOST, science management department, officer

Training contents are as below:

- Current situation of IC card use in Japan and other countries (attended the 16th ITS Asia-Pacific Forum FUKUOKA 2018)
- Understand IC card system operation at bus service offices
- Observation of cases of IC card system utilization at traffic terminals, commercial and tourist facilities
- Existing status and future plans of IC card use in railways (focusing on interoperability)



Presentation at ITS Forum by Mr. Hai



Lecture at Nishi-Nippon Railroad Co., Ltd.



Tokyo Metro General Training Center



JR Shinjuku Station

Source: JICA Project Team

Figure 2.1.2 First Training in Japan

- b. The second training in Japan was held from 17 February 2020 to 27 February 2020 for the purpose of learning actual situation of interoperable IC card use and operation in accordance with local characteristics, as well as considering its utilization in the project and adaption to Hanoi. The participants are as follows:
- Mr. Duong The Binh - HDOT, Deputy Head of Transport Infrastructure Management Division
 - Mr. Bui Xuan Quyet Thang - TRANSERCO, Deputy Head of Bus Operation Center
 - Mr. Nguyen Huu Quang - TRAMOC, Deputy Head of Science Technology Division,
 - Mr. Tran Tuan Hung - HMC, Deputy Head of Engineering- Infrastructure Division
 - Mr. Nguyen Huu Tuyen - DOIC, Head of Technical and Service Development Division

Training contents are as below:

- Overview of nationwide interoperable IC card (nimoca)
- Technical visit at Hakata bus service office, and experience transfer between bus and train in Fukuoka
- Overview, expansion process, challenges and measures (vitalization of towns) of Kotoden Group's IC card "IruCa"
- History of Suica, overview of nationwide interoperable IC card use and technical visit at Suica-related facilities
- Observation of operation management of railways and human resource development



Technical visit at Hakata bus service office,
Nishi-Nippon Railroad Co., Ltd.



Explanation about clearing of bus onboard
equipment at bus fare clearing booth in Kotoden
Bus Headquarters



Lecture at Headquarters of East Japan Railway Company



Tokyo Metro General Training Center

Source: JICA Project Team

Figure 2.1.3 Second Training in Japan

2.2 Achievements of the Project

2.2.1 Outputs and Indicators

2.2.1.1 Output 1: 'Design Guideline and Specifications' for Interoperable Smart Card System are Developed

The results of Output 1 activities are shown in the table below.

Table 2.2.1 Results of Output 1 Activities

Activity and Work Item	Status of Activities	Results
1-1: Collection and analysis of information on the smart card systems for public transportation in Hanoi	<ul style="list-style-type: none"> - The following information on smart card system for public transportation have been collected. ✓ Legal systems and standards of smart card system ✓ Design materials of smart card system ✓ International standards of the interoperable automated fare collection (AFC) system ✓ AFC materials of MRT Line 2, Line 2a and Line 3 ✓ Planning materials of BRT and public buses ✓ Legal system and decisions regarding AFC technology (Hanoi City and Ministry of Transport (MOT)) ✓ Decisions, regulations and standards on smart cards and e-money (State Bank of Viet Nam) 	Achieved
1-2: Preparation of an outline of 'Design Guideline and Specifications' and fare policy	<ul style="list-style-type: none"> - The following activities have been conducted. ✓ Discussion on specifications of interoperable tickets ✓ Discussion on interoperable fare system ✓ Discussion on operation system ✓ Discussion on technical specifications 	Achieved
1-3: Consultation with the relevant organizations and finalization of the outline of 'Design Guideline and Specifications'	-	Achieved
1-4: Development of the draft 'Design Guideline and Specifications' and fare policy	-	Achieved
1-5: Consultation with the relevant organizations and finalization of 'Design Guideline and Specifications'	-	Achieved
1-6: Conduct of seminar(s) to introduce the draft 'Design Guideline and Specifications' and fare policy	<ul style="list-style-type: none"> - 1st Seminar: 5 December 2018 - 2nd Seminar: 27 November 2019 	Achieved



1st Seminar

2nd Seminar

Source: JICA Project Team

Figure 2.2.1 Conduct of Seminars

2.2.1.2 Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The results of Output 2 activities are shown in the table below.

Table 2.2.2 Results of Output 2 Activities

Activity and Work Item	Status of Activities	Results
2-1: Definition of the work scope of the proposed Fare Management Center (Division)	- Survey on laws and regulations - Definition of scope of work (function) that should be assigned to the Fare Management Center (Division)	- Achieved - Achieved
2-2: Definition of tasks and responsibilities of each unit under the Fare Management Center (Division)	-	Achieved
2-3: Consultation with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center	-	Achieved

Activity and Work Item	Status of Activities	Results
2-4: Preparation and submission of organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements	<ul style="list-style-type: none"> - Definition of requirements for business and operation - Organizational structure and staffing deployment 	<ul style="list-style-type: none"> - Achieved - Achieved

2.2.2 Project Purpose and Indicators

2.2.2.1 Output 1

The achievement status of Output 1 is shown below.

Table 2.2.3 Verifiable Indicators and Project Outputs (Output 1)

Objective Verifiable Indicator	Baseline	Status at the End of the Project
'Design Guideline and Specifications' for interoperable smart card system are developed.	- None	<ul style="list-style-type: none"> - 'Design Guideline and Specifications' necessary for the interoperable IC card system has been developed and submitted from Hanoi Department of Transport (HDOT) to Hanoi People's Committee (HPC). - Seminars on 'Design Guideline and Specifications' necessary for the interoperable IC card system have been held, and consensus has been achieved with related authorities in Hanoi City.

Source: Project Design Matrix 1.1

2.2.2.2 Output 2

The achievement status of Output 2 is shown below.

Table 2.2.4 Verifiable Indicators and Project Outputs (Output 2)

Objective Verifiable Indicator	Baseline	Status at the End of the Project
Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.	- None	- Organizational Terms of Reference of the Fare Management Center (Division) have been developed.

Source: Project Design Matrix 1.1

2.2.2.3 Achievement of the Project Purpose

As explained in the Project Design Matrix (PDM), the achievement of the project should be evaluated using verifiable indicators.

Table 2.2.5 Verifiable Indicators and Status at the End of the Project

Objective Verifiable Indicator	Baseline	Status at the End of the Project
- 'Design Guideline and Specifications' are approved by HPC.	- None	- 'Design Guideline and Specifications' for the approval process by HPC have been developed.
- The outline of fare policies for public transportation is developed.	- None	- The outline of fare policies for public transportation has been developed.

Source: Project Design Matrix 1.1

The following table shows required knowledge and skills for each indicator of this project. The level of knowledge and skills were evaluated based on a five-level scale as explained below.

- (1) Newbie: I have never heard of the name (1 point)
- (2) Novice: I have heard of the name, but I do not understand its detailed structure (2 points)
- (3) Young Expert: I understand its structure, but do not comprehend its details (3 points)
- (4) Expert: I understand the contents and can explain it to the third parties. However, it is difficult to add and/or revise the contents (4 points)
- (5) Senior Expert: I understand the contents and can explain it to the third parties. Moreover, I can revise the contents if necessary. (5 points)

Table 2.2.6 Component of Competence by Outputs and Activities

Outputs	Activities	Required Knowledge and Skills
Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed	Working Group 1: Discussion on fare system	1-1. Specifications of interoperable fare ticket [Metro] 1-2. Specifications of interoperable fare ticket [Bus] 1-3. Fare regulation [Metro] 1-4. Fare regulation [Bus]
	Working Group 2: Discussion on operation system	2-1. Operational Specifications [Metro] 2-2. Operational Specifications [Bus]
	Working Group 3: Discussion on technical specifications	3-1. Technical Rules 3-2. Implementing Technical Specifications 3-3. Host System
Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed	Working Group 4: Discussion on the Fare Management Center (Division)	4-1. Scope of Work of FMC 4-2. Tasks and Responsibilities of FMC 4-3. Requirements on management and operation 4-4. Organizational Structure and Staff Requirements 4-5. Operation management regulation of FMC

In order to grasp the level of knowledge and skills of counterparts at the beginning of the project, the first baseline survey was conducted in April 2018. Since, to check the achievement of the project, monitoring surveys have been conducted in the following milestones:

- April 2018: at the beginning of the project
- December 2018: when the outline is developed
- October 2019: when the first draft of DG/TS is developed
- November 2020: when the second draft of DG/TS is developed

2.3 History of PDM and PO Modification

2.3.1 Change and Mitigation of Risks

As explained in Section 1.3 Duration of the Project, the project team conducted a comparative study between card-based ticketing (CBT) and account-based ticketing (ABT) systems, in response to the request by Hanoi City to consider the ABT system as response to new technology toward a smart city concept.

In the Design Guideline and Technical Specifications (DG/TS), an output of the activity 1, the fare deduction timing is altered from at alighting (as initially specified) to at boarding.

The global pandemic of coronavirus disease (COVID-19) forced the project team to conduct their activities in a remote environment between Japan and Hanoi since March 2020.

2.3.2 Actions Undertaken by Hanoi Department of Transport

At the time of the comparison study between CBT and ABT systems, as well as the change in fare deduction timing specified in the DG/TS, HDOT sought to promote the project activities through discussion and smooth consensus process with Japan International Cooperation Agency (JICA) and JICA Expert Team (JET).

2.3.3 Results of Modification

As shown in Section 1.3 Duration of the Project, the project period was extended for one (1) year and five (5) months.

2.4 Others

2.4.1 Results of Environmental and Social Considerations

N/A

2.4.2 Results of Consideration on Gender/Peace Building/Poverty Reduction

N/A

Part 3. Results of Joint Review

3.1 Results of Review based on DAC Evaluation Criteria

The Project Team and Hanoi Department of Transport (HDOT) conducted joint review on the results of this project, applying DAC evaluation criteria¹, which was prepared by Development Assistance Committee (DAC) of Organization for Economic Co-operation and Development (OECD). These criteria contain five perspectives, namely relevance, effectiveness, efficiency, impact and sustainability as shown in Table 3.1.1. For each criterion, the project was evaluated on a scale of “highly satisfactory”, “satisfactory”, “partially unsatisfactory”, and “unsatisfactory”.

Table 3.1.1 Assessment Criteria of JICA Project

Criteria	Definition
1. Relevance	Relevance is reviewed by the validity of the Project Purpose and Overall Goal in connection with the government’s development policy and the needs of the target group and/or ultimate beneficiaries in Vietnam.
2. Effectiveness	Effectiveness is assessed in terms of the extent the Project has achieved its Project Purpose, clarifying the relationship between Project Purpose and Outputs.
3. Efficiency	Efficiency of project implementation is analyzed with emphasis on the relationship between Outputs and Inputs in terms of timing, quality, and quantity.
4. Impact	Impact of the Project is assessed in terms of positive/negative and intended/unintended influence it caused.
5. Sustainability	Sustainability of the Project is assessed in terms of (1) policy and institutional, (2) organizational, (3) financial, and (4) technical aspects by examining the extent to which the achievements of the Project will be sustained after the Project is completed.

3.1.1 Relevance

Due to the reasons below, the relevance of the Project is judged to be “Highly Satisfactory”.

The Vietnamese government puts a priority on constructing public transport to increase its modal share. The detailed policies are shown below:

- “Reinforcement of vehicle management for mitigation of traffic congestion and environmental pollution in Hanoi City (2017-2020 and vision for 2030)” (Resolution No. 04/2017/NQ-NDND), which aims to increase modal share of public transport from 30-35% (2020) to 50-55% (2030) in the city center, and 15% (2020) to 40% (2030) in satellite cities
- “Priority on the development of public transportation system with mass volume; encouraging investment in the construction and operation of terminals, car parking lots and other motorized vehicles, applying high technologies in the management and operation of the transportation system” (Resolution No. 07/2019/NQ-HDND).

¹ DAC Criteria for Evaluating Development Assistance :
<http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>

Currently, Urban Mass Rapid Transit (UMRT) line 1 and 2 are under planning with the aid of Japan, and line 2a (funded by China) and line 3 (funded by Asian Development Bank (ADB) and France) are under construction. Since different donors plan to introduce different type of smart card systems, it might be possible that interoperability among UMRT lines and other public transport modes would be hindered, undermining effectiveness of public transport. In this context, this project developing technical specifications for the interoperable smart card system would contribute to promoting public transport in Hanoi by enabling passengers to use any routes and lines of buses and UMRT with one single smart card. Thus, this project matches the needs and policies in Hanoi.

Furthermore, introduction of the smart card system is regarded as an urgent task for the smart city policy led by Hanoi People’s Committee (HPC). This project is expected to serve as a basis for this implementation.

3.1.2 Effectiveness

The purpose of this project is that Technical and management capacities of counterpart agencies under HPC are improved for establishing the interoperable smart card system. The effectiveness of this project is judged to be “Highly Satisfactory”, considering the following reasons.

The Project Team conducted baseline and monitoring surveys to examine knowledge and skill of counterpart agencies regarding Output 1 “development of Design Guideline and Specifications (hereinafter referred to as “DG/TS”) for interoperable smart card system”, and Output 2 “development of Organizational Terms of Reference (TOR) of each unit of the Fare Management Center (Division) (FMC)”. These surveys, adopting five-grade self-evaluation method, confirmed improvement of values of both outputs.

- Output 1: Due to its technically complicated contents, the baseline survey scored 2.49, below the median value of 3.00. After the Project, this value increased to 4.01 in the monitoring survey. As a result of the project, the index regarding “fare” (specifications of interoperable fare ticket and fare regulation), “operation”, and “technical specifications” increased from 1.7 to 3.8, 3.3 to 4.2, and 3.0 to 4.1, respectively.
- Output 2: The score indicating scope of work of FMC, tasks and responsibilities of FMC, and requirements on management and operation increased from 3.33 at the baseline survey to 4.67 at the monitoring survey.

The possible reasons for this enhancement of knowledge and skill include technical transfer in each working group (which is mentioned later), utilization of knowledge achieved through site visits and lectures at two training in Japan conducted in May 2018 and February 2020, and active involvement in two seminars held in Hanoi in December 2018 and November 2019.

Table 3.1.2 Average Score for each Output

Time	Output 1: development of DG/TS for interoperable smart card system	Output 2: development of Organizational TOR of each unit of the FMC
When the Project launched (April 2018)	2.49	3.33
When basic policy was formulated (December 2018)	3.03	3.67

When draft DG/TS and draft TOR of FMC (October 2019)	3.56	4.00
When the Project completed (November 2020)	4.01	4.67

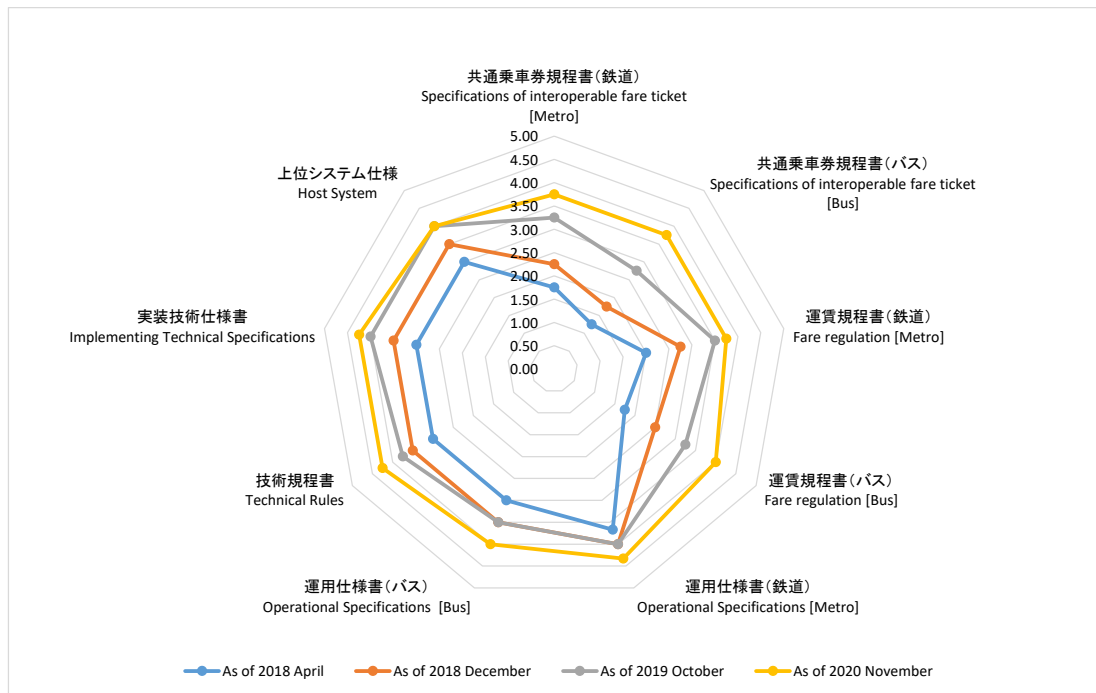


Figure 3.1.1 Necessary Knowledge and Skills for Output 1: Development of DG/TS for Interoperable Smart Card System

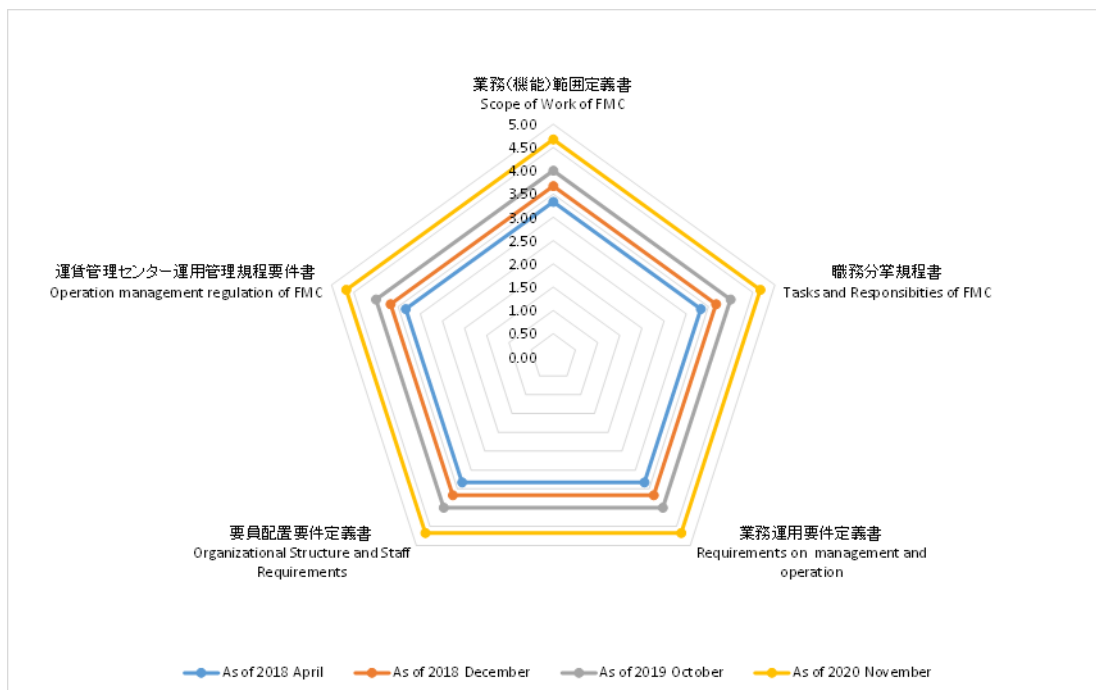


Figure 3.1.2 Necessary Knowledge and Skills for Output 2: Development of Organizational TOR of Each Unit of the FMC

3.1.3 Efficiency

As mentioned in Section 2.1, inputs from both Japanese and Vietnamese has been completed as planned, achieving the Project Purpose. The provided equipment is explained in Section 2.1.1.2.

29 members in total were assigned for this Project as counterparts. In order to utilize the Project outputs, each organization is required to master respective knowledge. Considering this, as described in Section 1.7.3, the Project established Working Groups (WGs) with a view to efficient and effective technical transfer. In as many as 189 WG meetings, WG members had deep discussions about each WG's topics, encouraging understanding of the counterparts. Moreover, consensus was achieved among relevant agencies and organizations at two seminars. Thus, HDOT took initiative to implement the course of activities.

On the other hand, the novel coronavirus disease (COVID-19) pandemic prevented the Japanese experts from visiting Hanoi since February 2020. While the Project was forced to conduct the technical transfer through the Internet, which is considered to be relatively insufficient compared to face-to-face discussions, the Project ensured its quality by communicating online. Considering this, the efficiency of the Project is judged "Satisfactory".

The extent to which the outputs have been achieved are summarized below.

- **Output 1:** the DG/TS necessary for the interoperable smart card system has been developed as planned. Currently, HDOT is continuously seeking HPC for its approval.
- **Output 2:** the organizational TOR of each unit of the FMC has been developed as planned. Based on this output, organizational structure for introduction and management of common smart cards will be established.

3.1.4 Impact

This Project developed DG/TS and organizational TOR of each unit of FMC, which are necessary to realize the Overall Goal of this Project, "Interoperable Smart Card Systems are developed for the public transportation in Hanoi". Thus, fundamental framework for technological system and organizational structure, which are essential to achieve the Overall Goal, have been formulated.

At the same time, to contain the COVID-19 pandemic occurred in 2020, measures to avoid 3Cs (closed spaces, crowded places, and close-contact settings) are taken globally. Since handing cash may induce risk to spread the virus, e-payment is considered to reduce this risk in terms of public hygiene. In this context, the impact of this Project to promote the use of smart cards is huge.

It is expected for Hanoi city to leverage the outputs of this Project to prepare for the introduction of the interoperable AFC system. Thus, the impact of this Project is judged "Satisfactory".

3.1.5 Sustainability

Although sustainability assessment should not be conducted at the completion of the project, opinions of the Project Team and counterparts are summarized below.

3.1.5.1 Policy and Institutional Aspects

According to the Record of Discussion of this project, the DG/TS shall be applied to all public transport in Hanoi. Also, HPC's decision No. 3978/QĐ-UBND issued in August 2015 stipulates establishment of the FMC that manages and operates the interoperable smart card system.

At the 4th Joint Coordination Committee (JCC) held on 29 August 2019, HDOT mentioned it would report to HPC that the outputs of this project are to be applied to the followings:

- 1) UMRT (all lines under construction or planning)
- 2) Bus Rapid Transit (BRT) and buses
- 3) FMC

Therefore, HPC, HDOT, and other relevant agencies are expected to continuously discuss the Project Purpose of this Project, which is "Technical and management capacities of counterpart agencies under HPC are improved for the development of interoperable smart card system for public transportation in Hanoi".

3.1.5.2 Organizational Aspect

This project defined a general functional model and requirements for business and operation of FMC for its establishment. This is a summary of functions that is required for an FMC in general based on the actual situation of Hanoi; this does not assume any specific, existing organization. Therefore, it would be necessary to establish the FMC, and to specify in detail an institutional system for introduction and operation of the automated fare collection (AFC) system in Hanoi.

3.1.5.3 Financial Aspect

As explained in Section 3.1.1, Resolution No. 07/2019/NQ-HDND describes Hanoi City's subsidies for construction of UMRT, BRT and buses. However, this is not applicable for the AFC system. To ensure financial sustainability, how to secure budget for construction and operation of the AFC system would be a critical issue.

3.1.5.4 Technical Aspect

Since the 4th JCC approved participation of information technology (IT) companies in Hanoi, the development of the DG/TS has involved members who are familiar with IT surroundings in the city. The coordination with these companies is considered to be effective in introducing the AFC system in terms of technology.

Also, as mentioned in Section 3.1.2, improvement in technical capacity of counterparts is confirmed through development of the output 1 and 2. The counterparts are expected to continuously make efforts to introduce the AFC system by utilizing knowledge and skill obtained through this Project.

3.2 Key Factors Affecting Implementation and Outcomes

The following factors influenced the Project implementation.

- (1) **Delay in assignment of counterparts:** In the 1st Joint Coordination Committee (JCC) meeting, it was agreed that WG members would be assigned in February 2018. However, the members were actually determined in 29 March 2018 (Decision No. 341/QD-SGTVT).
- (2) **Delay caused by comparative study between CBT and ABT:** In compliance with Decision 3978/QD-UBND, the Project Team submitted to HDOT the outline of DG/TS based on the card-based ticketing (CBT) system. This outline of DG/TS underwent the approval process. Although this Project is based on the assumption of adopting the CBT system, Hanoi City proposed to Japan International Cooperation Agency (JICA) to consider account-based ticketing (ABT) system with a perspective of the smart city concept. This led to comparative study between the CBT and ABT systems, which concluded application of the CBT system. The outline of DG/TS was finally approved in 26 April 2019, three months after the submission.
- (3) **COVID-19:** Global pandemic of the COVID-19 caused a serious impact on the project implementation, especially preventing Japanese experts from working in Hanoi.

3.3 Evaluation on the results of the Project Risk Management

HDOT responded to the above-mentioned factors as shown below.

- (1) **Assignment of counterparts:** In spite of the delay in assignment of WG members at the start of this Project, they actively involved themselves in the Project, including approximately 190 WG meetings. Moreover, participation of IT companies in Hanoi was approved at 4th JCC held in 29 August 2019, which allowed members familiar with IT in Hanoi to join the WGs, contributing to formulating the DG/TS based on the actual situation of the city. Director and Vice Director of HDOT, and director of Hanoi Urban Transport Management and Operation Center (TRAMOC) also take active part in the project, closely communicating with the Project Team.
- (2) **Comparative study between CBT and ABT:** A study meeting was held in 19 April 2019 chaired by Chairman of HPC. As a result, it was decided to continue the Project based on the submitted outline of DG/TS. This outline was approved in 26 April 2019 (HPC letter No. 1648/UBND-DT).
- (3) **COVID-19:** As Japanese experts were not able to visit Hanoi since February 2020, online meetings were held to ensure quality of the Project. Several meetings among executives of HDOT and TRAMOC, JICA Headquarters and JICA Vietnam Office were also held through the Internet. Moreover, the Project Leader (Mr. Takagi) visited Hanoi in 18 December 2020 to discuss and coordinate with counterparts directly, this enhancing the effectiveness of this Project.

3.4 Lessons Learnt

The following lessons are obtained from this Project.

- **Scheme of smart card system in Japan:** Through two courses of training in Japan, the counterparts obtained an insight about the interoperability of smart card system among different modes, and its operation depending on the local characteristics. In particular, they learned costs of smart card introduction and operation (initial costs, maintenance costs,

subsidies, etc.), implementation structure (role of each unit, role and number of staff, role of an organization corresponding to the FMC), analysis and utilization of data collected through smart card operation.

- **Versatile technical specifications:** The DG/TS formulated in this Project can be applied to diverse fare calculation methods, including distance-based, flat, and zone-based calculation methods. Although two-tap operation is assumed where passengers are supposed to tap both at boarding/entering and alighting/exiting, this DG/TS is applicable to one-tap method as well. This specification of fare and operation systems is derived from accumulative discussions in each WG, and thus is a highly versatile specification in accordance with actual usage of public transportation in Hanoi.
- **Potential of the AFC system for further development of Hanoi as a smart city:** This project is based on the assumption of the CBT system. However, as Hanoi develops further, and as use of financial methods (such as bank accounts) and inbound tourist increases, application to the ABT system and other new technologies (such as FinTech) should be required in the future. Hence, this Project conducted comparative study among 1) CBT system, 2) CBT and thin client system, and 3) ABT system, from the viewpoints of function, operation, security and economy, and proposed a basic policy of the AFC system toward further development of Hanoi as a smart city. Technological innovation in the field of information and communication technology, including smart cards, occurs at a rapid rate. To enhance the effectiveness of technical cooperation projects, it is deemed significant to closely monitor its development even during the project period, and to flexibly adapt to its change.
- **Way forward after the project:** The project formulated the DG/TS and TOR of FMC. In order to utilize them to actually introduce and operate the interoperable AFC system in Hanoi, additional technical assistance would be required to meet the demand at its stage. Thus, a technical cooperation program for this should be elaborated.

Part 4. For the Achievement of Overall Goals after the Project Completion

4.1 Prospects to achieve Overall Goal

The overall goal of this project is “Interoperable Smart Card Systems are developed for the public transportation in Hanoi”, which is evaluated by the indicators of “the number of public transport operators that applies the Design Guideline and Technical Specifications (DG/TS)” and “satisfaction of the interoperable smart cards”.

The project counterparts consist of governmental agencies such as Hanoi Department of Transport (HDOT), Department of Information and Communication (HDOIC), and Hanoi Urban Transport Management and Operation Center (TRAMOC), and bus and railway operators including Hanoi Transport and Service Corporation (TRANSERCO) and Hanoi Metro Company (HMC). Since the counterpart agencies had developed the DG/TS with Japanese experts, they already have full knowledge about its technical contents. Furthermore, participants in the second training in Japan (February 2020) were composed of three members from governmental agencies (HDOT, HDOIC, and TRAMOC) and two members from public transport operators (HMC and TRANSERCO), which covers the whole activities of this project. These five members, including leaders of each WG, have been involved actively in this project, and are expected to play important roles in operating the automated fare collection (AFC) system in Hanoi in the future.

Thus, since technical transfer has been conducted to governmental agencies and public transport operators that will take charge of introduction and operation of the AFC system in Hanoi in the future, the prospects to achieve the overall goal is estimated to be high.

4.2 Plan of Operation and Implementation Structure of the Vietnamese side to achieve Overall Goal

Hanoi City is to introduce smart card systems based on FeliCa, MIFARE, and Calypso to urban mass rapid transit (UMRT) line 1 and 2, 2a, and 3, respectively. In this context, Hanoi City requested this project with the aim of developing a system for the interoperable smart card use. At the 4th Joint Coordination Committee (JCC) held on 29 August 2019, HDOT mentioned it would report to HPC that the outputs of this project are to be applied to the followings:

- 1) UMRT (all lines under construction or planning)
- 2) Bus Rapid Transit (BRT) and buses
- 3) Fare Management Center (FMC)

While the Vietnamese side has not started the above-mentioned approaches as of March 2021, it is expected to do so for introduction of the AFC system.

4.3 Recommendations for the Vietnamese side

In order for the achievement of this project to be introduced into Hanoi public transport to realize the safe and convenient interoperable smart card service, it is proposed for the Hanoi City to conduct the followings:

- (1) Introduction of the AFC system into buses

Considering the delay in construction of UMRT, it is buses that the achievement of this project is most likely to be applied to for the first time. With the aim of introducing the AFC system into buses, it should be recommended to prepare operation plans, (bus routes to adopt the system, scale of equipment, operational structure, etc.), the AFC system structure, rough costs for introducing the system, and an overall work plan. It would be also necessary to test whether equipment to be procured complies with regulation and specification of the project outputs.

(2) Establishment of the FMC

The profitability of transportation smart card operation is presumed to be low. To sustain the AFC business in Hanoi, it is proposed to establish a special purpose company (SPC) serving as an FMC, based on the public-private partnership scheme with investment from private sectors. It is assumed that the SPC consists of Hanoi City, public transport operators in Hanoi (TRANSERCO, HPC, etc.), and other private companies, and plays the following roles:

- Operation and management of interoperable smart cards (issue, operation and management, clearing)
- Management of databases related to public transport
- Promotion of public transport use (product development and policy implementation to promote public transport use)

4.4 Monitoring Plan from the end of the Project to Ex-post Evaluation

Based on the international criteria (Development Assistance Committee (DAC) evaluation criteria), Japan International Cooperation Agency (JICA) assesses each project in terms of relevance, effectiveness, efficiency, impact, and sustainability. While the assessment results are summarized in Part 1 of this report, the project will be evaluated again as an ex-post evaluation. In general, the ex-post evaluation will be conducted two years after the project.

Before the ex-post evaluation, JICA will monitor this project in view of the following aspects:

- Progress of introducing the AFC system into buses
- Establishment of the FMC

As Hanoi develops further, and as use of financial methods (such as bank accounts) and inbound tourist increases, application to the account-based ticketing (ABT) system and other new technologies (such as FinTech) should be required in the future. Technological innovation needs to be monitored closely, considering its speed in the field of information and communication technology, including smart cards.

Appendix

Project Monitoring Sheet

PROJECT MONITORING SHEET

Project Title: The Project for Supporting Development of Interoperable Smart Card System for Public Transport in Hanoi

Version of the Sheet: Ver. 1 (Term: 2017 - 2019)

Name: Mr. Michimasa TAKAGI

Title: Team Leader/ Urban Public Transport

Submission Date: February 2018

I. Summary

1 Progress

1.1 Progress of Inputs

1.1.1 Experts

Table 1: Input of Experts as of ***

Designation	Name	No. of PMs
Team Leader/ Urban Public Transport	M. TAKAGI	
Deputy Team Leader/ AFC Technical Management	T. OTSUKI	
Public Transport Fare Policy [Railway]	S. HORIUCHI	
Public Transport Fare Policy [Bus]	T. KUMAI	
Interoperable Smart Card Plan	T. UMEKAWA	
Smart Card Data Management and Utilization	N. MIZOGUCHI	
Interoperable Smart Card System [Railway]	T. FUKATSU	
Interoperable Smart Card System [Bus]	A. TANAKA	
Communication System	K. HONDA	
Fare Management System [AFC Technical Specification]	H. KUWANO	
Fare Management system [AFC Host System]	Y. Sakamoto	
Organization Institution	A. SAKUMA	
Monitoring/ Training in Japan/ Coordination	M. OHNO	
TOTAL PMs		
Planned PMs		55.00

1.2 Progress of Activities

1.2.1 Joint Coordinating Committee and Working Group Meetings

XX Joint Coordinating Committee (JCC) meetings and several working group (WG) meetings were held during the period.

Table 2: Joint Coordinating Committee and Working Group Meetings

Meetings Conducted	Participated Agency	Key Agenda	Date

1.2.2 Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed.

The progress of Output 1 activities is shown in the table below.

Table 3: Progress of Output 1 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi			
1-2 Prepare an outline of 'Design Guideline and Specifications' and the fare policy	1) Examination of ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operational specifications 4) Examination of the technical specifications		
1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.			
1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy			
1-5 Consult with the relevant authorities and finalize the 'Design			

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
Guideline and Specifications' and the fare policy			
1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.			

1.2.3 Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The progress of Output 2 activities is shown in the table below.

Table 4: Progress of Output 2 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the Fare Management Center (division)		
2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).			
2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).			
2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	1) Prepare a TOR 2) Organizational structure and staff requirements		

1.3 Achievement of Output

1.3.1 Output 1

Achievement status of Output 1 is as follows.

Table 5: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
The Design Guideline and Specification is prepared.		

Source: PDM 1.1

1.3.2 Output 2

Achievement status of Output 2 is as follows.

Table 6: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	-	-

Source: PDM 1.1

1.4 Achievement of the Project Purpose

Also stated in PDM, the achievement of the project purpose shall be evaluated using verifiable indicators.

Table 7: Verifiable Indicators and Current Status

Objectively verifiable indicators	Baseline	Current Status
- 'Design Guideline and Specifications' are approved by HPC Bus system improvement plan	-	-
- The public transport fare policy is established	-	-

Source: PDM 1.1

To achieve the project purpose, the JICA Project Team (JPT) identify the required knowledge and skills by each output shown in the following table. Result of the baseline survey were evaluated on a five-level scale as indicated below and illustrated in following figures.

- (1) Newbie: I don't know the process/ concept;
- (2) Novice: I know the process/ concept, but I have never done it;
- (3) Young Expert: I have done it once, but I have not reported or presented the results;
- (4) Expert: I have done it twice or more/ I have done it once and reported or presented the results; and
- (5) Senior Expert: I have done it twice or more, and reported or presented the results.

Table 8 Required Knowledge and Skills per Project Output and Activity

Expected Output	Activities	Required Knowledge & Skills
(1) The 'Design Guideline and Specification' is prepared.	1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Information collection capability, Issue solving capability
	1-2 Prepare of outline of 'Design Guideline and Specifications' and the fare policy	(1) Basic knowledge of a) Ticket specifications, b) Fare system c) Operation system d) Technical specification e) Host system (2) Capability for development of a) Rules for common ticket b) Rules for fare c) Rules for operation specification d) Rules for technology implementing specification e) Host system specification
	1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	
	1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	
	1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	
	1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	
(2) Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	(1) Information collection capability (2) Issue solving capability
	2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of the scope of works (functions) (2) Capability for development of the scope of work(function)
	2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of work description (2) Capability for development of work description
	2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	(1) Basic knowledge of a) Operational terms of reference b) Terms of reference for staffing (2) Capability for development of rules for operation and management of Fare Management Center

The first baseline survey was conducted in xxx 2018 to measure the current knowledge and skills level. The average scores are shown in the following table and each scores are in the following figures.

Table 9 Average Scores per Outputs

Survey	Output	
	1	2
Baseline Survey (xxx 2018)		

Figure 1 Required Knowledge and Skills for Output 1: The Design Guideline and Specification is prepared.

Figure 2 Required Knowledge and Skills for Output 2: Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval

1.5 Changes of Risks and Actions for Mitigation

1.6 Progress of Actions undertaken by JICA

1.7 Progress of Actions undertaken by The People’s Committee of Hanoi

1.8 Progress of Environmental and Social Considerations (if applicable)

1.9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

1.10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

1.11 Tasks to be implemented by JICA Project Team and Counterparts

Work	Tasks	Implementing agencies
Output 1: 'Design Guideline and Specifications' are approved by HPC Bus system improvement plan		
Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.		

2 Delay of Work Schedule and/or Problems (if any)

2.1 Detail

2.2 Cause

2.3 Action to be taken

2.4 Roles of Responsible Persons/Organization (JICA, The People’s Committee of Hanoi, etc.)

3 Modification of the Project Implementation Plan

3.1 PO

3.2 Other modifications on detailed implementation plan

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Project Design Matrix)

Version 1

Project title: Project for Supporting Development of Interoperable Smart Card System for Public Transportation in Hanoi

Dated: *** Feb. 2018

Project Area: Hanoi

Target Group: Hanoi People's Committee (HPC) and organizations related to public transportation in Hanoi

Counterpart: HPC (Hanoi Department of Transport (DOT), Hanoi Department of Science and Technology (DOST), Hanoi Department of Information and Communication (DOIC), Hanoi Metro Company (HMC), Hanoi Transport Corporation (TRANSERCO))

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Interoperable smart card systems are developed for the public transportation in Hanoi	<ul style="list-style-type: none"> Number of public transport operators applying the 'Design Guideline and Specifications' developed under the Project to realize interoperable smart card system. Ratio of satisfaction on interoperable smart card is more than XX%. 	Survey report(s)			
Project Purpose					
Technical and management capacities of counterpart agencies under HPC are improved for the development of interoperable smart card system for public transportation in Hanoi	<ul style="list-style-type: none"> 'Design Guideline and Specifications' are approved by HPC. The public transport fare policy is established. 	<ul style="list-style-type: none"> Approved 'Design Guideline and Specifications' Project progress report 	Decision no. 3978/QD-UBND dated 13 August 2015 on use of interoperable smart card in public transportation in Hanoi continues to be effective.		
Outputs					
1. 'Design Guideline and Specifications' for interoperable smart card system are developed.	'Design Guideline and Specifications' are finalized.	'Design Guideline and Specifications' (final version)	HPC reviews policy/ documents developed under the Project in a timely manner.		
2. Organization terms of reference of each unit of the Fare Management Center (Division) are developed.	Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval.	Organizational terms of reference for the Fare Management Center (Division) (draft for approval)			

Activities	Input		Pre-conditions
	Japanese Side	Vietnamese Side	
1-1. Collect and analyze information on the existing and approved smart card systems for the public transportation system in Hanoi	1. Japanese Experts - Leader - Public Transport Fare Policy and System - Interoperable Smart Card System - Communication System - Fare Management System	1. Project Counterparts (1) HPC (2) HDOT - Road Transportation Management Division - Planning and Investment Division - Economics planning Division - TRAMOC (3) DOST (4) DOIC (5) HMC (6) TRANSERCO	Official request to apply for Japan's ODA Loan Project.
1-2. Prepare an outline of 'Design Guideline and Specifications' and fare policy 1) Examination of fare ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operation rules 4) Examination of the technical specifications	2. Counterpart Training in Japan 3. Seminar and workshop 4. Other cost - Local experts and consultants - Local staff - Others (survey, card rental, etc.)	2. Provision of Office Space and equipment 3. Cost for - counterpart members - office operation and maintenance - others (local travel expenses excluding airfare for Vietnamese side, etc.)	
1-3. Consult with the relevant authorities and finalize the outline of the 'Design Guideline and Specifications' and fare policy			
1-4. Draft a 'Design Guideline and Specifications' with fare policy			
1-5. Consult with the relevant authorities and finalize the 'Design Guideline and Specifications'			
1-6. Conduct seminar(s) to introduce the draft 'Design Guideline Specifications' and fare policy			
2-1. Define the scope of work to be performed by the proposed Fare Management Center (Division) 1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the fare management center (division)			
2-2. Define the tasks and responsibilities of departments/division under the Fare Management Center (Division)			
2-3. Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division)			
2-4. Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements. 1) Prepare a TOR 2) Organizational structure and staff requirements			

PROJECT MONITORING SHEET

Project Title: The Project for Supporting Development of Interoperable Smart Card System for Public Transport in Hanoi

Version of the Sheet: Ver. 2 (Term: 2017 - 2019)

Name: Mr. Michimasa TAKAGI

Title: Team Leader/ Urban Public Transport

Submission Date: August 2018

I. Summary

1 Progress

This monitoring sheet covers the period from project commencement in **December 2017** up to **the end of July 2018**.

1.1 Progress of Inputs

1.1.1 Experts

Table 1: Input of Experts as of End-July

Designation	Name	No. of PMs
Team Leader/ Urban Public Transport	M. TAKAGI	3.47
Deputy Team Leader/ AFC Technical Management	T. OTSUKI	2.85
Public Transport Fare Policy [Railway]	S. HORIUCHI	1.35
Public Transport Fare Policy [Bus]	T. KUMAI	1.02
Interoperable Smart Card Plan	T. UMEKAWA	0.13
Smart Card Data Management and Utilization	N. MIZOGUCHI	0.00
Interoperable Smart Card System [Railway]	T. FUKATSU	1.42
Interoperable Smart Card System [Bus]1	A. TANAKA	1.27
Interoperable Smart Card System [Bus]2	H. Miyahara	0.20
Communication System	K. HONDA	0.40
Fare Management System [AFC Technical Specification]	Y. WATABE	0.57
Fare Management system [AFC Host System]	Y. Sakamoto	0.50
Organization Institution	A. SAKUMA	0.60

Monitoring/ Training in Japan/ Coordination	M. OHNO	1.33
TOTAL PMs		17.84 (32.4%)
Planned PMs		55.00

1.2 Progress of Activities

1.2.1 Joint Coordinating Committee and Working Group Meetings

One Joint Coordinating Committee (JCC) meeting and several working group (WG) meetings were held during the period.

Table 2: Joint Coordinating Committee and Working Group Meetings

Meetings Conducted	Participated Agency	Key Agenda	Date
First JCC meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	Outline of Work Plan (Draft) Confirmation of the Undertakings by Vietnamese Side	2 February 2018

Table 3: Working Group 1 Meetings

No.	Date	Subject
1	16th Apr, 2018	<ul style="list-style-type: none"> Outline of the expected output of WG1 Confirmation of the activity schedule
2	29rd May, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in Japan
3	30th May, 2018	<ul style="list-style-type: none"> Discussion on the feasibility to install each system into Hanoi
4	5th June, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in the other countries
5	25th July, 2018	<ul style="list-style-type: none"> Clarification of the items to be discussed Discussion on the reporting to the 2nd JCC

Table 4: Working Group 2 Meetings

No.	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> Procedure on WG2 activities "Development of Operational Specification" Explanation of the draft proposal of the list of Operational Specification Outline of the expected final output of WG2 Confirmation of the activity schedule
2	13rd Apr, 2018	<ul style="list-style-type: none"> Outline of the expected final output of the Operational Specification Confirmation of the activity schedule
3	30th May, 2018	<ul style="list-style-type: none"> Explanation of the draft proposal of the list of Operational Specification Re-issue and re-issue registration (Assignment) Card life cycle
4	31st May, 2018	<ul style="list-style-type: none"> Boarding and Alighting from railway, BRT and bus
5	21st June, 2018	<ul style="list-style-type: none"> Discussion on the Operational Specification
6	5th July, 2018	<ul style="list-style-type: none"> Interview about operation of railway, BRT and bus

Table 5: Working Group 3 Meetings

No.	Date	Subject
1	12 th Apr, 2018	<ul style="list-style-type: none"> Discussion on WG3 activity planning

PM Form 3-1 Monitoring Sheet Summary

No.	Date	Subject
2	13 rd Apr, 2018	<ul style="list-style-type: none"> ➤ Confirmation on WBS, operation plan ➤ Sharing the target deliverables of WG3 (AFC technical specification) ➤ Review on AFC system interoperable use • Lecture for understanding of AFC system, basic terms and structure • Review and discussion on Hanoi AFC technical framework (3978) from interoperable perspective.
3	21 st May, 2018	<ul style="list-style-type: none"> • Explanation of AFC survey report on public transportation interoperability in Hanoi City. (BRT, Line2A, Line3, laws and regulatios) • Review on overview on AFC techniocal specifiaction and IC card issuance process • Procedure on WG3 activities and planning for coming 3 month
4	22 nd May, 2018	<ul style="list-style-type: none"> • Understanding of AFC technical specification ➤ Explanation and discussion on each AFC technical specification item. (ticket media, R/W, Smartcard IC format, Encoding process/format, common code, ticket validation, transaction data and set value, black list, trip pattern, host system)
5	23 rd May, 2018	
6	24 th May, 2018	
7	25 th May, 2018	
8	28 rd May, 2018	
9	29 th May, 2018	
10	30 th May, 2018	
11	8 th June, 2018	
12	4 th June, 2018	<ul style="list-style-type: none"> • Review of proposal of FMC by TRAMOC (2015):
13	11 th June, 2018	<ul style="list-style-type: none"> • Clarification key points of AFC interoperable technical specification for Hanoi ➤ Acquire the important key point for AFC technical specification to be introduced in Hanoi city ➤ Listing up the discussion items with other WGs.
14	13 rd June, 2018	
15	15 th June, 2018	
16	26 th June, 2018	
17	27 th June, 2018	
18	29 th June, 2018	
19	4 th July, 2018	
20	27 th June, 2018	<ul style="list-style-type: none"> • MKsmartfactory visit for IC card manufacturing tour and study on interoperable bus R/W.
21	19 th July, 2018	<ul style="list-style-type: none"> • Review of Drafted outline of AFC technical specification. ➤ Create and review draft version of outline of AFC technical specification.
22	23 rd July, 2018	
23	24 th July, 2018	
24	31 st July, 2018	
25	24 th July, 2018	<ul style="list-style-type: none"> • Review BRT AFC document from Viettel • On site review of demonstration of AFC system for pilot test and confirmation of technical details with Transerco-Viettel BRT projet members • Review on summary of mainpoint discussed and Study of coping plan • Joint meeting with WG1, WG2 and WG4 to shaping consensus on main point discussed proposed by WG3
26	27 th July, 2018	
27	8 th Aug, 2018	
28	10 th Aug, 2018	
29	14 th Aug, 2018	
30	16 th Aug, 2018	

Table 6: Working Group 4 Meetings

No.	Date	Subject
1	12 th April, 2018	<ul style="list-style-type: none"> • Expected task of WG4 (Confirmation of TOR draft) • Expected roles and operation of FMC
2	13 rd April, 2018	<ul style="list-style-type: none"> • Confirmation of necessary tasks and explanation of TOR draft • Explanation of the draft outline of FMC and discussion on it

3	18 th May, 2018	• Interview to Vietcom Bank about the IC card use in banking operation
4	19 th June, 2018	• Exchange of ideas with SBV about the draft outline of FMC, transportation IC card and non-cash payment
5	20 th June, 2018	• Discussion on roles of FMC

1.2.2 Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed.

The progress of Output 1 activities is shown in the table below.

Table 7: Progress of Output 1 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Collect the legal documents related to the transportation smart card system as follows,; <ul style="list-style-type: none"> ✓ Legal systems and standards on smart card system/ transportation smart card system ✓ Design documents of smart card system ✓ International standards for interoperable AFC system ✓ MRT 2A, 3: AFC technical design ✓ MRT 2: AFC technical specifications ✓ BRT1, Route Bus: Specifications and planning documents to introduce ✓ Hanoi City and MOT: Legal system and decision about technical standardization of AFC ✓ Central Bank: Decision, regulations, standard regarding smart card and electric money 	- Done	- No activity (N/A)
1-2 Prepare an outline of 'Design Guideline and Specifications' and the fare policy	1) Examination of ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operational specifications 4) Examination of the technical specifications	- On-going	- Continue the on-going activities
1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the		-	-

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
fare policy.			
1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy		-	-
1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy		-	-
1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.		-	-

1.2.3 Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The progress of Output 2 activities is shown in the table below.

Table 8: Progress of Output 2 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the Fare Management Center (division)	- On-going	- Continue the on-going activities
2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	Define the basic six items of operational terms of reference of FMC	- On-going	- Continue the on-going activities
2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare		-	-

PM Form 3-1 Monitoring Sheet Summary

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
Management Center (Division).			
2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	1) Prepare a TOR 2) Organizational structure and staff requirements	-	-

1.3 Achievement of Output

1.3.1 Output 1

Achievement status of Output 1 is as follows.

Table 9: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
The Design Guideline and Specification is prepared.		

Source: PDM 1.1

1.3.2 Output 2

Achievement status of Output 2 is as follows.

Table 10: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	-	-

Source: PDM 1.1

1.4 Achievement of the Project Purpose

Also stated in PDM, the achievement of the project purpose shall be evaluated using verifiable indicators.

Table 11: Verifiable Indicators and Current Status

Objectively verifiable indicators	Baseline	Current Status
- 'Design Guideline and Specifications' are approved by HPC Bus system improvement plan	-	-
- The public transport fare policy is established	-	-

Source: PDM 1.1

To achieve the project purpose, the JICA Project Team (JPT) identify the required knowledge and skills by each output shown in the following table. Result of the baseline survey were evaluated on a five-level scale as indicated below and illustrated in following figures.

- (1) Newbie: I don't know the process/ concept;
- (2) Novice: I know the process/ concept, but I have never done it;
- (3) Young Expert: I have done it once, but I have not reported or presented the results;
- (4) Expert: I have done it twice or more/ I have done it once and reported or presented the results; and
- (5) Senior Expert: I have done it twice or more, and reported or presented the results.

Table 12 Required Knowledge and Skills per Project Output and Activity

Expected Output	Activities	Required Knowledge & Skills
(1) The 'Design Guideline and Specification' is prepared.	1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Information collection capability, Issue solving capability
	1-2 Prepare of outline of 'Design Guideline and Specifications' and the fare policy	(1) Basic knowledge of a) Ticket specifications, b) Fare system c) Operation system d) Technical specification e) Host system (2) Capability for development of a) Rules for common ticket b) Rules for fare c) Rules for operation specification d) Rules for technology implementing specification e) Host system specification
	1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	
	1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	
	1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	
	1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	
(2) Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	(1) Information collection capability (2) Issue solving capability
	2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of the scope of works (functions) (2) Capability for development of the scope of work(function)
	2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of work description (2) Capability for development of work description
	2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	(1) Basic knowledge of a) Operational terms of reference b) Terms of reference for staffing (2) Capability for development of rules for operation and management of Fare Management Center

The first baseline survey was conducted in xxx 2018 to measure the current knowledge and skills level. The average scores are shown in the following table and each scores are in the following figures.

Table 13 Average Scores per Outputs

Survey	Output	
	1	2
Baseline Survey (xxx 2018)		

1.5 Changes of Risks and Actions for Mitigation

1.6 Progress of Actions undertaken by JICA

1.7 Progress of Actions undertaken by The People’s Committee of Hanoi

1.8 Progress of Environmental and Social Considerations (if applicable)

1.9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

1.10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

1.11 Tasks to be implemented by JICA Project Team and Counterparts

Work	Tasks	Implementing agencies
Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed		
Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.		

2 Delay of Work Schedule and/or Problems (if any)

2.1 Detail

2.2 Cause

2.3 Action to be taken

2.4 Roles of Responsible Persons/Organization (JICA, The People's Committee of Hanoi, etc.)

3 Modification of the Project Implementation Plan

3.1 PO

3.2 Other modifications on detailed implementation plan

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Project Design Matrix)

Version 2

Project title: Project for Supporting Development of Interoperable Smart Card System for Public Transportation in Hanoi

Dated. 22 August. 2018

Project Area: Hanoi

Target Group: Hanoi People's Committee (HPC) and organizations related to public transportation in Hanoi

Counterpart: HPC (Hanoi Department of Transport (DOT), Hanoi Department of Science and Technology (DOST), Hanoi Department of Information and Communication (DOIC), Hanoi Metro Company (HMC), Hanoi Transport Corporation (TRANSERCO))

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Interoperable smart card systems are developed for the public transportation in Hanoi	<ul style="list-style-type: none"> Number of public transport operators applying the 'Design Guideline and Specifications' developed under the Project to realize interoperable smart card system. Ratio of satisfaction on interoperable smart card is more than XX%. 	<ul style="list-style-type: none"> Survey report(s) 			
Project Purpose					
Technical and management capacities of counterpart agencies under HPC are improved for the development of interoperable smart card system for public transportation in Hanoi	<ul style="list-style-type: none"> 'Design Guideline and Specifications' are approved by HPC. The public transport fare policy is established. 	<ul style="list-style-type: none"> Approved 'Design Guideline and Specifications' Project progress report 	Decision no. 3978/QD-UBND dated 13 August 2015 on use of interoperable smart card in public transportation in Hanoi continues to be effective.		
Outputs					
1. 'Design Guideline and Specifications' for interoperable smart card system are developed.	'Design Guideline and Specifications' are finalized.	'Design Guideline and Specifications' (final version)	HPC reviews policy/ documents developed under the Project in a timely manner.		
2. Organization terms of reference of each unit of the Fare Management Center (Division) are developed.	Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval.	Organizational terms of reference for the Fare Management Center (Division) (draft for approval)			

Activities	Input		Pre-conditions
	Japanese Side	Vietnamese Side	
1-1. Collect and analyze information on the existing and approved smart card systems for the public transportation system in Hanoi	1. Japanese Experts - Leader - Public Transport Fare Policy and System - Interoperable Smart Card System - Communication System - Fare Management System	1. Project Counterparts (1) HPC (2) HDOT - Road Transportation Management Division - Planning and Investment Division - Economics planning Division - TRAMOC (3) DOST (4) DOIC (5) HMC (6) TRANSERCO	Official request to apply for Japan's ODA Loan Project.
1-2. Prepare an outline of 'Design Guideline and Specifications' and fare policy 1) Examination of fare ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operation rules 4) Examination of the technical specifications	2. Counterpart Training in Japan 3. Seminar and workshop 4. Other cost - Local experts and consultants - Local staff - Others (survey, card rental, etc.)	2. Provision of Office Space and equipment 3. Cost for - counterpart members - office operation and maintenance - others (local travel expenses excluding airfare for Vietnamese side, etc.)	
1-3. Consult with the relevant authorities and finalize the outline of the 'Design Guideline and Specifications' and fare policy			
1-4. Draft a 'Design Guideline and Specifications' with fare policy			
1-5. Consult with the relevant authorities and finalize the 'Design Guideline and Specifications'			
1-6. Conduct seminar(s) to introduce the draft 'Design Guideline Specifications' and fare policy			
2-1. Define the scope of work to be performed by the proposed Fare Management Center (Division) 1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the fare management center (division)			
2-2. Define the tasks and responsibilities of departments/division under the Fare Management Center (Division)			
2-3. Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division)			
2-4. Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements. 1) Prepare a TOR 2) Organizational structure and staff requirements			

PROJECT MONITORING SHEET

Project Title: The Project for Supporting Development of Interoperable Smart Card System for Public Transport in Hanoi

Version of the Sheet: Ver. 3 (Term: 2017 - 2019)

Name: Mr. Michimasa TAKAGI

Title: Team Leader/ Urban Public Transport

Submission Date: June 2019

I. Summary

1 Progress

This monitoring sheet covers the period from project commencement in **December 2017** up to **the end of May 2019**.

1.1 Progress of Inputs

1.1.1 Experts

Table 1: Input of Experts as of End-July

Designation	Name	No. of PMs
Team Leader/ Urban Public Transport	M. TAKAGI	5.47
Deputy Team Leader/ AFC Technical Management	T. OTSUKI	5.37
Public Transport Fare Policy [Railway]	S. HORIUCHI	2.92
Public Transport Fare Policy [Railway]	R. SAITO	0.50
Public Transport Fare Policy [Bus]	T. KUMAI	1.80
Interoperable Smart Card Plan	T. UMEKAWA	0.67
Smart Card Data Management and Utilization	N. MIZOGUCHI	0.00
Interoperable Smart Card System [Railway]	T. FUKATSU	3.07
Interoperable Smart Card System [Bus]1	A. TANAKA	2.43
Interoperable Smart Card System [Bus]2	H. MIYAHARA	1.70
Communication System	K. HONDA	2.10
Fare Management System [AFC Technical Specification]	H. KUWANO	0.57

Fare Management System [AFC Technical Specification]	Y. WATABE	3.67
Fare Management system [AFC Host System]	Y. SAKAMOTO	0.50
Organization Institution	A. SAKUMA	1.07
Monitoring/ Training in Japan/ Coordination	M. OHNO	2.40
TOTAL PMs		33.74 (61.3%)
Planned PMs		55.00

1.2 Progress of Activities

1.2.1 Joint Coordinating Committee and Working Group Meetings

Three Joint Coordinating Committee (JCC) meeting and several working group (WG) meetings were held during the period.

Table 2: Joint Coordinating Committee and Working Group Meetings

Meetings Conducted	Participated Agency	Key Agenda	Date
First JCC meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Outline of Work Plan (Draft) 2) Confirmation of the Undertakings by Vietnamese Side	2 February 2018
Second JCC Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project 2) Proposal from WG 3) Items to be confirmed by Hanoi-city 4) Activity plans	22 August 2018
Third JCC Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Achievements in the 1st Year 2) Explanation for Outline of 'Design Guideline and Specifications 'and Fare Policy 3) Activities in Next Period	7 November 2018

Meetings Conducted	Participated Agency	Key Agenda	Date
1st WG Leader Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Ideal AFC Model in Hanoi 2) Confirmation of 2nd JCC	23 August 2018
2nd WG Leader Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project since last JCC meeting 2) Response to the notice by HPC 3) Confirmation of the materials and preparations for the seminar	4 December 2018
3rd WG Leader Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Reflection of the seminar for the formulation of Outline Report 2) Site Visit at TRAMOC (Bus Operator) Demo for Bus unit	6 December 2018

Meetings Conducted	Participated Agency	Key Agenda	Date
1st Seminar	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	Project Overview and Introduction of Basic Approach on Interoperable Smart Card System for Public Transportation in Hanoi	5 December 2018

Table 3: Working Group 1 Meetings

No.	Date	Subject
1	16th Apr, 2018	<ul style="list-style-type: none"> Outline of the expected output of WG1 Confirmation of the activity schedule
2	29rd May, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in Japan
3	30th May, 2018	<ul style="list-style-type: none"> Discussion on the feasibility to install each system into Hanoi
4	5th Jun, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in other countries
5	25th Jul, 2018	<ul style="list-style-type: none"> Clarification of the items to be discussed Discussion on the reporting to the 2nd JCC
6	19th Sep, 2018	<ul style="list-style-type: none"> Confirmation of the contents of outline report
7	20th Sep, 2018	<ul style="list-style-type: none"> Explanation of transfer discount in other countries
8	28th Nov, 2018	<ul style="list-style-type: none"> Confirmation of the contents of seminar Confirmation of items to be discussed in the upcoming WG1
9	7th Dec, 2018	<ul style="list-style-type: none"> Confirmation of distance-based fare Discussion on ticket type
10	14th Jan, 2019	<ul style="list-style-type: none"> Discussion on the way of transfer discount
11	17th Jan, 2019	<ul style="list-style-type: none"> Discussion on ticket types and information on card surface
12	22nd Jan, 2019	<ul style="list-style-type: none"> Confirmation of the result of discussion and table of contents of the output
13	26th Feb, 2019	<ul style="list-style-type: none"> Confirmation of contents of fare system guideline (proposed)
14	14th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the comment from Vietnamese side against fare system guideline (proposed)
15	20th Mar, 2019	<ul style="list-style-type: none"> Reconfirmation of the whole structure of outputs in line with the work plan Confirmation of the tasks from April
16	25th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the response toward the comments from Vietnamese side against fare system guideline (proposed)

Table 4: Working Group 2 Meetings

No.	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> Procedure on WG2 activities "Development of Operational Specification" Explanation of the draft proposal of the list of Operational Specification Outline of the expected final output of WG2 Confirmation of the activity schedule
2	13rd Apr, 2018	<ul style="list-style-type: none"> Outline of the expected final output of the Operational Specification Confirmation of the activity schedule
3	30th May, 2018	<ul style="list-style-type: none"> Explanation of the draft proposal of the list of Operational Specification Re-issue and re-issue registration (Assignment) Card life cycle
4	31st May, 2018	<ul style="list-style-type: none"> Boarding and Alighting from railway, BRT and bus
5	21st June, 2018	<ul style="list-style-type: none"> Discussion on the Operational Specification
6	5th July, 2018	<ul style="list-style-type: none"> Interview about operation of railway, BRT and bus

7	21st Aug, 2018	• Confirmation of the contents of outline report
8	6th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
9	8th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
10	4th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
11	18th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
12	22nd Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
13	24th Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
14	26th Mar, 2019	• Discussion on the operational flow in the use of interoperable IC card
15	29th May, 2019	• Discussion on the operational flow in the use of interoperable IC card

Table 5: Working Group 3 Meetings

No.	Date	Subject
1	12th Apr, 2018	• Discussion on WG3 activity planning
2	13rd Apr, 2018	<ul style="list-style-type: none"> ➢ Confirmation on WBS, operation plan ➢ Sharing the target deliverables of WG3 (AFC technical specification) ➢ Review on AFC system interoperable use • Lecture for understanding of AFC system, basic terms and structure • Review and discussion on Hanoi AFC technical framework (3978) from interoperable perspective.
3	21st May, 2018	• Explanation of AFC survey report on public transportation interoperability in Hanoi City. (BRT, Line2A, Line3, laws and regulations) • Review on overview on AFC technical specification and IC card issuance process • Procedure on WG3 activities and planning for upcoming 3 months
4	22nd May, 2018	• Understanding of AFC technical specification
5	23rd May, 2018	➢ Explanation and discussion on each AFC technical specification item.
6	24th May, 2018	(ticket media, R/W, Smartcard IC format, encoding process/format,
7	25th May, 2018	common code, ticket validation, transaction data and set value, black list,
8	28rd May, 2018	trip pattern, host system)
9	29th May, 2018	
10	30th May, 2018	
11	8th June, 2018	
12	4th June, 2018	• Review of proposal of FMC by TRAMOC (2015):
13	11th June, 2018	• Clarification key points of AFC interoperable technical specification for Hanoi
14	13rd June, 2018	➢ Acquire the important key point for AFC technical specification to be
15	15th June, 2018	introduced in Hanoi city
16	26th June, 2018	➢ Listing up the discussion items with other WGs.
17	27th June, 2018	
18	29th June, 2018	
19	4th July, 2018	
20	27th June, 2018	• MKsmartfactory visit for IC card manufacturing tour and study on interoperable bus R/W.
21	19th July, 2018	• Review of Drafted outline of AFC technical specification.
22	23rd July, 2018	➢ Create and review draft version of outline of AFC technical specification.
23	24th July, 2018	
24	31st July, 2018	
25	24th July, 2018	• Review BRT AFC document from Viettel
26	27th July, 2018	

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27	8th Aug, 2018	<ul style="list-style-type: none"> On site review of demonstration of AFC system for pilot test and confirmation of technical details with Transerco-Viettel BRT project members Review on summary of main point discussed and Study of coping plan Joint meeting with WG1, WG2 and WG4 to shaping consensus on main point discussed proposed by WG3
28	10th Aug, 2018	
29	14th Aug, 2018	
30	16th Aug, 2018	
31	21st Aug, 2018	<ul style="list-style-type: none"> Confirmation of the contents to be reported in JCC (Discussion on role sharing in formulation of the technical specifications)
32	24th Aug, 2018	<ul style="list-style-type: none"> Discussion on host system specifications
33	7th Sep, 2018	<ul style="list-style-type: none"> Discussion on contents and sharing of work between Japanese and Vietnamese sides in formulation of the technical specifications (common code)
34	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus companies*. Investigation was conducted in terms of infrastructure related to system and network and amount of data to be dealt with at each depot, for the purpose of establishment of AFC system suitable for the actual bus operation. *Nam Ha Noi Bus company, Cau Buou bus company (142 bus, 11 line), Tan Dat bus company (68 bus, 5 line)
35	6th Nov, 2018	<ul style="list-style-type: none"> Confirmation of contents of JCC meeting Discussion on technical specifications (proposed common code)
36	8th Nov, 2018	<ul style="list-style-type: none"> Discussion on proposed AFC system structure suitable for bus services
37	9th Nov, 2018	<ul style="list-style-type: none"> Site visit at Line 2A. Inspection of installed AFC facility, IC card and operation, and investigation for tasks to be tackled for formulation of common specifications are conducted. Survey of actual AFC trial operation in BRT
38	28th Nov, 2018	<ul style="list-style-type: none"> Discussion on specifications for common code, which is used to process data in interoperable use
39	7th Nov, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
40	17th Nov, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
41	19th Nov, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
42	21st Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
43	25th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
44	11th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (common code, format)
45	16th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (reader/writer)
46	17th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (encode process)
47	22nd Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (trip pattern)
48	24th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (host system)
49	19th Feb, 2019	<ul style="list-style-type: none"> Discussion on installation of IC card in buses with TRANSERCO
50	20th Feb, 2019	<ul style="list-style-type: none"> Discussion on work plan and role sharing in 2019 Sharing opinion with Mr. Hai (director of TRAMOC) about how to move WG3 forward Confirmation of list of tasks and role sharing in formulation of technical specifications
51	21st Jan, 2019	<ul style="list-style-type: none"> Interview with NAPAS about how to apply IC card to other transport Discussion with Ms. Huong on tasks and solutions in the process of project

52	17th Apr, 2019	<ul style="list-style-type: none"> • Site visit at Payoo Corporation to survey the situation of Fintech, which is used for ABT system • Site visit at pilot trial at Ho Chi Minh bus, in which ABT system is installed (create an account of ZaloPay, apply for UniPass, issue IC card, take a bus) • Sharing opinion with iTD Company, one of the most promising IT company in Vietnam, about ABT and CBT in the structure of AFC system
53	19th Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of progress in outline (to be tackled after conclusion of HPC meeting)
54	22nd Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of items, schedule and role sharing ➢ Vietnamese side raised a problem in lack of resources to be used to contents confirmation
55	24th Apr, 2019	<ul style="list-style-type: none"> • Sharing opinion with R&D sector, NAPAS
56	28th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
57	30th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code

Table 6: Working Group 4 Meetings

No.	Date	Subject
1	21st Aug, 2018	<ul style="list-style-type: none"> • Confirmation of contents of outline report
2	5th Nov, 2018	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
3	6th Dec, 2018	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
4	19th Dec, 2018	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
5	21st Dec, 2018	<ul style="list-style-type: none"> • Discussion on contents of outline report
6	23rd Jan, 2019	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
7	27th Mar, 2019	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
8	30th May, 2019	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC

1.2.2 Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed.

The progress of Output 1 activities is shown in the table below.

Table 7: Progress of Output 1 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Collect the legal documents related to the transportation smart card system as follows;; <ul style="list-style-type: none"> ✓ Legal systems and standards on smart card system/ transportation smart card system ✓ Design documents of smart card system 	- Done	- No activity (N/A)

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
	<ul style="list-style-type: none"> ✓ International standards for interoperable AFC system ✓ MRT 2A, 3: AFC technical design ✓ MRT 2: AFC technical specifications ✓ BRT1, Route Bus: Specifications and planning documents to introduce ✓ Hanoi City and MOT: Legal system and decision about technical standardization of AFC ✓ Central Bank: Decision, regulations, standard regarding smart card and electric money 		
1-2 Prepare an outline of 'Design Guideline and Specifications' and the fare policy	<ol style="list-style-type: none"> 1) Examination of ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operational specifications 4) Examination of the technical specifications 	- Done	- No activity (N/A)
1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	-	- Done	- No activity (N/A)
1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	-	- Completed Detailed Outline	- Based on the Detailed Outline, the Working Groups will continue to prepare the output.
1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	-	- On going	- To be completed at last in one month before Project is ended.
1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	- The 1 st Seminar was held on 5 December 2018.	- On going	- Continue discussion for the 2 nd Seminar

1.2.3 Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The progress of Output 2 activities is shown in the table below.

Table 8: Progress of Output 2 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the Fare Management Center (division)	- Done	- No activity (N/A)
2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	Define the basic six items of operational terms of reference of FMC	- Completed the Draft.	- Continue discussion for final version
2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	-	- To be done soon.	- No activity (N/A)
2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	1) Prepare a TOR 2) Organizational structure and staff requirements	- On going	- On going

1.3 Achievement of Output

1.3.1 Output 1

Achievement status of Output 1 is as follows.

Table 9: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
The Design Guideline and Specification is prepared.	None	On going

Source: PDM 1.1

1.3.2 Output 2

Achievement status of Output 2 is as follows.

Table 10: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	None	On going

Source: PDM 1.1

1.4 Achievement of the Project Purpose

Also stated in PDM, the achievement of the project purpose shall be evaluated using verifiable indicators.

Table 11: Verifiable Indicators and Current Status

Objectively verifiable indicators	Baseline	Current Status
- 'Design Guideline and Technical Specifications' are approved by HPC	None	On going
- The public transport fare policy is established	None	On going

Source: PDM 1.1

To achieve the project purpose, the JICA Project Team (JPT) identify the required knowledge and skills by each output shown in the following table. Result of the baseline survey were evaluated on a five-level scale as indicated below and illustrated in following figures.

- (1) Newbie: I don't know the process/ concept;
- (2) Novice: I know the process/ concept, but I have never done it;
- (3) Young Expert: I have done it once, but I have not reported or presented the results;
- (4) Expert: I have done it twice or more/ I have done it once and reported or presented the results;
and
- (5) Senior Expert: I have done it twice or more, and reported or presented the results.

Table 12 Required Knowledge and Skills per Project Output and Activity

Expected Output	Activities	Required Knowledge & Skills
(1) The 'Design Guideline and Specification' is prepared.	1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Information collection capability, Issue solving capability
	1-2 Prepare of outline of 'Design Guideline and Specifications' and the fare policy	(1) Basic knowledge of a) Ticket specifications, b) Fare system c) Operation system d) Technical specification e) Host system (2) Capability for development of a) Rules for common ticket b) Rules for fare c) Rules for operation specification d) Rules for technology implementing specification e) Host system specification
	1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	
	1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	
	1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	
	1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	
(2) Organizational terms of reference for the proposed	2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	

Expected Output	Activities	Required Knowledge & Skills
Fare Management Center (Division) is drafted and submitted for approval	2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of the scope of works (functions) (2) Capability for development of the scope of work(function)
	2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of work description (2) Capability for development of work description
	2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	(1) Basic knowledge of a) Operational terms of reference b) Terms of reference for staffing (2) Capability for development of rules for operation and management of Fare Management Center

The first baseline survey was conducted in April 2018 to measure the current knowledge and skills level. The average scores are shown in the following table.

Table 13 Average Scores per Outputs

Survey	Output	
	1	2
Baseline Survey (April 2018)	2.49	3.33
When basic policy was formulated (December 2018)	3.03	3.67

1.5 Changes of Risks and Actions for Mitigation

N/A

1.6 Progress of Actions undertaken by JICA

N/A

1.7 Progress of Actions undertaken by The People's Committee of Hanoi

N/A

1.8 Progress of Environmental and Social Considerations (if applicable)

N/A

1.9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

N/A

1.10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

Project is implemented in the context of many movements/fluctuations. Such as Line 2A, Line 3 in the completion process, pilot smart card on BRT Line... Especially, Hanoi started to develop a smart city... They create new several requirements for Project.

1.11 Tasks to be implemented by JICA Project Team and Counterparts

Work	Tasks	Implementing agencies
Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed		
N/A	N/A	N/A
Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.		
N/A	N/A	N/A

2 Delay of Work Schedule and/or Problems (if any)

2.1 Cause

First Reason: Working time of Working Groups is affected due to the delay of Working Groups Establishment

Working Groups were proposed to be established very soon in February 2018 as agreed by both sides at the 1st JCC Meeting on 02/02/2018, however, after almost 2 months of delay, finally Working groups were established on 29/3/2018 by the Decision No. 341/QD-SGTVT dated 29 March 2018. During the implementation, Vietnamese member list was revised once by the Decision No. 920/QD-SGTVT dated 4 June 2018.

Second Reason: Approval on Detailed Outline was delayed due to time consuming for Consideration on ABT technology issue

Detailed Outline of Design Guideline and Technical Specifications was prepared based on CBT technology according to Decision 3978/QD-UBND and it was submitted to get approval since 17 Jan 2019 for approval. Meanwhile, in order to develop Smart city, Hanoi city has been considering whether ABT technology is applied or not. After Hanoi city gave conclusion about this issue based on discussions with Project Expert Team about the comparison between ABT technology and CBT technology, Detailed Outline was officially approved in 26/04/2019, which took about 3 months since its submission.

During waiting-for-approval- period, Working Groups did not entirely stop their activities, but they could not work sufficiently because they could only discuss what contents not affected by approval results.

Third reason: Time consuming for consulting with authorized organizations and complete Outputs

Consulting with authorized organizations and complete "Design Guideline and Technical Specifications", "Fare Policy" and "Terms of Reference of FMC" are our planned activities. However, from practical experiences, as above mentioned, this task lasts relatively long time, especially Project Outputs are highly technical and/or quite sensitive in terms of organization. Therefore, Vietnamese side tends to take more time than planned to review, study, give comments.

2.2 Action to be taken

Due to above mentioned delays, in order to achieve the outputs as planned, it is considered to be necessary to extend the Project implementation duration.

Project extension will help Working Group members and Project Expert Team to have enough valuable time for technology transfer at necessary level and to ensure its sustainability. JET should continue to discuss extension of project period with JICA and HDOT.

2.3 Roles of Responsible Persons/Organization (JICA, The People's Committee of Hanoi, etc.)

N/A

3 Modification of the Project Implementation Plan

3.1 PO

3.2 Other modifications on detailed implementation plan

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Project Design Matrix)

Version 3

Project title: Project for Supporting Development of Interoperable Smart Card System for Public Transportation in Hanoi

Dated. 10 June 2019

Project Area: Hanoi

Target Group: Hanoi People's Committee (HPC) and organizations related to public transportation in Hanoi

Counterpart: HPC (Hanoi Department of Transport (DOT), Hanoi Department of Science and Technology (DOST), Hanoi Department of Information and Communication (DOIC), Hanoi Metro Company (HMC), Hanoi Transport Corporation (TRANSERCO))

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Interoperable smart card systems are developed for the public transportation in Hanoi	<ul style="list-style-type: none"> Number of public transport operators applying the 'Design Guideline and Specifications' developed under the Project to realize interoperable smart card system. Ratio of satisfaction on interoperable smart card is more than XX%. 	Survey report(s)			
Project Purpose					
Technical and management capacities of counterpart agencies under HPC are improved for the development of interoperable smart card system for public transportation in Hanoi	<ul style="list-style-type: none"> 'Design Guideline and Specifications' are approved by HPC. The public transport fare policy is established. 	<ul style="list-style-type: none"> Approved 'Design Guideline and Specifications' Project progress report 	Decision no. 3978/QD-UBND dated 13 August 2015 on use of interoperable smart card in public transportation in Hanoi continues to be effective.		
Outputs					
1. 'Design Guideline and Specifications' for interoperable smart card system are developed.	'Design Guideline and Specifications' are finalized.	'Design Guideline and Specifications' (final version)	HPC reviews policy/documents developed under the Project in a timely manner.		
2. Organization terms of reference of each unit of the Fare Management Center (Division) are developed.	Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval.	Organizational terms of reference for the Fare Management Center (Division) (draft for approval)			

Activities	Input		Pre-conditions
	Japanese Side	Vietnamese Side	
1-1. Collect and analyze information on the existing and approved smart card systems for the public transportation system in Hanoi	1. Japanese Experts - Leader - Public Transport Fare Policy and System - Interoperable Smart Card System - Communication System - Fare Management System	1. Project Counterparts (1) HPC (2) HDOT - Road Transportation Management Division - Planning and Investment Division - Economics planning Division - TRAMOC (3) DOST (4) DOIC (5) HMC (6) TRANSERCO 2. Provision of Office Space and equipment 3. Cost for - counterpart members - office operation and maintenance - others (local travel expenses excluding airfare for Vietnamese side, etc.)	Official request to apply for Japan's ODA Loan Project.
1-2. Prepare an outline of 'Design Guideline and Specifications' and fare policy 1) Examination of fare ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operation rules 4) Examination of the technical specifications	2. Counterpart Training in Japan 3. Seminar and workshop 4. Other cost - Local experts and consultants - Local staff - Others (survey, card rental, etc.)		
1-3. Consult with the relevant authorities and finalize the outline of the 'Design Guideline and Specifications' and fare policy			
1-4. Draft a 'Design Guideline and Specifications' with fare policy			
1-5. Consult with the relevant authorities and finalize the 'Design Guideline and Specifications'			
1-6. Conduct seminar(s) to introduce the draft 'Design Guideline Specifications' and fare policy			
2-1. Define the scope of work to be performed by the proposed Fare Management Center (Division) 1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the fare management center (division)			
2-2. Define the tasks and responsibilities of departments/division under the Fare Management Center (Division)			
2-3. Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division)			
2-4. Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements. 1) Prepare a TOR 2) Organizational structure and staff requirements			

PROJECT MONITORING SHEET

Project Title: The Project for Supporting Development of Interoperable Smart Card System for Public Transport in Hanoi

Version of the Sheet: Ver. 4 (Term: 2017 - 2019)

Name: Mr. Michimasa TAKAGI

Title: Team Leader/ Urban Public Transport

Submission Date: August 2019

I. Summary

1 Progress

This monitoring sheet covers the period from project commencement in **December 2017** up to **the end of July 2019**.

1.1 Progress of Inputs

1.1.1 Experts

Table 1: Input of Experts as of End-July

Designation	Name	No. of PMs
Team Leader/ Urban Public Transport	M. TAKAGI	5.47
Deputy Team Leader/ AFC Technical Management	T. OTSUKI	5.47
Public Transport Fare Policy [Railway]	S. HORIUCHI	2.92
Public Transport Fare Policy [Railway]	R. SAITO	0.50
Public Transport Fare Policy [Bus]	T. KUMAI	1.80
Interoperable Smart Card Plan	T. UMEKAWA	0.67
Smart Card Data Management and Utilization	N. MIZOGUCHI	0.00
Interoperable Smart Card System [Railway]	T. FUKATSU	3.33
Interoperable Smart Card System [Bus]1	A. TANAKA	2.60
Interoperable Smart Card System [Bus]2	H. MIYAHARA	2.00
Communication System	K. HONDA	2.50
Fare Management System [AFC Technical Specification]	H. KUWANO	0.57

Fare Management System [AFC Technical Specification]	Y. WATABE	4.40
Fare Management system [AFC Host System]	Y. SAKAMOTO	0.50
Organization Institution	A. SAKUMA	1.07
Monitoring/ Training in Japan/ Coordination	M. OHNO	2.60
TOTAL PMs		36.40 (66.2%)
Planned PMs		55.00

1.2 Progress of Activities

1.2.1 Joint Coordinating Committee and Working Group Meetings

Three Joint Coordinating Committee (JCC) meeting and several working group (WG) meetings were held during the period.

Table 2: Joint Coordinating Committee and Working Group Meetings

Meetings Conducted	Participated Agency	Key Agenda	Date
First JCC meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Outline of Work Plan (Draft) 2) Confirmation of the Undertakings by Vietnamese Side	2 February 2018
Second JCC Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project 2) Proposal from WG 3) Items to be confirmed by Hanoi-city 4) Activity plans	22 August 2018
Third JCC Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Achievements in the 1st Year 2) Explanation for Outline of 'Design Guideline and Specifications 'and Fare Policy 3) Activities in Next Period	7 November 2018

Meetings Conducted	Participated Agency	Key Agenda	Date
1st WG Leader Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Ideal AFC Model in Hanoi 2) Confirmation of 2nd JCC	23 August 2018
2nd WG Leader Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project since last JCC meeting 2) Response to the notice by HPC 3) Confirmation of the materials and preparations for the seminar	4 December 2018
3rd WG Leader Meeting	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Reflection of the seminar for the formulation of Outline Report 2) Site Visit at TRAMOC (Bus Operator) Demo for Bus unit	6 December 2018

Meetings Conducted	Participated Agency	Key Agenda	Date
1st Seminar	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	Project Overview and Introduction of Basic Approach on Interoperable Smart Card System for Public Transportation in Hanoi	5 December 2018

Table 3: Working Group 1 Meetings

No.	Date	Subject
1	16th Apr, 2018	<ul style="list-style-type: none"> Outline of the expected output of WG1 Confirmation of the activity schedule
2	29rd May, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in Japan
3	30th May, 2018	<ul style="list-style-type: none"> Discussion on the feasibility to install each system into Hanoi
4	5th Jun, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in other countries
5	25th Jul, 2018	<ul style="list-style-type: none"> Clarification of the items to be discussed Discussion on the reporting to the 2nd JCC
6	19th Sep, 2018	<ul style="list-style-type: none"> Confirmation of the contents of outline report
7	20th Sep, 2018	<ul style="list-style-type: none"> Explanation of transfer discount in other countries
8	28th Nov, 2018	<ul style="list-style-type: none"> Confirmation of the contents of seminar Confirmation of items to be discussed in the upcoming WG1
9	7th Dec, 2018	<ul style="list-style-type: none"> Confirmation of distance-based fare Discussion on ticket type
10	14th Jan, 2019	<ul style="list-style-type: none"> Discussion on the way of transfer discount
11	17th Jan, 2019	<ul style="list-style-type: none"> Discussion on ticket types and information on card surface
12	22nd Jan, 2019	<ul style="list-style-type: none"> Confirmation of the result of discussion and table of contents of the output
13	26th Feb, 2019	<ul style="list-style-type: none"> Confirmation of contents of fare system guideline (proposed)
14	14th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the comment from Vietnamese side against fare system guideline (proposed)
15	20th Mar, 2019	<ul style="list-style-type: none"> Reconfirmation of the whole structure of outputs in line with the work plan Confirmation of the tasks from April
16	25th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the response toward the comments from Vietnamese side against fare system guideline (proposed)
17	13rd Jun, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline
18	18th Jun, 2019	<ul style="list-style-type: none"> Leader meeting with Mr. Binh (vice director of TRAMOC)
19	16th Jul, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline

Table 4: Working Group 2 Meetings

No.	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> Procedure on WG2 activities "Development of Operational Specification" Explanation of the draft proposal of the list of Operational Specification Outline of the expected final output of WG2 Confirmation of the activity schedule
2	13rd Apr, 2018	<ul style="list-style-type: none"> Outline of the expected final output of the Operational Specification Confirmation of the activity schedule
3	30th May, 2018	<ul style="list-style-type: none"> Explanation of the draft proposal of the list of Operational Specification Re-issue and re-issue registration (Assignment) Card life cycle

4	31st May, 2018	• Boarding and Alighting from railway, BRT and bus
5	21st June, 2018	• Discussion on the Operational Specification
6	5th July, 2018	• Interview about operation of railway, BRT and bus
7	21st Aug, 2018	• Confirmation of the contents of outline report
8	6th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
9	8th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
10	4th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
11	18th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
12	22nd Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
13	24th Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
14	26th Mar, 2019	• Discussion on the operational flow in the use of interoperable IC card
15	29th May, 2019	• Discussion on the operational flow in the use of interoperable IC card
16	26th Jun, 2019	• Discussion on the operational flow in the use of interoperable IC card
17	24th Jul, 2019	• Discussion on the operational flow in the use of interoperable IC card

Table 5: Working Group 3 Meetings

No.	Date	Subject
1	12th Apr, 2018	• Discussion on WG3 activity planning
2	13rd Apr, 2018	<ul style="list-style-type: none"> ➤ Confirmation on WBS, operation plan ➤ Sharing the target deliverables of WG3 (AFC technical specification) ➤ Review on AFC system interoperable use • Lecture for understanding of AFC system, basic terms and structure • Review and discussion on Hanoi AFC technical framework (3978) from interoperable perspective.
3	21st May, 2018	<ul style="list-style-type: none"> • Explanation of AFC survey report on public transportation interoperability in Hanoi City. (BRT, Line2A, Line3, laws and regulations) • Review on overview on AFC technical specification and IC card issuance process • Procedure on WG3 activities and planning for upcoming 3 months
4	22nd May, 2018	• Understanding of AFC technical specification
5	23rd May, 2018	➤ Explanation and discussion on each AFC technical specification item.
6	24th May, 2018	(ticket media, R/W, Smartcard IC format, encoding process/format,
7	25th May, 2018	common code, ticket validation, transaction data and set value, black list,
8	28rd May, 2018	trip pattern, host system)
9	29th May, 2018	
10	30th May, 2018	
11	8th June, 2018	
12	4th June, 2018	• Review of proposal of FMC by TRAMOC (2015):
13	11th June, 2018	• Clarification key points of AFC interoperable technical specification for Hanoi
14	13rd June, 2018	➤ Acquire the important key point for AFC technical specification to be
15	15th June, 2018	introduced in Hanoi city
16	26th June, 2018	➤ Listing up the discussion items with other WGs.
17	27th June, 2018	
18	29th June, 2018	
19	4th July, 2018	
20	27th June, 2018	• MKsmartfactory visit for IC card manufacturing tour and study on interoperable bus R/W.

PM Form 3-1 Monitoring Sheet Summary

21	19th July, 2018	<ul style="list-style-type: none"> Review of Drafted outline of AFC technical specification. ➤ Create and review draft version of outline of AFC technical specification.
22	23rd July, 2018	
23	24th July, 2018	
24	31st July, 2018	
25	24th July, 2018	<ul style="list-style-type: none"> Review BRT AFC document from Viettel On site review of demonstration of AFC system for pilot test and confirmation of technical details with Transerco-Viettel BRT project members Review on summary of main point discussed and Study of coping plan Joint meeting with WG1, WG2 and WG4 to shaping consensus on main point discussed proposed by WG3
26	27th July, 2018	
27	8th Aug, 2018	
28	10th Aug, 2018	
29	14th Aug, 2018	
30	16th Aug, 2018	
31	21st Aug, 2018	<ul style="list-style-type: none"> Confirmation of the contents to be reported in JCC (Discussion on role sharing in formulation of the technical specifications)
32	24th Aug, 2018	<ul style="list-style-type: none"> Discussion on host system specifications
33	7th Sep, 2018	<ul style="list-style-type: none"> Discussion on contents and sharing of work between Japanese and Vietnamese sides in formulation of the technical specifications (common code)
34	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus companies*. Investigation was conducted in terms of infrastructure related to system and network and amount of data to be dealt with at each depot, for the purpose of establishment of AFC system suitable for the actual bus operation. *Nam Ha Noi Bus company, Cau Buou bus company (142 bus, 11 line), Tan Dat bus company (68 bus, 5 line)
35	6th Nov, 2018	<ul style="list-style-type: none"> Confirmation of contents of JCC meeting Discussion on technical specifications (proposed common code)
36	8th Nov, 2018	
37	9th Nov, 2018	<ul style="list-style-type: none"> Site visit at Line 2A. Inspection of installed AFC facility, IC card and operation, and investigation for tasks to be tackled for formulation of common specifications are conducted. Survey of actual AFC trial operation in BRT
38	28th Nov, 2018	<ul style="list-style-type: none"> Discussion on specifications for common code, which is used to process data in interoperable use
39	7th Nov, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
40	17th Nov, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
41	19th Nov, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
42	21st Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
43	25th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
44	11th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (common code, format)
45	16th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (reader/writer)
46	17th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (encode process)
47	22nd Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (trip pattern)
48	24th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (host system)
49	19th Feb, 2019	<ul style="list-style-type: none"> Discussion on installation of IC card in buses with TRANSERCO
50	20th Feb, 2019	<ul style="list-style-type: none"> Discussion on work plan and role sharing in 2019 Sharing opinion with Mr. Hai (director of TRAMOC) about how to move WG3 forward Confirmation of list of tasks and role sharing in formulation of technical specifications

51	21st Jan, 2019	<ul style="list-style-type: none"> • Interview with NAPAS about how to apply IC card to other transport • Discussion with Ms. Huong on tasks and solutions in the process of project
52	17th Apr, 2019	<ul style="list-style-type: none"> • Site visit at Payoo Corporation to survey the situation of Fintech, which is used for ABT system • Site visit at pilot trial at Ho Chi Minh bus, in which ABT system is installed (create an account of ZaloPay, apply for UniPass, issue IC card, take a bus) • Sharing opinion with iTD Company, one of the most promising IT company in Vietnam, about ABT and CBT in the structure of AFC system
53	19th Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of progress in outline (to be tackled after conclusion of HPC meeting)
54	22nd Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of items, schedule and role sharing ➢ Vietnamese side raised a problem in lack of resources to be used to contents confirmation
55	24th Apr, 2019	<ul style="list-style-type: none"> • Sharing opinion with R&D sector, NAPAS
56	28th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
57	30th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
58	4th – 21st Jun, 2019 (every Tue and Thu)	<ul style="list-style-type: none"> • Detailed review of specifications for common code
59	2nd – 25th Jul, 2019 (every Tue and Thu, except for 16th and 18th)	<ul style="list-style-type: none"> • Detailed review of specifications for common code
60	31st Jul, 2019	<ul style="list-style-type: none"> • Discussion on structure of common code of bus stops

Table 6: Working Group 4 Meetings

No.	Date	Subject
1	21st Aug, 2018	<ul style="list-style-type: none"> • Confirmation of contents of outline report
2	5th Nov, 2018	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
3	6th Dec, 2018	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
4	19th Dec, 2018	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
5	21st Dec, 2018	<ul style="list-style-type: none"> • Discussion on contents of outline report
6	23rd Jan, 2019	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
7	27th Mar, 2019	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
8	30th May, 2019	<ul style="list-style-type: none"> • Discussion on organizational structure and staffing requirements under FMC
9	27th Jun, 2019	<ul style="list-style-type: none"> • Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
10	25th Jul, 2019	<ul style="list-style-type: none"> • Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC

1.2.2 Output 1: ‘Design Guideline and Specifications’ for interoperable smart card system are developed.

The progress of Output 1 activities is shown in the table below.

Table 7: Progress of Output 1 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Collect the legal documents related to the transportation smart card system as follows; <ul style="list-style-type: none"> ✓ Legal systems and standards on smart card system/ transportation smart card system ✓ Design documents of smart card system ✓ International standards for interoperable AFC system ✓ MRT 2A, 3: AFC technical design ✓ MRT 2: AFC technical specifications ✓ BRT1, Route Bus: Specifications and planning documents to introduce ✓ Hanoi City and MOT: Legal system and decision about technical standardization of AFC ✓ Central Bank: Decision, regulations, standard regarding smart card and electric money 	- Done	- No activity (N/A)
1-2 Prepare an outline of ‘Design Guideline and Specifications’ and the fare policy	1) Examination of ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operational specifications 4) Examination of the technical specifications	- Done	- No activity (N/A)
1-3 Consult with the relevant authorities and finalize the concepts of the ‘Design Guideline and Specifications’ and the fare policy.	-	- Done	- No activity (N/A)
1-4 Preparation of the drafts of the ‘Design Guideline and Specifications’ and the fare policy	-	- Completed Detailed Outline	Based on the Detailed Outline, the Working Groups will continue to prepare the output.
1-5 Consult with the relevant authorities and finalize the ‘Design Guideline and	-	- On going	To be completed at last in one month before Project is ended.

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
Specifications' and the fare policy			
1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	-	- Under preparation and wait for permission from HPC	

1.2.3 Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The progress of Output 2 activities is shown in the table below.

Table 8: Progress of Output 2 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the Fare Management Center (division)	- Done	- No activity (N/A)
2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	Define the basic six items of operational terms of reference of FMC	- Completed the Draft.	- Continue discussion for final version
2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	-	- To be done soon.	- No activity (N/A)
2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	1) Prepare a TOR 2) Organizational structure and staff requirements	- On going	- On going

1.3 Achievement of Output

1.3.1 Output 1

Achievement status of Output 1 is as follows.

Table 9: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
The Design Guideline and Specification is prepared.	None	On going

Source: PDM 1.1

1.3.2 Output 2

Achievement status of Output 2 is as follows.

Table 10: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	None	On going

Source: PDM 1.1

1.4 Achievement of the Project Purpose

Also stated in PDM, the achievement of the project purpose shall be evaluated using verifiable indicators.

Table 11: Verifiable Indicators and Current Status

Objectively verifiable indicators	Baseline	Current Status
- 'Design Guideline and Technical Specifications' are approved by HPC	None	On going
- The public transport fare policy is established	None	On going

Source: PDM 1.1

To achieve the project purpose, the JICA Project Team (JPT) identify the required knowledge and skills by each output shown in the following table. Result of the baseline survey were evaluated on a five-level scale as indicated below and illustrated in following figures.

- (1) Newbie: I don't know the process/ concept;
- (2) Novice: I know the process/ concept, but I have never done it;
- (3) Young Expert: I have done it once, but I have not reported or presented the results;
- (4) Expert: I have done it twice or more/ I have done it once and reported or presented the results;
and
- (5) Senior Expert: I have done it twice or more, and reported or presented the results.

Table 12 Required Knowledge and Skills per Project Output and Activity

Expected Output	Activities	Required Knowledge & Skills
(1) The 'Design Guideline and Specification' is prepared.	1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Information collection capability, Issue solving capability
	1-2 Prepare of outline of 'Design Guideline and Specifications' and the fare policy	(1) Basic knowledge of
	1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	a) Ticket specifications, b) Fare system c) Operation system d) Technical specification e) Host system
	1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	(2) Capability for development of
	1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	a) Rules for common ticket b) Rules for fare c) Rules for operation specification d) Rules for technology implementing specification e) Host system specification
	1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	
(2) Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	(1) Information collection capability (2) Issue solving capability
	2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of the scope of works (functions) (2) Capability for development of the scope of work(function)
	2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of work description (2) Capability for development of work description
	2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including	(1) Basic knowledge of a) Operational terms of reference b) Terms of reference for staffing

Expected Output	Activities	Required Knowledge & Skills
	organizational structure and staffing requirements.	(2) Capability for development of rules for operation and management of Fare Management Center

The first baseline survey was conducted in xxx 2018 to measure the current knowledge and skills level. The average scores are shown in the following table and each scores are in the following figures.

Table 13 Average Scores per Outputs

Survey	Output	
	1	2
Baseline Survey (xxx 2018)		

1.5 Changes of Risks and Actions for Mitigation

1.6 Progress of Actions undertaken by JICA

1.7 Progress of Actions undertaken by The People’s Committee of Hanoi

1.8 Progress of Environmental and Social Considerations (if applicable)

1.9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

1.10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

Project is implemented in the context of many movements/fluctuations. Such as Line 2A, Line 3 in the completion process, pilot smart card on BRT Line... Especially, Hanoi started to develop a smart city... They create new several requirements for Project.

1.11 Tasks to be implemented by JICA Project Team and Counterparts

Work	Tasks	Implementing agencies
Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed		

Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.		

2 Delay of Work Schedule and/or Problems (if any)

2.1 Detail

2.2 Cause

First Reason: Working time of Working Groups is affected due to the delay of Working Groups Establishment

Working Groups were proposed to be established very soon in February 2018 as agreed by both sides at the 1st JCC Meeting on 02/02/2018, however, after almost 2 months of delay, finally Working groups were established on 29/3/2018 by the Decision No. 341/QD-SGTVT dated 29 March 2018. During the implementation, Vietnamese member list was revised once by the Decision No. 920/QD-SGTVT dated 4 June 2018.

Second Reason: Approval on Detailed Outline was delayed due to time consuming for Consideration on ABT technology issue

Detailed Outline of Design Guideline and Technical Specifications was prepared based on CBT technology according to Decision 3978/QD-UBND and it was submitted to get approval since 17 Jan 2019 for approval. Meanwhile, in order to develop Smart city, Hanoi city has been considering whether ABT technology is applied or not. After Hanoi city gave conclusion about this issue based on discussions with Project Expert Team about the comparison between ABT technology and CBT technology, Detailed Outline was officially approved in 26/04/2019, which took about 3 months since its submission.

During waiting-for-approval- period, Working Groups did not entirely stop their activities, but they could not work sufficiently because they could only discuss what contents not affected by approval results

Third reason: Time consuming for consulting with authorized organizations and complete Outputs

Consulting with authorized organizations and complete "Design Guideline and Technical Specifications", "Fare Policy" and "Terms of Reference of FMC" are our planned activities. However, from practical experiences, as above mentioned, this task lasts relatively long time, especially Project Outputs are highly technical and/or quite sensitive in terms of organization. Therefore, Vietnamese side tends to take more time than planned to review, study, give comments.

2.3 Action to be taken

Due to above mentioned delays, in order to achieve the outputs as planned, it is considered to be necessary to extend the Project implementation duration.

Project extension will help Working Group members and Project Expert Team to have enough valuable time for technology transfer at necessary level and to ensure its sustainability.

Our project proposes to extend 5 months, in which, all working items will be completed until the end of April 2020 and the final month, May 2020 is used for project completion tasks and hand-over.

As above mentioned, besides implementing working items of approved Work Plan, the amount of work for extension period until the end of April 2020 is summarized as follows:

- a. To complete technology transfer at necessary level to ensure the sustainability.
- b. To consult authorized organizations and complete "Design Guideline and Technical Specifications"
- c. To Finalize Report Contents, Prepare and Submit Reports

2.4 Roles of Responsible Persons/Organization (JICA, The People's Committee of Hanoi, etc.)

3 Modification of the Project Implementation Plan

3.1 PO

3.2 Other modifications on detailed implementation plan

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Project Design Matrix)

Version 3

Project title: Project for Supporting Development of Interoperable Smart Card System for Public Transportation in Hanoi

Dated. 28 August. 2019

Project Area: Hanoi

Target Group: Hanoi People's Committee (HPC) and organizations related to public transportation in Hanoi

Counterpart: HPC (Hanoi Department of Transport (DOT), Hanoi Department of Science and Technology (DOST), Hanoi Department of Information and Communication (DOIC), Hanoi Metro Company (HMC), Hanoi Transport Corporation (TRANSERCO))

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Interoperable smart card systems are developed for the public transportation in Hanoi	<ul style="list-style-type: none"> Number of public transport operators applying the 'Design Guideline and Specifications' developed under the Project to realize interoperable smart card system. Ratio of satisfaction on interoperable smart card is more than XX%. 	Survey report(s)			
Project Purpose					
Technical and management capacities of counterpart agencies under HPC are improved for the development of interoperable smart card system for public transportation in Hanoi	<ul style="list-style-type: none"> 'Design Guideline and Specifications' are approved by HPC. The public transport fare policy is established. 	<ul style="list-style-type: none"> Approved 'Design Guideline and Specifications' Project progress report 	Decision no. 3978/QD-UBND dated 13 August 2015 on use of interoperable smart card in public transportation in Hanoi continues to be effective.		
Outputs					
1. 'Design Guideline and Specifications' for interoperable smart card system are developed.	'Design Guideline and Specifications' are finalized.	'Design Guideline and Specifications' (final version)	HPC reviews policy/ documents developed under the Project in a timely manner.		
2. Organization terms of reference of each unit of the Fare Management Center (Division) are developed.	Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval.	Organizational terms of reference for the Fare Management Center (Division) (draft for approval)			

Activities	Input		Pre-conditions
	Japanese Side	Vietnamese Side	
1-1. Collect and analyze information on the existing and approved smart card systems for the public transportation system in Hanoi	1. Japanese Experts - Leader - Public Transport Fare Policy and System - Interoperable Smart Card System - Communication System - Fare Management System	1. Project Counterparts (1) HPC (2) HDOT - Road Transportation Management Division - Planning and Investment Division - Economics planning Division - TRAMOC (3) DOST (4) DOIC (5) HMC (6) TRANSERCO	Official request to apply for Japan's ODA Loan Project.
1-2. Prepare an outline of 'Design Guideline and Specifications' and fare policy 1) Examination of fare ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operation rules 4) Examination of the technical specifications	2. Counterpart Training in Japan 3. Seminar and workshop 4. Other cost - Local experts and consultants - Local staff - Others (survey, card rental, etc.)	2. Provision of Office Space and equipment 3. Cost for - counterpart members - office operation and maintenance - others (local travel expenses excluding airfare for Vietnamese side, etc.)	
1-3. Consult with the relevant authorities and finalize the outline of the 'Design Guideline and Specifications' and fare policy			
1-4. Draft a 'Design Guideline and Specifications' with fare policy			
1-5. Consult with the relevant authorities and finalize the 'Design Guideline and Specifications'			
1-6. Conduct seminar(s) to introduce the draft 'Design Guideline Specifications' and fare policy			
2-1. Define the scope of work to be performed by the proposed Fare Management Center (Division) 1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the fare management center (division)			
2-2. Define the tasks and responsibilities of departments/division under the Fare Management Center (Division)			
2-3. Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division)			
2-4. Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements. 1) Prepare a TOR 2) Organizational structure and staff requirements			

PROJECT MONITORING SHEET

Project Title: The Project for Supporting Development of Interoperable Smart Card System for Public Transport in Hanoi

Version of the Sheet: Ver. 5 (Term: 2017 - 2020)

Name: Mr. Michimasa TAKAGI

Title: Team Leader/ Urban Public Transport

Submission Date: December 2019

I. Summary

1 Progress

This monitoring sheet covers the period from project commencement in **December 2017** up to **the end of November 2019**.

1.1 Progress of Inputs

1.1.1 Experts

Table 1: Input of Experts as of End-July

Designation	Name	No. of PMs
Team Leader/ Urban Public Transport	M. TAKAGI	5.73
Deputy Team Leader/ AFC Technical Management	T. OTSUKI	6.30
Public Transport Fare Policy [Railway]	S. HORIUCHI	2.92
Public Transport Fare Policy [Railway]	R. SAITO	1.47
Public Transport Fare Policy [Bus]	T. KUMAI	2.03
Interoperable Smart Card Plan	T. UMEKAWA	0.83
Smart Card Data Management and Utilization	N. MIZOGUCHI	0.00
Interoperable Smart Card System [Railway]	T. FUKATSU	3.87
Interoperable Smart Card System [Bus]1	A. TANAKA	2.87
Interoperable Smart Card System [Bus]2	H. MIYAHARA	2.63
Communication System	K. HONDA	3.00
Fare Management System [AFC Technical Specification]	H. KUWANO	0.57

Fare Management System [AFC Technical Specification]	Y. WATABE	4.93
Fare Management system [AFC Host System]	Y. SAKAMOTO	1.00
Organization Institution	A. SAKUMA	1.30
Monitoring/ Training in Japan/ Coordination	M. OHNO	3.87
TOTAL PMs		41.85 (73.3%)
Planned PMs		57.10

1.2 Progress of Activities

1.2.1 Joint Coordinating Committee and Working Group Meetings

Four Joint Coordinating Committee (JCC) meetings and several working group (WG) meetings were held during the period.

Table 2: Joint Coordinating Committee and Working Group Meetings

Joint Coordination Committee Meeting

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	First JCC meeting	2 February 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Outline of Work Plan (Draft) 2) Confirmation of the Undertakings by Vietnamese Side
2	Second JCC Meeting	22 August 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Progress of the project 2) Proposal from WG 3) Items to be confirmed by Hanoi-city 4) Activity plans
3	Third JCC Meeting	7 November 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Achievements in the 1st Year 2) Explanation for Outline of 'Design Guideline and Specifications 'and Fare Policy 3) Activities in Next Period
4	Fourth JCC Meeting	29 August 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Report about Project Implementation 2) Remaining Items 3) Plan/Procedure to obtain appraisal, approval on Design Guidelines and Technical Specifications 4) Proposal on AFC system implementation under the city bus network (applying Project outputs) 5) Proposal about Project extension

Meeting among WGs/Meeting with Originations

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	1st WG Leader Meeting	23 August 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Ideal AFC Model in Hanoi 2) Confirmation of 2nd JCC

PM Form 3-1 Monitoring Sheet Summary

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
2	2nd WG Leader Meeting	4 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project since last JCC meeting 2) Response to the notice by HPC 3) Confirmation of the materials and preparations for the seminar
3	3rd WG Leader Meeting	6 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Reflection of the seminar for the formulation of Outline Report 2) Site Visit at TRAMOC (Bus Operator) Demo for Bus unit
4	JICA-JET meeting for the fourth JCC meeting	23 August 2019	JICA Headquarters, JICA Viet Nam Office, JICA Expert Team	1) Topics and materials in JCC meeting
5	Inter-Working Group Meeting	29 August 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Transfer discount 2) Valid period of season passes
6	Inter-Working Group Meeting (JET only)	3 October 2019	JICA Expert Team	1) Confirmation of draft DG/TS
7	Inter-Working Group Meeting	3 October 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Confirmation of remaining items
8	Orientation Meeting	4 October 2019	JICA Headquarters, JICA Viet Nam Office, JICA Expert Team	1) Confirmation on how to develop outputs and schedule
9	General Meeting with JICA	7th October 2019	JICA Headquarters, JICA Expert Team	1) Contents of outputs and the seminar
10	Inter-Working Group Meeting (JET only)	27th November 2019	JICA Expert Team	1) Review of the seminar and orientation
11	Meeting with HDOT	29th November 2019	HDOT, JICA Expert Team	1) Schedule of the project

Seminar

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	1st Seminar	5 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Project Overview and Introduction of Basic Approach on Interoperable Smart Card System for Public Transportation in Hanoi
2	2nd Seminar	27th November 2019	HDOT, HDOF, HDOST, HDOIC, SBV, HMC, TRANSERCO, MOT, TRAMOC. Construction Association, BIDV, IT Agribank, Vietcombank, Viettel, MK Group, ITD, VNPT, NAPAS, ADB, WB,	1) Overview of the draft DG/TS

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
			ABeam Consulting (Vietnam), Viet Nam Tokyo Metro, TOPPAN FORMS, Sony Imaging Products & Solutions, Sony Electronics Vietnam, JCB International	

Working Group 1 Meeting

No.	Date	Subject
1	16th Apr, 2018	<ul style="list-style-type: none"> Outline of the expected output of WG1 Confirmation of the activity schedule
2	29rd May, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in Japan Discussion on the feasibility to install each system into Hanoi
3	30th May, 2018	
4	5th Jun, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in other countries
5	25th Jul, 2018	<ul style="list-style-type: none"> Clarification of the items to be discussed Discussion on the reporting to the 2nd JCC
6	19th Sep, 2018	<ul style="list-style-type: none"> Confirmation of the contents of outline report
7	20th Sep, 2018	<ul style="list-style-type: none"> Explanation of transfer discount in other countries
8	28th Nov, 2018	<ul style="list-style-type: none"> Confirmation of the contents of seminar Confirmation of items to be discussed in the upcoming WG1
9	7th Dec, 2018	<ul style="list-style-type: none"> Confirmation of distance-based fare Discussion on ticket type
10	14th Jan, 2019	<ul style="list-style-type: none"> Discussion on the way of transfer discount
11	17th Jan, 2019	<ul style="list-style-type: none"> Discussion on ticket types and information on card surface
12	22nd Jan, 2019	<ul style="list-style-type: none"> Confirmation of the result of discussion and table of contents of the output
13	26th Feb, 2019	<ul style="list-style-type: none"> Confirmation of contents of fare system guideline (proposed)
14	14th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the comment from Vietnamese side against fare system guideline (proposed)
15	20th Mar, 2019	<ul style="list-style-type: none"> Reconfirmation of the whole structure of outputs in line with the work plan Confirmation of the tasks from April
16	25th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the response toward the comments from Vietnamese side against fare system guideline (proposed)
17	13rd Jun, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline
18	18th Jun, 2019	<ul style="list-style-type: none"> Leader meeting with Mr. Binh (vice director of TRAMOC)
19	16th Jul, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline
20	23rd Aug, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline
21	4th Oct, 2019	<ul style="list-style-type: none"> Discussion and Confirmation on draft technical cooperation outputs
22	24th Oct, 2019	<ul style="list-style-type: none"> Confirmation on outputs with WG3 (JICA Expert Team only)
23	31st Oct, 2019	<ul style="list-style-type: none"> Arrangement and material of the seminar (JICA Expert Team only)
24	25th Nov, 2019	<ul style="list-style-type: none"> Discussion on contents of the seminar

Working Group 2 Meeting

No.	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> Procedure on WG2 activities "Development of Operational Specification"

No.	Date	Subject
		<ul style="list-style-type: none"> • Explanation of the draft proposal of the list of Operational Specification • Outline of the expected final output of WG2 • Confirmation of the activity schedule
2	13rd Apr, 2018	<ul style="list-style-type: none"> • Outline of the expected final output of the Operational Specification • Confirmation of the activity schedule
3	30th May, 2018	<ul style="list-style-type: none"> • Explanation of the draft proposal of the list of Operational Specification • Re-issue and re-issue registration (Assignment) • Card life cycle
4	31st May, 2018	<ul style="list-style-type: none"> • Boarding and Alighting from railway, BRT and bus
5	21st June, 2018	<ul style="list-style-type: none"> • Discussion on the Operational Specification
6	5th July, 2018	<ul style="list-style-type: none"> • Interview about operation of railway, BRT and bus
7	21st Aug, 2018	<ul style="list-style-type: none"> • Confirmation of the contents of outline report
8	6th Nov, 2018	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
9	8th Nov, 2018	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
10	4th Dec, 2018	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
11	18th Dec, 2018	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
12	22nd Jan, 2019	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
13	24th Jan, 2019	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
14	26th Mar, 2019	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
15	29th May, 2019	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
16	26th Jun, 2019	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
17	24th Jul, 2019	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
18	28th Aug, 2019	<ul style="list-style-type: none"> • Discussion on the operational flow in the use of interoperable IC card
19	30th Oct, 2019	<ul style="list-style-type: none"> • Discussion on the DG/TS regarding the use of interoperable IC card
20	31st Oct, 2019	<ul style="list-style-type: none"> • Discussion on the DG/TS regarding the use of interoperable IC card
21	26th Nov, 2019	<ul style="list-style-type: none"> • Discussion on contents of the seminar
22	19th Dec, 2019	<ul style="list-style-type: none"> • Discussion on the fare deduction method

Working Group 3 Meeting

No	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> • Discussion on WG3 activity planning <ul style="list-style-type: none"> ➢ Confirmation on WBS, operation plan ➢ Sharing the target deliverables of WG3 (AFC technical specification) ➢ Review on AFC system interoperable use
2	13th Apr, 2018	<ul style="list-style-type: none"> • Lecture for understanding of AFC system, basic terms and structure • Review and discussion on Hanoi AFC technical framework (3978) from interoperable perspective.
3	21st May, 2018	<ul style="list-style-type: none"> • Explanation of AFC survey report on public transportation interoperability in Hanoi City. (BRT, Line2A, Line3, laws and regulations) • Review on overview on AFC technical specification and IC card issuance process • Procedure on WG3 activities and planning for upcoming 3 months
4	22nd May, 2018	<ul style="list-style-type: none"> • Understanding of AFC technical specification
5	23rd May, 2018	

No	Date	Subject
6	24th May, 2018	<ul style="list-style-type: none"> ➢ Explanation and discussion on each AFC technical specification item. (ticket media, R/W, Smartcard IC format, encoding process/format, common code, ticket validation, transaction data and set value, black list, trip pattern, host system)
7	25th May, 2018	
8	28th May, 2018	
9	29th May, 2018	
10	30th May, 2018	
11	4th June, 2018	<ul style="list-style-type: none"> • Review of proposal of FMC by TRAMOC (2015):
12	8th June, 2018	<ul style="list-style-type: none"> • Framework of Technical Specification for Host System
13	11th June, 2018	<ul style="list-style-type: none"> • Clarification key points of AFC interoperable technical specification for Hanoi <ul style="list-style-type: none"> ➢ Acquire the important key point for AFC technical specification to be introduced in Hanoi city ➢ Listing up the discussion items with other WGs.
14	13th June, 2018	
15	15th June, 2018	
16	19th June, 2018	
17	26th June, 2018	
18	27th June, 2018	
19	29th June, 2018	
20	4th July, 2018	
21	27th June, 2018	<ul style="list-style-type: none"> • MK smart factory visit for IC card manufacturing tour and study on interoperable bus R/W.
22	19th July, 2018	<ul style="list-style-type: none"> • Review of Drafted outline of AFC technical specification. <ul style="list-style-type: none"> ➢ Create and review draft version of outline of AFC technical specification.
23	23rd July, 2018	
24	23rd July, 2018	<ul style="list-style-type: none"> • Visit to HMC <ul style="list-style-type: none"> ➢ Technical Information of Line 2A ➢ Communication with HMC
25	24th July, 2018	<ul style="list-style-type: none"> • Review of Drafted outline of AFC technical specification.
26	31st July, 2018	<ul style="list-style-type: none"> • Review of BRT document from Viettel (rev3.2)
27	31st July, 2018	<ul style="list-style-type: none"> • Review Host system of Drafted outlines of Technical Specification (ver. 0.12)
28	24th July, 2018	<ul style="list-style-type: none"> • Review BRT AFC document from Viettel • On site review of demonstration of AFC system for pilot test and confirmation of technical details with Transerco-Viettel BRT project members • Review on summary of main point discussed and Study of coping plan • Joint meeting with WG1, WG2 and WG4 to shaping consensus on main point discussed proposed by WG3
29	27th July, 2018	
30	8th Aug, 2018	
31	10th Aug, 2018	
32	14th Aug, 2018	
33	16th Aug, 2018	
34	21st Aug, 2018	<ul style="list-style-type: none"> • Confirmation of the contents to be reported in JCC (Discussion on role sharing in formulation of the technical specifications)
35	24th Aug, 2018	<ul style="list-style-type: none"> • Discussion on host system specifications
36	7th Sep, 2018	<ul style="list-style-type: none"> • Discussion on contents and sharing of work between Japanese and Vietnamese sides in formulation of the technical specifications (common code)
37	3rd Oct, 2018	<ul style="list-style-type: none"> • Discussion on common code
38	5th Oct, 2018	<ul style="list-style-type: none"> • Discussion on common code and Blacklist

No	Date	Subject
39	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus company(1). Investigation was conducted in terms of infrastructure related to system and network and amount of data to be dealt with at each depot, for the purpose of establishment of AFC system suitable for the actual bus operation. : Nam Ha Noi Bus company,
40	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus companies(2): Cau Buou bus company (142 bus, 11 line)
41	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus company (3): Tan Dat bus company (68 bus, 5 line))
42	6th Nov, 2018	<ul style="list-style-type: none"> Confirmation of contents of JCC meeting Discussion on technical specifications (Ticket media)
43	8th Nov, 2018	<ul style="list-style-type: none"> Discussion on proposed AFC system structure suitable for bus services
44	9th Nov, 2018	<ul style="list-style-type: none"> Site visit at Line 2A. Inspection of installed AFC facility, IC card and operation, and investigation for tasks to be tackled for formulation of common specifications are conducted. Survey of actual AFC trial operation in BRT
45	9th Nov, 2018	<ul style="list-style-type: none"> Discussion on JCC 3rd result in WG3
46	20th Nov, 2018	<ul style="list-style-type: none"> Discussion on common code and gate access log
47	28th Nov, 2018	<ul style="list-style-type: none"> Discussion on specifications for common code, which is used to process data in interoperable use
48	7th Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
49	17th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
50	19th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
51	21st Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
52	25th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
53	11th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (common code, format)
54	16th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (reader/writer)
55	17th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (encode process)
56	22nd Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (trip pattern)
57	24th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (host system)
58	28th Jan, 2019	<ul style="list-style-type: none"> Discussion on schedule of further WG3 activities
59	19th Feb, 2019	<ul style="list-style-type: none"> Discussion on installation of IC card in buses with TRANSERCO
60	20th Feb, 2019	<ul style="list-style-type: none"> Discussion on work plan and role sharing in 2019 Confirmation of list of tasks and role sharing in formulation of technical specifications
61	20th Feb, 2019	<ul style="list-style-type: none"> Review of project with Mr.Hai (extension of project and other discussions)
62	20th Feb, 2019	<ul style="list-style-type: none"> Interview with NAPAS about how to apply IC card to other transport Discussion with Ms. Huong on tasks and solutions in the process of project
63	17th Apr, 2019	<ul style="list-style-type: none"> Site visit at Payoo Corporation to survey the situation of Fintech, which is used for ABT system Site visit at pilot trial at Ho Chi Minh bus, in which ABT system is installed (create an account of ZaloPay, apply for UniPass, issue IC card, take a bus) Sharing opinion with iTD Company, one of the most promising IT company in Vietnam, about ABT and CBT in the structure of AFC system

No	Date	Subject
64	19th Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of progress in outline (to be tackled after conclusion of HPC meeting)
65	22nd Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of items, schedule and role sharing ➢ Vietnamese side raised a problem in lack of resources to be used for contents confirmation
66	24th Apr, 2019	<ul style="list-style-type: none"> • Sharing opinion with R&D sector, NAPAS
67	28th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
68	30th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
69	4th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code and Encode Format
70	6th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Format
71	11th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Format
72	13th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Media
73	18th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for R/W and Ticket Validation
74	20th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
75	2nd July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
76	4th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
77	9th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
78	18th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
79	23rd July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
80	25th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
81	30th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
82	6th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data
83	8th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data
84	20th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications (Station code) on request of Hanoi member
85	22th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications (Station code) on request of Hanoi member
86	27th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data and Trip Pattern
87	10th Sep, 2019	<ul style="list-style-type: none"> • Discussion on project planning
88	10th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Host System and Trip Pattern
89	12th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Trip Pattern
90	17th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Trip Pattern
91	19th Sep, 2019	<ul style="list-style-type: none"> • Explanation contents and structure of Main report
92	24th Sep, 2019	<ul style="list-style-type: none"> • Review report of Host System
93	1st Oct, 2019	<ul style="list-style-type: none"> • Discussion on bus stop code
94	3rd Oct, 2019	<ul style="list-style-type: none"> • Review main report of WG3
95	15th Oct, 2019	<ul style="list-style-type: none"> • Pre-discussion on bus stop code (JICA Expert Meeting only)
96	17th Oct, 2019	<ul style="list-style-type: none"> • Discussion on bus stop code
97	5th Nov, 2019	<ul style="list-style-type: none"> • Discussion on contents of the seminar in WG3
98	12th Nov, 2019	<ul style="list-style-type: none"> • Preparation and review on seminar material
99	26th Nov, 2019	<ul style="list-style-type: none"> • Rehearsal of the seminar and check of the contents

Working Group 4 Meeting

No.	Date	Subject
1	21st Aug, 2018	• Confirmation of contents of outline report
2	5th Nov, 2018	• Discussion on organizational structure and staffing requirements under FMC
3	6th Dec, 2018	• Discussion on organizational structure and staffing requirements under FMC
4	19th Dec, 2018	• Discussion on organizational structure and staffing requirements under FMC
5	21st Dec, 2018	• Discussion on contents of outline report
6	23rd Jan, 2019	• Discussion on organizational structure and staffing requirements under FMC
7	27th Mar, 2019	• Discussion on organizational structure and staffing requirements under FMC
8	30th May, 2019	• Discussion on organizational structure and staffing requirements under FMC
9	27th Jun, 2019	• Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
10	25th Jul, 2019	• Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
11	28th Aug, 2019	• Discussion on staffing requirement of FMC
12	26th Sep, 2019	• Discussion on staffing requirement of FMC

1.2.2 Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed.

The progress of Output 1 activities is shown in the table below.

Table 7: Progress of Output 1 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Collect the legal documents related to the transportation smart card system as follows;; ✓ Legal systems and standards on smart card system/ transportation smart card system ✓ Design documents of smart card system ✓ International standards for interoperable AFC system ✓ MRT 2A, 3: AFC technical design ✓ MRT 2: AFC technical specifications ✓ BRT1, Route Bus: Specifications and planning documents to introduce ✓ Hanoi City and MOT: Legal system and decision about technical standardization of AFC	- Done	- No activity (N/A)

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
	✓ Central Bank: Decision, regulations, standard regarding smart card and electric money		
1-2 Prepare an outline of 'Design Guideline and Specifications' and the fare policy	1) Examination of ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operational specifications 4) Examination of the technical specifications	- Done	- No activity (N/A)
1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	-	- Done	- No activity (N/A)
1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	-	- On going	- Continue discussion for revision of DG/TS
1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	-	- On going	- Continue discussion for revision of DG/TS
1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	- The 1 st Seminar was held on 5 December 2018. - The 2 nd Seminar was held on 27 November 2019.	- Done	- No activity (N/A)

1.2.3 Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The progress of Output 2 activities is shown in the table below.

Table 8: Progress of Output 2 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the Fare Management Center (division)	- Done	- No activity (N/A)

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	Define the basic six items of operational terms of reference of FMC	- Done	- No activity (N/A)
2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	-	- Done	- No activity (N/A)
2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	1) Prepare a TOR 2) Organizational structure and staff requirements	- On going	- Continue discussion for final version

1.3 Achievement of Output

1.3.1 Output 1

Achievement status of Output 1 is as follows.

Table 9: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
The Design Guideline and Specification is prepared.	None	On going

Source: PDM 1.1

1.3.2 Output 2

Achievement status of Output 2 is as follows.

Table 10: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	None	On going

Source: PDM 1.1

1.4 Achievement of the Project Purpose

Also stated in PDM, the achievement of the project purpose shall be evaluated using verifiable indicators.

Table 11: Verifiable Indicators and Current Status

Objectively verifiable indicators	Baseline	Current Status
- 'Design Guideline and Technical Specifications' are approved by HPC	None	On going
- The public transport fare policy is established	None	On going

Source: PDM 1.1

To achieve the project purpose, the JICA Project Team (JPT) identify the required knowledge and skills by each output shown in the following table. Result of the baseline survey were evaluated on a five-level scale as indicated below and illustrated in following figures.

- (1) Newbie: I don't know the process/ concept;
- (2) Novice: I know the process/ concept, but I have never done it;
- (3) Young Expert: I have done it once, but I have not reported or presented the results;
- (4) Expert: I have done it twice or more/ I have done it once and reported or presented the results;
and
- (5) Senior Expert: I have done it twice or more, and reported or presented the results.

Table 12 Required Knowledge and Skills per Project Output and Activity

Expected Output	Activities	Required Knowledge & Skills
(1) The 'Design Guideline and Specification' is prepared.	1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Information collection capability, Issue solving capability
	1-2 Prepare of outline of 'Design Guideline and Specifications' and the fare policy	(1) Basic knowledge of a) Ticket specifications, b) Fare system c) Operation system d) Technical specification e) Host system (2) Capability for development of a) Rules for common ticket b) Rules for fare c) Rules for operation specification d) Rules for technology implementing specification e) Host system specification
	1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	
	1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	
	1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	
	1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	
(2) Organizational terms of reference for the proposed	2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	

Expected Output	Activities	Required Knowledge & Skills
Fare Management Center (Division) is drafted and submitted for approval	2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of the scope of works (functions) (2) Capability for development of the scope of work(function)
	2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of work description (2) Capability for development of work description
	2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	(1) Basic knowledge of a) Operational terms of reference b) Terms of reference for staffing (2) Capability for development of rules for operation and management of Fare Management Center

The first baseline survey was conducted in April 2018 to measure the current knowledge and skills level. The average scores are shown in the following table.

Table 13 Average Score for each Output

Time	Output 1: development of DG/TS for interoperable smart card system	Output 2: development of Organizational TOR of each unit of the FMC
When the Project launched (April 2018)	2.49	3.33
When basic policy was formulated (December 2018)	3.03	3.67
When draft DG/TS and draft TOR of FMC (October 2019)	3.56	4.00

1.5 Changes of Risks and Actions for Mitigation

N/A

1.6 Progress of Actions undertaken by JICA

N/A

1.7 Progress of Actions undertaken by The People's Committee of Hanoi

N/A

1.8 Progress of Environmental and Social Considerations (if applicable)

N/A

1.9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

N/A

1.10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

Project is implemented in the context of many movements/fluctuations. Such as Line 2A, Line 3 in the completion process, pilot smart card on BRT Line... Especially, Hanoi started to develop a smart city... They create new several requirements for Project.

1.11 Tasks to be implemented by JICA Project Team and Counterparts

Work	Tasks	Implementing agencies
Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed		
N/A	N/A	N/A
Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.		
N/A	N/A	N/A

2 Delay of Work Schedule and/or Problems (if any)

2.1 Cause

(1) Delay in assignment of counterparts

In the 1st Joint Coordination Committee (JCC) meeting, it was agreed that WG members would be assigned in February 2018. However, the members were actually determined in 29 March 2018 (Decision No. 341/QD-SGTVT).

(2) Delay caused by comparative study between CBT and ABT

In compliance with Decision 3978/QD-UBND, the Project Team submitted to HDOT the outline of DG/TS based on the card-based ticketing (CBT) system. This outline of DG/TS underwent the approval process. Although this Project is based on the assumption of adopting the CBT system, Hanoi City proposed to Japan International Cooperation Agency (JICA) to consider account-based ticketing (ABT) system with a perspective of the smart city concept. This led to comparative study between the CBT and ABT systems, which concluded application of the CBT system. The outline of DG/TS was finally approved in 26 April 2019, three months after the submission.

2.2 Action to be taken

(1) Assignment of counterparts

In spite of the delay in assignment of WG members at the start of this Project, they actively involved themselves in the Project, including approximately 190 WG meetings. Moreover, participation of IT companies in Hanoi was approved at 4th JCC held in 29 August 2019, which allowed members familiar with IT in Hanoi to join the WGs, contributing to formulating the DG/TS based on the actual situation of the city. Director and Vice

Director of HDOT, and director of Hanoi Urban Transport Management and Operation Center (TRAMOC) also take active part in the project, closely communicating with the Project Team.

(2) Comparative study between CBT and ABT

A study meeting was held in 19 April 2019 chaired by Chairman of HPC. As a result, it was decided to continue the Project based on the submitted outline of DG/TS. This outline was approved in 26 April 2019 (HPC letter No. 1648/UBND-DT).

2.3 Roles of Responsible Persons/Organization (JICA, The People's Committee of Hanoi, etc.)

N/A

3 Modification of the Project Implementation Plan

3.1 PO

3.2 Other modifications on detailed implementation plan

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Project Design Matrix)

Version 6

Project title: Project for Supporting Development of Interoperable Smart Card System for Public Transportation in Hanoi

Dated. 6 December 2019

Project Area: Hanoi

Target Group: Hanoi People's Committee (HPC) and organizations related to public transportation in Hanoi

Counterpart: HPC (Hanoi Department of Transport (DOT), Hanoi Department of Science and Technology (DOST), Hanoi Department of Information and Communication (DOIC), Hanoi Metro Company (HMC), Hanoi Transport Corporation (TRANSERCO))

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Interoperable smart card systems are developed for the public transportation in Hanoi	<ul style="list-style-type: none"> Number of public transport operators applying the 'Design Guideline and Specifications' developed under the Project to realize interoperable smart card system. Ratio of satisfaction on interoperable smart card is more than XX%. 	Survey report(s)			
Project Purpose					
Technical and management capacities of counterpart agencies under HPC are improved for the development of interoperable smart card system for public transportation in Hanoi	<ul style="list-style-type: none"> 'Design Guideline and Specifications' are approved by HPC. The public transport fare policy is established. 	<ul style="list-style-type: none"> Approved 'Design Guideline and Specifications' Project progress report 	Decision no. 3978/QD-UBND dated 13 August 2015 on use of interoperable smart card in public transportation in Hanoi continues to be effective.		
Outputs					
1. 'Design Guideline and Specifications' for interoperable smart card system are developed.	'Design Guideline and Specifications' are finalized.	'Design Guideline and Specifications' (final version)	HPC reviews policy/documents developed under the Project in a timely manner.		
2. Organization terms of reference of each unit of the Fare Management Center (Division) are developed.	Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval.	Organizational terms of reference for the Fare Management Center (Division) (draft for approval)			

Activities	Input		Pre-conditions
	Japanese Side	Vietnamese Side	
1-1. Collect and analyze information on the existing and approved smart card systems for the public transportation system in Hanoi	1. Japanese Experts - Leader - Public Transport Fare Policy and System - Interoperable Smart Card System - Communication System - Fare Management System	1. Project Counterparts (1) HPC (2) HDOT - Road Transportation Management Division - Planning and Investment Division - Economics planning Division - TRAMOC (3) DOST (4) DOIC (5) HMC (6) TRANSERCO 2. Provision of Office Space and equipment 3. Cost for - counterpart members - office operation and maintenance - others (local travel expenses excluding airfare for Vietnamese side, etc.)	Official request to apply for Japan's ODA Loan Project.
1-2. Prepare an outline of 'Design Guideline and Specifications' and fare policy 1) Examination of fare ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operation rules 4) Examination of the technical specifications	2. Counterpart Training in Japan 3. Seminar and workshop 4. Other cost - Local experts and consultants - Local staff - Others (survey, card rental, etc.)		
1-3. Consult with the relevant authorities and finalize the outline of the 'Design Guideline and Specifications' and fare policy			
1-4. Draft a 'Design Guideline and Specifications' with fare policy			
1-5. Consult with the relevant authorities and finalize the 'Design Guideline and Specifications'			
1-6. Conduct seminar(s) to introduce the draft 'Design Guideline Specifications' and fare policy			
2-1. Define the scope of work to be performed by the proposed Fare Management Center (Division) 1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the fare management center (division)			
2-2. Define the tasks and responsibilities of departments/division under the Fare Management Center (Division)			
2-3. Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division)			
2-4. Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements. 1) Prepare a TOR 2) Organizational structure and staff requirements			

PROJECT MONITORING SHEET

Project Title: The Project for Supporting Development of Interoperable Smart Card System for Public Transport in Hanoi

Version of the Sheet: Ver. 6 (Term: 2017 - 2020)

Name: Mr. Michimasa TAKAGI

Title: Team Leader/ Urban Public Transport

Submission Date: June 2020

I. Summary

1 Progress

This monitoring sheet covers the period from project commencement in **December 2017** up to **the end of May 2020**.

1.1 Progress of Inputs

1.1.1 Experts

Table 1: Input of Experts as of End-July

Designation	Name	No. of PMs
Team Leader/ Urban Public Transport	M. TAKAGI	6.32
Deputy Team Leader/ AFC Technical Management	T. OTSUKI	7.18
Public Transport Fare Policy [Railway]	S. HORIUCHI	2.92
Public Transport Fare Policy [Railway]	R. SAITO	1.60
Public Transport Fare Policy [Bus]	T. KUMAI	2.13
Interoperable Smart Card Plan	T. UMEKAWA	0.97
Smart Card Data Management and Utilization	N. MIZOGUCHI	0.00
Interoperable Smart Card System [Railway]	T. FUKATSU	4.02
Interoperable Smart Card System [Bus]1	A. TANAKA	2.87
Interoperable Smart Card System [Bus]2	H. MIYAHARA	2.80
Communication System	K. HONDA	3.00
Fare Management System [AFC Technical Specification]	H. KUWANO	0.57

Fare Management System [AFC Technical Specification]	Y. WATABE	6.73
Fare Management system [AFC Host System]	Y. SAKAMOTO	1.50
Organization Institution	A. SAKUMA	1.50
Monitoring/ Training in Japan/ Coordination	M. OHNO	4.47
TOTAL PMs		48.58 (85.1%)
Planned PMs		57.10

1.2 Progress of Activities

1.2.1 Joint Coordinating Committee and Working Group Meetings

Four Joint Coordinating Committee (JCC) meetings and several working group (WG) meetings were held during the period.

Table 2: Joint Coordinating Committee and Working Group Meetings

Joint Coordination Committee Meeting

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	First JCC meeting	2 February 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Outline of Work Plan (Draft) 2) Confirmation of the Undertakings by Vietnamese Side
2	Second JCC Meeting	22 August 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Progress of the project 2) Proposal from WG 3) Items to be confirmed by Hanoi-city 4) Activity plans
3	Third JCC Meeting	7 November 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Achievements in the 1st Year 2) Explanation for Outline of 'Design Guideline and Specifications 'and Fare Policy 3) Activities in Next Period
4	Fourth JCC Meeting	29 August 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Report about Project Implementation 2) Remaining Items 3) Plan/Procedure to obtain appraisal, approval on Design Guidelines and Technical Specifications 4) Proposal on AFC system implementation under the city bus network (applying Project outputs) 5) Proposal about Project extension

Meeting among WGs/Meeting with Originations

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	1st WG Leader Meeting	23 August 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	<ol style="list-style-type: none"> 1) Ideal AFC Model in Hanoi 2) Confirmation of 2nd JCC

PM Form 3-1 Monitoring Sheet Summary

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
2	2nd WG Leader Meeting	4 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project since last JCC meeting 2) Response to the notice by HPC 3) Confirmation of the materials and preparations for the seminar
3	3rd WG Leader Meeting	6 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Reflection of the seminar for the formulation of Outline Report 2) Site Visit at TRAMOC (Bus Operator) Demo for Bus unit
4	JICA-JET meeting for the fourth JCC meeting	23 August 2019	JICA Headquarters, JICA Viet Nam Office, JICA Expert Team	1) Topics and materials in JCC meeting
5	Inter-Working Group Meeting	29 August 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Transfer discount 2) Valid period of season passes
6	Inter-Working Group Meeting (JET only)	3 October 2019	JICA Expert Team	1) Confirmation of draft DG/TS
7	Inter-Working Group Meeting	3 October 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Confirmation of remaining items
8	Orientation Meeting	4 October 2019	JICA Headquarters, JICA Viet Nam Office, JICA Expert Team	1) Confirmation on how to develop outputs and schedule
9	General Meeting with JICA	7th October 2019	JICA Headquarters, JICA Expert Team	1) Contents of outputs and the seminar
10	Inter-Working Group Meeting (JET only)	27th November 2019	JICA Expert Team	1) Review of the seminar and orientation
11	Meeting with HDOT	29th November 2019	HDOT, JICA Expert Team	1) Schedule of the project
12	Meeting with HDOT and TRAMOC	25th December 2019	HDOT, TRAMOC, JICA Expert Team	1) Schedule of the project 2) Confirmation on remaining items 3) Training in Japan
13	Meeting at Ho Chi Minh City	16th January 2020	HCMC-DOT, MAUR, HCMC-Metro, JICA, WB, NJPT, JICA Expert Team	1) Opinion exchange about interoperable use of IC card
14	JET Meeting	13th February 2020	JICA Expert Team	1) Confirmation of revision policy of the DG/TS

Seminar

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	1st Seminar	5 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Project Overview and Introduction of Basic Approach on Interoperable Smart Card System for Public Transportation in Hanoi

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
2	2nd Seminar	27th November 2019	HDOT, HDOF, HDOST, HDOIC, SBV, HMC, TRANSERCO, MOT, TRAMOC. Construction Association, BIDV, IT Agribank, Vietcombank, Viettel, MK Group, ITD, VNPT, NAPAS, ADB, WB, ABeam Consulting (Vietnam), Viet Nam Tokyo Metro, TOPPAN FORMS, Sony Imaging Products & Solutions, Sony Electronics Vietnam, JCB International	1) Overview of the draft DG/TS

Working Group 1 Meeting

No.	Date	Subject
1	16th Apr, 2018	<ul style="list-style-type: none"> Outline of the expected output of WG1 Confirmation of the activity schedule
2	29rd May, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in Japan
3	30th May, 2018	<ul style="list-style-type: none"> Discussion on the feasibility to install each system into Hanoi
4	5th Jun, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in other countries
5	25th Jul, 2018	<ul style="list-style-type: none"> Clarification of the items to be discussed Discussion on the reporting to the 2nd JCC
6	19th Sep, 2018	<ul style="list-style-type: none"> Confirmation of the contents of outline report
7	20th Sep, 2018	<ul style="list-style-type: none"> Explanation of transfer discount in other countries
8	28th Nov, 2018	<ul style="list-style-type: none"> Confirmation of the contents of seminar Confirmation of items to be discussed in the upcoming WG1
9	7th Dec, 2018	<ul style="list-style-type: none"> Confirmation of distance-based fare Discussion on ticket type
10	14th Jan, 2019	<ul style="list-style-type: none"> Discussion on the way of transfer discount
11	17th Jan, 2019	<ul style="list-style-type: none"> Discussion on ticket types and information on card surface
12	22nd Jan, 2019	<ul style="list-style-type: none"> Confirmation of the result of discussion and table of contents of the output
13	26th Feb, 2019	<ul style="list-style-type: none"> Confirmation of contents of fare system guideline (proposed)
14	14th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the comment from Vietnamese side against fare system guideline (proposed)
15	20th Mar, 2019	<ul style="list-style-type: none"> Reconfirmation of the whole structure of outputs in line with the work plan Confirmation of the tasks from April
16	25th Mar, 2019	<ul style="list-style-type: none"> Confirmation of the response toward the comments from Vietnamese side against fare system guideline (proposed)
17	13rd Jun, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline
18	18th Jun, 2019	<ul style="list-style-type: none"> Leader meeting with Mr. Binh (vice director of TRAMOC)
19	16th Jul, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline
20	23rd Aug, 2019	<ul style="list-style-type: none"> Discussion on how to deal with fare system guideline
21	4th Oct, 2019	<ul style="list-style-type: none"> Discussion and Confirmation on draft technical cooperation outputs
22	24th Oct, 2019	<ul style="list-style-type: none"> Confirmation on outputs with WG3 (JICA Expert Team only)

23	31st Oct, 2019	• Arrangement and material of the seminar (JICA Expert Team only)
24	25th Nov, 2019	• Discussion on contents of the seminar

Working Group 2 Meeting

No.	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> • Procedure on WG2 activities "Development of Operational Specification" • Explanation of the draft proposal of the list of Operational Specification • Outline of the expected final output of WG2 • Confirmation of the activity schedule
2	13rd Apr, 2018	<ul style="list-style-type: none"> • Outline of the expected final output of the Operational Specification • Confirmation of the activity schedule
3	30th May, 2018	<ul style="list-style-type: none"> • Explanation of the draft proposal of the list of Operational Specification • Re-issue and re-issue registration (Assignment) • Card life cycle
4	31st May, 2018	• Boarding and Alighting from railway, BRT and bus
5	21st June, 2018	• Discussion on the Operational Specification
6	5th July, 2018	• Interview about operation of railway, BRT and bus
7	21st Aug, 2018	• Confirmation of the contents of outline report
8	6th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
9	8th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
10	4th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
11	18th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
12	22nd Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
13	24th Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
14	26th Mar, 2019	• Discussion on the operational flow in the use of interoperable IC card
15	29th May, 2019	• Discussion on the operational flow in the use of interoperable IC card
16	26th Jun, 2019	• Discussion on the operational flow in the use of interoperable IC card
17	24th Jul, 2019	• Discussion on the operational flow in the use of interoperable IC card
18	28th Aug, 2019	• Discussion on the operational flow in the use of interoperable IC card
19	30th Oct, 2019	• Discussion on the DG/TS regarding the use of interoperable IC card
20	31st Oct, 2019	• Discussion on the DG/TS regarding the use of interoperable IC card
21	26th Nov, 2019	• Discussion on contents of the seminar
22	19th Dec, 2019	• Discussion on the fare deduction method
23	14th Jan, 2020	• Discussion on the fare deduction method

Working Group 3 Meeting

No	Date	Subject
1	12th Apr, 2018	<ul style="list-style-type: none"> • Discussion on WG3 activity planning <ul style="list-style-type: none"> ➢ Confirmation on WBS, operation plan ➢ Sharing the target deliverables of WG3 (AFC technical specification)

No	Date	Subject
2	13th Apr, 2018	<ul style="list-style-type: none"> ➢ Review on AFC system interoperable use • Lecture for understanding of AFC system, basic terms and structure • Review and discussion on Hanoi AFC technical framework (3978) from interoperable perspective.
3	21st May, 2018	<ul style="list-style-type: none"> • Explanation of AFC survey report on public transportation interoperability in Hanoi City. (BRT, Line2A, Line3, laws and regulations) • Review on overview on AFC technical specification and IC card issuance process • Procedure on WG3 activities and planning for upcoming 3 months
4	22nd May, 2018	<ul style="list-style-type: none"> • Understanding of AFC technical specification ➢ Explanation and discussion on each AFC technical specification item. (ticket media, R/W, Smartcard IC format, encoding process/format, common code, ticket validation, transaction data and set value, black list, trip pattern, host system)
5	23rd May, 2018	
6	24th May, 2018	
7	25th May, 2018	
8	28th May, 2018	
9	29th May, 2018	
10	30th May, 2018	
11	4th June, 2018	• Review of proposal of FMC by TRAMOC (2015):
12	8th June, 2018	• Framework of Technical Specification for Host System
13	11th June, 2018	<ul style="list-style-type: none"> • Clarification key points of AFC interoperable technical specification for Hanoi ➢ Acquire the important key point for AFC technical specification to be introduced in Hanoi city ➢ Listing up the discussion items with other WGs.
14	13th June, 2018	
15	15th June, 2018	
16	19th June, 2018	
17	26th June, 2018	
18	27th June, 2018	
19	29th June, 2018	
20	4th July, 2018	
21	27th June, 2018	• MK smart factory visit for IC card manufacturing tour and study on interoperable bus R/W.
22	19th July, 2018	<ul style="list-style-type: none"> • Review of Drafted outline of AFC technical specification. ➢ Create and review draft version of outline of AFC technical specification.
23	23rd July, 2018	
24	23rd July, 2018	<ul style="list-style-type: none"> • Visit to HMC ➢ Technical Information of Line 2A ➢ Communication with HMC
25	24th July, 2018	• Review of Drafted outline of AFC technical specification.
26	31st July, 2018	• Review of BRT document from Viettel (rev3.2)
27	31st July, 2018	• Review Host system of Drafted outlines of Technical Specification (ver. 0.12)
28	24th July, 2018	<ul style="list-style-type: none"> • Review BRT AFC document from Viettel • On site review of demonstration of AFC system for pilot test and confirmation of technical details with Transerco-Viettel BRT project members • Review on summary of main point discussed and Study of coping plan
29	27th July, 2018	
30	8th Aug, 2018	
31	10th Aug, 2018	

PM Form 3-1 Monitoring Sheet Summary

No	Date	Subject
32	14th Aug, 2018	<ul style="list-style-type: none"> Joint meeting with WG1, WG2 and WG4 to shaping consensus on main point discussed proposed by WG3
33	16th Aug, 2018	
34	21st Aug, 2018	<ul style="list-style-type: none"> Confirmation of the contents to be reported in JCC (Discussion on role sharing in formulation of the technical specifications)
35	24th Aug, 2018	<ul style="list-style-type: none"> Discussion on host system specifications
36	7th Sep, 2018	<ul style="list-style-type: none"> Discussion on contents and sharing of work between Japanese and Vietnamese sides in formulation of the technical specifications (common code)
37	3rd Oct, 2018	<ul style="list-style-type: none"> Discussion on common code
38	5th Oct, 2018	<ul style="list-style-type: none"> Discussion on common code and Blacklist
39	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus company(1). Investigation was conducted in terms of infrastructure related to system and network and amount of data to be dealt with at each depot, for the purpose of establishment of AFC system suitable for the actual bus operation. : Nam Ha Noi Bus company,
40	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus companies(2): Cau Buou bus company (142 bus, 11 line)
41	5th Nov, 2018	<ul style="list-style-type: none"> Site visit at depots of three local bus company (3): Tan Dat bus company (68 bus, 5 line))
42	6th Nov, 2018	<ul style="list-style-type: none"> Confirmation of contents of JCC meeting Discussion on technical specifications (Ticket media)
43	8th Nov, 2018	<ul style="list-style-type: none"> Discussion on proposed AFC system structure suitable for bus services
44	9th Nov, 2018	<ul style="list-style-type: none"> Site visit at Line 2A. Inspection of installed AFC facility, IC card and operation, and investigation for tasks to be tackled for formulation of common specifications are conducted. Survey of actual AFC trial operation in BRT
45	9th Nov, 2018	<ul style="list-style-type: none"> Discussion on JCC 3rd result in WG3
46	20th Nov, 2018	<ul style="list-style-type: none"> Discussion on common code and gate access log
47	28th Nov, 2018	<ul style="list-style-type: none"> Discussion on specifications for common code, which is used to process data in interoperable use
48	7th Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
49	17th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
50	19th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
51	21st Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
52	25th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
53	11th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (common code, format)
54	16th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (reader/writer)
55	17th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (encode process)
56	22nd Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (trip pattern)
57	24th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (host system)
58	28th Jan, 2019	<ul style="list-style-type: none"> Discussion on schedule of further WG3 activities
59	19th Feb, 2019	<ul style="list-style-type: none"> Discussion on installation of IC card in buses with TRANSERCO
60	20th Feb, 2019	<ul style="list-style-type: none"> Discussion on work plan and role sharing in 2019 Confirmation of list of tasks and role sharing in formulation of technical specifications
61	20th Feb, 2019	<ul style="list-style-type: none"> Revie of project with Mr.Hai (extension of project and other discussions)

No	Date	Subject
62	20th Feb, 2019	<ul style="list-style-type: none"> • Interview with NAPAS about how to apply IC card to other transport • Discussion with Ms. Huong on tasks and solutions in the process of project
63	17th Apr, 2019	<ul style="list-style-type: none"> • Site visit at Payoo Corporation to survey the situation of Fintech, which is used for ABT system • Site visit at pilot trial at Ho Chi Minh bus, in which ABT system is installed (create an account of ZaloPay, apply for UniPass, issue IC card, take a bus) • Sharing opinion with iTD Company, one of the most promising IT company in Vietnam, about ABT and CBT in the structure of AFC system
64	19th Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of progress in outline (to be tackled after conclusion of HPC meeting)
65	22nd Apr, 2019	<ul style="list-style-type: none"> • Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> ➢ Confirmation of items, schedule and role sharing ➢ Vietnamese side raised a problem in lack of resources to be used for contents confirmation
66	24th Apr, 2019	<ul style="list-style-type: none"> • Sharing opinion with R&D sector, NAPAS
67	28th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
68	30th May, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code
69	4th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for common code and Encode Format
70	6th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Format
71	11th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Format
72	13th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Media
73	18th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for R/W and Ticket Validation
74	20th June, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
75	2nd July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
76	4th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Ticket Validation
77	9th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
78	18th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
79	23rd July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
80	25th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
81	30th July, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Encode Data
82	6th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data
83	8th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data
84	20th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications (Station code) on request of Hanoi member
85	22th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications (Station code) on request of Hanoi member
86	27th Aug, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Transaction Data and Trip Pattern
87	10th Sep, 2019	<ul style="list-style-type: none"> • Discussion on project planning
88	10th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Host System and Trip Pattern
89	12th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Trip Pattern
90	17th Sep, 2019	<ul style="list-style-type: none"> • Detailed review of specifications for Trip Pattern
91	19th Sep, 2019	<ul style="list-style-type: none"> • Explanation contents and structure of Main report
92	24th Sep, 2019	<ul style="list-style-type: none"> • Review report of Host System
93	1st Oct, 2019	<ul style="list-style-type: none"> • Discussion on bus stop code

No	Date	Subject
94	3rd Oct, 2019	• Review main report of WG3
95	15th Oct, 2019	• Pre-discussion on bus stop code (JICA Expert Meeting only)
96	17th Oct, 2019	• Discussion on bus stop code
97	5th Nov, 2019	• Discussion on contents of the seminar in WG3
98	12th Nov, 2019	• Preparation and review on seminar material
99	26th Nov, 2019	• Rehearsal of the seminar and check of the contents
100	26th Dec, 2019	• Bus stop code structure and confirmation on reflection of the comments at the seminar

Working Group 4 Meeting

No.	Date	Subject
1	21st Aug, 2018	• Confirmation of contents of outline report
2	5th Nov, 2018	• Discussion on organizational structure and staffing requirements under FMC
3	6th Dec, 2018	• Discussion on organizational structure and staffing requirements under FMC
4	19th Dec, 2018	• Discussion on organizational structure and staffing requirements under FMC
5	21st Dec, 2018	• Discussion on contents of outline report
6	23rd Jan, 2019	• Discussion on organizational structure and staffing requirements under FMC
7	27th Mar, 2019	• Discussion on organizational structure and staffing requirements under FMC
8	30th May, 2019	• Discussion on organizational structure and staffing requirements under FMC
9	27th Jun, 2019	• Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
10	25th Jul, 2019	• Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
11	28th Aug, 2019	• Discussion on staffing requirement of FMC
12	26th Sep, 2019	• Discussion on staffing requirement of FMC
13	19th Dec, 2019	• Confirmation on Organizational TOR of FMC

1.2.2 Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed.

The progress of Output 1 activities is shown in the table below.

Table 7: Progress of Output 1 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Collect the legal documents related to the transportation smart card system as follows;; ✓ Legal systems and standards on smart card system/ transportation smart card system ✓ Design documents of smart card system	- Done	- No activity (N/A)

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Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
	<ul style="list-style-type: none"> ✓ International standards for interoperable AFC system ✓ MRT 2A, 3: AFC technical design ✓ MRT 2: AFC technical specifications ✓ BRT1, Route Bus: Specifications and planning documents to introduce ✓ Hanoi City and MOT: Legal system and decision about technical standardization of AFC ✓ Central Bank: Decision, regulations, standard regarding smart card and electric money 		
1-2 Prepare an outline of 'Design Guideline and Specifications' and the fare policy	<ol style="list-style-type: none"> 1) Examination of ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operational specifications 4) Examination of the technical specifications 	- Done	- No activity (N/A)
1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	-	- Done	- No activity (N/A)
1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	-	- On going	- Continue discussion for revision of DG/TS
1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	-	- On going	- Continue discussion for revision of DG/TS
1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	<ul style="list-style-type: none"> - The 1st Seminar was held on 5 December 2018. - The 2nd Seminar was held on 27 November 2019. 	- Done	- No activity (N/A)

1.2.3 Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The progress of Output 2 activities is shown in the table below.

Table 8: Progress of Output 2 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the Fare Management Center (division)	- Done	- No activity (N/A)
2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	Define the basic six items of operational terms of reference of FMC	- Done	- No activity (N/A)
2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	-	- Done	- No activity (N/A)
2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	1) Prepare a TOR 2) Organizational structure and staff requirements	- On going	- Continue discussion for final version

1.3 Achievement of Output

1.3.1 Output 1

Achievement status of Output 1 is as follows.

Table 9: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
The Design Guideline and Specification is prepared.	None	On going

Source: PDM 1.1

1.3.2 Output 2

Achievement status of Output 2 is as follows.

Table 10: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
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Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	None	On going
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Source: PDM 1.1

1.4 Achievement of the Project Purpose

Also stated in PDM, the achievement of the project purpose shall be evaluated using verifiable indicators.

Table 11: Verifiable Indicators and Current Status

Objectively verifiable indicators	Baseline	Current Status
- 'Design Guideline and Technical Specifications' are approved by HPC	None	On going
- The public transport fare policy is established	None	On going

Source: PDM 1.1

To achieve the project purpose, the JICA Project Team (JPT) identify the required knowledge and skills by each output shown in the following table. Result of the baseline survey were evaluated on a five-level scale as indicated below and illustrated in following figures.

- (1) Newbie: I don't know the process/ concept;
- (2) Novice: I know the process/ concept, but I have never done it;
- (3) Young Expert: I have done it once, but I have not reported or presented the results;
- (4) Expert: I have done it twice or more/ I have done it once and reported or presented the results;
and
- (5) Senior Expert: I have done it twice or more, and reported or presented the results.

Table 12 Required Knowledge and Skills per Project Output and Activity

Expected Output	Activities	Required Knowledge & Skills
(1) The 'Design Guideline and Specification' is prepared.	1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Information collection capability, Issue solving capability
	1-2 Prepare of outline of 'Design Guideline and Specifications' and the fare policy	(1) Basic knowledge of a) Ticket specifications, b) Fare system c) Operation system d) Technical specification e) Host system
	1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	
	1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	
	1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	
		(2) Capability for development of a) Rules for common ticket

Expected Output	Activities	Required Knowledge & Skills
	1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	b) Rules for fare c) Rules for operation specification d) Rules for technology implementing specification e) Host system specification
(2) Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	(1) Information collection capability (2) Issue solving capability
	2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of the scope of works (functions) (2) Capability for development of the scope of work(function)
	2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of work description (2) Capability for development of work description
	2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	(1) Basic knowledge of a) Operational terms of reference b) Terms of reference for staffing (2) Capability for development of rules for operation and management of Fare Management Center

The first baseline survey was conducted in April 2018 to measure the current knowledge and skills level. The average scores are shown in the following table.

Table 13 Average Score for each Output

Time	Output 1: development of DG/TS for interoperable smart card system	Output 2: development of Organizational TOR of each unit of the FMC
When the Project launched (April 2018)	2.49	3.33
When basic policy was formulated (December 2018)	3.03	3.67
When draft DG/TS and draft TOR of FMC (October 2019)	3.56	4.00

1.5 Changes of Risks and Actions for Mitigation

N/A

1.6 Progress of Actions undertaken by JICA

N/A

1.7 Progress of Actions undertaken by The People's Committee of Hanoi

N/A

1.8 Progress of Environmental and Social Considerations (if applicable)

N/A

1.9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

N/A

1.10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

Project is implemented in the context of many movements/fluctuations. Such as Line 2A, Line 3 in the completion process, pilot smart card on BRT Line... Especially, Hanoi started to develop a smart city... They create new several requirements for Project.

1.11 Tasks to be implemented by JICA Project Team and Counterparts

Work	Tasks	Implementing agencies
Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed		
N/A	N/A	N/A
Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.		
N/A	N/A	N/A

2 Delay of Work Schedule and/or Problems (if any)**2.1 Cause****(1) Delay in assignment of counterparts**

In the 1st Joint Coordination Committee (JCC) meeting, it was agreed that WG members would be assigned in February 2018. However, the members were actually determined in 29 March 2018 (Decision No. 341/QD-SGTVT).

(2) Delay caused by comparative study between CBT and ABT

In compliance with Decision 3978/QD-UBND, the Project Team submitted to HDOT the outline of DG/TS based on the card-based ticketing (CBT) system. This outline of DG/TS underwent the approval process. Although this Project is based on the assumption of adopting the CBT system, Hanoi City proposed to Japan International Cooperation Agency (JICA) to consider account-based ticketing (ABT) system with a perspective of the smart city concept. This led to comparative study between the CBT and ABT systems, which concluded application of the CBT system. The outline of DG/TS was finally approved in 26 April 2019, three months after the submission.

(3) COVID-19

Global pandemic of the COVID-19 caused a serious impact on the project implementation, especially preventing Japanese experts from working in Hanoi.

2.2 Action to be taken

(1) Assignment of counterparts

In spite of the delay in assignment of WG members at the start of this Project, they actively involved themselves in the Project, including approximately 190 WG meetings. Moreover, participation of IT companies in Hanoi was approved at 4th JCC held in 29 August 2019, which allowed members familiar with IT in Hanoi to join the WGs, contributing to formulating the DG/TS based on the actual situation of the city. Director and Vice Director of HDOT, and director of Hanoi Urban Transport Management and Operation Center (TRAMOC) also take active part in the project, closely communicating with the Project Team.

(2) Comparative study between CBT and ABT

A study meeting was held in 19 April 2019 chaired by Chairman of HPC. As a result, it was decided to continue the Project based on the submitted outline of DG/TS. This outline was approved in 26 April 2019 (HPC letter No. 1648/UBND-DT).

(3) COVID-19

As Japanese experts were not able to visit Hanoi since February 2020, online meetings were held to ensure quality of the Project.

2.3 Roles of Responsible Persons/Organization (JICA, The People's Committee of Hanoi, etc.)

N/A

3 Modification of the Project Implementation Plan

3.1 PO

3.2 Other modifications on detailed implementation plan

II. Project Monitoring Sheet I & II *as Attached*

Project Monitoring Sheet I (Project Design Matrix)

Version 6

Project title: Project for Supporting Development of Interoperable Smart Card System for Public Transportation in Hanoi

Dated. 5 June 2020

Project Area: Hanoi

Target Group: Hanoi People's Committee (HPC) and organizations related to public transportation in Hanoi

Counterpart: HPC (Hanoi Department of Transport (DOT), Hanoi Department of Science and Technology (DOST), Hanoi Department of Information and Communication (DOIC), Hanoi Metro Company (HMC), Hanoi Transport Corporation (TRANSERCO))

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Interoperable smart card systems are developed for the public transportation in Hanoi	<ul style="list-style-type: none"> Number of public transport operators applying the 'Design Guideline and Specifications' developed under the Project to realize interoperable smart card system. Ratio of satisfaction on interoperable smart card is more than XX%. 	Survey report(s)			
Project Purpose					
Technical and management capacities of counterpart agencies under HPC are improved for the development of interoperable smart card system for public transportation in Hanoi	<ul style="list-style-type: none"> 'Design Guideline and Specifications' are approved by HPC. The public transport fare policy is established. 	<ul style="list-style-type: none"> Approved 'Design Guideline and Specifications' Project progress report 	Decision no. 3978/QD-UBND dated 13 August 2015 on use of interoperable smart card in public transportation in Hanoi continues to be effective.		
Outputs					
1. 'Design Guideline and Specifications' for interoperable smart card system are developed.	'Design Guideline and Specifications' are finalized.	'Design Guideline and Specifications' (final version)	HPC reviews policy/documents developed under the Project in a timely manner.		
2. Organization terms of reference of each unit of the Fare Management Center (Division) are developed.	Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval.	Organizational terms of reference for the Fare Management Center (Division) (draft for approval)			

Activities	Input		Pre-conditions
	Japanese Side	Vietnamese Side	
1-1. Collect and analyze information on the existing and approved smart card systems for the public transportation system in Hanoi	1. Japanese Experts - Leader - Public Transport Fare Policy and System - Interoperable Smart Card System - Communication System - Fare Management System	1. Project Counterparts (1) HPC (2) HDOT - Road Transportation Management Division - Planning and Investment Division - Economics planning Division - TRAMOC (3) DOST (4) DOIC (5) HMC (6) TRANSERCO 2. Provision of Office Space and equipment 3. Cost for - counterpart members - office operation and maintenance - others (local travel expenses excluding airfare for Vietnamese side, etc.)	Official request to apply for Japan's ODA Loan Project.
1-2. Prepare an outline of 'Design Guideline and Specifications' and fare policy 1) Examination of fare ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operation rules 4) Examination of the technical specifications	2. Counterpart Training in Japan 3. Seminar and workshop 4. Other cost - Local experts and consultants - Local staff - Others (survey, card rental, etc.)		
1-3. Consult with the relevant authorities and finalize the outline of the 'Design Guideline and Specifications' and fare policy			
1-4. Draft a 'Design Guideline and Specifications' with fare policy			
1-5. Consult with the relevant authorities and finalize the 'Design Guideline and Specifications'			
1-6. Conduct seminar(s) to introduce the draft 'Design Guideline Specifications' and fare policy			
2-1. Define the scope of work to be performed by the proposed Fare Management Center (Division) 1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the fare management center (division)			
2-2. Define the tasks and responsibilities of departments/division under the Fare Management Center (Division)			
2-3. Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division)			
2-4. Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements. 1) Prepare a TOR 2) Organizational structure and staff requirements			

PROJECT MONITORING SHEET

Project Title: The Project for Supporting Development of Interoperable Smart Card System for Public Transport in Hanoi

Version of the Sheet: Ver. 7 (Term: 2017 - 2020)

Name: Mr. Michimasa TAKAGI

Title: Team Leader/ Urban Public Transport

Submission Date: December 2020

I. Summary

1 Progress

This monitoring sheet covers the period from project commencement in **December 2017** up to **the end of November 2020**.

1.1 Progress of Inputs

1.1.1 Experts

Table 1: Input of Experts as of End-July

Designation	Name	No. of PMs
Team Leader/ Urban Public Transport	M. TAKAGI	7.83
Deputy Team Leader/ AFC Technical Management	T. OTSUKI	9.93
Public Transport Fare Policy [Railway]	S. HORIUCHI	2.92
Public Transport Fare Policy [Railway]	R. SAITO	2.25
Public Transport Fare Policy [Bus]	T. KUMAI	2.83
Interoperable Smart Card Plan	T. UMEKAWA	0.97
Smart Card Data Management and Utilization	N. MIZOGUCHI	0.00
Interoperable Smart Card System [Railway]	T. FUKATSU	4.62
Interoperable Smart Card System [Bus]1	A. TANAKA	3.22
Interoperable Smart Card System [Bus]2	H. MIYAHARA	2.85
Communication System	K. HONDA	3.40
Fare Management System [AFC Technical Specification]	H. KUWANO	0.57

Fare Management System [AFC Technical Specification]1	Y. WATABE	9.47
Fare Management System [AFC Technical Specification]2	K. HIRAMATSU	0.00
Fare Management system [AFC Host System]	Y. SAKAMOTO	1.50
Organization Institution	A. SAKUMA	1.50
Monitoring/ Training in Japan/ Coordination	M. OHNO	7.68
TOTAL PMs		61.54 (92.8%)
Planned PMs		66.30

1.2 Progress of Activities

1.2.1 Joint Coordinating Committee and Working Group Meetings

Four Joint Coordinating Committee (JCC) meetings and several working group (WG) meetings were held during the period.

Table 2: Joint Coordinating Committee and Working Group Meetings

Joint Coordination Committee Meeting

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	First JCC meeting	2 February 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Outline of Work Plan (Draft) 2) Confirmation of the Undertakings by Vietnamese Side
2	Second JCC Meeting	22 August 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project 2) Proposal from WG 3) Items to be confirmed by Hanoi-city 4) Activity plans
3	Third JCC Meeting	7 November 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Achievements in the 1st Year 2) Explanation for Outline of 'Design Guideline and Specifications 'and Fare Policy 3) Activities in Next Period
4	Fourth JCC Meeting	29 August 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Report about Project Implementation 2) Remaining Items 3) Plan/Procedure to obtain appraisal, approval on Design Guidelines and Technical Specifications 4) Proposal on AFC system implementation under the city bus network (applying Project outputs) 5) Proposal about Project extension

Meeting among WGs/Meeting with Originations

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	1st WG Leader Meeting	23 August 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Ideal AFC Model in Hanoi 2) Confirmation of 2nd JCC

PM Form 3-1 Monitoring Sheet Summary

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
2	2nd WG Leader Meeting	4 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Progress of the project since last JCC meeting 2) Response to the notice by HPC 3) Confirmation of the materials and preparations for the seminar
3	3rd WG Leader Meeting	6 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Reflection of the seminar for the formulation of Outline Report 2) Site Visit at TRAMOC (Bus Operator) Demo for Bus unit
4	JICA-JET meeting for the fourth JCC meeting	23 August 2019	JICA Headquarters, JICA Viet Nam Office, JICA Expert Team	1) Topics and materials in JCC meeting
5	Inter-Working Group Meeting	29 August 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Transfer discount 2) Valid period of season passes
6	Inter-Working Group Meeting (JET only)	3 October 2019	JICA Expert Team	1) Confirmation of draft DG/TS
7	Inter-Working Group Meeting	3 October 2019	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Confirmation of remaining items
8	Orientation Meeting	4 October 2019	JICA Headquarters, JICA Viet Nam Office, JICA Expert Team	1) Confirmation on how to develop outputs and schedule
9	General Meeting with JICA	7th October 2019	JICA Headquarters, JICA Expert Team	1) Contents of outputs and the seminar
10	Inter-Working Group Meeting (JET only)	27th November 2019	JICA Expert Team	1) Review of the seminar and orientation
11	Meeting with HDOT	29th November 2019	HDOT, JICA Expert Team	1) Schedule of the project
12	Meeting with HDOT and TRAMOC	25th December 2019	HDOT, TRAMOC, JICA Expert Team	1) Schedule of the project 2) Confirmation on remaining items 3) Training in Japan
13	Meeting at Ho Chi Minh City	16th January 2020	HCMC-DOT, MAUR, HCMC-Metro, JICA, WB, NJPT, JICA Expert Team	1) Opinion exchange about interoperable use of IC card
14	JET Meeting	13th February 2020	JICA Expert Team	1) Confirmation of revision policy of the DG/TS
15	Meeting with HDOT	12th August 2020	HDOT, JICA Expert Team	1) Revision of RD, project schedule, etc. caused by change in project period
16	Inter-Working Group Meeting (JET only)	1st September 2020	JICA Expert Team	1) Confirmation of revision of the DG/TS by each Working Group 2) Confirmation on topics to be discussed among WGs 3) Confirmation on schedule

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
17	WG1-WG3 meeting (JET only)	3rd September 2020	WG1 and WG3 members of JICA Expert Team	1) Confirmation on how to deal with the case where passengers alight buses without tapping their IC cards
18	WG1-WG3 meeting (JET only)	15th September 2020	WG1 and WG3 members of JICA Expert Team	1) Final confirmation on revised parts of the DG/TS

Seminar

No.	Meetings Conducted	Date	Participated Agency	Key Agenda
1	1st Seminar	5 December 2018	HDOT, HDOST, HDOIC, HAPI, TRANSERCO, TRAMOC, JICA Expert Team	1) Project Overview and Introduction of Basic Approach on Interoperable Smart Card System for Public Transportation in Hanoi
2	2nd Seminar	27th November 2019	HDOT, HDOF, HDOST, HDOIC, SBV, HMC, TRANSERCO, MOT, TRAMOC. Construction Association, BIDV, IT Agribank, Vietcombank, Viettel, MK Group, ITD, VNPT, NAPAS, ADB, WB, ABeam Consulting (Vietnam), Viet Nam Tokyo Metro, TOPPAN FORMS, Sony Imaging Products & Solutions, Sony Electronics Vietnam, JCB International	1) Overview of the draft DG/TS

Working Group 1 Meeting

No.	Date	Subject
1	16th Apr, 2018	<ul style="list-style-type: none"> Outline of the expected output of WG1 Confirmation of the activity schedule
2	29rd May, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in Japan
3	30th May, 2018	<ul style="list-style-type: none"> Discussion on the feasibility to install each system into Hanoi
4	5th Jun, 2018	<ul style="list-style-type: none"> Explanation of the Fare Management System in other countries
5	25th Jul, 2018	<ul style="list-style-type: none"> Clarification of the items to be discussed Discussion on the reporting to the 2nd JCC
6	19th Sep, 2018	<ul style="list-style-type: none"> Confirmation of the contents of outline report
7	20th Sep, 2018	<ul style="list-style-type: none"> Explanation of transfer discount in other countries
8	28th Nov, 2018	<ul style="list-style-type: none"> Confirmation of the contents of seminar Confirmation of items to be discussed in the upcoming WG1
9	7th Dec, 2018	<ul style="list-style-type: none"> Confirmation of distance-based fare Discussion on ticket type

10	14th Jan, 2019	• Discussion on the way of transfer discount
11	17th Jan, 2019	• Discussion on ticket types and information on card surface
12	22nd Jan, 2019	• Confirmation of the result of discussion and table of contents of the output
13	26th Feb, 2019	• Confirmation of contents of fare system guideline (proposed)
14	14th Mar, 2019	• Confirmation of the comment from Vietnamese side against fare system guideline (proposed)
15	20th Mar, 2019	• Reconfirmation of the whole structure of outputs in line with the work plan • Confirmation of the tasks from April
16	25th Mar, 2019	• Confirmation of the response toward the comments from Vietnamese side against fare system guideline (proposed)
17	13rd Jun, 2019	• Discussion on how to deal with fare system guideline
18	18th Jun, 2019	• Leader meeting with Mr. Binh (vice director of TRAMOC)
19	16th Jul, 2019	• Discussion on how to deal with fare system guideline
20	23rd Aug, 2019	• Discussion on how to deal with fare system guideline
21	4th Oct, 2019	• Discussion and Confirmation on draft technical cooperation outputs
22	24th Oct, 2019	• Confirmation on outputs with WG3 (JICA Expert Team only)
23	31st Oct, 2019	• Arrangement and material of the seminar (JICA Expert Team only)
24	25th Nov, 2019	• Discussion on contents of the seminar
25	20th Aug, 2020	• Confirmation on revision policy of the DG/TS and schedule
26	26th Aug, 2020	• Confirmation on draft revision of the DG/TS and schedule

Working Group 2 Meeting

No.	Date	Subject
1	12th Apr, 2018	• Procedure on WG2 activities "Development of Operational Specification" • Explanation of the draft proposal of the list of Operational Specification • Outline of the expected final output of WG2 • Confirmation of the activity schedule
2	13rd Apr, 2018	• Outline of the expected final output of the Operational Specification • Confirmation of the activity schedule
3	30th May, 2018	• Explanation of the draft proposal of the list of Operational Specification • Re-issue and re-issue registration (Assignment) • Card life cycle
4	31st May, 2018	• Boarding and Alighting from railway, BRT and bus
5	21st June, 2018	• Discussion on the Operational Specification
6	5th July, 2018	• Interview about operation of railway, BRT and bus
7	21st Aug, 2018	• Confirmation of the contents of outline report
8	6th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
9	8th Nov, 2018	• Discussion on the operational flow in the use of interoperable IC card
10	4th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
11	18th Dec, 2018	• Discussion on the operational flow in the use of interoperable IC card
12	22nd Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
13	24th Jan, 2019	• Discussion on the operational flow in the use of interoperable IC card
14	26th Mar, 2019	• Discussion on the operational flow in the use of interoperable IC card
15	29th May, 2019	• Discussion on the operational flow in the use of interoperable IC card
16	26th Jun, 2019	• Discussion on the operational flow in the use of interoperable IC card

No.	Date	Subject
17	24th Jul, 2019	• Discussion on the operational flow in the use of interoperable IC card
18	28th Aug, 2019	• Discussion on the operational flow in the use of interoperable IC card
19	30th Oct, 2019	• Discussion on the DG/TS regarding the use of interoperable IC card
20	31st Oct, 2019	• Discussion on the DG/TS regarding the use of interoperable IC card
21	26th Nov, 2019	• Discussion on contents of the seminar
22	19th Dec, 2019	• Discussion on the fare deduction method
23	14th Jan, 2020	• Discussion on the fare deduction method
24	27th Aug, 2020	• Discussion on revision policy of the DG/TS and schedule
25	22th Sep, 2020	• Confirmation on revision of the WG2 documents via email

Working Group 3 Meeting

No	Date	Subject
1	12th Apr, 2018	• Discussion on WG3 activity planning <ul style="list-style-type: none"> ➢ Confirmation on WBS, operation plan ➢ Sharing the target deliverables of WG3 (AFC technical specification) ➢ Review on AFC system interoperable use
2	13th Apr, 2018	• Lecture for understanding of AFC system, basic terms and structure • Review and discussion on Hanoi AFC technical framework (3978) from interoperable perspective.
3	21st May, 2018	• Explanation of AFC survey report on public transportation interoperability in Hanoi City. (BRT, Line2A, Line3, laws and regulations) • Review on overview on AFC technical specification and IC card issuance process • Procedure on WG3 activities and planning for upcoming 3 months
4	22nd May, 2018	• Understanding of AFC technical specification <ul style="list-style-type: none"> ➢ Explanation and discussion on each AFC technical specification item. (ticket media, R/W, Smartcard IC format, encoding process/format, common code, ticket validation, transaction data and set value, black list, trip pattern, host system)
5	23rd May, 2018	
6	24th May, 2018	
7	25th May, 2018	
8	28th May, 2018	
9	29th May, 2018	
10	30th May, 2018	
11	4th June, 2018	• Review of proposal of FMC by TRAMOC (2015):
12	8th June, 2018	• Framework of Technical Specification for Host System
13	11th June, 2018	• Clarification key points of AFC interoperable technical specification for Hanoi <ul style="list-style-type: none"> ➢ Acquire the important key point for AFC technical specification to be introduced in Hanoi city ➢ Listing up the discussion items with other WGs.
14	13th June, 2018	
15	15th June, 2018	
16	19th June, 2018	
17	26th June, 2018	
18	27th June, 2018	
19	29th June, 2018	
20	4th July, 2018	

No	Date	Subject
21	27th June, 2018	<ul style="list-style-type: none"> • MK smart factory visit for IC card manufacturing tour and study on interoperable bus R/W.
22	19th July, 2018	<ul style="list-style-type: none"> • Review of Drafted outline of AFC technical specification.
23	23rd July, 2018	<ul style="list-style-type: none"> ➢ Create and review draft version of outline of AFC technical specification.
24	23rd July, 2018	<ul style="list-style-type: none"> • Visit to HMC <ul style="list-style-type: none"> ➢ Technical Information of Line 2A ➢ Communication with HMC
25	24th July, 2018	<ul style="list-style-type: none"> • Review of Drafted outline of AFC technical specification.
26	31st July, 2018	<ul style="list-style-type: none"> • Review of BRT document from Viettel (rev3.2)
27	31st July, 2018	<ul style="list-style-type: none"> • Review Host system of Drafted outlines of Technical Specification (ver. 0.12)
28	24th July, 2018	<ul style="list-style-type: none"> • Review BRT AFC document from Viettel
29	27th July, 2018	<ul style="list-style-type: none"> • On site review of demonstration of AFC system for pilot test and confirmation of technical details with Transerco-Viettel BRT project members
30	8th Aug, 2018	<ul style="list-style-type: none"> • Review on summary of main point discussed and Study of coping plan
31	10th Aug, 2018	<ul style="list-style-type: none"> • Joint meeting with WG1, WG2 and WG4 to shaping consensus on main point discussed proposed by WG3
32	14th Aug, 2018	
33	16th Aug, 2018	
34	21st Aug, 2018	<ul style="list-style-type: none"> • Confirmation of the contents to be reported in JCC (Discussion on role sharing in formulation of the technical specifications)
35	24th Aug, 2018	<ul style="list-style-type: none"> • Discussion on host system specifications
36	7th Sep, 2018	<ul style="list-style-type: none"> • Discussion on contents and sharing of work between Japanese and Vietnamese sides in formulation of the technical specifications (common code)
37	3rd Oct, 2018	<ul style="list-style-type: none"> • Discussion on common code
38	5th Oct, 2018	<ul style="list-style-type: none"> • Discussion on common code and Blacklist
39	5th Nov, 2018	<ul style="list-style-type: none"> • Site visit at depots of three local bus company(1). Investigation was conducted in terms of infrastructure related to system and network and amount of data to be dealt with at each depot, for the purpose of establishment of AFC system suitable for the actual bus operation. : Nam Ha Noi Bus company,
40	5th Nov, 2018	<ul style="list-style-type: none"> • Site visit at depots of three local bus companies(2): Cau Buou bus company (142 bus, 11 line)
41	5th Nov, 2018	<ul style="list-style-type: none"> • Site visit at depots of three local bus company (3): Tan Dat bus company (68 bus, 5 line))
42	6th Nov, 2018	<ul style="list-style-type: none"> • Confirmation of contents of JCC meeting • Discussion on technical specifications (Ticket media)
43	8th Nov, 2018	<ul style="list-style-type: none"> • Discussion on proposed AFC system structure suitable for bus services
44	9th Nov, 2018	<ul style="list-style-type: none"> • Site visit at Line 2A. Inspection of installed AFC facility, IC card and operation, and investigation for tasks to be tackled for formulation of common specifications are conducted. • Survey of actual AFC trial operation in BRT
45	9th Nov, 2018	<ul style="list-style-type: none"> • Discussion on JCC 3rd result in WG3
46	20th Nov, 2018	<ul style="list-style-type: none"> • Discussion on common code and gate access log

PM Form 3-1 Monitoring Sheet Summary

No	Date	Subject
47	28th Nov, 2018	<ul style="list-style-type: none"> Discussion on specifications for common code, which is used to process data in interoperable use
48	7th Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
49	17th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
50	19th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
51	21st Dec, 2018	<ul style="list-style-type: none"> Technical Specifications (discussion on encode format)
52	25th Dec, 2018	<ul style="list-style-type: none"> Discussion on the contents of outline report
53	11th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (common code, format)
54	16th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (reader/writer)
55	17th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (encode process)
56	22nd Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (trip pattern)
57	24th Jan, 2019	<ul style="list-style-type: none"> Discussion through Skype on technical Specifications (host system)
58	28th Jan, 2019	<ul style="list-style-type: none"> Discussion on schedule of further WG3 activities
59	19th Feb, 2019	<ul style="list-style-type: none"> Discussion on installation of IC card in buses with TRANSERCO
60	20th Feb, 2019	<ul style="list-style-type: none"> Discussion on work plan and role sharing in 2019 Confirmation of list of tasks and role sharing in formulation of technical specifications
61	20th Feb, 2019	<ul style="list-style-type: none"> Review of project with Mr.Hai (extension of project and other discussions)
62	20th Feb, 2019	<ul style="list-style-type: none"> Interview with NAPAS about how to apply IC card to other transport Discussion with Ms. Huong on tasks and solutions in the process of project
63	17th Apr, 2019	<ul style="list-style-type: none"> Site visit at Payoo Corporation to survey the situation of Fintech, which is used for ABT system Site visit at pilot trial at Ho Chi Minh bus, in which ABT system is installed (create an account of ZaloPay, apply for UniPass, issue IC card, take a bus) Sharing opinion with iTD Company, one of the most promising IT company in Vietnam, about ABT and CBT in the structure of AFC system
64	19th Apr, 2019	<ul style="list-style-type: none"> Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> Confirmation of progress in outline (to be tackled after conclusion of HPC meeting)
65	22nd Apr, 2019	<ul style="list-style-type: none"> Discussion with Vietnamese members about the main text of technical specifications <ul style="list-style-type: none"> Confirmation of items, schedule and role sharing Vietnamese side raised a problem in lack of resources to be used for contents confirmation
66	24th Apr, 2019	<ul style="list-style-type: none"> Sharing opinion with R&D sector, NAPAS
67	28th May, 2019	<ul style="list-style-type: none"> Detailed review of specifications for common code
68	30th May, 2019	<ul style="list-style-type: none"> Detailed review of specifications for common code
69	4th June, 2019	<ul style="list-style-type: none"> Detailed review of specifications for common code and Encode Format
70	6th June, 2019	<ul style="list-style-type: none"> Detailed review of specifications for Encode Format
71	11th June, 2019	<ul style="list-style-type: none"> Detailed review of specifications for Encode Format
72	13th June, 2019	<ul style="list-style-type: none"> Detailed review of specifications for Ticket Media
73	18th June, 2019	<ul style="list-style-type: none"> Detailed review of specifications for R/W and Ticket Validation
74	20th June, 2019	<ul style="list-style-type: none"> Detailed review of specifications for Ticket Validation
75	2nd July, 2019	<ul style="list-style-type: none"> Detailed review of specifications for Ticket Validation

No	Date	Subject
76	4th July, 2019	• Detailed review of specifications for Ticket Validation
77	9th July, 2019	• Detailed review of specifications for Encode Data
78	18th July, 2019	• Detailed review of specifications for Encode Data
79	23rd July, 2019	• Detailed review of specifications for Encode Data
80	25th July, 2019	• Detailed review of specifications for Encode Data
81	30th July, 2019	• Detailed review of specifications for Encode Data
82	6th Aug, 2019	• Detailed review of specifications for Transaction Data
83	8th Aug, 2019	• Detailed review of specifications for Transaction Data
84	20th Aug, 2019	• Detailed review of specifications (Station code) on request of Hanoi member
85	22th Aug, 2019	• Detailed review of specifications (Station code) on request of Hanoi member
86	27th Aug, 2019	• Detailed review of specifications for Transaction Data and Trip Pattern
87	10th Sep, 2019	• Discussion on project planning
88	10th Sep, 2019	• Detailed review of specifications for Host System and Trip Pattern
89	12th Sep, 2019	• Detailed review of specifications for Trip Pattern
90	17th Sep, 2019	• Detailed review of specifications for Trip Pattern
91	19th Sep, 2019	• Explanation contents and structure of Main report
92	24th Sep, 2019	• Review report of Host System
93	1st Oct, 2019	• Discussion on bus stop code
94	3rd Oct, 2019	• Review main report of WG3
95	15th Oct, 2019	• Pre-discussion on bus stop code (JICA Expert Meeting only)
96	17th Oct, 2019	• Discussion on bus stop code
97	5th Nov, 2019	• Discussion on contents of the seminar in WG3
98	12th Nov, 2019	• Preparation and review on seminar material
99	26th Nov, 2019	• Rehearsal of the seminar and check of the contents
100	26th Dec, 2019	• Bus stop code structure and confirmation on reflection of the comments at the seminar
101	18th Aug, 2020	• Confirmation on revision of the DG/TS (revised parts, basic concept)
102	20th Aug, 2020	• Confirmation on revised contents of the DG/TS (confirmation on involved member in the revision and schedule with Ms. Huong (HDOT))
103	27th Aug, 2020	• Confirmation on revised contents of the DG/TS (encode format and ticket validation)
104	3rd Sep, 2020	• Confirmation on revised contents of the DG/TS (encode data)
105	10th Sep, 2020	• Confirmation on revised contents of the DG/TS (transaction data format and transaction data encode)
106	17th Sep, 2020	• Confirmation on revised contents of the DG/TS (trip pattern)
107	24th Sep, 2020	• Confirmation on revised contents of the DG/TS (main body of the DG/TS) • Q&A about the DG/TS

Working Group 4 Meeting

No.	Date	Subject
1	21st Aug, 2018	• Confirmation of contents of outline report
2	5th Nov, 2018	• Discussion on organizational structure and staffing requirements under FMC
3	6th Dec, 2018	• Discussion on organizational structure and staffing requirements under FMC

4	19th Dec, 2018	• Discussion on organizational structure and staffing requirements under FMC
5	21st Dec, 2018	• Discussion on contents of outline report
6	23rd Jan, 2019	• Discussion on organizational structure and staffing requirements under FMC
7	27th Mar, 2019	• Discussion on organizational structure and staffing requirements under FMC
8	30th May, 2019	• Discussion on organizational structure and staffing requirements under FMC
9	27th Jun, 2019	• Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
10	25th Jul, 2019	• Discussion on terms of reference detailing the specific tasks and responsibilities of each unit under FMC
11	28th Aug, 2019	• Discussion on staffing requirement of FMC
12	26th Sep, 2019	• Discussion on staffing requirement of FMC
13	19th Dec, 2019	• Confirmation on Organizational TOR of FMC

1.2.2 Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed.

The progress of Output 1 activities is shown in the table below.

Table 7: Progress of Output 1 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Collect the legal documents related to the transportation smart card system as follows;; ✓ Legal systems and standards on smart card system/ transportation smart card system ✓ Design documents of smart card system ✓ International standards for interoperable AFC system ✓ MRT 2A, 3: AFC technical design ✓ MRT 2: AFC technical specifications ✓ BRT1, Route Bus: Specifications and planning documents to introduce ✓ Hanoi City and MOT: Legal system and decision about technical standardization of AFC ✓ Central Bank: Decision, regulations, standard regarding smart card and electric money	- Done	- No activity (N/A)

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
1-2 Prepare an outline of 'Design Guideline and Specifications' and the fare policy	1) Examination of ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operational specifications 4) Examination of the technical specifications	- Done	- No activity (N/A)
1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	-	- Done	- No activity (N/A)
1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	-	- The Project Team revised DG/TS to alter the timing of fare deduction at "boarding" instead of "alighting", and submitted the draft of DG/TS (Version 3) on 14 th October 2020.	- HDOT shall collect comments until December 2020. Reflect reasonable comments in DG/TS and submit DG/TS-Final Draft in late January.
1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	-	- On going	- To be completed in late January.
1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	- The 1 st Seminar was held on 5 December 2018. - The 2 nd Seminar was held on 27 November 2019.	- Done	- No activity (N/A)

1.2.3 Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.

The progress of Output 2 activities is shown in the table below.

Table 8: Progress of Output 2 Activities

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the Fare Management Center (division)	- Done	- No activity (N/A)

Activity and Work Item	Activities	Progress	Activity for the Next 6 Months
2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	Define the basic six items of operational terms of reference of FMC	- Completed the Draft.	- Continue discussion for final version
2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	-	- To be done soon.	- Continue discussion for final version
2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	1) Prepare a TOR 2) Organizational structure and staff requirements	- On going	- To be completed in late January.

1.3 Achievement of Output

1.3.1 Output 1

Achievement status of Output 1 is as follows.

Table 9: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
The Design Guideline and Specification is prepared.	None	On going

Source: PDM 1.1

1.3.2 Output 2

Achievement status of Output 2 is as follows.

Table 10: Verifiable Indicators and Current Status

Objectively Verifiable Indicator	Baseline	Current Status
Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval	None	On going

Source: PDM 1.1

1.4 Achievement of the Project Purpose

Also stated in PDM, the achievement of the project purpose shall be evaluated using verifiable indicators.

Table 11: Verifiable Indicators and Current Status

Objectively verifiable indicators	Baseline	Current Status
- 'Design Guideline and Technical Specifications' are approved by HPC	None	On going
- The public transport fare policy is established	None	On going

Source: PDM 1.1

To achieve the project purpose, the JICA Project Team (JPT) identify the required knowledge and skills by each output shown in the following table. Result of the baseline survey were evaluated on a five-level scale as indicated below and illustrated in following figures.

- (1) Newbie: I don't know the process/ concept;
- (2) Novice: I know the process/ concept, but I have never done it;
- (3) Young Expert: I have done it once, but I have not reported or presented the results;
- (4) Expert: I have done it twice or more/ I have done it once and reported or presented the results;
and
- (5) Senior Expert: I have done it twice or more, and reported or presented the results.

Table 12 Required Knowledge and Skills per Project Output and Activity

Expected Output	Activities	Required Knowledge & Skills
(1) The 'Design Guideline and Specification' is prepared.	1-1 Collect and analyze information on the existing and approved smart card systems for the public transportation system including MRT, BRT and Bus in Hanoi	Information collection capability, Issue solving capability
	1-2 Prepare of outline of 'Design Guideline and Specifications' and the fare policy	(1) Basic knowledge of a) Ticket specifications, b) Fare system c) Operation system d) Technical specification e) Host system (2) Capability for development of a) Rules for common ticket b) Rules for fare c) Rules for operation specification d) Rules for technology implementing specification e) Host system specification
	1-3 Consult with the relevant authorities and finalize the concepts of the 'Design Guideline and Specifications' and the fare policy.	
	1-4 Preparation of the drafts of the 'Design Guideline and Specifications' and the fare policy	
	1-5 Consult with the relevant authorities and finalize the 'Design Guideline and Specifications' and the fare policy	
	1-6 Conduct seminar(s) to introduce the Draft 'Design Guideline and Specifications' and fare policy.	
(2) Organizational terms of reference for the proposed	2-1 Define the scope of work to be performed by the proposed Fare Management Center (Division).	

Expected Output	Activities	Required Knowledge & Skills
Fare Management Center (Division) is drafted and submitted for approval	2-2 Define tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of the scope of works (functions) (2) Capability for development of the scope of work(function)
	2-3 Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division).	(1) Basic knowledge of work description (2) Capability for development of work description
	2-4 Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements.	(1) Basic knowledge of a) Operational terms of reference b) Terms of reference for staffing (2) Capability for development of rules for operation and management of Fare Management Center

The first baseline survey was conducted in April 2018 to measure the current knowledge and skills level. The average scores are shown in the following table.

Table 13 Average Score for each Output

Time	Output 1: development of DG/TS for interoperable smart card system	Output 2: development of Organizational TOR of each unit of the FMC
When the Project launched (April 2018)	2.49	3.33
When basic policy was formulated (December 2018)	3.03	3.67
When draft DG/TS and draft TOR of FMC (October 2019)	3.56	4.00
When the Project completed (November 2020)	4.01	4.67

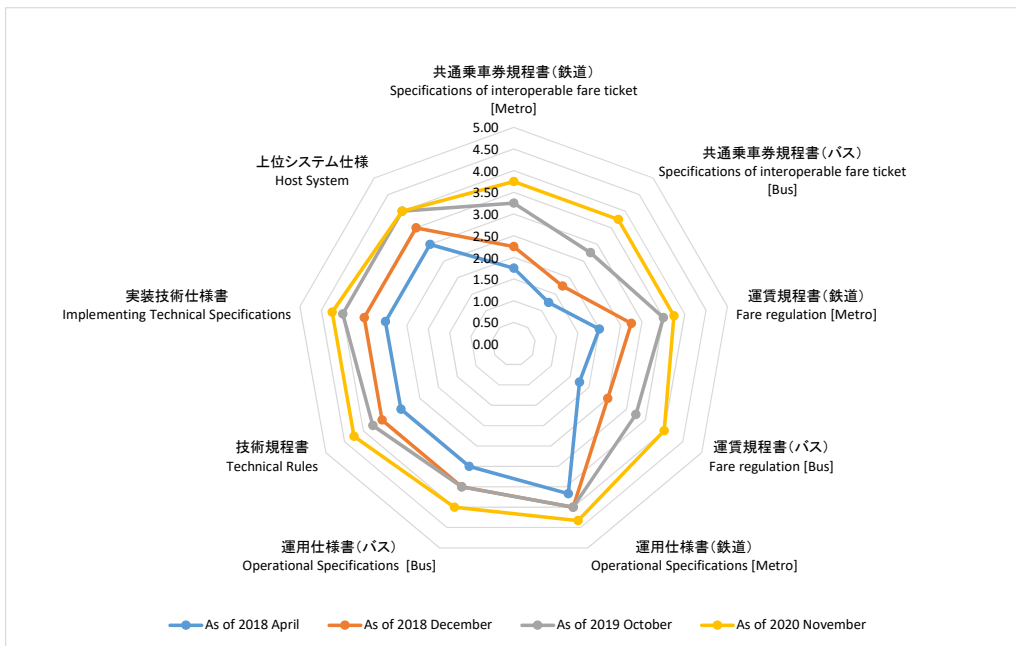


Figure 1 Necessary Knowledge and Skills for Output 1

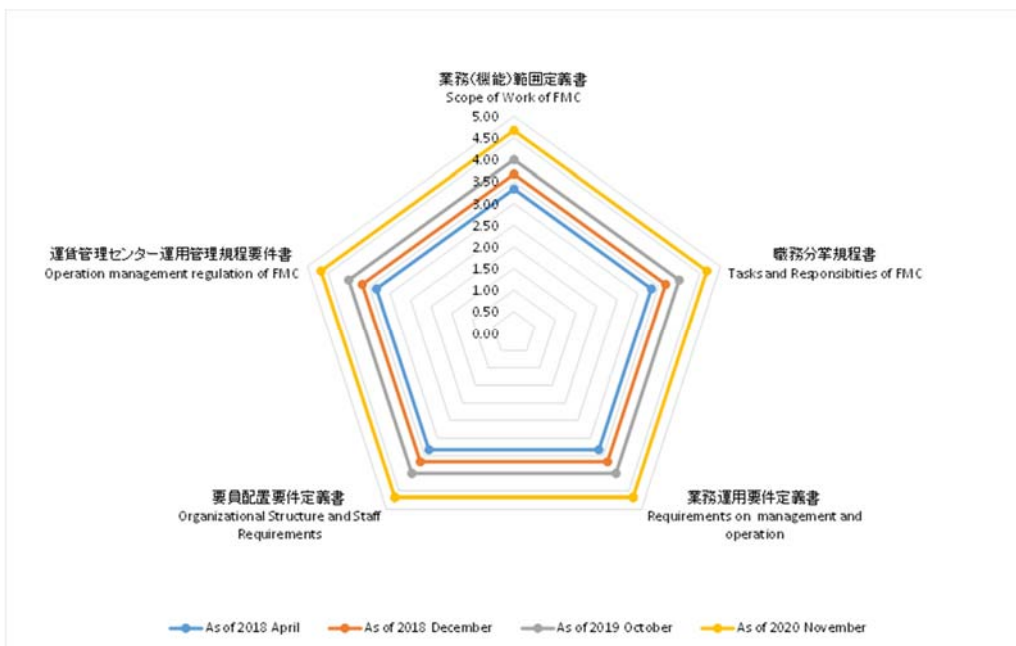


Figure 2 Necessary Knowledge and Skills for Output 2

1.5 Changes of Risks and Actions for Mitigation

N/A

1.6 Progress of Actions undertaken by JICA

N/A

1.7 Progress of Actions undertaken by The People's Committee of Hanoi

N/A

1.8 Progress of Environmental and Social Considerations (if applicable)

N/A

1.9 Progress of Considerations on Gender/Peace Building/Poverty Reduction (if applicable)

N/A

1.10 Other remarkable/considerable issues related/affect to the project (such as other JICA's projects, activities of counterparts, other donors, private sectors, NGOs etc.)

Project is implemented in the context of many movements/fluctuations. Such as Line 2A, Line 3 in the completion process, pilot smart card on BRT Line... Especially, Hanoi started to develop a smart city... They create new several requirements for Project.

1.11 Tasks to be implemented by JICA Project Team and Counterparts

Work	Tasks	Implementing agencies
Output 1: 'Design Guideline and Specifications' for interoperable smart card system are developed		
N/A	N/A	N/A
Output 2: Organizational terms of reference of each unit of the Fare Management Center (Division) are developed.		
N/A	N/A	N/A

2 Delay of Work Schedule and/or Problems (if any)**2.1 Cause****(1) Delay in assignment of counterparts**

In the 1st Joint Coordination Committee (JCC) meeting, it was agreed that WG members would be assigned in February 2018. However, the members were actually determined in 29 March 2018 (Decision No. 341/QD-SGTVT).

(2) Delay caused by comparative study between CBT and ABT

In compliance with Decision 3978/QD-UBND, the Project Team submitted to HDOT the outline of DG/TS based on the card-based ticketing (CBT) system. This outline of DG/TS underwent the approval process. Although this Project is based on the assumption of adopting the CBT system, Hanoi City proposed to Japan International Cooperation Agency (JICA) to consider account-based ticketing (ABT) system with a perspective of the smart city concept. This led to comparative study between the CBT and ABT systems, which concluded application of the CBT system. The outline of DG/TS was finally approved in 26 April 2019, three months after the submission.

(3) COVID-19

Global pandemic of the COVID-19 caused a serious impact on the project implementation, especially preventing Japanese experts from working in Hanoi.

2.2 Action to be taken**(1) Assignment of counterparts**

In spite of the delay in assignment of WG members at the start of this Project, they actively involved themselves in the Project, including approximately 190 WG meetings. Moreover, participation of IT companies in Hanoi was approved at 4th JCC held in 29 August 2019, which allowed members familiar with IT in Hanoi to join the WGs, contributing to formulating the DG/TS based on the actual situation of the city. Director and Vice Director of HDOT, and director of Hanoi Urban Transport Management and Operation Center (TRAMOC) also take active part in the project, closely communicating with the Project Team.

(2) Comparative study between CBT and ABT

A study meeting was held in 19 April 2019 chaired by Chairman of HPC. As a result, it was decided to continue the Project based on the submitted outline of DG/TS. This outline was approved in 26 April 2019 (HPC letter No. 1648/UBND-DT).

(3) COVID-19

As Japanese experts were not able to visit Hanoi since February 2020, online meetings were held to ensure quality of the Project. Several meetings among executives of HDOT and TRAMOC, JICA Headquarters and JICA Vietnam Office were also held through the Internet.

2.3 Roles of Responsible Persons/Organization (JICA, The People's Committee of Hanoi, etc.)

N/A

3 Modification of the Project Implementation Plan**3.1 PO****3.2 Other modifications on detailed implementation plan****II. Project Monitoring Sheet I & II** *as Attached*

Project Monitoring Sheet I (Project Design Matrix)

Version 7

Project title: Project for Supporting Development of Interoperable Smart Card System for Public Transportation in Hanoi

Dated. 3 December 2020

Project Area: Hanoi

Target Group: Hanoi People's Committee (HPC) and organizations related to public transportation in Hanoi

Counterpart: HPC (Hanoi Department of Transport (DOT), Hanoi Department of Science and Technology (DOST), Hanoi Department of Information and Communication (DOIC), Hanoi Metro Company (HMC), Hanoi Transport Corporation (TRANSERCO))

Narrative Summary	Objectively Verifiable Indicator	Means of Verification	Important Assumption	Achievement	Remarks
Overall Goal					
Interoperable smart card systems are developed for the public transportation in Hanoi	<ul style="list-style-type: none"> Number of public transport operators applying the 'Design Guideline and Specifications' developed under the Project to realize interoperable smart card system. Ratio of satisfaction on interoperable smart card is more than XX%. 	Survey report(s)			
Project Purpose					
Technical and management capacities of counterpart agencies under HPC are improved for the development of interoperable smart card system for public transportation in Hanoi	<ul style="list-style-type: none"> 'Design Guideline and Specifications' are approved by HPC. The public transport fare policy is established. 	<ul style="list-style-type: none"> Approved 'Design Guideline and Specifications' Project progress report 	Decision no. 3978/QD-UBND dated 13 August 2015 on use of interoperable smart card in public transportation in Hanoi continues to be effective.		
Outputs					
1. 'Design Guideline and Specifications' for interoperable smart card system are developed.	'Design Guideline and Specifications' are finalized.	'Design Guideline and Specifications' (final version)	HPC reviews policy/documents developed under the Project in a timely manner.		
2. Organization terms of reference of each unit of the Fare Management Center (Division) are developed.	Organizational terms of reference for the proposed Fare Management Center (Division) is drafted and submitted for approval.	Organizational terms of reference for the Fare Management Center (Division) (draft for approval)			

Activities	Input		Pre-conditions
	Japanese Side	Vietnamese Side	
1-1. Collect and analyze information on the existing and approved smart card systems for the public transportation system in Hanoi	1. Japanese Experts - Leader - Public Transport Fare Policy and System - Interoperable Smart Card System - Communication System - Fare Management System	1. Project Counterparts (1) HPC (2) HDOT - Road Transportation Management Division - Planning and Investment Division - Economics planning Division - TRAMOC (3) DOST (4) DOIC (5) HMC (6) TRANSERCO 2. Provision of Office Space and equipment 3. Cost for - counterpart members - office operation and maintenance - others (local travel expenses excluding airfare for Vietnamese side, etc.)	Official request to apply for Japan's ODA Loan Project.
1-2. Prepare an outline of 'Design Guideline and Specifications' and fare policy 1) Examination of fare ticket specifications for interoperable use 2) Examination of fare system rules for interoperable use 3) Examination of the operation rules 4) Examination of the technical specifications	2. Counterpart Training in Japan 3. Seminar and workshop 4. Other cost - Local experts and consultants - Local staff - Others (survey, card rental, etc.)		
1-3. Consult with the relevant authorities and finalize the outline of the 'Design Guideline and Specifications' and fare policy			
1-4. Draft a 'Design Guideline and Specifications' with fare policy			
1-5. Consult with the relevant authorities and finalize the 'Design Guideline and Specifications'			
1-6. Conduct seminar(s) to introduce the draft 'Design Guideline Specifications' and fare policy			
2-1. Define the scope of work to be performed by the proposed Fare Management Center (Division) 1) Conduct a survey of relevant laws and regulations 2) Define the scope of work of the fare management center (division)			
2-2. Define the tasks and responsibilities of departments/division under the Fare Management Center (Division)			
2-3. Consult with relevant authorities with regard to the defined tasks and responsibilities of each unit under the Fare Management Center (Division)			
2-4. Prepare and submit organizational terms of reference detailing the specific tasks and responsibilities of each unit under the Fare Management Center (Division), including organizational structure and staffing requirements. 1) Prepare a TOR 2) Organizational structure and staff requirements			

