Attachment 1 Environment Surrounding the Project

AT1-1 Overview of the Central Bank of Myanmar

1. Establishment of CBM

The Central Bank of Myanmar, then called Union Bank of Burma, was established in 1948 through the Union Bank of Burma Act of 1947. Its role was to take over the functions of the Yangon branches of the Reserve Bank of India. The currency management function of the Burma Currency Board was transferred to the Union Bank of Burma in 1952, when the bank was made the central bank for the first time.

In 1969, a monolithic bank known as the People's Bank of the Union of Burma, incorporating not only the central bank functions but also commercial, investment foreign exchange and development finance, was established. The administrative reform in 1975 restructured the Bank and changed its name to the Union of Burma Bank with four banks, namely the Union of Burma Bank, Myanmar Economic Bank, Myanmar Foreign Trade Bank and Myanmar Agriculture Bank, emerging out of the restructuring.

In the late 1980s, Myanmar's economic system changed from the planned economic system to market-oriented system. To support the market-oriented system, the Central Bank of Myanmar Law was enacted in 1990. The Law formed the present Central Bank of Myanmar.

The main responsibilities of the Central Bank of Myanmar are:
(i) to act as issuer of domestic currency and as a banker to the Government;
(ii) to act as an economic adviser to the Government;
(iii) to inspect and supervise financial institutions;
(iv) to act as banker for financial institutions;
(v) to manage the international reserves of the State;
(vi) to perform transactions resulting from the participation of the State in intergovernmental organization; and
(vii) to undertake all responsibilities in dealing with the aforesaid organizations on behalf of the Government.[15]

The Central Bank of Myanmar Act was enacted in July 2013 that made it an independent financial institution from the management and control of the MOF. Despite becoming independent, CBM still remains a government institution.

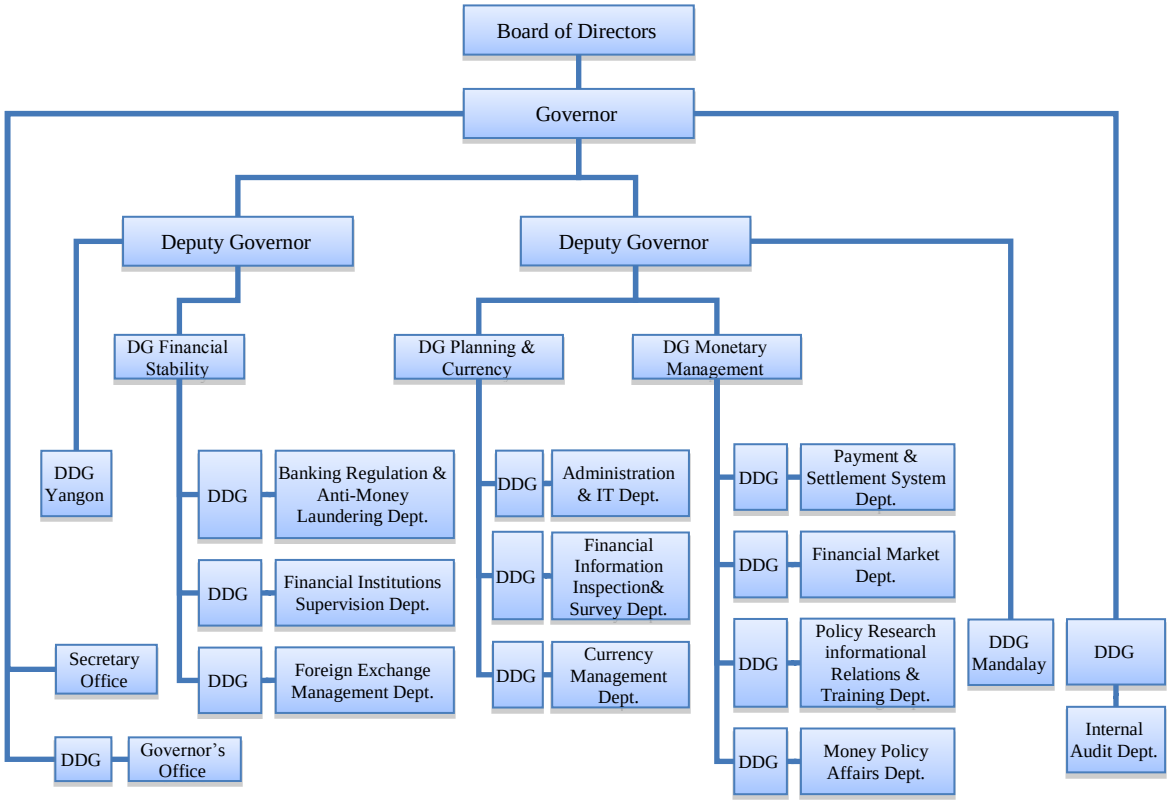
2. Organization / Personnel

As of July 2013, the number of staff at CBM is 1,399. Yangon Branch has the most number of staff with more than 660, followed by that of Nay Pyi Taw with more than 523 and Mandalay branch with 210.

The CBM is consisted of a governor, two deputy governors, three director-generals (DGs), 14 deputy director-generals (DDGs), and staff. Director-generals have jurisdiction over financial stability, planning and currency, and monetary management. There are 11 departments in CBM

[15] CBM website (http://www.cbm.gov.mm/content/central-bank-myanmar /, browsed 16 July 2013)

headed by a DDG. Yangon and Mandalay branches are headed by DDGs. The CBM is described in the following organogram:



Note: DG=Director-General, DDG=Deputy Director-General
Source: Prepared by the survey team based on existing CBM organogram and update information obtained from CBM

Figure AT1-1 Organogram of the Central Bank of Myanmar

The organogram is expected to change due to restructuring of CBM in August 2013. The restructuring to having three Deputy Governors is in response to the enactment of the new Central Bank of Myanmar Act 2013, which gives CBM its management independence from the MOF.

3. Finance / Budget

CBM's Annual Report shows that most of its income comes from investment interest. The annual income amounts to approximately MMK 294 billion. The investment is mostly dependent on purchase Treasury bill (T-bill) of the government.

Expenditure for the Fiscal Year 2011-2012 was approximately MMK 25 billion, of which 20 billion was spent for banknote printing. Operational and management cost that includes maintenance and repairs was at MMK 1 billion. Employee salary and benefits were approximately MMK 1.2 billion or MMK 1 million per staff per year.

Table AT1-1 Income Statement as of 31 March 2012

Income		(MMK million)
	Interest on Investment	276,823.11
	Interest on Deposits	22.53
	Exchange on Foreign Transactions	39.37
	Commission	6,295.99
	Building Rent	46.84
	License Fees from Financial Institutions	431.25
	Interest on Loans & Overdrafts	9,506.23
	Other Items (Miscellaneous)	398.97
	Total Income	**293,564.29**
Expenditure		
	Interest on Deposit, Borrowings, etc.	19.44
	Establishment Salaries	829.91
	Pension and Gratuity	331.45
	Travelling Expense	29.68
	Supplies and Services	434.00
	Instance	3.32
	Printing of Notes	20,214.62
	Remittance of Currency	1,306.50
	Maintenance and Repairs	1,086.69
	Depreciation	639.14
	Other Items (Miscellaneous)	521.74
	Total Expenditure	**25,416.49**
Excess Income Over Expenditure for the year		268,147.80
Retained Earnings from Previous Year		0.82
		268,148.62
Provision for Stabilization Fund		100,000.00
Net Profit Contribution		168,148.62

Source: CBM Annual Report 2011-2012

AT1-2 Payment and Settlement Business in the Central Bank of Myanmar

1. Current Business Flow

CBM conducts the following operations for fund settlement and Treasury bond / Treasury bill (T-bond/T-bill) settlement:

(1) Fund settlement

Current operational flows of fund settlement are shown in Attachment 6 of this report. The outline is as follows. Most of the businesses are operated manually (staff of financial institution (FI) visits CBM HO/branch and transactions are conducted based on the slips submitted by the staff and the current account ledger is booked). The utilization of IT system is limited (section 2.3 shows IT systems used in CBM). The feature of fund settlement by CBM is that CBM

conducts fund settlement in foreign currencies (US, EUR, SGD) as well as the one in MMK.

[Cheque clearing]

In Myanmar, clearing houses are managed and operated by CBM, which is different from Japan where clearing houses are managed and operated by Bankers Association. The procedure of clearing is the same as the one in Japan; Cheques brought to clearing house are collected by counter-party FI, and the FI's current accounts are credited or debited after calculating clearing balance.

[Credit]

Credit to FI's current deposit account

[Debit]

Debit from FI's current deposit account

[Transfer]

Transfer funds from a FI's current deposit account to another FI's current deposit account. There are transfers conducted within the same area (transfers within the same CBM jurisdiction) and between different areas (transfers between different CBM jurisdictions).

[Transfer with cheques]

With cheques brought in by the FI, transfer funds to the FI's current deposit account from another FI's current deposit account. There are fund transfers with CBM cheque and with bank cheque. Also, there are transfers within the same area and between different areas.

[Deposit auction]

Auction is conducted as a means of fund absorption. FIs propose deposit interest rate. Proposals are accepted from those with the lowest rates until reaching the target amount.

[FX auction]

Auction is conducted for determining and announcing foreign currency referential rate. Only US dollars are covered. Have FIs propose exchange rate, and accepts proposal beginning with the rate most favorable for CBM until reaching the target amount. There are auctions for foreign currency buying or selling.

[Cash Deposit (foreign currency)]

Deposit to FI's foreign currency current deposit account. Foreign currencies such as US, Euro, Singapore dollars shall be covered.

[Cash withdrawal (foreign currency)]

Debit to FI's foreign currency current deposit account

[Fund transfer (foreign currency)]

Transfer funds from a FI's foreign currency current deposit account to another FI's foreign currency current deposit account. There are transfers conducted within the same area and between different areas.

[Foreign currency buying]

CBM buys foreign currency from FI

[Foreign currency selling]

CBM sells foreign currency to FI

(2) Treasury bond (T-bond) / Treasury bill (T-bill) settlement

Current operational flows of Treasury bond (T-bond) Treasury bill (T-bill) settlement are shown in Attachment 6 of this report. The outline is as follows: Most of the businesses are operated manually. The utilization of IT system is limited (2.3 shows IT systems used in CBM). The transactions CBM conducts regarding T-bond/bill settlement are limited to T-bond/bill issuance and selling, T-bill renew, interest payment and redemption, and T-bond collateral loan. Since a secondary market has not yet developed, most of the T-bond/bill are bought and redeemed as buy and hold investment. T-bond/bill transfer is yet to be conducted.

[T-bond/bill issuance and selling]

T-bonds and T-bills vary depending on the length of redemption period. Redemption periods for T-bonds are 2 years, 3 years and 5 years while that of T-bill is 3 months. Issuing amount of T-bonds is determined annually by the MOF with considerations to the governmental financial status. MOF then requests to CBM to issue the T-bonds in accordance with the decision. T-bond tender is not conducted. CBM sells the T-bonds to Myanma Economic Bank (MEB) or Myanmar Securities Exchange Centre (MSEC) who function as the agent (or underwriter), who will then resell the T-bonds to end buyers. T-bond holder holds a certificate while registration is being made. The transactions are recorded on registers at the time of selling. As for T-bills, CBM will determine and report to MOF the issuing amount reflecting the short term financial status. T-bill tender is not conducted and therefore CBM will purchase the whole amount of the issued T-bill, then resell it to FI who may wish to purchase it. Registration is done at the time of purchase.

[T-bill renewal]

Extend redemption date for T-bill held by CBM and FI for 3 months as necessary based on the financial situation.

[Interest payment]

Conduct interest payment for T-bond/bill

[Redemption]

Conduct redemption for T-bond/bill

[T-bond collateral loan]

With the purpose of compensating the deficit in FIs' current account, loan is extended under T-bond as collateral.

2. Issues on the Current Business Operation and Direction for Solution

(1) Fund Settlement

Currently CBM conducts fund settlement manually. When systematizing it, CBM has to decide which method of fund settlement should be adopted; either Designated Time Net Settlement (DTNS) or Real Time Gross Settlement (RTGS).

While DTNS has a merit in the efficiency of liquidity management and it is easier for FIs to manage the liquidity, all FIs will be exposed to systemic risk that entire fund settlement will stop in the case where even one FI fails to conduct fund settlement due to fund shortage. Therefore it is the mainstream that central banks of other countries adopt RTGS, and thus, CBM should also adopt RTGS. In implementing RTGS, it is necessary for CBM to introduce intra-day overdraft in order to maintain intra-day liquidity of FIs. FIs need to submit collateral to CBM beforehand to enjoy the benefit of intra-day overdraft. It is necessary for CBM to prepare and systematize the operations to conduct intra-day overdraft and collateral management smoothly.

The CBM structure of the current accounts of participating financial institutions is different from central banks in other countries. Each branch holds a current account at CBM. Fund transfer between head offices/branches is executed via current accounts with CBM. For instance, the CBM Yangon Branch holds nearly 100 accounts of the MEB. This structure causes the inefficiency of fund management of FIs. It is also against the idea of the BIS guidelines that the fund settlement by a central bank should be focused on the large-value interbank payment. In order to promote the introduction of accounting system at FIs which realizes settlement internally without relying on the CBM ICT system to be developed, current account should be

one or at most three (one per head office / branch of CBM) per bank. However, with respect to the current situation, up to three accounts at each CBM hubs will have to be allowed. Development of online network at each FI should be promoted to have this exceptional measure terminated.

As to MEB mentioned above, it is entitled to enjoy special treatment regarding fund settlement. MEB is entrusted to deal with Union Fund by laws and it conducts fund settlement of Union Fund via current accounts of CBM. Since the amount of Union Fund transactions is huge and they are unexpectedly conducted, MEB is allowed to be left as red account (not to keep black account) at the end of the day. And for smooth cash operations of Union Fund, MEB can make repayments of cash within the amount of "chest box", which is physical cash entrusted to all MEB branches. Whereas cash within chest box is off-balanced; it is recorded as cash on balance sheet of CBM when it is withdrawn, and MEB balance is reduced.

There are three types of "Chest box" with different maximum amount which CBM decides considering transactions histories. The cash at chest box can be withdrawn irreverent of actual balance with CBM. Therefore, MEB is allowed to conduct cash withdraw transactions within the chest box amount even in the case where the amount of MEB account is insufficient (red balance). In addition to provision of chest box, MEB has also enjoyed another special treatment that: the details of such transactions are managed daily by MEB itself through registers; and are reported to CBM after some interval (at most one month later) and not on the same day.
This project does not cover Union Fund, however, it is necessary to consider how to respond to these special treatments of MEB account.

(2) T-bond / T-bill Settlement

Myanmar T-bond /T-bill are not scripless and issued in paper form. Since a secondary market has not yet developed, most of the bond/bill are bought and redeemed as buy and hold investment. In order to promote the development of secondary market for T-bond/bill, Myanmar should introduce book-entry system of T-bond/bill and adopt the scripless system (Although the current law requires the issuance of paper form). For that purpose, CBM should prepare the rules regarding the management of the book-entry system, and implement and systemize transactions such as T-bond/bill transfer and DVP (Delivery Versus Payment) which are yet to be conducted.

Currently T-bond/bill tender is not conducted. However, when the secondary market develops and T-bond/bill transactions are conducted under market price, CBM should introduce T-bond/bill issuance by tender. For this purpose, CBM is suggested to prepare and systemize the rules of T-bond/bill issuance and its business operation.

(3) Monetary Control

As the result of the absence of the secondary market, T-bond / T-bill operation cannot be conducted, hence depriving the CBM of monetary control means. Although other means of monetary control such as operation of reserve rate may be available, current requirement is that the reserve rate is fixed at 10%. Further, as previously mentioned, Union Fund transactions cannot be anticipated and are not managed at daily basis. This results in the monetary demand from public finance being unpredictable, therefore CBM being unable to conduct monetary control. Development of secondary market for T-bond / T-bill is desired to enable CBM to conduct monetary control as well as to establish an environment where CBM can monitor the supply and demand of currency in timely manner.

(4) Ledger Management

General ledger is managed electrically using the accounting system, but it is far from ideal.

Since automatic recording system is not available, daily final account balance is manually done. Account balances are also recorded on paper. The accounting system and access to transaction data should be fully computerized.

(5) Cheque Clearing

Currently, cheque clearing is totally dependent on manual procedure, resulting in low efficiency. Introduction of Mechanized Clearing House (MCH) is much desired. For this reason there is a need to standardize cheque format in Myanmar. Each commercial bank issues a different cheque book. This situation is likely to become an obstacle preventing the automation in the future. Cheque format should be standardized. Some financial institutions have several branches participating in the same clearing house. Financial institution should have only one participant per clearing house.

One idea is to introduce the Imaged Cheque Clearing and Archive System (ICAS), which is an automated cheque clearing system. However, unlike Thailand where cheque is already well established as a means of transaction, the current situation in Myanmar is yet to become a cheque society. Under such situation, it is recommendable for Myanmar not to proceed to becoming a cheque society but rather to be inclined to the penetration of bank transfer system. This is because bank transfer system is more in line with the basic settlement mechanism which will be required for mobile banking and internet banking in the future. Promotion of bank transfer mechanism will be recommendable from the viewpoint of expandability to electronic transfer society as opposed to the cheque society.

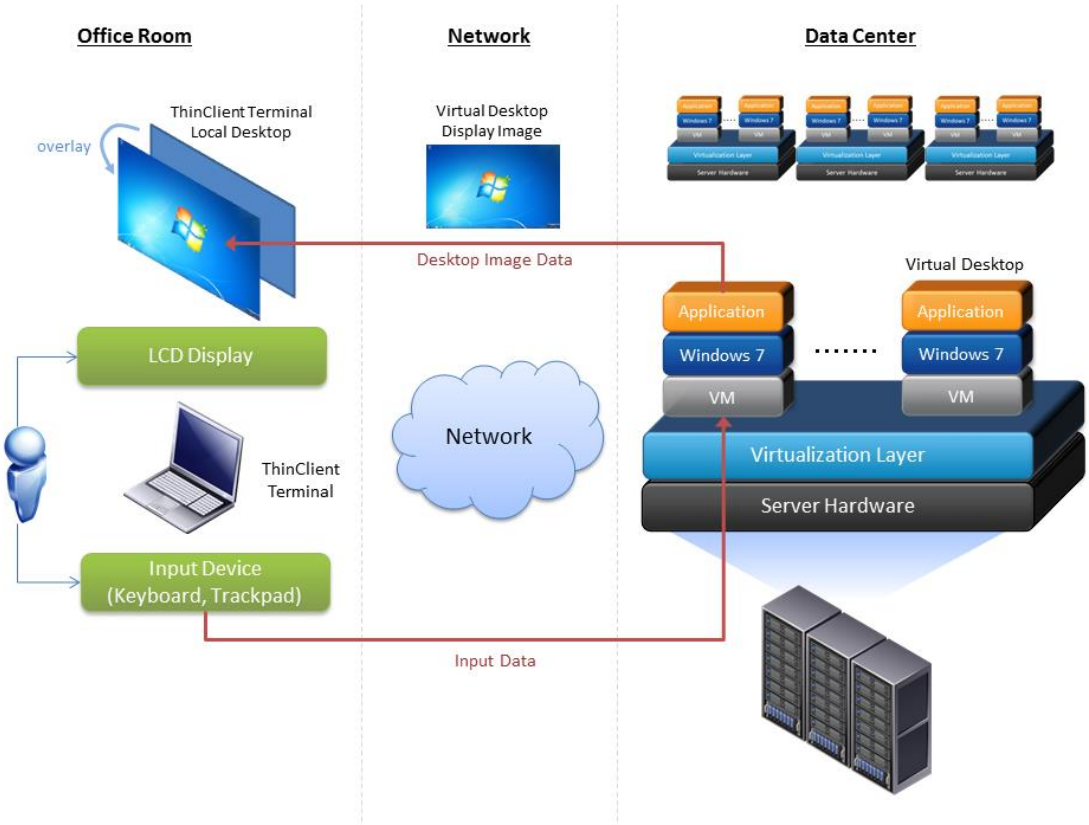
AT1-3 Current ICT Systems

1. Situation of System Utilization

There are two kinds of computer environment used by CBM employees. One is the business system environment created by CBM, the other is the office automation (OA) system. The business system environment is not included in this section. Details are available in the “Republic of the Union of Myanmar Data Collection Survey on Modernization of the Financial System Final Report”. This section only discusses the utilization situation of the OA system environment.

(1) OA System Environment

There are 150 OA client computers that have been deployed in Yangon office only. In addition, 150 OA client computers are scheduled to be added to Nay Pyi Taw office. Both OA client environments are thin client system based on Virtual Desktop Infrastructure (VDI). In terms of the utilization pattern, virtual desktop screen data will be sent from virtual machine (called virtual desktop) on servers set in the data center room within Yangon Office to users' terminals (thin client terminals).



Term	Explanation
Thin Client Environment	The environment of utilization pattern in which OS and applications will be executed on servers set in the data center and only the screen information of the execution results will be transferred to users' terminals through network.
Thin Client Terminal	The whole users' terminals using thin client environment.
Virtual Machine	Machine environment started on servers introduced by virtual software.
Virtual Desktop	The virtual machine to execute OS and applications in thin client environment based on VDI.

Source: Prepared by the Survey Team

Figure AT1-2 Current OA Environment

To implement the infrastructure for thin client environment, server virtualization software and thin client management software will be used. In the thin client environment, various kinds of terminals including general Windows PC and tablet devices can be used. In the current OA environment, general Windows PC with batteries are used as countermeasures for power failure. In this PC, screen reception software will be installed and the PC will be used as a thin client terminal. A concealed setting is applied so that Windows OS in the terminal cannot be directly accessed by users.

The OS for virtual desktop is Microsoft Windows, office suite software and anti-virus software and Myanmar font will be installed as well. In addition, file servers are created in the data center room and sharing of document files among users is possible. File servers have 2 areas: one for user specific and the other for user sharing which is shared by each division of CBM. Virtual desktop is not connected to the Internet.

(2) Printers

The monochrome laser printer has been set so as to enable printing from thin client environment through wireless LAN. The 2F, 3F, and 4F floors of CBM Yangon Branch have one printer each. The printing control mechanism has user authentication function.

(3) Network

In CBM Yangon office, Wireless LAN environment using 802.11n for OA system has been constructed. Thin client terminals and servers are connected through wireless LAN. CBM's Nay Pyi Taw office is scheduled to introduce the same wireless LAN environment. Printers will also be connected to the network for OA system through wireless LAN via printing control devices. But server room and wireless LAN access points are connected through cables. Details are explained in the following sub-section on network configuration.

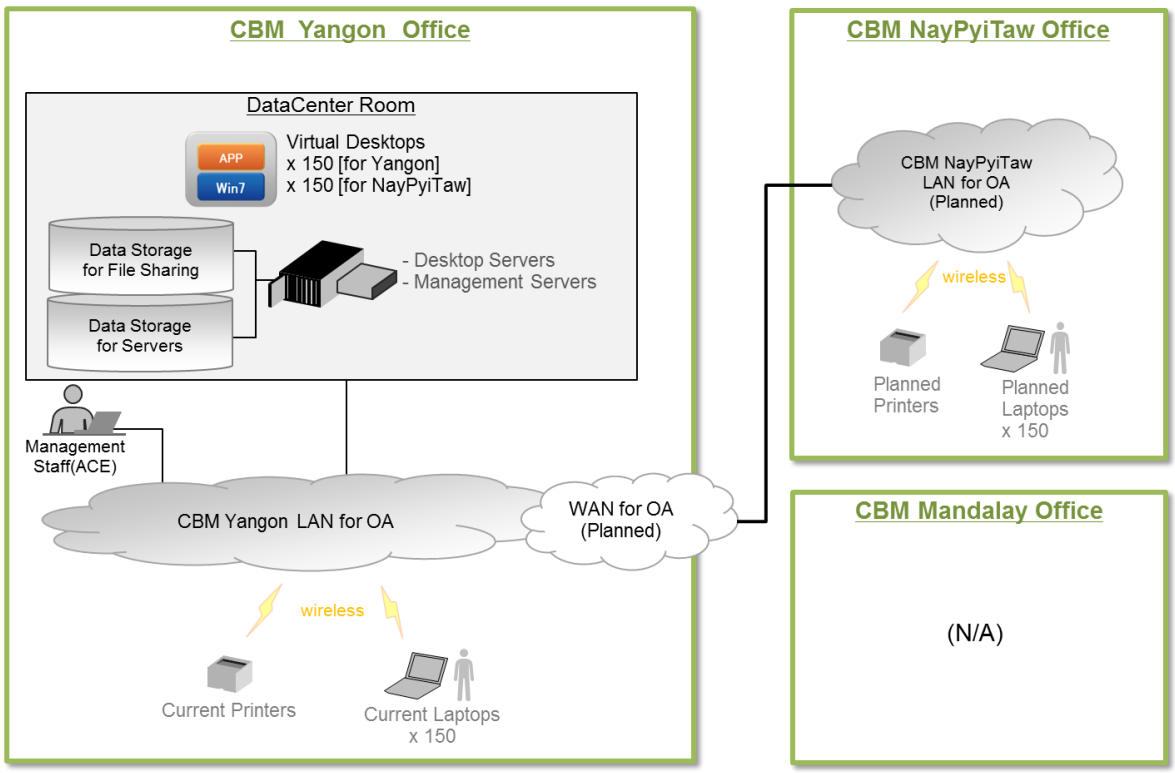
2. Physical Configuration of System

(1)Configuration of the System Infrastructure Environment

The report of the "Republic of the Union of Myanmar Data Collection Survey on Modernization of the Financial System Final Report" should be referred to concerning the system built by CBM independently. There is no requirement that interlocks with the system to be introduced in this project.

(2) Configuration of OA Environment

The following shows the block diagram of OA system.

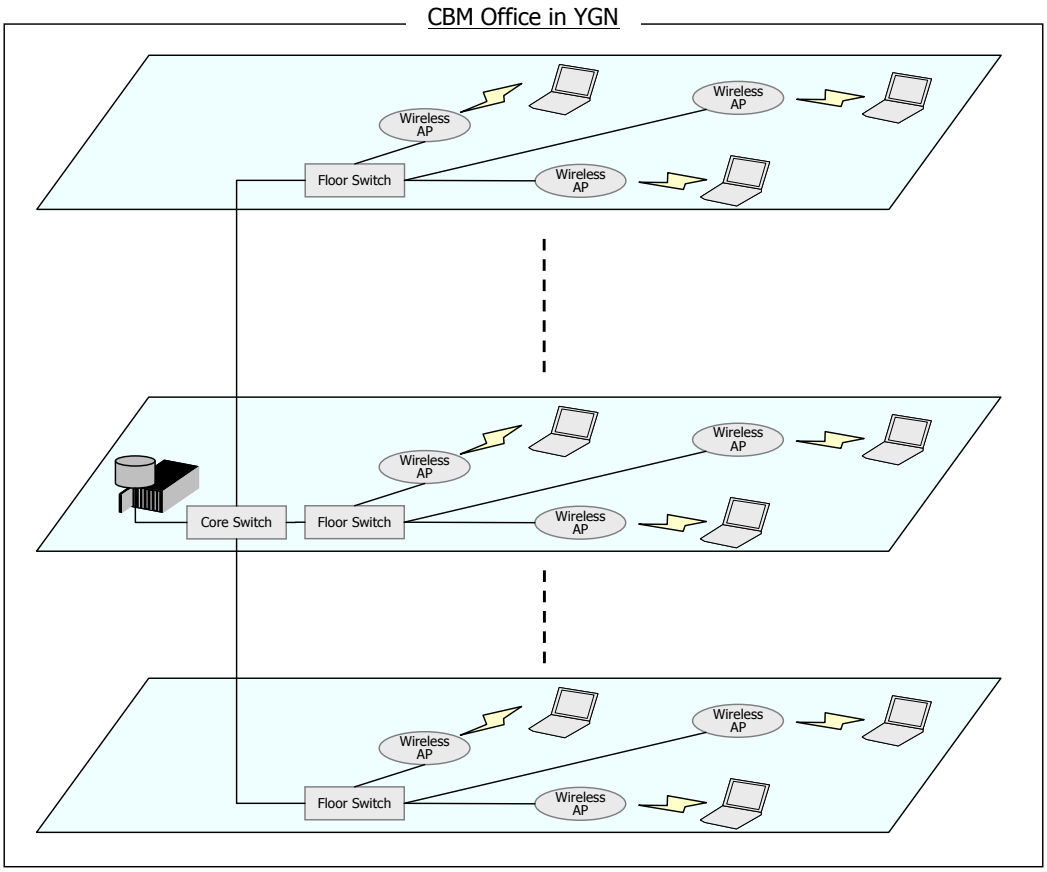


Source: Prepared by the Survey Team

Figure AT1-3 Block Diagram of OA System

(3) Configuration of Network Environment

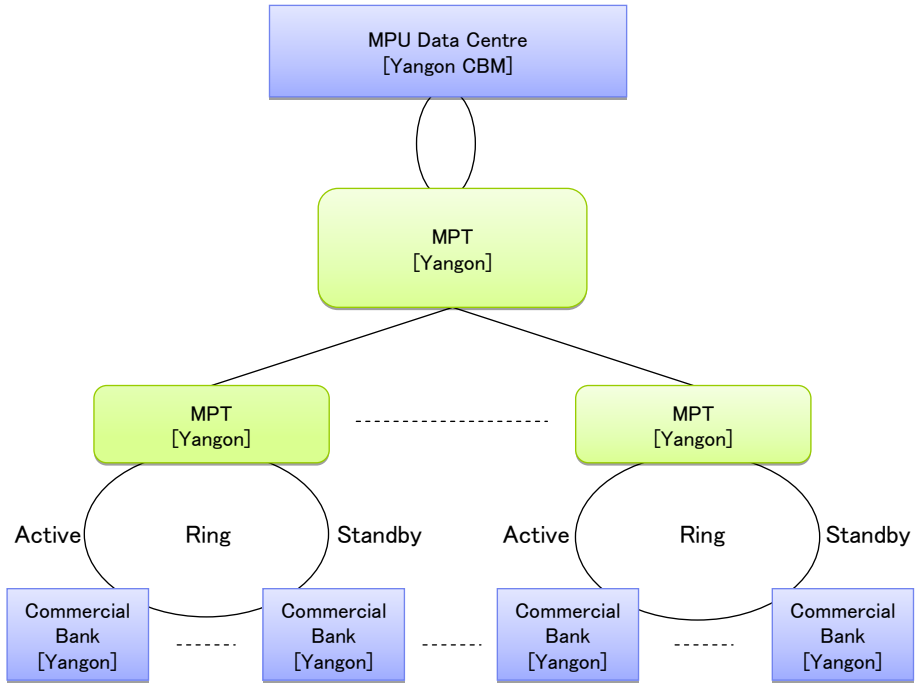
As the external network connectivity environment, Internet VPN is installed for the Banking Network which links CBM and commercial banks. Also, E1 (2Mbps) circuit is installed between CBM Yangon and CBM Nay Pyi Taw.



Source: Prepared by the Survey Team

Figure AT1-4 Network Environment

The network configuration diagram of MPU (Myanmar Payment Union) is described as in the following figure:



Source: Prepared by the Survey Team

Figure AT1-5 Network Diagram of MPU

(4) Facility Environment

The description of the current condition is reported based on the inspection of the data center rooms at three hubs of CBM.

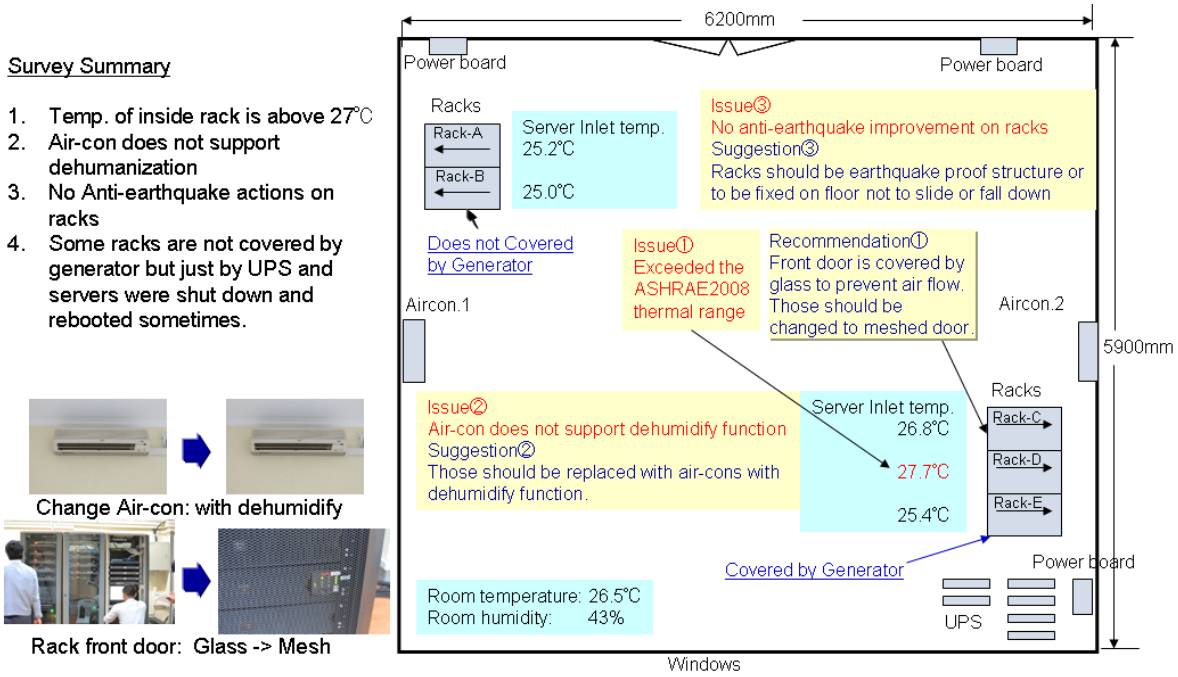
[Yangon Branch]

Some of the IT equipment was found to have no power supply from private generators. This was confirmed on the power system diagram of CBM Yangon Branch building. As a result, it became clear that the capacity of private generator to provide alternative power during the power failure is insufficient. Emergency power supply to the data center room can therefore support only a part of the IT equipment. As the uninterruptible power system (UPS) power backup for IT equipment can only be supported for the first 30 minutes of power failure, the IT system will have to be shut down manually if the power failure time exceeds 30 minutes.

Although two air conditioners are installed in the data center room, failure of one of them, for some reason, will require the remaining one unit to maintain appropriate temperature. Each of the air-conditioner, units should therefore be sufficient to sustain the new ICT systems to be developed, not to have them fail in a high temperature and high humidity environment beyond specification.

There is no seismic device or earthquake-resistant device structure in Yangon branch building. Myanmar is situated between two continental plates -- the Indian plate and the Australian plate -- which will likely cause frequent earthquakes. IT equipment will likely breakdown if and when an earthquake occurs.

Physical security at the entrance of Yangon central bank building is found to be insufficient. Only the entrance of the data center room is locked. The security level is insufficient to install a network for the new ICT systems with high confidentiality.



Source: Prepared by the Survey Team

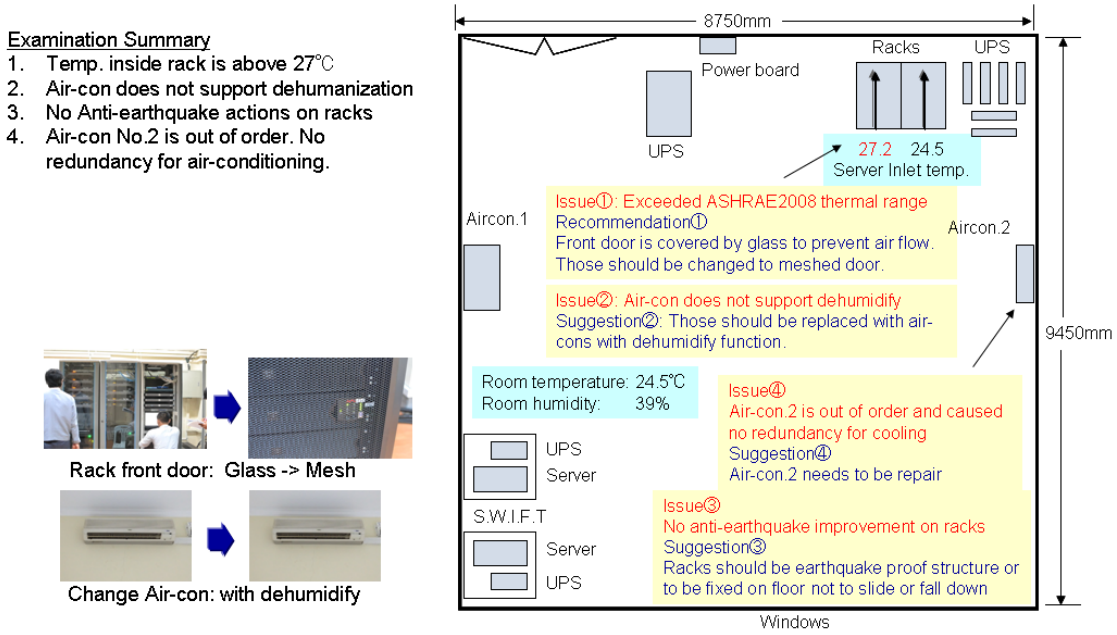
Figure AT1-6 Findings from Survey in Yangon Branch Machine Room

[Nay Pyi Taw Head Office]
The power system diagram of Nay Pyi Taw head office building shows a data center room with a generator which will work during a power outage. The generator will start within 30 minutes to provide power for ICT equipment, and also to refill the UPS.

Although two air-cooled air conditioners are installed in the data center room, one of them has broken and stopped running. If the other air conditioner stops running for some reason, ICT equipment could possibly breakdown due to high temperature and high humidity environment.

Nay Pyi Taw head office building is not an earthquake-resistant building and has no earthquake-resistant structure. Myanmar is situated between two continental plates — Indian plate and Australia plate — which will likely cause frequent earthquakes. ICT equipment is likely to be in danger if and when an earthquake occurs.

Physical security at the entrance of Nay Pyi Taw head office building is found to be insufficient. Only the entrance of the data center room is locked. The security level is insufficient to install a network for the new ICT systems with high confidentiality.



Source: Prepared by the Survey Team

Figure AT1-7 Findings from Survey in Nay Pyi Taw Head Office Machine Room

[Mandalay branch]
The system will be introduced in the new branch office building which is due to be completed during 2015. As of July 2013, the construction plan was awaiting institutional approval, after which budget was to be secured during October 2013. Having no physical arrangement, the Survey Team has requested CBM to take into consideration the issues found in other two hubs so as to avoid any predictable problems.

3. Issues on the Current System

(1) Business Operations and Applications

CBM manually executes most operations of fund settlement and T-bond/bill settlement CBM currently used operational systems limited to the following systems:

[EFT (Electric Funds Transfer System)]
The system is a messaging tool through the Banking Network for fund settlement. It connects CBM and head offices (H/O) of 20 FIs (19 under CBM Yangon, and 1 under CBM Mandalay jurisdiction), and transmits messages for fund transfer between current accounts at CBM. There are three types of remittance subject to EFT: account transfer, T-bond/bill selling/buying, and crediting/debiting. EFT is also used for transmitting various report submitted by FIs to CBM.

EFT is not frequently used because it is a mere message exchange system that does not manage balance and a separate slip for booking ledgers is still necessary. The new ICT systems will be able to substitute all the EFT functions except for its reporting function, however, the treatment of EFT after the new ICT systems starts operating has not been determined yet. Even if CBM continues to use EFT, for the new ICT systems will not interlock with EFT.

[Central Accounting System]
The system is for calculation and preparation of various subsidiary ledgers and general ledger. Transactions data is input manually into the Central Accounting System. The International

Monetary Fund instructs to re-establish the Central Accounting System in accordance with IFRS but no concrete plan has been set. There are issues on how to interlock the current system with other systems to be established in future and to automate booking ledgers.

[Other systems]
There are other PC systems, such as those for calculating amount of bids that are accepted at FX auction used by Financial Market Department (FMD). There are also systems used for calculating interest payment amount at T-bond/bill interest payment/redemption as well as for preparing slips. However, none of the systems interlocks with the Central Accounting system.

(2) Infrastructure

With the current system installed in a machine room inside the CBM Yangon branch building, the physical security and continued operation of the system is a concern. In addition, preparedness for equipment maintenance in Myanmar is limited when compared with the other countries. It usually takes longer time for equipment supplier to respond to equipment failure.

With regards to system operation, IT-skilled human resource is limited in number in Myanmar. With increasing operational personnel, the cost burden on CBM is also increasing. Therefore, system infrastructure which can reduce the load of operation work through a centralized management work is needed. In addition, security of scalability that allows for expected expansion in future is also essential.

Regarding the OA environment, high security level will be achieved through print control and thin client environment. However, it will be difficult to see the operational efficiency of OA environment as the number of machines distributed to CBM staff is still low.

4. Maintenance and Management of Current System

There is no regular maintenance for the current OA system. When the system components of current OA system are broken, they are replaced with new parts by vendors. There is no specific institutional arrangement for maintenance of the current OA system. There is no outsourcing agreement with the vendors and therefore faulty parts are replaced in each of the cases.

At the time of survey, operation and maintenance arrangement was yet to be made between CBM and a Japanese company who donated the OA system. Such being the case it was the Japanese vendor who was bearing the cost for any repair and replacement of the parts and equipment.

The annual cost for maintenance and repair in CBM is about MMK 1 billion in total, and the annual cost for ICT maintenance is also included in this amount. (c.f. “Table 3 Income Statement as of 31 March 2012”) The percentage of ICT maintenance cost in maintenance and repair in CBM is not clear, however, it is assumed that its portion is limited in accordance with the comments of CBM staffs and the number of ICT equipment currently installed.

5. Operation of the Current System

The following is the system management tasks done in current OA system:

- Daily System check before service starting time
- Weekly rebooting system
- System shutdown before long term vacation

- System monitoring

These operations are supported by some engineers from a local vendor who are stationed in CBM office during the business hours. This local vendor conducts on-site operations in cooperation with the Japanese company that introduced the OA system. Operation status of the OA system is being monitored by the Japanese company and reported to CBM by email together with relevant technical information on weekly basis. Response to CBM enquiries is also done through email communications.

6. Status of ICT System Introduction at Commercial Banks

Many of the commercial banks in Myanmar are about to introduce ICT systems for settlement and accounting. This has been enabling the banks to offer cash card service to their customers (through the usage of ATM provided by MPU).[16] On the other hand, State owned banks and small sized private banks are yet to introduce such modern ICT system. The only ICT systems that are existent in these banks are simple accounting database system. As of August 2013, Myamna Foreign Trade Bank is said to be considering the introduction of a modern ICT system, which will be the first of the cases with the state owned banks.

ICT systems that are being introduced in many of the private banks are not interconnected online. Consideration for connection is seen to be under way.

[16] First of the cases of major ICT system introduction is the case of Ayeyarwardy Bank in November 2011 (according to the ICT Department of the Bank)

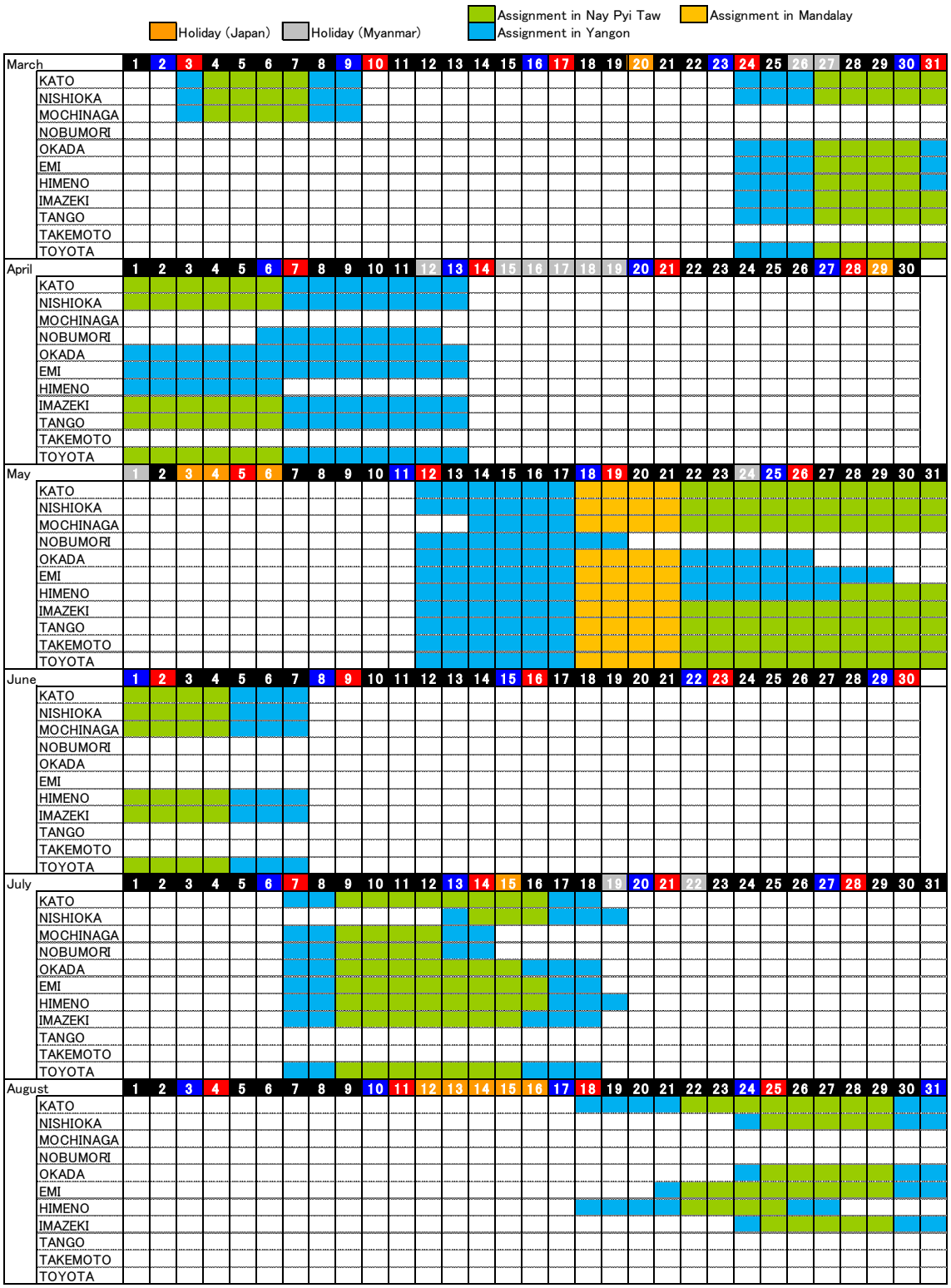
Attachment 2 Survey Team Members

Survey Team Members

	Name	Position	Affiliation
1	Mr OSHIKIRI, Koji	Team Leader	Director, Public Governance and Financial Management Division, Industrial Development and Public Policy Department, Japan International Cooperation Agency
2	Mr TSUJI, Kensuke	Planning and Management	Deputy Director, Public Governance and Financial Management Division, Industrial Development and Public Policy Department, Japan International Cooperation Agency
3	Mr KATO, Yoshihiko	Project Manager	Chief Project Manager, International Project Center, Mitsubishi Research Institute, Inc.
4	Mr NISHIOKA, Hiroshi	Procurement Planning 1 / Cost Estimation	Research Director, Social ICT Solutions Division, Mitsubishi Research Institute, Inc.
5	Mr MOCHINAGA, Dai	Procurement Planning 2 / Cost Estimation	Researcher, International Project Center, Mitsubishi Research Institute, Inc.
6	Mr NOBUMORI, Takehiro	Central Banking Business Planning 1	Director, Promontory Financial Group Global Services Japan, LLC
7	Ms OKADA, Hitomi	Central Banking Business Planning 2	Associate, Promontory Financial Group Global Services Japan, LLC
8	Mr EMI, Akihiro	Applications Design 1 / Cost Estimation	Managing Director, Promontory Financial Group Global Services Japan, LLC
9	Mr HIMENO, Takayuki	Applications Design 2 / Cost Estimation	Researcher, Social ICT Solutions Division, Mitsubishi Research Institute, Inc.
10	Mr IMAZEKI, Toshiyuki	IT Equipment Design and Planning / Cost Estimation	IT Architect, SW IT Architects, SW Client Technical Professionals, IBM Software Group, IBM Japan, Ltd. Mitsubishi Research Institute, Inc.
11	Mr TANGO, Satoru	Telecommunications Facility Design and Planning 1 / Cost Estimation	Technical Leader of Green and Beyond, Carbon Counselor, IT Solutions Data Center, Global Technology Services, IBM Japan, Ltd. Mitsubishi Research Institute, Inc.
12	Mr TAKEMOTO, Takeshi	Telecommunications Facility Design and Planning 2 / Cost Estimation	Advisory IT Specialist, Integrated Communication Service #1 ITS Delivery, IBM Japan, Ltd. Mitsubishi Research Institute, Inc.
13	Mr TOYOTA, Shigenori	OA Environment Design and Planning /Cost Estimation	IT Architect, WorkPlace Services #2, ITS Delivery, IBM, Japan, Ltd. Mitsubishi Research Institute, Inc.

Attachment 3 Survey Timings

Survey Timings



Attachment 4 Counterparts Lists

Counterparts Lists

1. Central Bank of Myanmar

Name	Position and Title
U Than Nyein	Governor (Former)
U Set Aung	Deputy Governor
Daw Khin Saw Oo	Deputy Governor
Dr Daw Sandar Oo	Director General, Monetary Management
U Maung Maung	Director General, Financial Stability
U Ye' Mint	Director General, Planning and Currency
Mr Masaru Tanaka	IMF General Advisor
(1) Governor Office	
U Barat Singh	DDG, Head of Governor Office
U Than Linn Aung	
(2) Administration & IT Department	
U Aung Aung	Deputy Director General, Head of Department
U Myo Min	Director
U Htin Kyaw Thein	Deputy Director
U Sein Htun	Deputy Director
Daw Khin Nwe Aung	Executive Engineer
U Soe Hlaing	
Daw May Thu Win	
Daw Nilar Htwe	
Daw Aye Aye Myo	
U Htay Hlaing	
Daw Khin Oo Khin	
U Kyaw Zeya	
Daw Yin New Mon	
Daw Hla Hla Myo	
Daw Thin Su Sandi	
(3) Financial Institutions Supervision Department	
U Thein Zaw	Deputy Director General, Head of Department
U Ye Aung	Director
U Win Htein Min	Deputy Director
Tin Nyo Tun	Deputy Director
Daw Kyi Kyi Wai	
Daw May Thandar Win	
(4) Financial Market Department	
Daw Nwe Ni Tun	Deputy Director
Daw Su Su New	Assistant Director
Daw Thu Zar Win	
Daw Phyo Phyo Ei	

Name	Position and Title
(5) Policy Research, International Relations & Training Department	
Daw Aye Aye Maw	Assistant Director
(6) Financial, Information, Inspection & Survey Department	
U Aung Kyaw Than	Deputy Director General, Head of Department
U Ye Aung	Director
Daw Kyaw Min Oo	Deputy Director
(7) Currency Management Department	
U Kyaw Win Tin	Deputy Director General, Head of Department
Daw Myint Myint Than	Director
Daw San San Myint	Assistant Director
(8) Foreign Exchange Management Department	
U Min Han Soe	Director
(9) Payment & Settlement System Department	
Daw Myint Myint Kyi	Director
Daw Khin Sandar	Deputy Director
Daw Kyi Moe Moe Aye	Assistant Director
Daw Josephine Joe	Assistant Director
Daw May Thoung Htike Oo	Assistant Director
(10) Internal Audit Department	
Daw Thida Myo Aung	Deputy Director General, Head of Department
Daw Win Win San	Director
Daw May Khine Win	Deputy Director
(11) Monetary Policy Affairs Department	
Daw Khine Shwe War	Director
Myint Myint Kyaing	Assistant Director
U Soe Min Tan	
Daw Thin Thin Myo	
(12) Yangon Branch	
U Win Thaw	Deputy Director General Yangon Branch, Head of PSSD and FIISD
(13) Mandalay Branch	
U Anug Kyaw Htoo	Director, Administration Departmnent
Daw Khine Soe Thet	Assistant Director, Administration Department
U Aung Phone Myent	Assistant Director, Financial, Information, Inspection & Survey Department
U Aung Soe Moe	Administration Department
Daw Theing Htwe	Payment and Settlement System Department
Daw Moh Moh	Payment and Settlement System Department
(14) Board of Secretary	
U Win Hteik	Board Secretary

2. Ministry of Finance

U Hla Myint Aung	Chair of the ICT Committee, General Manager MEB

3. Myanma Economic Bank

Daw Yin Yin Mya	Managing Director
U Kyaw Kyaw	General Manager
Daw Than Lwin Oo	General Manager
U Thu Ra	Assistant General Manager, Research Training and Public Relations Department

4. Myanma Posts and Telecommunications

U Htay Hla	Executive Engineer Mandalay Division
U Thein Hoke	Deputy General Manager, Nay Pyi Taw
U Tin Tun Aung	
U Kyaw Nyo Kant	

5. Myanmar Payment Union

U Pe Maw Thin	Deputy Manager
U Aung Toe Win	Software Engineer
U Lin Myat Maung	Network Engineer

6. The World Bank

Ms Sau-Ngan Wong	Senior Counsel, Financial & Private Sector, Legal Vice Presidency
Ms Nang Htay Htay	Financial Sector Specialist

7. IMF

Ms Yu Ching Wong	Resident Representative

8. ADB

Mr Putu M. Kamayana	Head, Extended Mission in Myanmar

9. GIZ

Mr Thomas Foerch	Head of Project

10. SWIFT

Mr Michael Moon	Director, Payment Markets Asia Pacific
Ms Stella Lim	Commercial Director, New Customers Asia Pacific
Mr Usama DeLorenzo	ASEAN Director, 2015 Initiatives, Markets & Initiatives

11. Embassy of Japan

Mr YAMAMOTO, Kazuhiro	Third Secretary (ICT, Broadcasting, Postal Service & IT)

12. JICA Myanmar Office

Mr TANAKA, Masahiko	Chief Representative
Mr INADA, Kyosuke	Senior Representative
Mr WARIISHI, Shunsuke	Project Formulation Adviser (Economic Development)
Daw Mi Mi Cho	Program Officer

13. JETRO Yangon

Mr KOBAYASHI, Hiroki	Director
Mr YAMAGUCHI, Tetsu	Senior Advisor

14. JICA Expert

Mr UENO, Shuhei	JICA Senior Expert to Myanmar Customs Department

Attachment 5 Minutes of Discussions

(1) Minutes of Discussions signed on 7 March 2013

Minutes of Discussions

on the Preparatory Survey

for the Project for Development of ICT System for Central Banking

In response to the request from the Republic of the Union of Myanmar (hereinafter referred to as "Myanmar"), the Japan International Cooperation Agency (hereinafter referred to as "JICA"), in consultation with the Government of Japan, decided to conduct a Preparatory Survey for the Project for Development of ICT System for Central Banking (hereinafter referred to as " the Project").

JICA sent to Myanmar, the Preparatory Survey Team (hereafter referred to as "the Team"), headed by Mr. Koji Oshikiri, Director, Public Governance and Financial Management Division, Industrial Development and Public Policy Department, JICA.

The Team held discussions with the officials concerned of the Government of Myanmar and conducted a field survey.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets.

The Team will proceed to further work and prepare the Preparatory Survey Report.

Nay Pyi Taw, March 7, 2013

7.3.2013

Mr. Koji Oshikiri	Mr. Aung Aung
Leader	Deputy Director General
Preparatory Survey Team	Head of Department
Japan International Cooperation Agency	Administration & IT Department
Japan	Central Bank of Myanmar
	Ministry of Finance and Revenue
	Republic of the Union of Myanmar

ATTACHMENT

1. Objective of the Project

The objective of the Project is to modernize the operation of the Central Bank of Myanmar by establishing Central Bank Core System based on the technology and experience of establishing and operating Japan's central bank core system.

2. Project Site

The Project site is Nay Pyi Taw, Yangon and Mandalay as the venue for development of the System.

3. Responsible and Implementing Agency

3-1. The Responsible Agency is the Ministry of Finance and Revenue (MOFR).

3-2. The Implementing Agency is the Central Bank of Myanmar (CBM).

4. Items requested by the Myanmar side as a scope of the Project

(1) Software Development

1) Software development of the following systems based on the technology and experience of establishing and operating Japan's central bank core system:
   - Management of Funds (current account management)
   - Management of Government Bonds (registry management)
   - Mechanized Clearing House

2) Operation of system tests/acceptance tests, training for system users in the central bank, state owned banks and private banks, and design of technical support and system maintenance.

(2) Hardware Development

Procurement of hardware, operating system, middle ware and any other equipment which are necessary for properly operating software mentioned above.

Referring to Article 1 above, the Myanmar side showed its expectation that the System is to be developed with the same settlement application architecture, settlement component structure and software development approach of Japan's central core bank system, namely, "BOJ-NET" as well as global–standard based operational model, in order to develop the System with equivalent scheme of settlement of Japan's BOJ-NET within their expected timeframe.

In order to materialize this issue, the CBM, as an implementing agency, is expecting single source method for the selection of contractor to conduct software development in Myanmar and is asking for approval from relevant ministries and will submit the result to JICA.

5. Undertakings taken by the Myanmar side

The Myanmar side confirmed that Myanmar side will finance and have responsibility to realize the following components that will not be covered by a Japanese Grant Aid but are essential for proper and effective operation of the new system:

- Any change in technical specifications after the detail design ;
- Development of systems of agencies other than CBM;
- Modification of the existing systems including those outside CBM to be connected to the new system;
- Transition from the legacy system to the new system, including transfer of data and information;
- Any change of the system after the system transfer, due to changes of system environment such as the upgrade of O/S and middle ware;
- Any change (upgrade and expansion) of the software after the system transfer;
- Any replacement of the hardware after the system transfer;
- System maintenance and operation after the system transfer;
- Construction/Upgrading of datacenter room(s);
- Providing the computer terminals for any system users including system users of state owned banks and private banks;
- Technical design for security, firing prevention, WAN (Wide Area Network), and LAN;
- Necessary premises such as firing prevention and air condition;
- Update of data such as the user list ;
- User support for state owned banks and private banks;

- Creating a business manual in CBM which stipulates business operation using the new system;
- Printing and distribution of documents for state owned banks and private banks;
- Connection fees of the installed communication lines;
- Arrangements and agreements with participants of Clearinghouse or relevant organizations, to make nationally uniform standards of checks;
- Providing a user training facility in CBM for operation of the new system; and
- Distributing and setting up equipment necessary for participants of Clearinghouse.

The Myanmar side will prepare datacenter room(s) with necessary equipment which would be necessary environment for operating the System properly, in a timely manner.

The Team will design the operation and maintenance which is to be borne by the Myanmar side after official release of the System and estimate its annual cost so that the Myanmar side can execute their responsibility to secure necessary budget for operation and maintenance.

6. Japan's Grant Aid Scheme

6-1. The Myanmar side understands the Japan's Grant Aid Scheme explained by the Team, as described in Annex 1 and Annex 2.

6-2. The Myanmar side will take the necessary measures, as described in Annex 3, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented in addition to Myanmar undertakings mentioned in the Article 5 above.

7. Function of Working Group

The Myanmar side agreed that the Working Group consisting of staff of CBM and other relevant organizations will work together with the Team during course of the review of operations and the design of the system so that the Myanmar side can make necessary preparatory work including development of relevant rules and regulations to properly introduce and operate the system.

For smooth implementation of the survey, the Myanmar side also agreed to deal with necessary work and provide necessary information in a timely manner in accordance with the Inception Report which was explained by the Team.

8. Schedule of the Survey

Both sides confirmed about the schedule of the Survey as stipulated in Annex 4.

8-1. The Team will proceed to further studies in Myanmar until August 2013. The consultants visit Myanmar again to share the progress and make further discussions on the operations and the design of the system with the WG and relevant agencies.

8-2. JICA will prepare the draft report in English and dispatch a mission in order to explain its contents in August 2013.

8-3. The both sides confirmed that the Team will share with CBM tentative cost estimation and other relevant information of the Project before the end of August, 2013. In addition, both sides confirmed that they will make mutual consultation on the respective draft report for smooth appraisal process in each country.

8-4. In case that the contents of the report are accepted in principle by the Government of Japan and Myanmar, JICA will complete the final report and send it to the Government of Myanmar by October 2013.

8-5. The both sides will take necessary preparatory measures for signing of E/N and G/A as soon as possible, which would be the important factor for developing the System on scheduled timeline.

9. Other relevant issues

9-1. It is inevitable to facilitate preparatory work, such as reviewing the legal framework and CBM's business processes and procedures in line with the System. The Myanmar side takes continuous efforts so that operations of CBM will be effectively made using the System after its installation.

9-2. In order to facilitate activities mentioned above, the Myanmar side is considering proposing request on technical cooperation to the Government of Japan. With regard to the technical cooperation, the Myanmar side showed its expectation to the technical support utilizing expertize of the Bank of Japan. The Team understood its importance and necessity and suggested that the Myanmar side proceed with further consideration for submission of official request to the Government of Japan at its earliest convenience so that the Japanese side can appraise it in a timely manner. As for the contents and concrete needs on this technical cooperation, the CBM will consult with the Team and other Japanese relevant agencies.

Annex 1. Japan's Grant Aid

Annex 2. Flow Chart of Japan's Grant Aid Procedures

Annex 3. Major Undertakings to be taken by the both sides

Annex 4. Tentative Schedule during the Preparatory Survey until September, 2013

Annex-1 Japan's Grant Aid

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GOJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures:

・Preparatory Survey

- The Survey conducted by JICA

・Appraisal &Approval

-Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet

・Authority for Determining Implementation

-The Notes exchanged between the GOJ and a recipient country

・Grant Agreement (hereinafter referred to as "the G/A")

-Agreement concluded between JICA and a recipient country

・Implementation

-Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of a outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-

reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be singed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary

measures as Annex 3.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

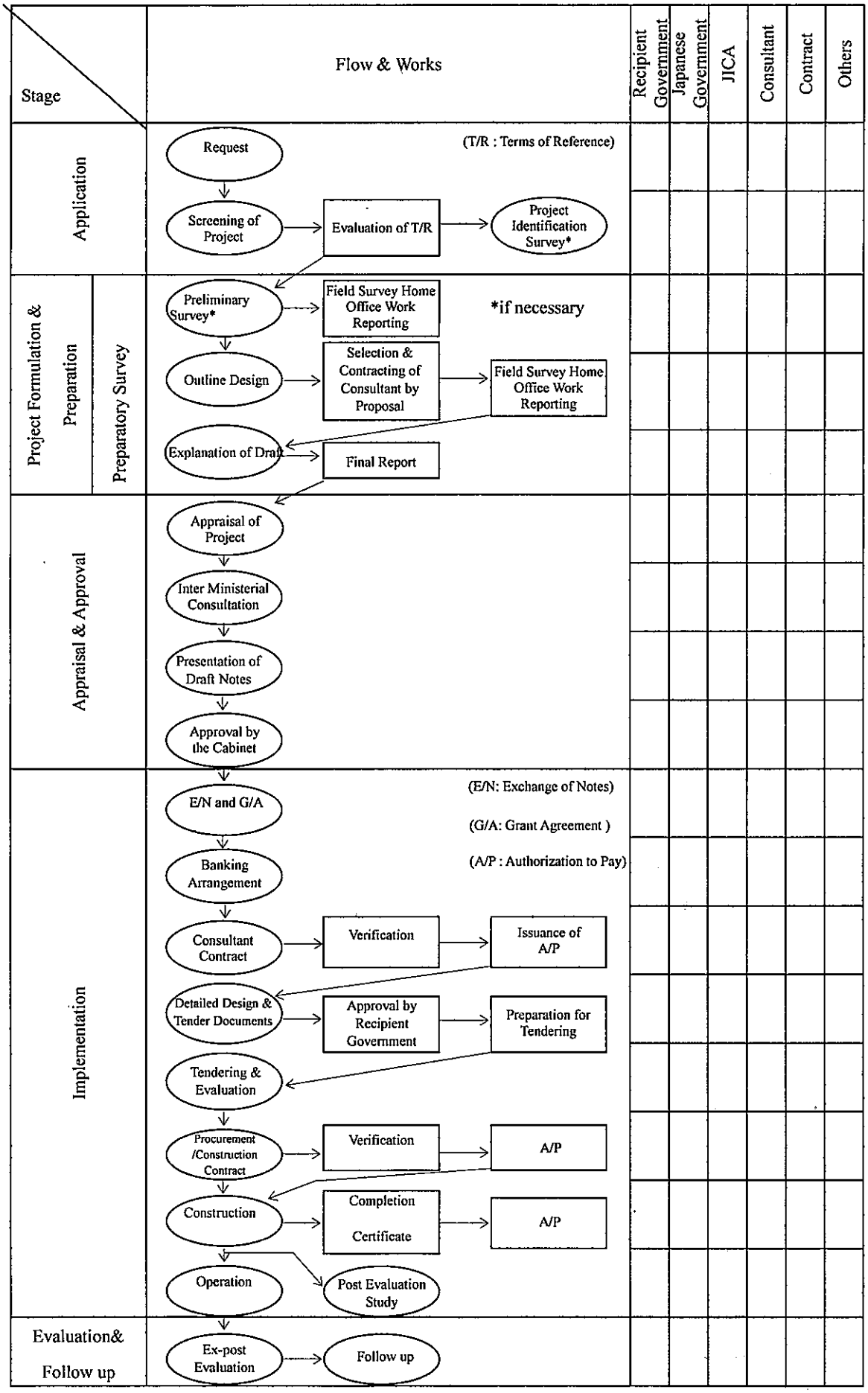
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

Annex 2

FLOW CHART OF JAPAN's GRANT AID PROCEDURES



Annex 3

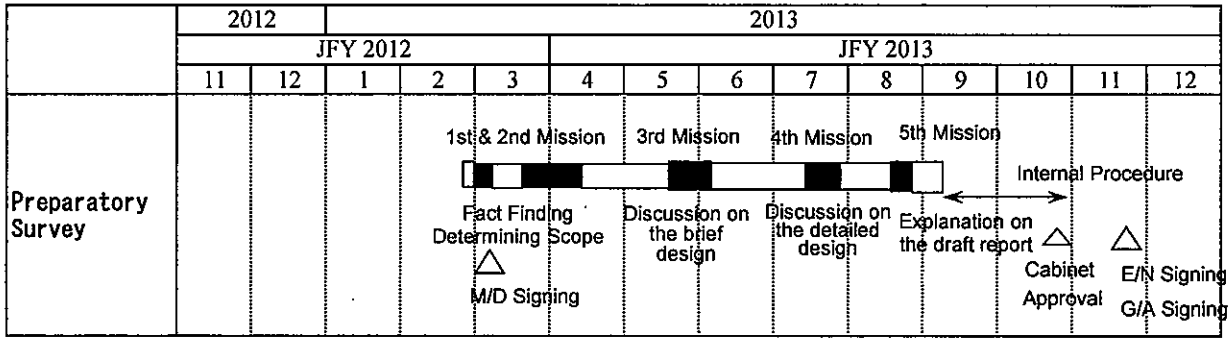
Major undertakings to be taken by the both sides

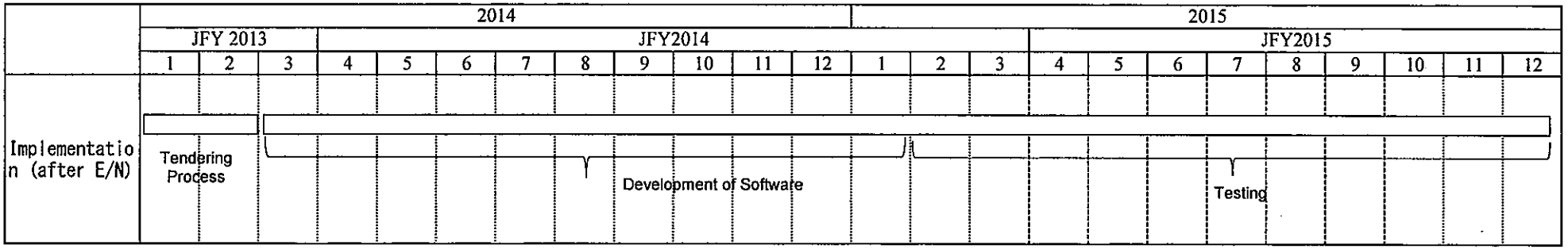
No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To ensure prompt unloading and customs clearance of the products at ports of disembarkation in the recipient country and to assist internal transportation of the products		
	1) Marine (Air) transportation of the Products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the Products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
2	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted		●
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and services such facilitation and arrangements as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
4	To ensure that the facilities and equipment be maintained and used properly and effectively under the Project		●
5	To bear the expenses, other than those covered by the Grant, necessary for the implementation of the Project such as preparation of infrastructures		●
6	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commissions		●
7	To give due environmental and social consideration in the implementation of the Project		●

(B/A : Banking Arrangement, A/P : Authorization to Pay)

Annex 4 Tentative Schedule

Project for Development of ICT System for Central Banking





▬▬ ···field survey

(2) Minutes of Discussions signed on 1 October 2013

Minutes of Discussions
on the Preparatory Survey
for the Project for Development of ICT System for Central Banking
(Explanation on the Draft Report)

From March to July, 2013, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey team on the Project for the "Development of ICT System for Central Banking" (hereinafter referred to as "the Project") several times and through discussions, field survey and technical examination in Japan, JICA prepared a draft summary report of the Preparatory Survey.

In order to explain and to consult with concerned officials of the Government of Myanmar on the components of the draft report of the Project, JICA sent to Myanmar the Preparatory Survey Team (hereinafter referred to as "the Team"), which is headed by Mr. Koji Oshikiri, Director, Public Governance and Financial Management Division, Industrial Development and Public Policy Department, JICA, from August 26 to 30, 2013.

As a result of discussions, both sides confirmed the main items described on the attached sheets.

Nay Pyi Taw, October 1, 2013

Mr. Masahiko Tanaka	Mr. Set Aung
Chief Representative	Deputy Governor
Myanmar Office	Central Bank of Myanmar
Japan International Cooperation Agency	Republic of the Union of Myanmar
Japan	

ATTACHMENT

1. Components of the Draft Report

   The Central Bank of Myanmar (hereinafter referred to as "CBM") agreed to the components of the Draft Summary Report (as shown in Annex 1) that was explained by the Team.

2. Confidentiality of the Specification of the Equipment and the Project Cost Estimate

2-1. Confidentiality of the Specification of the Equipment

Both sides agreed that the draft specification is confidential and should never be duplicated or released to any outside parties.

2-2. Confidentiality of the Project Cost Estimate

Both sides agreed that the Project cost estimate is confidential and should never be duplicated or released to any outside parties. The Myanmar side understood that the Project cost estimate is not final and is subject to change during course of the appraisal procedure of the Government of Japan.

3. Undertakings by the Myanmar side

Both sides reconfirmed that the Myanmar side shall take necessary measures to allocate necessary budget for undertakings which was described in the Draft Summary Report to be conducted in a timely manner. JICA side also reconfirmed that, as agreed upon, it understands the budgetary constraint of CBM and will take necessary measures to reduce the operations and maintenance costs for at least first 1-2 years of its operation after the completion of the development.

4. Japan's Grant Aid Scheme

4-1. The Myanmar side understands the Japan's Grant Aid Scheme explained by the Team, as described in Annex 2 and Annex 3.

4-2. The Myanmar side will take the necessary measures, as described in Annex 4, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented in addition to Myanmar undertakings mentioned in the Article 3 above.

5. Establishment of implementation structure

The Myanmar side will form an appropriate implementation structure for operating and maintaining the system which is composed of experts/officers concerned in CBM in accordance with the proposed counterpart arrangement for the Project as described in 4.6 of the Draft Summary Report (Annex 1). The proposed structure is expected to be the leading body which will take the initiative to implement the Project including procurement, consideration/examination of Detail Design of the ICT system and to operate and maintain after the installment. This team would also be the core body for actively implement the activities of the planned Technical Cooperation Project including developing necessary rules (e.g. laws, regulations, circulars, guidelines, etc.) and business manuals.

6. Japanese assistance for the modernization of financial sector in Myanmar

Both sides confirmed that JICA, in accordance with the commitment of Government of Japan for the comprehensive assistance for the modernization of financial sectors in Myanmar, continues to elaborate the most appropriate scope of the funds payment and securities settlement system in line with "Principles for financial market infrastructures" by BIS/CPSS and IOSCO. The ICT system by Japan's Grant Aid will accommodate wider category and type of securities to be issued in the future besides the existing treasury bonds/ bills as long as such securities can be settled in the ICT system without changes in the defined specifications.

Both sides also confirmed the importance of appropriate linkage between the ICT system by Japan's Grant Aid and the planned stock exchange systems to curtail the systemic risk, which will be further considered among Japanese stakeholders and its progress/results will be consulted with the relevant authorities in Myanmar.

7. Schedule

The Result of the Survey will be submitted to the Japanese cabinet for its approval in October, 2013.

The Completion Report of the Survey will be finalized after the approval from the Japanese cabinet and submitted to CBM.

Both sides agreed to make necessary procedures for the Exchange of Notes and the Grant Agreement which would be signed around November, 2013.

8. JICA Technical Cooperation Project

Both sides confirmed a) and b) below, subject to detailed discussion of the scope of the planned JICA Technical Cooperation Project and the subsequent approval by higher authorities on both sides as necessary.

a) JICA will implement technical cooperation project (around 3 to 5years) to enhance capacity of CBM to develop and utilize ICT system for central banking.

b) The following issues will be included in the technical cooperation project;

(1) Technical support to enhance capacity of CBM to enable CBM to utilize their own capacity in operating and maintaining the ICT system until the end of 2017 (the first two years after the installation), taking into account the budgetary constraints before realizing sufficient revenue from banks using the ICT system and from any other business as a central bank,

(2) Purchase, installation and relevant technical support fee for introducing application software for General Ledger to enhance capacity of CBM, on condition that the regulatory framework for accounting and business flows are ensured to be in accordance with international standard, and

(3) Technical support to consider appropriate measures for realizing "digital leapfrogging" toward the modernization of payment and settlement mechanism in Myanmar including feasibility assessment for introducing Automated Clearing House with truncated imaged cheques system.

Annex 1 Draft Summary Report

Annex 2 Japan's Grant Aid

Annex 3 Flow Chart of Japan's Grant Aid Procedures

Annex 4 Major Undertakings to be taken by the both sides

Annex 1

Republic of the Union of Myanmar
Central Bank of Myanmar

Preparatory Survey on the Project for the Development of ICT System for Central Banking

Draft Summary Report

September 2013

Japan International Cooperation Agency (JICA)

Mitsubishi Research Institute, Inc.
Promontory Financial Group Global Services Japan, LLC

Acronyms

A/C	Account
BOJ	Bank of Japan
BOJ-NET	Bank of Japan Financial Network System
CBM	Central Bank of Myanmar
CBM-NET	Central Bank of Myanmar Financial Network System
CBM-OA	Central Bank of Myanmar Office Automation System
CR	Credit request
DC	Data center
DDG	Deputy Director-General
DG	Director General
DR	Debit request
DVP	Delivery versus payment
EFT	Electric Funds Transfer
E/N	Exchange of Notes
FEMD	Foreign Exchange Management Department (CBM)
FI	Financial institution
FMD	Financial Market Department (CBM)
FX	Foreign exchange
G/A	Grant Agreement
H/O	Head Office
ICAS	Imaged Cheque Clearing and Archive System
ICT	Information Communication Technology
ID	Identification
IMF	International Monetary Fund
JICA	Japan International Cooperation Agency
JPY	Japanese Yen (currency)
LAN	Local area network
LTV	Loan-to-value
MCH	Mechanized Clearing House
MDY	Mandalay (CBM Mandalay Branch)
M/D	Minutes of Discussion
MEB	Myanma Economic Bank
MICR	Magnetic ink character recognition
MMK	Myanmar Kyat (currency)
MOF / MOFR	Ministry of Finance / (formerly Ministry of Finance and Revenue)
MPT	Myanma Posts and Telecommunication
MTM	Mark-to-market
NPT	Nay Pyi Taw (CBM Nay Pyi Taw Head Office)
OA	Office automation
O&M	Operation and maintenance
PC	Personal computer
PSSD	Payment and Settlement System Department (CBM)
RTGS	Real-time gross settlement
SGD	Singapore Dollar (currency)
T-bill	Treasury bill
T-Bond	Treasury bond
UPS	Uninterruptible power supply
USD	US Dollar (currency)
WAN	Wide area network
YGN	Yangon (CBM Yangon Branch)

Table of Content

7. Estimation of Outline Project Cost

Appendices:

Attachments:

1. Project Overview

1.1 Summary Information of the Project

The project for the development of ICT system for Central Banking is formulated based on the requested from the Central Bank of Myanmar. The overall goal of the project is to improve the environment for the Central Bank of Myanmar to implement necessary financial policies and measures in a smooth and steady manner. The overview of the project is summarized in the following table.

Table 1 Overview of the Project for the Development of ICT Systems for Central Banking

Item	Description
Overall goal	To improve the environment in the Central Bank of Myanmar so that financial policies and measures may be implemented smoothly and steadily.
Project Purpose	To modernize the operation of the Central Bank of Myanmar for the advancement of financial market and monetary policy by establishing Central Bank Core System based on the technology and experience of Japan's central bank core system.
Output of the Project	Develop an ICT system for CBM based on the technology and experience of Japan's central bank core system. Improved infrastructure and OA environment so that the central bank system may function appropriately.
Requirement	● Software development of the following systems based on the technology and experience of Japan's central bank core system ➢ Fund transfer using RTGS (current account management), which can be easily connectable to electronic transfer, internet and mobile banking applications that may be installed in the very near future. In this case, CBM will make sure to provide detailed information in advance related to what specific application to be installed at what time.) ➢ Management of Treasury Bonds / Bills including DVP function (registry management)[1] ➢ Credit and collateral management ➢ Mechanized Clearing House (which can be easily upgradable to Imaged Cheque Clearing system once required infrastructures are ready) ➢ GL system (either a customized or reputable packaged solution[2])

[1] The category and type of securities to be settled in the future can be extended wider in variety besides the existing Treasury bonds/ bills as long as such securities can be settled in the ICT system without changes in the defined specifications.

[2] GL system is expected to be developed through technical cooperation project provided by JICA

	● Operation of system tests/acceptance tests, training for system users in the central bank, state owned banks and private banks, and design of technical support and system maintenance. ● Hardware Development: Procurement of hardware, operating system, middle ware and any other equipment which are necessary for properly operating software mentioned above.
Target area	Target geographical area is the entire territory of Myanmar. CBM Head Office and branches are located in the following areas. ● Nay Pyi Taw (Head Office of the Central Bank of Myanmar) ● Yangon ● Mandalay
Relevant organizations of recipient country	Responsible Agency: Central Bank of Myanmar (CBM) Implementing Agency: Central Bank of Myanmar (CBM)
Beneficiary	Direct beneficiary : The Central Bank of Myanmar Indirect beneficiary : Commercial banks (State owned banks, Private banks), Banks' customer
Undertakings by the Myanmar side	Software [a] Any change in technical specification after the definition of system requirements; [b] Development of systems of agencies other than CBM; [c] Modification of the existing systems including those outside CBM to be connected to the new system; [d] Transition from the legacy system to the new system, including transfer of data and information; [e] Any change of the system after the system transfer, due to changes of system environment such as the upgrade of OS and middle ware; [f] Any change (upgrade and expansion) of the software after the system transfer; [g] System setting changes for enhancing the system function; [h] Software maintenance costs which may incur after introducing the system; [i] Update of data such as the user list; [j] Cost of process of application for use from the commercial banks; [k] Preparation and distribution of document for the users of commercial banks and the central bank; [l] Development of the central bank's operations manuals with regards to legal requirements. 2) Hardware/Facilities, etc. [m] Construction/Upgrading of a datacenter and a backup datacenter; [n] Necessary facilities on premises such as security against theft, fire protection, electricity supply and air conditioning; [o] Technical design for WAN (Wide Area Network) and LAN (Local Area Network); [p] Providing the computer terminals for any system users including

	system users of state owned banks and private banks; [q] System maintenance and operation after the system transfer; (helpdesk, system monitoring staff, maintenance staff, etc.); [r] Any replacement of the hardware after the system transfer; [s] Changing the setting for enhancing the function of the system; [t] Hardware maintenance after the introduction of the system; [u] User support for state owned banks and private banks; [v] Creating a business manual in CBM which stipulates business operation using the new system; [w] Printing and distribution of documents for state owned banks and private banks; [x] Connection fees of the installed communication lines; [y] Make arrangements and agreements with financial institutions regarding implementation of ICT system in CBM (e.g. with participants of clearing house to make nationally uniform standards of cheques, etc); [z] Providing a user training facility in CBM for operation of the new system, and; [aa] Distributing and setting up equipment necessary for participants of Clearing House.

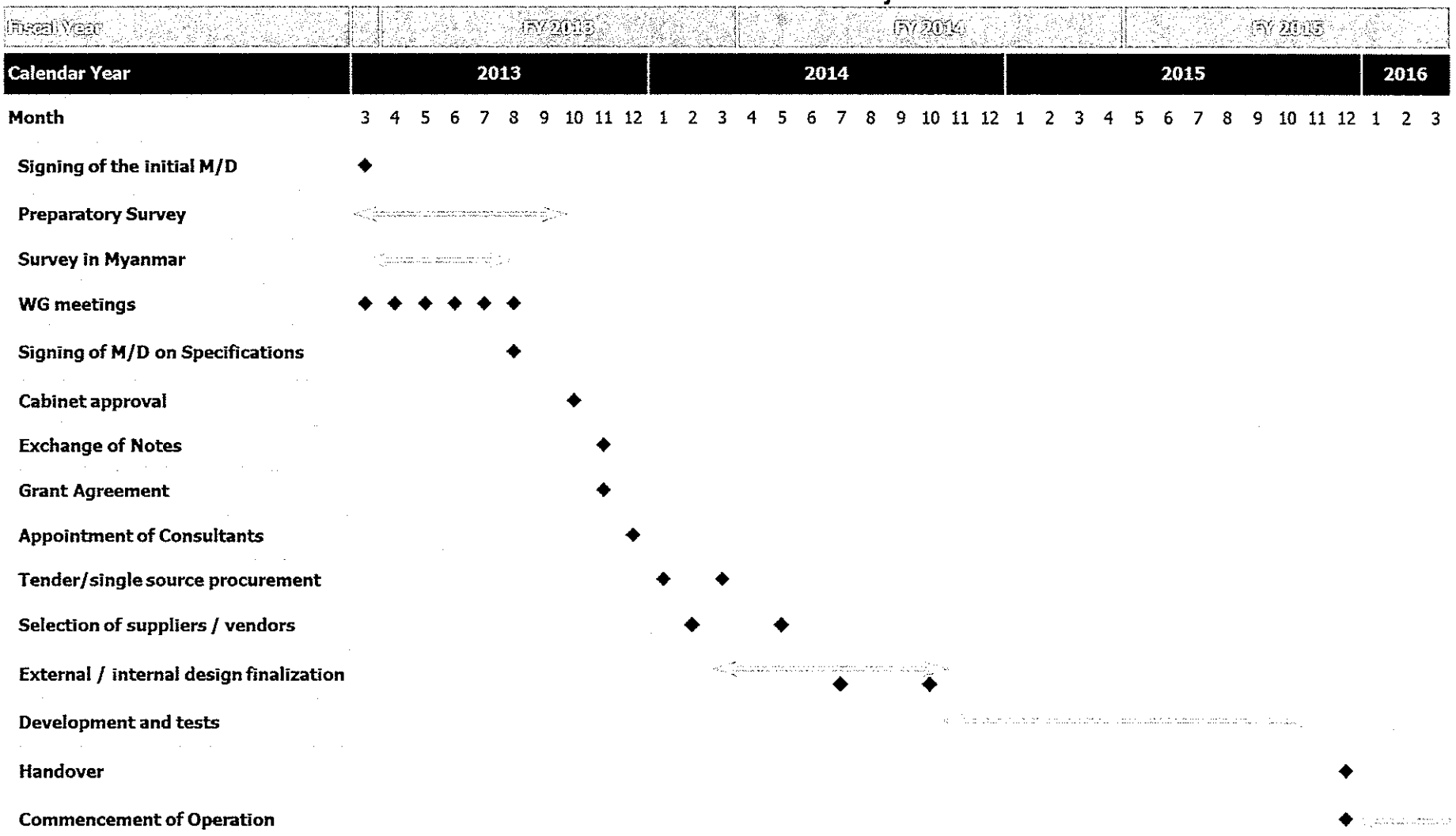
Source: Minutes of Discussion signed between CBM and JICA, March 2013

1.2 Project Timetable

The project started with the signing of the Minutes of Discussion (MD) between CBM and JICA in March2013. Following the MD, the preparatory survey for defining the scope and specification of the systems to be developed is being conducted. The survey will be completed by October 2013, when the Cabinet is scheduled to approve the execution of the project.

Designing and development of the systems will commence in March 2014 and will continue until the end of 2015. After various testing and trainings, the system will be handed over to CBM by the end of year 2015.

Table 2 Overall Timetable of the Project

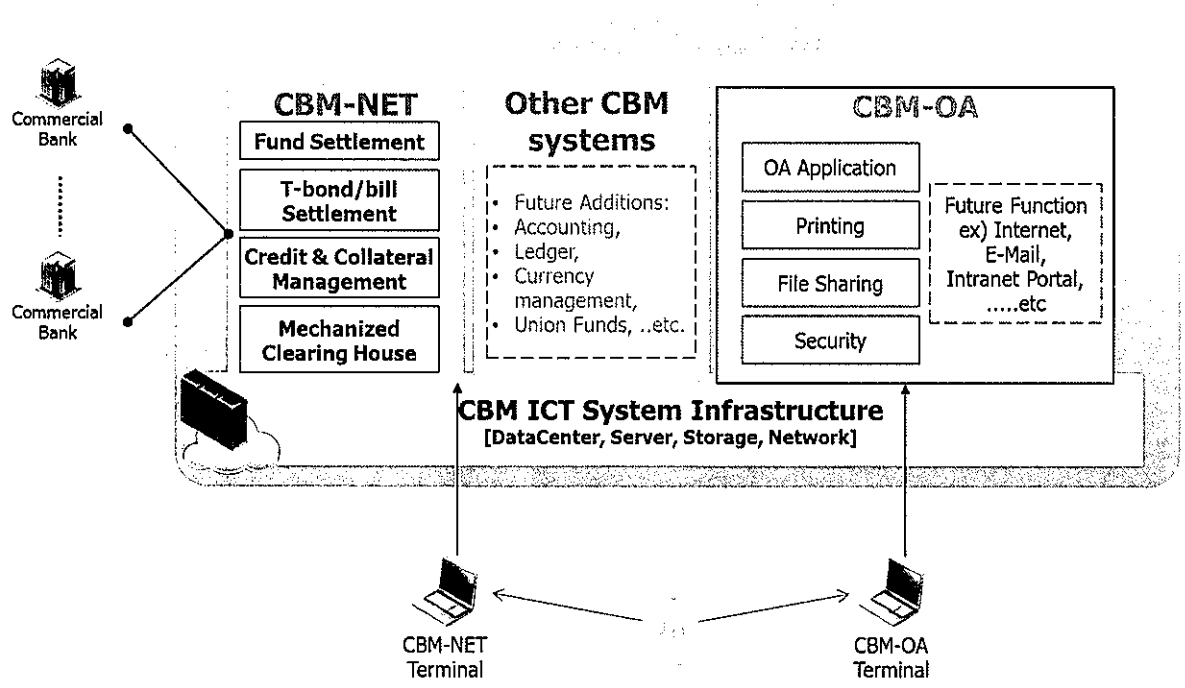


Source: Prepared by the Survey Team

1.3 Overview of the New System

The CBM ICT System consists of "CBM-NET (CBM Financial Network System)", "CBM-OA (CBM Office Automation System)", and other future and existing CBM systems. In this project, CBM-NET and CBM-OA provides new functions on the CBM ICT System infrastructure. The CBM ICT System infrastructure has data center, servers, storages, and network infrastructure. It works with CBM-NET terminal and CBM-OA terminal in CBM and commercial banks in Myanmar.

The CBM-NET provides functions for settlement of funds, Treasury bonds/bills, credit and collateral management, and mechanized clearing house. The CBM-OA provides office automation (OA) application, printing function, file sharing service, and security mechanism.



Source: Prepared by the Survey Team

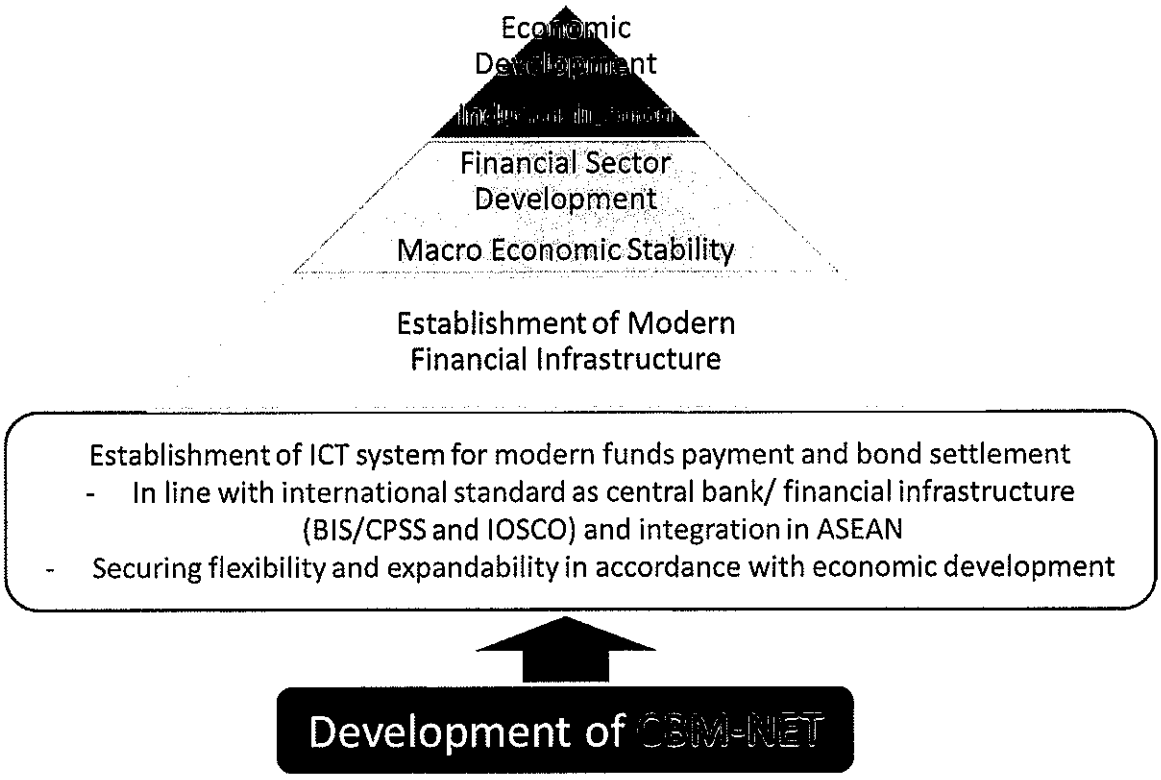
Figure 1 CBM-NET and CBM-OA

CBM ICT System Infrastructure, on which CBM-NET and CBM-OA stand, will offer a base for future expansion of the ICT functions. When an additional system is developed on the system infrastructure, the system resource will be shared and utilized efficiently compared with having these additional system individually developed. CBM-ICT System network provides scalability for additions of new systems in future.

1.4 Purpose of Systemization

The purpose of systemization is to develop a central banking system that will contribute to further development of Myanmar's financial market, thus improving Myanmar's investment climate and promote economic development. The modernization of financial system is necessary to meet socio-economic development, increase in capital demands of domestic companies, activation of foreign investment, and increase and promotion of use of bank by individuals.

Establishing central bank core system based on Japanese technology and experience will bring high efficiency to CBM. It will also improve business transaction of commercial banks handling huge volume of funds and data.



Source: Prepared by the Survey Team

Figure 2 Purposes of Systemization

1.5 Systemization Policy

The ICT System for central banking to be developed in this project will be designed based on the specification and requirements defined in this preparatory survey. The specification of the system is defined after thorough survey of the current condition of central banking operation at CBM and hence to address to the modernization of central banking operation.

A major policy for systemization of central banking in Myanmar is to introduce a system which enables fund and bond / bill management to be conducted in an integrated manner. This policy was set in light of the current function at CBM, where fund settlement and T-bond/bill management are being conducted under the same organization. A rationale for introducing an ICT system based on BOJ-NET design is therefore an ideal proposal for CBM. This is because BOJ-NET is a central banking system in which fund and bond / bill settlement are conducted in an integrated form.

CBM-NET, functioning on CBM ICT System Infrastructure, is a financial settlement system for central banking. The system must therefore be of high availability and high reliability. With the resources constraints that CBM might have, CBM-NET was designed to offer this requirement based on minimum investment and operation & maintenance (O&M) costs.

To this end, CBM-NET is designed with some latest technology features and considerations.

Such will enable the system to be highly available and reliable, but with minimal O&M cost burden for CBM. The following table lists up some of the features applied to CBM-NET.

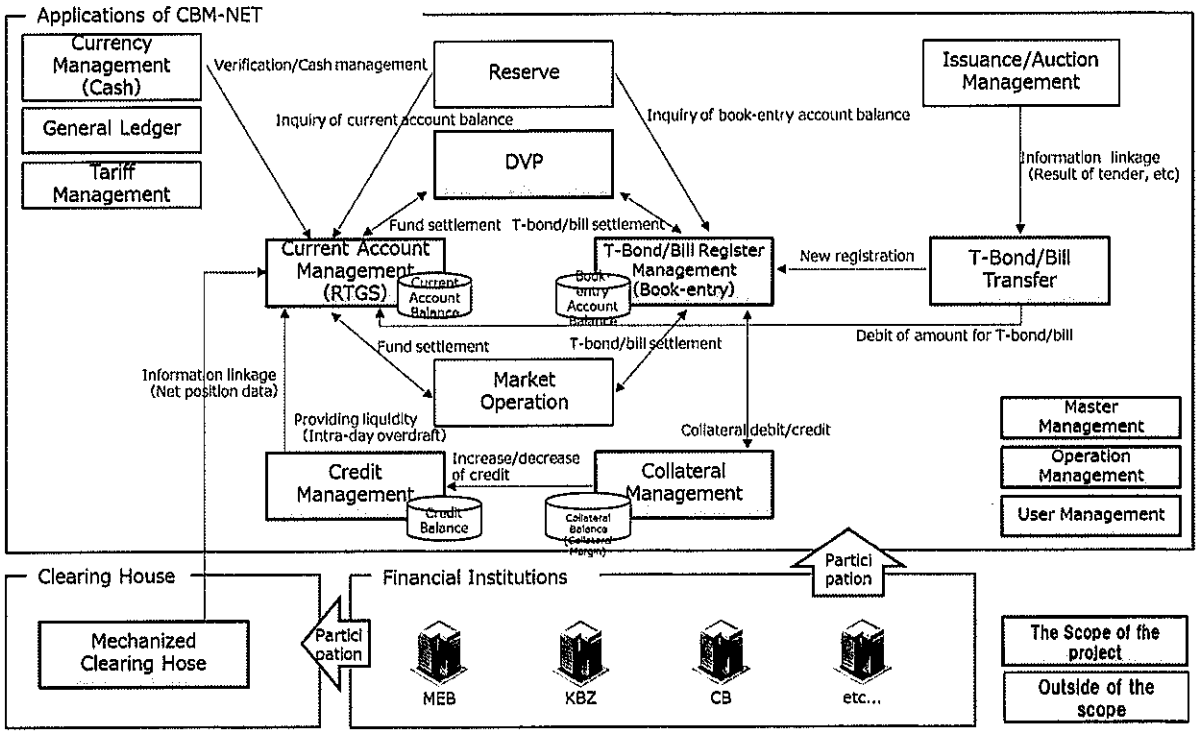
Table 3 Main Features of CBM-NET

Area	Features
Latest applications architecture	SOA, JAVA: ● As comparable with the new BOJ-NET currently being developed, CBM-NET features service oriented architecture (SOA) and JAVA for programming.
	Integrated applications: ● Unlike many of the package applications, three core functions i.e. fund settlement, bond/bill settlement and credit & collateral management are integrated on a single platform. This will enable three functions to be operating in a seamless manner, thus offering more convenient and high quality service for the users. ● For example, CBM-NET will be the sole system in the world, other than BOJ-NET that can offer "auto-credit" service, which requires integral operation of these three core functions. This auto-credit service is expected to be valuable in providing liquidity for effective RTGS operation.
Latest infrastructure architecture	● Latest server hardware machine is introduced under high availability (HA) technology. ● CBM-NET, being a settlement system for central banking, is expected to play an important role underpinning the economic activities in Myanmar. This mission-critical ICT system must be based on reliable machine structured under high availability arrangement (simple structure PCs and non-comprehensive maintenance support are not recommended).
Note 1: MS Windows Server based system tends to encounter non-compatibility constraints in updating occasions, and therefore is not being recommended for CBM-NET. Note 2: Linux open source software (OSS) is recommended to be utilized under maintenance contract.	

Source: Prepared by the Survey Team

1.6 Coverage of Systemization

The CBM-NET covers fund transaction, Treasury bond/bill transaction, credit and collateral management, mechanized clearing house (that can be easily upgradable to more advanced imaged cheque clearing system once the required infrastructures are in place), and master/operation/user management. Fund transactions in the system include cash deposit / withdrawal (MMK, USD, EUR, SGD, JPY), fund transfer (MMK, USD, EUR, SGD, JPY). Treasury bond/bill transactions in the system include new issuance – tender – new registration, T-bond/bill selling, T-bond/bill transfer, T-bond/bill DVP (delivery versus payment), interest payment / redemption.

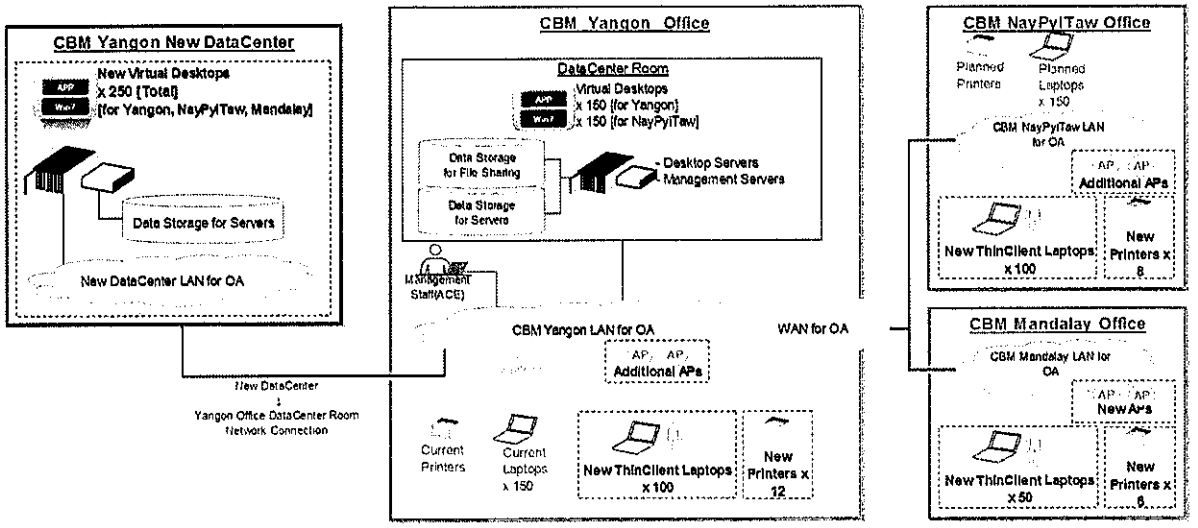


Source: Prepared by the Survey Team

Figure 3 Coverage of CBM-NET Applications

1.7 Conceptual Drawings for Systemization

CBM-OA consists of servers, new thin client laptops, OA equipment. Servers for CBM-OA are placed in new data center in Yangon. These servers will provide virtual desktops for thin client laptops operated in offices in Nay Pyi Taw, Yangon and Mandalay.

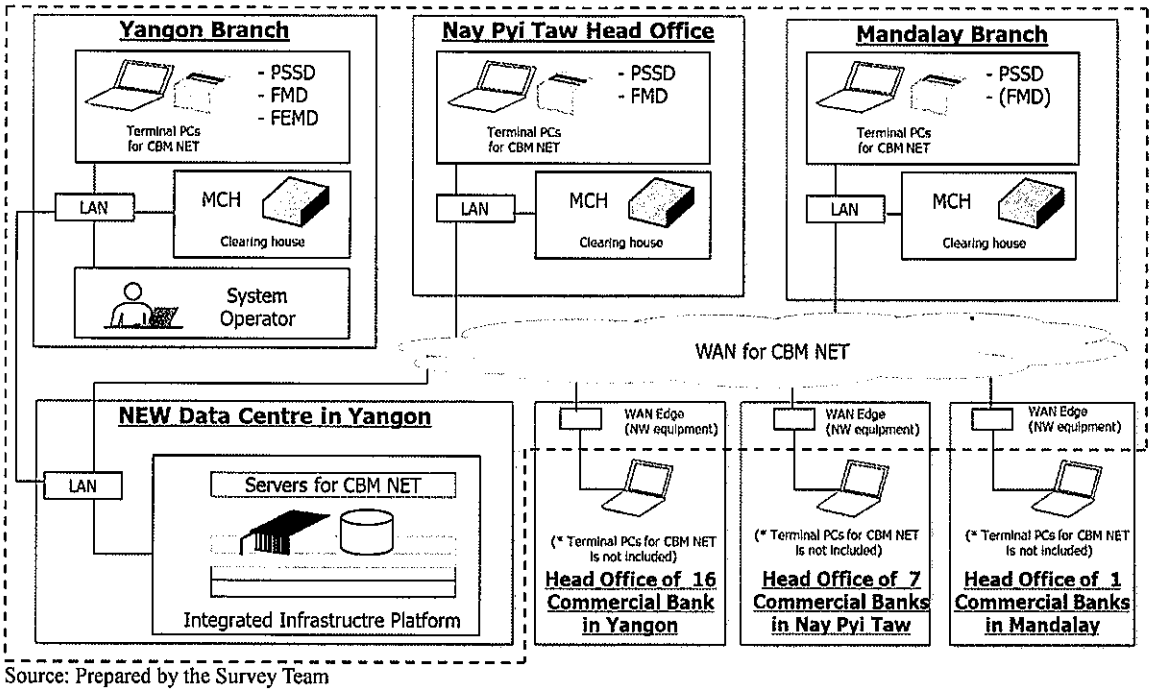


Source: Prepared by the Survey Team

Figure 4 CBM-OA Infrastructure Design

CBM-NET consists of servers, terminal PCs. Servers for CBM-NET are placed in new data center in Yangon. Terminal PCs for CBM-NET are connected to data center by WAN for

CBM-NET. System operators for CBM-NET servers are assumed to be stationed in Yangon.



Source: Prepared by the Survey Team

Figure 5 CBM-NET Infrastructure Design

The CBM Integrated Service Platform is the infrastructure of the CBM-NET. The CBM Integrated Service Platform will be launched in the new data center in Yangon and provide functions for the CBM-OA and the CBM-NET utilizing virtualization technology. The CBM Head office in Nay Pyi Taw, Yangon branch, and Mandalay branch will be connected to CBM Integrated service platform through WAN. The CBM-NET clients in head offices of commercial banks will also be connected to the CBM Integrated Service Platform.

2. System Functions Requirements

2.1 Fund Settlement Functions

(A) Fund transactions include cash deposit / withdrawal, and transfer (MMK, USD, EUR, JPY and SGD).
(B) Real time gross settlement (RTGS) and intra-day overdraft will be applied.
(C) Foreign currency transactions will cover four currencies (USD, EUR, JPY and SGD).

2.2 Treasury Bond/Bill Settlement Functions

(A) Transactions for tender-based new registration and non-tender-based new registration as with CBM's current operation of T-bond/bill selling to banks will be implemented.
(B) T-bond/bill transfer and T-bond/bill delivery versus payment (DVP) will be implemented.
(C) Interest payment/redemption amount will be calculated and automatically credited to the fund accounts.

2.3 Credit and Collateral Management Functions

(A) Credit and collateral management which will enable smooth currency market operation against collateral (T-bond/bill) will be introduced.
(B) Credit and collateral management will cover registration of eligible T-bond/bills and market value information, provision/return of collateral, and mark- to-market processing.

2.4 Mechanized Clearing House Functions

(A) Participating branches encode the amount on cheques using the encoders before bringing them to the clearing house.
(B) Clearing house aggregates and calculates net position automatically using reader/sorter.
(C) Net position data will be transferred to CBM-NET electronically.

2.5 Master management / Operation management / User management Functions

(A) Master/operation manages the information such as FI information and FI branch information, etc.
(B) Raw data for calculating the usage fee will be generated. Fee calculation will NOT be processed.
(C) Raw data for accounting and preparing the ledger will be generated. Accounting and ledger systems will NOT be covered in this project.
(D) CBM-NET will realize double check system for transaction input.

3. System Configurations Requirements

3.1 Basic Design of Infrastructure

(A) The Infrastructure of CBM-NET and CBM-OA would be installed as a part of integrated infrastructure platform applying server virtualization and cloud technologies.
(B) The integrated infrastructure platform, which is called the CBM Integrated Infrastructure Platform, has and also manages the hardware resources and common operational functions and services.
(C) System lifetime is expected to be 5 years after installation.

3.2 CBM-OA Infrastructure Design

(A) Servers, storages, client PCs, printers, access points and network equipment will be provided for new CBM-OA.
(B) New CBM-OA has the same architecture with the current OA system in Yangon, using thin client PC technology.
(C) New CBM-OA will be connected with the current OA system.
(D) The numbers of CBM-OA client PCs in each office are, YGN 100, NPT 100, MDY 50.
(E) The numbers of printers in each office are, YGN 12, NPT 8, MDY 6.
(F) CBM-OA servers are installed in the new data centre in Yangon.
(G) NPT and MDY offices will be connected to YGN data centre by new exclusive network WAN.

3.3 CBM-NET Infrastructure Design

(A) Servers, storages, client PCs (for CBM only), printers and network equipment for CBM-NET will be provided.
(B) System resource is designed based on the transaction amount in anticipation of economic growth for the coming 5 years from launch of the system.
(C) The service level of this system will be the best effort level (maintenance time is expected and also the system down time might occur caused by critical failure).
(D) The system secures backups in media (magnetic tapes) in remote location (more than 50km away from the data centre) for disaster recovery.
(E) Numbers of client PCs is up to 100 (tentatively 27 in CBM offices). Commercial banks (private and state owned) are required to procure their own client PCs.
(F) All head offices of the commercial banks will be connected to their nearby CBM offices by new exclusive network.
(G) The servers are installed in new data centre in Yangon.

3.4 Availability Requirements

Among the ICT systems to be developed, CBM-NET as the financial settlement system for central banking will have to ensure high availability. Focusing on the hardware, operation system (OS) and middleware, the grade of availability can be defined by multiplication of the reliability of the hardware configuration and O&M service level. The minimum required availability grade for a financial settlement ICT system is being taken into account. This is the specification whereby: (i) Linux Server Active – Active configuration is structured (with some

Active – Hot Stand-by exceptions), and (ii) working hours' on-site operator and call center support together with update patch provision is guaranteed.

Minimum requirement for the computing machine was identified to be Linux Server, with considerations for the stability, track record and scalability. Requirement for high availability (HA) redundancy configuration, with regards to the criticality of the system was identified as Active – Active structure with some exceptional Active – Hot Stand-by settings. Hardware reliability grade requirement for CBM-NET is therefore 20.

Table 4 Hardware Reliability Grade

Hardware Reliability Grade	Remarks
0 – 8	Non-HA or HA by PC and Windows
8 – 24 (20)*	HA by Server, Linux and Middle Ware (Active – Active & Active – Hot Standby combined)
24 over	HA by Mainframe

*: Requirement identified for CBM-NET
Source: Prepared by the Survey Team

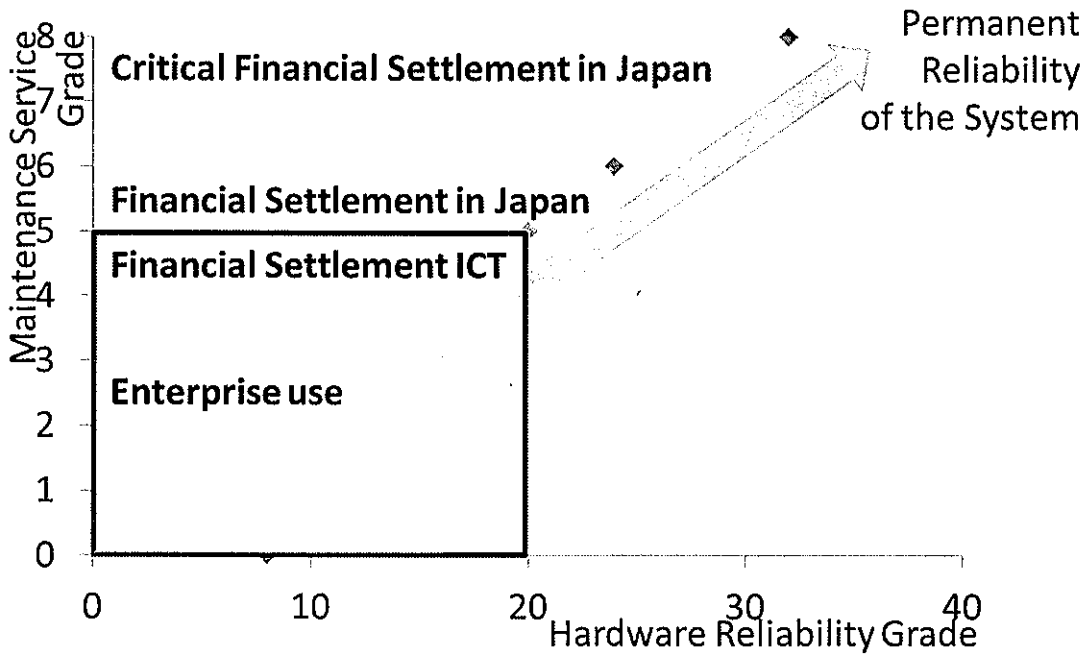
Another factor that comprises the availability is the maintenance service level. The availability grade is deemed to be the sum of three elements, i.e., (i) provision of update patch, (ii) call center opening time, (iii) on-site operator duty hours. With consideration for the criticality of CBM-NET as the financial settlement for central banking which is operating during the daytime on weekdays (requirement for the time being), the required service level was identified to be: 9 to 5 call center and on-site operator, plus full provision of update patch. Maintenance service grade, with the above three factors for CBM-NET, within the scale of 0 to 8, was identified as 5.

Table 5 Maintenance Service Grade

Maintenance Service Grade	Level of service
2	Patch provided 9-17 weekdays Call center
5*	Patch provided 9-17 weekdays Call center and 9-17 weekdays Operation support
6 over	Patch provided 24/365 Call center 24/365 Operation support and more

*: Requirement identified for CBM-NET
Source: Prepared by the Survey Team

Availability grade, being calculated as the multiplication of hardware reliability grade and maintenance service grade, required availability grade for CBM-NET, was identified. This availability grade is the requirement that can be described as the minimum requirement for financial settlement ICT system. Considering the possible resources constraints that CBM may face, the requirement is set also with the aim to minimize the burden on the O&M cost of the system, which CBM will have to bear.



Source: Prepared by the Survey Team

Figure 6 Availability Grade for CBM-NET

By mentioning that the grade identified for CBM-NET is the minimum requirement for financial settlement ICT system, it can also be said that any ICT system of availability grade below that of CBM-NET may not comply with the internationally required standards, as stipulated, for example, by CPSS. With regards to the possible consequence, an ICT system which has a likelihood of being in a status of non-recovery will not be tolerated as a financial ICT system. The following figure shows that the availability requirement for financial settlement ICT system, in some countries such as Japan, is often of higher grade compared with what has been identified as minimal requirement for CBM-NET.

4. Design / Installation Plan

4.1 Use of Management Consultants

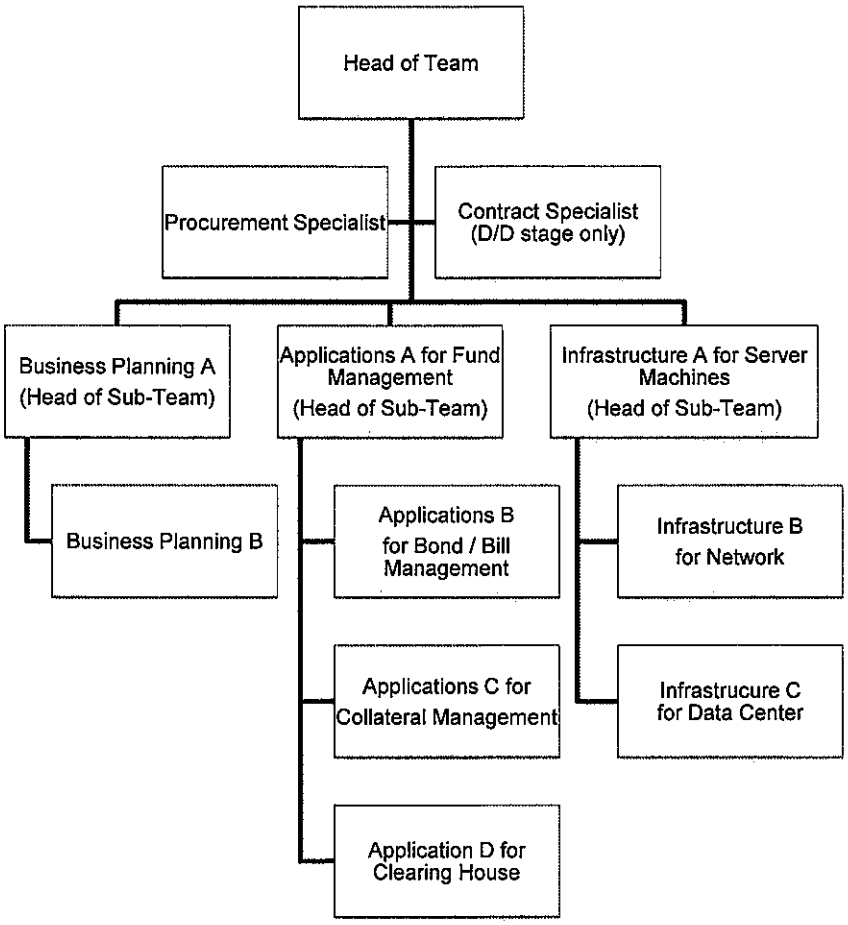
Once the project has been officially approved under the conclusion of Exchange of Notes (E/N) and Grant Agreement (G/A), CBM, will have to pursue the procurement of developers and vendors. As such procedure requires specialized skills CBM will be requested from JICA to hire management consultant(s) who will support CBM in detailed designs and development supervision.

The following are the tasks assumed to be pursued by the management consultant(s):
(1) Detailed Design:
- Support for Confirmation of the development plan
- Support for Procurement of suppliers / vendors

(2) Supervision of Development:
- Support for logistics;
- Support for confirmation of specification;
- Support for running test;
- Support for system development process management;
- Support for acceptance;
- Support for operation rehearsal;
- Support for decision making on service commencement;

(3) Supervision of Development (Soft Component):
- Support for drafting of business manuals;
- Support for user trainings;
- Support for communications with the commercial banks;
- Support for setting up of operation and maintenance structure.

The consultants will be supporting CBM on the items mentioned above throughout the procurement and development period of the systems. Such tasks will be conducted by a team of twelve members as illustrated in the following execution structure.



Source: Prepared by the Survey Team

Figure 7 Team Structure of Management Consultants

As will be mentioned in the following procurement batches and methodologies section, the management consultants will be appointed by CBM based on the JICA recommendation. This is the standard procedure for JICA Grant Aid. Contract between CBM and the management consultants will be concluded by means of a standard contract format offered by JICA.

JICA expects CBM to appoint and hire the management consultant(s) by December 2013, so that procurement and detailed design procedures can be started in a smooth manner. The consultants, on the other hand, are expected to start negotiating the contract with CBM soon after the conclusion of Gran Agreement.

4.2 Procurement Plan

The basic policy for procurement in the project aims for competitive pricing, reliability of the integrated systems, and minimizing the total cost of ownership. As such, the survey team has sets following approaches: The first approach is the competitive pricing approach that separates the procurement items into small component for tenders. The second approach is bundling the procurement items so as to ensure reliability of the integrated systems. The third approach is to procure, wherever possible, the systems including operation and maintenance service with an aim to minimize the total cost of ownership.

Table 6 Approach to Procurement for CBM-NET and CBM-OA

No	Aim	Approach
1	Competitive pricing	Separate the procurement items into small component for tender
2	Ensure reliability of the integrated systems	Bundle the procurement items which have integral relations
3	Minimise the total cost of ownership (by considering both initial procurement and system operation costs)	Procure the system including operation and maintenance services

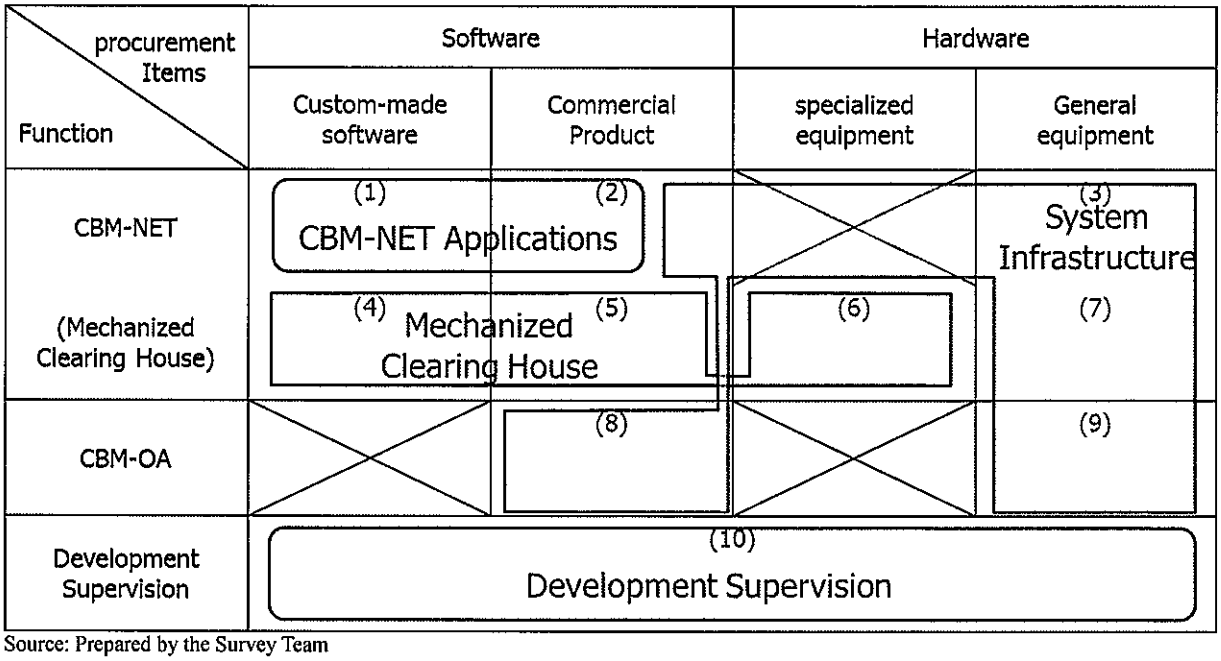
Source: Prepared by the Survey Team

4.3 Procurement Batches and Methods

Procurement will be conducted in four batches. Among these four batches, procurement for CBM-NET Applications should be conducted under the "single source procurement method" whereby a vendor is nominated by CBM. This is due to the highly-specialized nature of the CBM-NET Applications, not applied elsewhere but to central banking ICT system. The Bank of Japan Financial Network System (BOJ-NET) is an ICT system which is an ideal model for CBM-NET Applications, with an integrated functions serving both fund transfer and bond management. Only an application vendor who has experience in developing a comprehensive central banking ICT system such as the BOJ-NET would be capable of offering the solution, based on well-proven architecture. Moreover, under the constraint to have CBM-NET Applications in operational by the end of 2015, time available for the development of the system is extremely limited. This is another reason why CBM-NET Applications vendor must have a track record of development of a comprehensive ICT system for central banking. Under these conditions, the applications will have to be procured from a single vendor with experience of the development of Bank of Japan Financial Network System (BOJ-NET).

To achieve consistency and continuity, the management consultants for detailed designing and development supervision need to be well acquainted with the background of this project. Against this background, the management consultants for detailed design and development supervision will be recommended by JICA to CBM. CBM will therefore be required to hire the consultants with particular experience in this project, also through single source method.

On the other hand, system infrastructure and mechanized clearing house are procured by competitive tendering. This is because the equipment to be supplied from these two batches is mostly comprised of "off-the-shelf" products. The equipment therefore may be procured from number of suppliers. It is for this reason that these two batches are procured under the competitive tendering procedure.



Source: Prepared by the Survey Team

Figure 8 Procurement Batches and procurement methods

4.4 Soft Component

Other than the trainings which the applications and equipment suppliers will provide, technical support for ensuring smooth operation of CBM-NET will be required. Soft component of the project will therefore be included in the terms of reference for the project management consultants. Four topics of technical supports are:

- Support for drafting of business manuals;
- Support for user trainings;
- Support for communications with the commercial banks, and;
- Support for setting up of operation and maintenance structure.

4.5 Technical Cooperation

Technical Cooperation Project will be implemented in parallel with the development and initial years of operation of CBM-NET/OA system. The duration of the Technical Cooperation Project is expected to be approximately 3 to 5 years. Technical Cooperation Project is a form of technical transfer activity commonly conducted by JICA, with the main activities being: Co-working on policy development / trainings (both inland and overseas).

The overall goal of the Technical Cooperation Project is to modernize the financial market in Myanmar. To this end, the purpose is set as to establish a necessary environment for operating and maintaining ICT system for central banking.

Outputs from the Technical Cooperation Project are assumed to be as follows:

- Necessary laws, regulations and circulars corresponding to introduction and operation of the ICT system for central banking are developed;
- The capacity to plan, operate, maintain and manage the new system properly is enhanced;
- Users of the new system both in CBM and the commercial banks acquire necessary knowledge and skills in accordance with modernization of financial sector.

Capacity development of CBM to develop and to utilize the ICT system will be one of the main activities of this Technical Cooperation Project. The following issues will be included in the technical cooperation project:

(1) Capacity development to enable CBM to maintain and utilize their own ICT system

Technical support to enhance capacity of CBM to enable CBM to utilize their own capacity in operating and maintaining the ICT system will be included in the Technical Cooperation Project until the end of 2017 (the first two years after the installation). This takes into account the budgetary constraints before realizing sufficient revenue from banks using the ICT system and from any other business as a central bank.

Table 7 Capacity Development Cost to be borne by JICA under Technical Cooperation Project

Cost item	Capacity development aspects to be taken care of by the Technical Cooperation Project	Coverage amount (MMK billion)
Software maintenance	The Project will support CBM to become capable to operate the ICT system. Necessary knowledge on Software maintenance will be transferred in the component of the Technical Cooperation Project and the relevant cost will be borne by the Project.	1st – 2nd year (until the end of 2017): 1.2 Thereafter: 0.0
Operation	Cost for operation of the ICT system is a requisite for acquiring knowledge and skills on: (i) routine monitoring, (ii) problem analysis, (iii) recovery actions and (iv) negotiations with the vendors, among others. The above cost in the context of capacity development therefore will be borne within the Technical Cooperation Project.	1st – 2nd year (until the end of 2017): 0.2 Thereafter: 0.0
Applications maintenance	Necessary knowledge and skills for Applications maintenance will be transferred in the component of the Technical Cooperation Project and the relevant cost will be borne by the Project.	1st – 2nd year (until the end of 2017): 0.4 Thereafter: 0.0

Source: Prepared by the Survey Team

These items contribute to enhancing capacity of CBM to utilize the ICT system during operation and maintenance – to be supported by the planned Technical Cooperation Project funded by JICA until 2017.

In addition, the Technical Cooperation Project will also provide necessary technical support on appropriate tariff policy on the usage of the ICT system and any other central banking operations so that CBM can enhance their capacity to afford to maintain the ICT system sustainably.

	Original proposal	Could be Reduced to	Coverage by the planned Technical Cooperation Project until 2017	Net burden of CBM*
Hardware maintenance	1.6	0.9		0.9
Software maintenance	1.2	1.2	1.2	
Network usage	0.4	0.2		0.2
operation	0.4	0.2	0.2	0
Application maintenance	0.4	0.4	0.4	0
total	4.0	2.9	1.8	**1.1**

* CBM could further receive user fee revenues from banks using ICT system.
Source: Prepared by the Survey Team (unit: USD, Million)

Figure 9 Net Burden for CBM after Cost Relief by Technical Cooperation Project

(2) Support for the Introduction of New international accounting system

Purchase, installation and relevant technical support fee for introducing application software for General Ledger to enhance capacity of CBM, on condition that the regulatory framework for accounting and business flows are ensured to be in accordance with international standard will be featured in the Technical Cooperation Project.

(3) Digital leapfrogging towards the modernization of payment and settlement mechanism

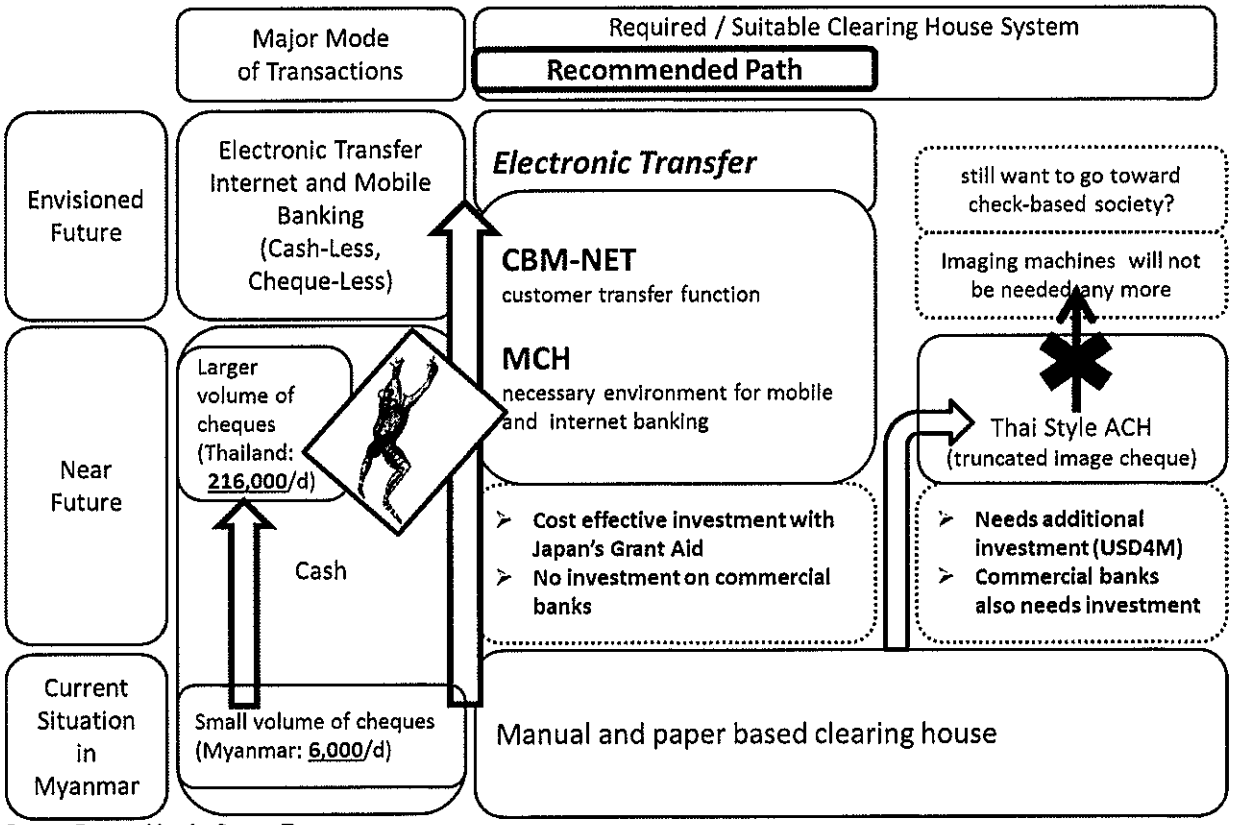
Technical support to consider appropriate measures for realizing "digital leapfrogging" toward the modernization of payment and settlement mechanism in Myanmar will be conducted within the Technical Cooperation Project. This will also include feasibility assessment for introducing Automated Clearing House with truncated imaged cheques system.

Assessment and policy making for realizing the "digital leapfrogging" should be conducted by looking both at good practices as well as the characteristics of the financial market in Myanmar. One hypothesis is to introduce the state of art cheque clearing system as with the case of Imaged Cheque Clearing and Archive System (ICAS) of Thailand (which is an image based cheque truncation system). In considering the application of best practices in other countries, rationality, applicability and effectiveness should be carefully considered.

ICAS of Thailand, for example, may be an optimal cheque clearing system only in an environment where cheque has already penetrated as one of the most common way of transaction settlement. This is backed by Thailand's legal system in which issuing a cheque resulting in being dishonored is a serious criminal offence. Cheque therefore has already been regarded as a reliable and convenient means of settlement in Thailand. If such were to be introduced in Myanmar, a similar legal system will have to be developed, followed by familiarization of cheques and necessary investments for establishing proper infrastructure. Following such path may not be the most recommendable way if ultimate direction were to be the electronic transfer society in which mobile and internet banking can be popularly utilized instead of cheques as many other countries moving ahead.

CBM-NET, contrary to the image based cheque truncation system, is in line with the path

towards the electronic transfer society. The customer transfer function of CBM-NET is the basic fund transfer mechanism that can be enhanced and applied to mobile and internet banking systems. It is ensured that the CBM-NET can be easily enhanced and/or connected to mobile and Internet banking systems in the near future. In such case, CBM will make sure to provide detailed information in advance related to what specific application will be installed at what time.



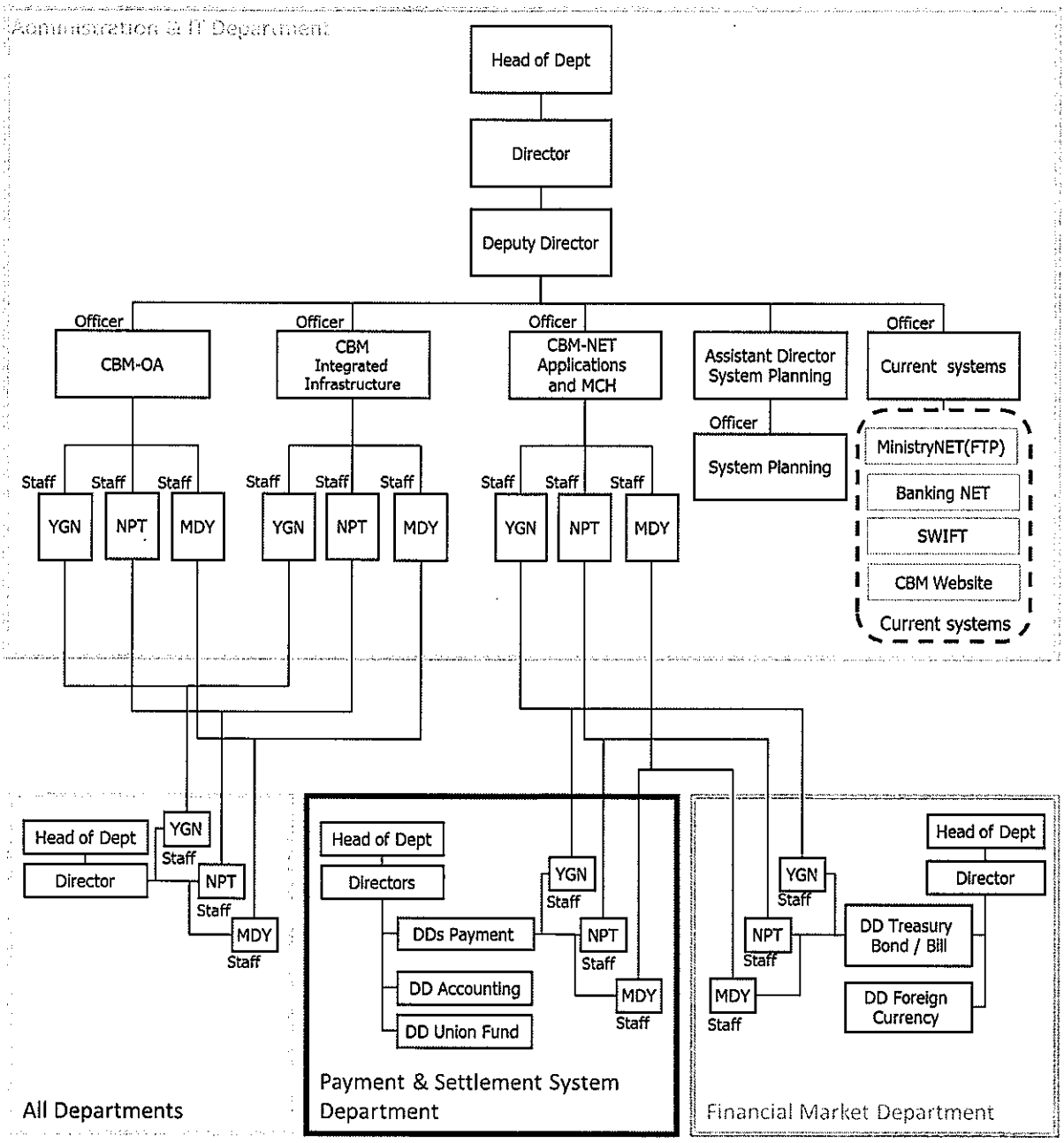
Source: Prepared by the Survey Team

Figure 10 Recommendable Digital Leapfrogging Path

4.6 Institutional Arrangement for Operation of the System

All departments will utilize CBM-OA for daily business operations. Staffs under the Directors assigned as the caretaker of the ICT system will be posted at each hubs of CBM. Further, PSSD and FMD will become the major users of CBM-NET. These departments will facilitate the use of the CBM-NET by assigning dedicated staffs for the system.

An example of institutional arrangement for the operation of the ICT system is shown in the following figure.



Source: Prepared by the Survey Team

Figure 11 Proposed institutional Arrangement for the Operation of ICT System

ICT department will be considerably strengthened so as to become capable of operating and maintaining CBM-NET and CBM-OA. The mission of the new ICT department will be:

- To make available optimal ICT environment for CBM staffs;
- To introduce updated ICT technologies to CBM in timely manner, and;
- To ensure that CBM stays connected to Myanmar and the international community, online.

5. Arrangement by the Recipient Country

Further to the undertakings mentioned in 1.1 of this draft summary report, CBM is requested to make arrangements on the following points. All of the items listed below are based on the undertakings initially listed in the Minutes of Discussion signed in March 2013.

5.1 Establishment of Necessary Rules

CBM is requested to establish necessary rules (laws, regulations, circulars, guidelines, clarifications, etc.) both for its internal operation and also for business operations in relation with the financial institutions that will make use of the ICT systems. Following is the list of rules that will have to be established prior to the commencement of the ICT system operation:

- Current account needs to be coded according to the BIC code structure of SWIFT.
- The number of CBM-NET online accounts will be limited to one account per bank (tentatively one account with one CBM branch <=3 accounts>).
- Scrip less system for T-bond/bill settlement should be realized when introducing the book-entry system. This should be done simultaneously with the commencement of CBM-NET operation.
- Intra-day overdraft agreements with the CBM-NET account holders are to be introduced.
- Cheque format needs to be standardized utilizing magnetic ink character recognition (MICR).
- The number of clearing house participating branch is to be limited to one per clearing house (The case of MEB will be considered separately).
- CBM should negotiate and arrange with the commercial banks to prepare an appropriate environment for installing communication equipment, CBM-NET client PC, cheque encoder, and for the operation of the ICT system introduced under this project.

5.2 Physical and institutional preparations within CBM

Many of the physical preparation will incur expenses. CBM is therefore requested to secure budget for the costs mentioned below. Budgetary measure will be necessary from FY 2014.

Table 8 Physical and institutional preparations and direct expenses

Arrangement	Direct expense	Timing for disbursement
• Take responsibility for system operation and management by making institutional arrangements (staff assignment) for system operation of CBM- NET and CBM-OA.	Hire staffs for ICT system.	By April 2015
• Budget for the maintenance cost of CBM-NET and CBM-OA shall be secured and borne by CBM, including hardware / software maintenance cost, application maintenance cost, operational cost, network usage costs.	The maintenance costs that could be reduced through the JICA's technical cooperation arrangement as explained in 4.5.	From Dec 2015 onwards

• Enhance CBM's accounting and ledger information systems by adding data import functions	-	To be completed before the commencement of operation (Jan-Nov 2015)
• Secure spaces for the racks, which will be installed for this system - The rack space in the new data center - The rack space in the data center room in CBM building - The rack space on each floors of CBM building	To be paid as the data center usage cost. The amount is to be negotiated with the owner of the center.	—
• An air conditioned and access restricted reader/sorter machine room should be prepared in each clearing house building.	-	Apr-Dec 2014 for Yangon, Nay Pyi Taw, late 2015 for Mandalay
• Provide appropriate power source and air condition. (in data center, CBM building and also in clearing house machine room).	-	To be settled Apr-Dec 2014
• Bear the cost of telecommunication services from prior to the handover of the ICT systems.	-	The cost will incur during Apr-Nov 2015
• Make necessary arrangement to transport backup tapes for disaster recovery to remote location to be stored.	Service is yet to be identified	The cost will incur from December 2015
• Secure a space for reserve stocks of equipment.	Cost for securing an indoor storage space.	—

Source: Prepared by the Survey Team

6. Project Operation and Maintenance Plan

6.1 Composition of Operation and Maintenance Cost

Cost for operation and maintenance of the ICT system will incur from the time of handing over of the system to CBM. Under the current timetable, operation and maintenance cost will be payable from December 2015, i.e., from fiscal year 2015.

The operation and maintenance cost consists of five categories. They are operation fee for IT vendors, application maintenance fee for technical support, software maintenance fee for software vendors, hardware maintenance fee for products vendors, and network usage fees for Myanmar Post and Telecommunications (MPT).

There is a strong concern in Myanmar related to the operation and maintenance costs to be borne, hence, the system will have to be designed and developed so as to ensures that the operation and maintenance costs shall be kept at minimum required level

Table 9 Categories of Operation and Maintenance Cost

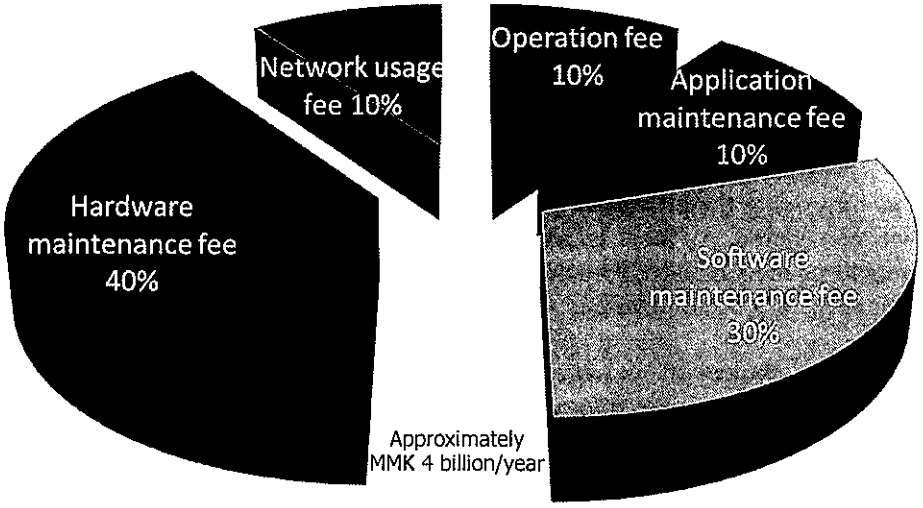
	Category	Description
1	Operation fee	• Cost for the operational work as provided by local IT Vendor. • Engineers from local IT vendor support and help system operation and conduct maintenance work of CBM staff. • Foreign IT vendors may support the local IT vendors when required. • Work includes: system monitoring work, supporting fixed problems operation on the system, supporting to run scheduled operational works, etc.
2	Applications maintenance fee	• Cost for the application technical support and solution work provided by local IT vendor.
3	Software (OS, framework, middleware) maintenance fee	• Fee for obtaining maintenance support for software product (OS, framework and middleware) provided by software vendors. • Service includes providing fixed module and update module, using call center support, etc. • Some software may not be used without paying an annual fee. • The fee includes authorization for use. • Products include: OS, Virtualization SW, middleware, framework.
4	Hardware maintenance fee	• Fee for maintenance support from hardware product vendors. • Service includes providing parts, using call center support, etc. • Hardware include: Servers, Storages, Network equipment, Thin Client PCs, MCH reader/sorter, MCH encoder
5	Network usage cost (to be paid to MPT)	• Usage fees for WAN as provided by MPT. • Cost includes: - Usage fees for Long distance NW (between CBM offices) - Usage fees for Short distance NW (between CBM and Commercial Banks)

Source: Prepared by the Survey Team

The hardware maintenance comprises approximately 40% of the total O&M cost, while software maintenance approximately 30%. These cost elements are the costs to ensure the high availability and reliability of CBM-NET as mentioned in section 3.4 of this report. These

hardware and software maintenance costs are essential for the system to be functioning and also to be capable of recovering from failures in a limited time.

In order to secure appropriate reliability of the system as the financial settlement system for central banking, O&M cost for hardware / network / software (OS and middleware) will not differ regardless of the application the system will have.



Source: Prepared by the Survey Team

Figure 12 Composition of the O&M cost for CBM-NET and CBM-OA

Prior to the selection of the actual vendors, the estimation for the operation and maintenance cost will have to be based broadly on the percentage of initial investment cost. The breakdown of the O&M cost for CBM-NET and CBM-OA by cost elements was calculated. In total, 70% of the total O&M cost can be attributed to CBM-NET, including MCH. While hardware maintenance, software maintenance, operation fees are mostly proportional to their investment figures, cost elements such as network usage and applications maintenance fee are almost totally attributable to CBM-NET function.

Table 10 Composition of Operation and Maintenance Cost by Functions

Items	% of O&M Cost	CBM-NET (including MCH) (%)	CBM-OA (%)
Hardware maintenance fee	40	25	15
Software maintenance fee	30	19	11
Network usage	10	9	1
Operation fee	10	7	3
Applications maintenance fee	10	10	0
Total	100	70	30

Source: Prepared by the Survey Team

To ensure that the maintenance, license, etc., of software (e.g. OS, framework, and middleware, etc.), shall not be higher than what is commonly expected, O&M cost should also be quoted in the tendering process. The vendor selection should take into account the quoted O&M costs. Also, to reduce the operation fees and a portion of application maintenance, CBM should consider making use of its in-house employees and to select local IT service providers who will render operation and maintenance services at the lowest possible fees.

6.2 O&M Cost Comparison with Package Applications

As already demonstrated in the previous sub-section, applications maintenance cost comprises merely 10% of the total O&M cost. Nevertheless, saving should be considered by selecting the applications that will be available at lower O&M cost. Here, O&M cost is compared between CBM-NET as the custom-designed ICT system and some of the package solutions.

CBM-NET will be developed in line with "Principles for financial market infrastructures" by BIS/CPSS and IOSCO which defines the requirements funds payment and securities settlement system should be furnished. In addition, CBM-NET needs to secure appropriate flexibility and expandability for stable and sustainable operation of the financial infrastructure in accordance with the growth and modernization of financial sector in this country.

Possibility of improving the efficiency of the project by making use of "off the shelf" package solutions was considered. As there is no package software currently available that provides all necessary functions the CBM-NET contains, the comparative option was to utilize the package software with necessary customization.

There are numerous choices of package applications for accounting and resource management functions. These applications are not necessarily developed for central banking. On the other hand, system application for payment and settlement in central banking are strikingly different from those commonly utilized in commercial banking, and therefore are exclusively for central banking. Products from internationally recognized vendors such as CMA Small System, Logica (CGI), Montran and SIA Perago are utilized by many central banks.[3]

In general terms, the strength of custom developed system such as CBM-NET, in comparison with the package applications can be pointed out as follows:

- Can easily be tailored to the need of the users
- Size can be enhanced in phased manner
- User customization is possible
- Technical transfer can be achieved.

Major package applications brands are mostly offering full sets of products that cover RTGS, bond settlement and collateral management functions. It should however be noted that these individual package products are not designed to be linked automatically with each other. Users often pick up certain product for individual purposes as opposed to custom developed integrated system such as CBM-NET. For such reason, these package applications need to be heavily customized to be integrated into one comprehensive system that covers RTGS, bond settlement and collateral management functions.

[3] Revised information based on Morten Bech, Bart Hobijn, " Technology Diffusion within Central Banking: The Case of Real-Time Gross Settlement", Staff Report nj. 260, Federal Reserve Bank of New York, Working Paper, September 2006

Table 11 Major Package Applications for Central Banking

Brands	Country of origin	Products			RTGS examples in Asia Pacific
		RTGS	Bond settlement	Collateral management	
CMA Small System	Sweden	RTS/X	DEPO/X	DEPO/X	Brunei, Cambodia, Indonesia, Lao PDR, Mongolia
Logica (CGI)	UK	CAS	CSS	CSS	Sri Lanka, Philippines, Fiji
Montran	USA	RTGS/GPS	CSD	RTGS	Kyrgyz
SIA Perago	Italy	RTGS	CSD	CSD	N/A

Note: Packages, even if selected from the same brand, will not have automatic linkage function. For example, CMA's RTS/X has limited automatic linkage with DEPO/X collateral management. Similarly, Montran's CSD has dedicated interface with its RTGS to support the settlement for the cash-leg of securities transaction, but without any automatic linkage between securities management and RTGS collateral management.
Source: Prepared by the Survey Team

The applications operation and maintenance cost often turns out to be more expensive with the package applications due to heavy customization. This is especially the case with the application maintenance cost as the possibility to localize the maintenance is usually limited. Other items in the O&M costs would inevitably incur at the same level as the custom developed applications regardless of selection of the solutions (installing off the shelf packages or customizations).

There is also a risk in package applications when these products are revised / updated. Once such updates occur, the customization process will have to be repeated, resulting in unexpected amount of re-development cost incurring.

Moreover, transfer of knowledge may be limited due to the closed characteristics of the package solutions. CBM-NET, on the other hand, can provide more opportunity for localization of operation and maintenance as well as for customization. JICA is therefore expected to conduct technical cooperation activities so as to transfer the knowledge of system operation and maintenance through technical cooperation project.

Table 12 Comparison of CBM-NET and Package Solutions

Description of Cost structure	**"Off the shelf" package solutions**	**CBM-NET based on JICA proposal**
1. Development Costs		
1.1. Cost of the hardware/ network infrastructure development	*Almost same regardless of the solution*	
1.2. Cost of the application development	*Cheaper*	*More expensive*
Total development costs (1.1+1.2)	***Cheaper***	***More expensive, but all borne by JICA grant.***
2. Operation & Maintenance Costs (% of the total O&M cost <approx. 4mil. US$>)		
2.1. Hardware maintenance fee	Theoretically same (40%), but more expensive with the package if locked-in by the dedicated	40%

	vendor.	
2.2. Network usage fee	*Same (10%), regardless of the solution.*	
2.3. Operation fee	*more expensive, if the cost of staff training, on-demand help/support is charged by the dedicated vendor.*	*10%, operated by CBM proprietary staff trained in the soft component (see below)*
2.4. Application maintenance fee	*Much more expensive (10%+ 10%or more=minimum 20%), as the application should be customized remotely by vendors abroad.* *Very limited room to customize (almost "black box")*	*10%, as customized by domestically hired vendors &/or CBM proprietary system engineers*
2.5. Software (O/S, middle ware such as DBMS, VM, etc.) maintenance fee including license fee	Theoretically same (30%), but more expensive if locked-in by the dedicated vendor.	30%
Total operation & maintenance costs (2.1~2.5)	***More expensive (minimum 110%)***	***Cheaper (total 100%)***

Source: Prepared by the Survey Team

6.3 Possible Scenario for Mitigating the Operation and Maintenance Cost Impact

Annual O&M cost, including all of the categories above mentioned, is expected to reach total MMK 2.9 billion as downside, and MMK 4 billion as upside scenarios.[4]

JICA understands that CBM needs to find appropriate measures to minimize the operation and maintenance cost especially in the initial period, which may at least range from 1 to 5 years, in order to afford full costs of operation and maintenance. Against this background, options for reducing the O&M cost, although with increase in risks, as a downside scenario, may be proposed.

[4] O&M cost of MMK 4 billion accounts for approximately 10% of the initial investment, which will be the necessary cost for securing stable financial infrastructure environment of CBM-NET. The ratio of O&M cost against the initial investment amount is commonly between 10 – 20% and therefore the anticipated O&M cost for CBM ICT system can be said to be appropriate.

Table 13 O&M Cost Saving Options

Cost element	Cost to be saved	Saving option	Risk factor
Operation (10%) MMK 0.4 billion	-MMK 0.2 billion (-5%)	No outsourcing of operation service (by utilizing CBM proprietary system engineers)	• Limited capacity and competence may take longer time for system recovery. • Thorough and intensive training will be required.
Applications maintenance fee (10%) MMK 0.4 billion	N/A	N/A	• Applications will require continuous updates and troubleshooting services to ensure sustainable operation of the ICT system.
Software maintenance fee (30%) MMK 1.2 billion	N/A	N/A	• O/S, middleware (which would be provided by global brands like IBM, Microsoft, Oracle, VM Ware, etc.) needs to be licenced for usage and continued maintenance. Software maintenance contract should not be omitted.
Hardware maintenance fee (40%) MMK 1.6 billion	-MMK 0.6 billion (-15%)	No service agreement on CBM-OA equipment	• Cause for failure should be identified by CBM; • Fixing of failures may take longer time. Daily operation might be seriously affected. • Availability of spare parts will not be ensured. • Examples of additional costs that may incur: Cost that may incur in case of failure: 1) HDD: MMK 02 million for new HDD MMK 06 million for travel expense MMK 03 million logistics (incl. send back fee) 2) Blade server: MMK 12 million for new blade server MMK 06 million for travel expense MMK 03 million logistics (incl. send back fee)
	-MMK 0.1 billion (-2.5%)	Sharing MCH encoder maintenance cost with commercial banks	• Commercial banks will have to be bearing the cost burden.
Network usage fee (10%) MMK 0.4 billion	-MMK 0.17 billion (-4.3%)	Sharing the network bandwidth with other mission-critical financial infrastructures such as planned Myanmar Stock Exchange, etc. who has wider bandwidth than CBM-NET and peak transaction volume in the different time slot.	• Coincidental overlap of traffic peak may result in transaction delay. • No redundancy arrangement.

Source: Prepared by the Survey Team

In assuming the downside scenario, core CBM-NET functions were excluded from the subject of O&M cost reduction with regards to its mission criticality.

If all of the cost reducing options were to be applied as the extreme downside scenario, the total O&M cost will become approximately MMK 2.9 billion. It should, however, be noted that this scenario will entail significant risks in operation of the systems.

JICA will also assist CBM to find effective ways to mitigate the operation and maintenance costs by offsetting with fees and charges that may include:

(A) **charging participant banks with usage fees** to cover a part of operation and maintenance cost through structuring the reasonable tariff to make CBM-NET economically sustainable in the long timeframe. (note: The tariff strategy could be advised in the activities of planned Technical Cooperation Project. According to our rough scenario analysis, the volume of transactions in 2020 will reach 8,600 per day, which will bring CBM the fees enough to cover the entire annual operation and maintenance cost.)

(B) **promoting usage of customer payments among corporate sectors** instead of delivery of bank notes which would also contribute to expand the source of revenues of CBM-NET in addition to the interbank payments. (note: The tariff strategy for customer payments could be advised in the activities of planned Technical Cooperation Project.);

(C) **facilitating with more DVP transactions** on the CBM-NET via;

- **promoting T-bond market** through establishment of wider range of CBM monetary policy operations as well as building more sophisticated function of treasury and debt management in the MOF which will bring the more traffic into DVP on the CBM-NET,
- **expanding the asset classes such as corporate bonds, CPs, etc. to be settled on the CBM-NET** in addition to T-bonds/ bills, which will also help reduce the systemic risks in the financial market through the better use of central bank money.

CBM nonetheless may encounter difficulty in securing and managing the budget for O&M of CBM-NET from the first year of its operation. With regards to enable gradual start-up of its own ICT system operation and management, JICA will execute a technical cooperation project in parallel to CBM-NET development up to the first and second years of its operation after the completion of the development. Necessary technical transfer to enable CBM to utilize and manage the ICT system eventually will be provided, and which will contribute to reducing the burden of CBM on the required O&M costs during the first and second years of CBM-NET operation.[5]

6.4 Financial Sustainability of the Project

The initial cost for this project on the development of the ICT system for central banking will be borne by JICA's grant aid. Financial sustainability therefore is dependent on how operation and maintenance expenditure can be managed. An option to secure sustainability is to have CBM seeking for its own source of income from the usage of the ICT system that it will avail to the financial institutions.

The following table shows some of the examples of fees collected by the high value payment system operators. It shows that the structure and the level of levy differ from country to country. Representative patterns are: fixes charge, charge per transaction and charge per value. In most of

[5] Resources for capacity development activities are explained in sub-section 4.5 on Technical Cooperation of this summary report.

the cases these patterns are applied in plural. Fee per transaction may also vary from USD 0.22 to 6.00.

Table 14 Fee Structure for High Value Payment Systems

Country	High value payment system	Fee (example)
Malaysia	RENTAS	Annual membership: MYR 5,000 (=USD 1,500) MYR 2.5 (=USD 0.75) per transaction
Thailand	BAHTNET	Monthly: THB 3,500 (=USD 105) Per transaction (after 16:00) THB 200 (=USD 6)
Philippines	PhilPaSS	Minimum: PHP 10 (=USD 0.22) Large value= Value x 0.001%

Source: EMEAP

According to the preceding tariff strategies with the central banks in various countries, fee may be charged also for other transactions such as bond settlements and cheque clearing which may also contribute to sustainably managing CBM-NET by recovering certain portion of its O&M cost from the users.

An appropriate tariff strategy will not only partially contribute to the financial sustainability of the ICT system but should also encourage the shift from manual, paper based transactions to electronic automated transactions. JICA technical cooperation project may address to the issue of the development of such tariff strategy at CBM.

A simple simulation to calculate an average charge on a transaction that will balance the fee collected with the O&M cost in 2020 was calculated to be approximately MMK 1,800 per transaction.

Table 15 Simulation of Usage Fee Revenue against O&M Cost

	2016	2017	2018	2019	2020
1. Operation and maintenance cost					
Upside Scenario [A]	4	4	4	4	4
Downside scenario [B]	2.9	2.9	2.9	2.9	2.9
2. Operation and Maintenance Cost for CBM-NET [C]	2.2	2.2	2.2	2.2	2.2
3. Usage fee income [D]	0.4	0.6	1.0	1.4	2.2
4. Balance					
Upside scenario [D-A]	-3.6	-3.4	-3.0	-2.6	-1.8
Downside scenario [D-B]	-2.4	-2.2	-1.8	-1.4	-0.6
Against O&M cost for CBM NET [D-C]	-1.8	-1.6	-1.2	-0.8	0.0

Note: (Assumption) Fee per transaction to be charged with participant banks: MMK 1,800.
Source: Prepared by the Survey Team

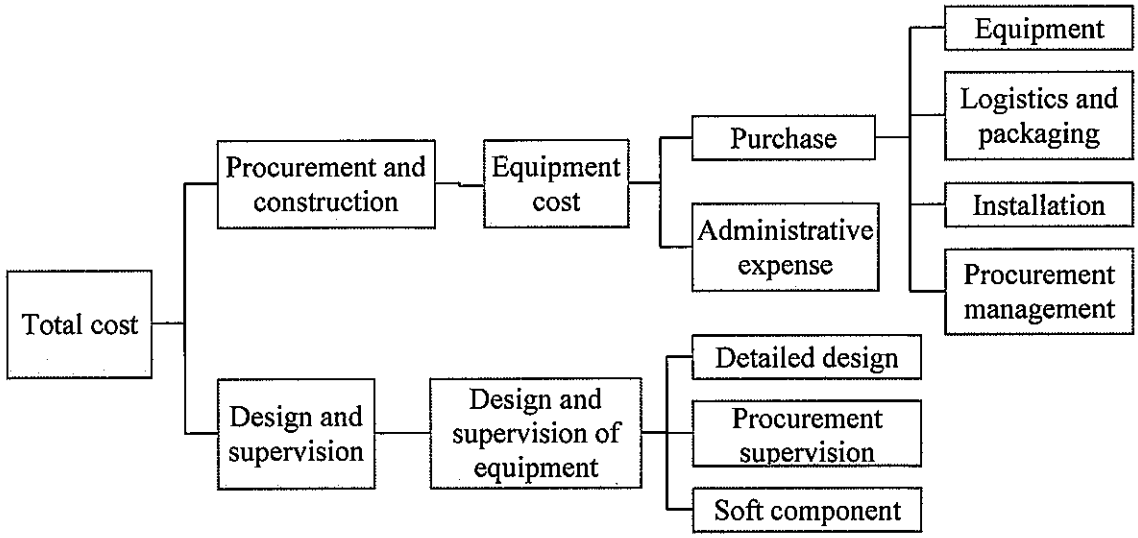
7. Estimation of the Project Cost

7.1 Policy for Cost Estimation

Cost estimation for goods and services to be procured under competitive tendering procedure batch was done based on the quotations obtained from three potential vendors / suppliers. For goods and services which are planned to be procured under single source method, the survey team examined the elements of the elaborated cost breakdown which was provided by the single vendor / supplier.

7.2 Composition of the Project Cost

The project cost consists of the procurement cost and the project supervision cost. The procurement cost includes purchase cost and indirect cost. The project supervision cost includes planning, procurement management, and soft component.



Source: Prepared by the Survey Team based on JICA Cost Estimation Manual

Figure 13 Composition of Project Cost

The actual total cost for the project to be borne by Japanese ODA Grant Aid is as explained in the supplement to this chapter.

Attachment 1: Cost-Revenue Analysis of CBM-NET

1. Transaction Volume

Current transaction volume at CBM (Total of volume at Nay Pyi Taw, Yangon and Mandalay), is approximately 500 per day (maximum). The volume of transaction in 2020 is estimated to be 8,600, resulting in the annual chargeable transaction being approximately 1.2 million.

[Assumptions]

- Annual growth rate of daily business volume is assumed to be 50 %, with reference to the growth rate of inter-bank settlement in Vietnam (2006 - 2010, Central Bank ANNUAL REPORT 2010).[9]
- Average number of transactions is 60% of the maximum rate.
- There are 240 working days in a year.
- All transactions, both online and offline are being charged.
- Cheque clearing is excluded from chargeable transactions.

Table: Projection of Business Volume

Business volume	2013	2014	2015	2016	2017	2018	2019	2020
Daily maximum business volume	500	750	1,125	1,688	2,531	3,797	5,695	8,543
Annual chargeable transaction	72.000	108,000	162,000	243,072	364,464	546,768	820,080	1,230,192

Source: Prepared by the Survey Team based on current data obtained from CBM

2. O&M Cost

Breakdown of the O&M cost for CBM ICT system is:

CBM-NET excluding MCH:	MMK 2.2 billion/yr (Downside: MMK 2.0 billion)
CBM-OA:	MMK 1.2 billion/yr (Downside: MMK 0.4 billion)
Mechanized Clearinghouse:	MMK 0.6 billion/yr (Downside: MMK 0.5 billion)

Cost-revenue analysis is conducted for CBM-NET (excluding MCH), assuming that usage fee is charged on all transactions.

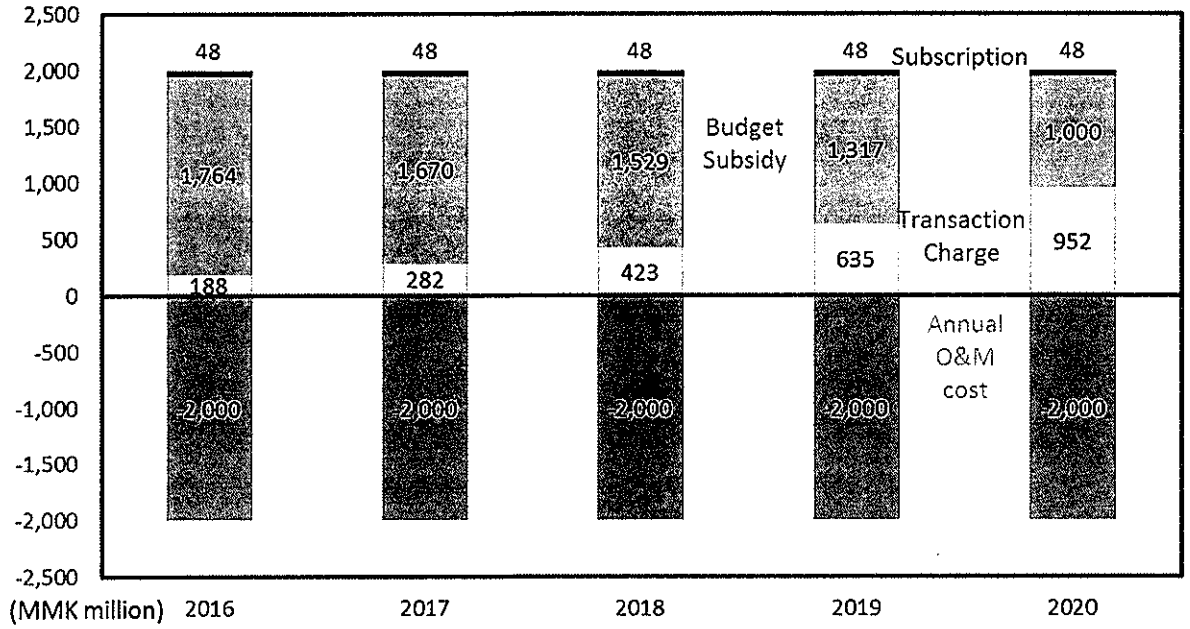
3. Annual Usage Fee Income[10]

(1) Case 1: Budget support will be diminished to MMK 1 billion by 2020 (Subscription = MMK 2 million, fee per transaction: MMK 770)

Assuming that an annual subscription of MMK 2 million plus usage fee of MMK 774 is charged for all transactions utilizing CBM-NET (excluding MCH), annual income will cover MMK 1 billion in 2020, leaving the rest of the amount, i.e. MMK 1 billion to be subsidized by budget support by CBM.

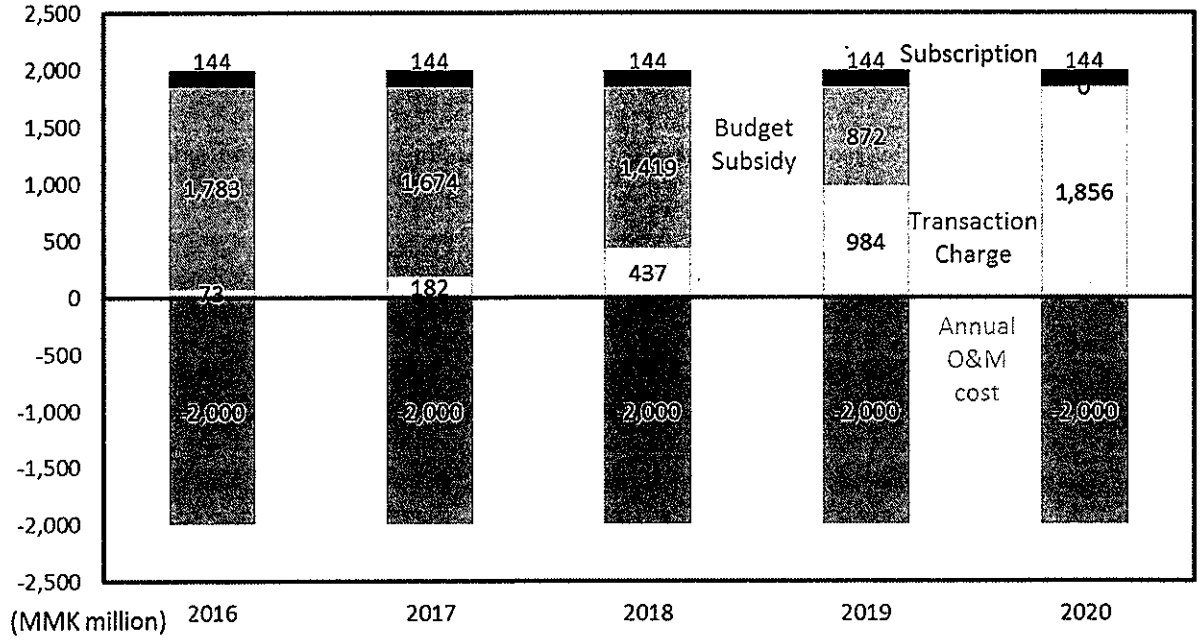
[9] The inter-bank settlement in Vietnam grew 3.5 times from 2006 to 2010 with average growth rate of 37%

[10] Transactions to be charged: interbank fund transfer and other fund transactions, T-bond buying, selling



(2) Case 2: Budget support may be eliminated by 2020 (Subscription = MMK 6 million, fee per transaction: increasing from MMK 300 to 1,500)

Assuming that an annual subscription of MMK 6 million plus usage fee of MMK 300 - 1500 is charged for all transactions utilizing CBM-NET (excluding MCH), annual income will cover the entire cost of required downside O&M cost of MMK 2 billion in 2020, no longer with the need for budgetary support.



4. Conclusion

User fee charging policy may be formulated with the aim of covering the O&M cost of CBM-NET. The fee charging structure, however, should be designed based on the policy to promote the utilization of CBM-NET to encourage manual transactions to shift to electronic transfer. Fee charging policy should therefore be considered with a wider scope to include manual transactions.

Attachment 2: Central Bank ICT Systems in Other Countries

1. Comparison with the Neighbouring Countries

Myanmar's neighbouring Southeast Asian nations have implemented modernization of their central banking system. The forerunner was Vietnam who introduced their interbank payment as early as in 2002. The initiative was funded under the World Bank with a Korean system architecture applied. Cambodia[11] and Lao PDR[12] chose to introduce package applications.

	Major fund source	System	Estimated cost	Inauguration
Cambodia	Asian Development Bank	CMA BCS/X (ACH)	USD 15 million	Dec 2012
Lao PDR	-	CMA RTS/X Oracle Flexcube	- USD 10 million	Mar 2011
Vietnam	World Bank	Hyundai Information Technology	USD 105 million (includes other components)	Jul 2002

2. Usage Fee to compensate for the O&M Cost

There are various patterns of fee collection from the users of central banking settlement system. For example, Bank Indonesia charges IDR 7,500 per transaction for their RTGS payment and settlement system. With an average of 17 million transactions taking place, the total revenue will amount to approximately IDR 134 billion which is equivalent to USD 12 million. Introduction of a similar usage cost charging scheme is therefore expected to bring about a significant amount of income to compensate for the O&M cost of the ICT system. It should be noted that user fee usually charged for transaction which is directly beneficially for participant of settlement system. Housing and Computer equipment of Office Automation should not be included in the user fees.

[11] RTGS and Securities Settlement (CSD) are not included. CMA ACH is only used for Cheque Clearing House just like MCH.

[12] Securities Settlement (CSD) is not included. According to Oracle news release, USD10 million is only the price for Oracle Flexcube.

Annex 2 Japan's Grant Aid

The Government of Japan (hereinafter referred to as "the GOJ") is implementing the organizational reforms to improve the quality of ODA operations, and as a part of this realignment, a new JICA law was entered into effect on October 1, 2008. Based on this law and the decision of the GOJ, JICA has become the executing agency of the Grant Aid for General Projects, for Fisheries and for Cultural Cooperation, etc.

The Grant Aid is non-reimbursable fund provided to a recipient country to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

The Japanese Grant Aid is supplied through following procedures:

・Preparatory Survey

- The Survey conducted by JICA

・Appraisal &Approval

-Appraisal by the GOJ and JICA, and Approval by the Japanese Cabinet

・Authority for Determining Implementation

-The Notes exchanged between the GOJ and a recipient country

・Grant Agreement (hereinafter referred to as "the G/A")

-Agreement concluded between JICA and a recipient country

・Implementation

-Implementation of the Project on the basis of the G/A

2. Preparatory Survey

(1) Contents of the Survey

The aim of the preparatory Survey is to provide a basic document necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of relevant agencies of the recipient country necessary for the implementation of the Project.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of a outline design of the Project.
- Estimation of costs of the Project.

The contents of the original request by the recipient country are not necessarily approved in their initial form as the contents of the Grant Aid project. The Outline Design of the Project is confirmed based on the guidelines of the Japan's Grant Aid scheme.

JICA requests the Government of the recipient country to take whatever measures necessary to achieve its self-

reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the organization of the recipient country which actually implements the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA employs (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the Report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the appropriateness of the Project.

3. Japan's Grant Aid Scheme

(1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes(hereinafter referred to as "the E/N") will be singed between the GOJ and the Government of the recipient country to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Government of the recipient country to define the necessary articles to implement the Project, such as payment conditions, responsibilities of the Government of the recipient country, and procurement conditions.

(2) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the recipient country to continue to work on the Project's implementation after the E/N and G/A.

(3) Eligible source country

Under the Japanese Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased. When JICA and the Government of the recipient country or its designated authority deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm are limited to "Japanese nationals".

(4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by JICA. This "Verification" is deemed necessary to fulfill accountability to Japanese taxpayers.

(5) Major undertakings to be taken by the Government of the Recipient Country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary

measures as Annex 4.

(6) "Proper Use"

The Government of the recipient country is required to maintain and use properly and effectively the facilities constructed and the equipment purchased under the Grant Aid, to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Grant Aid.

(7) "Export and Re-export"

The products purchased under the Grant Aid should not be exported or re-exported from the recipient country.

(8) Banking Arrangements (B/A)

a) The Government of the recipient country or its designated authority should open an account under the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). JICA will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the Verified Contracts.

b) The payments will be made when payment requests are presented by the Bank to JICA under an Authorization to Pay (A/P) issued by the Government of the recipient country or its designated authority.

(9) Authorization to Pay (A/P)

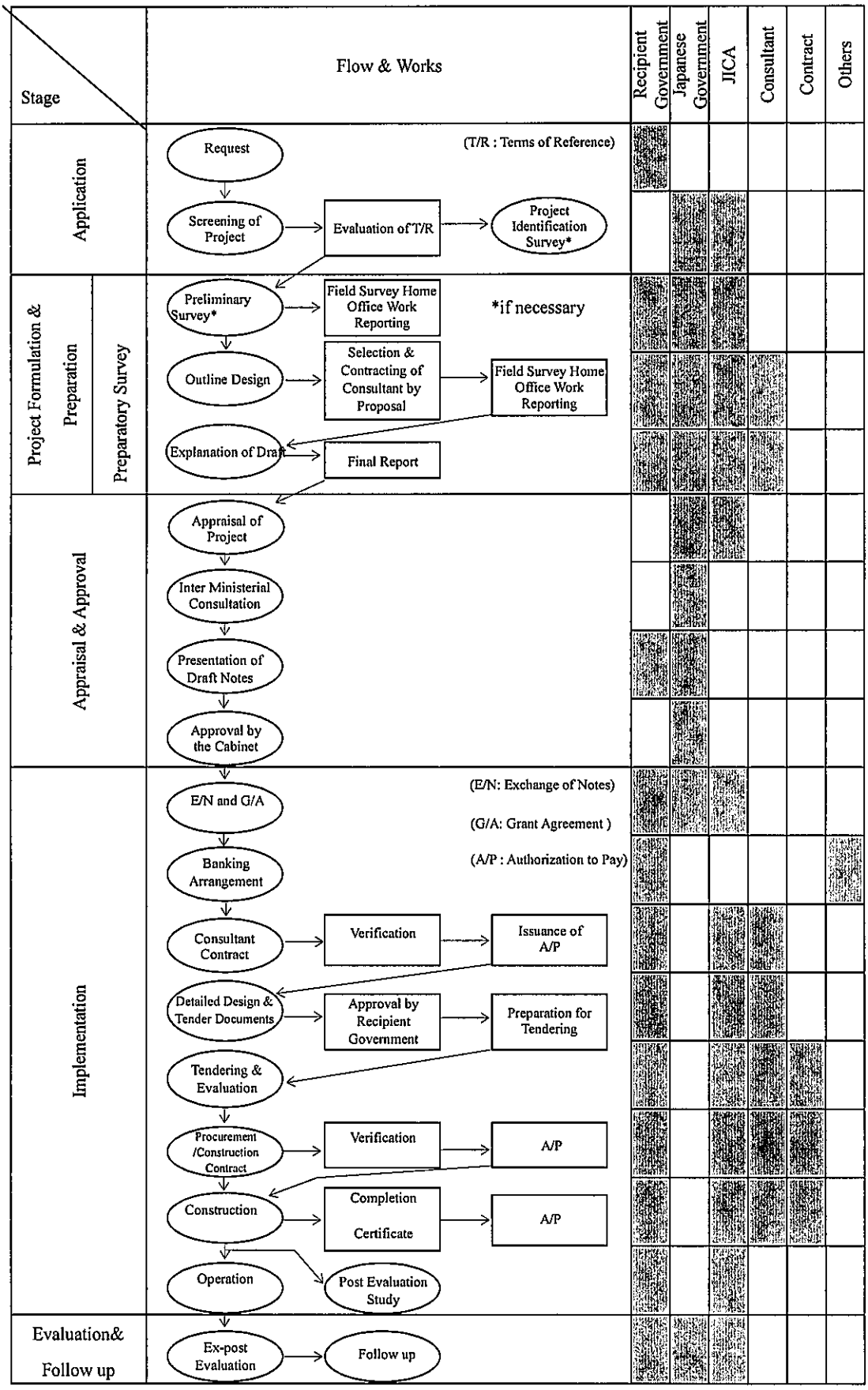
The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions paid to the Bank.

(10) Social and Environmental Considerations

A recipient country must carefully consider social and environmental impacts by the Project and must comply with the environmental regulations of the recipient country and JICA socio-environmental guidelines.

Annex 3

FLOW CHART OF JAPAN's GRANT AID PROCEDURES



Annex 4

Major undertakings to be taken by the both sides

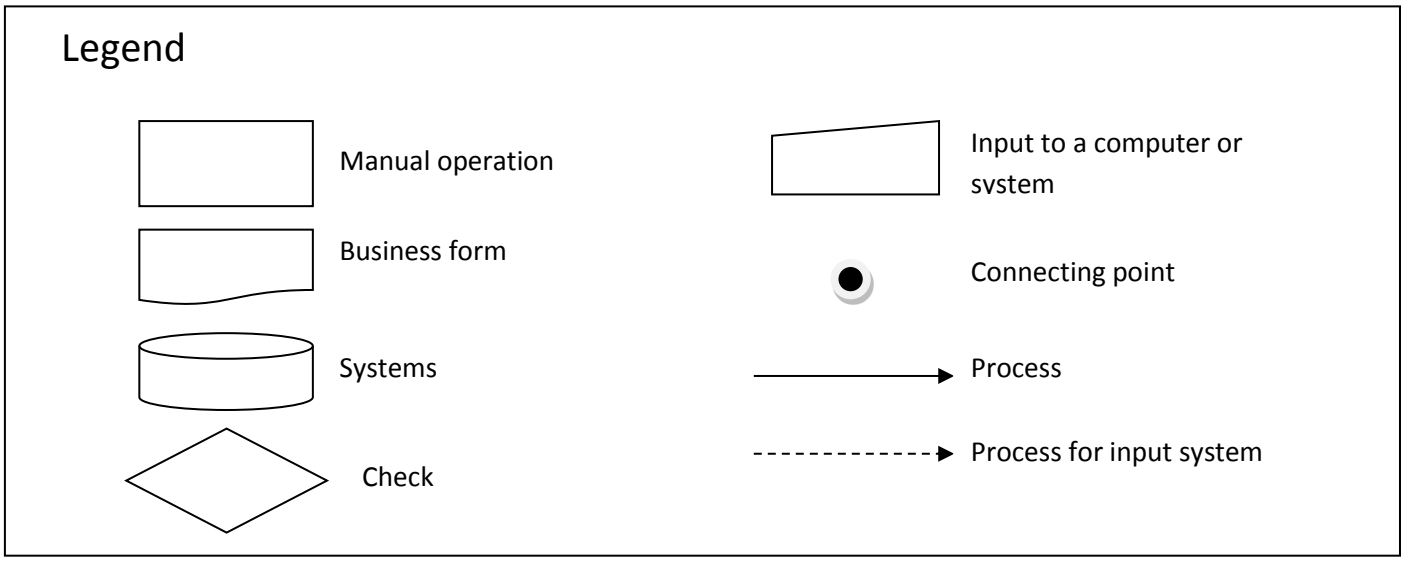
No.	Items	To be covered by Grant Aid	To be covered by Recipient Side
1	To ensure prompt unloading and customs clearance of the products at ports of disembarkation in the recipient country and to assist internal transportation of the products		
	1) Marine (Air) transportation of the Products from Japan to the recipient country	●	
	2) Tax exemption and custom clearance of the Products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
2	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the purchase of the products and the services be exempted		●
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and services such facilitation and arragements as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
4	To ensure that the facilities and equipment be maintained and used properly and effectively under the Project		●
5	To bear the expenses, other than those covered by the Grant, necessary for the implementation of the Project such as preparation of infrastructures		●
6	To bear the following commissions paid to the Japanese bank for banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commissions		●
7	To give due environmental and social consideration in the implementation of the Project		●

(B/A : Banking Arrangement, A/P : Authorization to Pay)

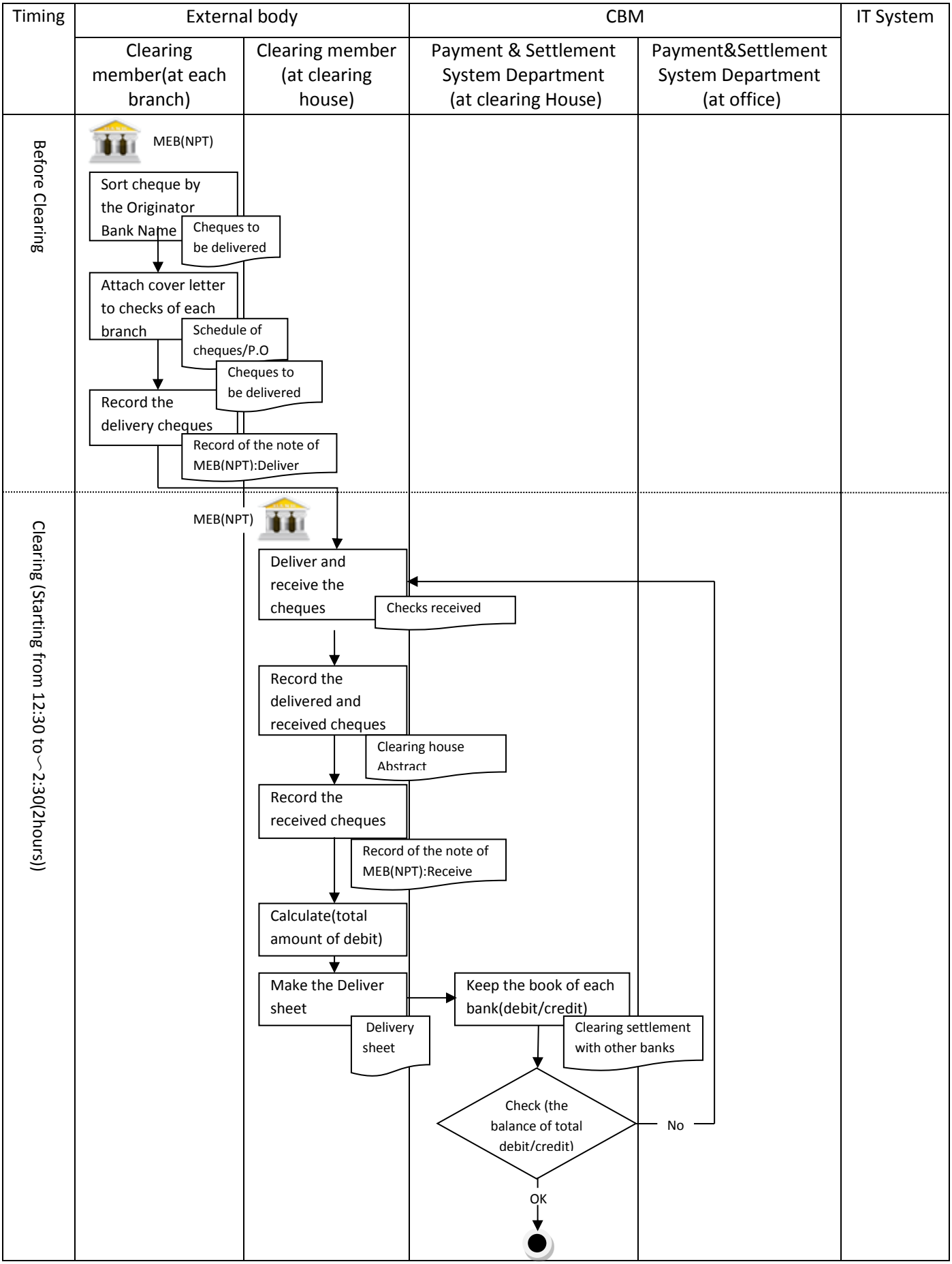
Attachment 6 Flow of the Current Business Operations

Flow of the Current Business Operations

No	Title
1	Clearing
2	Cash Deposit
3	Cash Withdraw
4	Fund transfer without cheque
5	Fund transfer with CBM cheque
6	Fund transfer with Bank cheque
7	Fund transfer without cheque (YGN → NPT)
8	Fund transfer with CBM cheque (NPT → YGN)
9	Fund transfer with Bank cheque (NPT → YGN)
10	Daily position
11	Deposit Auction
12	FX Auction (CBM sells $ to bank)
13	Cash Deposit (Foreign currency)
14	Cash Withdraw (Foreign currency)
15	Fund transfer(Foreign Currency) #1
16	Fund transfer(Foreign Currency) #2
17	Fund Transfer (Foreign currency) (YGN → NPT)
18	Foreign currency buy (CBM buy $ from KBZ(YGN))
19	Foreign currency sell (CBM sell $ to KBZ(YGN))
20	T-bond issuance
21	T-bill issuance
22	T-bill (owned by CBM) renewal
23	T-bill (owned by banks) renewal
24	Treasury bond/bill selling from CBM to Bank
25	Treasury bond selling from MEB to others
26	Interest Payment of T-bond/bill
27	Redemption of T-bond/bill
28	T-bond loan
29	T-bond repayment

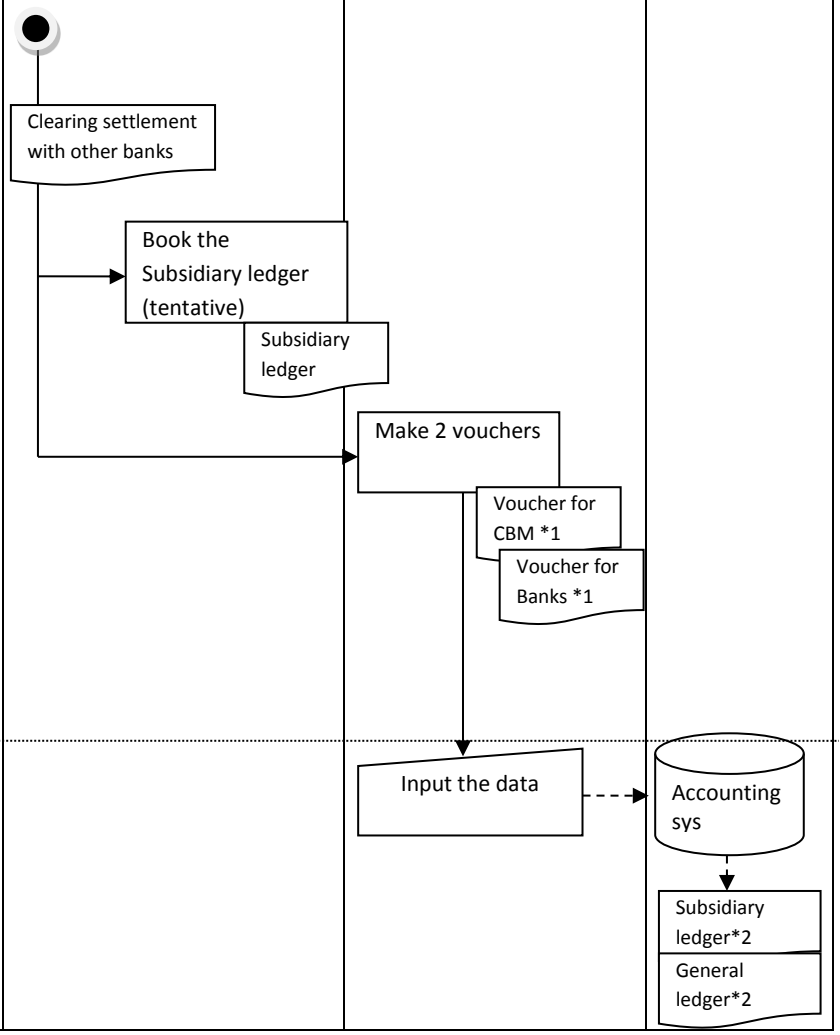

Legend
Manual operation
Business form
Systems
Check
Input to a computer or system
Connecting point
Process
Process for input system

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Clearing	1		JUL-12	1/2



Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Clearing	1		JUL-12	2/2

Timing	External body		CBM		IT System
	Clearing member(at each branch)	Clearing member(at clearing house)	Payment & Settlement System Department (at clearing House)	Payment & Settlement System Department (at office)	
14:30 ～ 15:00					
1 month later					

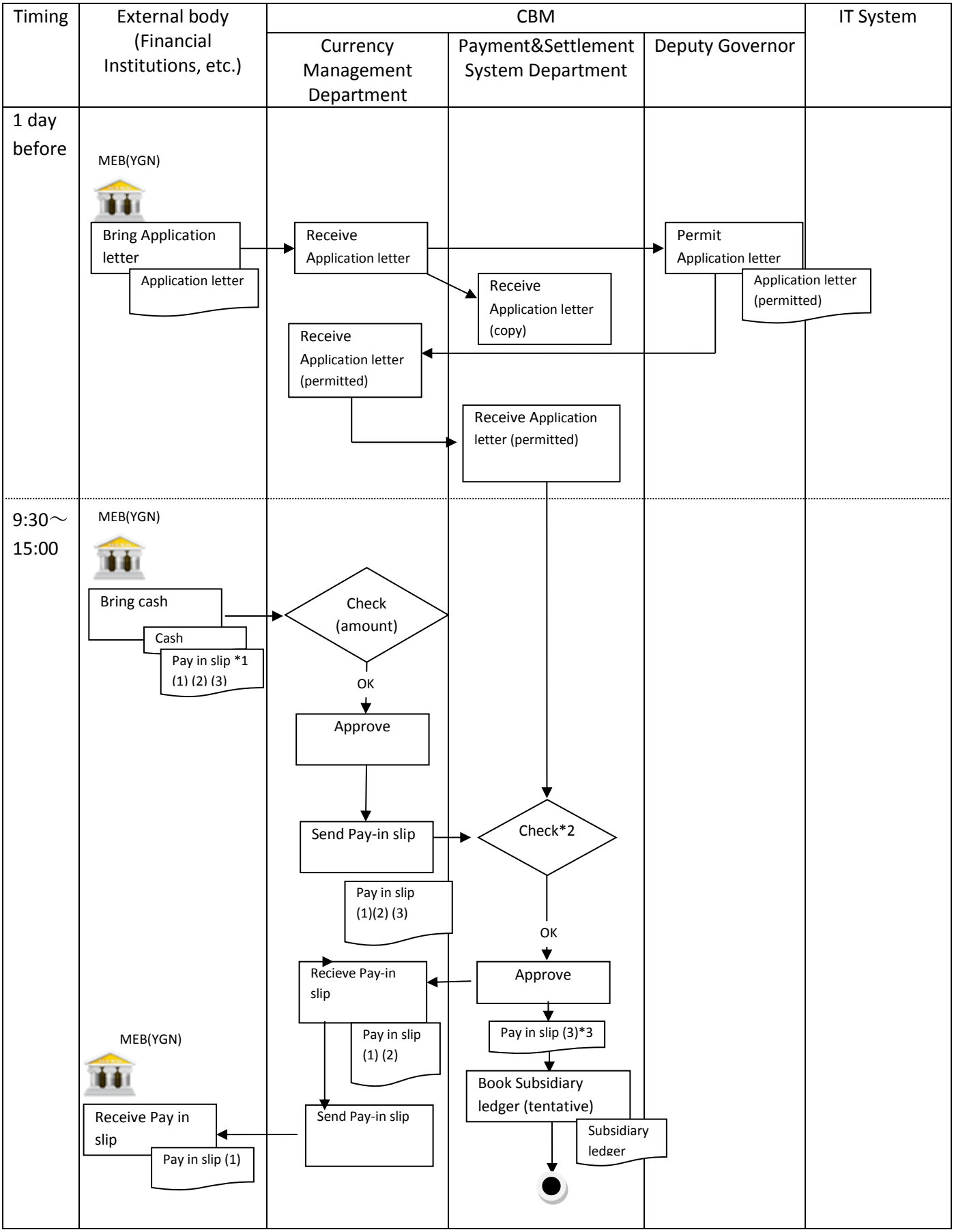


Remarks

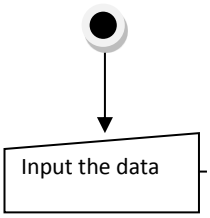
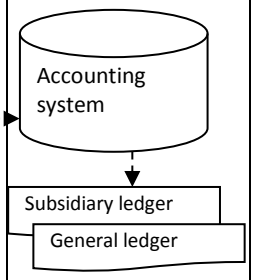
*1 Dr/Cr; Clearing house a/c, Cr/Dr; Banks a/c

*2 Making Subsidiary ledger and General ledger with two ways (manual and the system output). Collate the results given by two methods for the purpose of checking them mutually.

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Cash Deposit	2		JUL-12	1/2



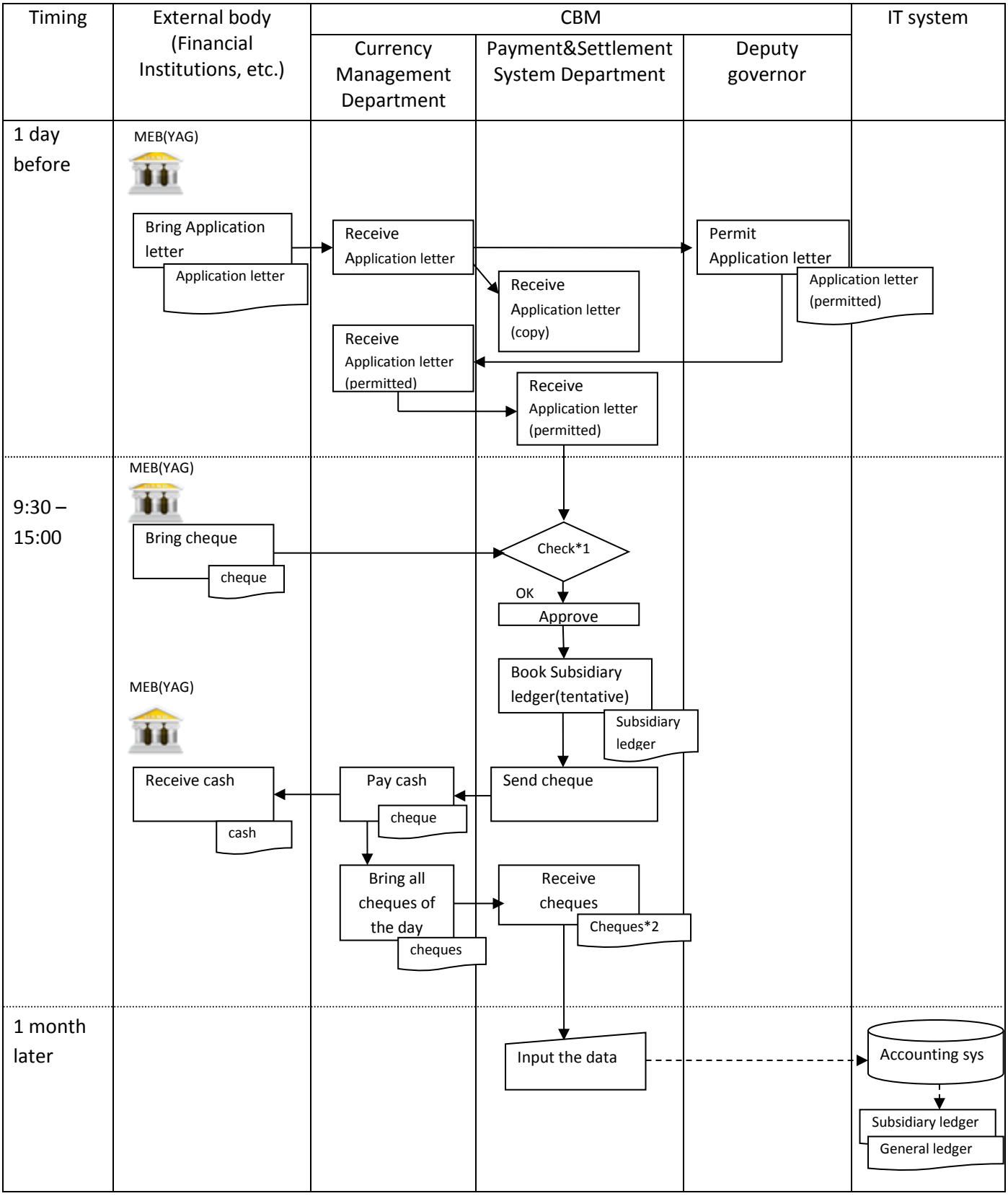
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Cash Deposit	2		JUL-12	2/2

Timing	External body (Financial Institutions, etc.)	CBM			IT System
		Currency Management Department	Payment&Settlement System Department	Deputy Governor	
1 month later					

Remarks

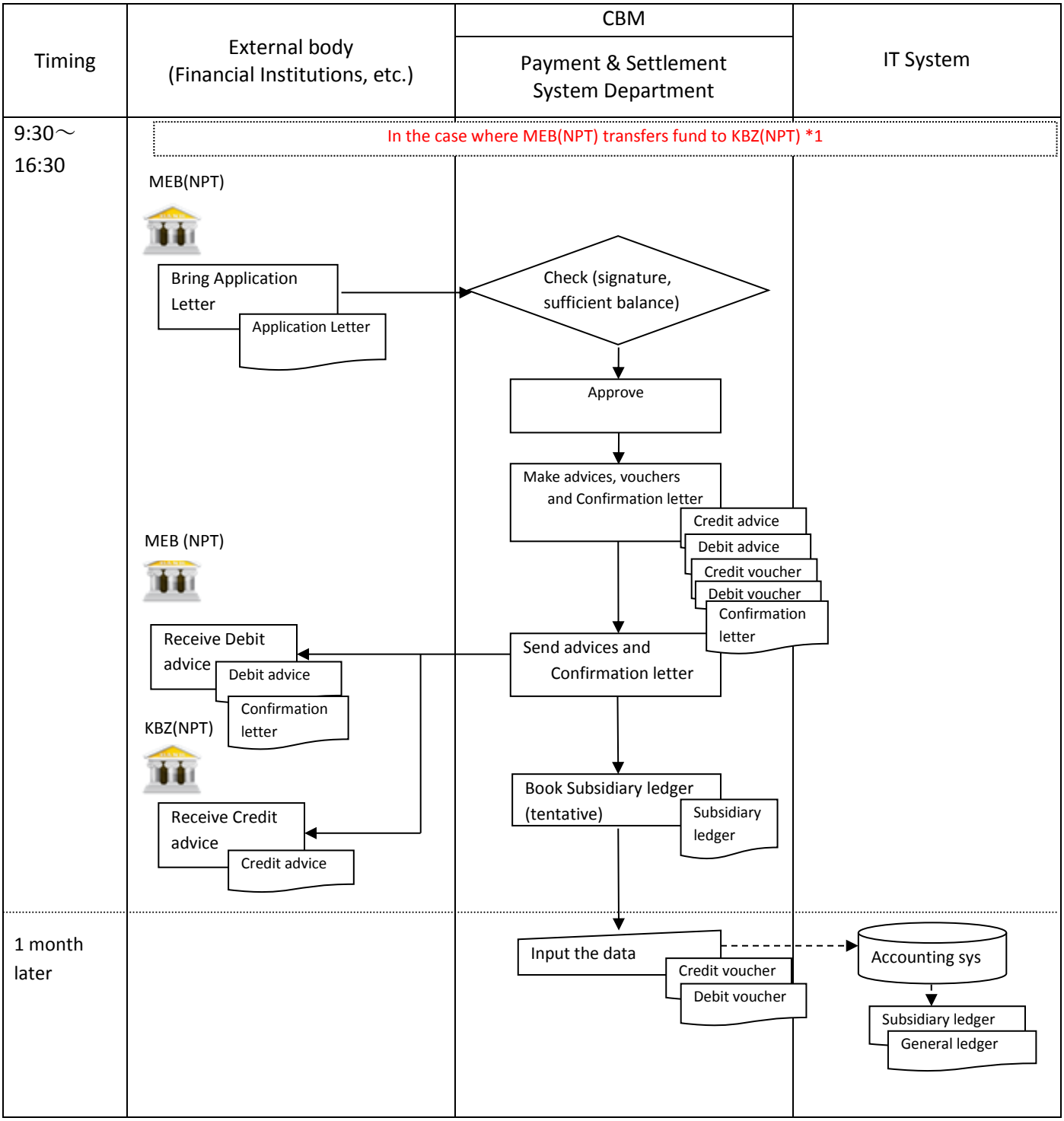
*1 Pay in slip (1) : for bank , Pay in slip(2) : for CMD , Pay in slip(3):for PSSD
*2 Check (amount, Financial Institution code, signature ,currency management receipt signature, application letter(permitted))
*3 Dr: Currency a/c Cr: MEB(YGN) a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Cash Withdraw	3		JUL-12	1/1



Remarks
*1 check (amount, Financial Institution code, signature, application letter(permitted))
*2 Dr: MEB(YGN) a/c, Cr: Currency a/c

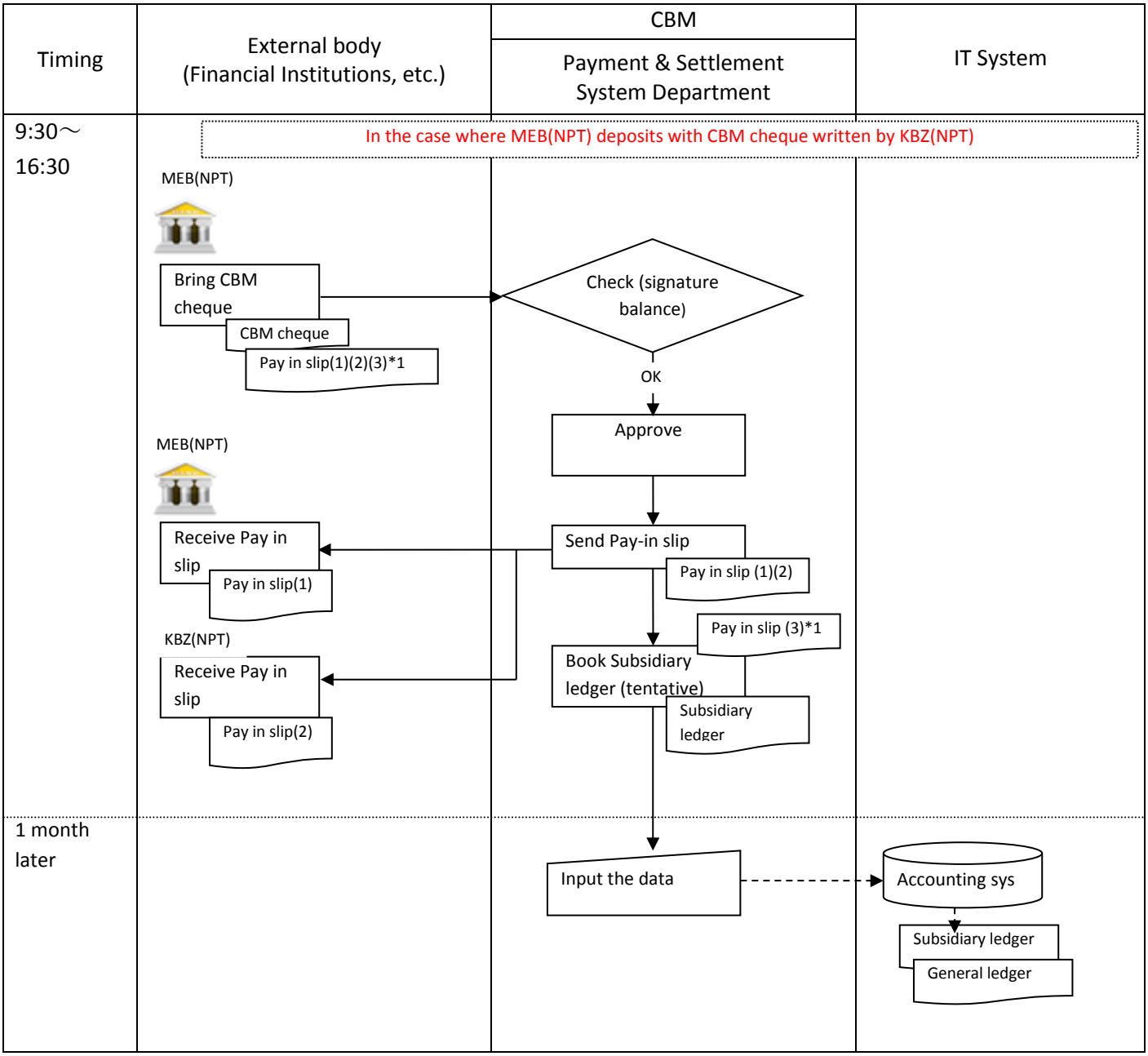
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer without cheque	4		JUL-12	1/1



Remarks

*1 different banks (and also same bank) within the same area: No need for service charge

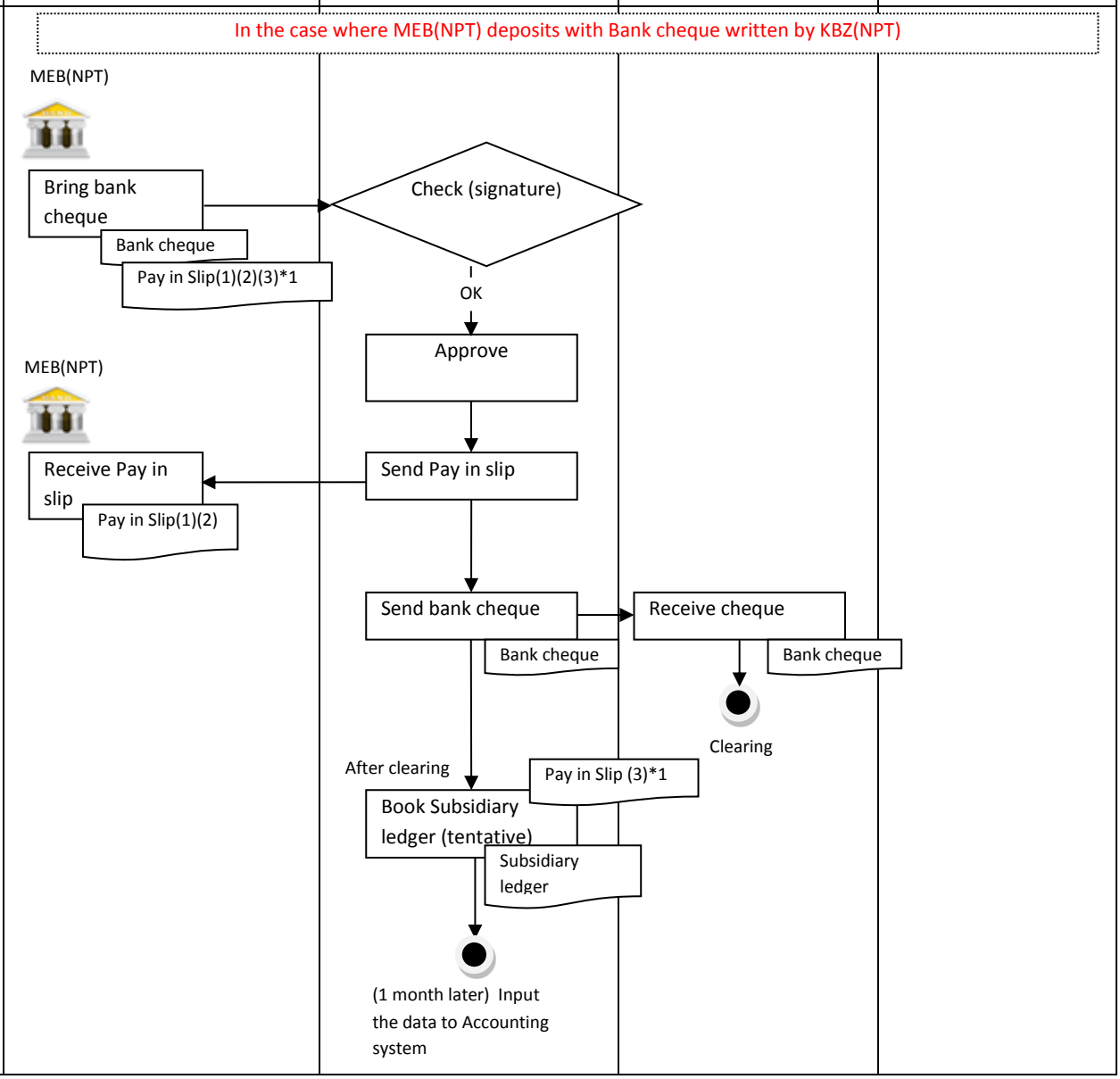
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer with CBM cheque	5		JUL-12	1/1



Remarks
*1 Dr: KBZ(NPT) a/c, Cr: MEB(NPT) a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer with Bank cheque	6		JUL-12	1/1

Timing	External body (Financial Institutions, etc.)	CBM		IT System
		Payment & Settlement System Department (at office)	Payment&Settlement System Department (at clearing house)	
9:30～16:30				

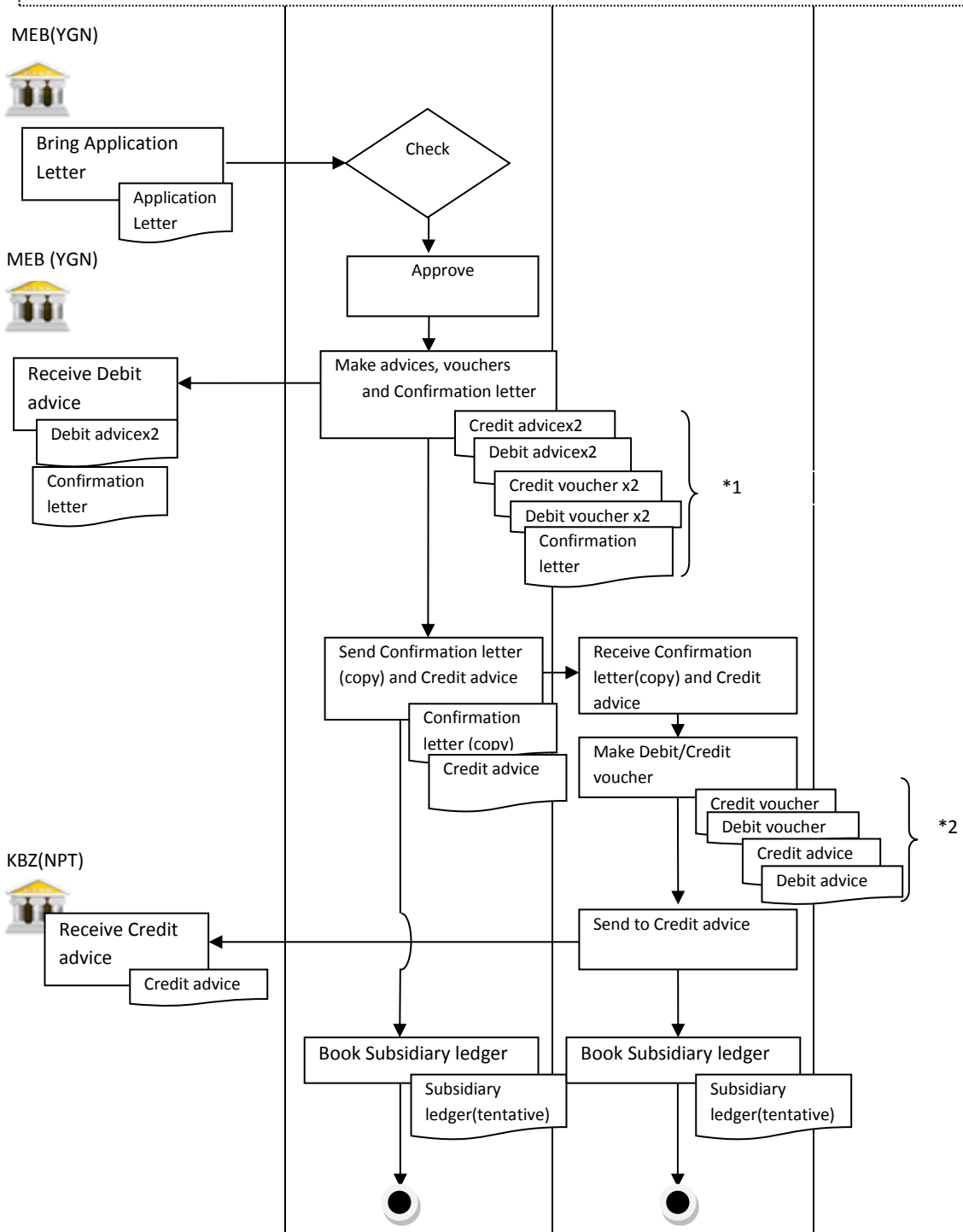


Remarks

*1 Dr: Clearing banker's a/c, Cr: MEB(NPT) a/c

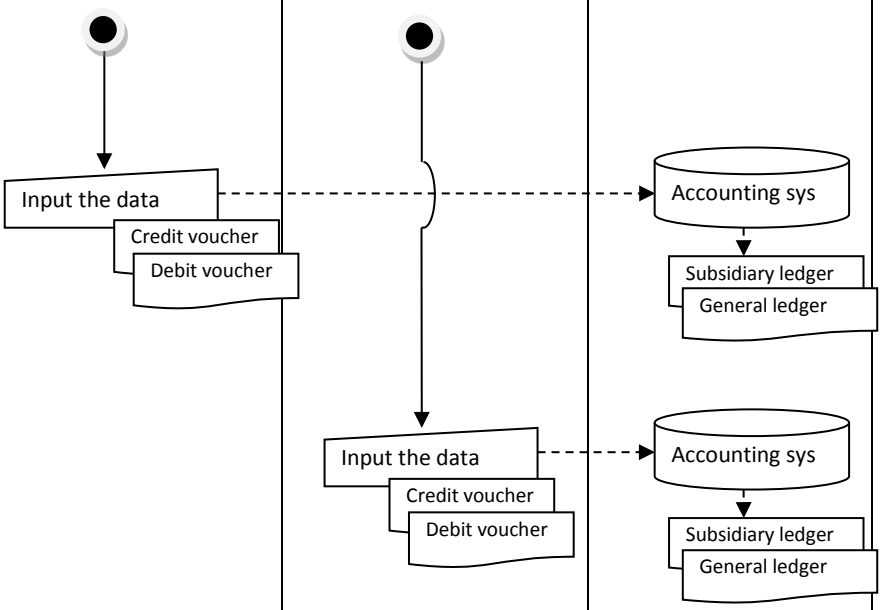
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer without cheque (YGN → NPT)	7		JUL-12	1/2

Timing	External body (Financial Institutions, etc.)	CBM		IT System
		Payment & Settlement System Department (Yangon)	Payment & Settlement System Department (Nay Pyi Taw)	
9:30～16:30	In the case where MEB(YAG) transfers fund to KBZ(NPT)			



Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer without cheque (YGN → NPT)	7		JUL-12	2/2

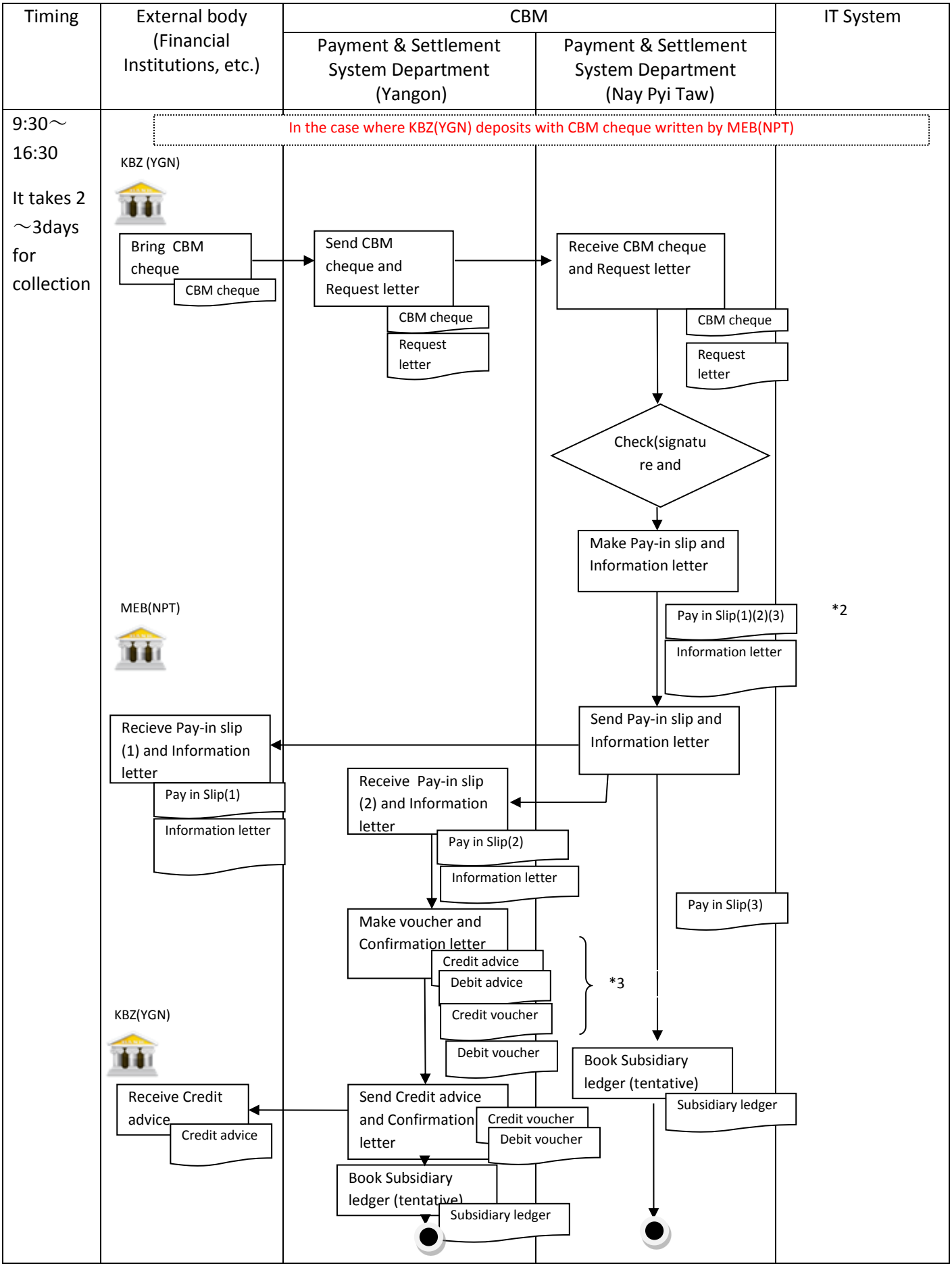
Timing	External body (Financial Institutions, etc.)	CBM		IT System
		Payment & Settlement System Department (Yangon)	Payment & Settlement System Department (Nay Pyi Taw)	
1 month later				



Remarks

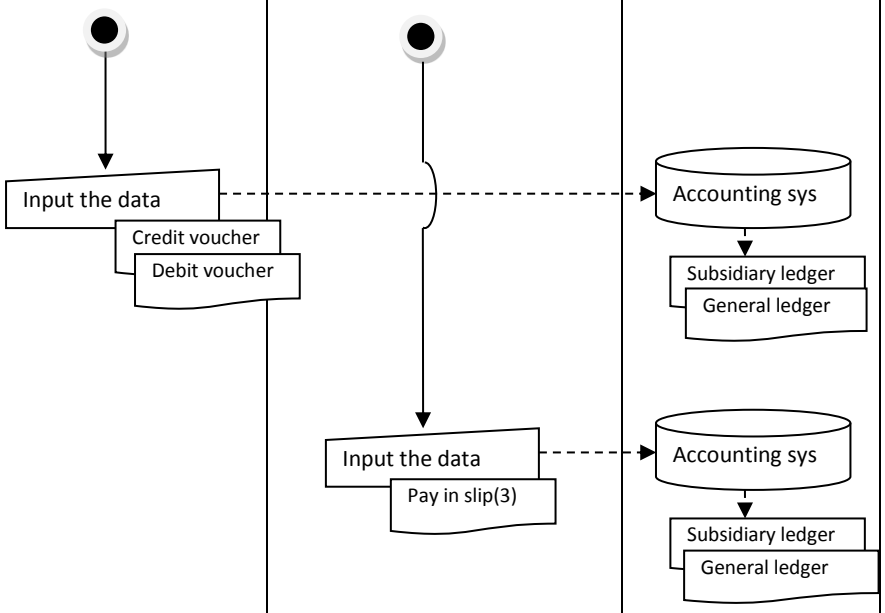
*1 Different banks (and also same bank) between different areas need for service charge (0.05%) and need 4 vouchers.
Dr: MEB (YGN) a/c, Cr: CBM (NPT) a/c
Dr: MEB (YGN) a/c, Cr: CBM income a/c
*2 Dr: CBM (YGN) a/c, Cr: KBZ (NPT) a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer with CBM cheque (NPT →YGN)	8		JUL-12	1/2



Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer with CBM cheque (NPT →YGN)	8		JUL-12	2/2

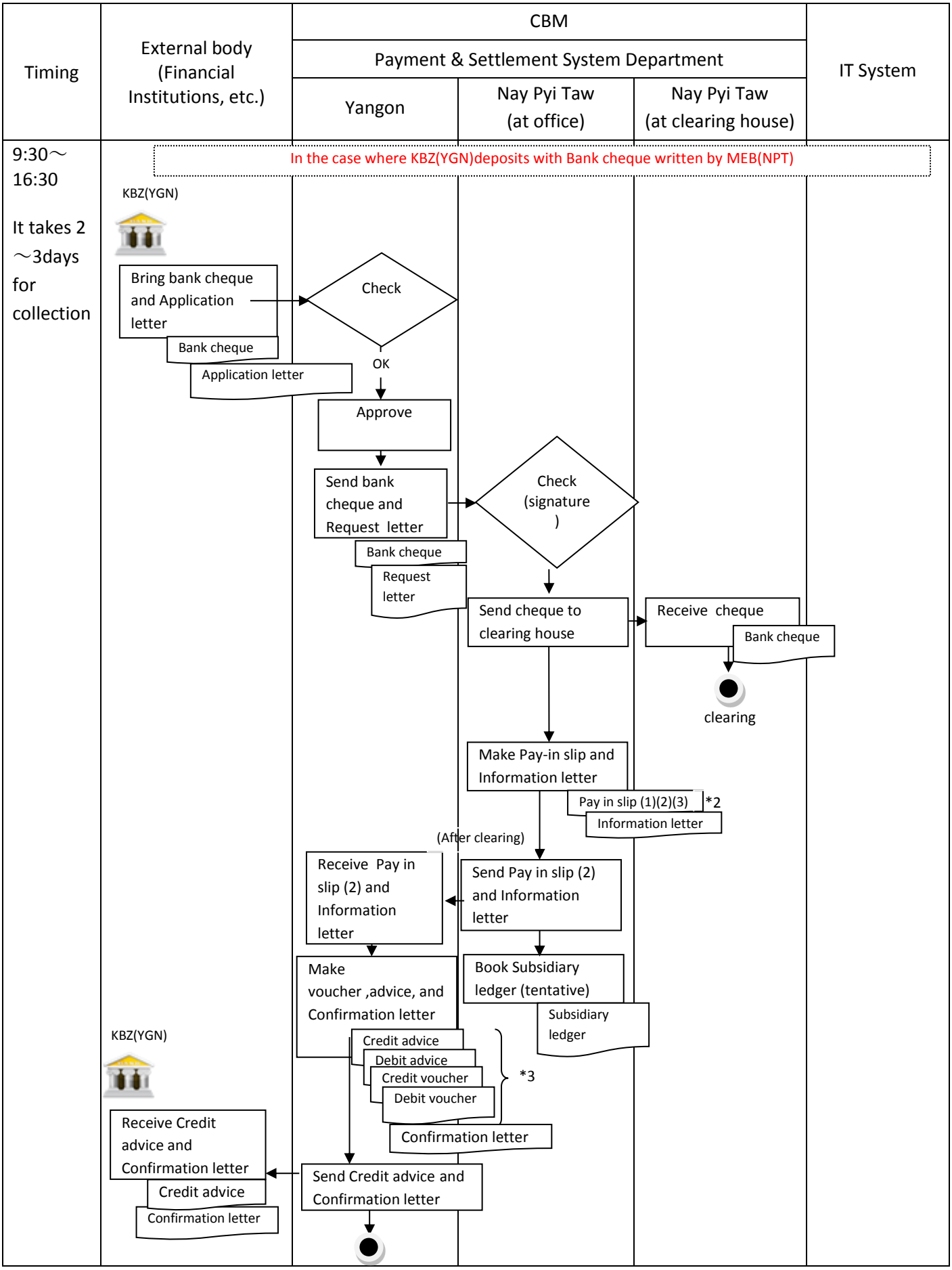
Timing	External body (Financial Institutions, etc.)	CBM		IT System
		Payment & Settlement System Department (Yangon)	Payment & Settlement System Department (Nay Pyi Taw)	
1 month later				



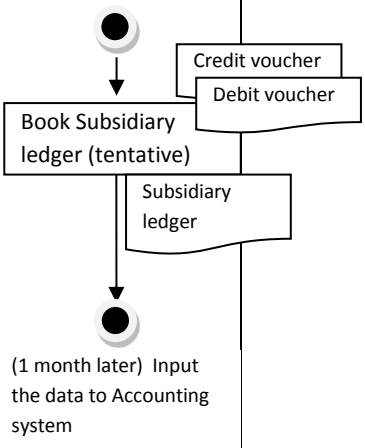
Remarks

*1 in this case, pay in slip(2) is not used
*2 Dr: MEB(NPT) a/c, Cr: CBM(YGN) a/c
*3 Dr: CBM(NPT) a/c, Cr: KBZ (YGN) a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer with Bank cheque (NPT →YGN)	9		JULY-12	1/2



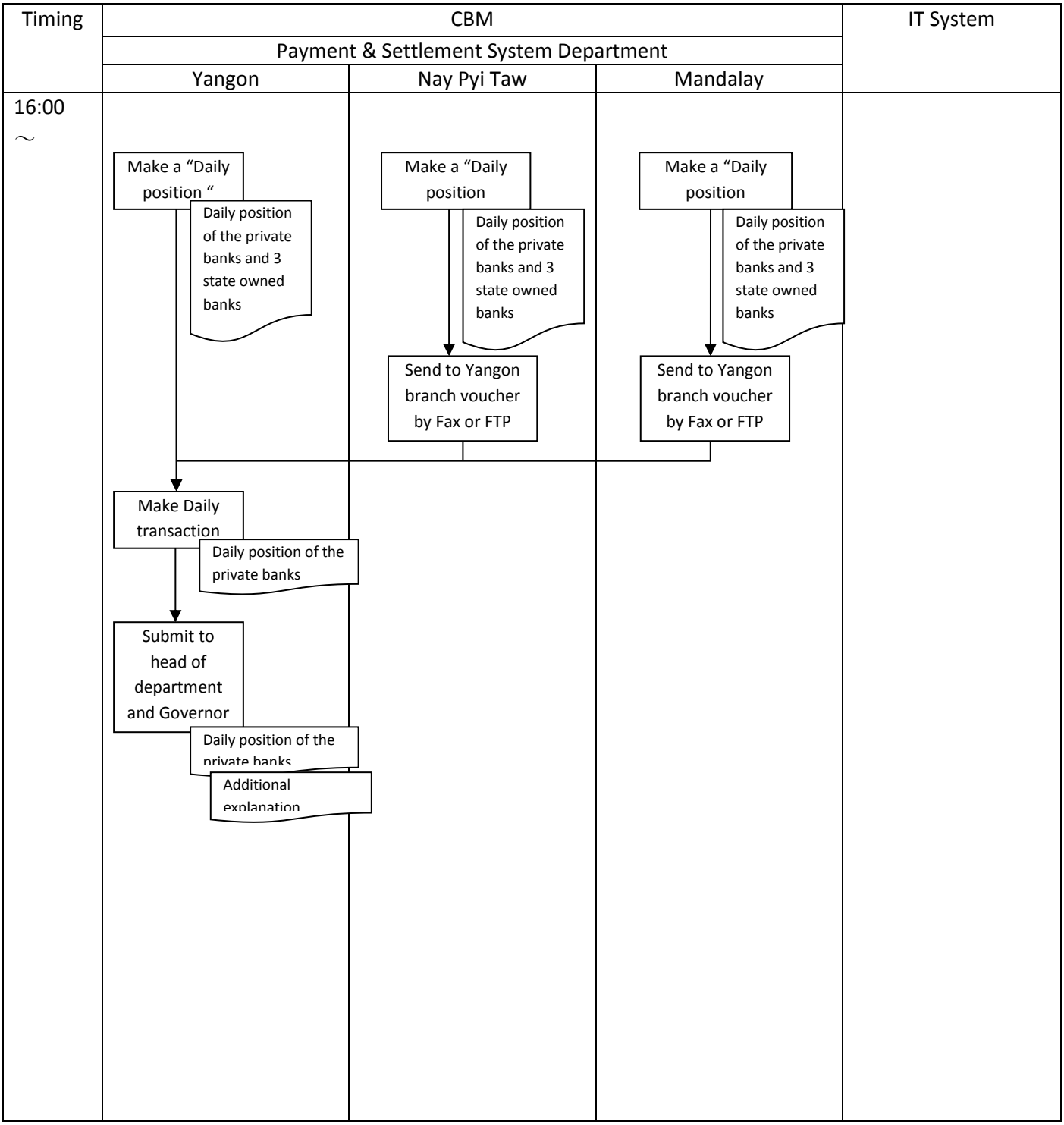
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer with Bank cheque (NPT →YGN)	9		JULY-12	2/2

Timing	External body (Financial Institutions, etc.)	CBM			IT System
		Payment & Settlement System Department			
		Yangon	Nay Pyi Taw (at office)	Nay Pyi Taw (at clearing house)	
					

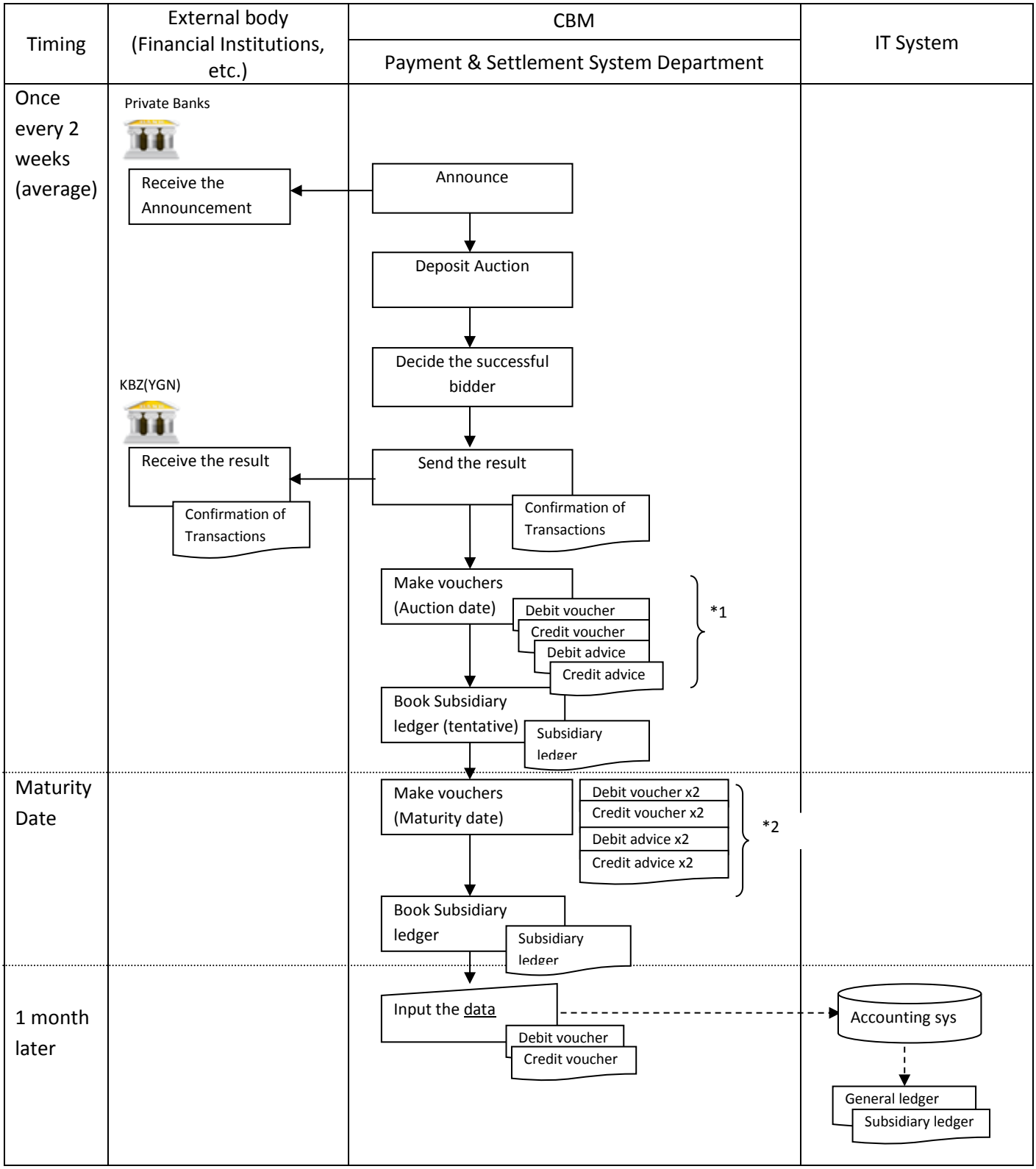
Remarks

*1 in this case, pay in slip(2) is not used
*2 Dr: Clearing Banker's a/c, Cr: CBM(YGN) a/c
*3 Dr: CBM(NPT) a/c , Cr: KBZ(YGN) a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Daily position	10		JULY-12	1/1



Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Deposit Auction	11		JULY-12	1/1



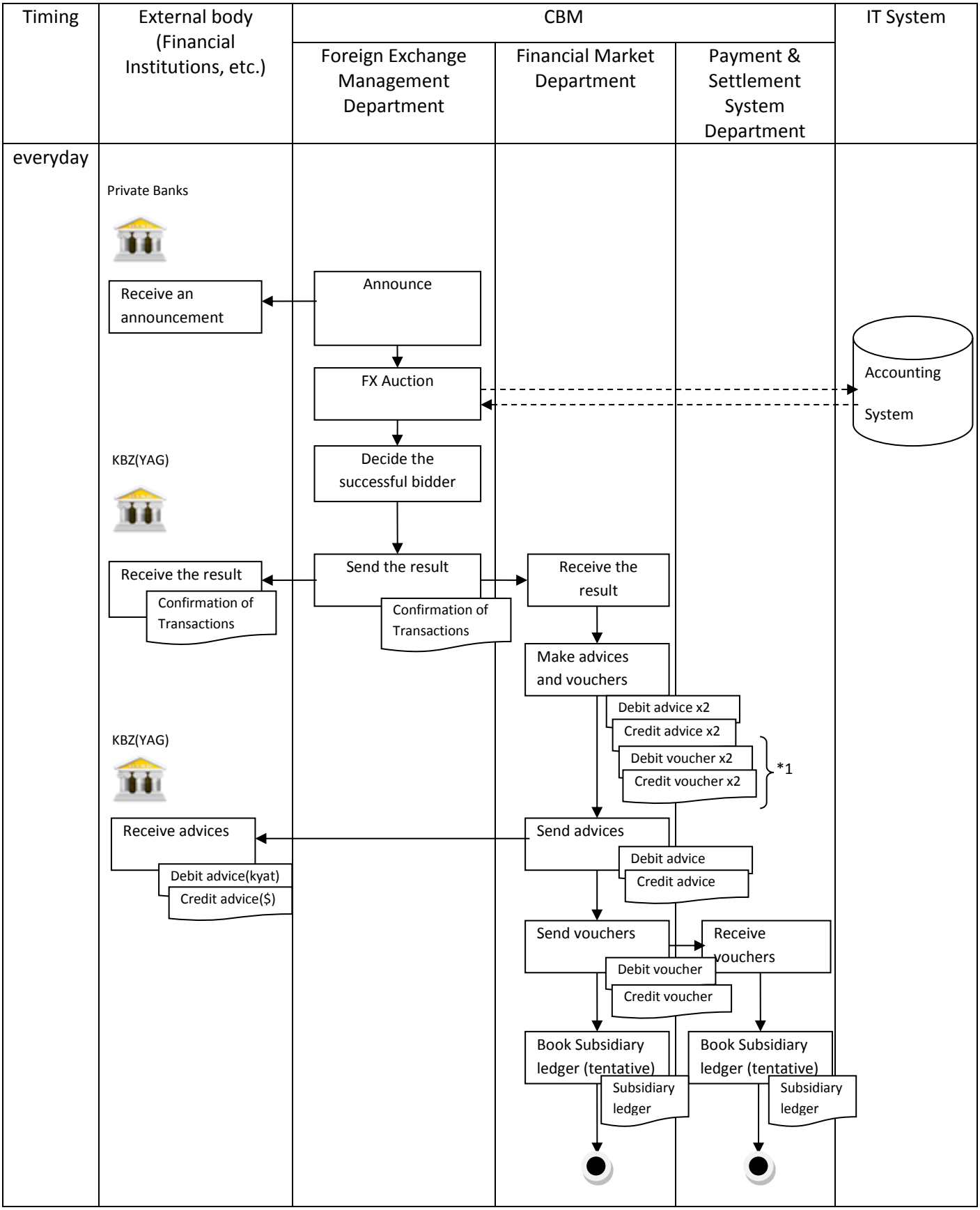
Remarks

*1 Dr: KBZ(YGN) a/c ,Cr: Deposit Auction a/c

*2 Dr: Deposit Auction a/c, Cr KBZ(YGN) a/c ・・・principal

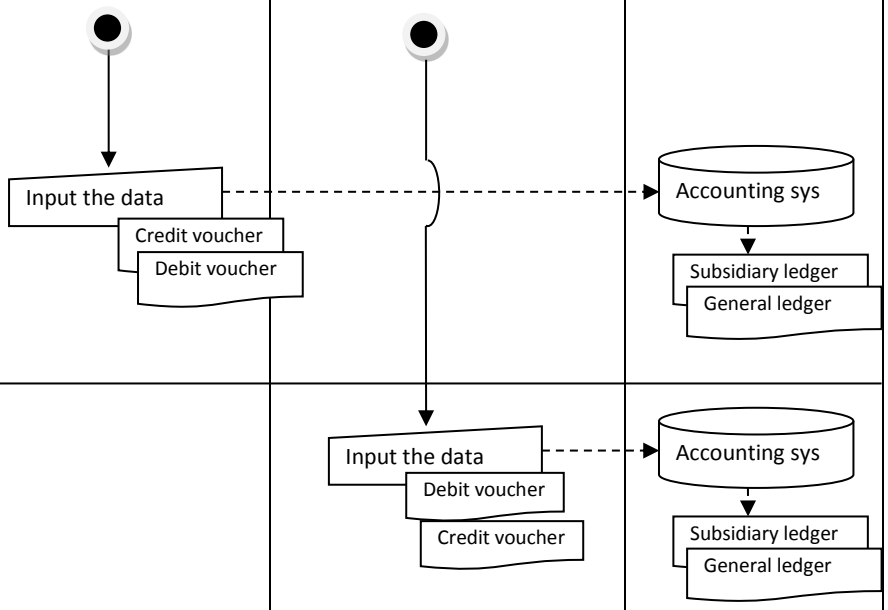
Dr: interest on deposit auction, Cr KBZ(YGN) a/c ・・・interest

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	FX Auction (CBM sells $ to bank)	12		JULY-12	1/2



Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	FX Auction (CBM sells $ to bank)	12			2/2

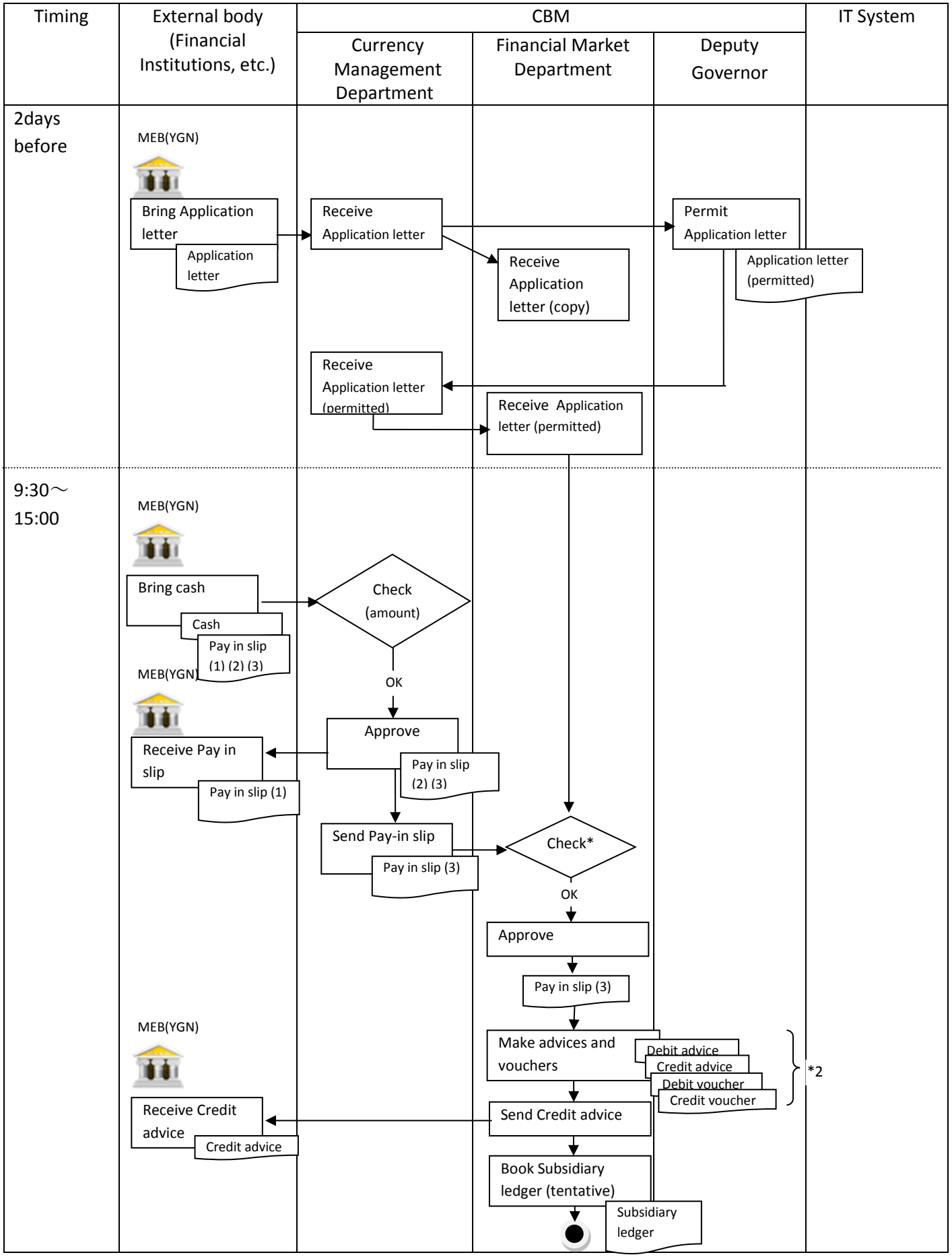
Timing	External body (Financial Institutions, etc.)	CBM		IT System
		Financial Market Department	Payment & Settlement System Department	
Same day or 1 day later				
1 month later				



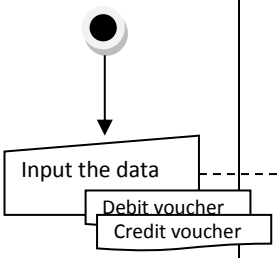
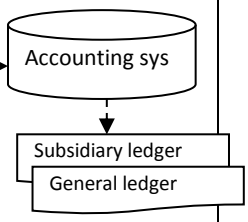
Remarks

*1 Dr:Sundry Deposit a/c , Cr: KBZ(YGN) FX deposit a/c …$
Dr:KBZ(YGN) a/c , Cr: Suspense a/c …kyat

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Cash Deposit(foreign currency)	13		JULY-12	1/2



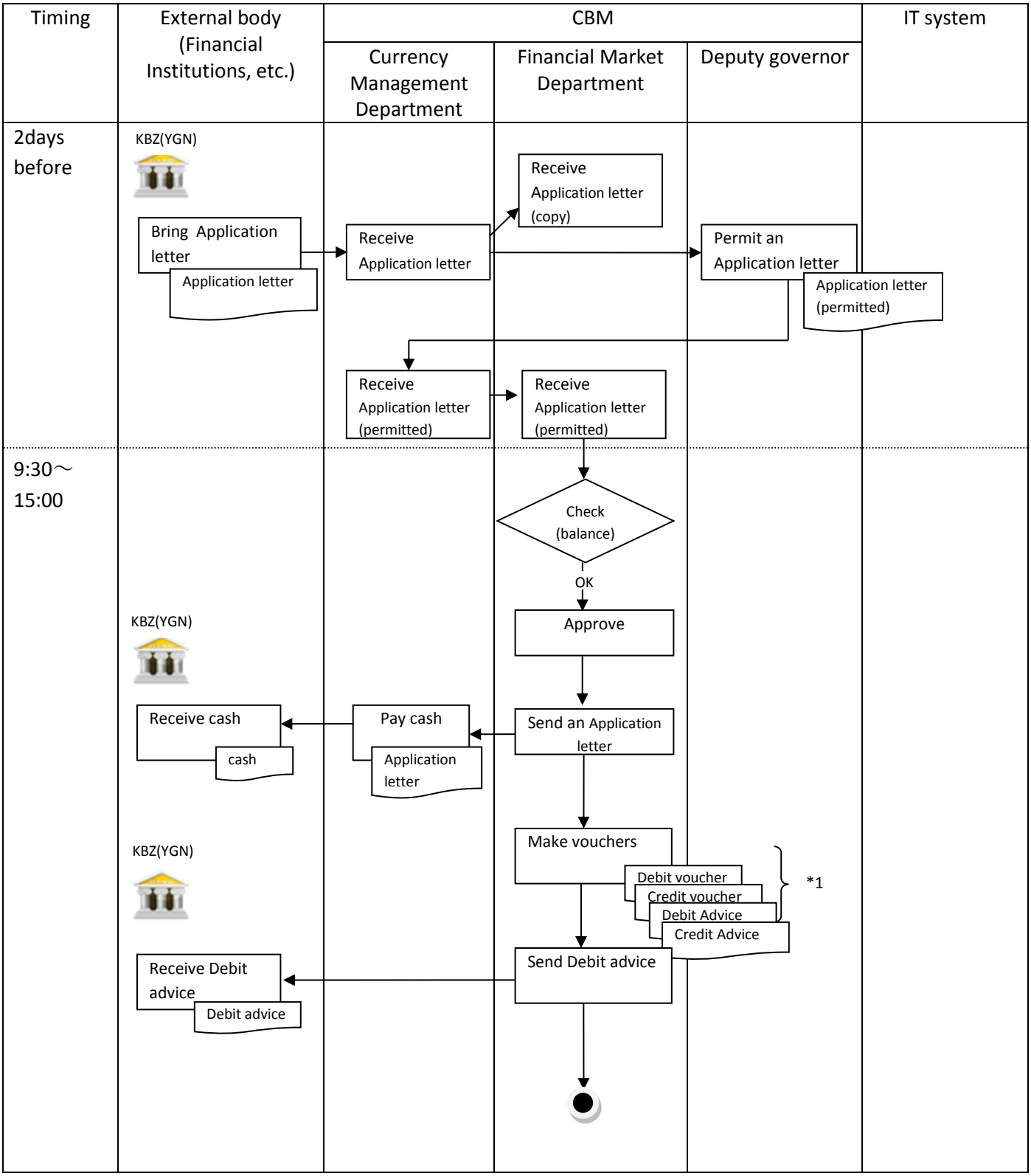
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Cash Deposit(foreign currency)	13		JULY-12	2/2

Timing	External body (Financial Institutions, etc.)	CBM			IT System
		Currency Management Department	Financial Market Department	Deputy Governor	
Same day or 1 day later					

Remarks

*1 Check (amount, Financial Institution code, signature ,currency management receipt signature, application letter(permitted)
*2 Dr: Foreign currency a/c, Cr: MEB(YGN) FX deposit a/c

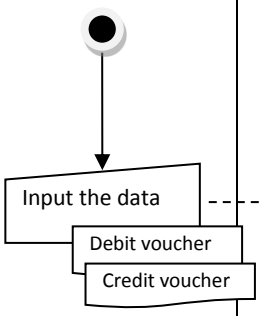
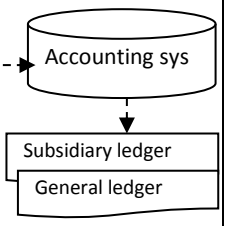
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Cash Withdraw(foreign currency)	14		JULY-12	1/2



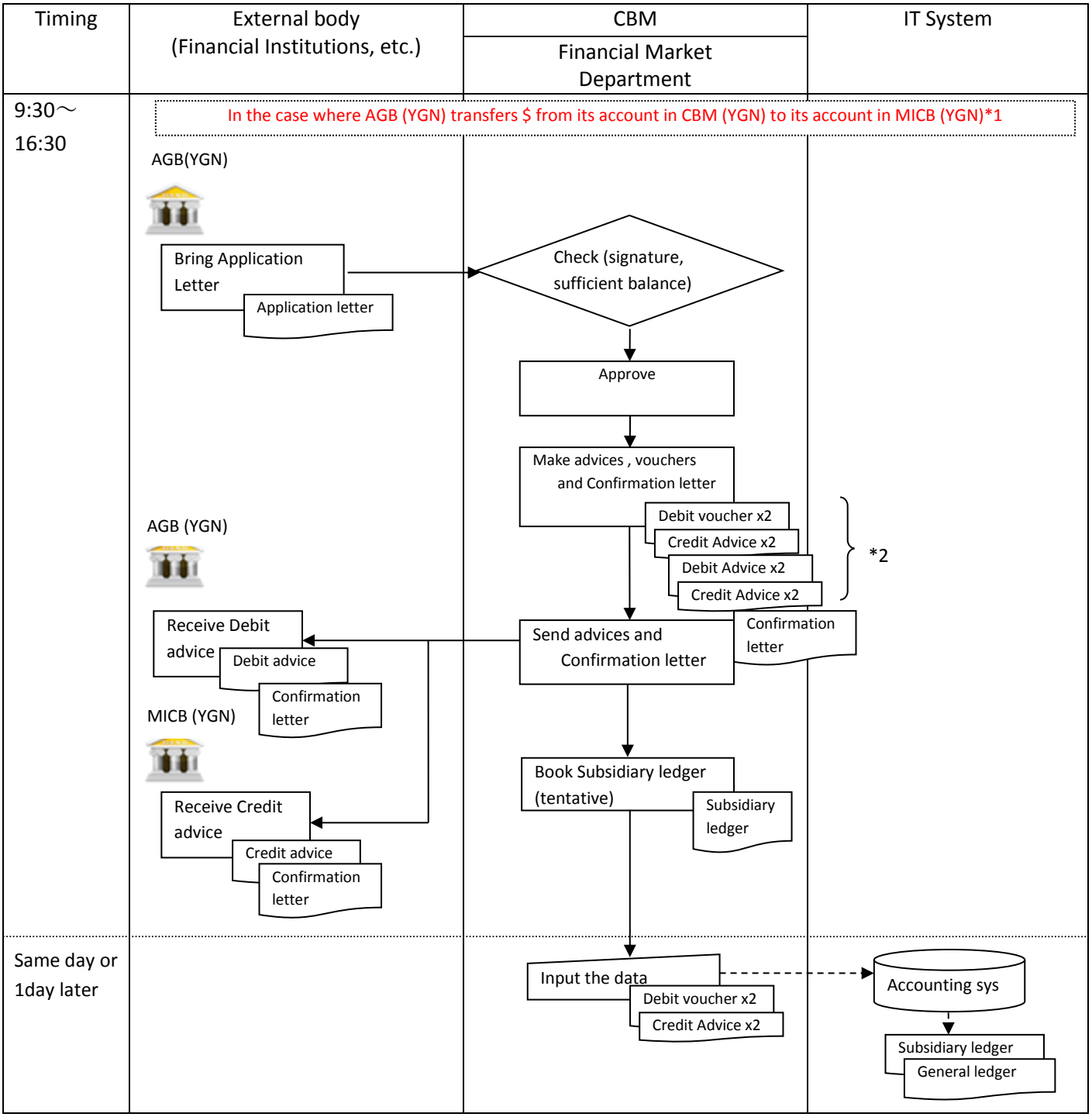
Remarks

*1 Dr: KBZ(YGN) FX deposit a/c , Cr: foreign currency a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Cash Withdraw(foreign currency)	14		JULY-12	2/2

Timing	External body (Financial Institutions, etc.)	CBM			IT systems
		Currency Management Department	Financial Market Department	Deputy governor	
Same day or 1day later					

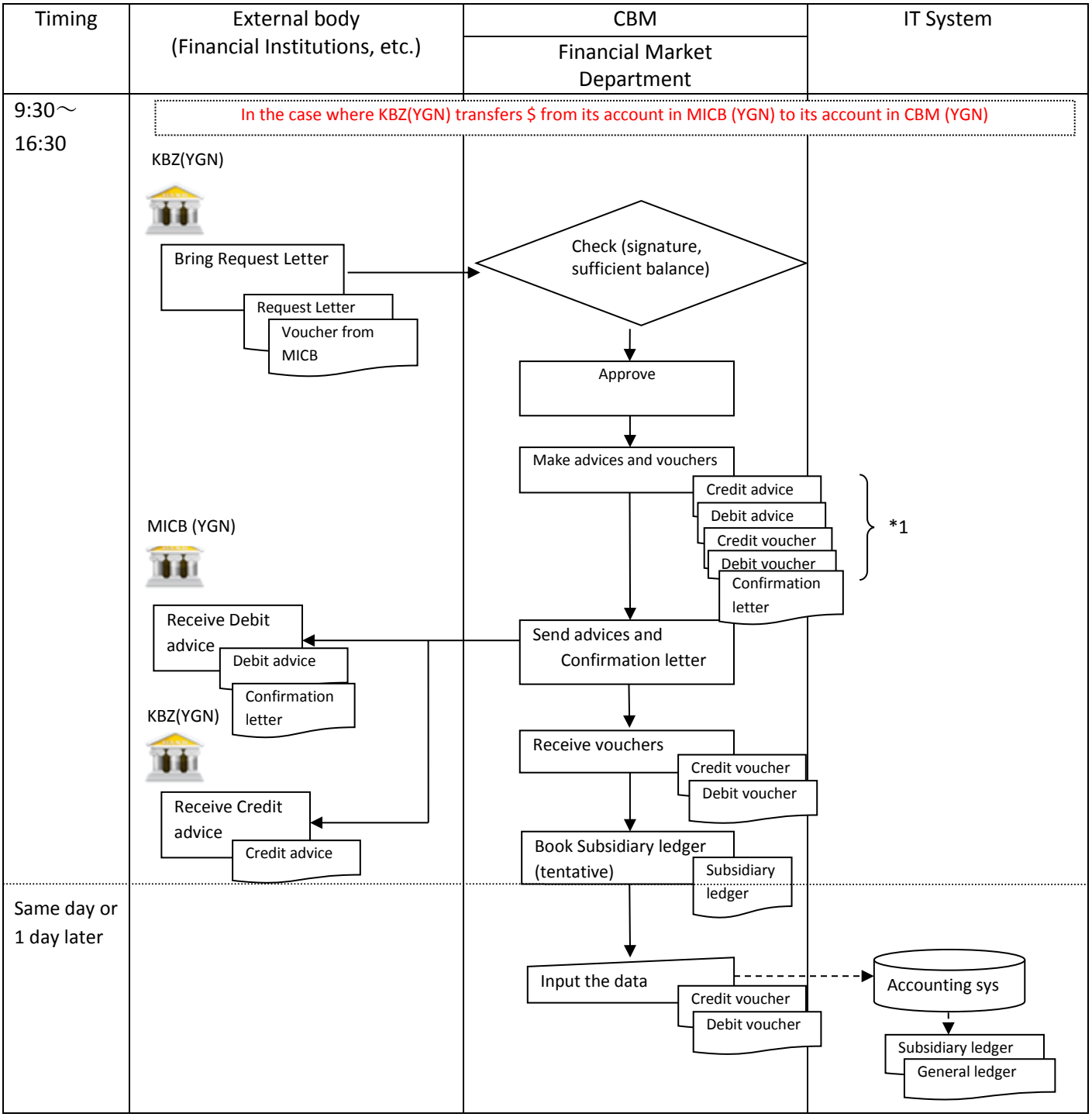
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer(Foreign Currency) #1	15			1/1



Remarks

*1 Charges $2 (Same area), $15 (different areas) by each transaction
*2 Dr: AGB(YGN) FX a/c, Cr: MICB(YGN) a/c, Dr: AGB(YGN) a/c , Cr: CBM income a/c

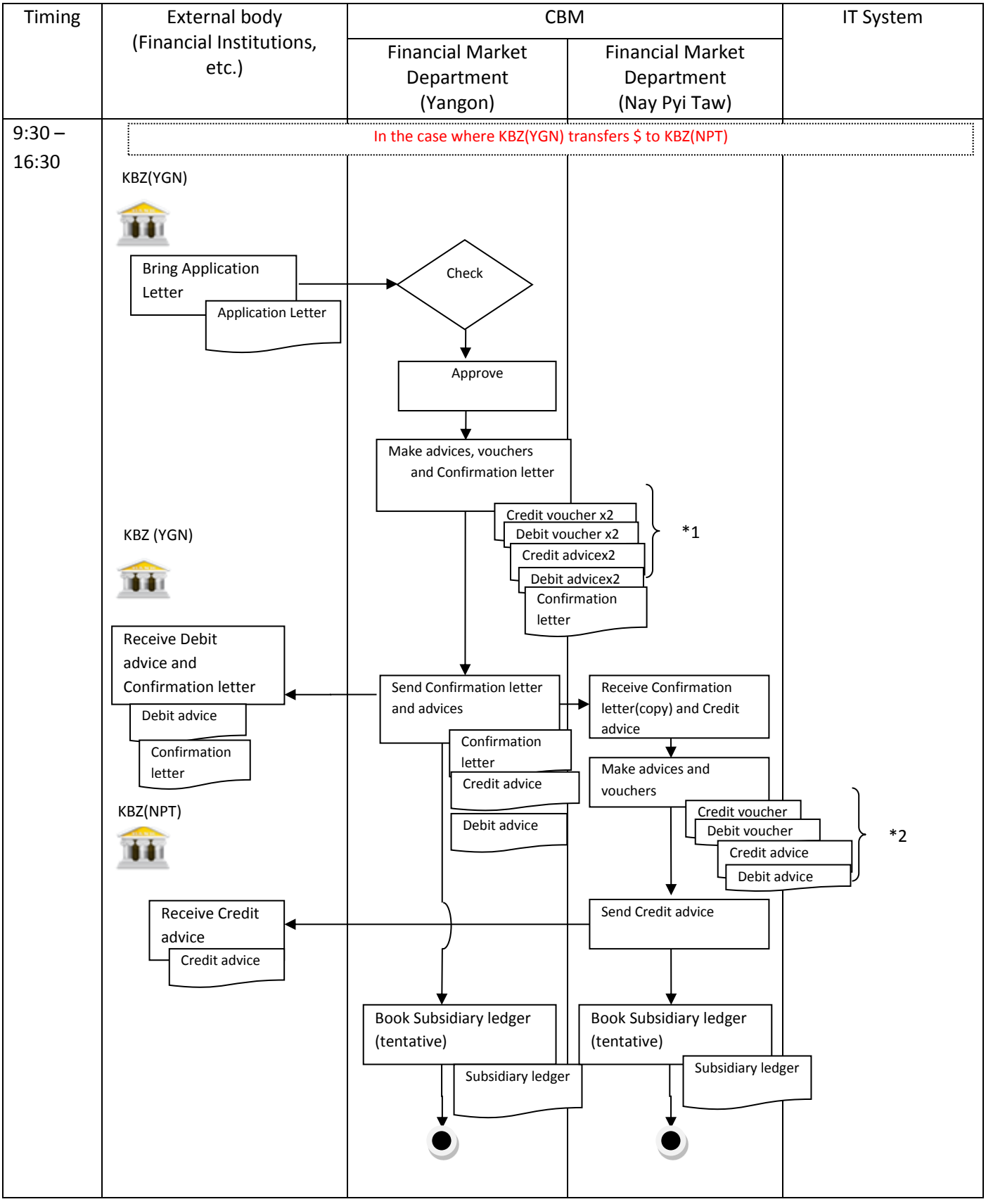
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer(Foreign Currency) #2	16		JULY-12	1/1



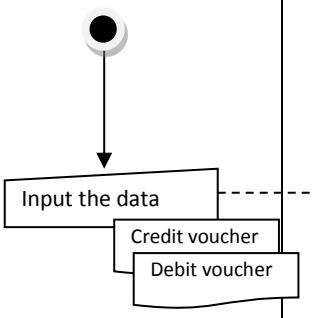
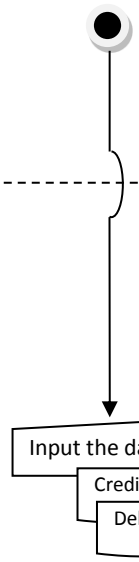
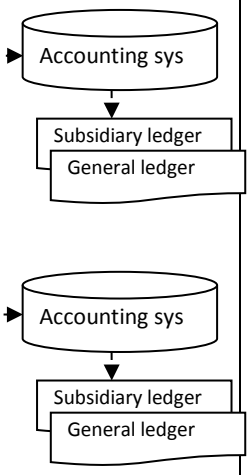
Remarks

*1 Dr: MICB(YGN) FX deposit a/c, Cr: KBZ(YGN) FX deposit a/c, Dr: KBZ(YGN) FX deposit a/c , Cr: CBM income a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer (Foreign Currency) (YGN to NPT)	17		JULY-12	1/2



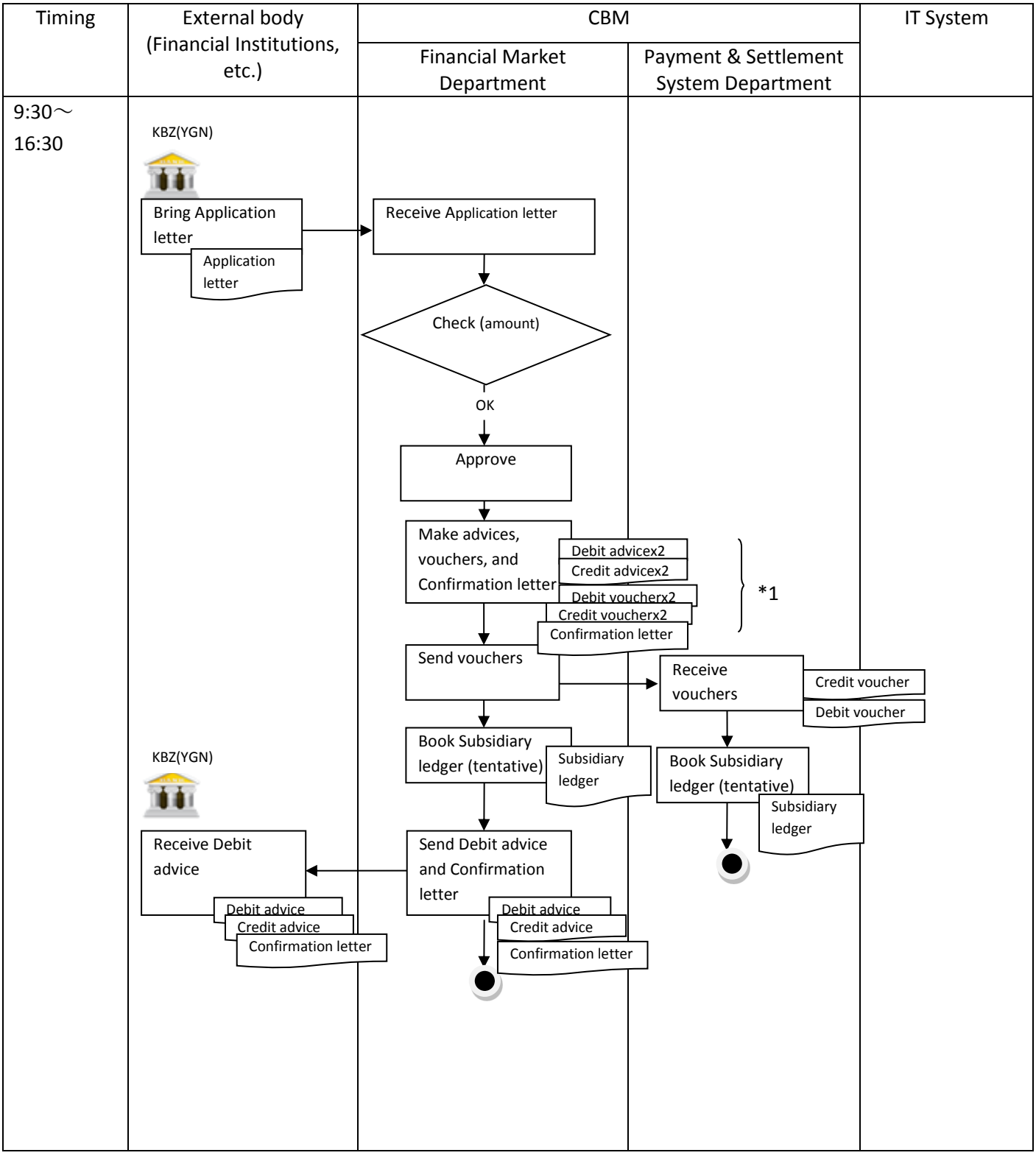
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Fund transfer (Foreign Currency) (YGN to NPT)	17			2/2

Timing	External body (Financial Institutions, etc.)	CBM		IT System
		Financial Market Department (Yangon)	Financial Market Department (Nay Pyi Taw)	
Same day or 1 day later				

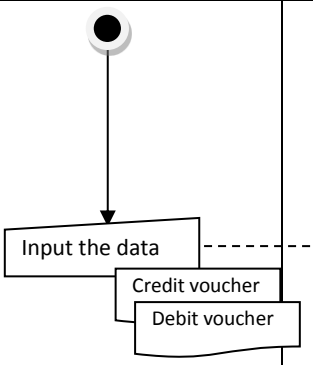
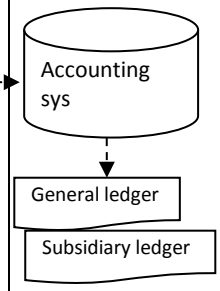
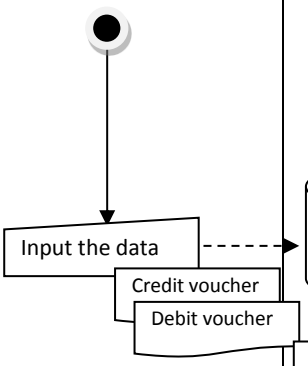
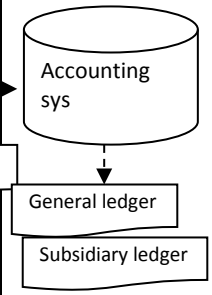
Remarks

*1 Dr: KBZ (YGN)FX deposit a/c, Cr: CBM(NPT) FX deposit a/c
Dr: KBZ (YGN)FX FX deposit a/c, Cr: CBM income a/c
*2 Dr: CBM (YGN) FX deposit a/c, Cr: KBZ(NPT) FX deposit a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Foreign currency buy (CBM buy $ from KBZ(YGN))	18		JULY-12	1/2



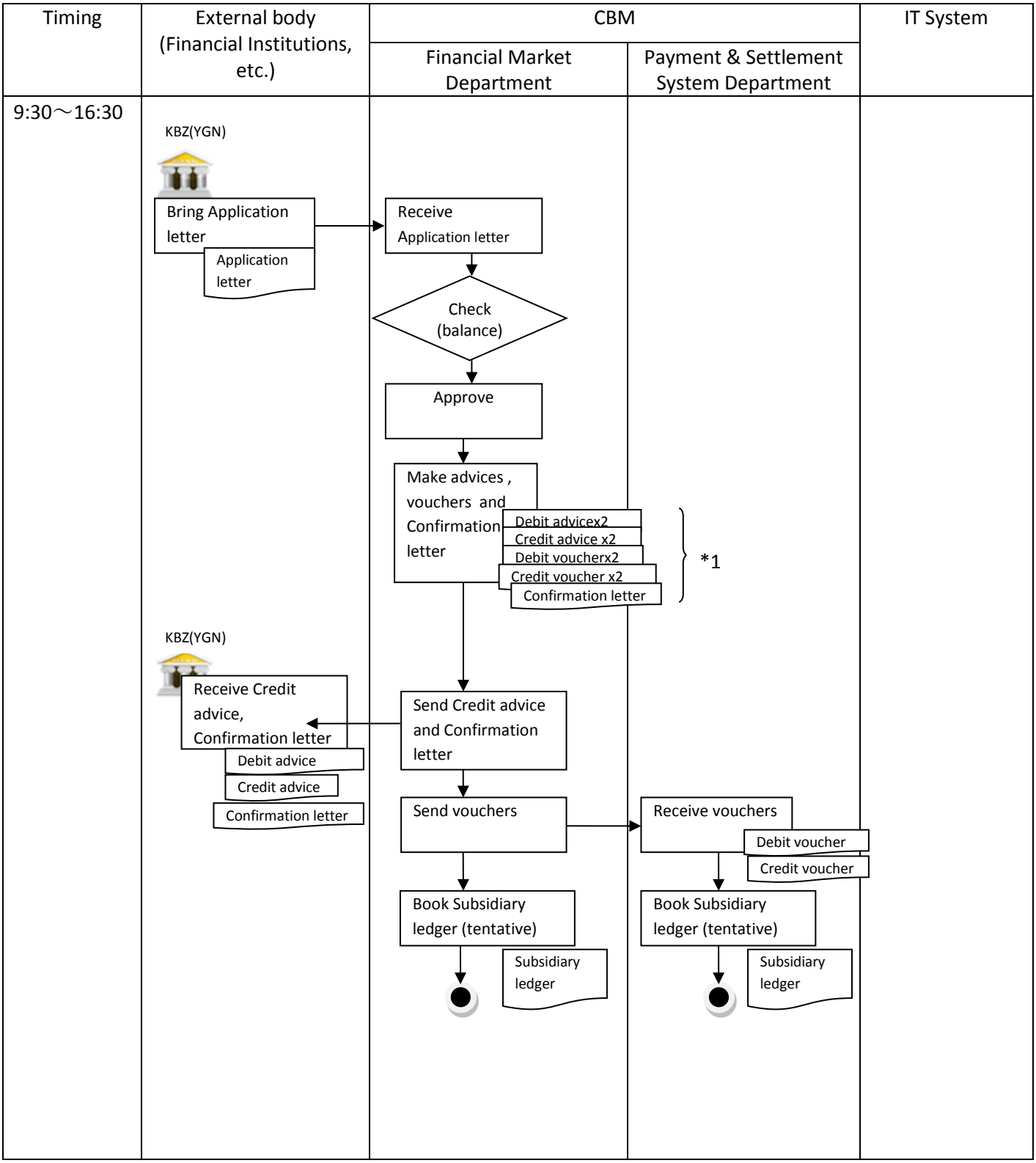
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Foreign currency buy (CBM buy $ from KBZ(YGN))	18			2/2

Timing	External body (Financial Institutions, etc.)	CBM		IT System
		Financial Market Department	Payment & Settlement System Department	
Same day or 1day later(FMD)				
1 month later(PSS)				

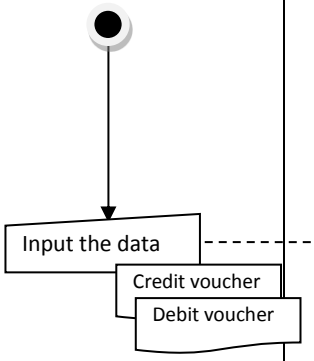
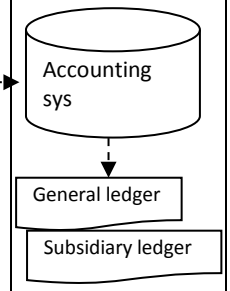
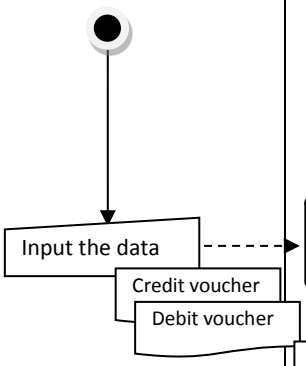
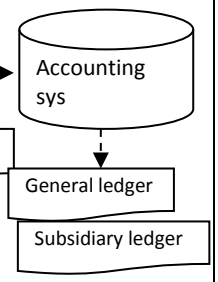
Remarks

*1 Dr: KBZ(YGN) FX deposit a/c , Cr: Sundry Deposit a/c ⋯$
Dr: Suspense a/c , Cr: KBZ(YGN) a/c ⋯kyat

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Foreign currency sell (CBM sell $ to KBZ(YGN))*1	19			1/2



Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Foreign currency sell (CBM sell $ to KBZ(YGN))	19		JULY-12	2/2

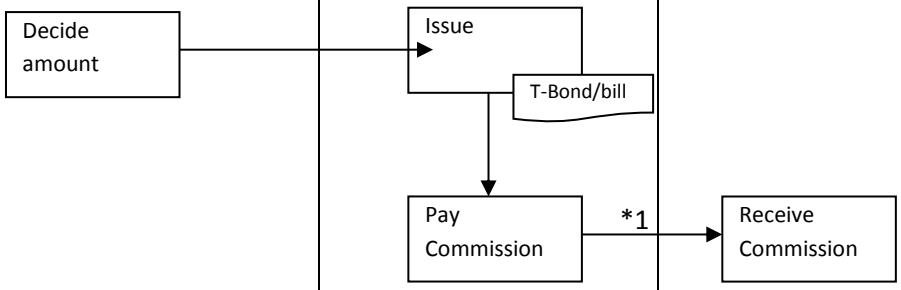
Timing	External body (Financial Institutions, etc.)	CBM		IT System
		Financial Market Department	Payment & Settlement System Department	
Same day or 1day later(FMD)				
1 month later(PSS)				

Remarks

*1 Dr:Sundry Deposit a/c , Cr: KBZ(YGN) FX deposit a/c … $
Dr:KBZ(YGN) a/c , Cr: Suspense a/c …kyat

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	T-bond issuance	20		JUL-12	1/1

Timing	Government	CBM	MEB/ MSEC	IT System
	MOFR Budget Department	Financial Market Department		



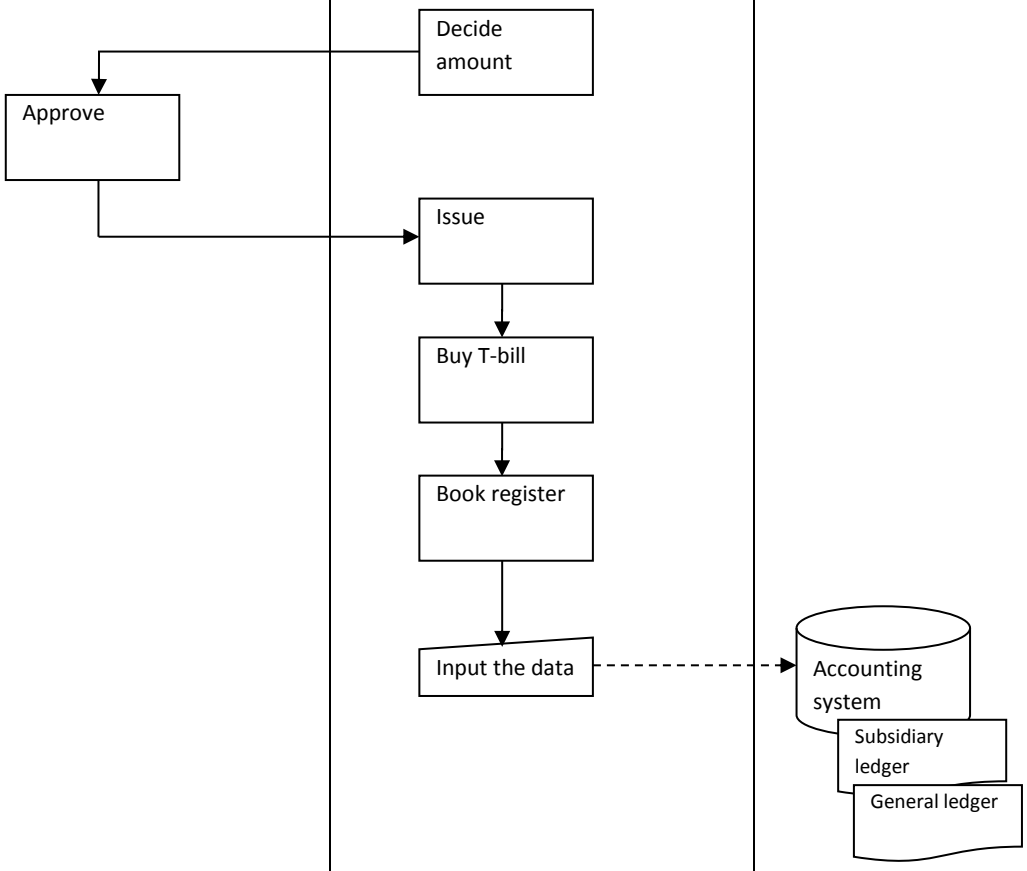
Remarks

*1

- CBM pays commission fee to MEB/MSEC twice a year after MEB/MSEC sell T-bond/bill to customers.
- Commission fee is 0.5% of the amount of T-bond/bill MEB/MSEC sold.

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	T-bill issuance	21		JUL-12	1/1

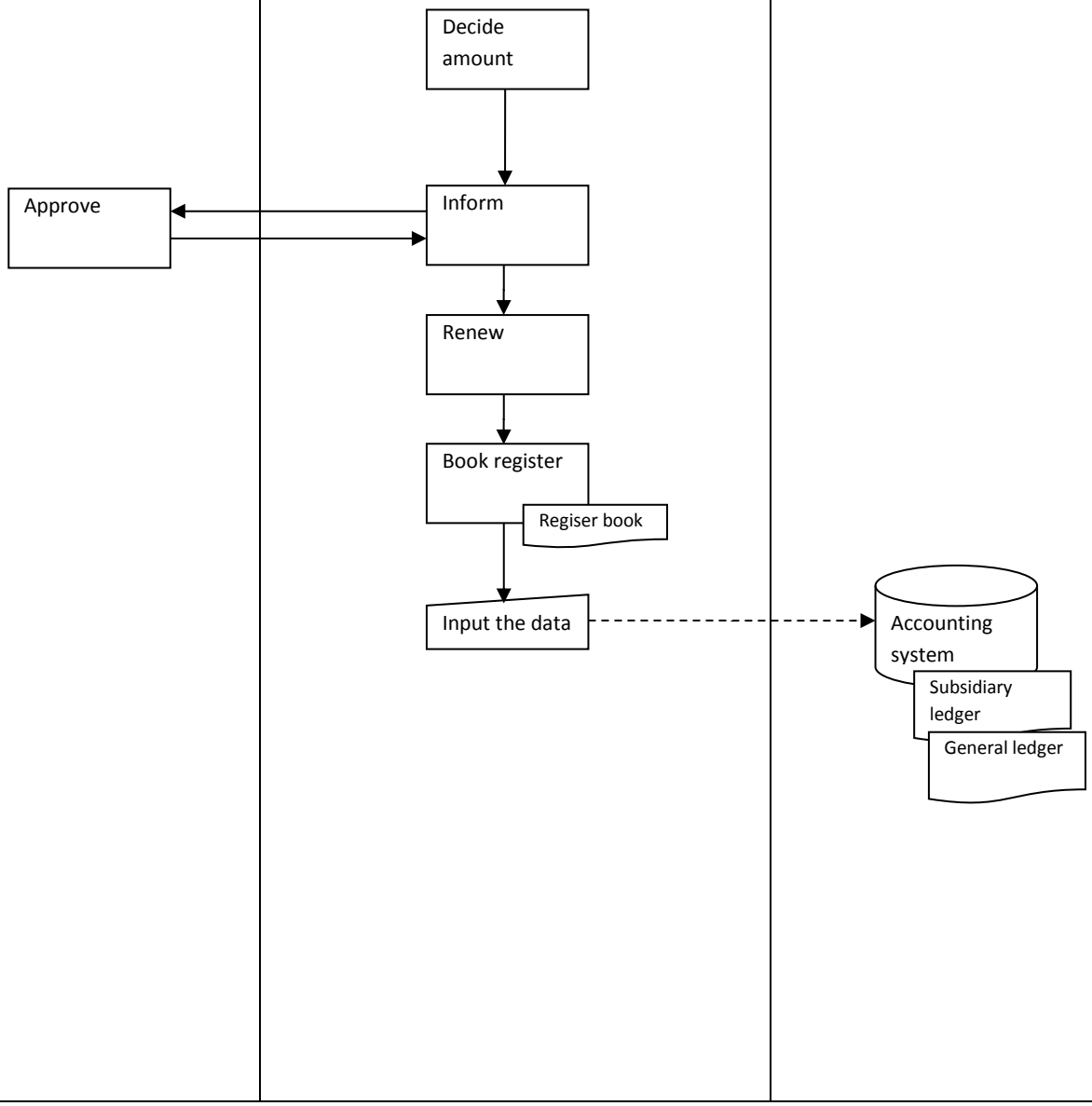
Timing	Government	CBM	IT System
	MOFR Budget Department	Financial Market Department	



Remarks

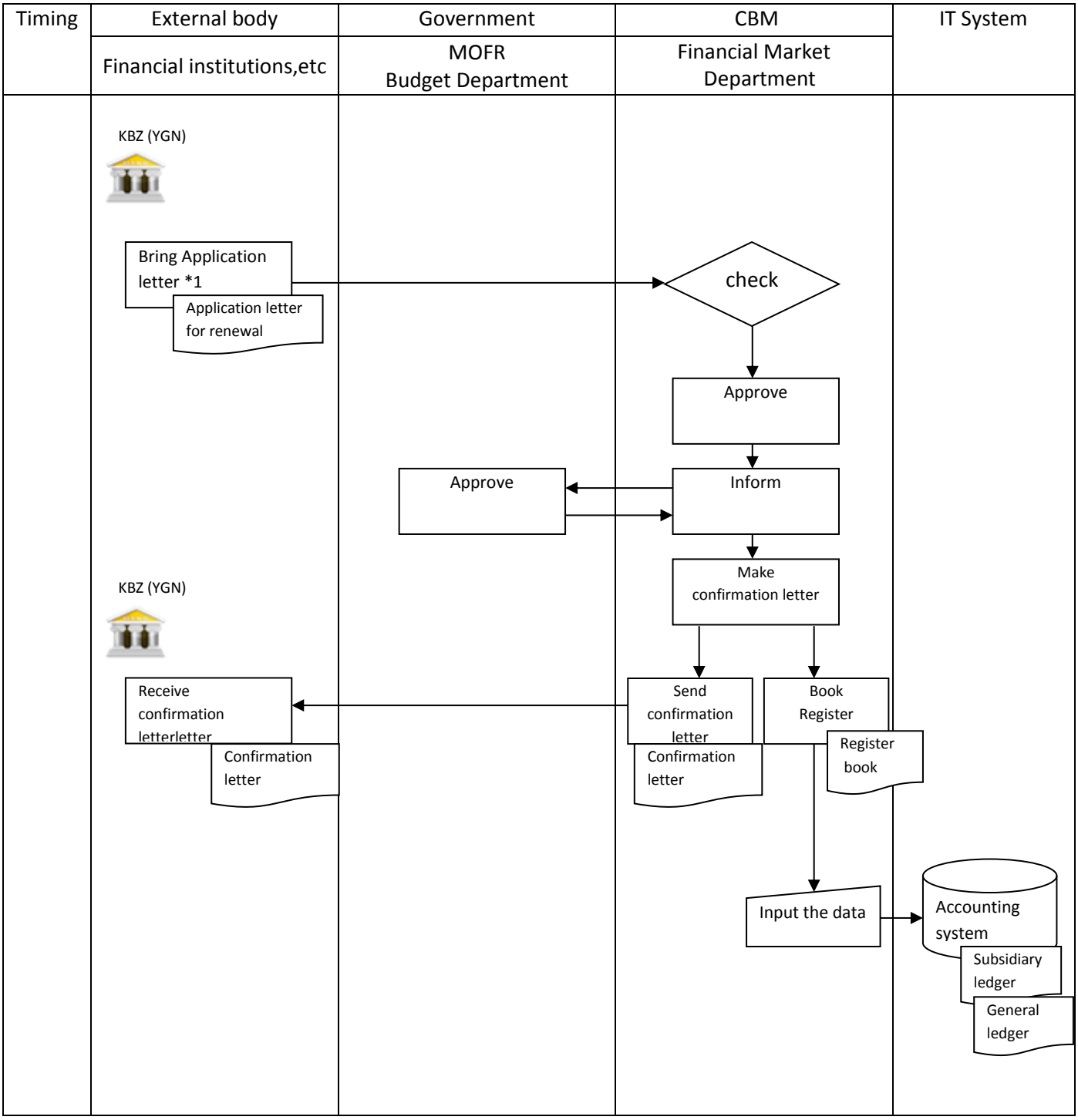
Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	T-bill (owned by CBM) renewal	22			1/1

Timing	Government	CBM	IT System
	MOFR Budget Department	Financial Market Department	



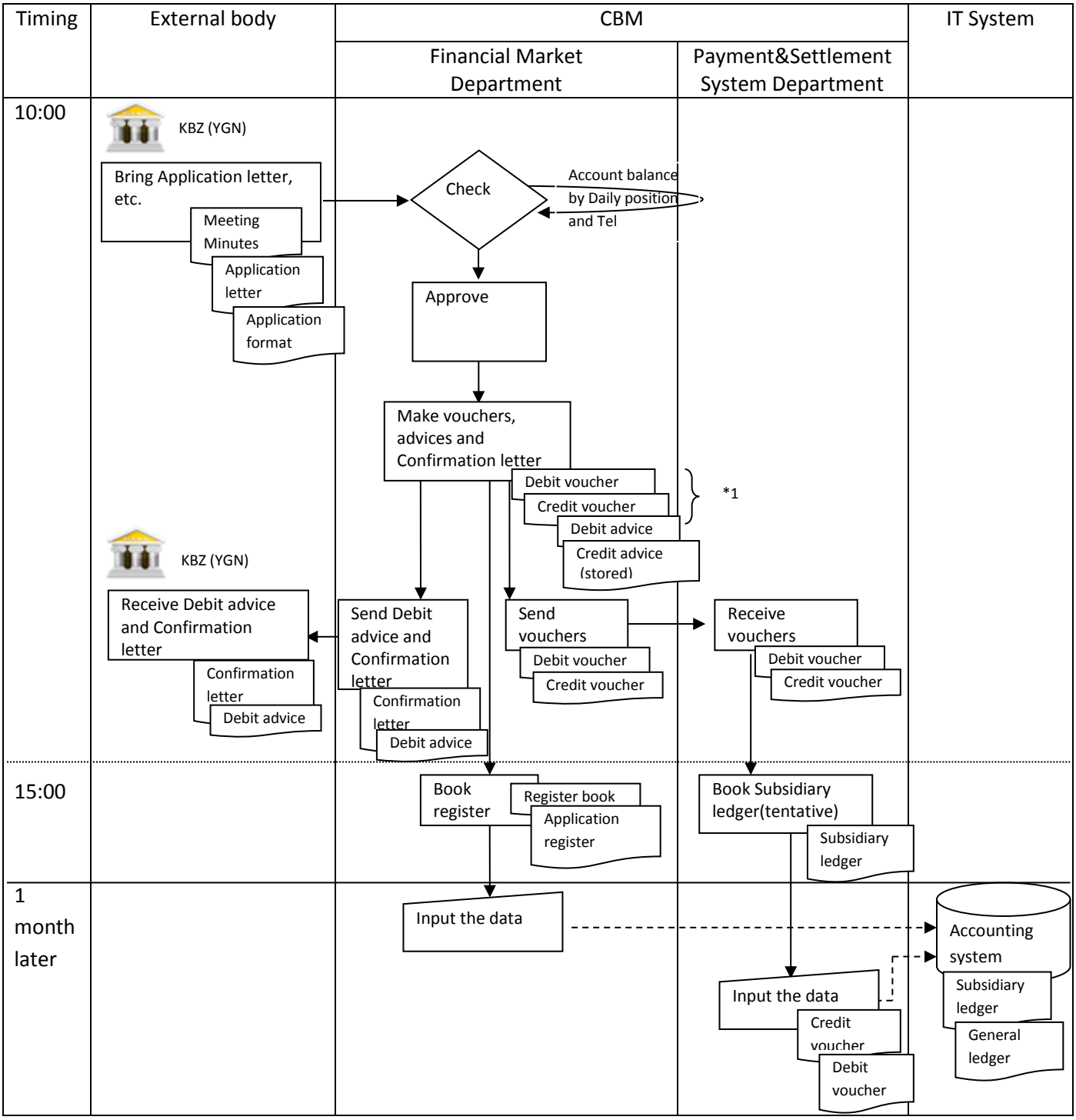
Remarks

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	T-bill (owned by banks) renewal	23			1/1



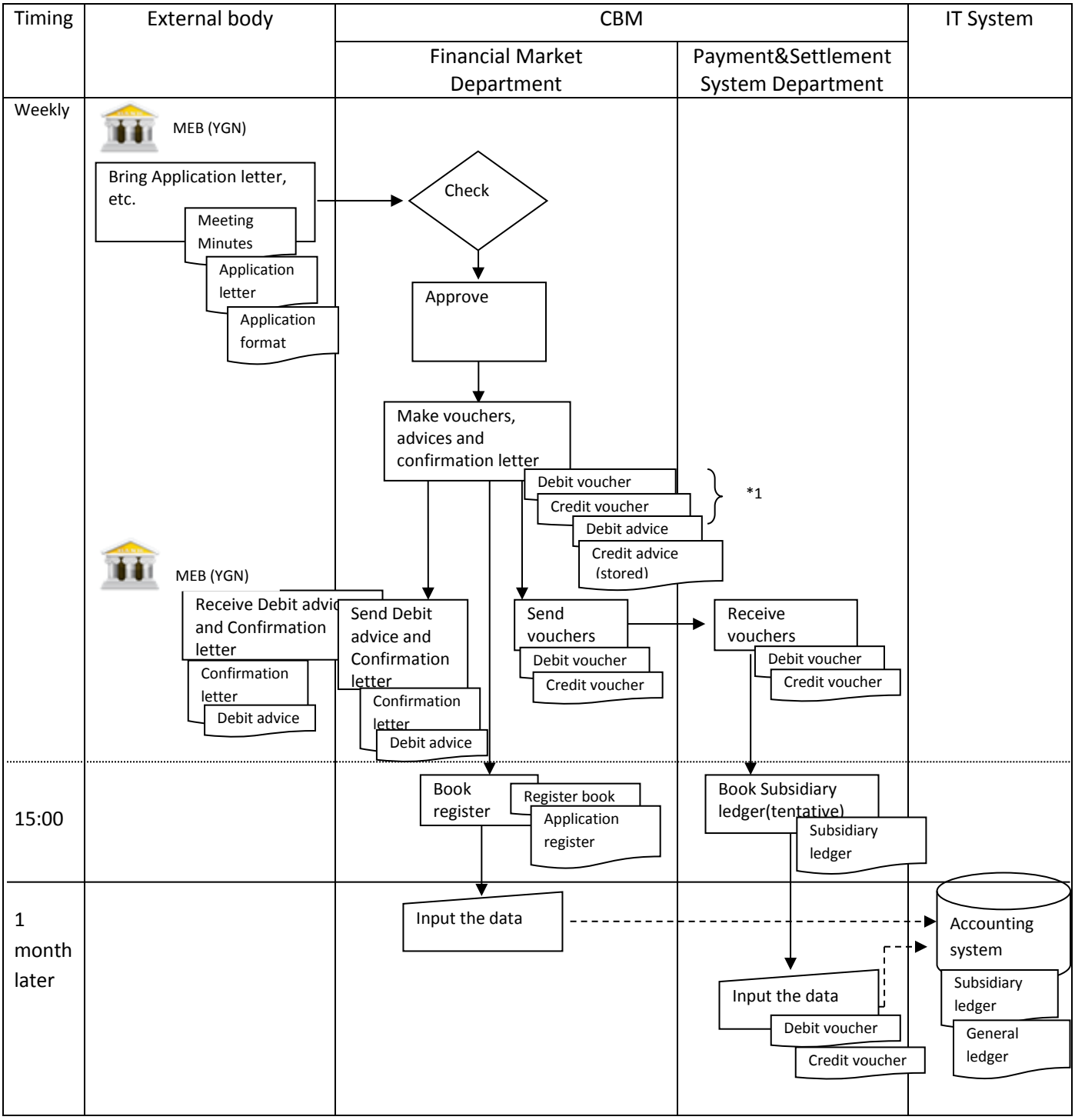
Remarks
*1 KBZ(YGN) informs CBM whether if wants to renew, T-bill or to redeem every three months after insurance

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	T-bond/bill selling from CBM to bank	24		JULY-12	1/1



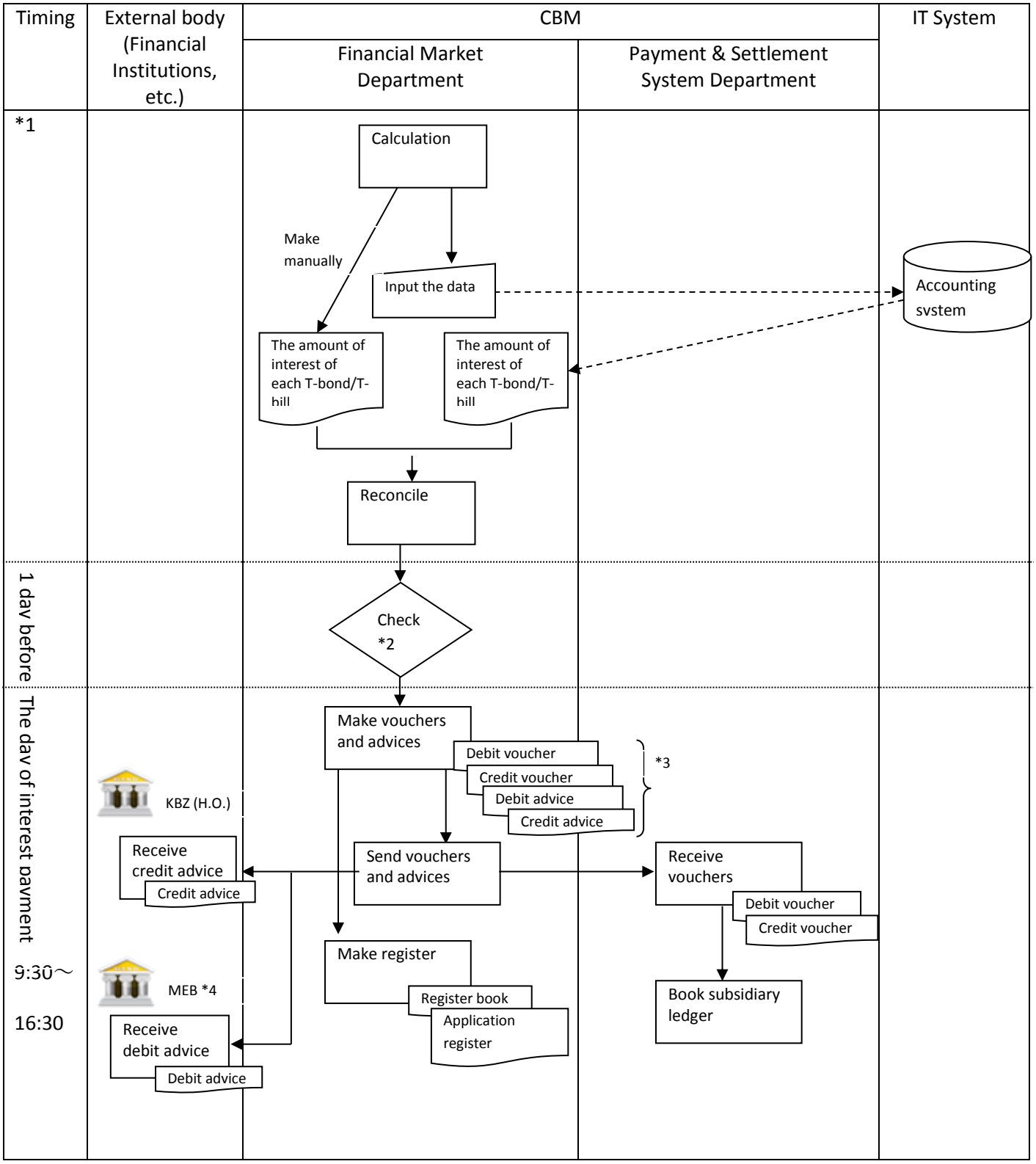
Remarks
*1 Dr: KBZ(YGN) a/c Cr: Union government deposit a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	T-bond selling from MEB to others	25		JULY-12	1/1



Remarks
*1 Dr: MEB (YGN) a/c Cr: Union government deposit a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Interest Payment of T-bond/bill	26		JULY-12	1/1



Remarks

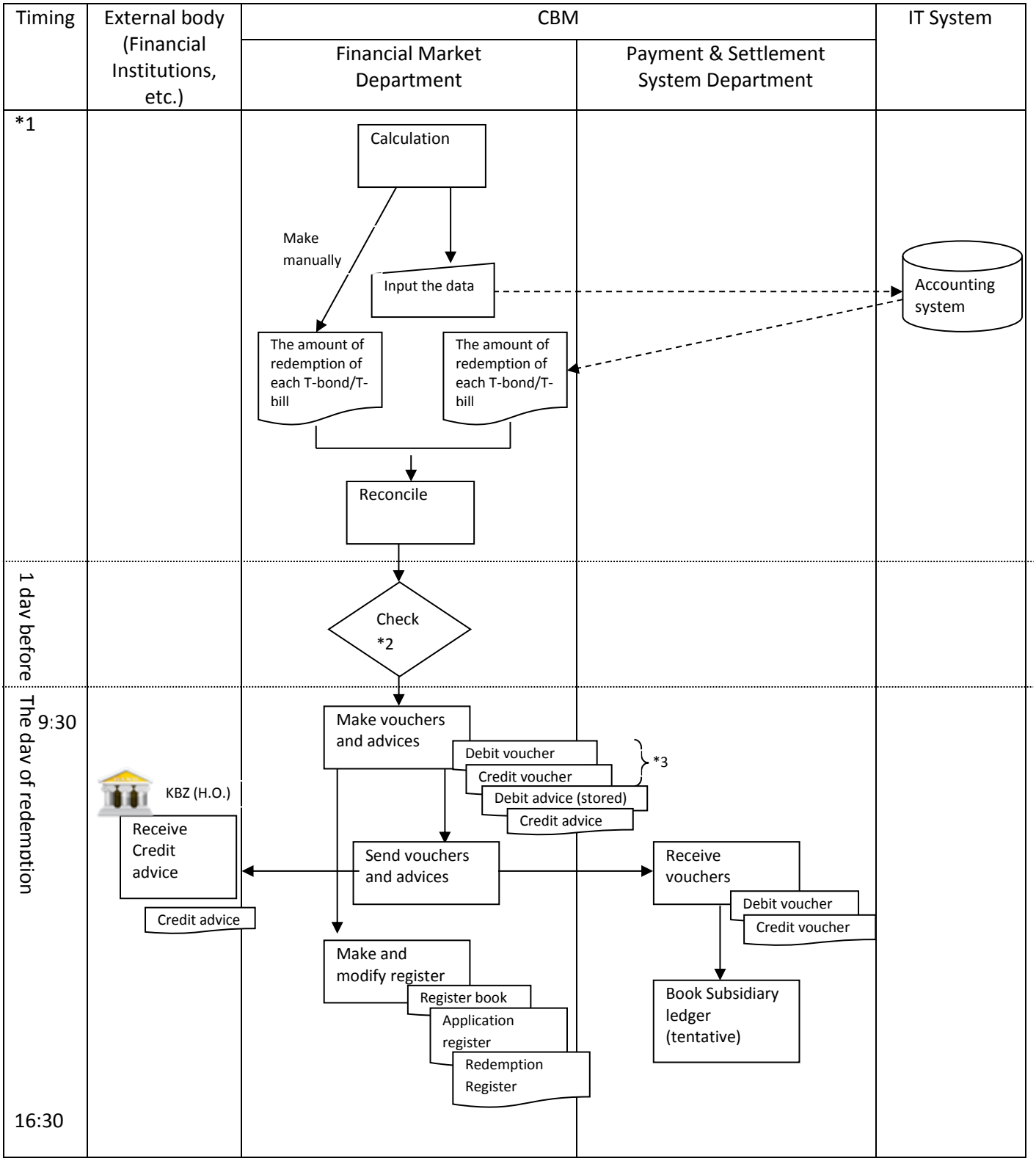
*1 When CBM sells T-bonds to banks or when MEB/MSEC sell T-bonds to customers, FMD calculates the amount of next interest payment

*2 Check the amount of interest payment

*3 Dr: MEB (5) a/c Cr: KBZ (H.O.) a/c

*4 Interest payment of T-bond/bill is deducted from Budget department a/c which is held in MEB (5)

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	Redemption of T-bond/bill	27		JULY-12	1/1



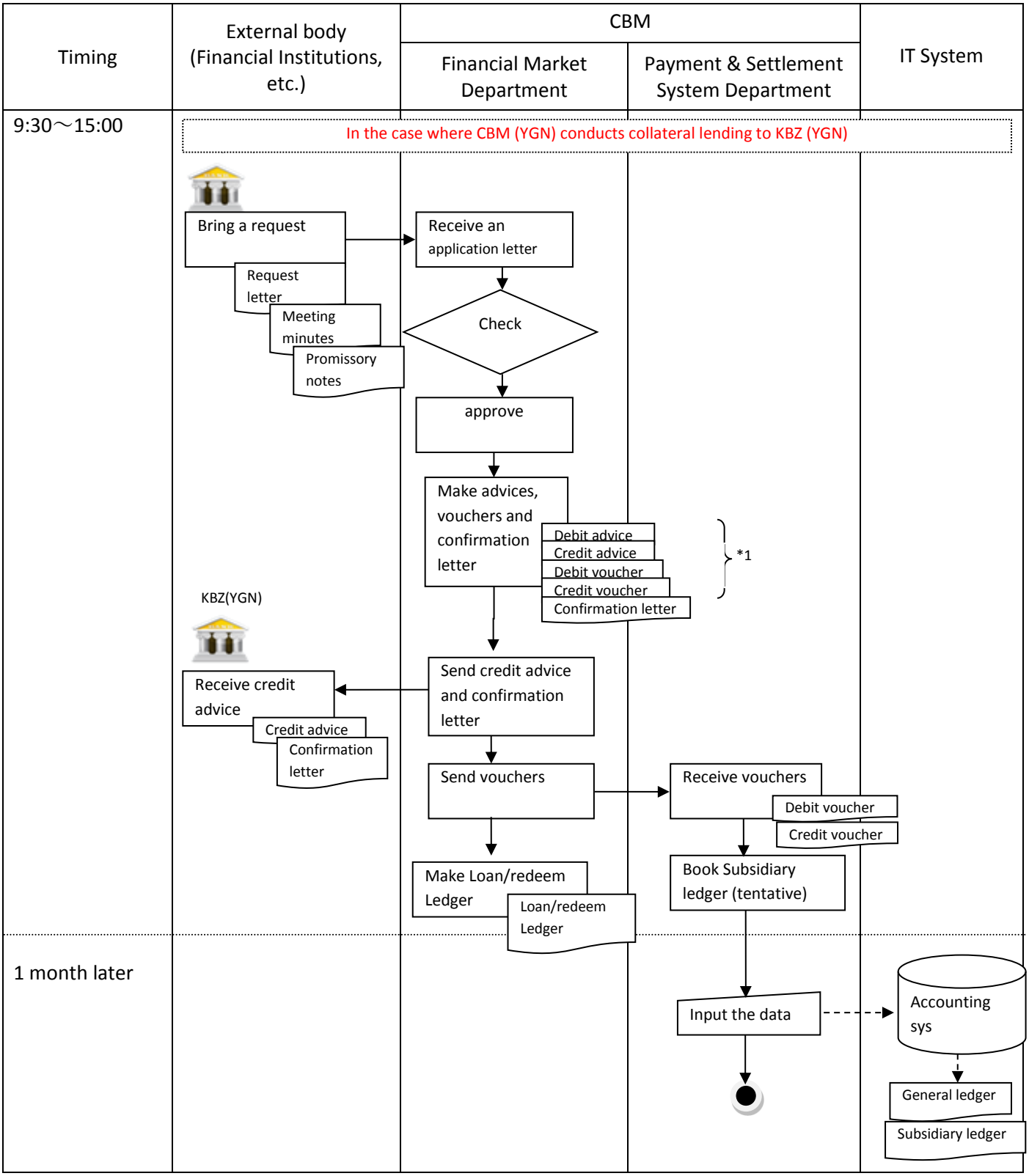
Remarks

*1 FMD calculates the amount of redemption after the last interest payment finishes.

*2 Check the amount of redemption

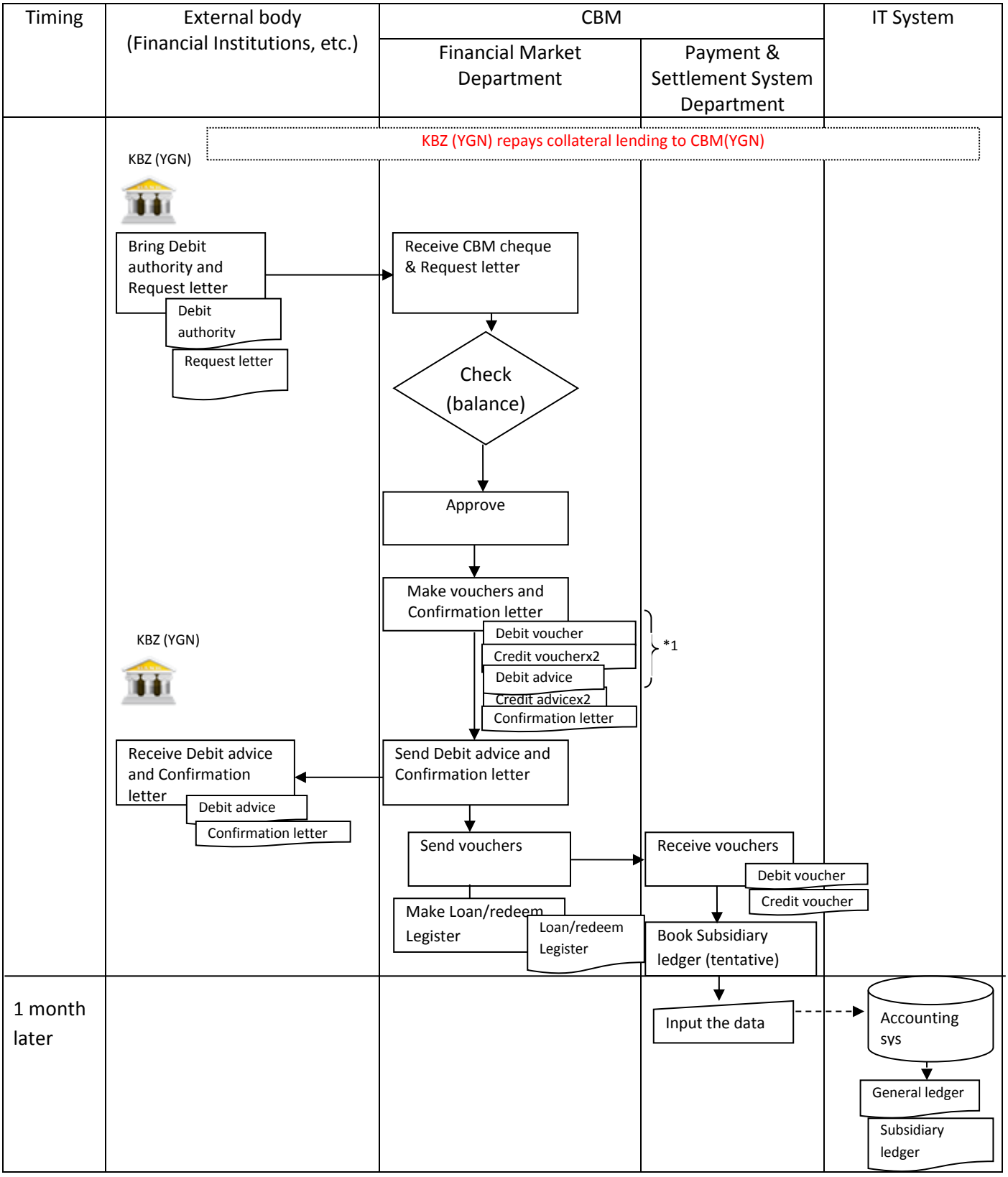
*3 Dr: Union government deposit a/c, Cr: KBZ(H.O) a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	T- bond loan	28		JULY-12	1/1



Remarks
*1 Dr: Loan to KBZ a/c Cr: KBZ(YGN) a/c

Category	Flow name	Flow No.	Ver.	Date	Page
Current Business	T- bond repayment	28		JULY-12	1/1



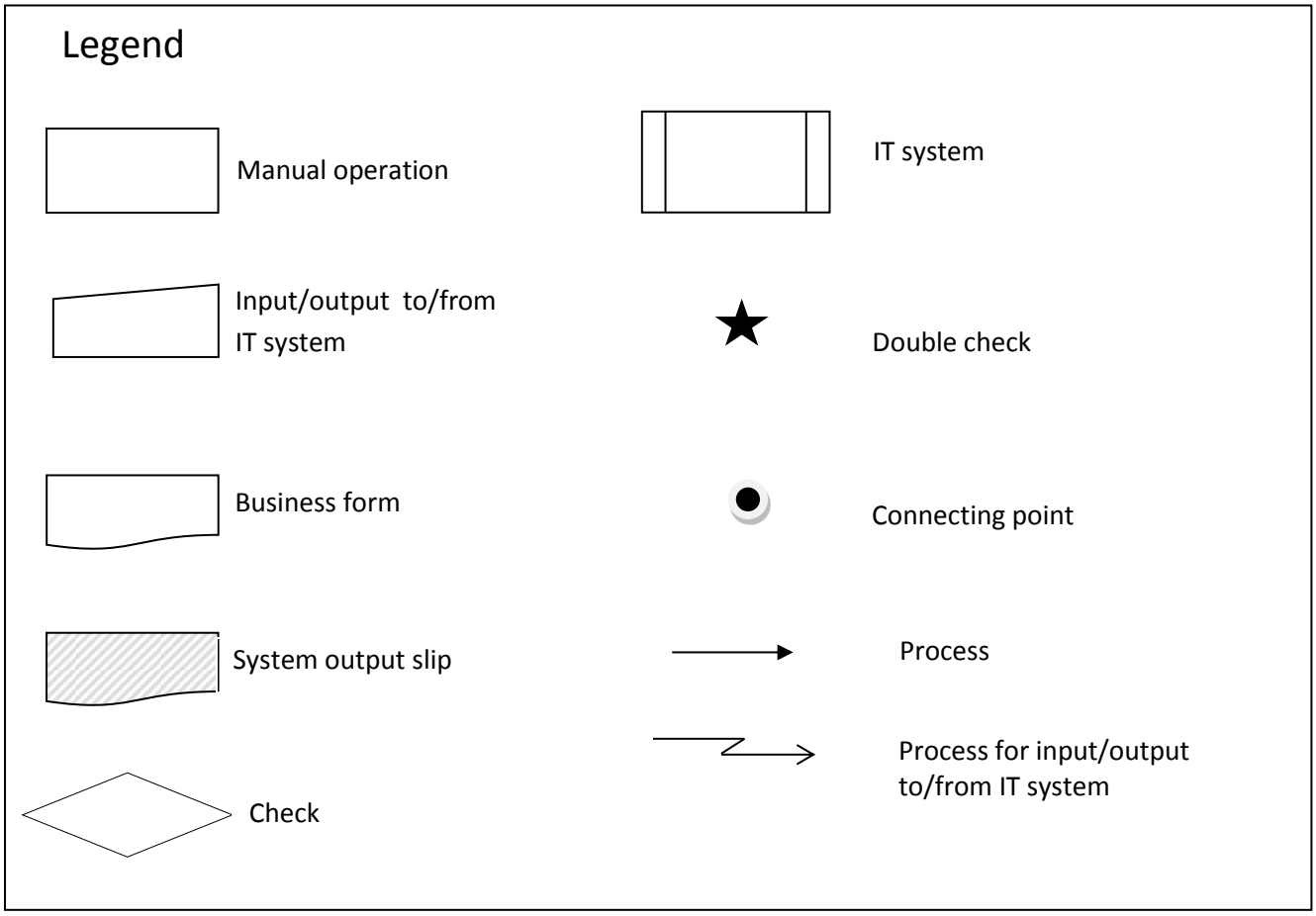
Remarks

*1 Dr: KBZ a/c(principal + interest) Cr: Loan to bank a/c (principal)
Cr: CBM income a/c (interest)

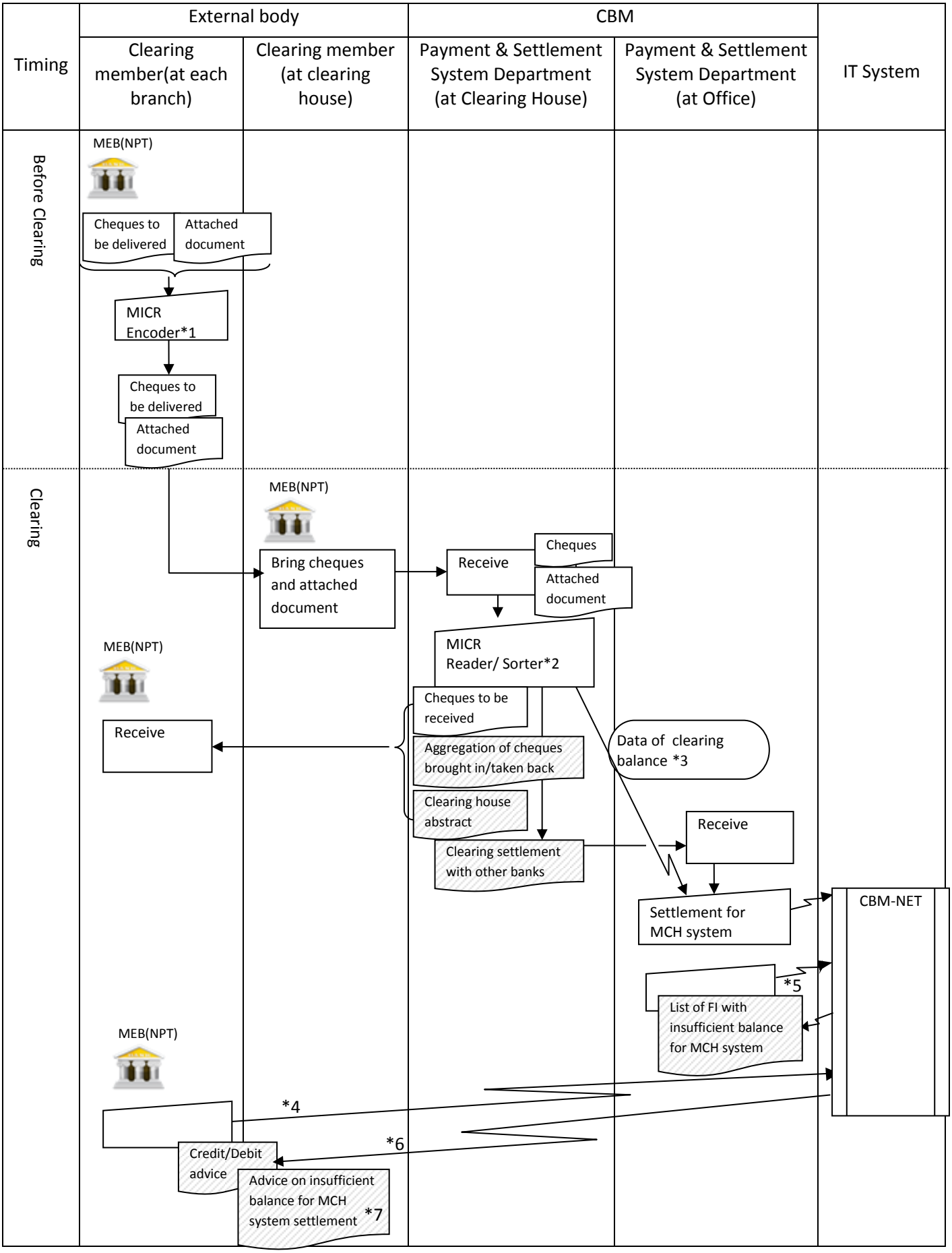
Attachment 7 Flow of the New Business Operations

Flow of the New Business Operation

No	Title
1	Clearing
2	Cash Deposit
3	Cash Withdrawal
4	Fund transfer without cheque#1
5	Fund transfer without cheque#2
6	Fund transfer with CBM cheque
7	Fund transfer with Bank cheque
8	Customer Credit Transfer
9	Customer Debit Transfer
10	Cash Deposit (Foreign currency)
11	Cash Withdraw (Foreign currency)
12	Fund Transfer(Foreign currency) #1
13	Fund Transfer(Foreign currency) #2
14	Foreign currency buying (CBM buys $ from KBZ)
15	Foreign currency selling (CBM sells $ to KBZ)
16	Registration/change/deletion of information on eligible T-bond/bill
17	Registration/change of market value information
18	Provision of collateral
19	Return of collateral
20	Change of MTM plan
21	Collateral amount increase/decrease (increasing case)
22	Collateral amount increase/decrease (decreasing case)
23	Temporary MTM processing
24	MTM processing
25	Return of collateral at maturity
26	Output of list of fund balances and list of overdraft outstanding
27	T-bond Issuance, tender, and new registration/payment execution
28	T-bill issuance
29	T-bill (owned by CBM) renewal
30	T-bill (owned by banks) renewal
31	T-bond selling from CBM to bank
32	T- bill selling from CBM to bank
33	T-bond selling from MEB to others
34	T-bond/bill transfer
35	T-bond/bill DVP
36	Credit processing for interest payment
37	Redemption processing
38	Master data registration
39	Operation management
40	Double check


Legend
Manual operation
IT system
Input/output to/from
IT system
Double check
Business form
Connecting point
System output slip
Process
Process for input/output
to/from IT system
Check

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Clearing	1		30-June	1/2



Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Clearing	1		30-June	2/2

Remarks

*1 Print computer-readable numbers on cheques (amount) and on attached document (FI code and branch code of the branch which conducts credit exchange, branch code of the branch which collected cheques, and total number and amount of credit exchange cheques) on attached document.

*2 Calculation and sorting

*3 Transmit the data of clearing balance via by connection through network.

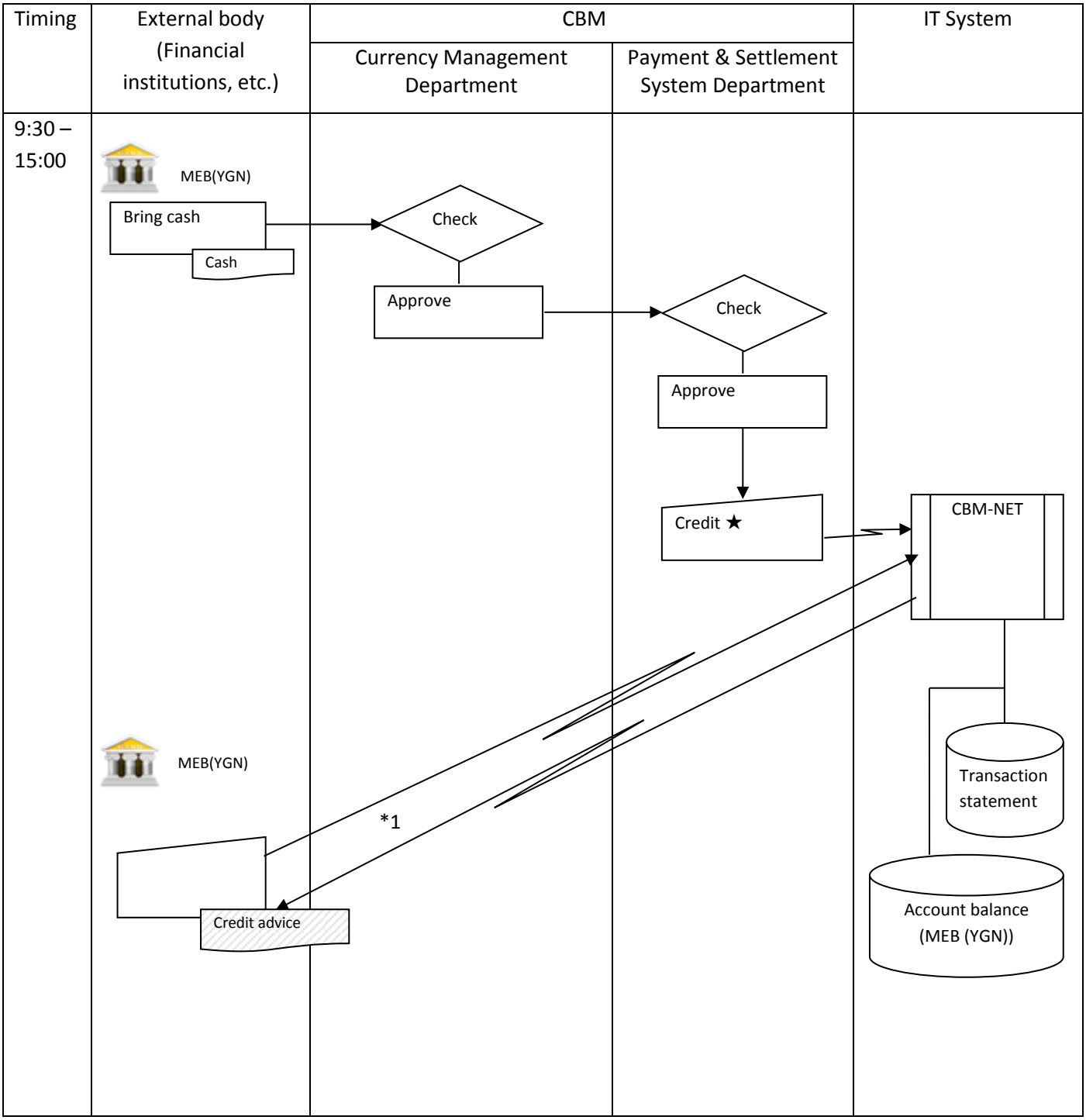
*4 In the case where MEB (NPT) has a CBM-NET terminal, MEB(NPT) accesses to CBM-NET and obtain slips. Slips will be output on screen, but can be output on paper as needed. In the case where MEB (NPT) does not have a CBM-NET terminal, CBM accesses to CBM-NET and obtain the slip and hand it to MEB (YGN) after outputting on paper.

*5 CBM accesses CBM-NET and obtains the slip in the case where there is a FI with insufficient fund for debiting.

*6 If settlement was successful, MEB (NPT) accesses to CBM-NET and obtains the slip “MCH system settlement (credit) confirmation advice / MCH system settlement (debit) confirmation advice”. In the case of insufficient balance, MEB(NPT) obtains “MCH system settlement insufficient balance advice (for FI)”.

*7 “MCH system settlement insufficient balance advice (for FI)” is a slip which a bank with insufficient balance can obtain.

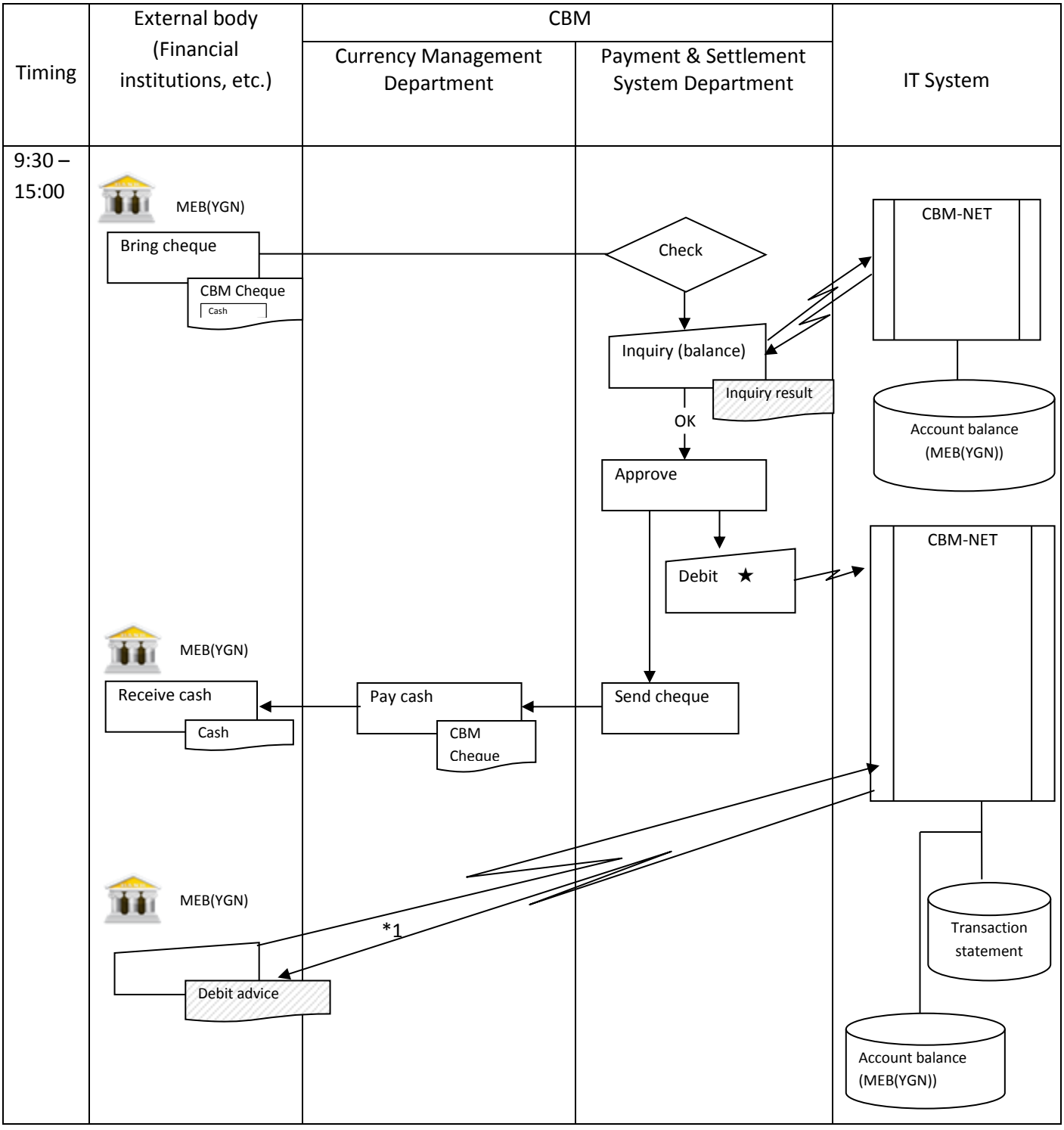
Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Cash Deposit	2		30-June	1/1



Remarks

*1 In the case where MEB(YGN) has a CBM-NET terminal, MEB(YGN) accesses to CBM-NET and obtain slips. Slips will be output on screen, but can be output on paper as needed. In the case where MEB (YGN) does not have a CBM-NET terminal, CBM accesses to CBM-NET and obtain the slip and hand it to MEB (YGN) after outputting on paper (hereinafter the same)

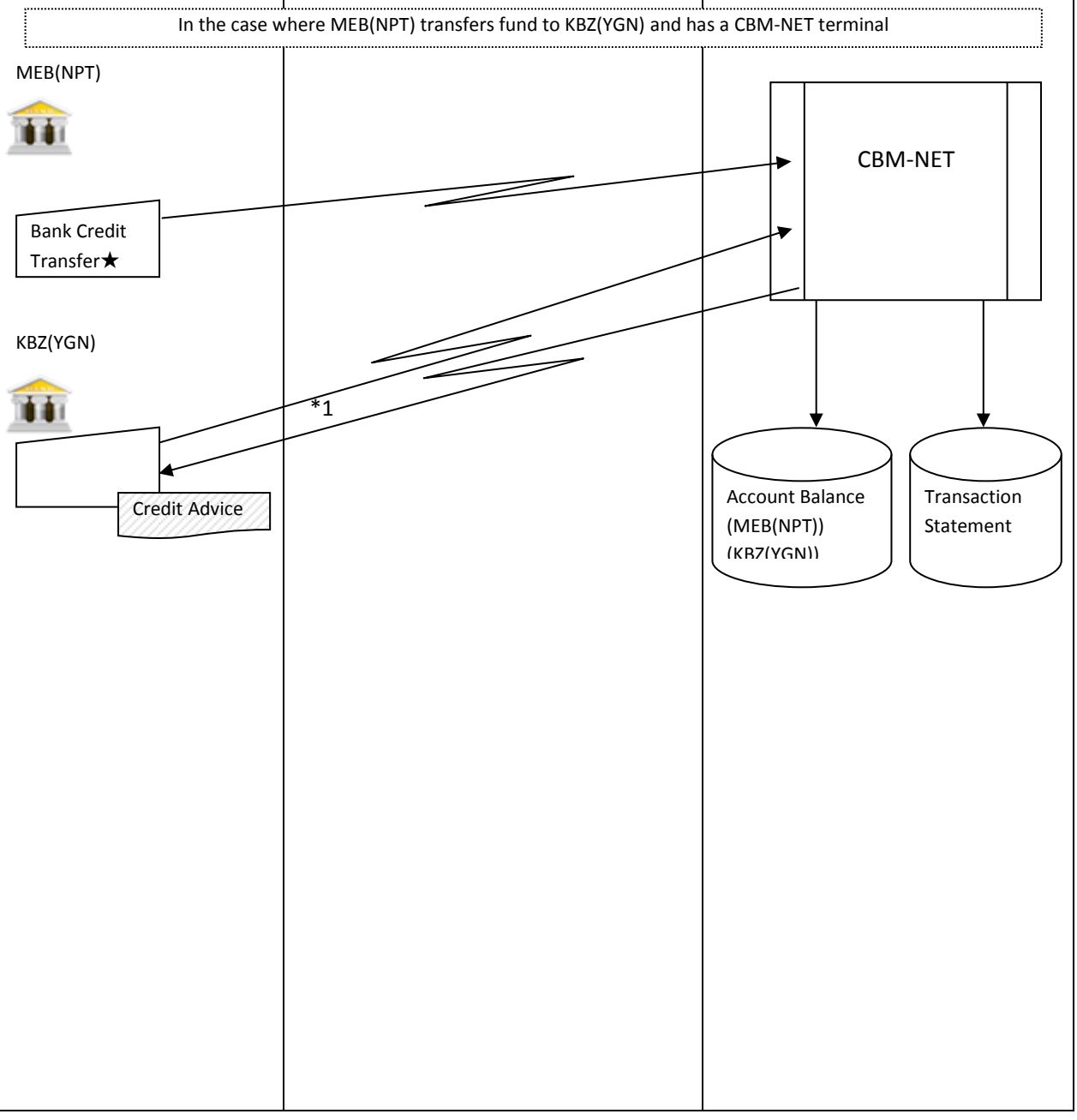
Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Cash Withdrawal	3		30-June	1/1



Remarks

*1 In the case where MEB(YGN) has a t CBM-NET terminal, MEB(YGN) accesses to CBM-NET and obtain slips. Silps will be output on screen, but can be output on paper as needed. In the case where MEB (YGN) does not have a CBM-NET terminal, CBM accesses to CBM-NET and obtain the form and hand it to MEB (YGN) after outputting on paper (hereinafter the same)

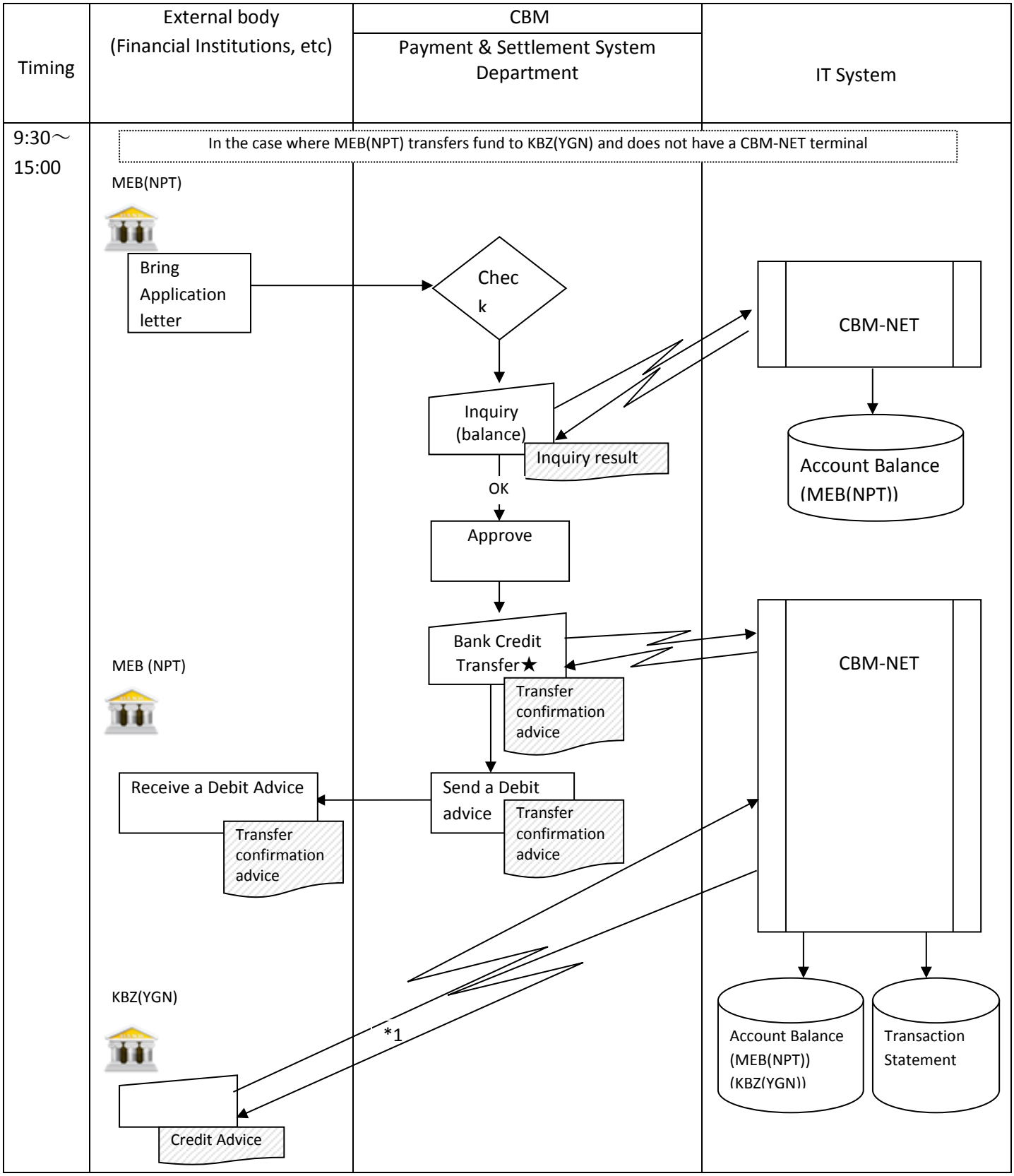
Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Fund Transfer without cheque #1	4		30-June	1/1

Timing	External body (Financial Institutions, etc)	CBM Payment & Settlement System Department	IT System
9:30～ 15:00			

Remarks

*1 In the case where KBZ(YGN) has a CBM-NET terminal.

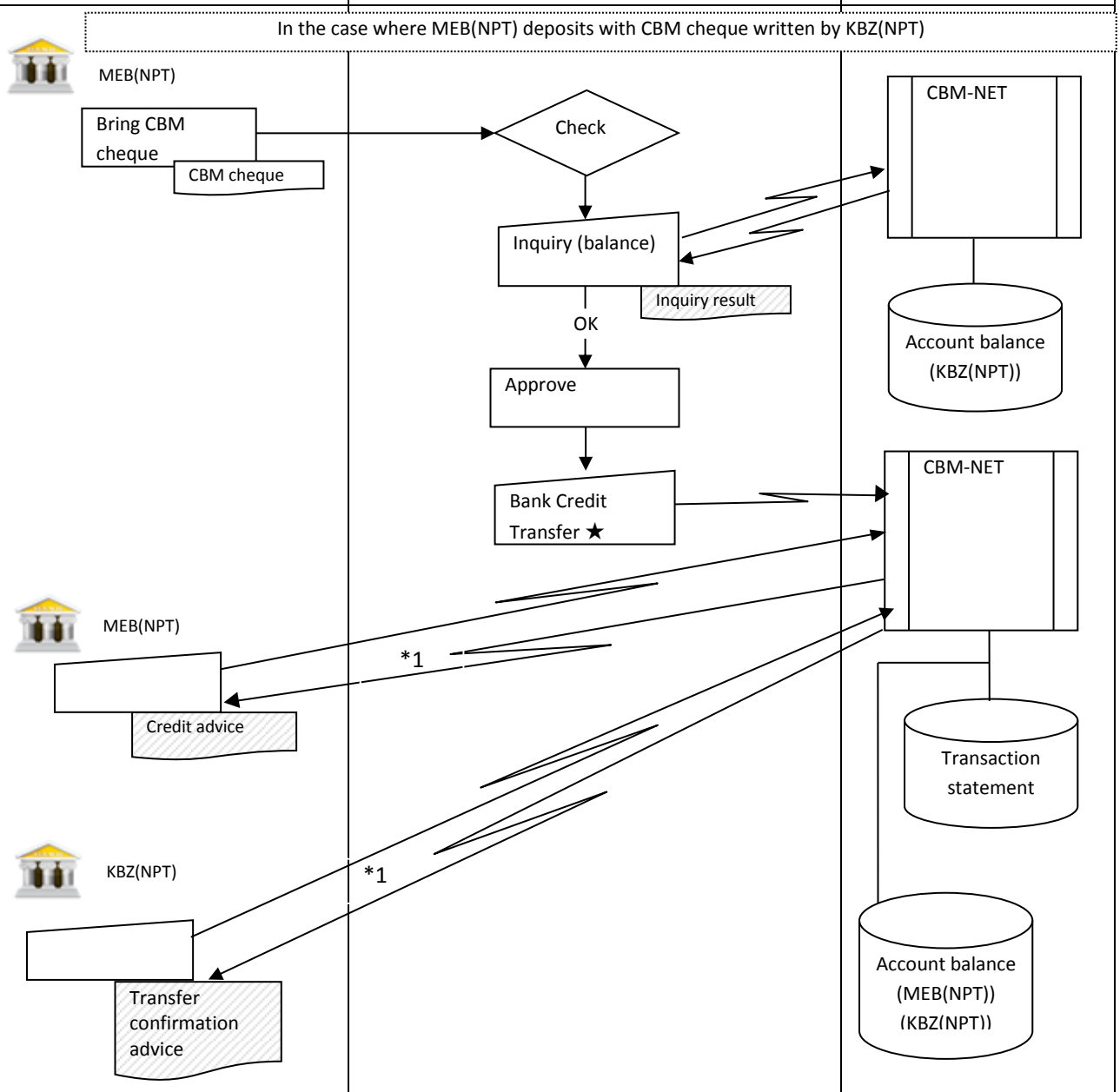
Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Fund Transfer without cheque #2	5		30-June	1/1



Remarks
*1 In the case where KBZ(YGN) has a CBM-NET terminal.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Fund transfer with CBM cheque	6		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM Payment & Settlement System Department	IT System
9:30 – 15:00			

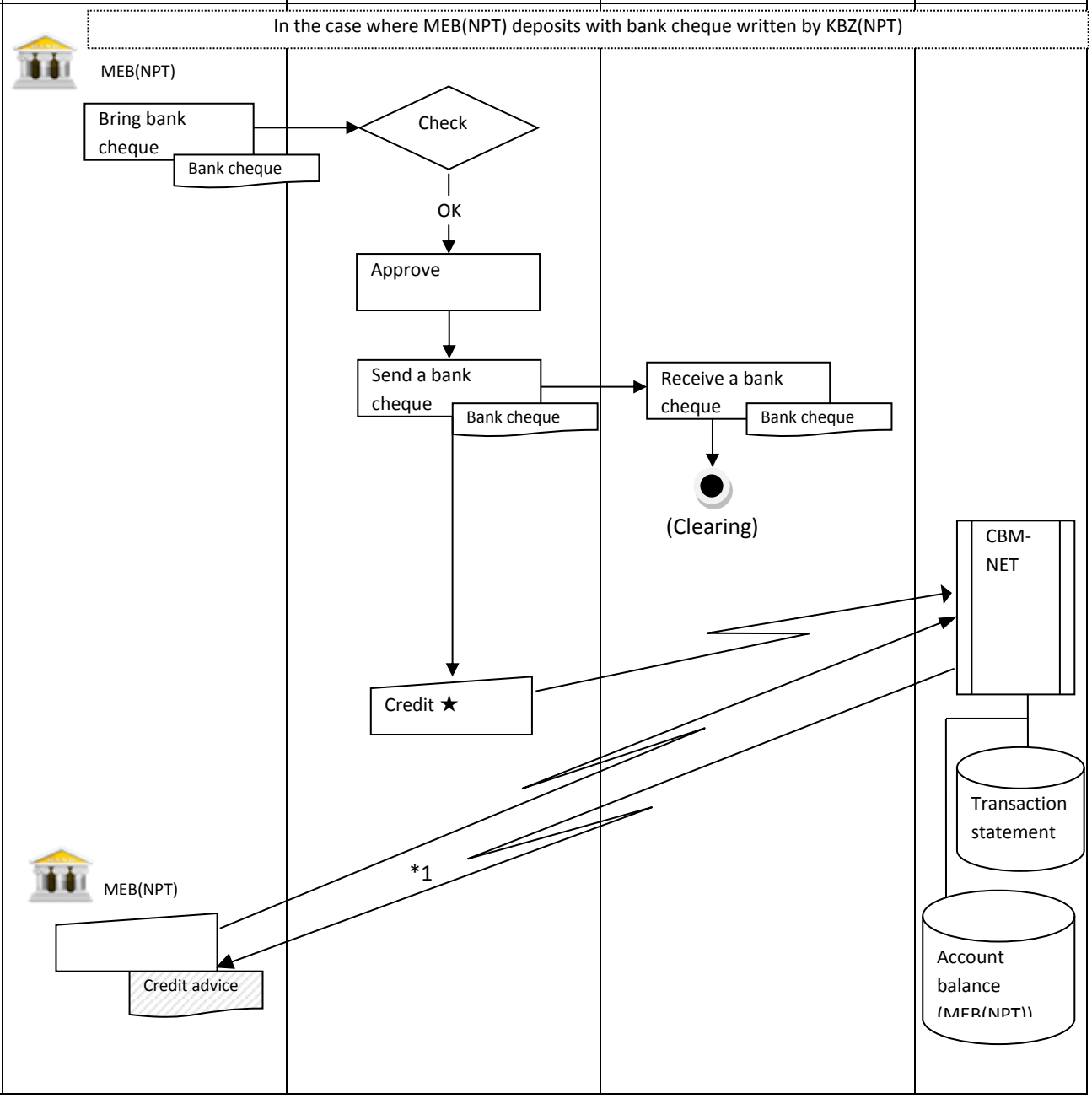


Remarks

*1 In the case where MEB(NPT) and KBZ(NPT) have a CBM-NET terminal.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Fund transfer with bank cheque	7		30-June	1/1

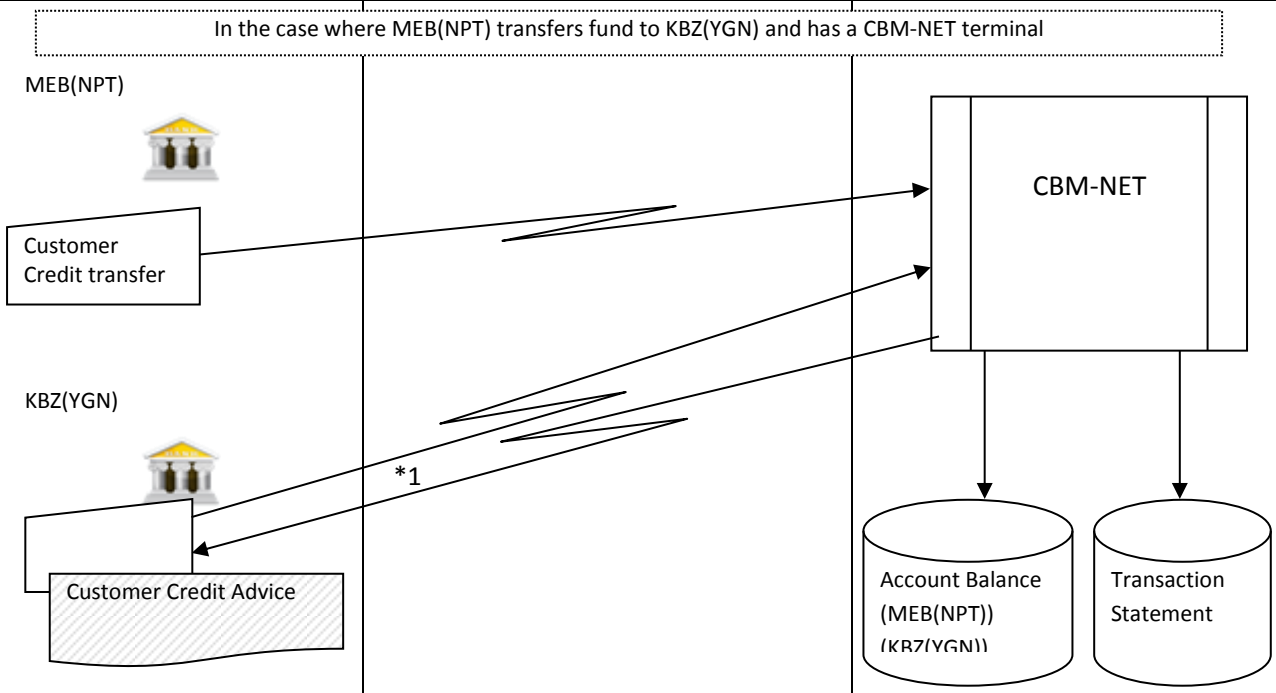
Timing	External body (Financial institutions, etc.)	CBM		IT System
		Payment & Settlement System Department (at Office)	Payment & Settlement System Department (at clearing house)	
9:30 – 15:00				



Remarks

*1 In the case where MEB(NPT) has a CBM-NET terminal.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Customer Credit Transfer	8		30-June	1/1

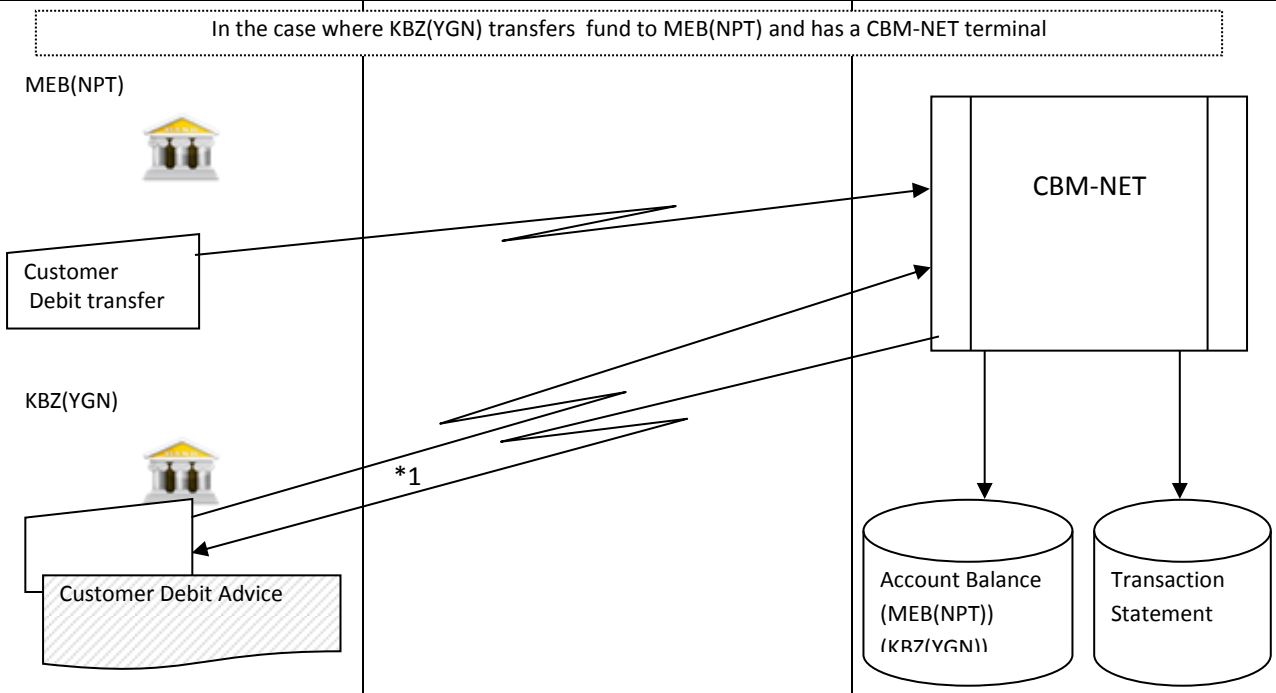
Timing	External body (Financial Institutions, etc)	CBM Payment & Settlement System Department	IT System
9:30～15:00			

Remarks

*1 In the case where KBZ(YGN) has a CBM-NET terminal.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Customer Debit Transfer	9		30-June	1/1

Timing	External body (Financial Institutions, etc)	CBM Payment & Settlement System Department	IT System
9:30～15:00			



Remarks

*1 In the case where KBZ(YGN) has a CBM-NET terminal.

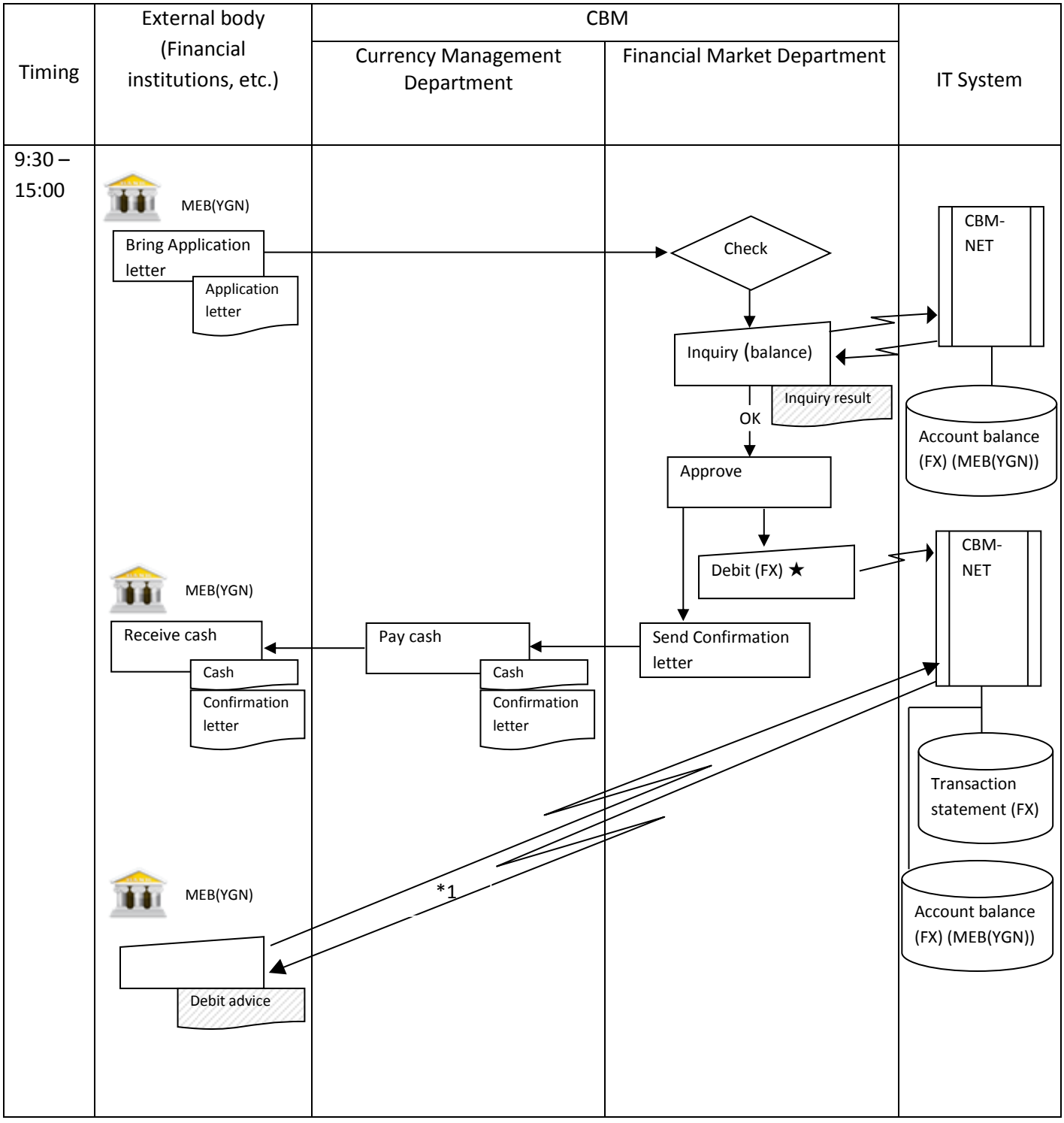
Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Cash Deposit (foreign currency)	10		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM		IT System
		Currency Management Department	Financial Market Department	
9:30 – 15:00	MEB(YGN) Bring cash Cash(FX)	Check Approve	Check Approve Credit (FX) ★	CBM-NET Transaction statement (FX) Account balance (FX) (MEB(YGN))
	MEB(YGN) Credit advice	*1		

Remarks

*1 In the case where MEB(YGN) has a CBM-NET terminal.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Cash Withdrawal (foreign currency)	11		30-June	1/1

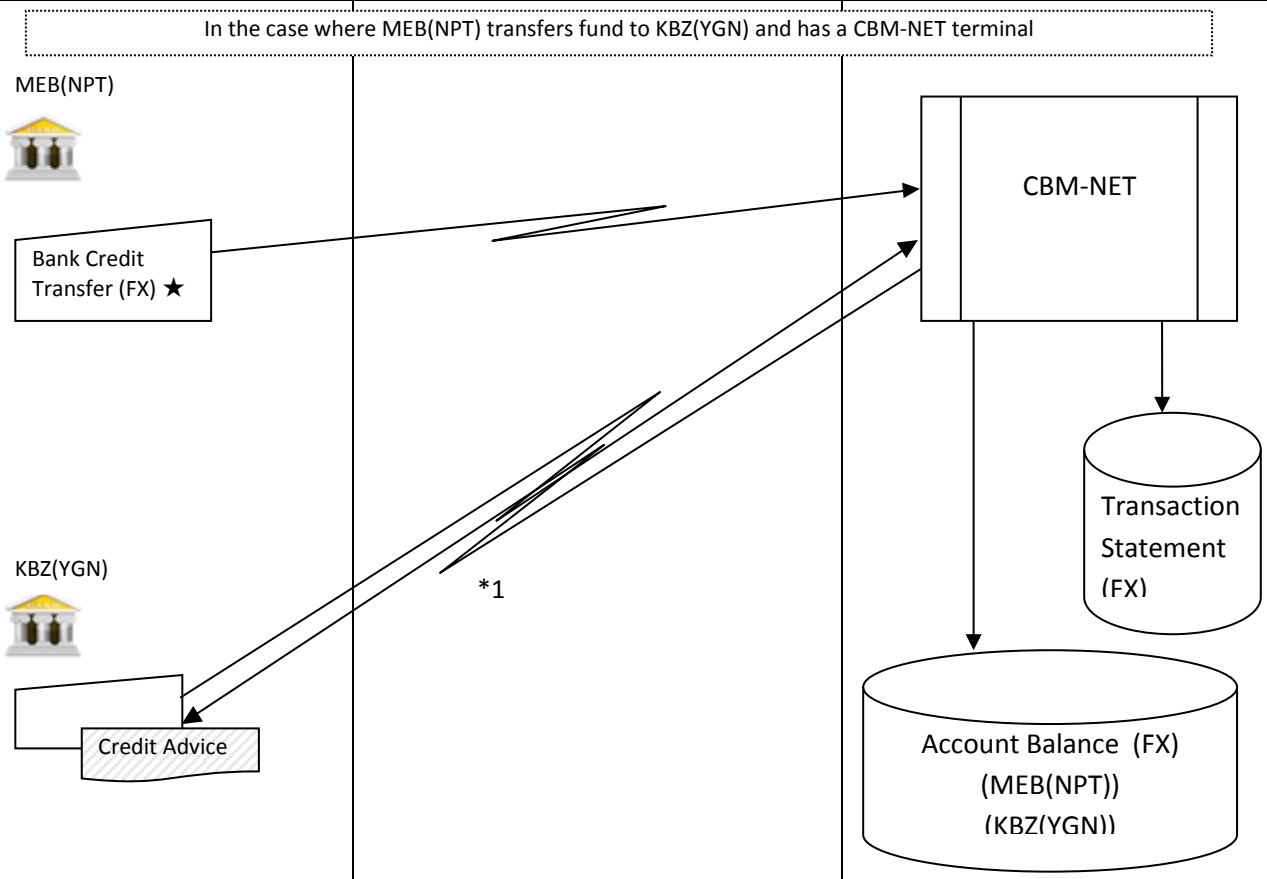


Remarks

*1 In the case where MEB(YGN) has a CBM-NET terminal.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Fund Transfer (Foreign currency) #1	12		30-June	1/1

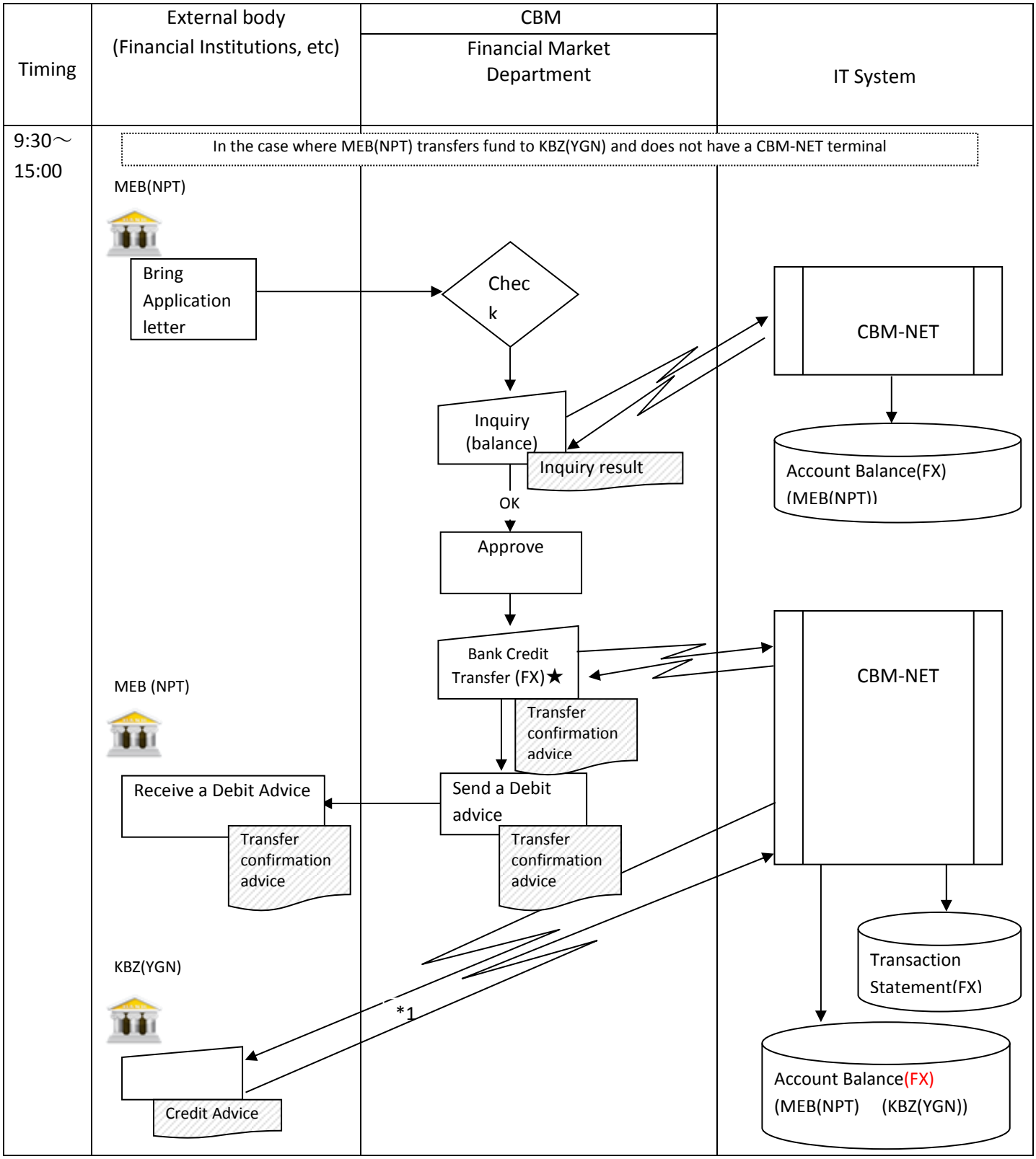
Timing	External body (Financial Institutions, etc)	CBM Financial Market Department	IT System
9:30～ 15:00	In the case where MEB(NPT) transfers fund to KBZ(YGN) and has a CBM-NET terminal		



Remarks

*1 In the case where KBZ(YGN) has a CBM-NET terminal.

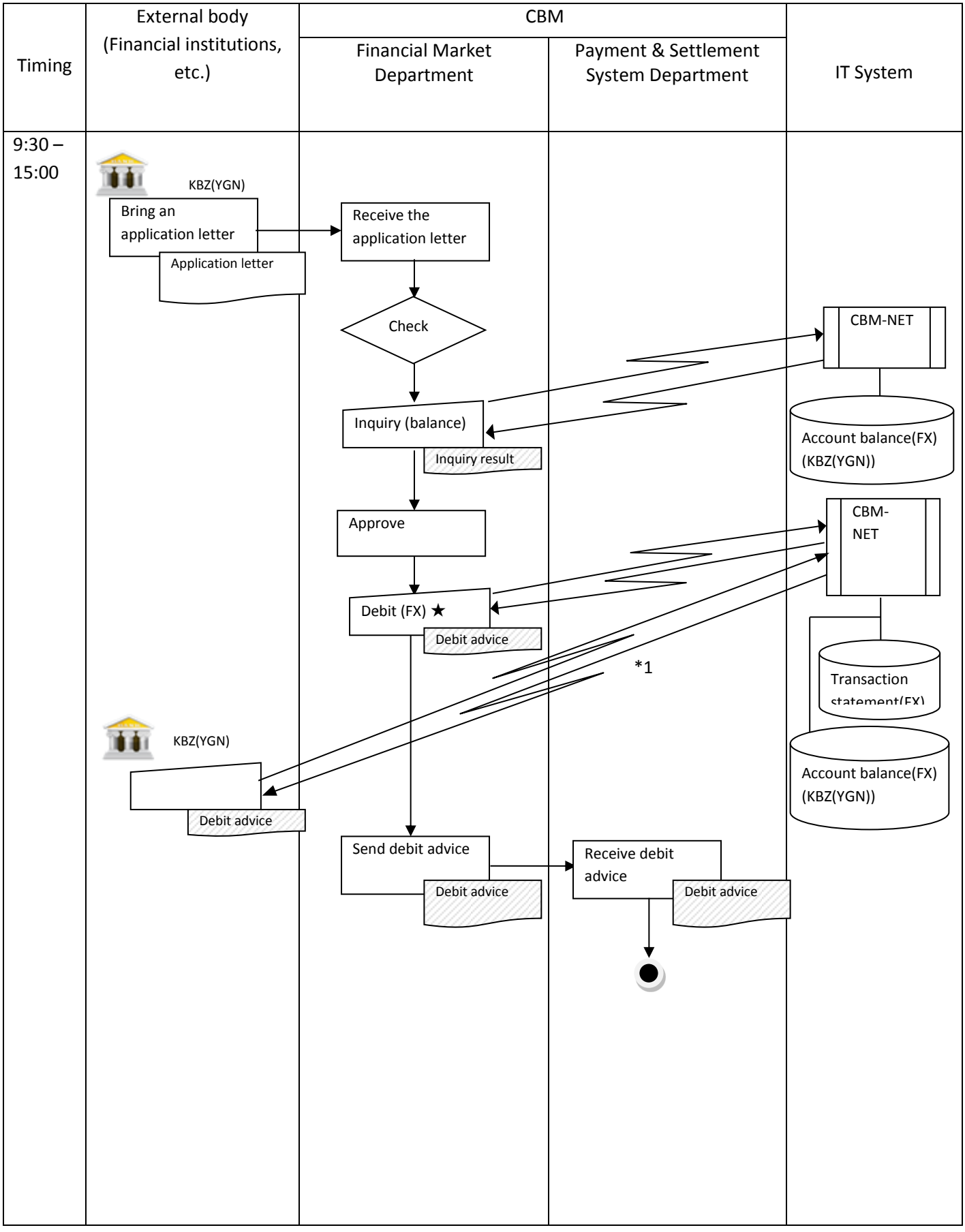
Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Fund Transfer (Foreign currency) #2	13		30-June	1/1



Remarks

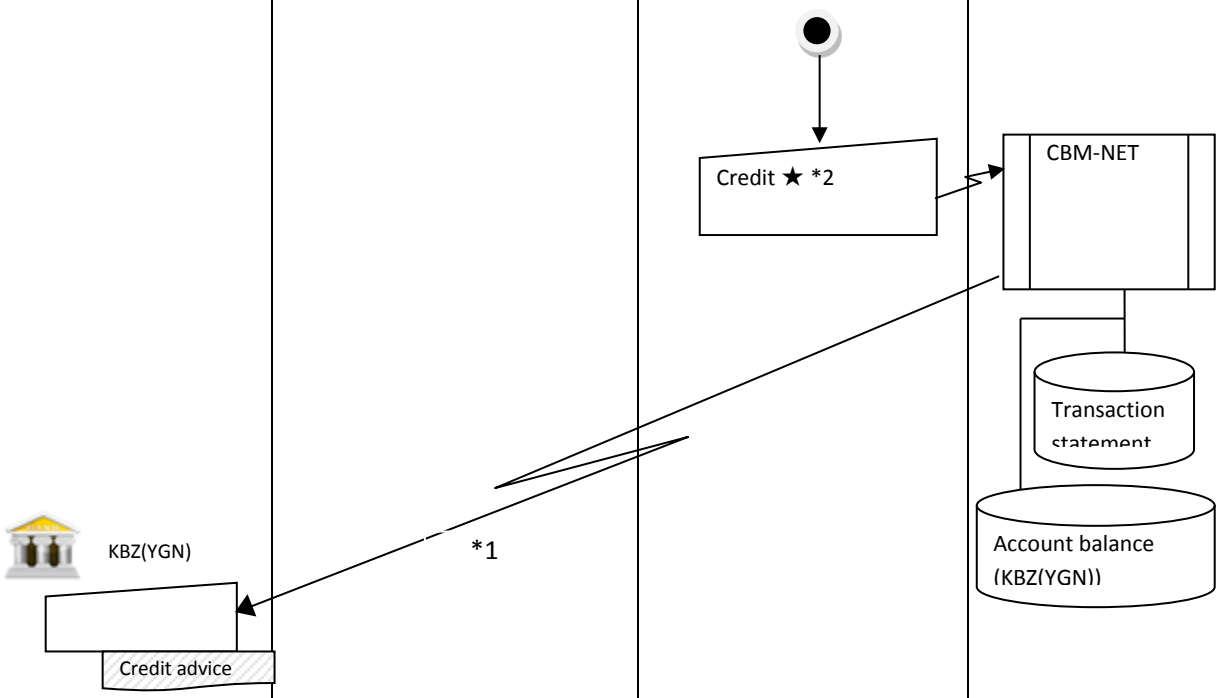
*1 In the case where KBZ(YGN) has a CBM-NET terminal.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Foreign currency buying (CBM buys $ from KBZ)	14		30-June	1/2



Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Foreign currency buying (CBM buys $ from KBZ)	14		30-June	2/2

Timing	External body (Financial institutions, etc.)	CBM		IT System
		Financial Market Department	Payment & Settlement System Department	
9:30 – 15:00				

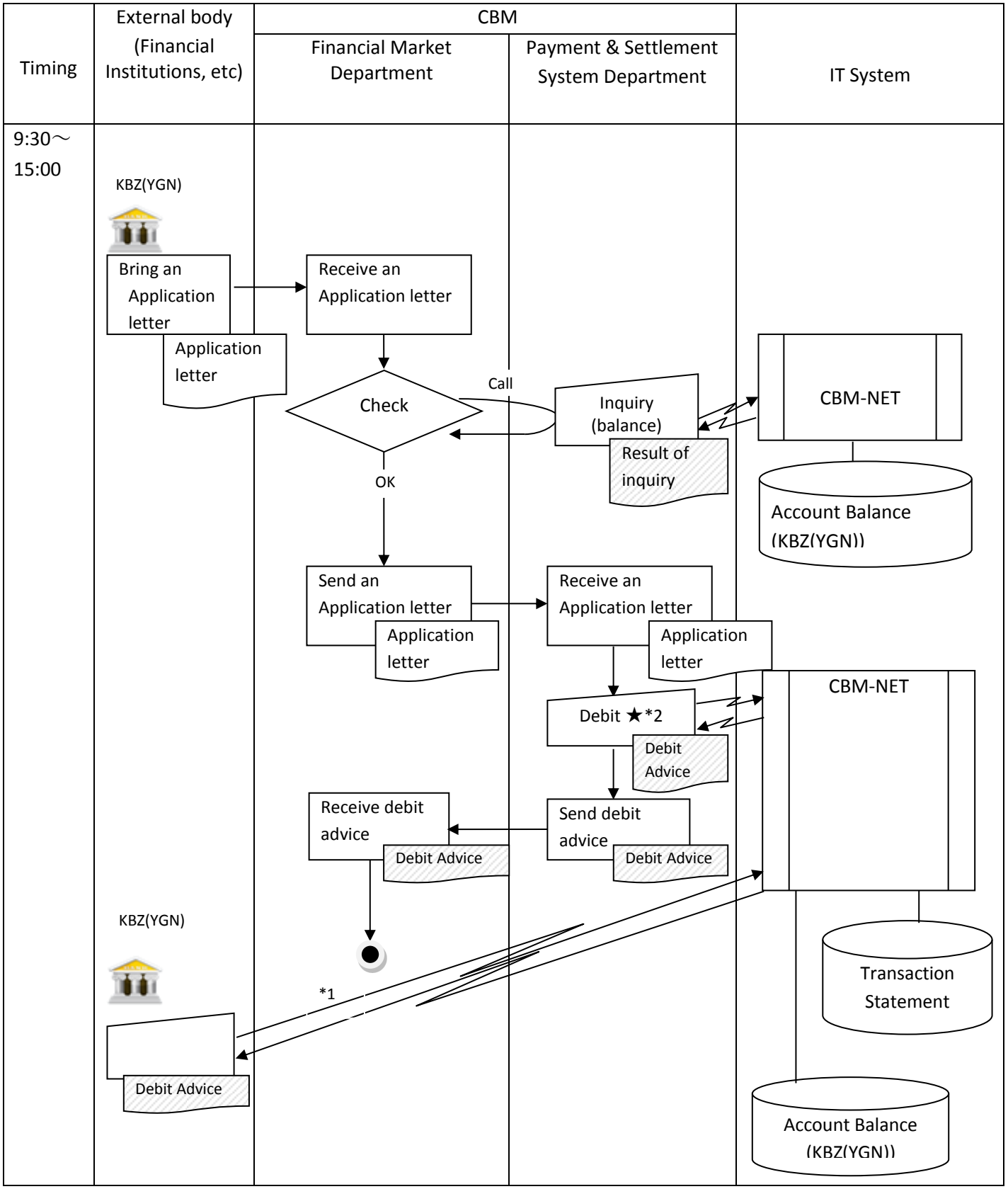


Remarks

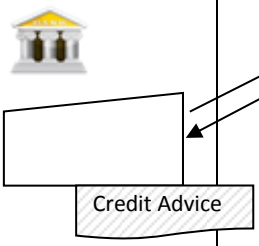
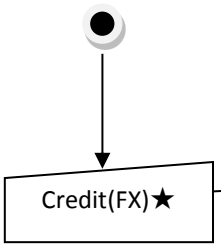
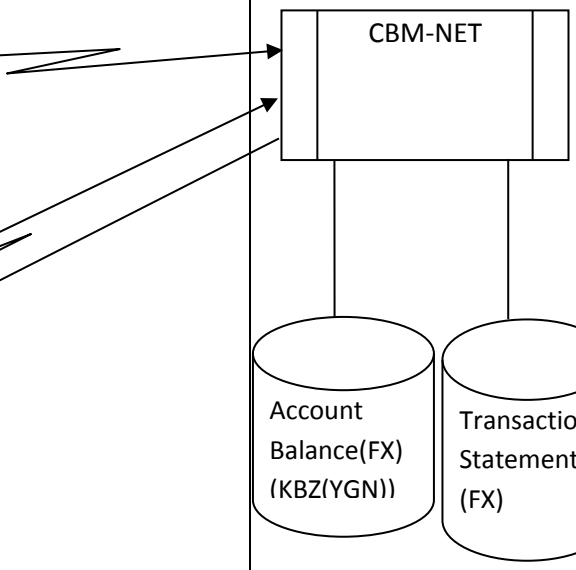
*1 In the case where KBZ (YGN) has a CBM-NET terminal.

*2 CBM-NET does not convert Kyat to foreign currency (convert by manual operation). Foreign exchange rate is announced before foreign currency buying or selling.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Foreign currency selling (CBM sells $ to KBZ)	15		30-June	1/2



Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Foreign currency selling (CBM sells $ to KBZ)	15		30-June	2/2

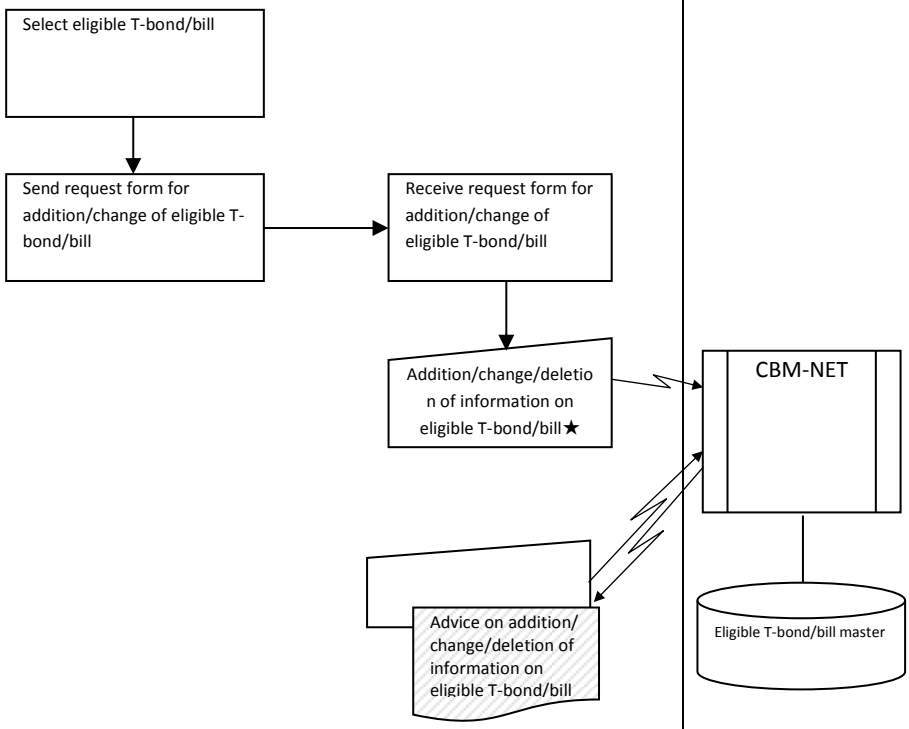
Timing	External body (Financial Institutions, etc)	CBM		IT System
		Financial Market Department	Payment & Settlement System Department	
9:30～15:00				

Remarks

*1 In the case where KBZ(YGN) has a CBM-NET terminal.

*2 CBM-NET does not convert Kyat to foreign currency (convert by manual operation). Foreign exchange rate is announced before foreign currency buying or selling.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Registration/change/deletion of information on eligible T-bond/bill	16		30-June	1/1

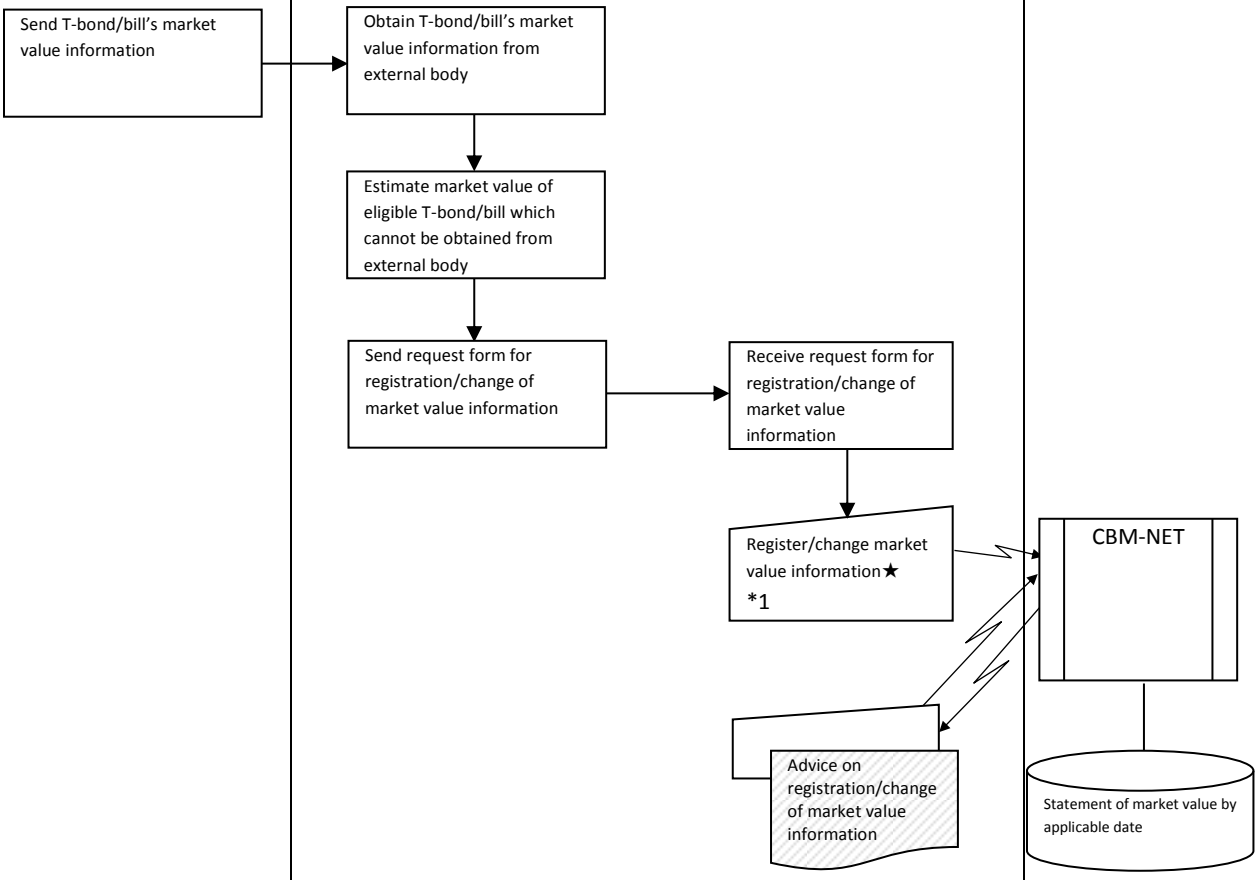
Timing	External body (Financial institutions, etc.)	CBM Financial Market Department	IT System
9:30～15:00			

Remarks

*1Applicable date for eligible T-bond/bill subject to registration/change/deletion is later than the next business day.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Registration/change of market value information	17		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM Financial Market Department	IT System
9:30～15:00			

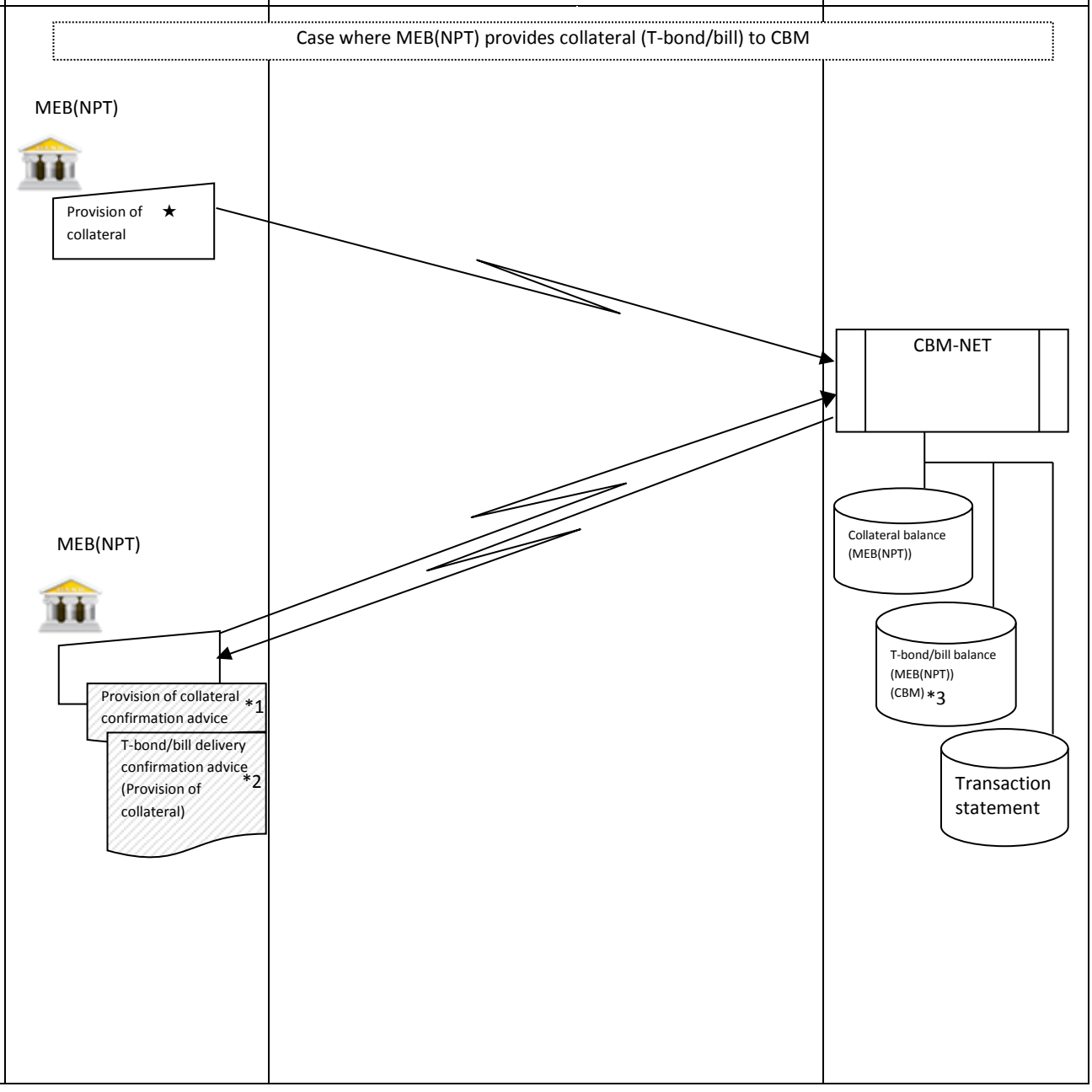


Remarks

*1 Applicable date for market value information subject to registration/change/deletion is later than the next business day.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Provision of collateral	18		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM Financial Market Department	IT System
9:30～15:00			



Remarks

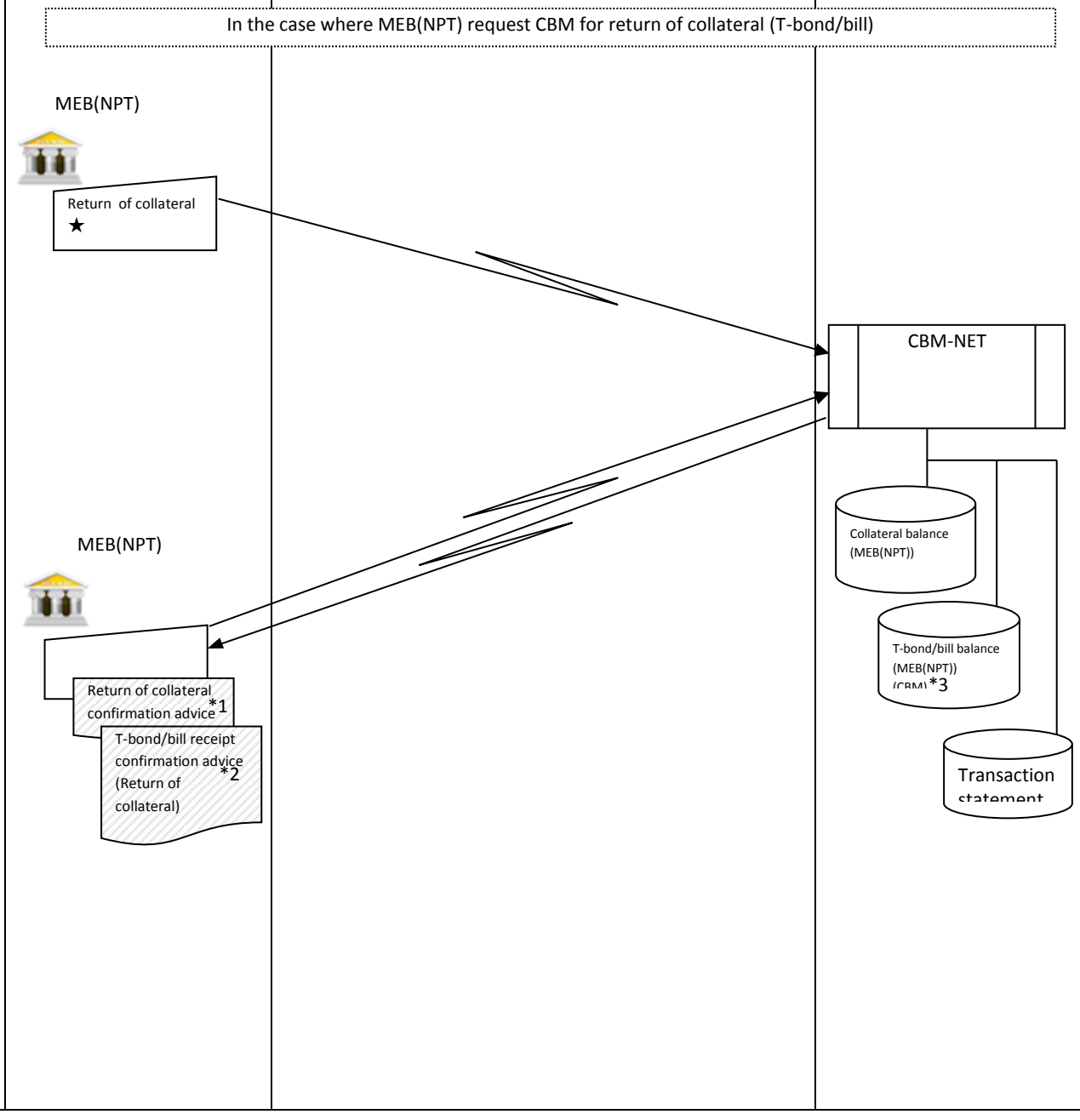
*1 In the case where input branch differs from a designated collateral output branch (representative branch (one per FI) which can obtain processing result (slip) of provision of collateral or return operation)

*2 In the case where input branch is the same with the designated output branch of FI which delivers T-bond/bill.

*3 CBM's pledge account

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Return of collateral	19		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM Financial Market Department	IT System
9:30～15:00			



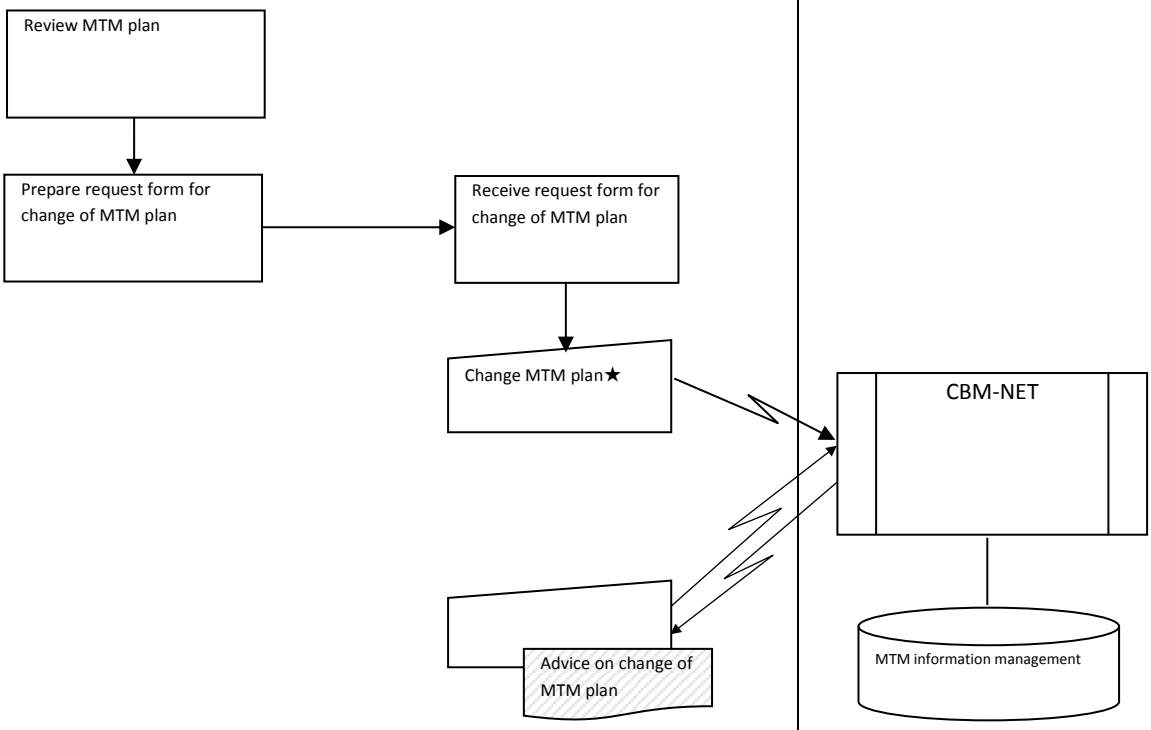
Remarks

*1 In the case where input branch differs from a designated collateral output branch (representative branch (one per FI) which can obtain processing result (slip) of provision of collateral or return operation)

*2 In the case where input branch is the same with the designated output branch of FI which receives T-bond/bill.

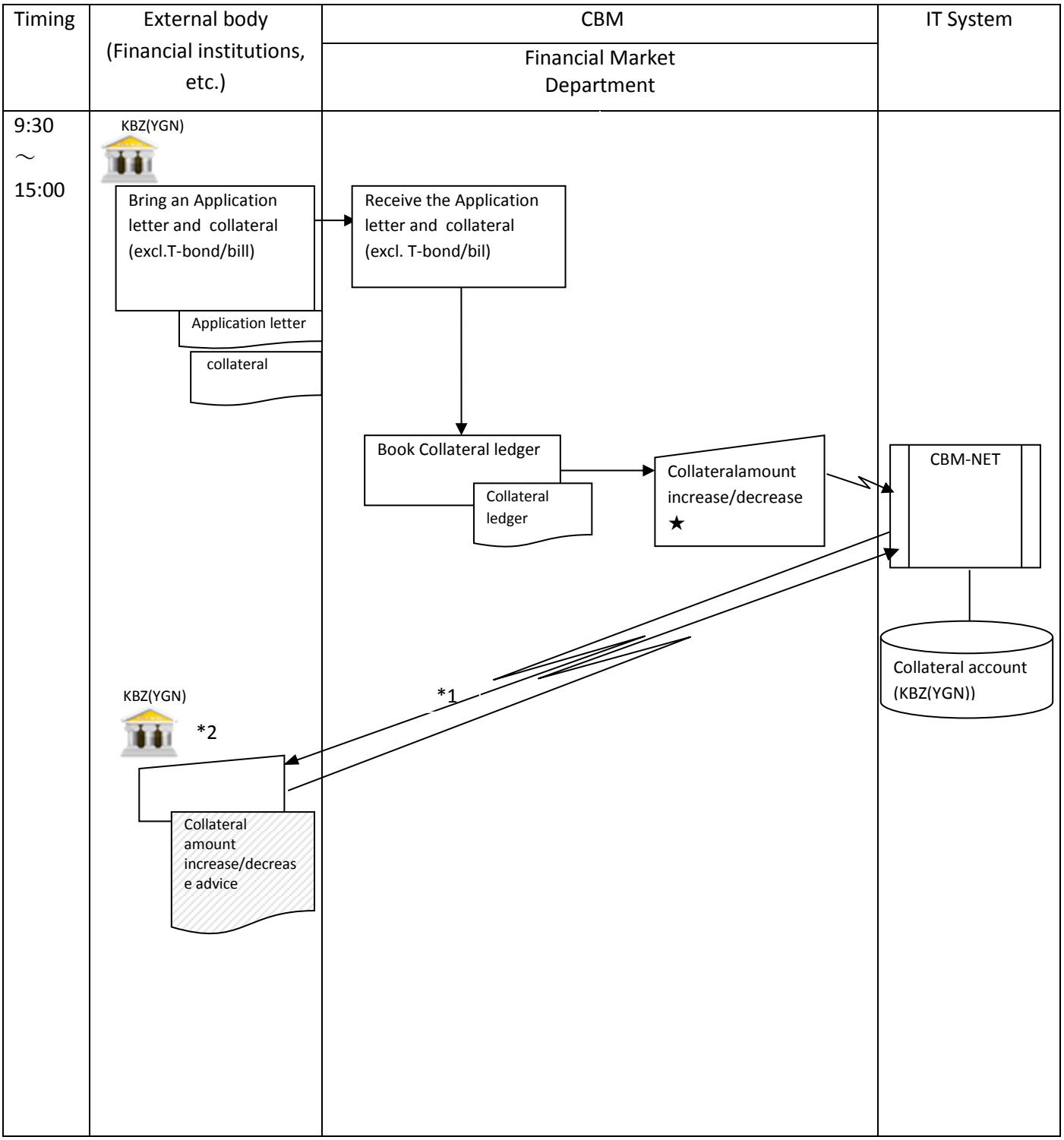
*3 CBM's pledge account

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Change of MTM plan	20		30-June	1/1

Timing	CBM	IT System
	Financial Market Department	
9:30～ 15:00		

Remarks

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Collateral amount increase/decrease (increasing case)	21		30-June	1/1

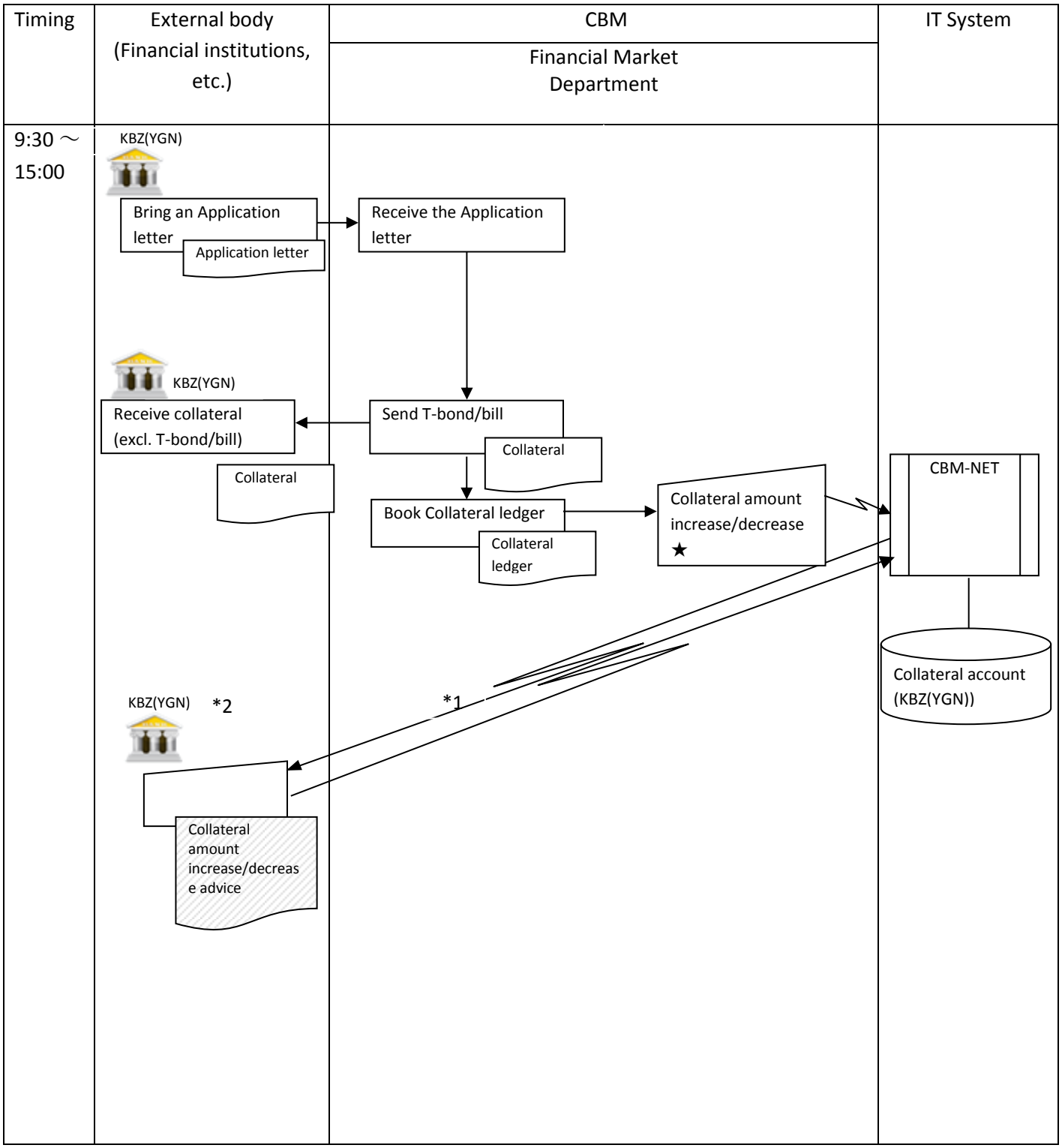


Remarks

*1 In the case where KBZ (YGN) has a CBM-NET terminal.

*2 In the case where KBZ (YGN) is a branch designated for collateral output.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Collateral amount increase/decrease (decreasing case)	22		30-June	1/1



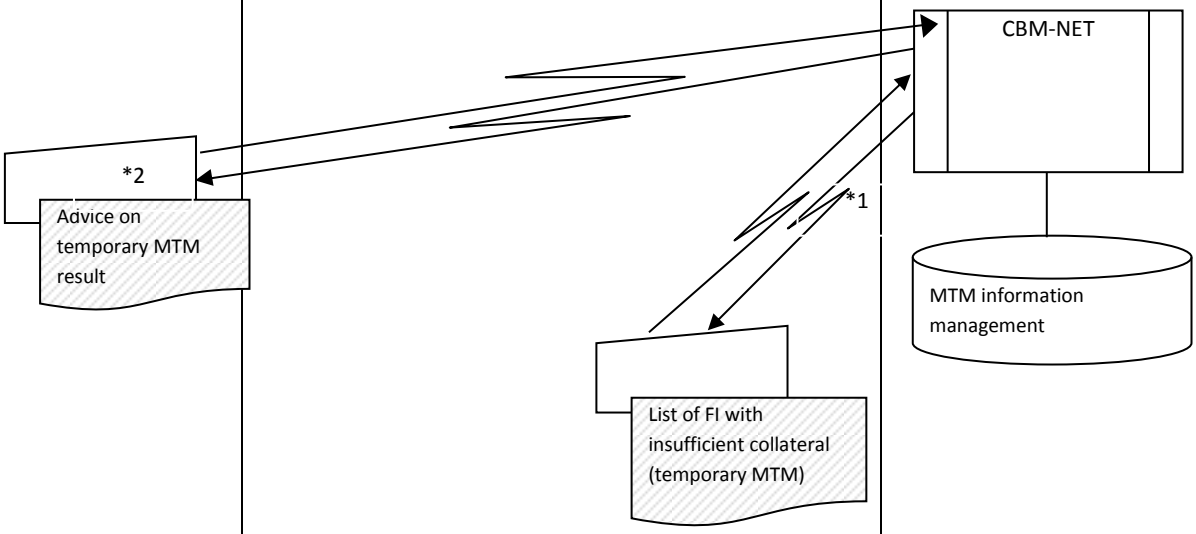
Remarks

*1 In the case where KBZ (YGN) has a CBM-NET terminal.

*2 In the case where KBZ (YGN) is a branch designated for collateral output

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Temporary MTM processing	23		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM Financial Market Department	IT System
After the collateral operations are finished on the date for setting base values			



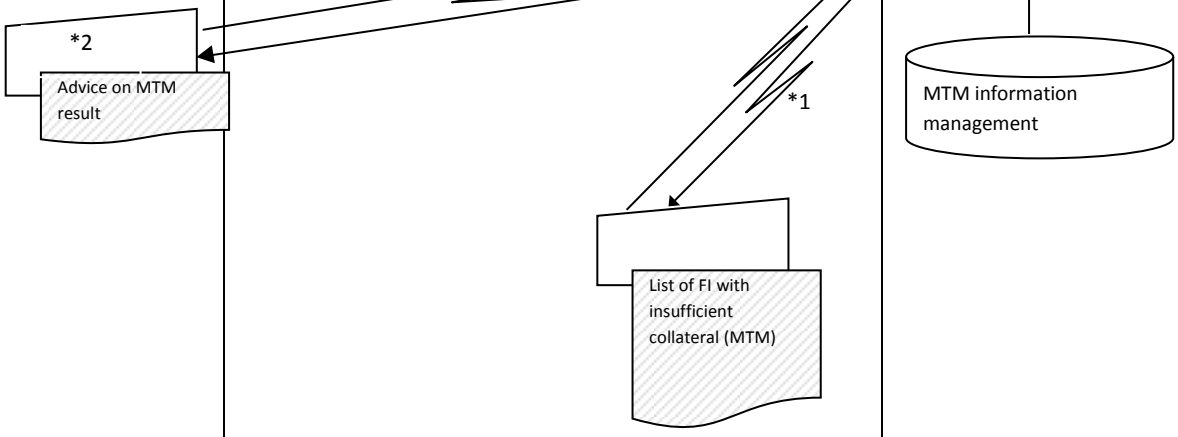
Remarks

*1 In the case where there is a FI with insufficient collateral after temporary MTM processing

*2 In the case where it is the branch designated for collateral output

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	MTM processing	24		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM Financial Market Department	IT System
After collateral operations are finished on the business day preceding to MTM applicable date			



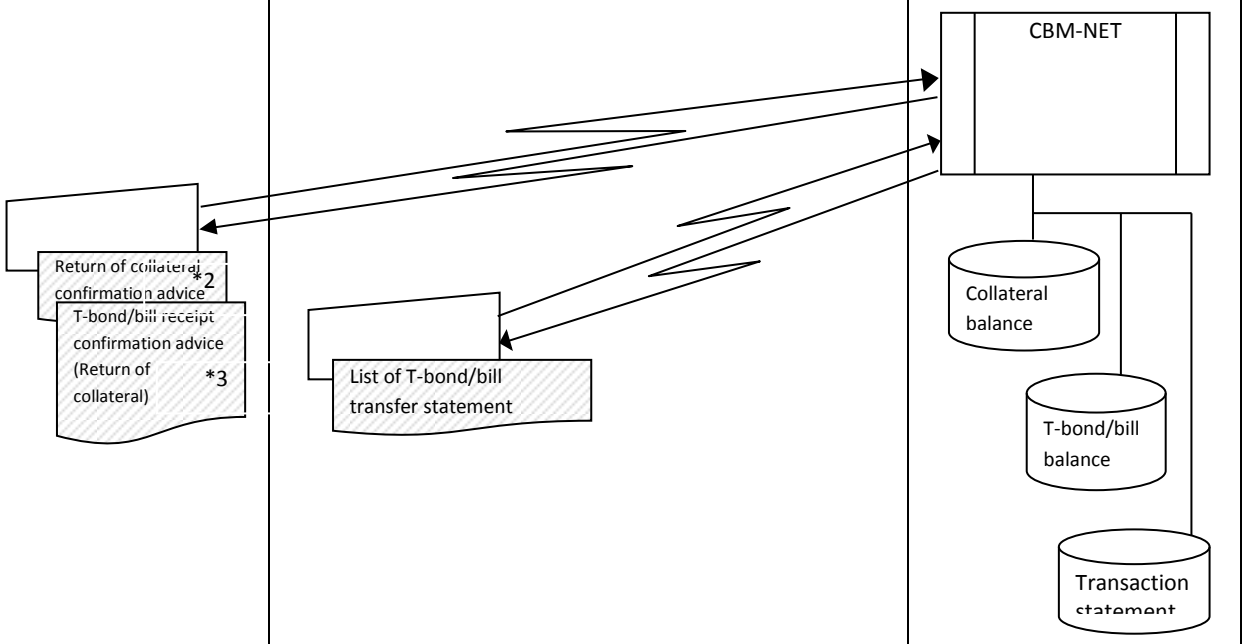
Remarks

*1 In the case where there is a FI with insufficient collateral after temporary MTM processing

*2In the case where it is the branch designated for collateral output

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Return of collateral at maturity*1	25		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM Financial Market Department	IT System
On a given business day before the redemption date			



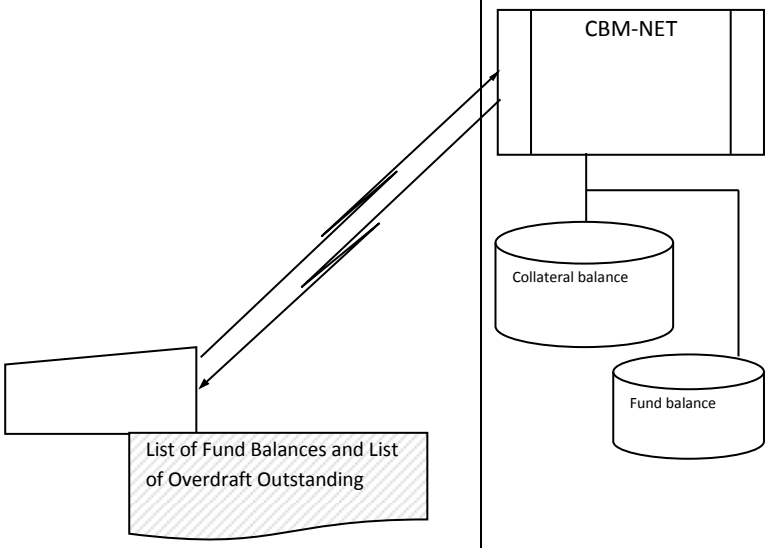
Remarks

*1 T-bond/bill returned at maturity is subject to redemption in the redemption processing (Flow 38)

*2In the case where it is the branch designated for collateral output

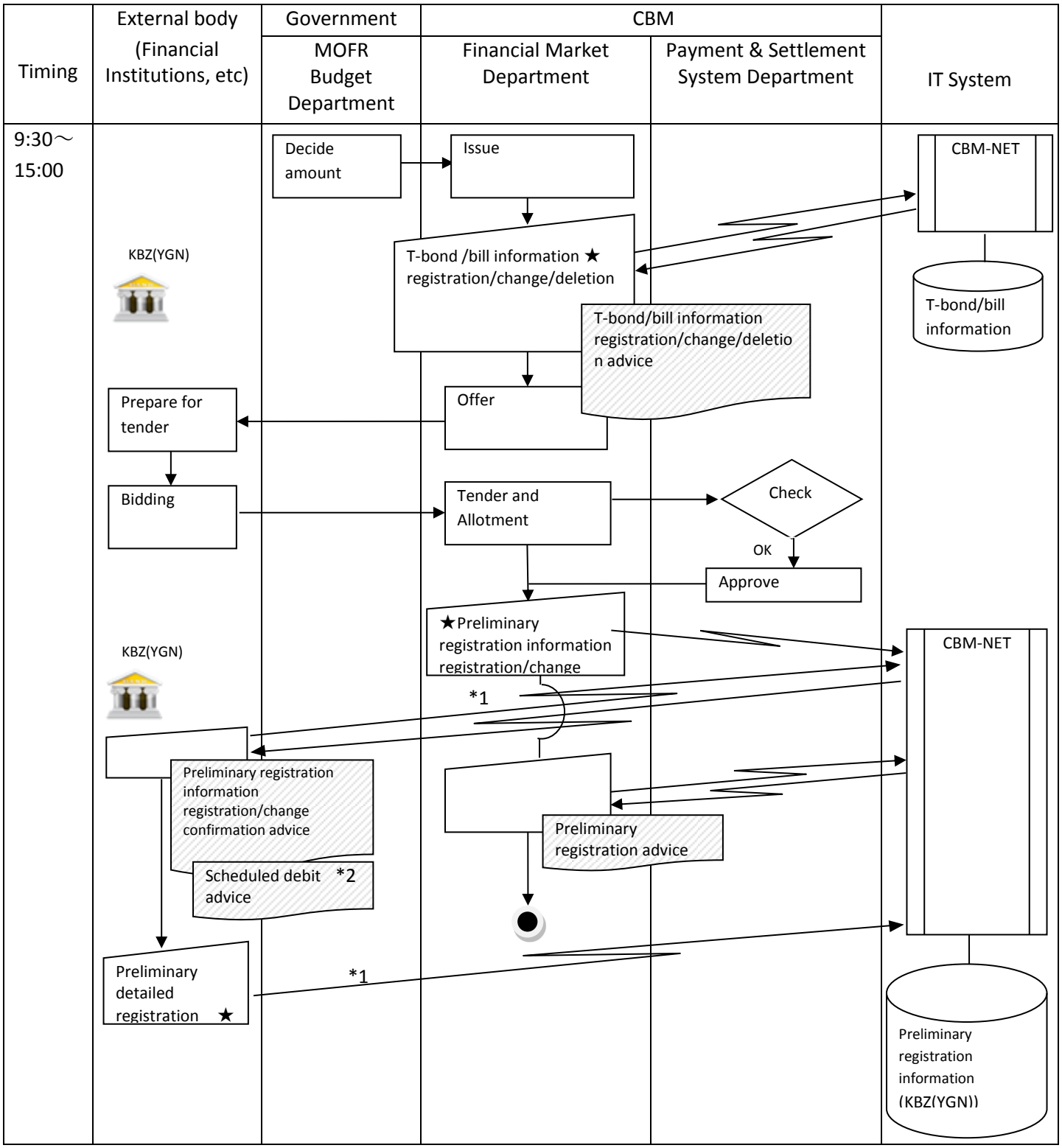
*3 In the case where it is the designated output branch of FI which receives T-bond/bill.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Output of list of fund balances and list of overdraft outstanding	26		30-June	1/1

Timing	External body (Financial institutions, etc.)	CBM	IT System
		Payment & Settlement System Department	
16;00 ～			

Remarks

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	T-bond/bill Issuance, tender, and new registration/payment execution	27		30-June	1/2



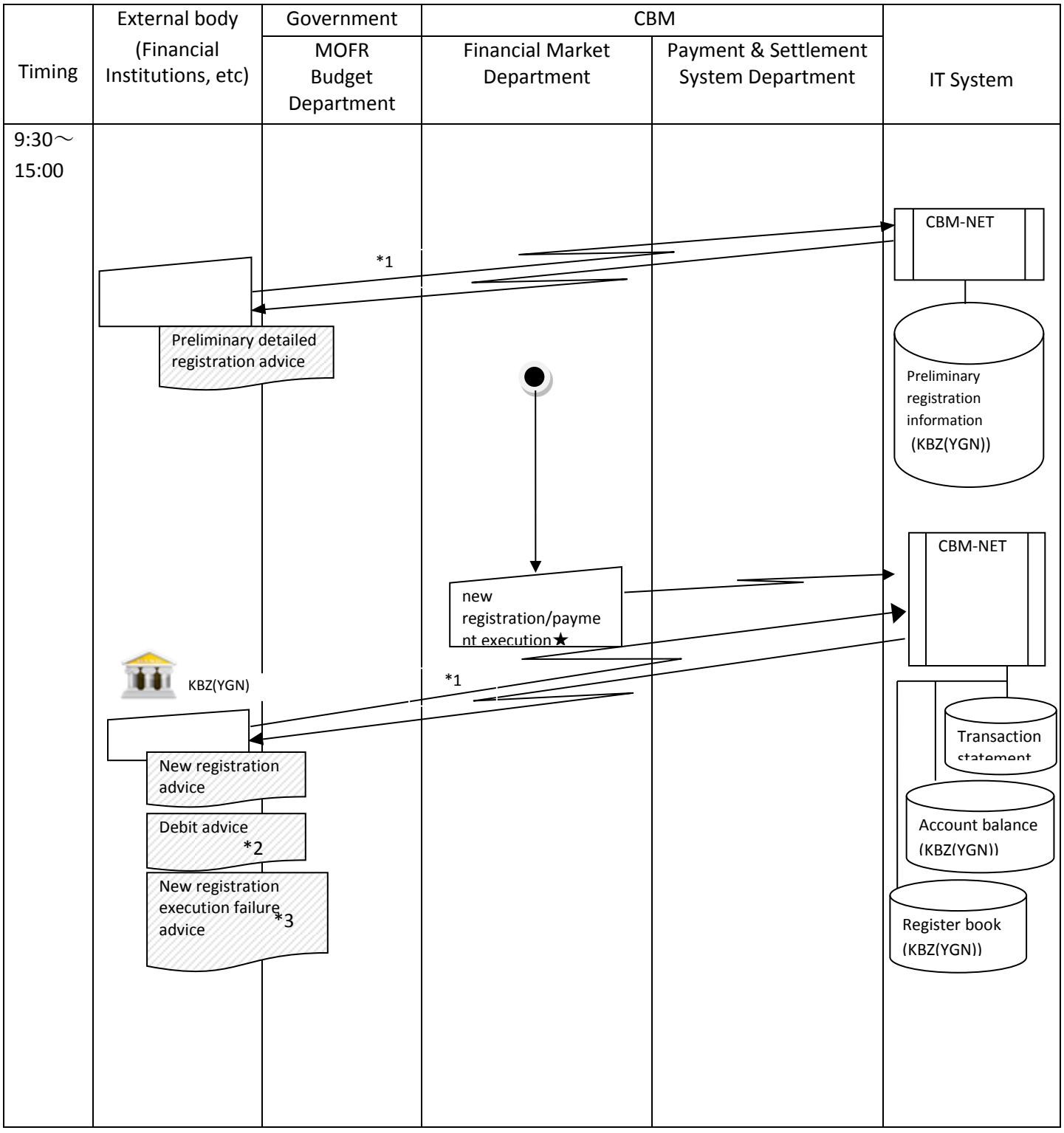
Remarks

*1 In the case where KBZ(YGN) has a CBM- NET terminal .

*2 Same as case where a branch in which fund is paid is the designated output branch*3 of FI which receives T-bond/bill.

*3Designated T-bond/bill output branch: Representative branch which can obtain processing result (slip) which is associated with a FI eligible for T-bond/bill settlement

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	T-bond Issuance, tender, and new registration/payment execution	27		30-June	2/2



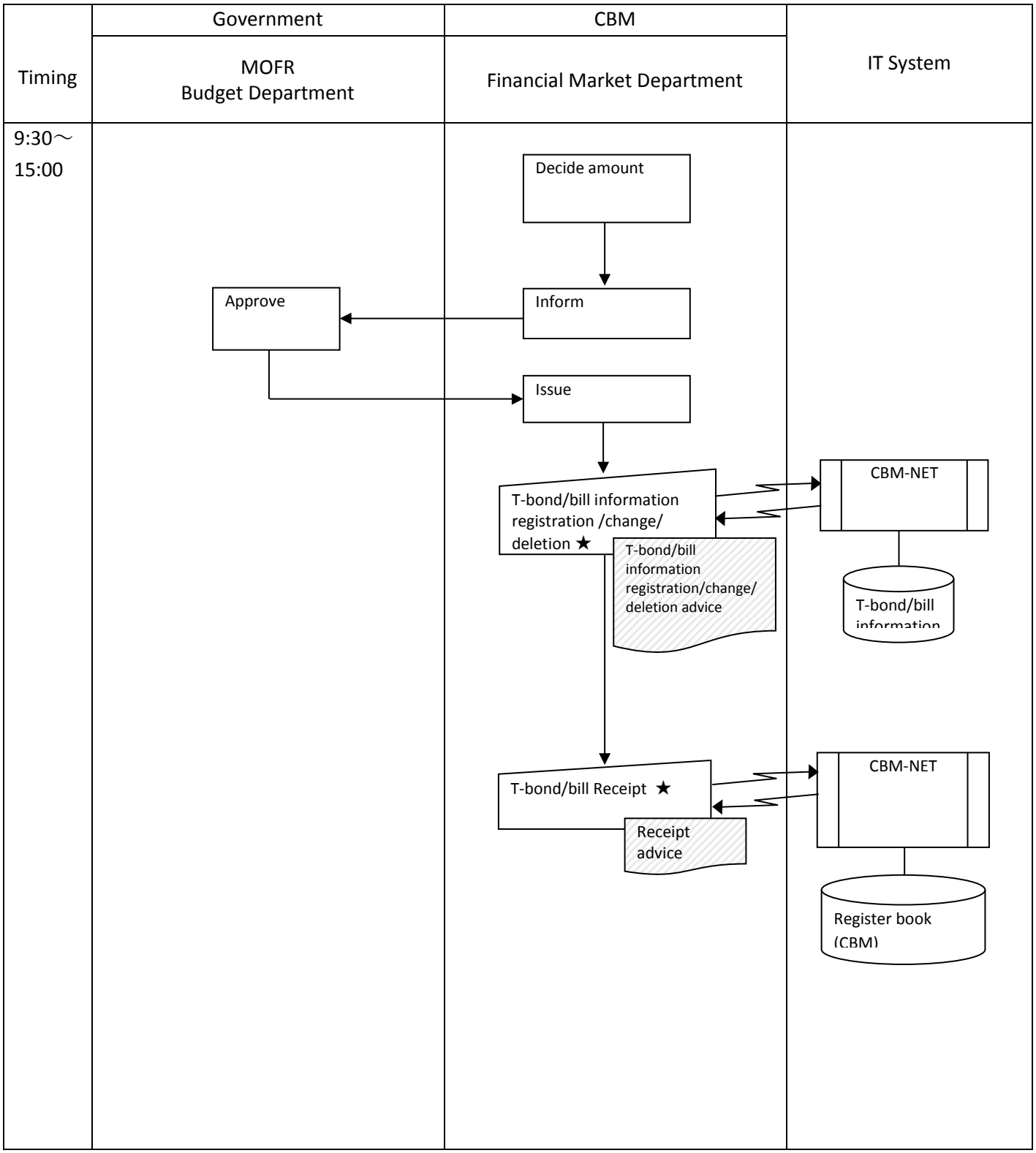
Remarks

*1 In the case where KBZ(YGN) has a CBM- NET terminal .

*2 Same as case where a branch in which fund is paid is the designated output branch of FI which receives T-bond/bill.

*3 KBZ(YGN) receives a slip ”New registration execution failure advice” instead of “new registration advice” and “debit advice” in the case where fund balance is insufficient.

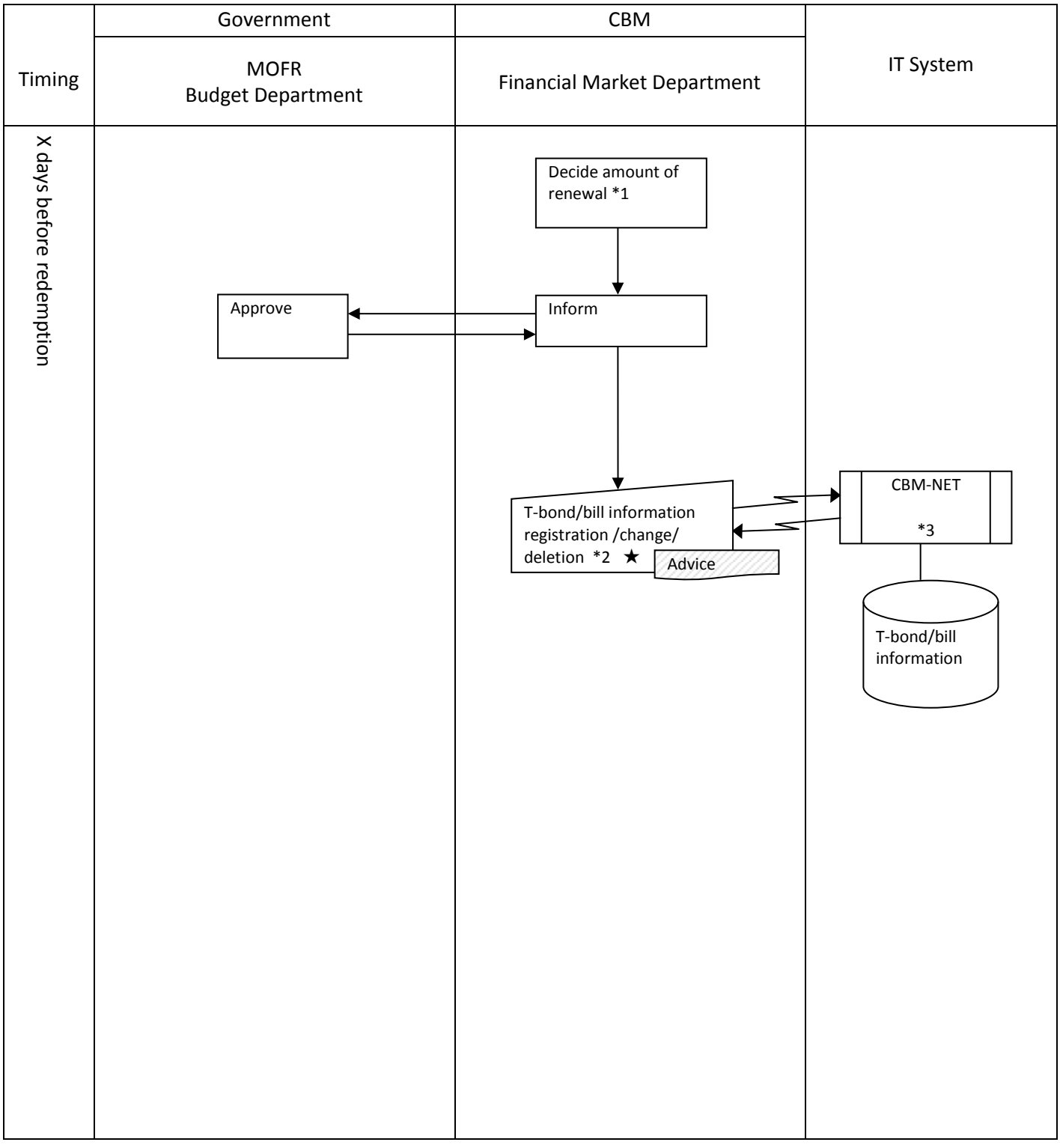
Category	Flow name	Flow No	Ver.	Date	Page
New Business	T-bill issuance *1	28		30-June	1/1



Remarks

*1 In the case of T-bill issuance, CBM buys the whole amount of T-bill.

Category	Flow name	Flow No	Ver.	Date	Page
New Business	T-bill (owned by CBM) renewal	29		13-July	1/1



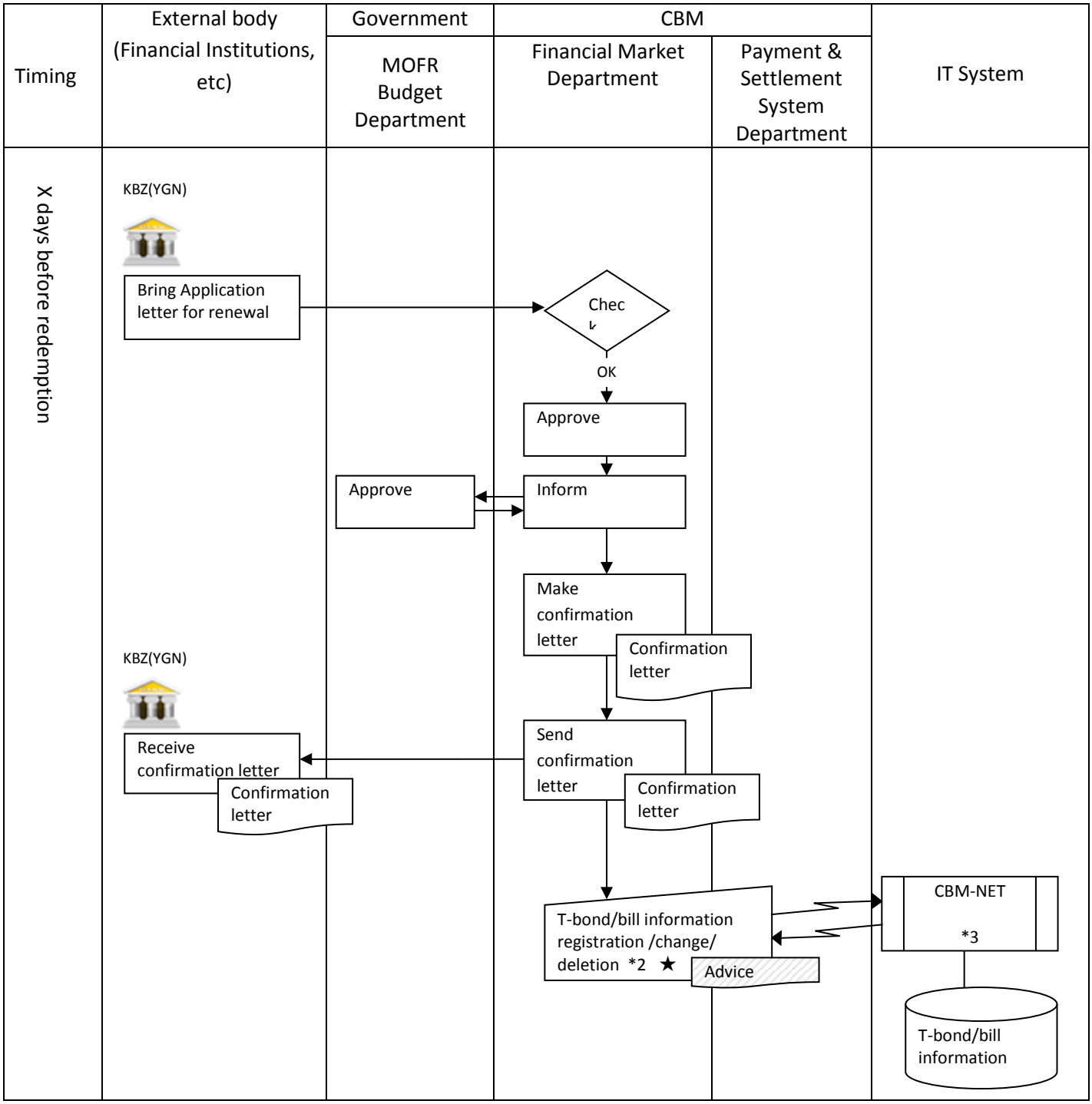
Remarks

*1 CBM renews the whole amount of each T-bill issue.

*2 CBM changes the redemption date of T-bill to be renewed.

*3 Redemption date renewal processing reflect change of T-bond/bill information to eligible T-bond/bill master information.

Category	Flow name	Flow No	Ver.	Date	Page
New Business	T-bill (owned by banks) renewal*1	30		13-July	1/1



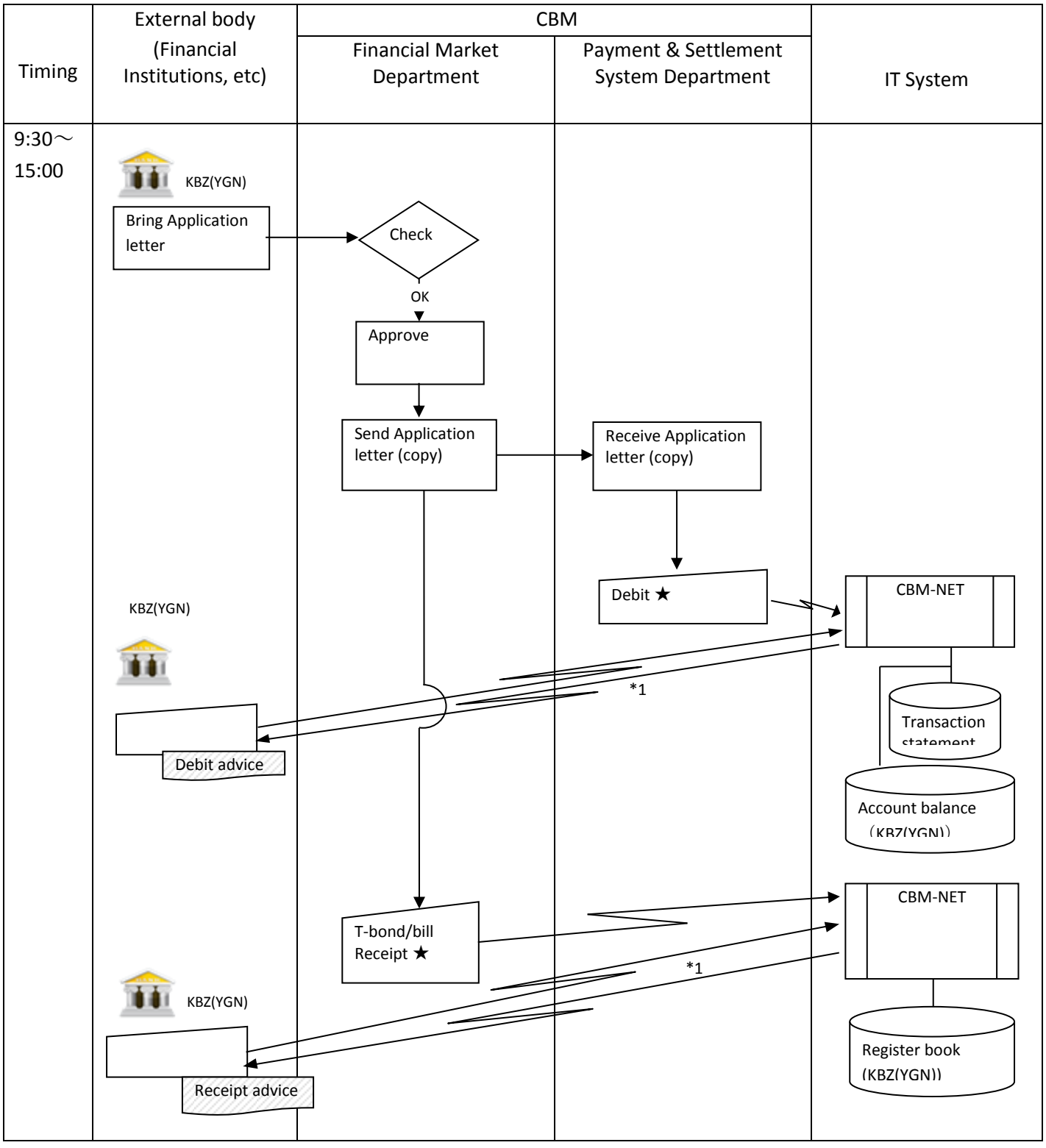
Remarks

*1 CBM renews the whole amount of each T-bill issue. In the case where some banks request to redeem their T-bill which is to be renewed, CBM buys them back (so that all subject T-bill should be renewed).

*2 CBM changes the redemption date of T-bill to be renewed.

*3 Redemption date renewal processing reflect change of T-bond/bill information to eligible T-bond/bill master information.

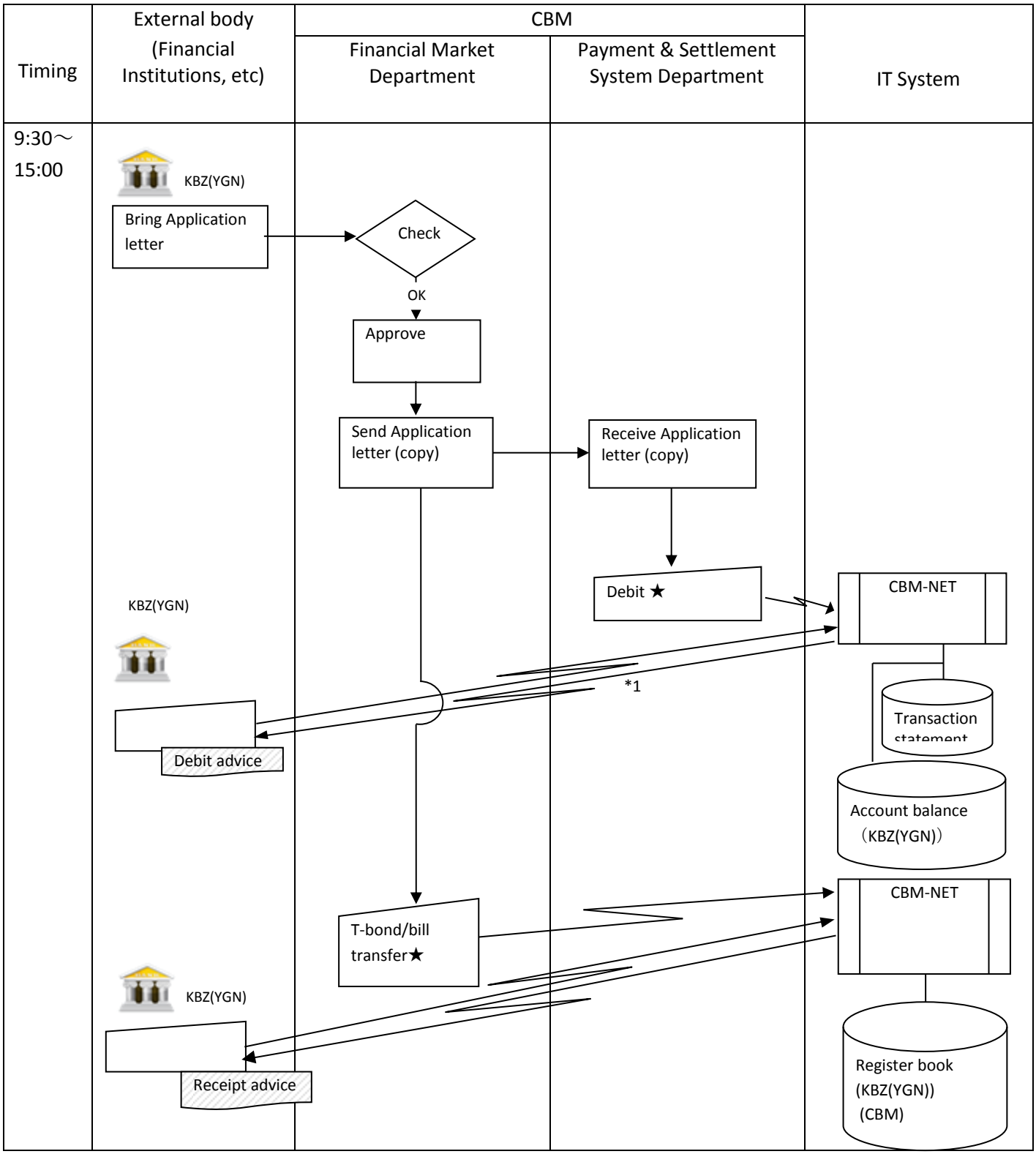
Category	Flow name	Flow No	Ver.	Date	Page
New Business	T-bond selling from CBM to bank	31		30-June	1/1



Remarks

*1 In the case where KBZ(YGN) has a CBM- NET terminal.

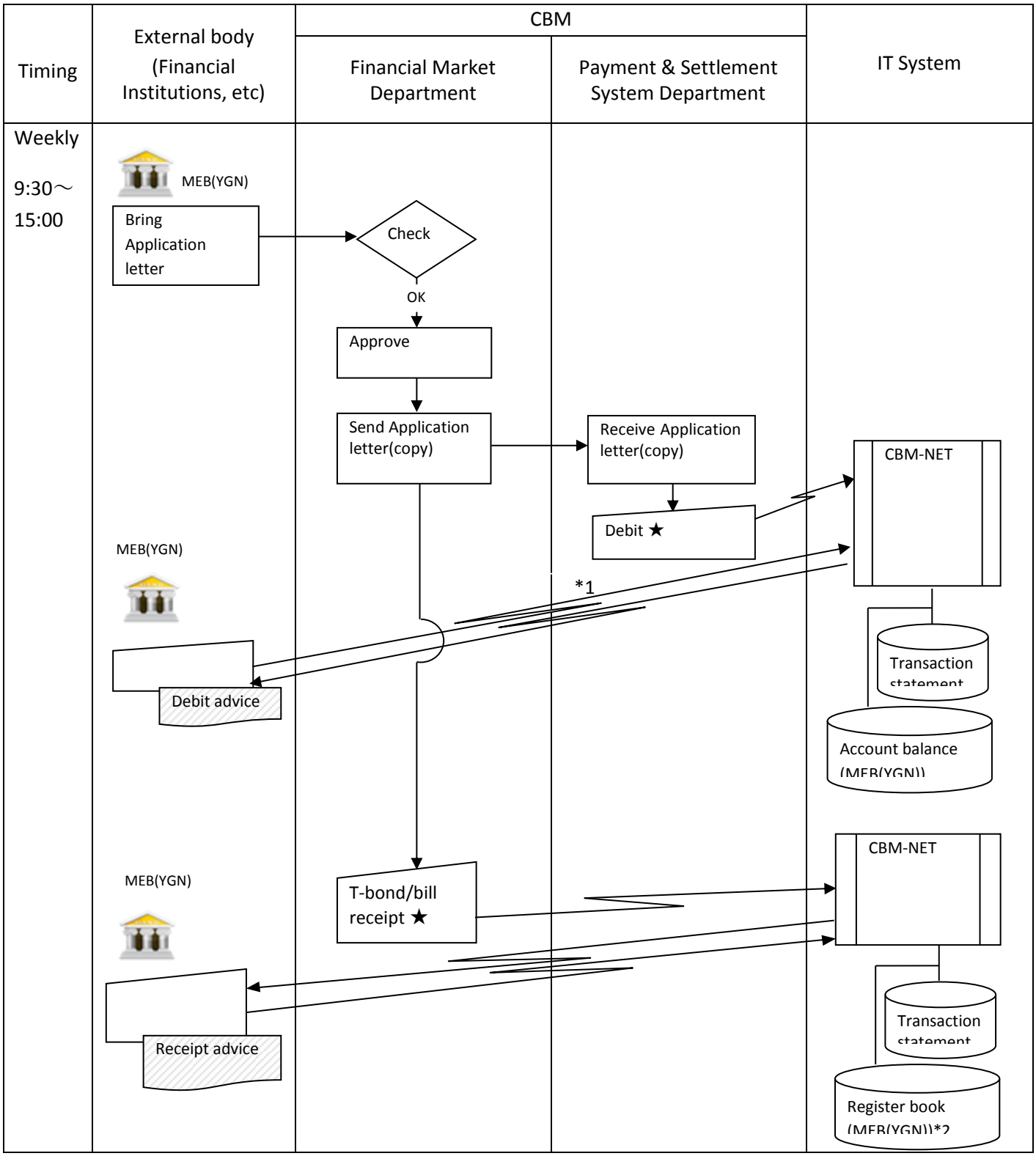
Category	Flow name	Flow No	Ver.	Date	Page
New Business	T- bill selling from CBM to bank	32		30-June	1/1



Remarks

*1 In the case where KBZ(YGN) has a CBM- NET terminal.

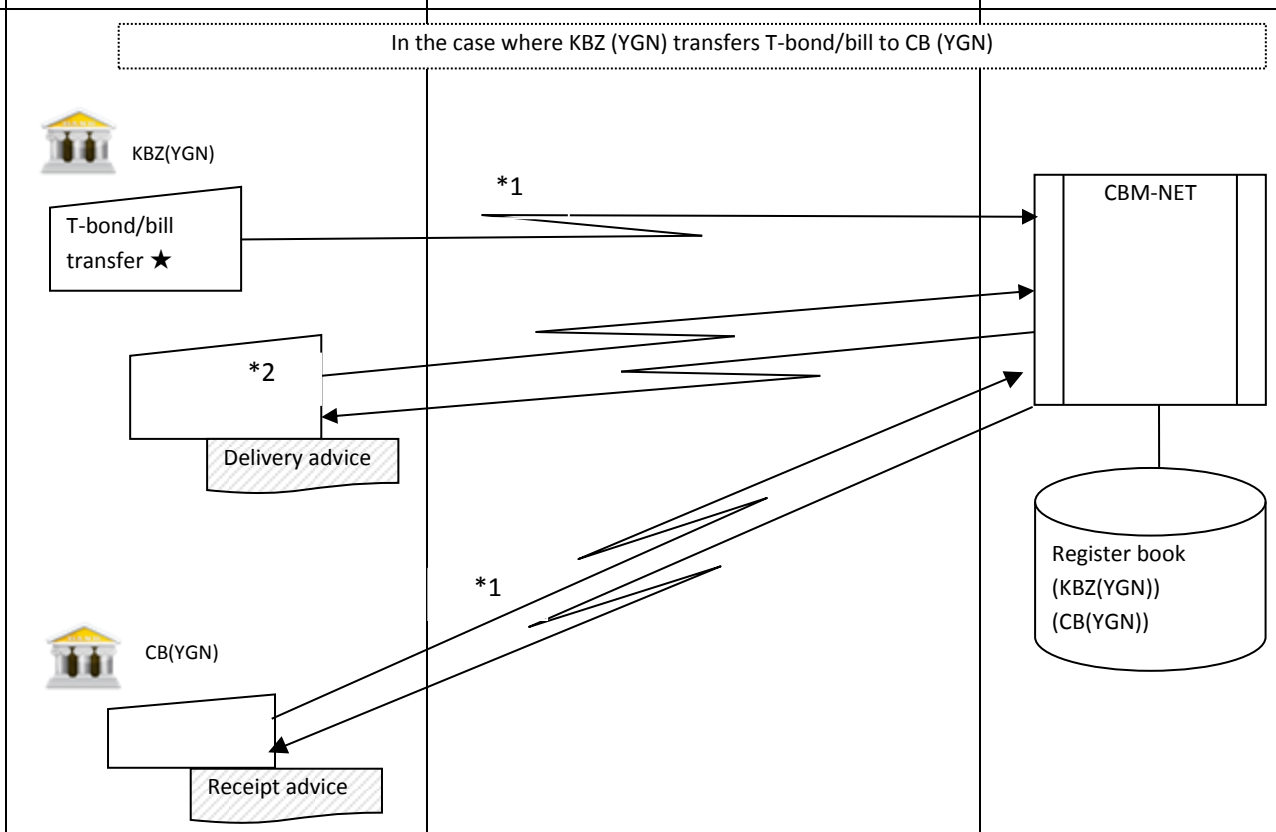
Category	Flow name	Flow No	Ver.	Date	Page
New Business	T-bond selling from MEB to others	33		30-June	1/1



Remarks
*1 In the case where MEB(YGN) has a CBM- NET terminal
*2 Customer's account of MEB(YGN)

Category	Flow name	Flow No	Ver.	Date	Page
New Business	T-bond/bill transfer	34		30-June	1/1

Timing	External body (Financial Institutions, etc)	CBM Financial Market Department	IT System
9:30～ 15:00			

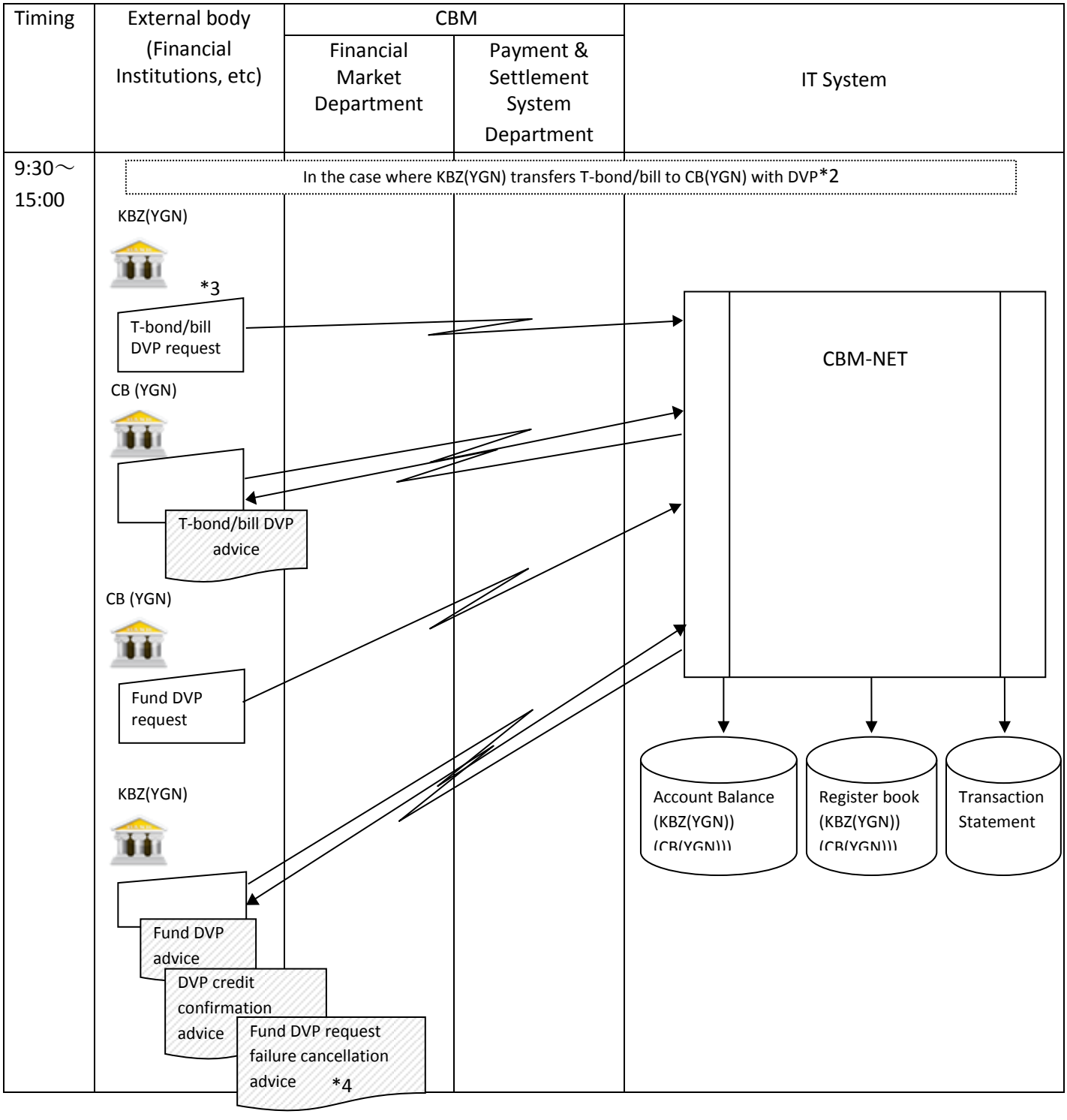


Remarks

*1 In the case where KBZ(YGN) and CB(YGN) have a CBM- NET terminal.

*2 In the case where input branch differs from designated T-bond/bill output branch.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	T-bond/bill DVP *1	35		30-June	1/1



Remarks

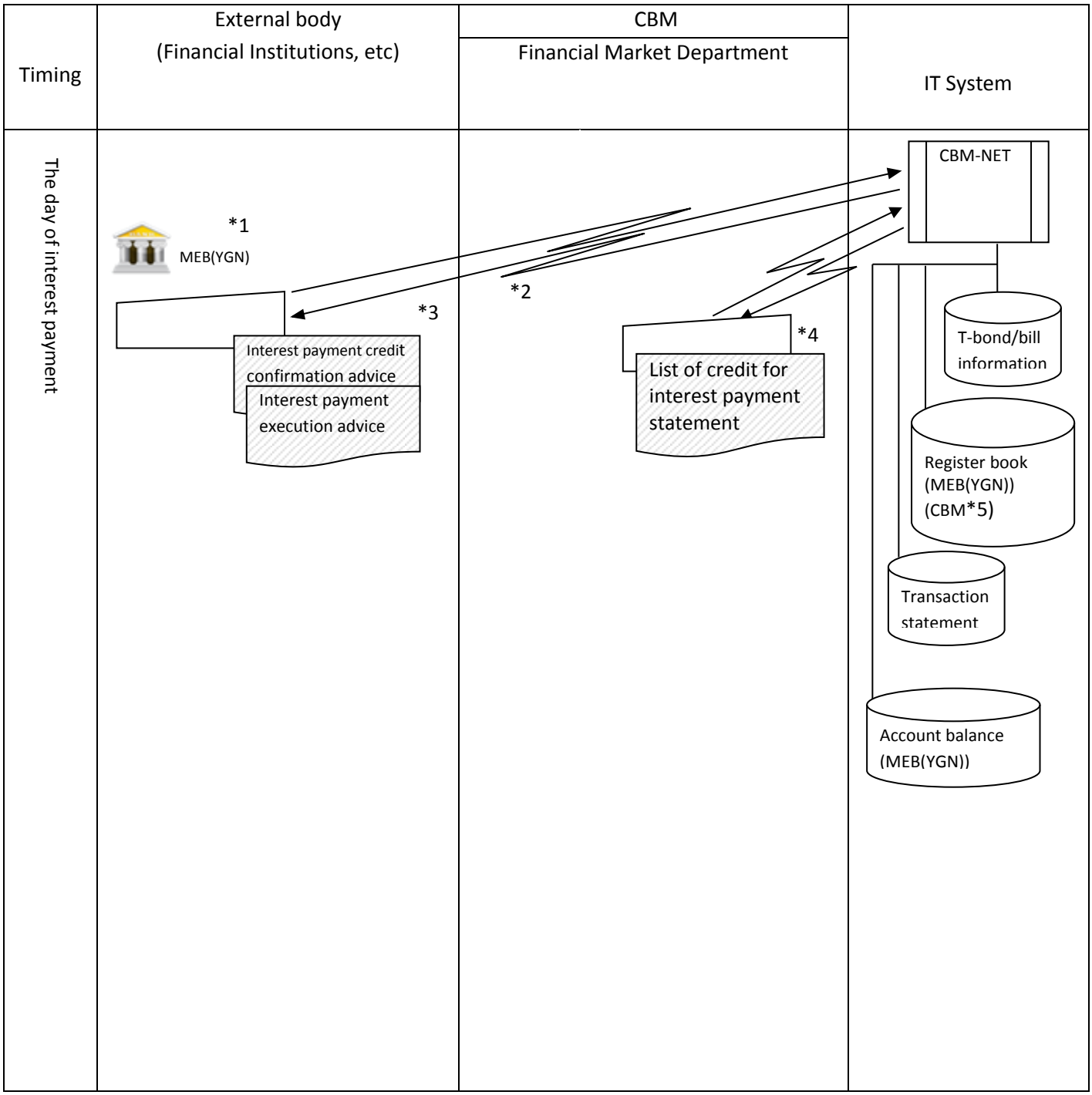
*1 T-bond/bill DVP is conducted between on-line FI branches (which has a CBM-NET terminal).

*2 This business flow assumes a case where KBZ(YGN) is designated output and credit branch of a FI which T-bond/bill is delivered, and CB(YGN) is designated output and debit branch of a FI receives T-bond/bill.

*3 KBZ(YGN) can designate other branch's account as a fund credit account. CB(YGN) can designate other branch's account as a fund debit account.

*4 In the case of insufficient balance error for fund or T-bond/bill, KBZ(YGN) can acquire "Fund DVP request failure cancellation advice" slip, instead of "Fund DVP advice" and "DVP Credit confirmation advice".

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Credit processing for interest payment	36		30-June	1/1



Remarks

*1 In the case where fund account for credit processing for interest payment is on MEB (YGN)

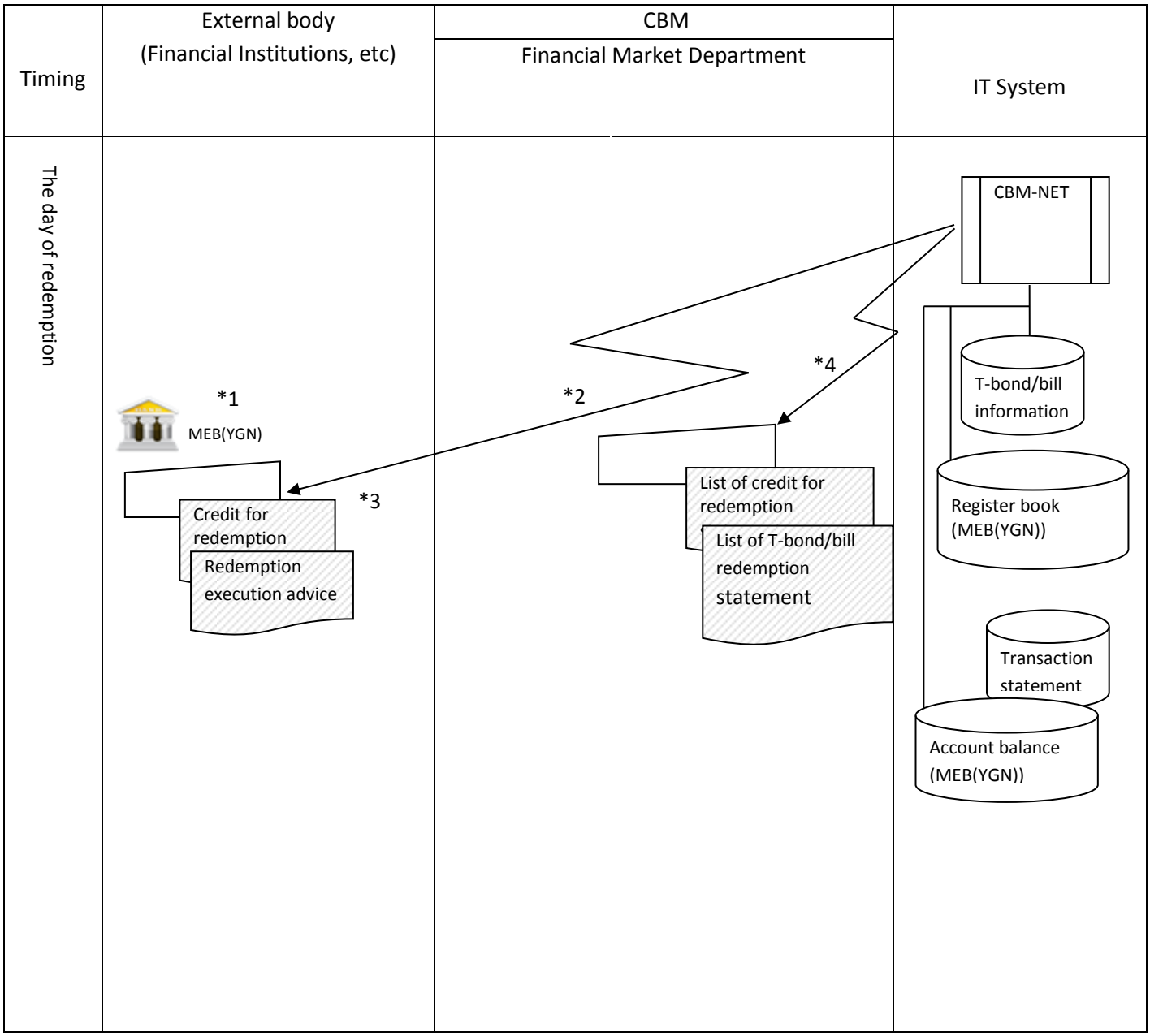
*2 In the case where MEB (YGN) has a CBM-NET terminal

*3 On interest payment day, MEB (YGN) acquires slips such as “Interest payment credit confirmation advice” and “Interest payment execution advice” for interest payment.

*4 On interest payment day, CBM acquires “List of credit for interest payment statement” for interest payment.

*5 Refer to pledge account of CBM, T-bond/bill provided as collateral is also subject to interest payment.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Redemption processing	37		30-June	1/1



Remarks

*1 In the case where credit fund account for redemption processing is on MEB (YGN)

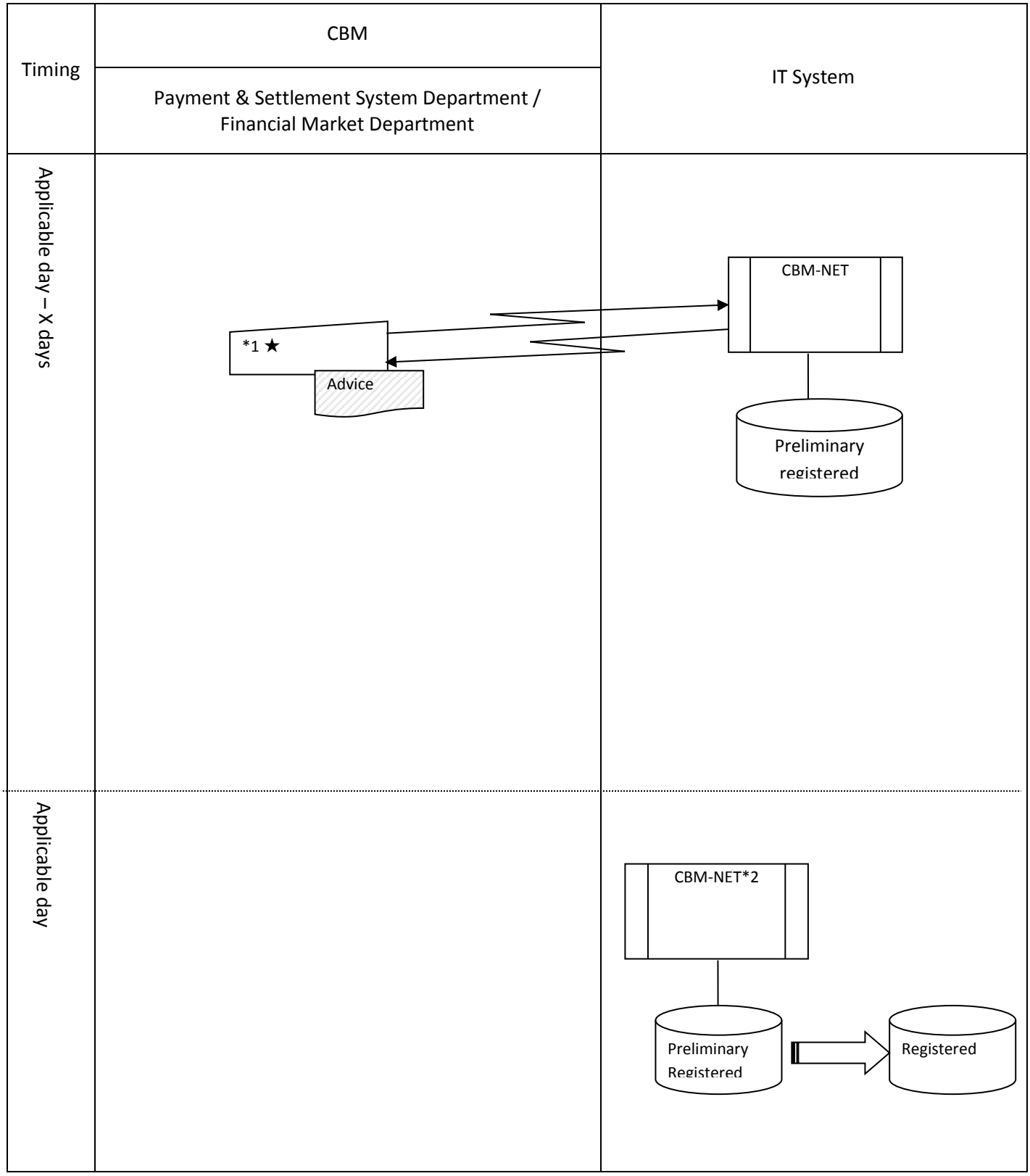
*2 In the case where MEB (YGN) has a CBM-NET terminal

*3 On redemption day, MEB (YGN) acquires slips such as “Credit for redemption confirmation advice” and “Redemption execution advice” for redemption.

*4 On redemption day, CBM acquires “List of credit for redemption statement” and “List of T-bond/bill redemption statement” for redemption.

*5 Refer to Flow29, for the case of renewing T-bill approaching redemption date.

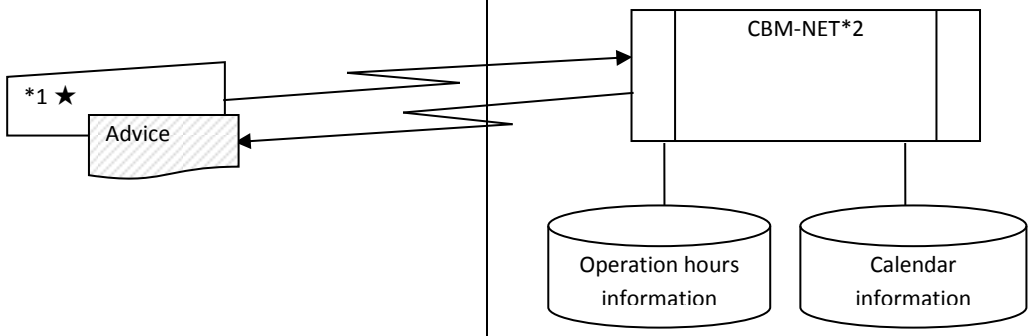
Category	Flow name	Flow No	Ver.	Date	Page
New Business	Master data registration	38		30-June	1/1



Remarks

*1 Registration, change and deletion of the information on: financial institution / authorization of financial institution / branch of financial institution / authorization of branch of financial institution. FI is also allowed to input for inquiry.*2 Automatically reflect the contents which were preliminarily registered.

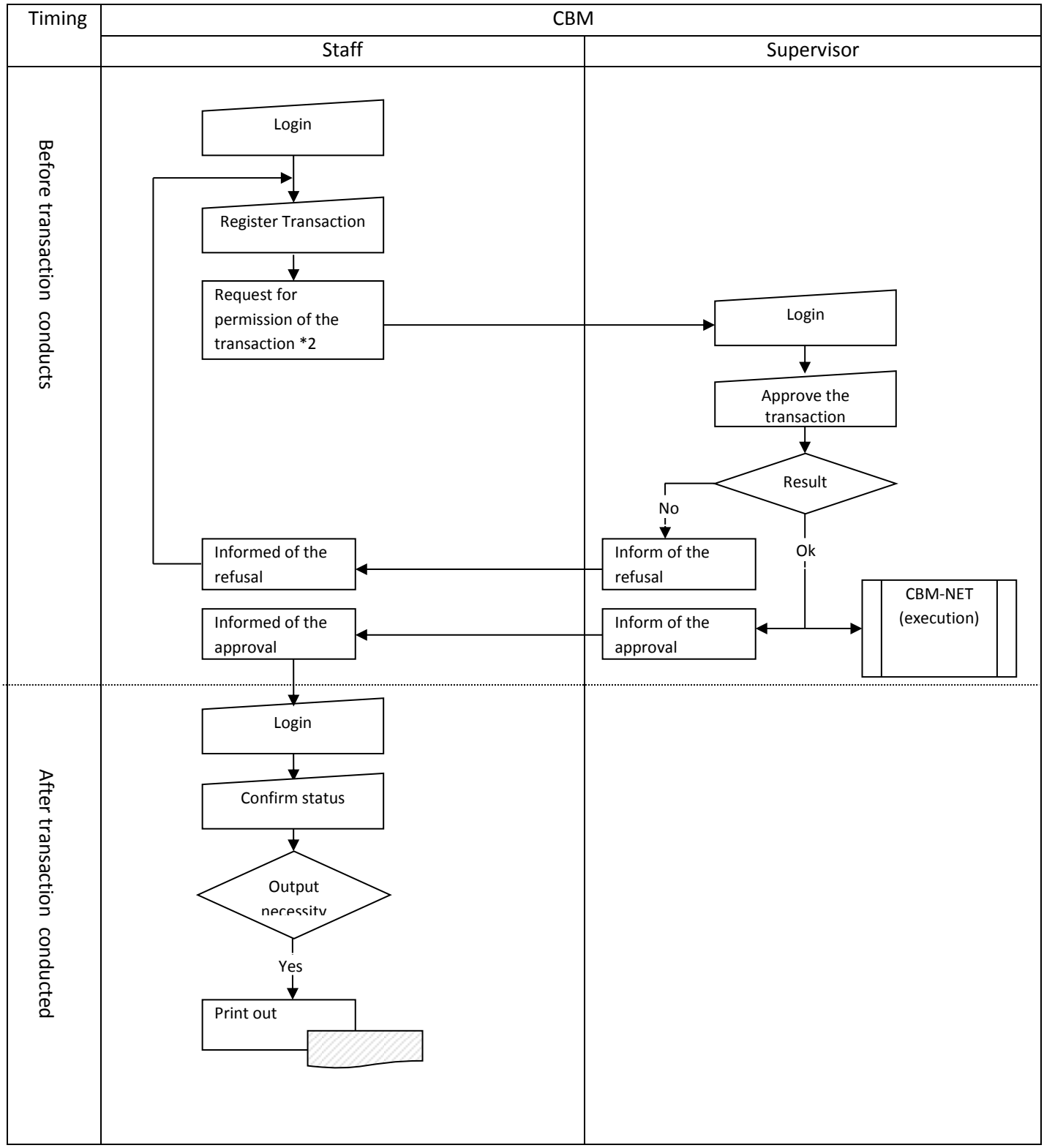
Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Operation management	39		30-June	1/1

Timing	CBM Payment & Settlement System Department / Financial Market Department	IT System
9:00～ 16:00 *3		

Remarks

*1 Registration of input operation hours/ calendar information. FI is also allowed to input for inquiry.
*2 Contents of setting and changes will be reflected immediately after the input
*3 "Registration of input operation hours" transaction shall be input, in principle, during 9:00-9:30 except for cases such as extension of hours due to operational delay.

Category	Flow name	Flow No.	Ver.	Date	Page
New Business	Double check*1	40		30-June	1/1



Remarks

*1 Staff registers transaction. Then, Supervisor checks and approves the transaction. After transaction is conducted, staff prints out the processing result as needed (Supervisor also can confirm status and print out result of approval).

*2 When Staff registers in the first time, only registration is possible. Deletion is possible before approval or after refusal.

Attachment 8 System Function List and Description

System Function List and Description

#	Function	Class	Category	Transaction	Input by	Processing time	Double check	Outline
1	MCH	Processing for MCH system	Processing for MCH system	Settlement for MCH system	CBM	Real-time	–	Reflect fund clearing result (clearing balance) provided from MCH system to the balance
2				Interlocking with MCH system (file upload function)	CBM	Real-time	–	Upload clearing balance data provided from MCH system to CBM-NET
3	Fund settlement	Fund (Kyat)	Credit/ Debit	Credit	CBM	Real-time	○	Credit to a designated fund account
4				Debit	CBM	Real-time	○	Debit from a designated fund account
5			Transfer	Bank credit transfer	CBM FI (Debtor)	Real-time	○	Transfer fund from debit account to credit account
6				Customer credit transfer	FI (Debtor)	Real-time	○	Transfer fund from debit account to credit account * Transfer advice with customer information
7				Customer debit transfer	FI(Creditor)	Real-time	○	Creditor makes input and transfer fund from debit account to credit account * Transfer advice with customer information
8			Inquiry	Balance inquiry (fund)	CBM FI	Real-time	–	Inquire a designated account's balance (current balance) as of the day of the inquiry.
9				Transaction statement inquiry (fund)	CBM FI	Real-time	–	Inquire the transaction statements of a designated account as of the day of inquiry
10		Fund(USD)	Credit/ Debit(USD)	Credit(USD)	CBM	Real-time	○	Credit to a designated fund account(USD)
11				Debit(USD)	CBM	Real-time	○	Debit from a designated fund account(USD)
12			Transfer(USD)	Bank credit transfer (USD)	CBM FI (Debtor)	Real-time	○	Transfer fund from debit account to credit account(USD)
13			Inquiry(USD)	Balance inquiry(USD)	CBM FI	Real-time	–	Inquire a designated account's balance(USD) (current balance) as of the day of the inquiry.
14				Transaction statement inquiry (USD)	CBM FI	Real-time	–	Inquire the transaction statements of a designated account(USD) as of the day of inquiry
15		Fund(EUR)	Credit/ Debit(EUR)	Credit(EUR)	CBM	Real-time	○	Credit to a designated fund account(EUR)
16				Debit(EUR)	CBM	Real-time	○	Debit from a designated fund account(EUR)
17			Transfer(EUR)	Bank credit transfer (EUR)	CBM FI (Debtor)	Real-time	○	Transfer fund from debit account to credit account(EUR)
18			Inquiry(EUR)	Balance inquiry(EUR)	CBM FI	Real-time	–	Inquire a designated account's balance(EUR) (current balance) as of the day of the inquiry.
19				Transaction statement inquiry (EUR)	CBM FI	Real-time	–	Inquire the transaction statements of a designated account(EUR) as of the day of inquiry
20		Fund(SGD)	Credit/ Debit(SGD)	Credit(SGD)	CBM	Real-time	○	Credit to a designated fund account(SGD)
21				Debit(SGD)	CBM	Real-time	○	Debit from a designated fund account(SGD)
22			Transfer(SGD)	Bank credit transfer (SGD)	CBM FI (Debtor)	Real-time	○	Transfer fund from debit account to credit account(SGD)
23			Inquiry(SGD)	Balance inquiry(SGD)	CBM FI	Real-time	–	Inquire a designated account's balance(SGD) (current balance) as of the day of the inquiry.
24				Transaction statement inquiry (SGD)	CBM FI	Real-time	–	Inquire the transaction statements of a designated account(SGD) as of the day of inquiry
25		Fund(JPY)	Credit/ Debit(JPY)	Credit(JPY)	CBM	Real-time	○	Credit to a designated fund account(JPY)
26				Debit(JPY)	CBM	Real-time	○	Debit from a designated fund account(JPY)
27			Transfer(JPY)	Bank credit transfer (JPY)	CBM FI (Debtor)	Real-time	○	Transfer fund from debit account to credit account(JPY)
28			Inquiry(JPY)	Balance inquiry(JPY)	CBM FI	Real-time	–	Inquire a designated account's balance(JPY) (current balance) as of the day of the inquiry.
29				Transaction statement inquiry (JPY)	CBM FI	Real-time	–	Inquire the transaction statements of a designated account(JPY) as of the day of inquiry
30	Collateral management	Collateral debit/credit	Collateral provision/return	Provision of collateral	CBM FI	Real-time	○	Based on input by CBM or a branch, which conducts collateral debit/credit input, associated with collateral provider, subject FI's collateral amount (collateral margin) is increased and subject T-bond/bill is transfered from holder's account to pledge account.
31				Return of collateral	CBM FI	Real-time	○	Based on input by CBM or a branch, which conducts collateral debit/credit input, associated with collateral provider, subject FI's collateral amount (collateral margin) is decreased and subject T-bond/bill is transfered from pledge account to holder's account.
32				Return of collateral at maturity	–	–	–	For Fis which hold T-bond/bill (eligible T-bond/bill) which will be redemption on the next business day, collateral amount (collateral margin) is decreased and transfer is conducted from pledge account to holder's account. Simultaneously, a list of T-bond/bill transfer result (statement) will be output.
33			Collateral amount increase/decrease	Collateral amount increase/decrease	CBM	Real-time	○	Increase or decrease collateral amount by collateral provider and/or collateral type
34			inquiry	Balance inquiry (collateral)	CBM FI	Real-time	–	Inquire collateral amount by FI and/or T-bond/bill
35				Collateral margin inquiry	CBM FI	Real-time	–	Inquire collateral amount by FI
36				Transaction statement inquiry (collateral)	CBM FI	Real-time	–	Inquire transaction status on provision and return of collateral by collateral account
37		Collateral management	Eligible T-bond/bill management	Registration/change/deletion of information on eligible T-bond/bill	CBM	Designated on prior date	○	Registration/change/deletion to eligible T-bond/bill master shall be conducted for T-bond/bill to be treated as eligible. Simultaneous setting for multiple T-bond/bill is possible if applicable date and setting type (registration/change/deletion) are identical. However, registration/change/deletion can be accepted only for application after next day.
38				Inquiry on information on eligible T-bond/bill	CBM FI	Real-time	–	Inquire on eligible T-bond/bill master information
39				Registration/change of market value information	CBM	Designated on prior date	○	Register/change market value information.
40				Inquiry on market value information	CBM FI	Real-time	–	Inquire on market value information.
44				Redemption date renewal processing	–	–	–	Reflect change of T-bond/bill information to eligible T-bond/bill master information.
42			MTM processing	MTM processing	–	–	–	Amount of pledged collateral is calculated based on the market value and LTV ration as of the next business day after business hours and will be reflected on collateral margin (total collateral amount).
43				Temporary MTM processing	–	–	–	Collateral amount is calculated based on applicable date on the base value setting day of market value and LTV ratio, and send advice on scheduled collateral amount to Fis which collateral margin will go negative. Also, register schedule for the next MTM.
44				Change of MTM plan	CBM	Real-time	○	Update MTM schedule by changing the setting of MTM frequency and the number of days remaining before the applicable date (the number of business days from the base value setting date to the applicable date)
45			Others	Output of list of fund balance and overdraft outstanding list	–	–	–	Output the list of FI which did not repay for overdraft within the same day for CBM after closing current deposit transaction
46	T-bond/bill	T-bond/bill	Receipt / delivery	T-bond/bill receipt	CBM	Real-time	○	Execute T-bond/bill receipt for a designated account

#	Function	Class	Category	Transaction	Input by	Processing time	Double check	Outline
47	Bond/ Bill settlement	Bond/ Bill transfer	delivery	T-bond/bill delivery	CBM	Real-time	○	Execute T-bond/bill delivery for a designated account
48			Transfer	T-bond/bill transfer	CBM FI	Real-time	○	Transfer T-bond/bill from debit account to credit account (In the case of input by a FI, the FI can execute transfers debited from the FI's T-bond/bill account only.)
49		Inquiry	Inquiry	Balance inquiry (T-bond/bill)	CBM FI	Real-time	–	Inquire T-bond/bill account balance of a designated T-bond/bill account (In the case of input by a FI, the FI can inquire the FI's T-bond/bill account only.)
50				Transaction statement inquiry (T-bond/bill)	CBM FI	Real-time	–	Inquire a T-bond/bill transaction statement, as of the day of inquiry, by a designated T-bond/bill account, receipt/delivery, or transaction statement's serial number
51		T-bond/bill manageme	New registration	Preliminary registration information registration/change	CBM	Real-time	○	Register/change the total face amount of T-bond/bill issued and the amount of funds paid in by T-bond/bill, issuance date and/or participant (fund account is set at a branch set by "Registration/change/deletion of FI's authorization information".
52				Preliminary registration information inquiry	CBM	Real-time	–	Inquire the information registered at preliminary registration
53				Preliminary detailed registration/change	CBM FI(branch associated with participant)	Real-time	○	Register or change the face amount of T-bond/bill for each T-bond/bill account out of the total face amount registerd in Preliminary registration. In case of changing, re-enter all the description. (In the case of input by FI, it is possible only for the account held by the FI.)
54				Preliminary detailed registration statement inquiry	CBM FI(branch associated with participant)	Real-time	–	Inquire the information entered as description of preliminary detailed registration/changes (In the case of input by FI, only the information of the account held by the FI can be inquired)
55				New registration/payment execution	CBM	Real-time	○	Debit amount to be paid in entered at preliminary registration from the payer's fund account on the day of T-bond/bill issuance and conduct new registration of T-bond/bills in accordance with the distribution to each T-bond/bill account which was input as description of preliminary detailed registration/changes on T-bond/bill account.
56			T-bond/bill Information	T-bond/bill information registration/change/deletion	CBM	Real-time	○	Execute either one of the following: – Register a T-bond/bill's information (initial issuing date, date of interest payment, rate, etc.) at the time of T-bond/bill issuance, – Add the date of issuance for T-bond/bill at reopening – Change rates – Change index – Revocate T-bond/bill's information by issuing date, If issuing date unexists due to the revocation. – Change redemption date when T-bill is renewed.
57				T-bond/bill information inquiry	CBM FI	Real-time	–	Inquire the information of a designated T-bond/bill information (date of issue, date of interest payment, rate, index, etc.)
58		Interest payment / redemptio n	Interest payment	Credit processing of interest payment (T-bond)	–	–	–	Interest payment is credited to fund account of a payee branch of a FI which holds the subject T-bond on the interest payment date. Simultaneously, a list of credit payment details about all the interest payment is output.
58				Credit processing of interest payment (T-bill)	–	–	–	Interest payment is credited to fund account of a payee branch of a FI which holds the subject T-bill on the interest payment date. Simultaneously, a list of credit payment details about all the interest payment is output.
60			Redemptio n	Redemption processing	–	–	–	The subject T-bond/bill's account held by a FI which holds the subject T-bond/bill will be terminated on redemption date and redemption amount will be credited to the fund account of a payee branch. Simultaneously, a list of credit payment details about all the redemption is output.
61		DVP	T-bond/bill DVP	T-bond/bill DVP request	FI(T-bond/bill debtor)	Real-time	○	Designate T-bond/bill debit and credit accounts as well as fund debit and credit place.
62				Fund DVP request	FI(fund debtor)	Real-time	○	Execute the settlement based on the contents input by "T-bond/bill DVP request"
63				T-bond/bill DVP request cancellation	FI(T-bond/bill debtor)	Real-time	○	Cancel the contents input by "T-bond/bill DVP request".
64				DVP automatic cancellation	–	–	–	Delete file of transaction statement (DVP). Output advice to input place of T-bond/bill DVP request in the case where there is a statement of transaction which is not settled with Fund DVP request by the end of the same day.
65	Master Data Manageme nt	Master Data Manageme nt	info. on FI	FI information registration/change/deletion	CBM	Designated on prior date	○	Register, change, and delete the information on FI.
66				FI information inquiry	CBM FI	Real-time	–	Inquire the information of FI. (In the case of input by a FI, only the information of the FI can be inquired)
67			info. on authorizati on of FI	Registration/change/deletion of FI's authorization information	CBM	Designated on prior date	○	Register, change, and delete the information on authorization of FI.
68				Inquiry of FI's authorization information	CBM FI	Real-time	–	Inquire the information on authorization of FI. (In the case of input by a FI, only the information of the FI can be inquired)
69			info. on branch of FI	FI branch information registration/change/deletion	CBM	Designated on prior date	○	Register, change, and delete the information on branch of FI.
70				FI branch information inquiry	CBM FI	Real-time	–	Inquire the information on branch of FI. (In the case of input by a FI, only the information on branches of the FI can be inquired)
71			info. on authorizati on for branch of FI	Registration/change/deletion of FI branch's authorization information	CBM	Designated on prior date	○	Register, change, and delete the information on authorization for branch of FI.
72				Inquiry of FI branch's authorization information	CBM FI	Real-time	–	Inquire the information on authorization for branch of financial institution. (In the case of input by a FI, only the information on branches of the FI can be inquired)
73	Operation manageme nt	Operation manageme nt	Input operation hours on the day	Registration of input operation hours	CBM	Real-time	○	Register input operation hours in a operating day by transaction group
74				Input operation hours inquiry	CBM FI	Real-time	–	Inquire on input operation hours in a operating day by transaction group
75			Calendar manageme nt	Calendar information registration	CBM	Designated on prior date	○	Register calendar information as either operating day or non-operating day.
76				Calendar information inquiry	CBM FI	Real-time	–	Inquire the calendar information in 1 year unit.
77			Batching at date change	Date change processing	–	–	–	Execute processing which should be implemented at closing time: – Reflect calendar information – Reset time slots for input – Change date for online operation – Processings such as updating current flag
78			After-cutoff-time	Post-cutoff-time processing	–	–	–	Conduct various after-cutoff-time processing after business hours. – Delete designated-time transaction statement – Reset serial numbers of transactions
79		Ledger	Ledger	Extract original data for preparing ledger	–	–	–	Extract original data for preparing ledger
80		Charging	Charging	Extract original data for charging	–	–	–	Extract original data for charging

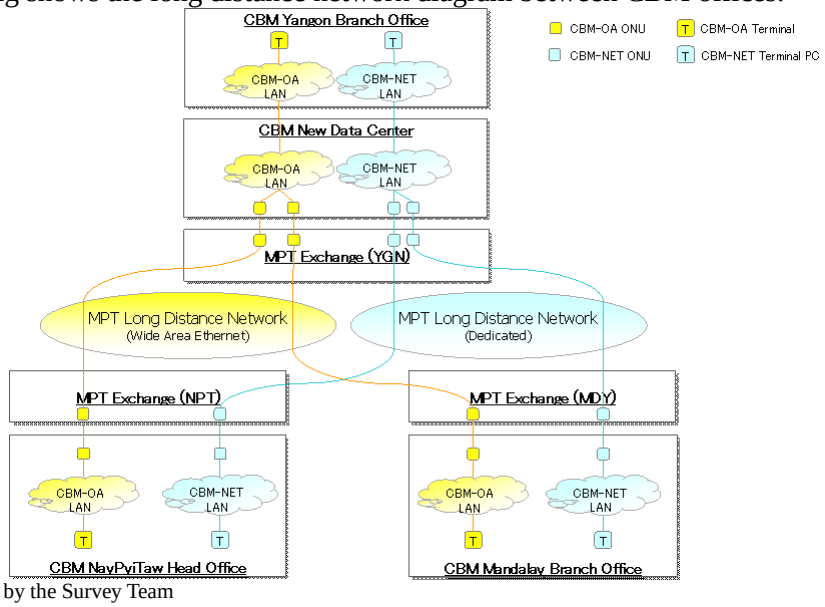
#	Function	Class	Category	Transaction	Input by	Processing time	Double check	Outline
81	User management	User management	User management	User information registration	CBM FI(*)	Real-time	○	Register user information (user ID, user's organization, authorization level and password) (In the case where input by FI, only user from the user's own branch can be registered) (*)Initial registration can be conducted only by CBM
82				User information change/deletion	CBM FI	Real-time	○	Change / delete User information (User ID, authorization level, lock-out release, password initialization, etc.) (In the case where input by FI, only user from the user's own branch can be changed/deleted)
83				User information inquiry	CBM FI	Real-time	-	Inquire user information (user ID, authorization level and lock-out status) (In the case where input by FI, only user from the user's own branch can be inquired)
84				Password change	CBM FI	Real-time	-	Change user information (password)

Attachment 9 Network Diagrams

Attachment 9 Network Diagrams

1. Detailed WAN diagram

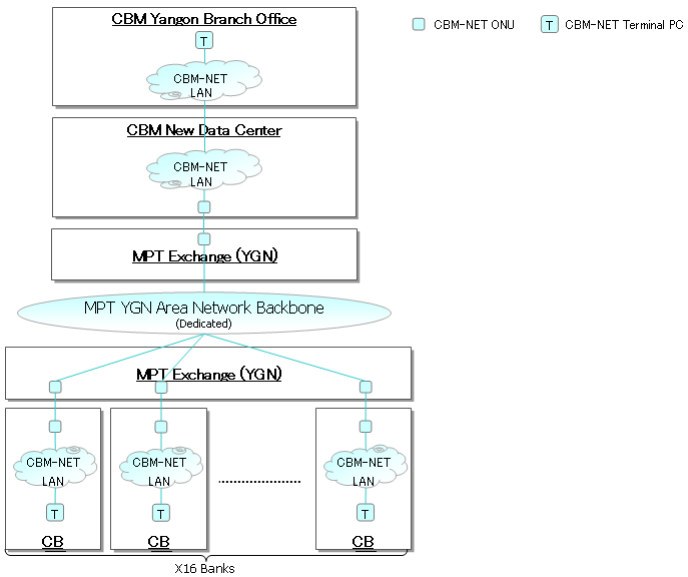
The following shows the long distance network diagram between CBM offices.



Source: Prepared by the Survey Team

Figure AT9-1 Long Distance Network Diagram between CBM Offices

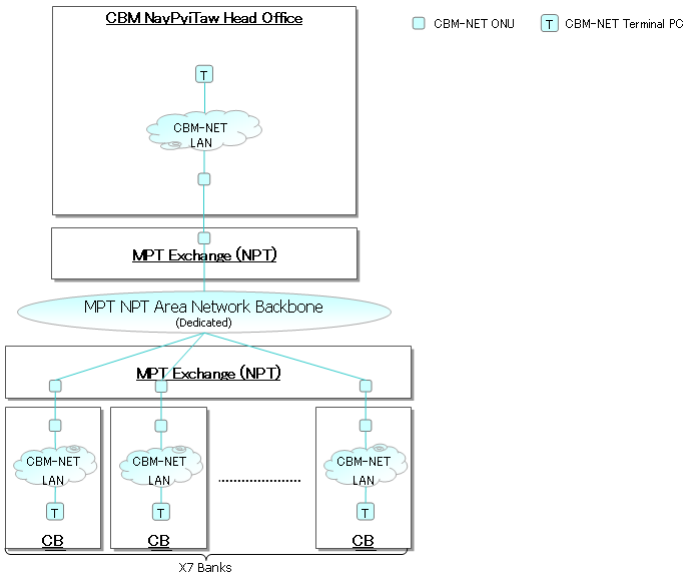
The following shows the area network diagram of CBM Yangon branch.



Source: Prepared by the Survey Team

Figure AT9-2 Area Network Diagram of CBM Yangon Branch

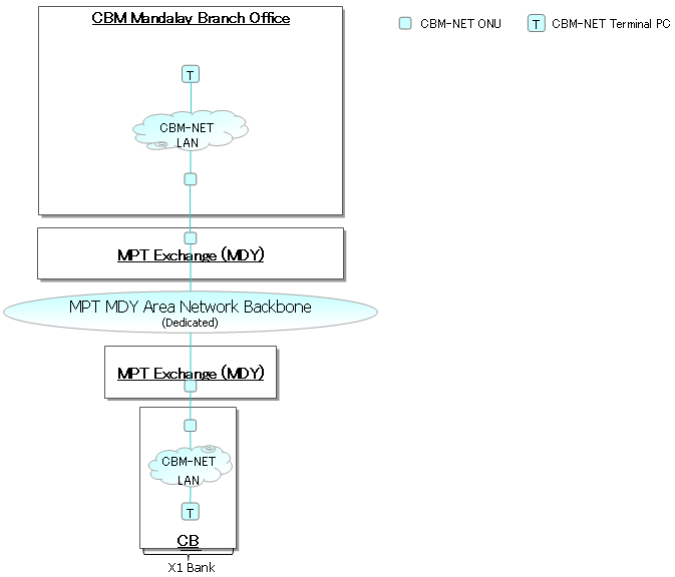
The following shows the area network diagram of CBM Nay Pyi Taw head office.



Source: Prepared by the Survey Team

Figure AT9-3 Area network diagram of CBM Nay Pyi Taw head office

The following shows the area network diagram of CBM Mandalay branch.

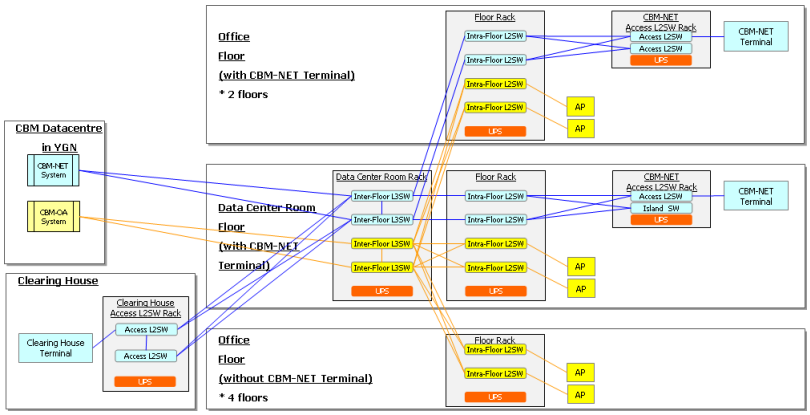


Source: Prepared by the Survey Team

Figure AT9-4 Area Network Diagram of CBM Mandalay Branch

2. Detailed LAN diagram

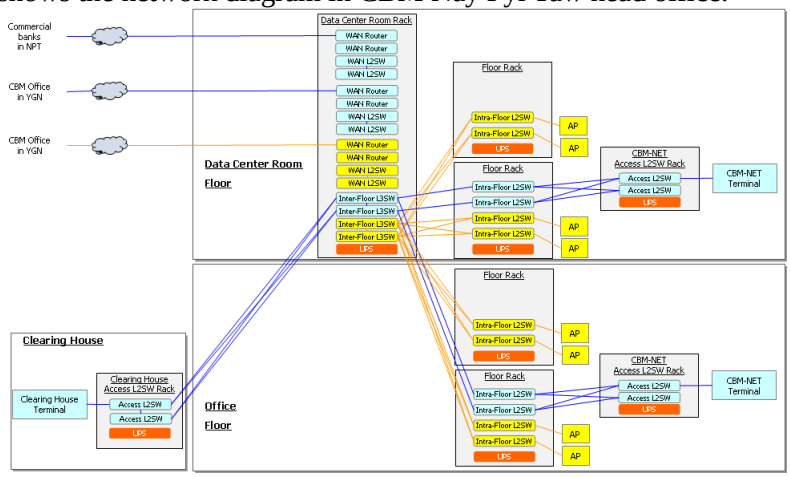
The following shows the network diagram in CBM Yangon branch.



Source: Prepared by the Survey Team

Figure AT9-5 Network Diagram in CBM Yangon Branch

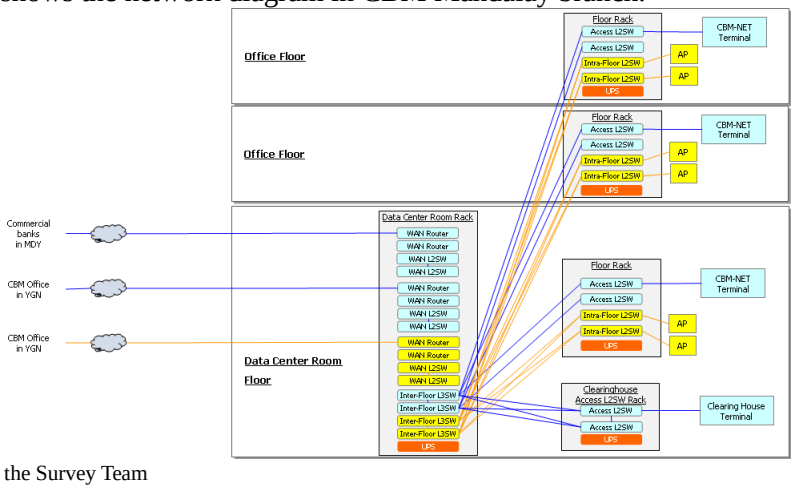
The following shows the network diagram in CBM Nay Pyi Taw head office.



Source: Prepared by the Survey Team

Figure AT9-6 Network Diagram in CBM Nay Pyi Taw Head Office

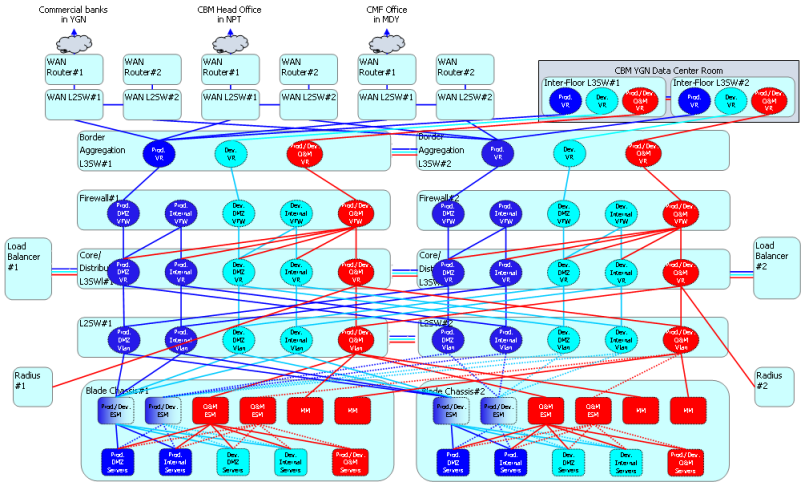
The following shows the network diagram in CBM Mandalay branch.



Source: Prepared by the Survey Team

Figure AT9-7 Network Diagram in CBM Mandalay Branch

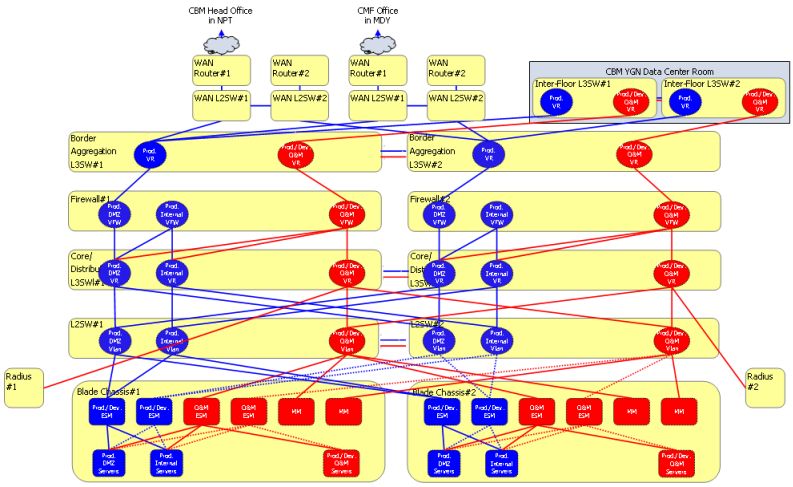
The following shows the CBM-NET network diagram in CBM Data center.



Source: Prepared by the Survey Team

Figure AT9-8 CBM-NET Network Diagram in CBM Data Center

The following shows the CBM-OA network diagram in CBM Data center.



Source: Prepared by the Survey Team

Figure AT9-9 CBM-OA Network Diagram in CBM Data Center

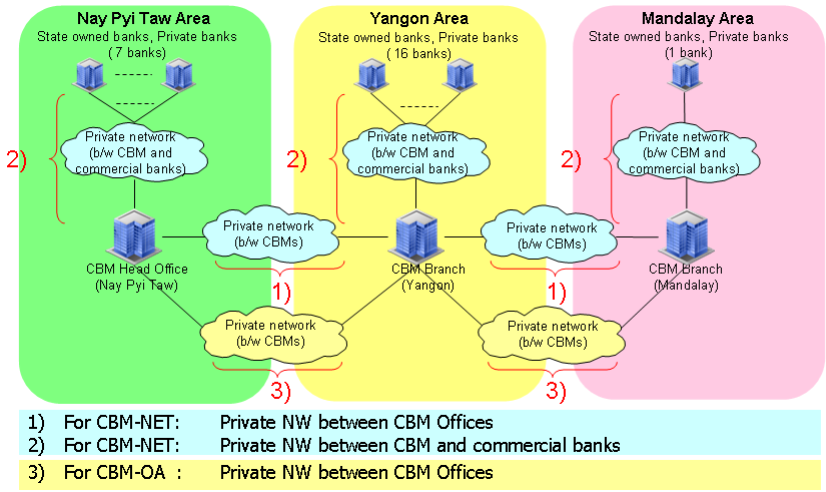
Attachment 10 Wide Area Network Assumptions

Attachment 10 Wide Area Network Assumptions

It is expected that WAN for this project will be built based of following assumption as a result of discussion with CBM and MPT.

1. Overview

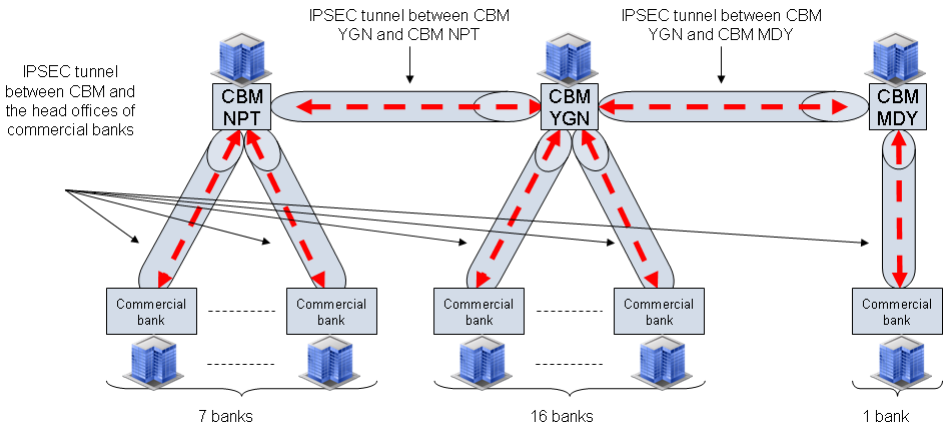
The following shows the overview of WAN for CBM-NET and CBM-OA. Each system requires its own network. CBM-NET requires connection between CBM offices. Also, it requires connection between CBM and commercial banks in each area. CBM-OA requires connection between CBM offices.



Source: Prepared by the Survey Team

Figure AT10-1 Overview of WAN for CBM-NET and CBM-OA

Network must be private network. Even more, for security protection, we are planning to encrypt communication by creating IPSEC tunnel between CPE routers.



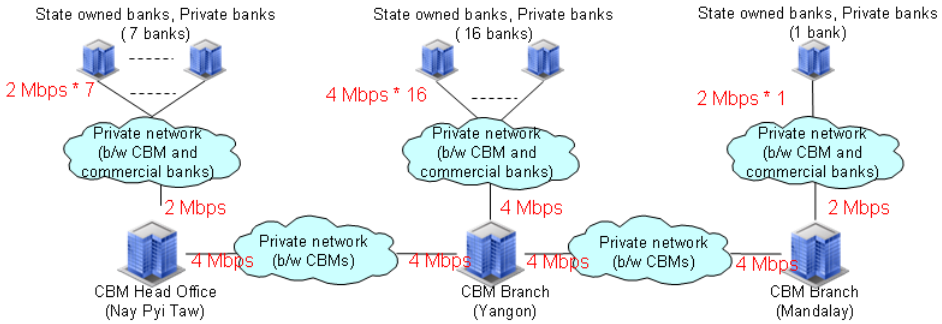
Source: Prepared by the Survey Team

Figure AT10-2 Encryption on WAN

2. Assumption of WAN

The following shows assumption of WAN for CBM-NET.

1. Bandwidth must be assured. Bandwidth requirement for each access line is written in the diagram.
2. In terms of security protection of banking network, exclusive network is required.
3. Network must have redundant architecture which eliminates single-point-of-failure.
4. UPS is required in CBM and commercial banks for avoiding outage.
5. WAN must be able to accommodate IPSEC.
6. In CBM Yangon office, 2 lines are required to connect to CBM Nay Pyi Taw and CBM Mandalay. Furthermore, another 1 line is required to connect to 16 commercial banks in Yangon.

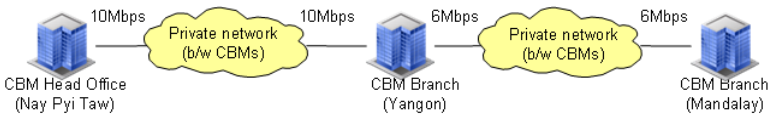


Source: Prepared by the Survey Team

Figure AT10-3 WAN for CBM-NET

The following shows assumption of WAN for CBM-OA.

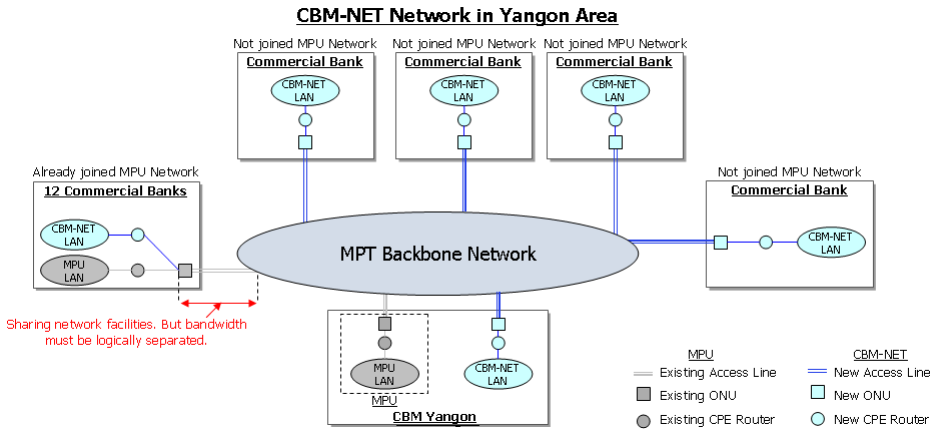
1. Bandwidth must be assured. Bandwidth requirement are 10Mbps and 6Mbps.
2. In terms of cost efficiency, exclusive line (dedicated line) is not required. Wide area ethernet is acceptable as long as bandwidth is assured.
3. Network must have redundant architecture which eliminates single-point-of-failure.
4. UPS is required in CBM and commercial banks for avoiding outage.
5. WAN must be able to accommodate IPSEC.
6. In CBM Yangon office, 2 lines are required to connect to CBM Nay Pyi Taw and CBM Mandalay.



Source: Prepared by the Survey Team

Figure AT10-4 WAN for CBM-OA

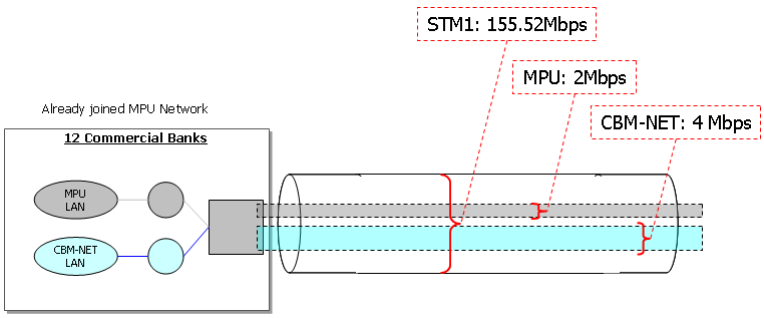
In Yangon, 12 commercial banks have network to connect to MPU. In terms of cost efficiency for those 12 commercial banks, ONU can be shared with MPU, but LAN side from ONU (e.g. CPE Router, LAN side cabling) must be exclusively developed for CBM-NET. Also, bandwidth must be separately assured for CBM-NET which is 4 Mbps. The following diagram shows how we would like to utilize existing network facilities for CBM-NET. As for 4 banks which have not joined MPU, we would like to ask MPT to develop new ring network for these banks.
In addition, as for CBM Yangon office, it requires a new ring network because MPU is a different organization from CBM.



Source: Prepared by the Survey Team

Figure AT10-5 CBM-NET network in Yangon area

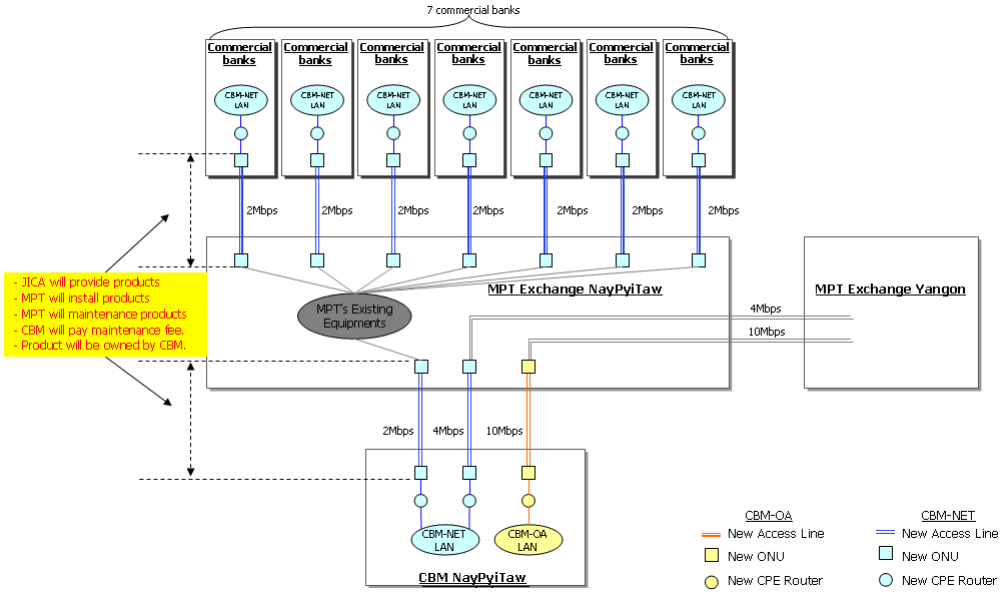
Bandwidth must be separately assured for CBM-NET. CBM-NET requires 4 Mbps in Yangon. MPU and CBM-NET are totally different system and inter-connection between 2 systems is not allowed. Also, it is not allowed to share bandwidth.



Source: Prepared by the Survey Team

Figure AT10-6 Bandwidth assurance

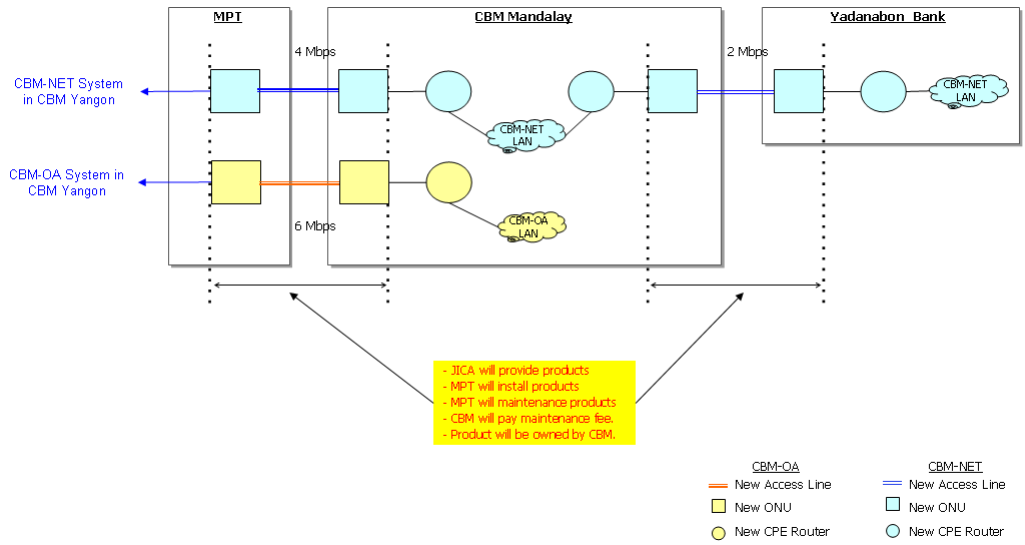
The following shows the area network in Nay Pyi Taw.



Source: Prepared by the Survey Team

Figure AT10-7 Area network in Nay Pyi Taw

The following shows the area network in Mandalay.



Source: Prepared by the Survey Team

Figure AT10-8 Area network in Mandalay

Attachment 11 List of Infrastructure Hardware

No.	Component No.	Constituents No.	Item	Quantity	Unit	remarks
1			CBM-NET System			
	1-1		The equipments of CBM-NET system infrastructure	1	set	
		1	Blade server chassis for CBM-NET infrastructure	2	pcs.	
		2	Virtualized blade server for CBM-NET business system	6	pcs.	
		3	Physical blade server for CBM-NET business system	3	pcs.	
		4	Virtualized blade server for CBM-NET development and tes	3	pcs.	
		5	Physical blade server for CBM-NET development and test s	2	pcs.	
		6	Blade server for CBM-NET system management	3	pcs.	
		7	Rack-mountable server for configuration management of CB	6	pcs.	
		8	Fiber channel storage for CBM-NET infrastructure	1	pcs.	
		9	NAS storage for CBM-NET infrastructure	1	pcs.	
		10	Tape drive for CBM-NET backup	1	pcs.	
		11	SAN switch	2	pcs.	
		12	Rack console	5	pcs.	
		13	Console selector	5	pcs.	
		14	PC for operational management task	5	pcs.	
	1-2		Equipments for CBM-NET users in Yangon	1	set	
		1	PC for CBM-NET terminal	8	pcs.	
		2	Printer for CBM-NET terminal	4	pcs.	
			Printer peripheral device for printing control	4	sets	
	1-3		Equipments for CBM-NET users in Nay Pyi Taw	1	set	
		1	PC oriented for CBM-NET terminal	8	pcs.	
		2	Printer oriented for CBM-NET terminal	4	pcs.	
			Printer peripheral device for printing control	4	sets	
	1-4		The equipments for CBM-NET users in Mandalay	1	set	
		1	PC oriented for CBM-NET terminal	8	pcs.	
		2	Printer oriented for CBM-NET terminal	4	pcs.	
			Printer peripheral device for CBM-NET printing control	4	sets	
2			CBM-OA system			
	2-1		CBM-OA system infrastructure equipment	1	set	
		1	Blade server chassis for CBM-OA infrastructure	2	pcs.	
		2	Blade server for CBM-OA virtual desktop	7	pcs.	
		3	Blade server for CBM-OA infrastructure management	4	pcs.	
		4	Rack-mountable server for CBM-OA infrastructure configu	6	pcs.	
		5	FibreChannel storage for CBM-OA infrastructure	1	pcs.	
		6	NAS storage for CBM-OA infrastructure	1	pcs.	
		7	Tape drive for CBM-OA backup	1	pcs.	
	2-2		Equipments for CBM-OA users in Yangon	1	set	
		1	CBM-OA thin client terminals	100	pcs.	
		2	CBM-OA network printers	12	pcs.	
		3	Printer peripheral device for CBM-OA printing control	12	sets	
			Printer peripheral device for CBM-OA printing control	5	sets	
	2-3		Equipments for CBM-OA users in Nay Pyi Taw	1	set	
		1	CBM-OA thin client terminals	100	pcs.	
		2	CBM-OA network printers	8	pcs.	
		3	Printer peripheral device for CBM-OA printing control	8	sets	
			Printer peripheral device for CBM-OA printing control	5	sets	
	2-4		Equipments for CBM-OA users in Mandalay	1	set	
		1	CBM-OA thin client terminals	50	pcs.	
		2	CBM-OA network printers	6	pcs.	
		3	Printer peripheral device for CBM-OA printing control	6	sets	
			Printer peripheral device for CBM-OA printing control	5	sets	
3			Network equipment for CBM Nay Pyi Taw head office			
	3-1		Network connection equipment for commercial banks in Naypyid	1	set	
		3	WAN router	3	pcs.	
		4	WAN L2 switch	3	pcs.	
		5	Optical fiber cable	1	set	
		6	Ethernet cable	1	set	
	3-2		Network equipment within commercial banks in Naypyidaw	7	sets	
		3	WAN router	2	pcs.	
		4	WAN L2 switch	2	pcs.	
		5	Optical fiber cable	1	set	
		6	Ethernet cable	1	set	
	3-3		Network connection equipment for central bank data center	1	set	
			Network channel terminating equipment (requested by MPT	5	pcs.	
		3	WAN router	5	pcs.	
		4	WAN L2 switch	5	pcs.	
		5	Optical fiber cable	1	set	
		6	Ethernet cable	1	set	
	3-4		Network equipment within central bank Naypyidaw head office	1	set	

No.	Component No.	Constituents No.	Item	Quantity	Unit	remarks
		1	Inter-Floor L3 switch between floors for CBM-NET	3	pcs.	
		2	Intra-Floor L2 switch within floor for CBM-NET	5	pcs.	
		3	Access L2 switch for CBM-NET	5	pcs.	
		4	Clearing house access L2 switch for CBM-NET	3	pcs.	
		5	Inter-Floor L3 switch between floors for CBM-OAT	3	pcs.	
		6	Intra-Floor L2 switch within floor for CBM-OA	9	pcs.	
		7	Wireless LAN access point	30	pcs.	
		8	Optical fiber cable (1G)	1	set	
		9	Ethernet cable	1	set	
4			Network equipment for central bank Mandalay branch			
	4-1		Network connection equipment for commercial banks in Mandala	1	set	
		3	WAN router	3	pcs.	
		4	WAN L2 switch	3	pcs.	
		5	Optical fiber cable	1	set	
		6	Ethernet cable	1	set	
	4-2		Network equipment within Mandalay commercial bank	1	set	
		3	WAN router	2	pcs.	
		4	WAN L2 switch	2	pcs.	
		5	Optical fiber cable	1	set	
		6	Ethernet cable	1	set	
	4-3		Network connection equipment for central bank data center	1	set	
			Network channel terminating equipment (requested by MPT	1	pcs.	
		3	WAN router	5	pcs.	
		4	WAN L2 switch	5	pcs.	
		5	Optical fiber cable	2	set	
		6	Ethernet cable	2	set	
	4-4		Network equipment within central bank Mandalay branch	1	set	
		1	Inter-Floor L3 switch between floors for CBM-NET	3	pcs.	
		2	Access L2 switch for CBM-NET	7	pcs.	
		3	Clearing house access L2 switch for CBM-NET	3	pcs.	
		4	Inter-Floor L3 switch between floors for CBM-OA	3	pcs.	
		5	Intra-Floor L2 switch within floor for CBM-OA	7	pcs.	
		6	Wireless LAN access point	13	pcs.	
		7	Optical fiber cable (1G)	1	set	
		8	Ethernet cable	1	set	
5			Network equipment for central bank Yangon branch			
	5-1		Network equipment within central bank Yangon branch	1	set	
		1	Inter-Floor L3 switch between floors for CBM-NET	3	pcs.	
		2	Intra-Floor L2 switch within floor for CBM-NET	7	pcs.	
		3	Access L2 switch for CBM-NET	7	pcs.	
		4	Clearing house access L2 switch for CBM-NET	3	pcs.	
		5	Inter-Floor L3 switch between floors for CBM-OA	3	pcs.	
		6	Intra-Floor L2 switch within floor for CBM-OA	15	pcs.	
		7	Wireless LAN access point	30	pcs.	
		8	Optical fiber cable (1G)	1	set	
		9	Ethernet cable	1	set	
6			Network Equipment for central bank data center			
	6-1		Network connection equipment for commercial banks in Yangon	1	set	
		3	WAN router	3	pcs.	
		4	WAN L2 switch	3	pcs.	
		5	Optical fiber cable	1	set	
		6	Ethernet cable	1	set	
	6-2		Network equipment within commercial banks in Yangon (MPU pa	12	sets	
		1	WAN router	2	pcs.	
		2	WAN L2 switch	2	pcs.	
		3	Ethernet cable	1	set	
	6-3		Network equipment within commercial banks in Yangon (MPU no	4	set	
			Network channel terminating equipment (CBM)	3	pcs.	
		3	WAN router	2	pcs.	
		4	WAN L2 switch	2	pcs.	
		5	Optical fiber cable	1	set	
		6	Ethernet cable	1	set	
	6-4		Network connection equipment for central bank Naypyidaw head	1	set	
		1	Network channel terminating equipment (CBM)	3	pcs.	
		2	Network channel terminating equipment (NW Carrier)	3	pcs.	
		3	WAN router	5	pcs.	
		4	WAN L2 switch	5	pcs.	
		5	Optical fiber cable	2	set	
		6	Ethernet cable	2	set	
	6-5		Network connection equipment for central bank Mandalay branc	1	set	

No.	Component No.	Constituents No.	Item	Quantity	Unit	remarks
		1	Network channel terminating equipment (CBM)	2	pcs.	
		2	Network channel terminating equipment (NW Carrier)	2	pcs.	
		3	WAN router	4	pcs.	
		4	WAN L2 switch	4	pcs.	
		5	Optical fiber cable	2	set	
		6	Ethernet cable	2	set	
	6-6		Network equipment within central bank data center	1	set	
		1	Border aggregation L3 switch for CBM-NET	3	pcs.	
		2	Firewall for CBM-NET	3	pcs.	
		3	Core L3 switch for CBM-NET	3	pcs.	
		4	Server access L2 switch for CBM-NET	3	pcs.	
		5	Load balancer for CBM-NET	3	pcs.	
		6	Radius equipment for CBM-NET	3	pcs.	
		7	Border aggregation L3 switch for CBM-OA	2	pcs.	
		8	Firewall for CBM-OA	2	pcs.	
		9	Core L3 switch for CBM-OA	2	pcs.	
		10	Server access L2 switch for CBM-OA	2	pcs.	
		12	Radius equipment for CBM-OA	2	pcs.	
		13	Optical fiber cable (1G)	100	sets	
		14	Optical fiber cable (10G)	130	sets	
		15	Ethernet cable	466	sets	
			Equipments for WAN construction by MPT	1	set	
7			Facility equipment used for CBM Nay Pyi Taw head Office			
	7-1		IT rack enclosure	1	set	
		1	IT Rack enclosure for IT equipment (Full rack)	1	pcs.	
		2	IT Rack enclosure for IT equipment (Half rack)	7	pcs.	
			Blank panel	9	pcs.	
		3	PDU for full rack	4	pcs.	
			PDU for half rack	14	pcs.	
			PDU Power cord for half rack	14	pcs.	
		4	Rack seismic isolation panel	8	pcs.	
	7-2		Uninterruptible Power System (UPS)	1	set	
		1	Uninterruptible Power System (UPS) 3000VA	3	pcs.	
		2	Uninterruptible Power System (UPS) 1500VA	5	pcs.	
	7-3		Monitoring system of rack security	1	set	
		1	Temperature sensor	8	pcs.	
		2	Electronic lock set	8	pcs.	
8			Facility equipment used for CBM Mandalay Office			
	8-1		IT rack enclosure	1	set	
		1	IT Rack enclosure for IT equipment (Full rack)	1	pcs.	
		2	IT Rack enclosure for IT equipment (Half rack)	4	pcs.	
			Blank panel	6	pcs.	
		3	PDU for full rack	4	pcs.	
			PDU for half rack	8	pcs.	
			PDU Power Cord for half rack	8	pcs.	
		4	Rack seismic isolation panel	5	pcs.	
	8-2		Uninterruptible Power System (UPS)	1	set	
		1	Uninterruptible Power System (UPS) 3000VA	4	pcs.	
		2	Uninterruptible Power System (UPS) 1500VA	1	pcs.	
	8-3		Monitoring system of rack security	1	set	
		1	Temperature sensor	5	pcs.	
		2	Electronic lock set	5	pcs.	
9			Facility equipment used for CBM Yangon Office			
	9-1		IT rack enclosure	1	set	
		1	IT Rack enclosure for IT equipment (Full rack)	0	pcs.	
		2	IT Rack enclosure for IT equipment (Half rack)	12	pcs.	
			Blank panel	12	pcs.	
		3	PDU for full rack	0	pcs.	
			PDU for half rack	24	pcs.	
			PDU Power Cord for half rack	24	pcs.	
		4	Rack seismic isolation plate	12	pcs.	
	9-2		Uninterruptible Power System (UPS)	1	set	
		1	Uninterruptible Power System (UPS) 3000VA	4	pcs.	
		2	Uninterruptible Power System (UPS) 1500VA	8	pcs.	
	9-3		Monitoring system of rack security	1	set	
		1	Temperature sensor	12	pcs.	
		2	Electronic lock set	12	pcs.	

Attachment 12 List of Infrastructure Software

No.	Component No.	Constituents No.	Item	quantitiy	unit	remarks
1			CBM-NET System			
	1-1		The equipments of CBM-NET system infrastructure	1	set	
		15	Virtualization software for CBM-NET blade server	1	set	Used for following servers 1-1-2, 1-1-4, 1-1-6
		16	OS for blade server for CBM-NET system management	1	set	Used for following servers 1-1-4
		17	OS for rack-mountable server for configuration managemer	1	set	Used for following servers 1-1-7
		18	Anti-virus software for CBM-NET server	1	set	Used for following servers 1-1-2, 1-1-3, 1-1-4, 1-1-5, 1-1-6, 1-1-7
		19	Anti-virus software for CBM-NET operation management t	1	set	Used for following PCs 1-1-14
		20	Backup software for CBM-NET server	1	set	Used for following servers 1-1-2, 1-1-3, 1-1-4, 1-1-5, 1-1-6, 1-1-7
		21	Software for CBM-NET infrastructure configuration manage	1	set	Used for following servers 1-1-2, 1-1-3, 1-1-4, 1-1-5, 1-1-6, 1-1-7
		22	Software for CBM-NET infrastructure operation manageme	1	set	for all equipments managed by operational system for CBM-NET
			Printing control software for CBM-NETterminal	1	set	
	1-2		Equipments for CBM-NET system users in Yangon	1	set	
		3	Anti-Virus software for CBM-NET terminal	1	set	
		4	Office suite software for CBM-NET terminal	1	set	
	1-3		Equipments for CBM-NET system users in Nay Pyi Taw	1	set	
		3	Anti-Virus software for CBM-NET terminal	1	set	
		4	Office suite software for CBM-NET terminal	1	set	
	1-4		Equipments for CBM-NET system users in Mandalay	1	set	
		3	Anti-Virus software for CBM-NET terminal	1	set	
		4	Office suite software for CBM-NET terminal	1	set	
2			CBM-OA system		set	
	2-1		CBM-OA system infrastructure equipment	1	set	
		8	Virtualization software for CBM-OA blade server	1	set	Used for following servers 2-1-2, 2-1-3
		9	CBM-OA thinclient infrastructure management software	1	set	for 250 virtual desktop environment (YGN:100, NPT:100, MDY:50)
		10	OS for blade server for CBM-OA infrastructure managemer	1	set	Used for following servers and partitions 2-1-3, 250 virtual desktop environment
		11	OS for rack-mountable server for CBM-OA infrastructure c	1	set	Used for following servers 2-1-4
		12	Client OS for CBM-OA virtual desktop	1	set	for 250 virtual desktop environment
		13	Office suite software for CBM-OA virtual desktop	1	set	for 250 virtual desktop environment
		14	Anti-virus software for CBM-OA infrastructure managemer	1	set	Used for following servers 2-1-3, 2-1-4
		15	Anti-virus software for CBM-OA virtual desktop	1	set	for 250 virtual desktop environment
		16	Printing control software for CBM-OA virtual desktop	1	set	Used for following printers 2-2-2, 2-3-2, 2-4-2
		17	Backup software for CBM-OA infrasturcture management s	1	set	Used for following servers 2-1-3, 2-1-4
		18	Software for CBM-OA infrastructure configuration manager	1	set	Used for following servers 2-1-3, 2-1-4
		19	Software for CBM-OA infrastructure operation managemen	1	set	for all equipments managed by operational system for CBM-OA
9			Facility equipment used for CBM Yangon Office			
	9-3		Monitoring system of rack security	1	set	
		3	Monitoring system of power, temperature and electronic loc	1	set	targeted racks by monitoring system in No.7, 8 and 9

Attachment 13 Soft Component Plan

Republic of the Union of Myanmar
Central Bank of Myanmar

Preparatory Survey on the Project for the Development of ICT System for Central Banking

Soft Component Plan

September 2013

Mitsubishi Research Institute, Inc.
Promontory Financial Group Global Services Japan, LLC

Table of Contents

1. Background of the Soft Component Plan

1.1 Outline of the ICT System Development Project

The project aims to modernise the business operations at the Central Bank of Myanmar (hereinafter CBM) by utilizing the experience and technologies of system planning and operation for central banking in Japan. The contents of the project will be the development of software for 1) fund settlement 2) securities settlement, and 3) cheque clearing, as well as the development of system infrastructure and OA environment for the above mentioned software.

1.2 Necessity of executing soft component

This project focuses on fund settlement, securities settlement, and cheque clearing systems within CBM business operations. These all occupy crucial positions regarding 1) accuracy 2) sustainability, and 3) universality. Any error or outage of these functions will immediately affect the Myanmar economy.
To modernise the CBM through ICT system usage, it is essential that the officers of the Central Bank are capable of using the ICT system accurately and continuously.
To this end, 1) officer training is essential to maintain accuracy, and 2) where staff are replaced and/or transferred to ensure sustainability, the business operations manuals rather than machine operation are the key to business continuity, and 3) universality, enabling a flexible response to anomalies occurring in everyday business. These also require manuals and training.
Further, the ICT system for central banking will become effective only when commercial banks are making use of this system. It is also essential that the commercial banks understand the significance of this system and to be able to conduct business operations accurately as well as with the Central Bank.

1.3 Relationship between Technical cooperation project and Soft Component

Legal instruments and system, business rules, organizational design should also be developed to have CBM executing their business utilizing the information systems which is built by this ICT system development project. Such technical support is planned to be conducted within a separate Technical Cooperation Project which will be pursued by legal and institutional development experts with abundant experience.
From the viewpoint of the Soft Component, the Technical Cooperation Project may be regarded as a basis of the Soft Component. This is because business processes of fund settlement, securities settlement, and cheque clearing are designed based on the legal system. These business operations will therefore be elaborated taking into account the business rules institutional arrangements.

2. Objective of Soft Component

Merely constructing, supplying, and showing how to operate an ICT system does not ensure its continued usage. The first objective of the Soft Component is to ensure a smooth startup of the system by CBM, into an autonomous and sustainable utilization and operation status.
The immediate objective is to ensure operational, technical, and stable start-up of the system by the end of 2015 by 1) prepare the manuals, 2) conducting training, 3) conducting

explanations and trainings for commercial banks who are the actual users of the system, and 4) supporting the setup of a sustainable operation and maintenance of the system even after the completion of the grant aid assistance, i.e. after the entry into service of the system. Business changes rapidly depending on new legislature, the status of the economy etc. Also, as the system must evolve in response to any additional business demands and technology progress, etc. the Soft Component will also aim to create an environment where the initial basic structure of the ICT system at the entry into service will be sustainably maintained.

3. Soft Component Deliverables

Smooth startup of the Central Bank of Myanmar Financial Network System (CBM-NET) and the Mechanized Clearing House (MCH) will be ensured by conducting the Soft Component. In light of the objectives described above, concrete deliverables from the Soft Component will be as follows:

1) Preparing the manuals
   Based on laws and regulations and the institution of CBM, a detailed business plan is required to enable precise and efficient business operations.
   The assured quality and quantity of the manuals makes for appropriate usage and operation of the CBM-NET and MCH systems;
2) Training (tutorial / user education)
   Officers of CBM are provided with training of sufficient quality and quantity to become capable to conduct the business utilizing the system appropriately;
3) Commercial bank support
   Users at the commercial banks are provided with training of sufficient quality and quantity to become capable to conduct the business utilizing the system appropriately
4) Maintenance & operation support
   Operational plans for the running of the system after startup are developed and utilized.

4. Evaluation of Deliverable Completion

Soft Component deliverables are broadly divided into quantitative and qualitative as follows:

4.1 Quantitative effect

(1) Smooth startup of the System

Following indicators will be measured during the running test period: The aim will be to improve the indicator values compared with the start. Target of the indicator values will be set in consultation with the stakeholders, at the start of the running test period, aiming at a level where business can be achieved without difficulty (CBM-NET, MCH).

- Reduction of the difference between scheduled and actual office opening/closing times
- Reduction of the number of business operation errors (which are the number of incorrect data inputs that are corrected by reverse transaction inputs; overall business mistakes, which are found and adjusted by multiple checking procedures are not counted.)
- Reduction of the number of system operation mistakes

(2) System continuity

The status of manual preparation and training delivery are measured as indicators. The manual are expected to be prepared prior to the entry into service of the ICT system. However, even in the case where some part of the manuals is not prepared in time, entry into service may be deemed appropriate under condition that the consultant determines that this incompletion is already being addressed (e.g. documentation is delayed but running test results confirm that operation can be conducted without any concerns for utilization). In such cases, the unachieved issues will be addressed as part of CBM's autonomous program of continuous technical improvement.

- Status of manual preparation

Target: In order for CBM-NET and MCH daily operation to run continuously, the minimum set of manual (NB1) is specified, and the preparation status of the necessary manuals is reported.
(NB 1): status that manuals for cheque clearing, fund management (MMK), fund management (foreign currency), credit and collateral management, bond management, bond transfer, bond DVP and common business operations for CBM and commercial banks are prepared (draft are also acceptable).

Indicator: Manual preparation status = number of prepared manuals / total number of manuals to be prepared

- Status of training

Target: Adequate trainings and briefings are conducted to the bank officers identified in CBM and in commercial banks as users of the ICT system. At CBM this means at least 2 officers from each branch or HQ where there is a department that either operates or uses the system for business. In the case of the commercial banks this means at least 2 officers from each branch using CBM-NET, and at least further 1 officer from each branch participating in MCH.
Indicator: Status of training = number of officers trained / total number of officers to be trained.

- Understanding of the training

Target: officers of CBM and the commercial banks properly understand the training and briefing they have been given. Responses to the CBM-NET and MCH basic outline's 5 stage evaluation (1. Completely understood; 2. Mostly understood; 3. Basically understood; 4. Some parts not understood; 5. Not understood) (NB 2) must be 3 or above.
(NB2) Questionnaire evaluation items and evaluation parameters are to be reappraised during the period of operation
Indicator: Check understanding by questionnaire.

4.2 qualitative effect

(1) Establishment of a business operating system

CBM's establishment of business operating system (organisational structure, segregation of duties, definition of authority, adequate staff retention, etc) related to CBM-NET and MCH is confirmed by organisational chart and on-site verification.

(2) Establishment of a system maintenance management structure

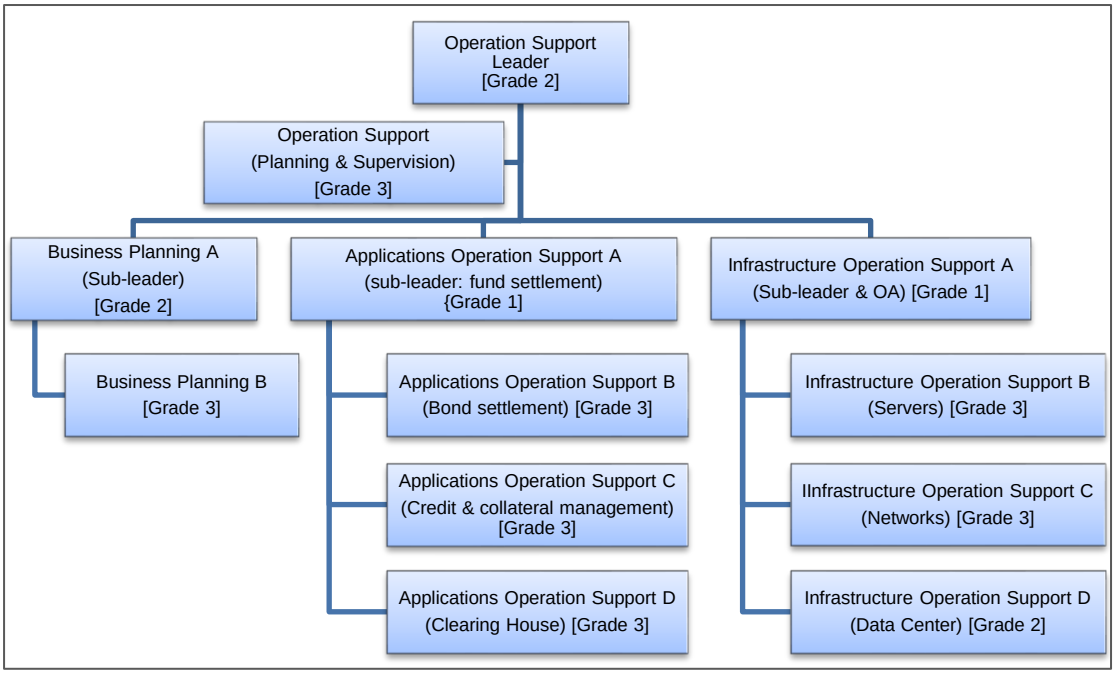
Confirm the construction of a system maintenance structure (made up of system-related department within CBM and of outsourced system-related contractors) by organisational chart and on-site verification.

5. Soft Component Activity (input plan)

5.1 Executing structure

The executing structure is illustrated below. Total of 12 members headed by the Operation Support Leader are planned to be assigned. Of these, 6 officers are to be business or application-related.
The role of Business Planning member is to ensure that the ICT system can be utilized by all users concerned, including at commercial banks, for fund settlement, government bond settlement, and cheque clearing transactions, under the recipient country's rules and regulations, and to advise on the corrections as necessary. The task will also include support and giving advice, related to any system alterations deemed necessary to be instigated by the CBM. As this responsibility requires extremely specialized knowledge of financial and settlement systems, 2 persons shall be assigned to oversee fund settlement, government bond settlement, and cheque clearing.

Four persons are anticipated to be assigned as applications members. The members' role is to ensure the appropriateness of the ICT system from a business executors' viewpoint. For this reason the applications members will be in close contact with the CBM personnel and the system developers. Therefore, a considerable amount of task is envisaged, requiring a person for each field of fund settlement, government bond settlement, credit and collateral management, and cheque clearing. Flexibility is also considered to accommodate reciprocal support among the members.



Execution Structure

Further, 4 persons are assigned to infrastructure operations support. Due to the divergence and sophistication of the ICT systems, the specific tasks of each field require a high degree of expertise with the consultants. The 4 fields of OA environment, settlement system servers, networks, and data center, each need their own personnel.

5.2 Execution process and task definition

The design and supervision (detailed design, procurement supervision) and Soft Component tasks are carried out as in the table below. The Soft Component are the tasks numbered from 11 through to 14 (four tasks namely 11.1, 13.4, 14.2, and 14.3 are design and supervision tasks)

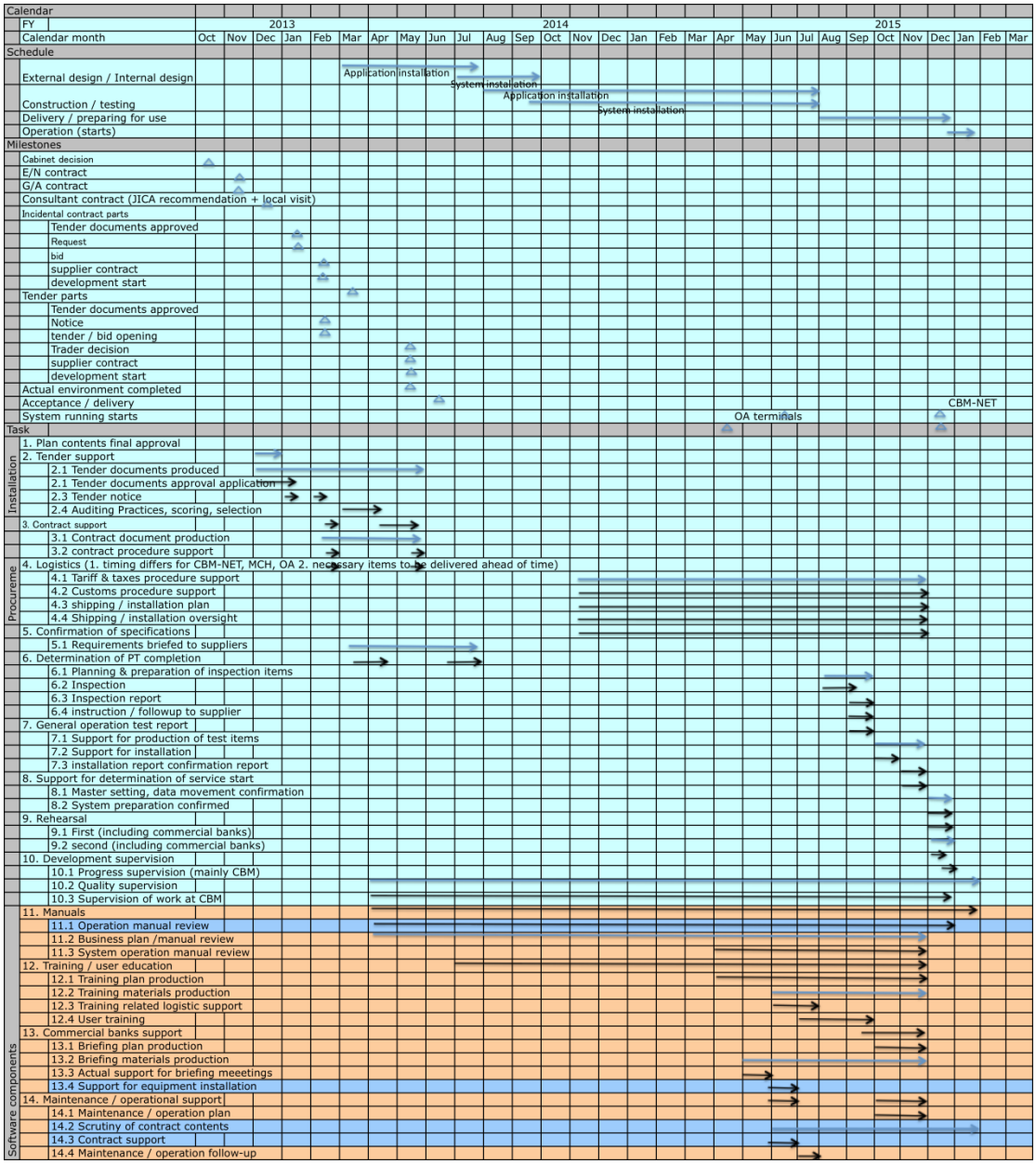
Task List

Detailed design	1 Final approval for plan contents
Procurement Supervision	2 Bidding support
	3 Contract support
	4 Logistics
	5 Confirmation of specifications
	6 Judgment of PT completion
	7 Running test support
	8 Support for decision to commence service
	9 Rehearsal
	10 Development supervision
Soft Component	11 Manuals
	11.1 Operation manual review
	11.2 Business plan / manual review
	11.3 System operation manual review
	12 Training / user education
	12.1 Drafting of training plan
	12.2 Training materials preparation
	12.3 Training-related logistics support
	12.4 User training
	13 Commercial banks support
	13.1 Drafting of briefing plan
	13.2 Briefing materials preparation
	13.3 Support for briefing meetings
	13.4 Support for equipment installation
	14 Maintenance /operational support
	14.1 Maintenance / operation plan
	14.2 Scrutiny of the contract contents
	14.3 Contract support
	14.4 Maintenance / operation follow-up

5.2.1 Execution process

This work schedule shows the tasks to be done in the Soft Component (red) and related project administrative tasks (blue), and its schedule.

Work schedule



5.2.2 Task definition

The work contents of the Soft Component are explained below
*Note: Numbers are aligned with the '**Work Schedule**' above.*

Task 11. Manuals

11.2 Business plan / business manual review

The business manuals codify the business procedure laid down by CBM, legislature, regulations, etc. These are deliverables that the user could not have produced without related knowledge. CBM has manuals but they are not necessarily utilised. Bank staffs are therefore not accustomed to manual production. The consultants is therefore needed to instruct how to produce manuals, and advise on reviewing deliverables.

11.3 System operation manual review

The system operation manuals related to system control only are provided by the installing vendor or equipment manufacturer. This mostly used by the system department (AIT: Administration and Information Technology department). The manual mostly consists of general-use contents. From the viewpoint of the user, depending on his environment and skill level, he may need to revise and add to it. In operation, the rules of the user's organisation may also need to be inculcated. Because CBM does not have many systems running right now, as with business manuals, bank staffs are not used to manual production. Therefore the consultants are required to review and advise on document production.

Task 12. Training / user education

12.1 Training plan production

The production of a plan for training and user education should be carried out mainly by the staff of the bank in question, but CBM staffs are not accustomed to business planning. The consultants' support is necessary. Support consists of (1) The consultants producing a training plan format and handing it over (2) CBM officers filling in the form and having it reviewed by the consultants.

12.2 Training materials production

Production of the training and user education materials planned at 12.1 is supported. The consultants and CBM should cooperate, but considering the Bank's systems and the fact that they are not normally accustomed to producing materials beforehand, the consultants will take over the production of said materials. However, it is recommended that Bank officials consider and strive for business continuation. As with the training plan, firstly the consultant provides a format, next the Bank official produces a draft, which the consultant reviews and returns as procedure in agreement with the Bank officials.

12.3 Training-related logistics support

Joint training is planned for either Bank HQ at Nay Pyi Taw, or at the more accessible Yangon. Moreover, as it would be difficult for serving bank officers at manager level to take leave of absence for some days, some follow-up at branch level will be needed. Selection for training, contents of training, preparing the venue, preparing the trainer etc. should be the task of CBM, but The consultants must confirm whether the preparations are complete and issue preparation instructions to CBM. The consultants also undertakes to support the request the developer to prepare access to the system (test environment) from the training venue

12.4 Providing the training programs

Training is delivered to the user departments of CBM; PSSD (Payment & Settlement Department), CMD (Currency Management Department), FMD (Foreign Currency Management Department), etc. as end users.
Training uses the materials produced at 12.3, but briefings require knowledge of CBM's business systems, related financial business, and the specifications of this system. Duties at CBM are carried out horizontally, and often the officer only knows his own business area, so the trainer's instructions may fall on stony ground. Therefore, the consultants need the support of CBM officers in finding suitable training staff who can communicate effectively with the training participants. Also, onsite support at each branch, while vital, needs the active participation of all related parties to follow through.

Task 13. Commercial banks support

13.1 Briefing plan production

Training is supplied to commercial banks participating in CBM-NET and MCH (Mechanised Clearing House).
It is planned to conduct briefings at CBM facilities, to be carried out either at Bank HQ in Nay Pyi Taw, or at the more accessible Yangon. Basic logistics, however, also suggest that all three Nay Pyi Taw, Yangon, and Mandalay hubs may conduct briefings.
As with CBM internal training plan provision (12.1), the consultants will involve bank staff in planning briefings to the commercial banks.

13.2 Materials production

Briefing materials are planned the same as for CBM users (12.2). The consultants and CBM are to cooperate on this. The consultants will provide the outline for the production of documents, the bank staff will fill it in as far as possible, and finally the consultants will review it and fill in the missing parts.

13.3 Actual support for briefing meetings

Briefing meetings, for the same reason as bank internal briefings, shall be given by the consultants. To aid communication with the participants, support from senior cheque clearing officers of CBM is envisaged. Also from development vendors as necessary to construct the demo environment (preparation of system partition used in the commercial banks briefings, data sets etc)

Task 14. Maintenance / operation support

14.1 Maintenance / operation plan

CBM must create the plan for post-startup (1) maintenance items; (2) maintenance structure, (3) service contents, (4) division of roles, and (5) contracts with contractors. As noted previously, the AIT division of CBM has no capacity to prepare these items for service (they plan to boost their structure in order to install this System, but relying on newly acquired staff to become instantly effective is taking a great risk). The consultants will therefore prepare the necessary items, and advance the plan while taking appropriate advice.

14.4 Maintenance / operation follow-up

One month on from system startup, the consultants will overview the status of system operation. The maintenance contractor will deal with problems with the installed system and mechanical breakdowns. However, what are not covered in the systems maintenance are the few cases of continuity with the previous system, and manual work to be done outside the system. These should be covered by CBM, however, expected conditions are (1) unfamiliarity with the new system, and (2) the period immediately after startup to be busy time of the year. Until the situation are back to normal, somewhat (one month will be required), the consultants will follow-up after system startup, identifying problems and managing solutions, and simultaneously passing management knowhow to CBM staff.

5.3 Tasking and role definition

The planned staffing levels necessary for the Soft Component are explained below
*Note: Numbers are aligned with the '**Work Schedule'** above.*

Task 11. Manuals

11.2 Business plan / business manual review

The business plan precedes business manual production, and includes a great variety of planning and study, that is study of business system and division of duties, the setting of rules for each type of work, the definition of rule parameters (defining exceptions), detailed definition of business functions, detailing the business flow which was outlined in the definition phase (including detailing related business operations not covered by CBM-NET), designing related output forms not covered by CBM-NET (for example, design of output forms to be supplied to the trader where trading is input to CBM-NET), etc.

Business plan and business manual production require various organisational decisions, and the involved CBM officer is positioned to carry these out.

Firstly, in the business plan review, it is expected that the officers of the CBM are not accustomed to business planning, so that the consultants will provide guidance on the items and documentation to be considered from his Japan-based experience. Then, the CBM officer will instigate the business plan, but while this is happening the consultants will report on QA, and also review the business plan contents under consideration. The review point will focus on whether the business manual has been prepared to a producible status, with the necessary preparatory systems become part of the technology cooperation project.

As the scope of the CBM-NET has increased since its inception, the variegated target parameters of fund settlement, collateral management, national bond settlement, master data management, business operation, and user management, have come to include many tasks that the CBM does not currently undertake (bid issuance of government bonds, government bonds transfer, government bonds DVP, collateral management, etc).

In addition to CBM's unfamiliarity with business planning, consideration is needed of business in which it has no experience, so that the consultants will not only instigate the production of CBM's business plan, but it is also expected to report on QA strategy as well.

Next, the CBM officer is not expected to be accustomed to business manual production either, so the consultants will provide prior guidance as with business planning. The CBM officer will produce the business manuals based on that guidance, which the consultants will review. The review points focus on whether business is performable along the lines of the business manual.

Below are the consulting business contents related to business plan and manual review.

1) Consulting support contents

The business support contents of the consultants are laid out below. Those that take time are where the consultants have to research the contents of the question. Consultants with knowledge of BOJ Net are retained, but the current specifications require further study, and the cooperation of the Bank of Japan is envisaged. Especially, disclose of business operation manuals, system operation manuals and related documents.

Support Items

(1) Business plan guidance • Briefing of study contents as part of the requirements definition process • Items to be studied as part of the business plan • Data to be acquired (i.e. ledgers used in current business, dealing types corresponding to account sorting items, current business data interfacing with the CBM-NET, etc) • Format for laying out study results
(2) QA response (NB 3) (expected questions) • Requirements definitions document meaning / contents, especially contents which are not being carried out currently • BoJ Net operating method • Study results writeup method, summarization • Items to be studied (questions such as “firstly, I don't know what I’m supposed to be studying” are expected)
(3) Review of business plan study results • Review and identification of unsatisfactory sections • Comment on items which require additional study
(4) Business manual production guidance • Manual structure • Description level • Format
(5) Business manual review • Identification of unsatisfactory sections of text items • Comment on revisions

(NB 3) content related to legislation and institutions, etc. are the tasks of the Technical Cooperation Project

2) Expected work and work volume estimation

Considering the business manual format at BoJ, the manuals to be produced at CBM-NET are seen below. The consultant man-hours necessary to carry out these tasks are calculated as follows. Because ‘business plan review’ has more study items than ‘business manual review’, as seen in the above table ‘support Items’, more time must be set aside for Q&A with CBM officers. The business process manuals are prepared about 200pages for each business area in Bank of Japan. Assuming this volume to be reviewed for each business area, it will be 3,200 pages to be reviewed all business area showed in following table. It is possible to make an assumption that rules of Bank of Japan are more complicated than CBM, and related documents are from double to four times larger. Thus the volumes of manuals to be reviewed in Soft Component are about 800 pages.

Expected production cost for business plan and manual review

Business manual	Usage	Business plan review (man/months)				Manual review (man/ months)	Total (man/ months)
		Guida-nce	QA respon se	Review	Subtotal		
Cheque clearance	CBM	0.2	0.5	0.3	1.0	0.3	1.3
	financial institution	0.1	0.3	0.2	0.6	0.2	0.8
Fund settlement (MMK)	CBM	0.5	1.5	1.0	3.0	0.6	3.6
	financial institution	0.4	1.0	0.6	2.0	0.4	2.4
Fund settlement (foreign currency)	CBM	0.4	1.0	0.6	2.0	0.4	2.4
	financial institution	0.2	0.5	0.3	1.0	0.2	1.2
Collateral management	CBM	0.5	1.5	1.0	3.0	0.6	3.6
	financial institution	0.4	1.0	0.6	2.0	0.4	2.4
Government bond management	CBM	0.5	1.5	1.0	3.0	0.6	3.6
	financial institution	0.4	1.0	0.6	2.0	0.4	2.4
Government bond transfer	CBM	0.5	1.5	1.0	3.0	0.6	3.6
	financial institution	0.4	1.0	0.6	2.0	0.4	2.4
Government bond DVP	CBM	0.5	1.5	1.0	3.0	0.6	3.6
	financial institution	0.4	1.0	0.6	2.0	0.4	2.4
Common business	CBM	0.4	1.0	0.6	2.0	0.4	2.4
	financial institution	0.2	0.5	0.3	1.0	0.2	1.2
Total		6.0	16.3	10.3	32.6	6.7	39.3

3) Assumptions for time to startup and tasks to be pursued

- The period starts with the completion date of the detailed design on 1st July 2014, and runs until the preparation begins on 1st July 2015 for the general operating trial (12 working months, 39.3 man-months)
- This will mainly involve 6 persons on business plans A and B and applications A through D, but this averages out to 0.5 man/months per person every month
- Work to be done by each business group is scheduled as follows: (1) business plan guidance (2) business plan QA response (3) business plan study result review (4) business manual production guidance, and (5) business manual review

- Business groups are clearing, fund settlement (MMK), fund settlement (foreign currency), collateral management, government bond management, government bond transfer, government bond DVP, and joint business (terminal management, master data management, business operation, user management, etc)
- If CBM should fail to prepare manuals by the due date of the new system service start schedule, CBM and the project consultant will arrange the situation. If CBM and they agree to recover the shortage of manuals, the new system will be operated on schedule.

Input for the above will require the following person months:

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
1.5	0.7	0	0	4.5	0.9	5.4	1.1	4.7	1.0	5.7	1.0

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
1.5	1.0	5.0	1.1	0	0	0	0	0	0	0	0

Operation Support Leader: complete oversight for this work
Business plan A: Carrying out business plan and business manual review. Covers fund settlement and government bond settlement related work.
Business plan B: Same business plan reviewing function as in A above. Covers collateral management and MCH related work
Application A: reviewing of non-system work, response to anomalies. Review of fund settlement-related operations manual
Application B: Same as Application A. Covers government bond settlement-related parameters
Application C: Same as Application A. Covers collateral management-related parameters
Application D: Same as Application A. Covers MCH-related parameters

11.3 System operation manual review

As with the business manual, it is envisaged that the system operation manual is written by CBM after receiving guidance based on our Japan-related experience, which is then reviewed by the consultants

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0.2	0	0	0	0	0	0	0	0	0	0

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0	0	0	0	0.2	0.5	0.5	0.5	0.5	0.2	0.3

Operation Support Leader: complete oversight this work
Infrastructure A: With main system operation in Japan as benchmark, consideration is given to whether vital work items have been missed out, or whether there are any special Myanmar

conditions (irregular power cuts, monsoon) to be taken into consideration. Covers OA-related work.
Infrastructure B: Same as Infrastructure A. Covers CBM-NET server environment.
Infrastructure C: Same as Infrastructure A. Covers networks such as long-distance, metropolitan, and building LAN
Infrastructure D: Covers data center facilities.

Task 12. Training / user education

12.1 Training plan production

The business plan manager locates on site to cooperate with the CBM business manager on what training contents should be included from a business viewpoint. Other consultants prepare the plan in Japan

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0.2	0	0	0	0.2	0.2	0.3	0.2	0	0	0	0

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0	0	0	0.2	0	0	0	0	0	0	0

Operation Support Leader: complete oversight for this work
Business plan A: Establishment of necessary training menu. Discussion with CBM manager to finalize the menu. Covers fund settlement, government bond settlement
Business plan B: Same as business plan A. Covers MCH, collateral management
Infrastructure A: Establishment of necessary training menu from the viewpoint of system operation management

12.2 Training materials production

Training materials to be produced in Japan. CBM to approve contents, particularly the business plan manager.

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0.2	0	0	0	0.4	0.2	0.4	0.3	0.5	0	0.5	0

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0.5	0	0.5	0	0	0	0.3	0.3	0.3	0.3	0.2	0.2

Operation Support Leader: complete oversight for this work
Business plan A: Information is obtained from CBM manager or government department such as MOF, and the data necessary for manual production is extracted. Related systems covers fund settlement, government bond settlement.
Business plan B: Same review as business plan A. Covers MCH, collateral management.
Application A: Outline production of training materials, with opportunity for materials production given to the partners in the other country (for study purposes). Then, materials are finalised. Covers fund settlement, government bond settlement.

Application B: Same as Application A. Covers parameters related to government bond settlement.
Application C: Same as Application A. Covers parameters related to collateral management.
Application D: Same as Application A. Covers parameters related to MCH.
Infrastructure B: Training materials produced following discussion with AIT department manager. Wherever possible, same as with Applications, production of materials will be handled by the bank staff. Covers parameters related to server environment.
Infrastructure C: Same as Infrastructure A. Covers parameters related to network
Infrastructure D: Same as Infrastructure A. Covers parameters related to data center.

12.3 training-related logistics support

Training-related logistics will be mainly handed by CBM. CBM will oversee and make arrangements where necessary.

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0.1	0	0	0	0	0	0	0	0	0	0.2

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0	0	0	0	0.2	0	0	0	0	0	0

Operation Support Leader: complete oversight for this work
Application B: Support for training arrangements. CBM application side to support, i.e. PSSD, CMD, FMD, etc
Infrastructure A: Same as Application B. Infrastructure side to support AIT etc.

12.4 User training

The consultants attend training and oversee an effective session. Basically he is a training instructor.
Training to run at least twice in each of Nay Pyi Taw and Yangon branches over a period of 2 months (the arrangements allow for 4 sessions each).

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0.2	0	0	0	0.5	0	0.5	0	0.5	0	0.5

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0.5	0	0.5	0	0.1	0	0.4	0	0	0	0

The above responsible persons are to brief on business / system, application specifications, and infrastructure. Time arrangements are subject to change depending on the department undergoing the briefing. There are three persons responsible, covering business, application, and infrastructure, and 2 locations for briefing. However, initially it is expected that the education will have to be fine-tuned to the circumstances, and all are encouraged to attend.

Task 13. Commercial banks support

13.1 Briefing plan support

Briefings are planned for the commercial banks as one of the users of this system. Contents, timing, and agenda of the plan are to reflect the requirements as an aid recipient country. 2 briefings are envisaged for the commercial banks; the briefing of August 2015 (TBC) will introduce the role of CBM and future cooperation; the briefing of October 2015 (TBC) will cover administrative procedure at the operational level

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0.1	0	0	0	0.2	0.2	0.2	0.2	0.2	0	0	0

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0	0.2	0	0	0	0	0	0	0	0	0

Operation Support Leader: complete oversight for this work.
Business plan A: Information connection with CBM, banking association etc to obtain data necessary to training (system preparedness, literacy at each bank), establishment of necessary training menu. Covers fund settlement, government bond settlement
Business plan B: Same as business plan A. Covers MCH, collateral management
Application A: Connect application spec-related data with business plan A & B
Application D: same as Application A. Covers MCH-related parameters

13.2 materials production

Production of briefing materials in line with the plan. Produced locally with the consensus of the CBM members and the commercial banks members.

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0.1	0	0	0	0.2	0.2	0.2	0.2	0.2	0	0	0

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0	0.2	0	0	0	0	0	0	0	0	0

Operation Support Leader: complete oversight for this work.
Business plan A: Training materials produced according to the plan in 12.1. Covers fund settlements, government bond settlements
Business plan B: Written as Business plan A. Covers collateral management, MCH-related.

13.2 Actual support for briefing meetings

Both The consultants and CBM lecturer arrange briefing meetings. Bidirectional delivery is also planned. Basically, in order to deliver correct information, the most knowledgeable consultant will deliver the entire content. The CBM lecturer mainly supports communication with the commercial bank participants

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0.1	0	0	0	0.2	0	0.2	0	0.2	0	0

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0	0	0.2	0	0.2	0	0	0	0	0	0

Operation Support Leader: complete oversight for this work.
Business plan A: Lecturer in charge
Business plan B: Q&A in the area of expertise. Where simultaneous operation over multiple locations is necessary, the lecturer shall be in charge.
Application A: Same as business plan B: Covers Q&A related to CBM-NET
Application D: Same as business plan B: Covers Q&A related to MCH
Infrastructure A: Same as business plan B: Covers Q&A related to infrastructure

Task 14. Maintenance / operational support

14.1 Maintenance / operation plan

The basic ideas for drawing up the plan for maintenance & operation after startup come from within Myanmar

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0.2	0	0.2	0	0.2	0	0	0	0.2	0	0	0

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0	0.2	0	0.2	0	0	0	0	0	0	0

Operation Support Leader: complete oversight for this work.
Procurement plan: Coverts the summarisation of work results.
Business plan A: Brings to light necessary items from the business operation
Application A: Brings to light necessary items from the application
Application D: Brings to light necessary items about MCH-related machine maintenance
Infrastructure A: Brings to light maintenance operation factors related to infrastructure.

14.4 Maintenance / operation follow-up

Disruption is a possibly in the immediate aftermath of startup (January 2016 TBC), so support will be on-site

Person month plan (unit: person months)

Operation Support Leader		Operation Support		Business plan A		Business plan B		Application A (fund settlement)		Application B (government bonds settlement	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0.5	0	0.5	0.2	0	0	0	0	0	0	0.1

Application C (collateral mgmt.)		Application D (MCH)		Infrastructure A (OA)		Infrastructure B (server hardware)		Infrastructure C (network)		Infrastructure D (data center)	
Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar	Japan	Myanmar
0	0	0	0	0	0.5	0.5	0	0	0	0	0

Operation Support Leader: complete oversight for this work.
Procurement plan: to support the Operation Support Leader. Covers minutes-taking, communication support
Application B: Myanmar application support
Infrastructure A: Myanmar infrastructure support
Infrastructure B: Specialist support from Japan for Infrastructure A.

6. Business Travel Plan

Plan for travel to Myanmar is specified below. As specified in the practical task list, Soft Component is conducted in parallel with procurement supervision, and there may be some overlapping of members. Travel costs are accounted under procurement supervision until June 2015, then under Soft Component from July 2015

Business Travel Plan

Person in charge	Travel dates	Purpose
Operation Support Leader	15th Jul. to 18th Aug. 2015 (33 days)	Support manual preparation
	25th to 28th Aug. 2015 (3 days)	Support vendor contract
	1st Sep. 2015 to 15th Jan 2016 (135 days)	Long stay for conducting Soft Component while managing procurement
Procurement plan	12th Aug to 18th Sep. 2015 (36 days)	Informing and advising related to the vendor contract
	20th Oct to 8th Nov 2015 (18 days	Support vendor contract
	20th Dec 2015 to 8th Jan 2016 (18 days)	Vendor contract support follow-up
Business plan A	15th to 27th Jul 2015 (12 days)	Business specifying, manual preparation support
	15th to 30th Aug 2015 (15 days)	Training material production support
	12th to 30th Sep 2015 (18 days)	Training support
	15th to 30th Oct 2015 (15 days)	Commercial banks teaching support
	15th to 30th Nov 2015 (15 days)	Training support whilst managing procurement
	12th to 30th Dec 2015 (18 days)	Confirmation of business specifications whilst managing procurement
Business plan B	12th to 30th Jul 2015 (18 days)	Business specifying, manual preparation support
	15th to 30th Aug 2015 (15 days)	Training material production support
	15th to 30th Sep 2015 (15 days)	Training support
	15th to 30th Oct 2015 (15 days)	Commercial banks teaching support
	12th to 30th Nov 2015 (18 days)	Training support whilst managing procurement
	12th to 30th Dec 2015 (18 days)	Confirmation of business specifications whilst managing procurement
Applications (CBM-NET) A	15th to 21st Jul 2015 (6 days)	Business specifying, manual preparation support

	15th to 21st Aug 2015 (6 days)	Training material production support
	12th to 30th Sep 2015 (18 days)	Training support
	18th to 30th Oct 2015 (12 days)	Commercial banks teaching support
	12th to 30th Nov 2015 (18 days)	Training support whilst managing procurement
	12th to 30th Dec 2015 (18 days)	Confirmation of business specifications whilst managing procurement
Applications (CBM-NET) B	15th to 21st Jul 2015 (6 days)	Operating manual review
	15th to 21st Aug 2015 (6 days)	Business manual review
	10th to 30th Sep 2015 (21 days)	Training support
	12th to 30th Oct 2015 (18 days)	Training support
	7th Nov 2015 to 30th Jan 2016 (84 days)	Long stay for conducting Soft Component while managing procurement
Applications (CBM-NET) C	15th to 21st Jul 2015 (6 days)	Operating manual review
	15th to 21st Aug 2015 (6 days)	Business manual review
	13th to 30th Sep 2015 (18 days)	Training support
	15th to 21st Oct 2015 (6 days)	Training support
	15th Nov to 30th Dec 2012 (45 days)	Long stay for conducting Soft Component while managing procurement
Applications (MCH) D	15th to 21st Jul 2015 (6 days)	Operating manual review
	15th to 27th Aug 2015 (12 days)	Business manual review
	13th to 25th Sep 2015 (12 days)	Training support
	1st Oct to 30th Dec 2015 (90 days)	Training support
Infrastructure A	15th to 21st Jul 2015 (6 days)	Operating manual review, adjustment
	20th Aug to 8th Sep 2015 (18 days)	Business manual review, adjustment
	20th Oct to 5th Nov 2015 (15 days)	Training support
	18th Nov 2015 to 15th Jan 2016 (57 days)	Long stay for conducting Soft Component while test supporting
Infrastructure B	1st to 24th Jul 2015 (24 days)	Operating manual review, adjustment
	1st to 24th Sep 2015 (24 days)	Business manual review, adjustment
	20th Oct to 11th Nov 2015 (21 days)	Training support
	18th Nov 2015 to 15th Jan 2016 (57 days)	Long stay for conducting Soft Component while test supporting
Infrastructure C	1st to 24th Jul 2015 (24 days)	Operating manual review, adjustment
	18th to 30th Sep 2015 (12 days)	Business manual review, adjustment
	15th to 30th Oct 2015 (15 days)	Training support
	20th Nov to 30th Dec 2015 (39 days)	Long stay for conducting Soft Component while test supporting
Infrastructure D	1st to 15th Jul 2015 (15 days)	Operating manual review, adjustment
	18th to 30th Sep 2015 (12 days)	Business manual review, adjustment
	18th to 30th Nov 2015 (12 days)	Training material production support, adjustment

7. Soft Component Execution Resources Procurement

The resources for execution are expected to be direct-input type depending on ordering consultant. This project is based on technical experience of the Bank of Japan business and system, so consultants with that technology and experience are appointed for this project.

8. Soft Component Business Execution Plan

The Soft Component Process has been planned in to be harmonized with the system development supervision tasks.

9. Soft Component Deliverables

Soft Component deliverables are as follows

- Soft Component completion report
- Training program
- Training materials (joint production by developer and CBM)
- Business manuals (joint production with CBM)
- Commercial banks briefing materials (joint production with CBM)

10. Arrangement by the Recipient Country

- Contribution to adjustment items
  CBM have to carry responsibility for instruction, contact and arrangement items within CBM and commercial banks etc. For example, notice of workshop and arrangement of MCH machine delivery.

- Building the organisation
  Appointing sufficient number and capable CBM staff to complete the organisational structure which is required to carry a new business and system operation.

- Building the system
  The necessary legislation and regulation to run this project to be carried out beforehand by CBM, in order to prevent hindrance to this project.

- Writing manuals
  While Technical cooperation consultants and Soft Component consultants will advise and review the manuals, the CBM have to write business operation manuals by itself.

End of Document