CHAPTER 3 CSS Proposal

3.1 Development Policy of CSS

3.1.1 General View

Border controlling, detecting smugglers, controlling goods and collecting government revenue will be the most important jobs of Customs for years to come. In addition to the above roles, in an economic globalization era, Customs is required to perform the role as facilitator of international trade. Recently this new role has become more significant than traditional roles.

Market forces have exerted strong pressure on the Directorate General of Customs and Excise (DJBC) to facilitate the flow of international cargo to support the economic development of Indonesia. In order to cater to those demands, DJBC has implemented new computer system including Electrical Data Exchange (EDI) and New Customs Law to assist with import procedures. Those DJBC's efforts have improved Customs activities and been highly appreciated noticed by market players.

Indonesian is facing economic globalization and trade liberalization in the form of AFTA 2003. Moreover DJBC has to improve and modernize customs system procedures in order to achieve the government policy; "Develop Indonesian Economy by enhancing non-oil/gas export and increasing direct investment through improving trade and investment environment." To accomplish the above objectives, urgent methods are the implementation of advanced, integrated and fully-effective computer system for all customs clearance procedures and utilization of completely-integrated computerized database system.

3.1.2 Integrated CSS System

DJBC maintains its computerized import clearance system, which consists of Customs Fast Release System (CFRS) and EDI system telecommunications between importers and customs. This system has achieved progress in betterment of the flow of import goods and has reduced import clearance time. However CFRS was developed in 1989 and has been updated several times to conform with amendment related to the regulatory and legal

framework as well as to satisfy the requirements of market players and customs. The frequent update of the system made its structure complicated and less reliable.

DJBC has a plan to develop a Customs Export System in cooperation with PT. EDI Indonesia. The system is expected to facilitate export customs procedures and to expand exports.

Considering the new trade globalization era and environment of Customs, the development of a new integrated Customs computer clearance system, called Customs Service System (CSS), is inevitable for DJBC. CSS should be developed based on the latest computer technology and the latest Customs clearance concept to be established by WCO. CSS is expected to cover all Customs clearance procedures:

- Import Clearance
- Export Clearance
- Bonded Transport (including cargo control)
- Arrival/Departure Control

Implementation of CSS including EDI must be completed before the year 2003 when the AFTA new free trade era comes in full force to Indonesia.

Regarding the development of CSS, the following maters should be taken into consideration;

- The new system should ultimately be based on the latest version of UN/EDIFACT.
- The server of the new system should have sufficient capacity to be utilized during certain period and have enough capacity to expand memory, in conformity with the increase in data transaction stemming from the increase in PIB and PEB during the period.
- Terminals should be replaced with PC's and have multi-screen functions for CSS and other Customs systems. The popular operating system is suitable for this purpose.
- System architecture should be based on the philosophy of easy amendment.

In addition to the development of CSS application program, it should be considered that the EDI system would be used for communication between CSS and the its users.

Since CSS needs to be a comprehensive Customs clearance system, it seems that feedback from users, such as importers, customs brokers, banks, operators of bonded zones and warehouses, will be an important component to make an efficient system. The establishment of committee that consists of representatives of those parties is very excellent way to assure the system's success and assimilation.

3.2 Current Customs Service and CFRS

3.2.1 Current Procedures

In this part, current Customs procedures are described.

An overview of the Customs procedures is shown in Figure 3.2.1-1. In this figure, each arrow represents the flow of cargo, which constructs one procedure. Thick arrows show the computerized procedures in April, 1998.

Figure 3.2.1-2 summarizes the Data Flow Diagram (level 0). To help explain current procedures, 2 methods are used:

3.2.1.1 Data Flow Diagram

Data flow diagrams (DFD) are used to model the passage of data through the system by showing a network structure of the data. DFDs do not show the processes that control this flow of data, nor do they make any attempt to distinguish between valid and invalid paths through the data. However, DFDs have many useful features:

- Provide a way to document the system from the point of view of the data itself.
- Illustrate external data feeds that will require an interface of some kind.
- Document the manual processes of the system, as well as computer-based ones.
- Perform a data-centric partitioning of the overall system.

(Source : Dave Ensor, Ian Stevenson :"Oracle Design", O'Reilly & Associates, p.95, 1997)

In the level 0 of DFD, the target organization is treated as a black box. All the data flow between the target organization and related organization should be shown. No process conducted inside the organization shall appear.

To achieve the technical transfer in limited time, the JICA Study Team has chosen the sector of Arrival/Departure management, to be analyzed with DFD. Other sectors are analyzed with Process Flow method explained below.

In the lower level of DFD, the JICA Study Team made two DFDs for each procedure, because of complication of the procedures. One is similar to the level 0 of DFD and the other shows the detail.

3.2.1.2 Process Flow

Each procedure, except for the procedures in the sector of arrival/departure management, is described in Process Flow. This type of diagrams describe the flow of job process. An arrow means the flow of job process, which means that latter job process shall be processed after the former job is processed. Latter process is usually initiated with receiving some data from former process. Therefore, the main flow of data is also described in this type of diagram. Some of the described data flow do not mean process flow and those are distinguished by a dashed line.

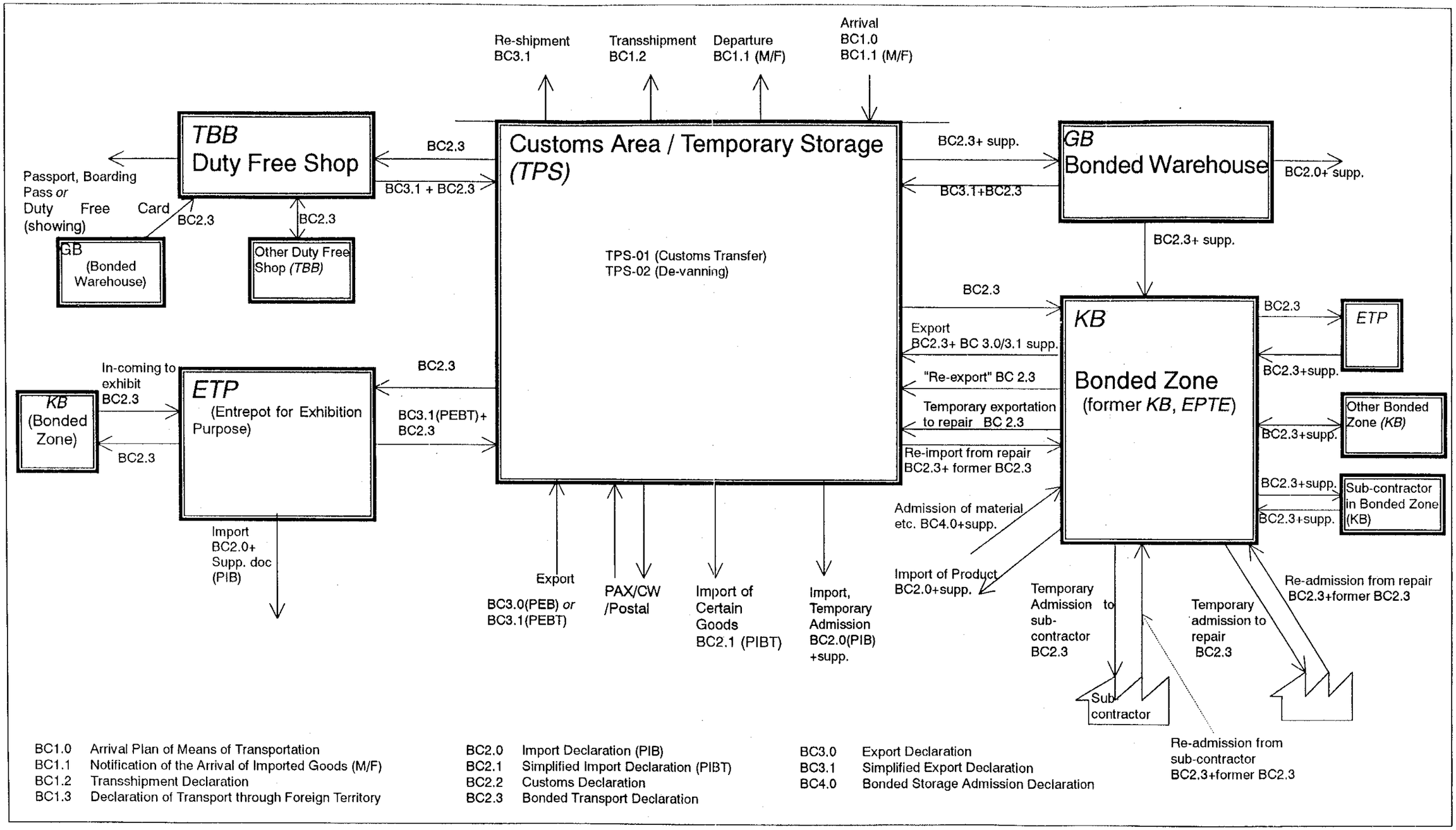

Figure 3.2.1-1: Overview of the Procedure before Computerization

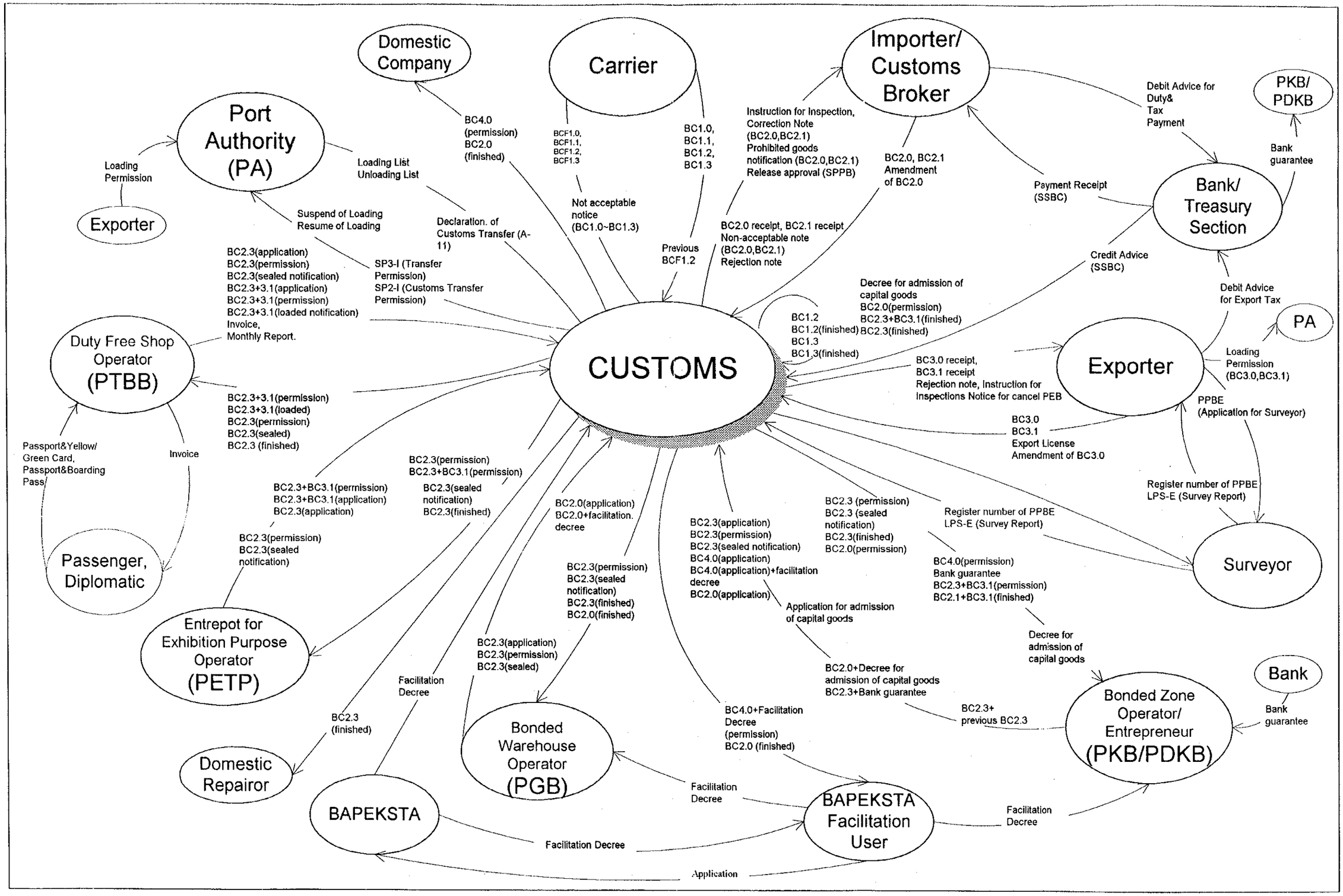

Figure 3.2.1-2: Data Flow Diagram (level 0)

3.3 Image of CSS in 2003

3.3.1 Procedure and Objectives of System Improvement

3.3.1.1 Procedure of System Improvement

It is recommended that DJBC establish several committees in order to clarify or scrutinize customs clearance procedures and computerize both inside and outside clearance procedures. To maximize the result of computerization, it is very important to hear opinions or requests from CSS users, e.g. Importer, Bank, Operator of Bonded Storage, carrier, and so on.

3.3.1.2 Objectives of System Improvement

Customs plays an important role in the trade liberalization era. As described in the previous chapter, CSS is required to achieve facilitation in Indonesia. CSS must cover not only customs clearance but also all the other procedures related to customs clearance. To assist the efficient performance of all international trade and customs functions and activities, CSS should be improved to provide consistent, simple and transparent procedures.

The objectives are:

1) Facilitator and Controller
   - Smooth and simple procedure
   - Proper revenue collection
   - Potential contraband finding
   - Fraudulent customs declaration finding
2) Inspection office activity monitor
3) Highly reliable and simplified system

The functions to be computerized are:

1) Arrival of ship/airline control
2) Customs area, warehouse, bonded zone and bonded transfer control
3) Import declaration
4) Export declaration
5) Departure of ship/airline control

The interface with other departments, such as port authority and the EFT between importer and Bank are not designed this time, because there are not directly related to customs obligation. Therefore, there are not included in the cost estimation. The interface and the EFT

are, however, very important from a view point of quick customs clearance. Hence, these two matters will have to be considered when CSS is developed.

The image of procedures through CSS is described in Figure 3.3.1.2-1 and Figure 3.3.1.2-2. The system covers all customs procedures from arrival of airplane/ships to release of goods in the case of import, and the other way around in case of export. The submission of documents is processed by EDI through EDI provider. The electrical message should comply with UN-EDIFACT (United Nation's standard for EDI message).

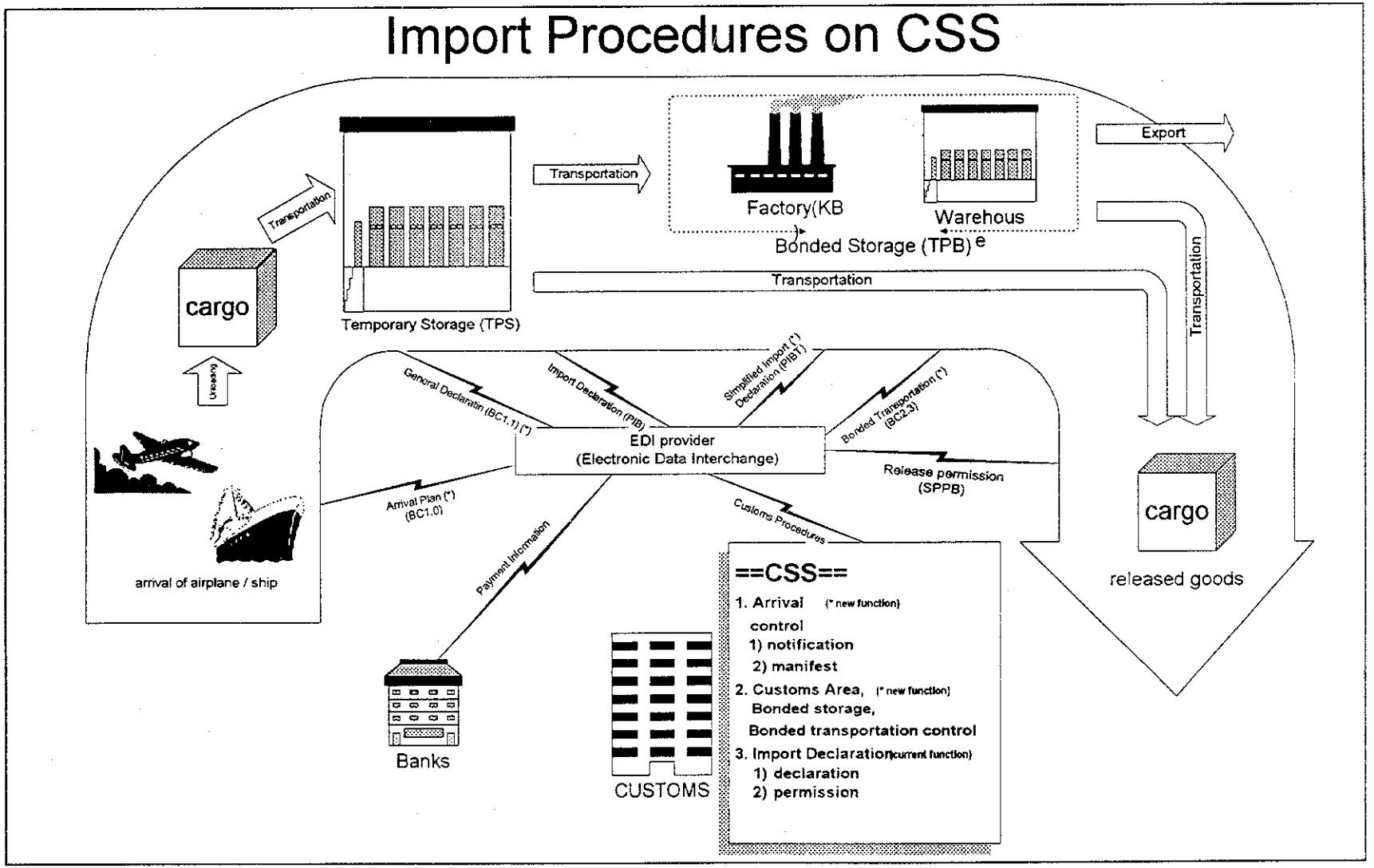

Figure 3.3.1.2-1: Import Procedure on CSS

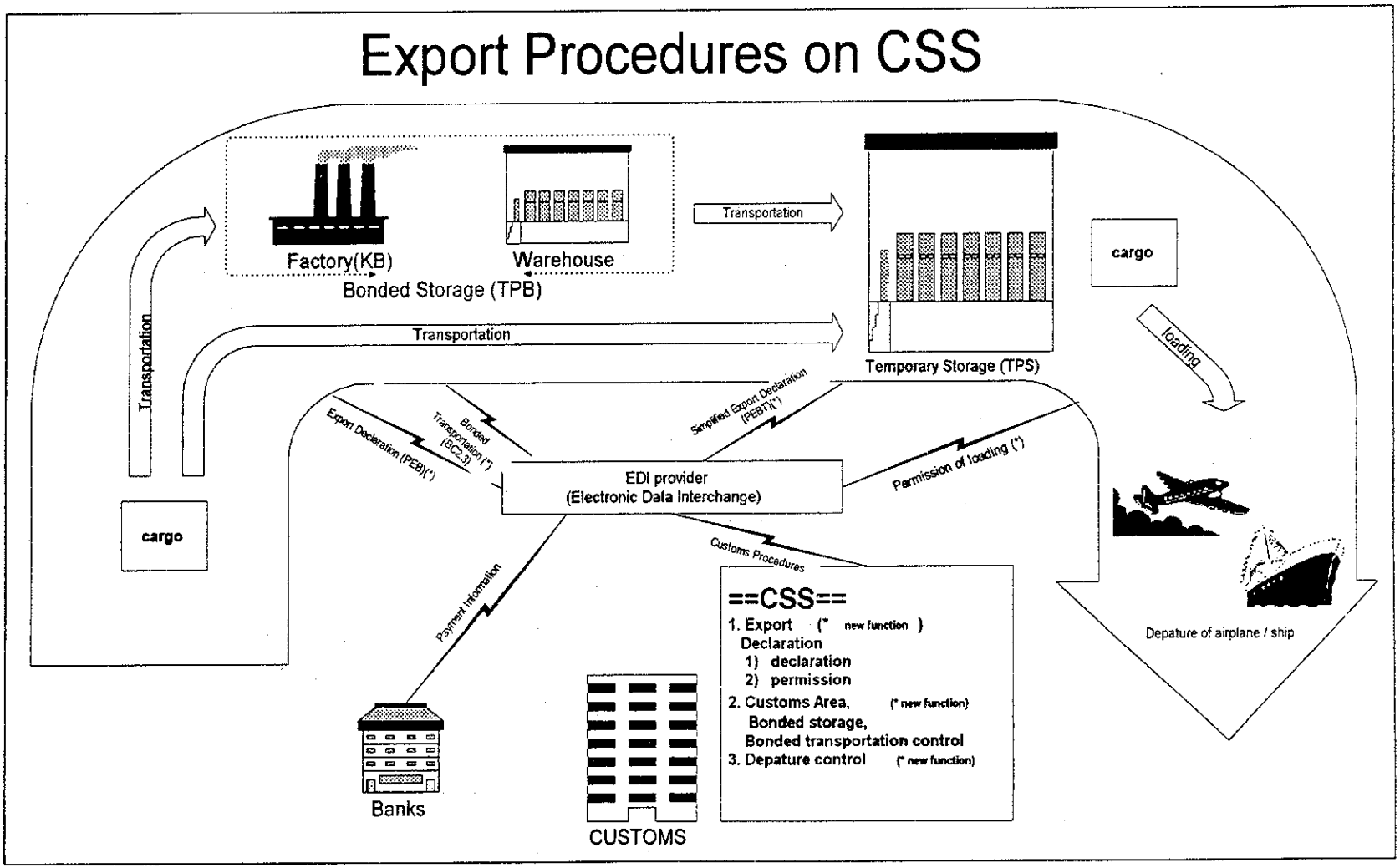

Figure 3.3.1.2-2: Export Procedures on CSS

3.3.2 Procedures to be Computerized

3.3.2.1 Job Process to be Computerized

The JICA Study Team proposed suitable customs clearance procedures for the idea of CSS as a result of interview with DJBC. The jobs cover almost all customs procedures. Figure 3.3.2.1-1 shows the "overview of the procedure after computerization." The thick arrows mean suitable job to be computerized. The numbers in the figure (for example, KB-11) are the same as those in Table 3.3.2.2-1.

The procedures after computerization are almost the same as the procedures before computerization in this basic investigation phase, because of the limitation of investigation and research time. The procedures after computerization, therefore, need further investigation from the viewpoint of system simplification and further consideration from legal point of view.

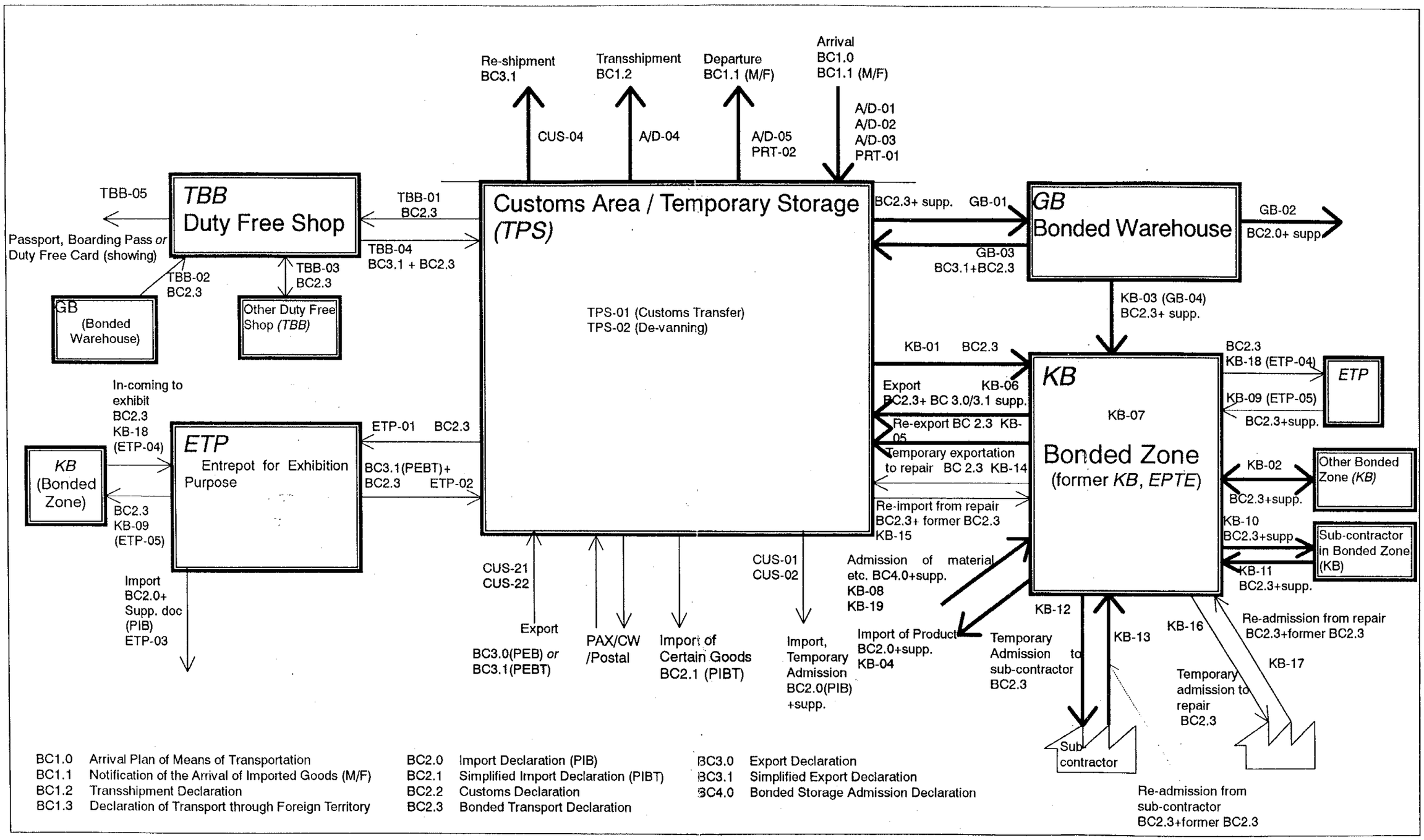

Figure 3.3.2.1-1: Overview of the Procedure after Computerization

3.3.2.2 List of Jobs

In this phase, the list of jobs is described. There are eight categories in the jobs. Table 3.3.2.2-1 shows the "List of jobs to be computerized". The rows with "low transaction" in remarks mean lower priority for computerization than other jobs, because there are not so many transactions that related to such jobs.

- Arrival / Departure of means of transport (A/D)
- Customs area (PRT)
- Temporary storage (TPS)
- Customs clearance (CUS)
- Bonded Zone (KB)
- Bonded warehouse (GB)
- Entreport for exhibition purpose (ETP)
- Duty free shop (TBB)

Table 3.3.2.2-1: List of jobs to be computerized (1/12)

No.	Job Group / Job	Data	Description	Remarks
A/D	Arrival / Departure of Means of Transport			
A/D-01	Arrival Plan of Means of Transport	BC1.0 (Notification of Arrival Plan of Means of Transport)	Carrier shall submit "the Arrival Plan of Means of Transport" if the means of transport arrives irregularly.	—
A/D-02	Schedule of the Arrival Plan of Means of Transport	Schedule of Arrival Plan of Means of Transport	Carrier shall submit "the Schedule of Arrival Plan of Means of Transport" if the means of transport arrives regularly.	—
A/D-03	Notification on Arrival of Imported Goods (General Declaration)	BC 1.1 (M/F)	Carrier shall submit "the Notification of Arrival of Import Goods" when the means of transport arrives.	—
A/D-04	Transshipment	BC 1.2	Carrier shall declare the goods which shall transit or transshipped whether their destination is other domestic port or foreign port.	—
A/D-05	Departure	BC1.1 (M/F) (Declaration on the Departure of Means of Transport)	Carrier shall submit the outward manifest after the departure of the means of transport.	—
A/D-5X	Arrival / Departure Batch Jobs			
A/D-51	Daily report of processed document, value, quantity	—	Daily report of processed document, value and quantity of incoming/outgoing goods, number of means of transport.	—
A/D-52	Monthly report of processed document, value, quantity	—	Monthly report of processed document, value and quantity of incoming/outgoing goods, number of means of transport.	—
A/D-53	Dump Manifest data (daily)	—	Dump Manifest data to magnetic media.	—
PRT	Customs Area			
PRT-01	Discharge	—	Port Authority shall notify the discharged goods.	
PRT-04	Loading	—		included in Export Procedure
PRT-51	Daily report of inventory	—	Daily report of inventory.	—

Table 3.3.2.2-1: List of jobs to be computerized (2/12)

No.	Job Group / Job	Data	Description	Remarks
PRT-52	Daily report of document, value, quantity	—	Daily report of processed document, value and quantity of in-coming/out-going goods.	—
PRT-53	Monthly report of document, value, quantity	—	Monthly report of processed document, value and quantity of in-coming/out-going goods.	—
PRT-54	Check for the expiration of goods	—	Check the goods which exceed the expiration period.	—
TPS	Temporary Storage (TPS)			
TPS-01	Admission from Customs Area	SP2-I	Customs Transfer from Customs Area at port to depot.	—
TPS-02	Devanning	—	Strip containers.	—
TPS-51	Daily report of devanning	—	Daily report of devanned goods.	—
TPS-52	Daily report of inventory	—	Daily report of inventory.	—
TPS-53	Daily report of document, value, quantity	—	Daily report of processed document, value and quantity of incoming/outgoing goods.	—
TPS-54	Monthly report of document, value, quantity	—	Monthly report of processed document, value and quantity of incoming/outgoing goods.	—
TPS-55	Check for the expiration of goods	—	Check the goods which exceed the expiration period.	—
CUS	Import Clearance			—
CUS-01	Import Declaration (PIB)	BC 2.0 (PIB)	Import clearance for general goods, including temporary admission.	—
CUS-02	Periodical PIB	BC 2.0 (PIB)	Importer can declare once in a certain period.	Not yet implemented
CUS-03	Simplified Import Declaration (PIBT)	BC 2.1 (PIBT)	Import clearance for certain goods which are subject to official assessment; Removal goods, Goods brought by passenger, Consigned goods, Sea and air transportation, others (DJBC).	—
CUS-04	Re-shipment	BC 3.1	Re-exportation of imported goods: mistakenly sent off; not in agreement with the order; subject to a change of regulations; other reasons.	—

Table 3.3.2.2-1: List of jobs to be computerized (3/12)

No.	Job Group / Job	Data	Description	Remarks
CUS-2X	Export Clearance			
CUS-21	Export Declaration (PEB)	BC 3.0 (PEB)/BC 3.1 (PEBT), Consolidation Document (in case of LCL), CTPS, LPS-E (in case of the company uses reduction/ exemption of tax handling)	Export clearance, including surveyor inspection and loading.	—
CUS-22	Periodical Lodgement of PEB(T)	BC 3.0 (PEB)	Exporter can declare once in a certain period. Exporter shall submit supporting documents at each export.	—
CUS-5X	Batch Jobs for Import Clearance			
CUS-51	Daily report for Hanggar	—	Daily report.	—
CUS-52	Daily Report from Hanggar to Inspection Office (KaKIBC)	—	Daily report from Hanggar to Inspection Office.	—
CUS-53	Monthly report from Inspection Office to Regional Office	—	Monthly report from Inspection Office to Regional Office.	—
CUS-54	Monthly report from Inspection Office to Head Office	—	Monthly report from Inspection Office to Head Office.	—
CUS-55	Quarterly Report of processed documents, values, quantities	—	Quarterly report of processed documents, values and quantity of import goods.	—
CUS-56	Semiannual Report of processed documents, values, quantities	—	Semiannual report of processed documents, values and quantity of import goods.	—
CUS-57	Annual Report of processed documents, values, quantities	—	Annual report of processed documents, values and quantity of import goods.	—
CUS-58	Monthly statistic report to Bank Indonesia	—	Monthly statistic report for Bank Indonesia.	—

Table 3.3.2.2-1: List of jobs to be computerized (4/12)

No.	Job Group / Job	Data	Description	Remarks
CUS-59	Monthly statistic report to Central Statistic Bureau (BPS)	—	Monthly statistic report for Central Statistic Bureau (BPS).	—
CUS-60	Dump PIB Data (daily)	—	Dump PIB data to magnetic media (simply output all the PIB data).	—
CUS-61	Update Importer Profile	—	Update Importer Profiles from magnetic media (magnetic media should be prepared otherwise).	—
CUS-62	Update Commodity Profile	—	Update Commodity Profiles from magnetic media (magnetic media should be prepared otherwise).	—
CUS-63	Update other Profiles	—	Update Other Profiles interactively.	—
CUS-7X	Batch Jobs for Export Clearance			
CUS-71	Daily Report for each Hanggar	—	Daily report.	—
CUS-72	Daily Report from Hanggar to Inspection Office (KaKIBC)	—	Daily report from Hanggar to Inspection Office.	—
CUS-73	Monthly Report from Inspection Office (KIBC) to Regional Office	—	Monthly report from Inspection Office to Regional Office.	—
CUS-74	Monthly report from Inspection Office to Head Office	—	Monthly report from Inspection Office to Head Office.	—
CUS-75	Quarterly Report of processed documents, values, quantities	—	Quarterly report of processed documents, values and quantity of export goods.	—
CUS-76	Semiannual Report of processed documents, values, quantities	—	Semiannual report of processed documents, values and quantity of export goods.	—
CUS-77	Annual Report of processed documents, values, quantities	—	Annual report of processed documents, values and quantities of export goods.	—
CUS-78	Monthly statistic report to Bank Indonesia	—	Monthly statistic report for Bank Indonesia.	—
CUS-79	Monthly statistic report to Central Statistic Bureau (BPS)	—	Monthly statistic report for Central Statistic Bureau (BPS).	—
CUS-80	Monthly report to BAPEKSTA	—	Monthly report of export goods for BAPEKSTA.	—

Table 3.3.2.2-1: List of jobs to be computerized (5/12)

No.	Job Group / Job	Data	Description	Remarks
CUS-81	Dump PEB Data (daily)	—	Dump PEB data to magnetic media. (Simply output all the PEB data).	—
CUS-82	Update Exporter Profile	—	Update Exporter Profiles from magnetic media (magnetic media should be prepared otherwise).	—
CUS-83	Update other Profiles	—	Update Other Profiles interactively.	—
KB	Bonded Zone (KB)			
KB-1	In-coming procedure of Import Goods from Temporary Storage (TPS) to Bonded Zone (KB)	BC 2.3, supplemenatary documents	Bonded Transport from Temporary Storage (TPS) to Bonded Zone (KB).	—
KB-2	In-coming procedure from one Bonded Zone (KB) to another Bonded Zone (KB)	BC 2.3	Bonded Transport between Bonded Zones (KB).	—
KB-3	In-coming procedure from Bonded Warehouse (GB) to Bonded Zone (KB)	BC 2.3	Bonded Transport from Bonded Warehouse (GB) to Bonded Zone (KB).	—
KB-4	Import of Products (Out-going procedure from Bonded Zone (KB) to Domestic (DPIL))	BC 2.0, attached document (B/L or AWB, I/V, P/L)	Import at Bonded Zone (KB), same as ordinary import at Inspection Office.	—
KB-5	Re-export (of material / capital goods)	BC 2.3, BC 3.1 (PEBT), prior BC 2.3	Re-export of import goods. Almost the same as ordinary re-export at Inspection Office, except for requirement for Bonded Transport.	—
KB-6	Export (of Products)	BC2.3, BC 3.0/3.1, attached document	Export is almost the same as ordinary export at Inspection Office, except for requirement for Bonded Transport.	—
KB-7	Out-going procedure from Management (PDKB) to another Management (PDKB) within one Bonded Zone (KB)	BC 2.3	Bonded Transport between Entrepreneures. Currently, no KB has two or more Customs Offices, but, in juri, there might be many Customs Offices.	—

Table 3.3.2.2-1: List of jobs to be computerized (6/12)

No.	Job Group / Job	Data	Description	Remarks
KB-8	In-coming procedure from BAPEKSTA user to Bonded Zone (KB)	BC 4.0	Entry from domestic to Bonded Zone (KB). The goods are treated as exported as for the BAPEKSTA facilitation.	—
KB-9	In-coming procedure from Entrepot for Exhibition Purpose (ETP) to Bonded Zone (KB)	BC 2.3	Bonded Transport from Entrepot for Exhibition Purpose (ETP) to Bonded Zone (KB).	(Low Transaction)
KB-10	Out-going procedure from one Bonded Zone (KB) to another Bonded Zone (KB) as its Subcontractor	BC 2.3	Bonded Transport from Bonded Zone (KB) to Bonded Zone (KB) for subcontracting.	—
KB-11	In-coming procedure from Bonded Zone (KB) as a Subcontractor to original Bonded Zone (KB)	BC 2.3	Bonded Transport from Bonded Zone (KB) to Bonded Zone (KB) from subcontracting.	—
KB-12	Out-going procedure from Bonded Zone (KB) to Domestic Subcontractor	BC 2.3	Temporary admission for subcontracting. Some security is necessary.	—
KB-13	In-coming procedure from Domestic Subcontractor to Bonded Zone (KB)	BC 2.3	Re-entry to Bonded Zone (KB) after subcontracting. Some check of conversion rate is necessary. The security is handled.	—
KB-14	Temporary export for repairing	BC 2.3, BC 3.1 (PEBT)	Temporary exportation for repairing. Almost all the same with ordinary temporary exportation except for requirement for Bonded Transportation.	(Low Transaction)
KB-15	Re-import after repairing	BC 2.3, prior BC 2.3	Re-importation after repairing. Almost all the same with ordinary Bonded Transport from Temporary Storage (TPS) except for some documents related to prior exportation.	(Low Transaction)
KB-16	Temporary Admission for Repairing	BC 2.3	Temporary admission for repairing. Some security is necessary.	(Low Transaction)

Table 3.3.2.2-1: List of jobs to be computerized (7/12)

No.	Job Group / Job	Data	Description	Remarks
KB-17	In-coming from domestic (DPIL) after Repairing	BC.2.3, prior BC 2.3	Re-entry to Bonded Zone (KB) after repairing. The security is handled.	(Low Transaction)
KB-18	Out-going procedure from Bonded Zone (KB) to Entrepot for Exhibition Purpose (ETP)	BC 2.3	Bonded Transport from Bonded Zone (KB) to Entrepot for Exhibition Purpose (ETP).	(Low Transaction)
KB-19	In-coming procedure from Domestic (DPIL) to Bonded Zone (KB)	BC 4.0, supplementary documents	Entry from domestic to Bonded Zone (KB).	—
KB-5X	Batch Jobs of Bonded Zone (KB)			
KB-51	Check for the expiration of temporary exportation for repairing	—	Check the goods which excessed the expiration period for temporary exportation for repairing.	(Low Transaction)
KB-52	Check for the expiration of temporary admission for reparing	—	Check the goods which excessed the expiration period for temporary admission for repairing.	(Low Transaction)
KB-53	Check for the expiration of subcontraction in Bonded Zone (KB)	—	Check the goods which excessed the expiration period for subcontracting in Bonded Zone.	—
KB-54	Check for the expiration of subcontraction in other Bonded Zone (KB)	—	Check the goods which excessed the expiration period for subcontracting in Bonded Zone.	—
KB-55	Check for the expiration of subcontraction in Domestic (DPIL)	—	Check the goods which excessed the expiration period for subcontracting in domestic.	—
KB-56	Monthly Inventry Report of Raw material in Bonded Zone (KB)	—	Monthly inventry report of raw material for reconcilliation with that from PKB.	—
KB-57	Monthly Inventory Report of Work in progress in Bonded Zone (KB)	—	Monthly inventry report of raw material for reconcilliation with that from PKB.	—
KB-58	Monthly Inventry Report of Product in Bonded Zone (KB)	—	Monthly inventry report of finished product for reconciliation with that from PKB.	—
KB-59	Quarterly Inventry Report of Raw material in Bonded Zone (KB)	—	Quarterly inventry report of raw material for reconcilliation with that PKB.	—

Table 3.3.2.2-1: List of jobs to be computerized (8/12)

No.	Job Group / Job	Data	Description	Remarks
KB-60	Quarterly Inventory Report of Work in progress in Bonded Zone (KB)	—	Quarterly inventry report of work in progress for reconcilliation with that PKB.	—
KB-61	Quarterly Inventry Report of Product in Bonded Zone (KB)	—	Quarterly inventry report of produce for reconcilliation with that PKB.	—
KB-62	Monthly report of processed document, value, quantities	—	Monthly report of processed document, value and quantity of incoming/outgoing goods.	—
KB-63	Quarterly Report of processed documents, values, quantities	—	Quarterly report of processed document, value and quantity of incoming/outgoing goods.	—
KB-64	Semiannual Report of processed documents, values, quantities	—	Semiannual report of processed document, value and quantity of incoming/outgoing goods.	—
KB-65	Annual Report of processed documents, values, quantities	—	Annual report of processed document, value and quantity of incoming/outgoing goods.	—
KB-66	Monthly statistic report to Bank Indonesia	—	Monthly statistic report for Bank Indonesia.	—
KB-67	Monthly statistic report to Central Statistic Bureau (BPS)	—	Monthly statistic report for Central Statistic Bureau (BPS).	—
KB-68	Monthly report to BAPEKSTA	—	Monthly report for BAPEKSTA about exported goods from each BAPEKSTA user.	—
GB	Bonded Warehouse (Procedural Job)			
GB-01	In-coming procedure from Temporary Storage (TPS) to Bonded Warehouse (GB)	BC 2.3	Bonded Transport from Temporary Storage (TPS) from Bonded Warehouse (GB).	—
GB-02	Out-going procedure from Bonded Warehouse (GB) to Domestic (DPIL) as import	BC2.0 (PIB), attached document	Import through Bonded Warehouse (GB). Same as ordinary import at Inspection Office.	—
GB-03	Re-export	BC3.1 (PEBT), BC2.3 of Carry-in	Re-export of import goods. Almost the same as ordinary re-export at Inspection Office, except for requirement for Bonded Transport.	—

Table 3.3.2.2-1: List of jobs to be computerized (9/12)

No.	Job Group / Job	Data	Description	Remarks
GB-04	Out-going procedure from Bonded Warehouse (GB) to Bonded Zone (KB)	Described in Bonded Zone (KB) part.		
GB-5X	Batch Jobs of Bonded Warehouse (GB)			
GB-51	Monthly Inventory Report of Bonded Warehouse (GB)	—	Monthly inventry report of goods for reconcilliation with that PKB.	—
GB-52	Quarterly Inventory Report of Bonded Warehouse (GB)	—	Quarterly inventry report of goods for reconciliation with that of PGB.	—
GB-52	List of the goods which excessed certain limitation	—	Check the goods which excessed the expiration period.	—
GB-53	Monthly Report of processed documents, values, quantities	—	Monthly report of processed document, value and quantity of incoming/outgoing goods.	—
GB-54	Quarterly Report of processed documents, values, quantities	—	Quarterly report of processed document, value and quantity of incoming/outgoing goods.	—
GB-55	Semiannual Report of processed documents, values, quantities	—	Semiannual report of processed document, value and quantity of incoming/outgoing goods.	—
GB-56	Annual Report of processed documents, values, quantities	—	Annual report of processed document, value and quantity of incoming/outgoing goods.	—
GB-57	Monthly statistic report to Bank Indonesia	—	Monthly statistic report for Bank Indonesia.	—
GB-58	Monthly statistic report to Central Statistic Bureau (BPS)	—	Monthly statistic report for Central Statistic Bureau (BPS).	—
ETP	Entrepot for Exhibition Purpose			
ETP-1	In-coming procedure of Import Goods from Temporary Storage (TPS) to Entrepot for Exhibition Purpose (ETP)	BC2.3	Bonded Transport from Temporary Storage (TPS) from Bonded Warehouse (GB).	(Low Transaction)

Table 3.3.2.2-1: List of jobs to be computerized (10/12)

No.	Job Group / Job	Data	Description	Remarks
ETP-2	Re-export after exhibition (Out-going procedure from Entrepot for Exhibition Purpose (ETP) to Temporary Storage (TPS))	BC 2.3, BC3.1 (PEBT), prior BC2.3	Re-export of import goods. Almost the same as ordinary re-export at Inspection Office, except for requirement for Bonded Transport.	(Low Transaction)
ETP-3	In-coming procedure from Domestic (DPIL) to Entrepot for Exhibition Purpose (ETP)	—	Temporary entry to Entrepot for Exhibition Purpose (ETP) for exibhition.	(Low Transaction)
ETP-4	Out-going procedure from Entrepot for Exhibition Purpose (ETP) to Domestic (DPIL) after Exhibition	—	Release after temporary entry for exhibition. These goods are not dutiable, so check is necessary.	(Low Transaction)
ETP-5	Import from Entrepot for Exhibition Purpose (ETP)	BC2.0 (PIB), attached document	Almost the same as ordinary import at Inspection Office.	(Low Transaction)
ETP-6	In-coming procedure from Bonded Zone (KB) to Entrepot for Exhibition Purpose (ETP)	Described in Bonded Zone (KB) part.		
ETP-7	Out-going procedure from Entrepot for Exhibition Purpose (ETP) to Bonded Zone (KB)	Described in Bonded Zone (KB) part.		
ETP-5X	Batch Jobs for Entrepot for Exhibition Purpose (ETP)			
ETP-51	Monthly Inventory Report of Entrepot for Exhibition Purpose (ETP)	—	Monthly inventry report of goods.	(Low Transaction)
ETP-52	Quarterly Inventory Report of Entrepot for Exhibition Purpose (ETP)	—	Quarterly inventry report of goods for reconcilliation with that of PETP.	—
ETP-53	Check for the expiration of certain limitation for goods	—	Check the goods which excessed the expiration period.	(Low Transaction)
ETP-54	Monthly Report of processed documents, values, quantities	—	Monthly report of processed document, value and quantity of incoming/outgoing goods.	—

Table 3.3.2.2-1: List of jobs to be computerized (11/12)

No.	Job Group / Job	Data	Description	Remarks
ETP-55	Quarterly Report of processed documents, values, quantities	—	Quarterly report of processed document, value and quantity of incoming/outgoing goods.	—
ETP-56	Semiannual Report of processed documents, values, quantities	—	Semiannual report of processed document, value and quantity of incoming/outgoing goods.	—
ETP-57	Annual Report of processed documents, values, quantities	—	Annual report of processed document, value and quantity of incoming/outgoing goods.	(Low Transaction)
ETP-58	Monthly statistic report to Bank Indonesia	—	Monthly statistic report for Bank Indonesia.	(Low Transaction)
ETP-59	Monthly statistic report to Central Statistic Bureau (BPS)	—	Monthly statistic report for Central Statistic Bureau (BPS).	(Low Transaction)
TBB	Duty Free Shop (TBB)			
TBB-1	In-coming procedure from Temporary Storage (TPS) to Duty Free Shop (TBB)	BC2.3	Bonded Transport from Temporary Storage (TPS) from Duty Free Shop (TBB).	(Low Transaction)
TBB-2	Out-going procedure from Duty Free Shop	—	Duty Free Shop shall periodically declare all of the goods sold.	(Low Transaction)
TBB-5X	Batch Jobs for Duty Free Shop (TBB)			
TBB-51	Monthly Inventory Report of Duty Free Shop	—	Monthly inventry report of goods.	(Low Transaction)
TBB-52	Quarterly Inventory Report of Duty Free Shop	—	Quarterly inventry report of goods for reconciliation with that of PTBB.	(Low Transaction)
TBB-53	Check for the expiration of certain limitation for goods	—	Check the goods which excessed the expiration period.	(Low Transaction)
TBB-54	Monthly Report of processed documents, values, quantities	—	Monthly report of processed document, value and quantity of incoming/outgoing goods.	(Low Transaction)
TBB-55	Quarterly Report of processed documents, values, quantities	—	Quarterly report of processed document, value and quantity of incoming/outgoing goods.	(Low Transaction)

Table 3.3.2.2-1: List of jobs to be computerized (12/12)

No.	Job Group / Job	Data	Description	Remarks
TBB-56	Semiannual Report of processed documents, values, quantities	—	Semiannual report of processed document, value and quantity of incoming/outgoing goods.	(Low Transaction)
TBB-57	Annual Report of processed documents, values, quantities	—	Annual report of processed document, value and quantity of incoming/outgoing goods.	(Low Transaction)
TBB-58	Monthly statistic report to Bank Indonesia	—	Monthly statistic report for Bank Indonesia.	(Low Transaction)
TBB-59	Monthly statistic report to Central Statistic Bureau (BPS)	—	Monthly statistic report for Central Statistic Bureau (BPS).	(Low Transaction)
TBB-60	Monthly report to BAPEKSTA	—	Monthly report for BAPEKSTA about export goods from each BAPEKSTA user.	(Low Transaction)
UM	User Module			
UM-01	Import/Export declaration module	—	Module for Import/Export declaration.	—
UM-02	Bonded Transfer module	—	Module for Bonded Transfer.	—
UM-03	Payment information (Bank) module	—	Module for payment information from Bank to Customs.	—

3.3.3 System Configuration

This part describes the CSS System Configuration Diagram, Hardware, and Software Package for the CSS. The JICA Study Team would like to propose that CSS be developed on Client/Server (hereinafter referred to as C/S) configuration for the following technical reasons. However, the real system configuration for CSS must be defined on basic design and detail design phase.

Development Tools for C/S configuration are supported well by many software vendors, therefore, it is easy to find technical supports when applications are developed on C/S configuration.

With C/S configuration, the load of the server can be reduced to provide good response.

It is forecast that production of dumb terminals will be on decreasing trend. Therefore, it might be difficult to have technical support on dumb terminal troubleshooting in the near future.

It is predicted that PC will be used as a terminal by emulating dumb terminal function that makes dumb terminal configuration and that C/S configuration will be the same in cost performance.

If a PC is used as a terminal, it is possible to connect the PC terminal to several applications, such as CIS, CFRS (CSS), and other application systems in the future.

3.3.3.1 System Configuration Diagram

System configuration of the CSS is not so different from the system configuration of the CFRS but users of the CSS will increase significantly.

Figure 3.3.3.1-1 shows the system configuration of the CSS: how Inspection Offices are connected to their EDI provider.

There are two methods of connection between the Inspection Office and the EDI Provider,

- Through terrestrial-line (in this case leased-line service)
- Through satellite-VSAT.

The JICA Study Team would like to propose the terrestrial-line as the first choice because it costs less then the VSAT. Inspection Offices, which are covered by terrestrial lines, are better to use this type of telecommunication system to connect to their EDI provider.

An Inspection Office that is connected to CSS will have a server. Terminals of CSS in the Inspection Office will connect to the CSS server through Local Area Network (LAN).

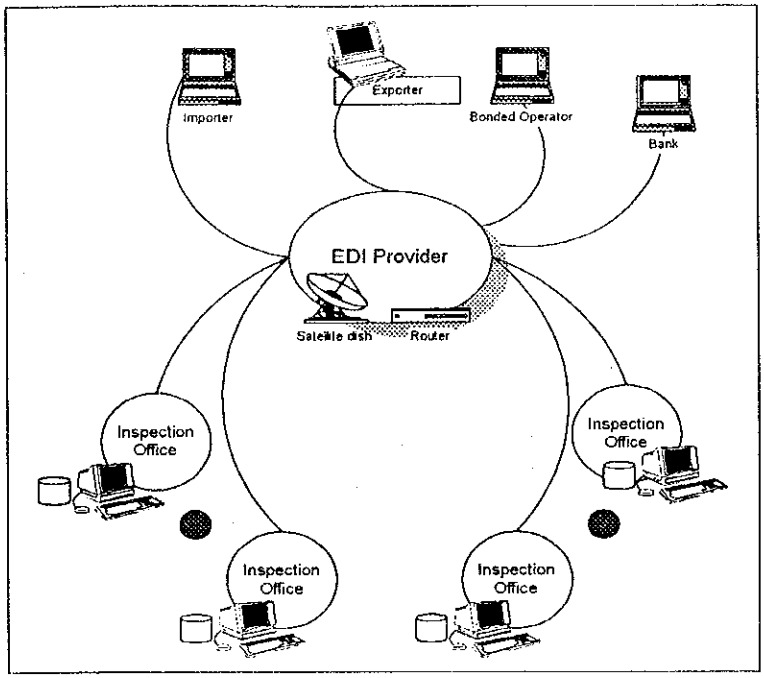

Figure 3.3.3.1-1: System Configuration of CSS

In the first stage, it is supposed that only the major Inspection Offices will be serviced by the CSS. There are several major Inspection Offices, which are appropriate to implement the CSS firstly, considering the cost and benefit. Table 3.3.3.1-1 shows the name of those Inspection Offices. This table also describes how Inspection Offices connect to EDI provider.

Table 3.3.3.1-1: Several Major of Inspections Offices Connected to CSS (1/2)

No	Inspection Office	KANWIL Name	Connection to EDI Provider	
			VSAT	Leased-line
1	Belawan	KANWIL I Medan	64 kbps	—
2	Tanjung Priok I	KANWIL IV Jakarta	—	256 kbps
3	Tanjung Priok II	KANWIL IV Jakarta	—	256 kbps
4	Tanjung Priok III	KANWIL IV Jakarta	—	256 kbps
5	Soekarno Hatta I	KANWILV Bandung	—	256 kbps
6	Soekarno Hatta II	KANWILV Bandung	—	256 kbps

Table 3.3.3.1-1: Several Major of Inspections Offices Connected to CSS (2/2)

No	Inspection Office	KANWIL Name	Connection to EDI Provider	
			VSAT	Leased-line
7	Bandung	KANWILV Bandung	64 kbps	—
8	Tanjung Mas	KANWILVI Semarang	64 kbps	—
9	Tanjung Perak	KANWILVII Surabaya	—	256 kbps

3.3.3.2 Hardware of CSS

This part is describing the number of PC clients for respective Inspection Office where the CSS will be implemented, how to define the server for that Inspection Office, and at the last part will show a list of hardware.

To define what type of server and client is available for CSS, the JICA Study Team should calculate in advance the workload of CSS from the real condition of the existing CFRS. Figure 3.3.3.2-1 shows CFRS workload of each Inspection Office during the first semester of 1995/1996 and 1996/1997. As shown in this figure, Inspection Office Tanjung Priok III is the Inspection Office with the heaviest workload. The next one is the Inspection Office Tanjung Priok II, followed by Inspection Office Soekarno Hatta II, Tanjung Perak and Tanjung Priok I.

The JICA Study Team is assuming that Tanjung Priok III is currently in optimum condition in providing customs services using CFRS. According to this assumption, workload ratio of each Inspection Office against Tanjung Priok Inspection Office III is used as a parameter to define the server type and number of clients for each Inspection Office.

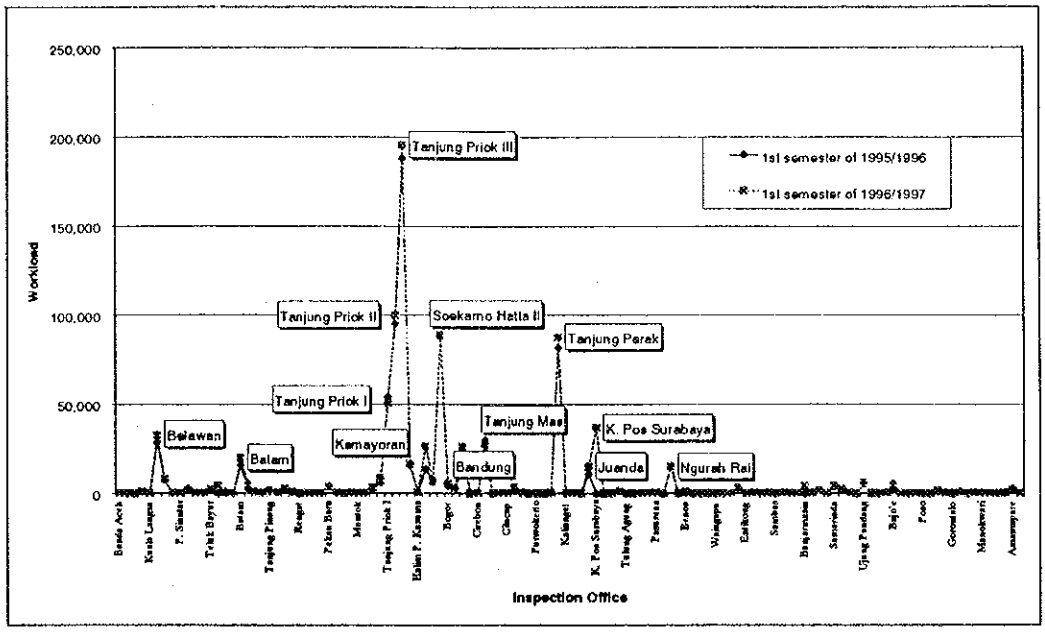

Figure 3.3.3.2-1: CFRS Workload of Each Inspection Office

And to define the type of server for each Inspection Office, it is used a chart as shown in Figure 3.3.3.2-2. As shown in Figure 3.3.3.2-2, Inspection Office with workload ratio less then 10% will use a small type (S) of the CSS server. Inspection Office with workload ratio between 10% and 40% will use a medium type (M) of CSS server. And Inspection Office with workload ratio more then 40% will use a large type (L) of CSS server.

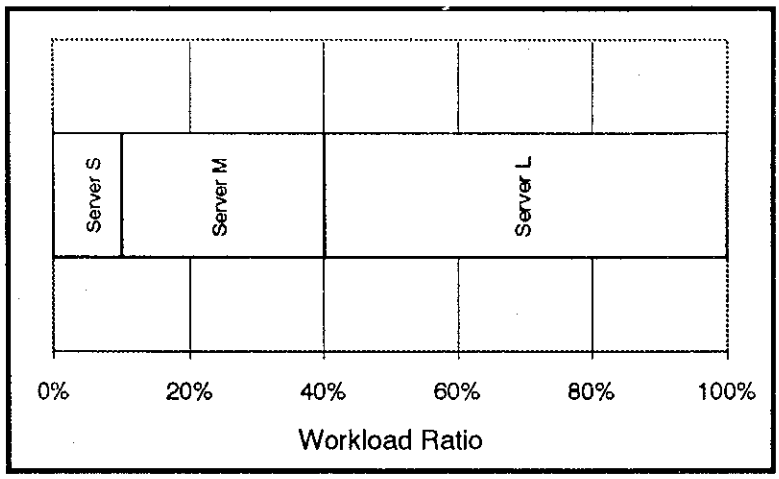

Figure 3.3.3.2-2: Percentage of CFRS Workload and Type of Server

Nevertheless, to calculate the number of CSS client for each Inspection Office it is used following equation,

$$N = \begin{Bmatrix} \text{Min_Num} & \text{IF} & Wr <= \text{Std_Wr} \\ \text{Roundup } (Wr \times Ntp \times Wt) & \text{IF} & Wr > \text{Std_Wr} \end{Bmatrix}$$

N : Number of CSS client for an Inspection Office

Min_Num : Minimum number of CSS client

Wr : Workload ratio of the Inspection Office

Std_Wr : Standard workload of Inspection Office that will be computerized

Ntp : Existing Number of CFRS client of Inspection Office Tanjung Priok III

Wt : CFRS workload increasing rate. The value coming from cross product between "Indonesia economic growth" to "increasing rate of customs services to be computerized."

As mentioned by the above equation, the number of the CSS client for each Inspection Office should be in proportion to their workload ratio.

Table 3.3.3.2-1 shows which server type should be installed at each Inspection Office/Regional Office and show the number of CSS client in each office. It found that required number of PC is 367 units including PC for design stage. In this case the value of each parameter is:

- Min_Num is 3. An Inspection Office needs at least 3 clients of CSS to provide customs services, one for import and export, one for customs gate and one for bonded storage.
- Std_Wr is 3%. Standard Workload ratio of Inspection Office for CSS implementation.
- Ntp is 40. This is an optimal number of clients for current CFRS workload of Inspection Office Tanjung Priok III.
- Wt is 2.87. Forecasted average number of economic growth of Indonesia from 1998 to 2003 is 5% per-year. And the increasing rate of computerized customs services is 2.25. It is 1 for import services, 0.25 for export services and 1 from manifest and bonded storage services.

Table 3.3.3.2-1: CSS Server Type and Number of CSS Client for each Inspection Office

Office		Type of Server		Number of PC/Clients
KANWIL	Inspection Office			
KANWIL I Medan	Belawan	M		20
KANWIL IV Jakarta	Tanjung Priok I	M		30
	Tanjung Priok II	L		59
	Tanjung Priok III	L		115
KANWIL V Bandung	Soekarno Hatta I	S		5
	Soekarno Hatta II	L		53
	Bandung	M		16
KANWIL VI Semarang	Tanjung Mas	M		17
KANWIL VII Surabaya	Tanjung Perak	L		52
Design Stage		Server in Tanjung Priok I will be used during design stage		50
TOTAL		S	1	417
		M	4	
		L	4	

3.3.3.3 Software Package

This part describes about what kind of software package will be used to develop and to run the CSS application. The software package consist 4 categories, which are:

- Basic Software or Operating System,
- Database,
- Operational Control Software, and
- Development Tools.

The JICA Study Team considers that the CSS application should be run under a platform with good performance and good reliability. UNIX operating system is a suitable basic software for that condition. Therefore, the JICA Study Team supposes to propose to use UNIX operating system for all type of CSS server. On client site, it is recommended using Microsoft Windows 95 operating system with some function that will make it easy to treat. Due to the fact that L Server should serve a large number of clients, the JICA Study Team proposes to employ operational control software to make it easier service its clients. Because CSS is quite a big system, and the server machine should serve a rather large number of clients in some Inspection Offices, it is proposed to use a database that can manage huge amount of data, and is easy to deal with. In addition, the database should have a high

compatibility with any kinds of development tools. To develop a high-performance of CSS application it is needed development tools with characteristic such as:

- Easily transition into new technology frontiers,
- Fast in creating windows-based application,
- Enhanced database access.

Table 3.3.3.3-1: Software Package List

Type of Server	Category	Software Package Name
L Server	Basic Software	UNIX Operating System
	Database	Oracle 8 SQL*Net
	Operational Control Software	Operation Control Tool
		Trouble Control Tool
		Network Control Tool
		Power Control Tool
M Server	Basic Software	UNIX Operating System
	Database	Oracle 8 SQL*Net
M Server	Operational Control Software	Operation Control Tool Trouble Control Tool
		Network Control Tool
		Power Control Tool
S Server	Basic Software	UNIX Operating System
	Database	Oracle 8 SQL*Net
	Operational Control Software	Operation Control Tool
		Trouble Control Tool
		Network Control Tool
		Power Control Tool
PC Client	Basic Software	Windows 95
	Development Tool	Oracle Designer/2000
		Oracle Developer/2000
		Visual Basic 5.0 Enterprise
	Operational Control Software	Client License

CHAPTER 4 Project Implementation Arrangement

4.1 CIS

4.1.1 Development process and schedule

This section will briefly explain processes and schedule to develop CIS.

4.1.1.1 Processes of developing CIS

Development processes are divided into 10 processes as follows.

Table 4.1.1.1-1: Development process (1/2)

Category	Process	Definition	Remarks
Investigation Phase	BI	Basic Investigation Phase This phase focuses on investigating and analyzing the requirements from end users. Computer system with high effectiveness is considered and proposed.	The JICA Study Team assigned
Design Phase	BD	Basic Design Phase This phase focuses on the transformation of the business aspects into the computer world. The business area requirements are converted into system specifications that include the basic system function, data structure and security.	The JICA Study Team [Scope of the First stage] / Next Phase [Scope of the Second Stage and the Third Stage]
	DD	Detail Design Phase Following guidelines in BD, system specifications are broken down into the more specific system processes and modules. As part of the design step, these processes are decomposed into individual programs that are designed in the next sub-phase.	
Programming Phase	PD	Program Design Phase This phase focuses on the individual programs. The program structures are designed and the programs are broken down into individual modules.	Next Phase
	M	Making phase The modules, which are the smallest component of the system, are designed, coded and tested in this phase.	

Table 4.1.1.1-1: Development process (2/2)

Category	Process	Definition	Remarks
Testing Phase	SI	System Integration phase During the System Integration phase, the programs validated in the previous phase are integrated into processes. Each is tested and verified against the specifications defined in the Detail Design phase.	Next Phase
	PT	Product Test phase The processes, which were validated in the System Integration phase, are integrated into the complete system and tested in this phase. The tests validate the functionality, performance, reliability, and operability of the developed system.	
	RT	Running Test phase This test phase is implemented by the end user to certify all the aspects of the developed system.	
Operation Phase	OP	Operation phase This phase supports user in implementing the system and business operation.	
Maintenance Phase	MA	Maintenance phase In this phase, the system is continually monitored and modified to eliminate bugs and to maintain the system validity. The business trends are also monitored to ensure that the system is always up to date.	

4.1.1.2 Stages of developing CIS

According to the 4-year CIS development master plan, there are four stages to develop CIS. In effect, the JICA Study Team is trying to actualize the vision written in that master plan. Four stages of the CIS development are scheduled as follows.

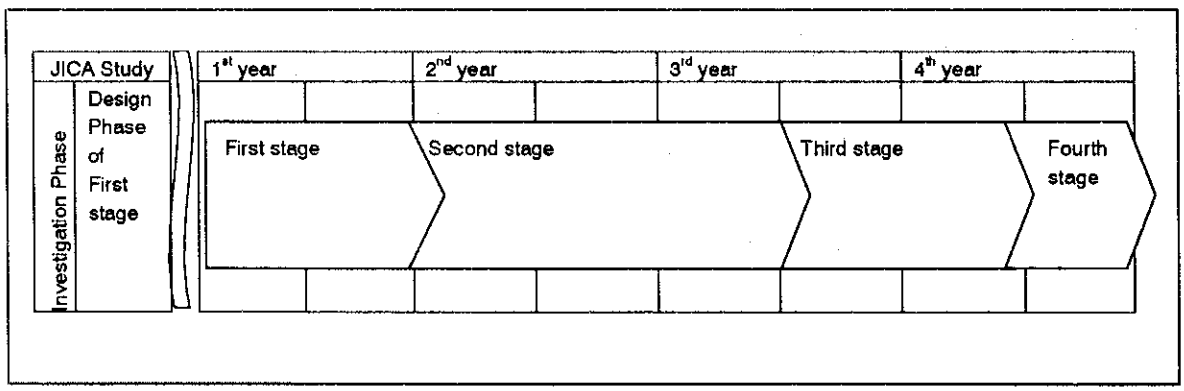

Figure 4.1.1.2-1: Stages in developing CIS

- First stage: For approximately 13 months.

  The essential CIS application function will be developed at this stage. Approximately 13 months will be needed to develop and to test the CIS application programs and also to provide users with some training on CIS.
- Second stage: For approximately 18 months

  The remaining CIS application programs will be developed at the second stage. CIS will expand to 5 major Regional Offices and their major Service Offices. Approximately 18 months will be needed for the CIS development, installation, testing, and training.
- Third stage: For approximately 12 months

  In the third stage, the focus is on the installation, operation test, and training at each Regional Office and Service Office. Approximately 12 months will be needed to install, test, and train.
- Fourth stage : For approximately 5 months

  Until this stage, further study is needed to understand other ministry's requirement as to accessing to CIS. Should it be limited only to the scope of development, installation, operating test, and training, it can be done within 5 months. This stage is optional because DJBC has yet to decided to connect other ministries and agencies.

Each stage is described in greater detail in chapter 5 of Volume II.

4.1.2 Organization of development

There are several concepts of organization to develop computer system. The JICA Study Team would like to mention the important factors of CIS development organization in this subsection (refer to 5.2 in Volume II).

The CIS development organization should be considered by not only development vendors but also DJBC. DJBC side is expected to organize the following two committee.

- Steering committee

  To authorize the CIS specification and direction of the CIS development project
- Technical committee

  To authorize the CIS specification and technical matters in the CIS development.

The CIS development organization of vendor has to be broken down into several groups and teams (refer to 5.2 in Volume II). Project manager(s) and Group leaders should be chosen to manage the CIS development project

- Project manager

  Project manager must be an expert of system developing management. He conducts the CIS project with the experiences of managing large-scale system development projects.

- Group leader

  Group leader has to have experiences of developing computer system and know the methodology of how to develop the tailor-made computer application systems. The group leader must also be able to manage and conduct the process control of development in each team.

In implementing CIS, the following consultants will be needed to clear the usage or operation of CIS in DJBC.

- Customs operation consultant

  Expert of Customs-Excise operation, especially Customs Intelligence database systems, will be needed for development of CIS.

In developing CIS, the following consultants will be needed to resolve the technical problems.

- Vendor support consultant

  In the CIS development project, specific tool products (Oracle, Oracle/developer 2000 and PL/SQL) will be used, based on user requirements. Although system engineers and programmers are trained before starting the project, they will not be experts of Oracle products. Therefore, Oracle specialist will be needed in tuning Oracle DBMS, dealing with troubles and solving technical problems. If any specific products are used in this project, products specialist will be needed from the beginning.

4.1.3 The cost estimation in implementing CIS

4.1.3.1 Summary of installation plan

According to the research done by the JICA Study Team, Regional Office IV and Service Offices at Tanjung Priok I to III should be covered in the first stage, because they handle nearly a half of all customs transactions (PIB and PEB). Four other Regional Offices (I, V, VI, VII) and five Service Offices should be covered in the second stage, which handle roughly a quarter of all customs transaction. Thus, at the end of second stage, about three-quarters of all PIB and PEB transactions would have been handled by CIS.

Therefore, the installation plan is to cover Head Office, Regional Office IV, and Service Offices at Tanjung Priok I to III at the first stage. CIS is expanded to Regional offices I, V, VI, VII and Service Offices at Belawan, Soekarno-Hatta II, Bandung, Tanjung Emas and

Tanjung Perak at the second stage. At the third stage, CIS is expanded to Regional Offices II, III, VIII, IX, X, XI and XII. As a result, CIS covers Head Office, 12 Regional Offices, and 8 Service Offices.

The location of the Regional and Service Offices which will be installed CIS in this plan, is summarized in Table 4.1.3.1-1. The JICA Study Team had discussed the CIS development plan and cost with DJBC. The total costs for each stage are also in Table 4.1.3.1-1. Further information is described in 5.3 in Volume II.

Table 4.1.3.1-1: Summary of plan (1/2)

Item	First Stage	Second Stage	Third Stage
Location	1 Head Office 1 Regional Office • Regional Office IV (Jakarta) (Without server) 3 Service Offices • Tanjung Priok I • Tanjung Priok II • Tanjung Priok III	5 Regional Offices • Regional Office I (Medan) • Regional Office IV (Jakarta) • Regional Office V (Bandung) • Regional Office VI (Semarang) • Regional Office VII (Surabaya) 5 Service Offices • Belawan • Soekarno Hatta II • Bandung • Tanjung Emas • Tanjung Perak	7 Regional Offices • Regional Office II (Balai Karimun) • Regional Office III (Palembang) • Regional Office VIII (Denpasar) • Regional Office IX (Pontianak) • Regional Office X (Balikpapan) • Regional Office XI (Ujung Pandang) • Regional Office XII (Ambon)

Table 4.1.3.1-1: Summary of plan (2/2)

Item	First Stage	Second Stage	Third Stage
Function	1) Scale of program: 307 Kilo steps 2) Main functions • PIB verification mgmt. • NI, NHI management • Past record mgmt. • Violation management. • Bonded storage mgmt. • Revenue monitor And so on	1) Scale of program: 464 Kilo Steps 2) Main functions • PEB verification mgmt. • Investigation mgmt. • Facilitation management And so on	No development
Cost Including VAT	US$ 8.3 Million	US$ 8.1 Million	US$ 3.1 Million
Grand total Cost Including VAT	US$ 19.5 Million		

4.1.3.2 General precondition

In this subsection, several assumptions or preconditions must be made clear.

- DJBC had agreed to provide a developing team with office space to accommodate 50–60 persons to develop CIS. Therefore, the JICA Study Team does not estimate office rental fee for this phase. However, before starting the "first stage" of CIS development, the developing team must confirm this condition again.
- Contingencies include 10% of the cost. Contingencies are physical only, and price contingencies are not considered.
- During the development, additional cost will be incurred from consumable goods (ink, paper, office supplies, and so on) but the estimation does not take into account additional cost.
- Exchange rate used in the estimation is Rp 7,375 per US$1.00 as of 30 November 1998.
- The estimated costs are based on standard price in Indonesia as of November 1998.
- Hardware, software, and services are local procurement.

- Other equipment that may be needed to install the computer system is not included in the estimation, for example additional air conditioners, computer desks, and so on. DJBC must be aware of this cost.
- Additional hardware, software and modification on CFRS may be required in order to connect to CIS. Those additional costs are not included in this estimation.
- Interest rate is not considered in this estimation.
- DJBC has the specified contract with Oracle. If it is also effective for CIS, the development cost would be reduced. Since most of software product cost is Oracle products. DJBC and vendor should confirm whether the contract is still effective at each stage.
- These cost estimation and schedule are based on the specification of the System Design Phase II. If the specification is changed in future, there would be a possibility of changing the cost estimation and development schedule.

4.1.3.3 Cost estimation of CIS development budget package plan.

Table 4.1.3.1-1 shows summary of the CIS development cost. It costs approximately US$ 8.3 million at the first stage, US$ 8.1 million at the second stage, and US$ 3.1million at the third stage. Total development cost is about US$ 19.5 million. However, further discussion and consideration regarding the CIS development cost would be needed in order to implement the development of CIS within the expected budget of BAPPENAS (Badan Perencanaan Pembangunan Nasional). The JICA Study team recommends the following 4 budget package plans for the application development and hardware installment of CIS. Package Plan 1 implements the first-stage application development and the first-stage hardware installment. Package Plan 2 implements the first and second-stage application development and the first-stage hardware installment. Package Plan 3 implements the first-stage and a half of the second-stage application development and the first-stage hardware installment. Package Plan 4 implements the first-stage application development and the first and second-stage hardware installment (refer to Table 4.1.3.3-1 for comparisons).

Table 4.1.3.3-1: Budget package plan and cost

	Budget package plan				Total Cost
	First Stage	Second Stage			
	Implementing all application and hardware at first stage. (39 applications)	Implementing all application and no hardware at second stage (80applications)	Implementing a half of application and no hardware at second stage (40 applications)	Implementing hardware only at second stage	
Package Plan 1	√ (US$ 8.3M)	—	—	—	US$ 8.3 million
Package Plan 2	√ (US$ 8.3M)	√ (US$4.5M)	—	—	US$12.8 million
Package Plan 3	√ (US$ 8.3M)	—	√ (US$2.3M)	—	US$10.6 million
Package Plan 4	√ (US$ 8.3M)	—	—	√ (US$2.1M)	US$ 10.4 million

4.2 CSS

4.2.1 Development process and schedule

In this section, processes and schedule to develop CSS are described.

4.2.1.1 Processes of developing CSS

Development processes are divided into 10 as shown in the table below.

Table 4.2.1.1-1 Development Process (1/2)

Category	Process	Definition
Investigation Phase	BI	This phase focuses on investigation and analyzing the requirements from end users. Computer system with high effectiveness is considered and proposed.
Design Phase	BD	Basic Design Phase This phase focuses on the transformation of the business aspects into the computer world. The business area requirements are converted into system specifications that include the basic system function, data structure and security.
	DD	Detail Design phase Following guidelines in BD, system specifications are broken down into the more specific system processes and modules. As part of the design step, these processes are decomposed into individual programs that are designed in the next sub-phase.
Programming Phase	PD	Program Design Phase This phase focuses on the individual programs. The program structures are designed and the programs are broken down into individual modules.
	M	Making phase The modules, which are the smallest component of the system, are designed, coded and tested in this phase.
Testing Phase	SI	System Integration phase During the System Integration phase, the programs validated in the previous phase are integrated into processes. Each is tested and verified against the specifications defined in the Detail Design phase.
	PT	Product Test phase The processes, which were validated in the System Integration phase, are integrated into the complete system and tested in this phase. The tests validate the functionality, performance, reliability, and operability of the developed system.
	RT	Running Test phase This test phase is implemented by the end user to certify all the aspects of the developed system.

Table 4.2.1.1-1: Development Process (2/2)

Category	Process	Definition
Operation Phase	OP	Operation phase This phase supports users in implementing the system and business operation.
Maintenance Phase	MA	Maintenance phase In this phase, the system is continually monitored and modified to eliminate bugs and to maintain the system validity. The business trends are also monitored to ensure that the system is always up to date.

4.2.1.2 Stages of developing CSS

The JICA Study Team would like to propose two stages to develop and expand CSS. The first stage is CSS development stage and the next stage is CSS expansion stage. Two stages of the CSS development and expansion are scheduled as follows.

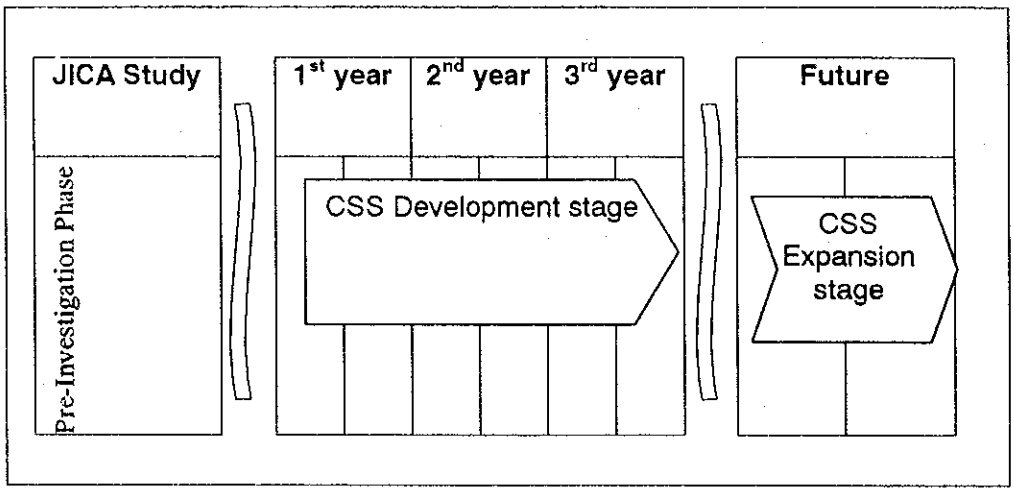

Figure 4.2.1.2-1: Stages in developing CSS

- CSS Development stage : For approximately 35 months.

  The functions in CSS application program will be developed in this stage. Approximately 35 months will be necessary to develop (designing and making) and to test CSS application programs and also to provide users with some training on CSS. The servers and its terminals are installed at the main inspection offices.

- CSS Expansion stage

  After the survey of the cost and benefit of CSS, expansion of CSS to remaining Inspection Offices should be considered in the future. The JICA Study Team, therefore, did not estimate the cost of expansion. The application programs are developed in the development stage.

In order to make the detailed schedule, we need further study in the Basic Investigation phase. Each stage is described in detail below.

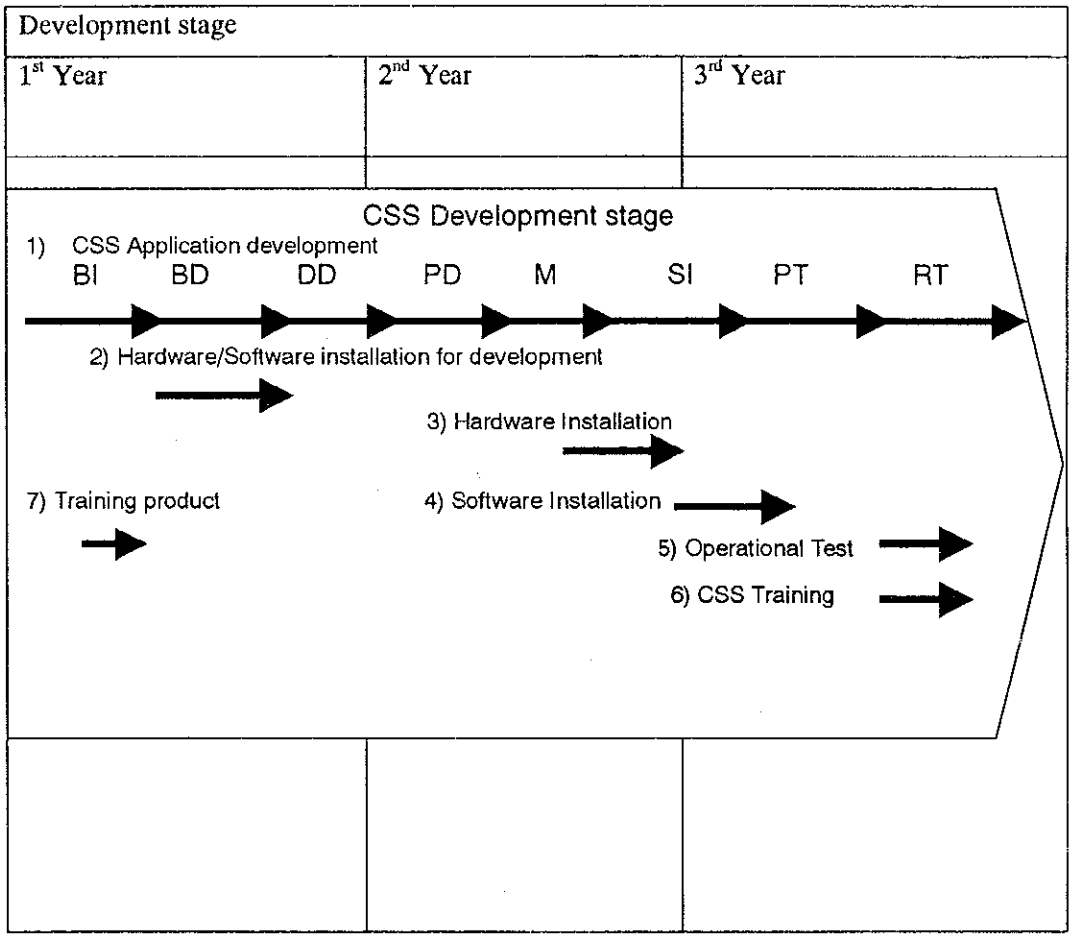

Figure 4.2.1.2-2: Development Stage

The development stage of CSS is divided into 7 major categories:

1) CSS application development

   The application programs of CSS will be developed in this stage. The JICA Study Team estimated that approximately 35 months are necessary to finish CSS software development.

2) Hardware/Software installation for development

Preparation the server and PCs for development of CSS application is required at the beginning of the making phase. Before installing the target machine, the application programs have to be tested by running on the machine, in order to calculate required memory size, disk size and CPU range. Because CSS application program development will continue further, we cannot use the target machine for development. Therefore development server and PCs are needed from this phase. The server machine for development process will be smaller in size than the target machine. Package software, OS, Database Management Software (DBMS) and development tool on the development environment must be compatible to the target machine environment.

3) Hardware installation

About 3 months will be needed to install hardware to the Inspection Offices. This work includes installation of equipment, network cabling work, and WAN line. In this stage, CSS will be installed at 9 places.

4) Software installation

About 3 months will be needed to install package product of software and CSS application program in the target machine. This work includes the installation of OS, Database Management Software (DBMS), other management software, and CSS application program in the main server as well as the installation of OS, CSS application software in approximately 420 personal computers.

5) Operation test phase

About 1.5 months will be needed to implement the Operation test phase. Users who are involved in the development of CSS will be the main testers in the operation test; therefore, officers from the Inspection Offices need to be involved during the development phase.

6) CSS training

CSS tutorial courses of 4 or 5 days have to be held for end-users. In this stage, All of the Customs officers who would use CSS shall be trained to understand how to use CSS.

7) Product training

This training is required for development team to understand the development tool that will be used in development phases. It will finish in one month and may also include programming language training.

4.2.2 Organization of development

There are several concepts of organization to develop computer system. The JICA Study Team would like to mention the important factors of CSS development organization in this subsection (refer to 4.2 in Volume IV).

The CSS development organization should be considered by not only development vendors but also DJBC. DJBC side is expected to organize the following two committee.

- Steering committee

  To authorize the CSS specification and direction of the CSS development project.

- Technical committee

  To authorize the CSS specification and technical matters in the CSS development.

The CSS development organization of vendor has to be broken down into several groups and teams (refer to 4.2 in Volume IV). Project manager(s) and Group leaders should be chosen to manage the CSS development project

- Project manager

  Project manager must be an expert of system developing management. He conducts the CSS project with the experiences of managing large-scale system development projects.

- Group leader

  Group leader has to have experiences of developing computer system and know the methodology of how to develop the tailor-made computer application systems. The group leader must also be able to manage and conduct the process control of development in each team.

In implementing CSS, the following consultants will be needed to clear the usage or operation of CSS in DJBC.

- Customs operation consultant

  Expert of Customs-Excise operation, especially Customs Service Systems, will be needed for development of CSS.

In developing CSS, the following consultants will be needed to resolve the technical problems.

- Vendor support consultant

  In the CSS development project, specific tool products (Oracle, Oracle/developer 2000 and PL/SQL) will be used, based on user requirements. Although system engineers and programmers are trained before starting the project, they will not be experts of Oracle products. Therefore. Oracle specialist will be needed in tuning Oracle DBMS, dealing with troubles and solving technical problems. If any specific products are used in this project, products specialist will be needed from the beginning.

4.2.3 Estimation of CSS Developing Cost

The JICA Study Team estimated the total cost of CSS development on the basic of basic investigation . This estimation is rough because the detail specification of the system has not been clear. There might be some changes after design phase of system.

The total estimated cost for development was US$ 28.22 million. The estimation result summary is as follows. Table 4.2.3-1 shows the summary of CSS cost estimation.

Table 4.2.3-1: Summary of the cost estimation

Item	Million USD	Remarks
1. Development cost total	28.22	—
1.1 Development cost sub total	26.94	—
1.1.1 Hardware cost	7.10	—
1.1.2 Package software cost	2.65	—
1.1.3 Tailor made software cost	12.11	1136 K Steps
1.1.4 Training	0.40	—
1.1.5 Others	4.68	e.g. Contingency, VAT
1.2 Maintenance cost	1.28	—
2. Annual maintenance cost	1.57	—

Preconditions are as follows.

- This estimation is based on
  - The prices in Indonesian as of November 1998
  - The local procurements

- This estimation includes
  - The physical contingency (10%)
  - VAT (10%)
  - The maintenance cost (hardware 10%, package software 15%)
  - The cost of over work (10%)
- This estimation dose not include
  - The price contingency
  - The rate of interest
  - The consumer goods (ink, paper, and so on.)
  - The maintenance (specification changes) cost of the tailor made software
  - The cost of expansion to other Inspection Office

CHAPTER 5 Economic and Financial Analysis

5.1 Establishment of Socio-economic Framework

5.1.1 Performance of Indonesian economy until 1996

Indonesia has enjoyed a high economic growth since 1986 as a result of its effort to reform economic structure since 1983 in order to get rid of heavy dependence on oil exports.

5.1.1.1 Economic situation

As a result of aggressive financial deregulation in 1993, Indonesia enjoyed improved economic growth due to recovered domestic demand and increased capital investment. Its target growth rates in the sixth Five-year Development Plan were fulfilled: 7.5% in 1994, 8.2% in 1995 and 7.8% in 1996.

The contribution to GDP of the manufacturing sector exceeded that of the agriculture sector for the first time in 1991, 20.0% and 18.4%, respectively. In 1996, contribution of the manufacturing sector increased to 24.6%, while contribution of the agricultural sector decreased to 15.2%. Those numbers indicate that although the agricultural sector continued developing, the manufacturing sector developed more rapidly than the agriculture sector. Moreover, contribution of oil-and-gas exports to GDP, which was more than 20% in early 1980s, fell to 13% in 1992 as a result of an extensive effort to export non oil-and-gas products. To support export-oriented industries, the Indonesian government launched the following measures of deregulation in June 1996:

1) Provision for excise reduction of 1,497 products,
2) Reduction of products previously prohibited to import, and
3) Simplification of export / import procedures.

In addition, the government announced the provision of corporate income tax exemptions called the "tax holiday" for particular industries. The promotion of free trade and deregulation continuously became an important issue. The inflation rate of consumer price, which was at 10.2% in 1993, declined to 6.7% in 1996.

5.1.2 Impacts of economic crisis after 1997

5.1.2.1 Emergence and expansion of currency crisis

In July 1997, the financial crisis erupted in Thailand and the plummeted value of the Thai currency spread to the Philippines, Malaysia and Indonesia. The shock hit Hong Kong in October and South Korea in November 1997.

In Indonesia, the rupiah's value was 2,432 against the US$ at the end of June 1997, which remained relatively stable up to September 1997. However, as many private companies rushed to purchase large amounts of foreign currencies for their debts due at the end of September, the rupiah lost its value at an accelerated speed.

5.1.2.2 Impacts of economic crisis

As Indonesia accepted international financial support led by IMF, the country will likely face a significant slowdown in economic growth under deflationary pressure to be created by fiscal and financial austerity measures, one of the conditions of IMF loans. While these measures will help promote the country's structural reforms in the long run, they surely have negative impacts on the already-troubled economy in the short run.

In fact, the average short-term interest rate of bank loans surged from approximately 21% at the end of June 1997 to 40% in February 1998 (and then went up to 60% at maximum). The inflation rate of consumer prices soared from 5.1% in June 1997 to 32% in February 1998.

The increase of unemployment rate is also becoming a serious problem. Postponed construction projects are said to have caused around 2 million workers to lose their jobs in Jakarta. According to the central bank, 2.5 million people newly enter the labor market each year in Indonesia and economic growth at an annual 7% level is required to absorb such inflow.

IMF adjusted its forecast from zero growth in early 1998 to a negative 5 percent in May 1998. This means that private companies will deteriorate further and cut their work force. Increased unemployment will raise a risk of stirring up social unrest and instability.

5.1.2.3 Causes for currency and financial crises

The crisis wreaking havoc on the country and economy seems to stem from structural problems that are commonly seen in the East Asian economies:

1) Uncontrolled inflow of massive short-term funds into the private sector and the inability of the financial system to monitor and alert it properly,
2) Overvaluation of the local currency as the consequence of the U.S. dollar-linked (pegged) foreign exchange system, and
3) Vulnerable industrial structure.

5.1.2.4 Road to economic recovery

At present, the Indonesian government continues to pursue two conflicting goals; structural reforms and stability of people's life. In particular, structural reforms of the economic system are essential if the country is to regain confidence in the international community. To this end, efforts must be proceeded by focusing on the following goals that need to be achieved steadfastly in a balanced manner:

1) To build healthy economy by controlling investments to the level of domestic savings, reducing the current account deficit and curtailing external debts.
2) To stabilize the financial system by early consolidation of financial institutions and write-off of non-performing loans, while establishing the system to protect depositors, thereby to reestablish the financial intermediary function as early as possible.
3) To create good investment climate by making efforts to develop competitive industry and high productivity for medium- and long-term perspectives, including human resource development.

5.1.3 Establishment of socio-economic framework until year 2003

The following items have been estimated in order to forecast the volume of traffic to the year of 2003.

- Population and employment
- Real GDP growth rate
- Composition of industry
- Export/import value
- International trade balance

Two types of forecasts are made: "Higher Growth Scenario Case (hereinafter referred to as H Case)" and "Lower Growth Scenario Case (hereinafter referred to as L Case)" shown in Table 5.1.3-1. In the "L Case" scenario, a lower number is used in estimating Indonesian economic development, where the monetary crisis continues for some time before recovering. In this scenario, the economic growth rate in 1998 is close to that of the forecast announced by Central Bureau of Statistics (BPS) in July 1998. On the other hand, in the "H Case," it is projected that the various policies are effectively implemented in closer cooperation with IMF and consequently Indonesian economic development can be implemented more smoothly than in the "L Case." Hence, Indonesian economy will recover rapidly to continue the economic growth and reach the 6% level in the long-term Development Plan in 2003. The advice from economic researchers at the University of Indonesia is considered in the projections.

Table 5.1.3-1: Summary of Socio-economic Framework

Item	Unit	1996	1997	1998		2003	
		Base	Revised	H Case	L Case	H Case	L Case
Population	million	197.9	201.1	204.2	204.2	219.2	219.2
Employment	million	82.1	84.1	70.6	70.6	78.7	78.7
Real GDP Growth Rate	%	7.8	4.8	-12.0	-15.0	6.0	5.5
GDP	Rp trillion	414.0	433.7	381.6	368.6	473.0	437.6
Industrial Structure	(% of GDP)						
Primary Industry (Agriculture)	%	15.2	14.8	17.0	17.5	15.3	16.3
Secondary Industry (Mining and Manufacturing)	%	42.9	43.2	43.2	42.6	51.9	51.7
Tertiary Industry (Services)	%	41.9	42.0	39.8	39.9	32.8	32.0
Total Foreign Trade							
Export	US$ billion	52.0	53.4	49.8	48.4	61.7	57.5
Import	US$ billion	45.8	41.7	36.9	35.4	45.5	42.1
Trade Balance	US$ billion	6.2	11.7	13.1	13.0	16.2	15.4

Note: GDP at 1993 constant prices.
Sources are BPS 1996 and 1997.

5.2 Cargo Traffic Analysis

5.2.1 Current state at Tanjung Priok port and Soekarno Hatta airport

5.2.1.1 Tanjung Priok port

1) Exports

For the nine-year period from 1988 to 1996, the volume of export cargo handled at Tanjung Priok increased by 1.32 times and the value increased by 5 times. For the latest five-year period, the ratios of volume and value in exports at the Port of Tanjung Priok to the total volume and value in exports at the entire ports in Indonesia are 5.4% and 28%, respectively.

2) Imports

For the nine-year period, the volume of import cargo handled at Tanjung Priok increased by 2.98 times, and the value increased by 3.45 times. For the latest five-year period, the ratios of volume and value in imports at the Port of Tanjung Priok to the total volume and value in imports at the entire ports in Indonesia are 32.7% and 55%, respectively.

5.2.1.2 Soekarno Hatta airport

1) Exports

For the nine-year period from 1988-1996, the volume of export cargo handled at the airport increased by 2.56 times while the value increased by 2.49 times.

2) Imports

The volume of import cargo handled at the airport increased by 2.52 times while the value increased by 6.68 times.

5.2.2 Forecast of cargo traffic by using regression formula

The GDP per capita and the regression formula were used to estimate the volume of export and import cargo traffic. The estimated numbers are shown in Table 5.2.2-1 and Table 5.2.2-2.

1) Tanjung Priok port

Table 5.2.2-1: Forecast of Exports/Imports at Tanjung Priok Port

(Unit: 1,000 ton)

	1998		2003	
	H Case	L Case	H Case	L Case
Export	10,314	10,162	11,063	10,674
Import	17,004	15,860	22,674	19,732

2) Soekarno Hatta airport

Table 5.2.2-2: Forecast of Exports/Imports at Soekarno Hatta Airport

(Unit: 1,000 ton)

	1998		2003	
	H Case	L Case	H Case	L Case
Export	54.3	52.0	65.6	59.8
Import	142.3	131.7	195.2	167.7

5.3 Economic and Financial Analysis

5.3.1 Current state of Customs and clearance service in Indonesia and major issues

5.3.1.1 Current state of Customs and clearance service

1) Organization of Customs

The current organization and staffing of DJBC, the Department of Finance are summarized as follows:

- Central organization: Directorate General of Customs and Excise
- Local organization: Twelve Regional and 123 Service offices
- Number of staff: Approximately 11,000

1) Current state of computer systems

The three computer systems that are currently operated by the department and the customs are as follows:

- CFRS : To process import clearance procedures
- SE-11 : To prepare statistics of tax revenues
- EDP Audit System : To monitor inventory levels at bonded factories and warehouses

5.3.1.2 Current state of CIS and CSS

1) CIS

i) Current state of information management

The current information management is summarized as follows:

- The monitoring of exporters and importers on the blacklist, who are subject to vigilant review and regulation, is primarily carried out manually. Information among related departments, Regional Officers and Service Offices are not shared each other.
- Customs clearance data are used solely as the basis of preparing statistics and are not properly classified or utilized for risk management.

ii) Definition

CIS is essentially an extensive database to support the Customs services including monitor clearance and follow-up investigation. The database is designed to store the following data and information:

- Exports and imports by individual exporters and importers
- Cargo cleared by Customs brokers
- Embarkation and disembarkation by ships and aircraft
- Cargo handled in bonded areas
- Crime and violation record by exporters, importers, Customs agents, ships, aircraft, bonded areas and passengers.

CIS is designed to enable in-depth analysis of the Customs operation and reliable risk management to ensure adequate and streamlined service.

2) Current state of CSS

i) Current state of the clearance system

Import clearance procedures are currently handled by a single system called CFRS. It faces bottlenecks in terms of performance and maintenance because it has increased complexity due to a series of system upgrades and required emulated operation of the existing software due to hardware replacement.

In addition, the major challenge for CSS is to develop and incorporate an export clearance and cargo control system.

ii) Definition

CSS is a new system designed to address the above issues and integrate the Customs clearance and related processes. More precisely, it offers the following capabilities:

- Customs clearance processes for exports and imports
- Bonded transportation processes
- Warehousing
- Cargo handling and control

CSS is designed to provide efficient clearance service in order to ensure streamlining, normalization and transparency.

5.3.1.3 Major issues and causes

The streamlining of Customs clearance service in Indonesia is demanded from the outside the country as well as domestic economic circles and the government itself.

JETRO conducted interview surveys for Japanese manufacturers operating in the ASEAN countries in between 1994, 1995 and 1996, covering major problems related to management control.

In Indonesia, "procedures of Customs" ranked in top three during the three consecutive years, which are not seen in other countries. More precisely, the problems related to "procedures of Customs," as cited by respondents, are the slow clearance processes, complicated procedures and the delay in tax return.

In comparison, the questionnaire survey was conducted by the JICA Study Team, asking the reasons for delay in import procedures in relation to physical distribution, procedures and communication. In the area of physical distribution, "inspection and examination by customs" ranked first for both marine and air cargoes. As for procedures and communication, "weekend and holiday," "procedures (permit/approval) other than Customs" and "duty payments" ranked at top three for both sea and air cargoes.

While the problems identified in these surveys need to be solved through communication between users and Customs, they constitute major issues to be resolved under the project.

5.3.1 Economic analysis

Economic analysis uses the economic internal rate of return (hereinafter referred to as EIRR) to measure the project's profitability. Financial analysis is not applicable to this project, because CIS and CSS are not expected to charge fees to users and their costs will be financed by the government's budget.

5.3.2.1 Basic framework for economic analysis

1) Scope of economic analysis

In economic analysis of projects, a range of investment must be equivalent to that of benefit from the investment. This is generally referred to as the cost/benefit-matching rule. For economic analysis, the following scope of the project was assumed:

i) Geographical scope

This project will be carried out at the Tanjung Priok port and the Soekarno Hatta airport and will deal with clearance procedures of direct import and export.

- Import clearance

  From port entry (arrival of cargo) to cargo delivery
- Export clearance

  From preparation of an export application to loading of cargo

Note that time required for the above processes is hereinafter referred to as "clearance time."

ii) Investment coverage

Within the geographical scope above, the precise scope of the project is the scope of project costs (embracing both hardware and software) presented in Volume II and IV. Likewise, benefits must be limited to those generated directly by investment made within the scope of the project.

iii) System indivisibility

CIS and CSS to be introduced under the project are assumed to function in an integrated manner and produce a number of economic benefits.

2) Establishment of "With" and "Without" cases

Profitability of the project is computed by a "With/Without" approach. A "With" case is defined as a case where the project is implemented, while a "Without" case is a case where the project is not implemented. In those cases, both costs and benefits are calculated. The EIRR is computed on the basis of the difference in costs and benefits between the "With" case and the "Without" case. Those "With" and "Without" cases assumed the following.

- "With" case

  The project is implemented successfully to streamline the Customs clearance processes and shorten congestion (waiting) time of cargo.

- "Without" case

  If the project is not implemented and if the volume of cargo increases, either of the following two consequences is expected to occur. Firstly, when the current ability to process Customs clearance remains unchanged, congestion time will increase. Secondly, when congestion time is maintained at the current level, the clearance capacity of labor will have to be increased, resulting in a rise in cost. An assumption is that DJBC will not increase staff. On the basis of the assumption, the former scenario of expected increase in congestion time is selected in the "without" case.

3) Economic benefits

Economic benefits expected from a project are defined as increased national income due to the implementation of a project.

Economic benefits are either direct or indirect, as defined below.

- Direct benefits

  System users enjoy direct benefits as a direct result of the project implementation. The benefits can be divided further into quantitative benefits and qualitative benefits. The latter can only be presented in a descriptive form.

- Indirect benefits

  Indirect benefits are enjoyed by the government and society as a whole and are derived from the implementation of a project. Indirect benefits are also divided into quantitative benefits and qualitative benefits. It is sometimes difficult to determine that the benefits are only from the project and what percentage of the project actually contributes to the benefit (e.g., the decrease in illegal trade). In this analysis, thus, indirect benefits are presented in a descriptive form.

4) Direct benefits

As the project is designed to help the streamlining and simplification of Customs clearance service, it will primarily generate direct benefits in the following two areas.

- Reduction of costs due to smooth cargo delivery

  The project is expected to reduce the period required for cargo to wait for Customs clearance, resulting in a shorter inventory period.

- Reduction of costs related to Customs procedures

  Computerization of paperwork including documentation and processing will reduce costs incurred by the customs and users for clearance procedures.

5) Indirect benefits

Indirect benefits are evaluated in the form of qualitative analysis. Details are to be discussed in 5.3.2.3.

6) Economic costs

Costs related to the project are roughly divided into those incurred during the system development and operation stage. The costs identified are screened on the basis of criteria according to the "With" and "Without" cases.

5.3.2.2 Direct benefits

1) Basic assumptions for economic analysis

i) Price

All the prices used in the analysis were fixed in 1998 with no inflation thereafter being taken into account.

ii) Currency and exchange rate

The economic analysis uses the U.S. dollar as the base unit of currency, and any values expressed in the local currency are converted to the dollar by applying the following exchange rate on November 30, 1998:

US$1 = Rp. 7,375

iii) Project life for economic analysis

The project's preliminary schedule is as follows:

- Start of CIS/CSS development: in 2000
- Start of operation of CIS and CSS: in 2003
- Final year of the project: in 2012

The project life assumed for economic analysis is thirteen years including four years for system development.

iv) Method for conversion from market price to economic price

For this analysis, economic prices of goods imported and exported, constituting the basis of calculating benefits, are indicated in CIF and FOB prices. For costs related

to CIS and CSS. economic prices are determined by subtracting tax (VAT) from market prices.

v) Opportunity cost of capital (OCC)

The opportunity cost of capital is used as the criteria to determine whether the project is economically feasible. For the project, the opportunity cost of capital is assumed to be 10%. (The opportunity cost of capital serves as a yardstick and is generally selected from the minimum level of rate of return on recent projects that were carried out in the country. International financial institutions assume the opportunity cost of capital in the range between 8% and 14%, depending upon the country.) It is used as the basis of estimating loss of opportunity cost due to congestion of cargo during the Customs clearance process.

2) Estimation of direct benefits

As discussed earlier, direct benefits expected from the project are the decline in congestion cost related to dead stock of cargo and the decline in customs clearance cost. While the latter will not contribute much to profit, the former is expected to contribute significantly and is estimated as follows.

i) Cargo volume forecast

The volume of cargo handled at Tanjung Priok port and the Soekarno Hatta airport until 2003 was estimated for "H Case" (high growth) and "L Case" (low growth).

a) Import cargo

The average annual growth rate of import between 1998 and 2003 was calculated by the mid-value between H and L cases, namely 5.2% for the Tanjung Priok port and 5.8% for the Soekarno Hatta airport.

Note that this analysis assumes that cargo import will continue to grow at the above rates after 2003, and the changes in import cargo volume at a five-year interval are shown below.

Table 5.3.2.2-1: Summary of Import Cargo Volume Forecast

(Unit: 1,000 ton)

Port	1998	2003	2008	2012
Tanjung Priok	16,432	21,203	27,320	33,461
Soekarno Hatta	137	182	241	302

Note: The year of 2012 is the final year of the project.

b) Export cargo

The average annual growth rate of export between 1998 and 2003 was calculated by the mid-value between H and L cases, namely 1.2% for the Tanjung Priok port and 3.3% for the Soekarno Hatta airport. Note that this analysis assumes that cargo export will continue to grow at the above rates after 2003, and the changes in export cargo volume at a five-year interval are shown below.

Table 5.3.2.2-2: Summary of Export Cargo Volume Forecast

(Unit: 1,000 ton)

Port	1998	2003	2008	2012
Tanjung Priok	10,238	10,869	11,537	12,101
Soekarno Hatta	53	63	74	84

Note: The year of 2012 is the final year of the project.

ii) Estimates of present clearance time and reducible waiting time

a) Use of questionnaire survey results

As discussed in 5.3.1.3, the questionnaire survey was conducted for Japanese companies operating in Jakarta to find out possible reasons for delay in import clearance procedures in terms of administrative procedures and physical distribution.

The results provided useful information on the current state of import clearance procedures.

b) Methodology related to interview survey

Based on the results of the questionnaire survey, the interview survey was conducted for users of customs clearance service.

The interview survey estimates the amount of time required for the import clearance process that is classified into the following four stages. Note that it is estimated for full container load (FCL) cargo destined to factories.

- From port entry (arrival of cargo) to unloading
- From unloading to application for import clearance
- From application to permit
- From permit to cargo delivery

Then, for each of the above steps, waiting time (reducible) and processing time (non-reducible) required for import procedures are estimated.

For the above purpose, reducible waiting time is estimated on the basis of the top-rank reasons for delay cited in the questionnaire survey. Similar estimation is made for export clearance.

c) Establishment of standard clearance time and reducible waiting time

Based on the analysis of data collected from the interview survey, standard clearance time is established and is then divided into reducible waiting time and non-reducible processing time.

Major findings from the survey, concerning the import clearance process at the Tanjung Priok port, are as follows:

- All the respondents feel that clearance time for Green Channel (4 days) is reasonable, while they think that around one day can be saved by streamlining some steps, including the payment to the bank.
- The similar responses are heard about Red Channel, except for the time required for examination. They feel that 2 days required for examination in Red Channel are inevitable. In practice, however, the examination takes not 2 days but 4 days due to the involvement of various participants in the examination process including Customs officers. They consider that the 2 additional days are waiting time.
- Based on the questionnaire survey, it is assumed that 90% of cargoes go through the Green Channel procedures and 10% through the Red Channel procedures, although the Red Channel procedures have been on the rise after the survey.

Responses were also obtained for the time required for import clearance at the Soekarno Hatta airport and the time required for export clearance at the Tanjung Priok port and the Soekarno Hatta airport. Most of them think that duration can be reduced by around 0.5 days.

The results of the survey and the analysis are summarized in Tables 5.3.2.2-3.

Table 5.3.2.2-3: Estimated Clearance Time

(Unit: days)

Import / Export	Green Channel			Red Channel		
	ECT	RWT	NWT	ECT	RWT	NWT
Import Clearance						
Tanjung Priok	4.0	1.0	3.0	8.0	3.0	5.0
Soekarno Hatta	2.5	0.5	2.0	N/A	N/A	N/A
Export Clearance						
Tanjung Priok	3.0	0.5	2.5	N/A	N/A	N/A
Soekarno Hatta	2.0	0.5	1.5	N/A	N/A	N/A

Note: ECT; Estimated Clearance Time
RWT; Reducible Waiting Time
NWT; Non-Reducible Waiting Time
N/A; Not available

iii) Estimation of clearance time under "Without" case

The "Without" case of the project assumes that the Customs clearance capacity will remain unchanged and congestion time will increase with the growth of cargo volume.

The increase in congestion time means the increase in waiting time due to the delay in the Customs clearance process.

As discussed earlier, present clearance time is divided into non-reducible processing time and reducible waiting time (congestion time).

Based on the above assumptions, clearance time under the "Without" case is assumed to increase as waiting time increases with the increase in cargo volume, while non-reducible processing time remains unchanged.

iv) Estimation of clearance time under "With" case

a) Establishment of rate of reduction in waiting-time

It is assumed that Indonesia will be able to achieve reduction of clearance time at rates similar to those proved in Japan, because performance and configuration similar to Japanese CIS and NACCS will be introduced to CIS and CSS. Thus, the rates of clearance time reduction experienced in import in Japan are applied to the project.

The following assumptions are established to apply the data:

- As CIS and CSS are scheduled to start operation in 2003, the base year to calculate the ratio of reduction is set in 2002. Thus, the rate of reduction in 2002 is 0%.
- As for marine cargo, for which no survey was conducted in the third and fourth year after the introduction of NACCS, the rate of reduction in 2005 and in 2006 is estimated by interpolation. The rate of reduction from approval to delivery of cargo is set at the same rate as that from port entry to approval. As for air cargo, the average rate of reduction for Narita and Baraki is applied to the analysis.
- The rates of reduction after the fifth year are set at the rate in the fifth year.

On the basis of the above assumptions, the rate of clearance time reduction for import clearance, under the "With" case, is summarized below.

Table 5.3.2.2-4: Breakdown of Rate of Reduction in Import Clearance Time

Year	Marine Cargo	Air Cargo
2003	10.9%	19.5%
2004	30.9%	30.5%
2005	35.2%	41.5%
2006	39.2%	47.5%
2007	43.5%	49.0%
:	:	:
2012	43.5%	49.0%

As for exports, no reliable data on reduction of clearance time in the "With" case are available. Therefore, the rate of reduction for exports in the base year (2002) is assumed to be 0% and remains at 0% after the introduction of CIS and CSS.

b) Estimation of clearance time in "With" case

Clearance time in the "With" case is obtained by multiplying the clearance time in 2002 (base year) by the above rate of reduction (reducible time), followed by subtracting the reducible time from the clearance time in 2002.

c) Estimation of congestion time

Congestion time is obtained by subtracting the clearance time in the "With" case from that in the "Without" case.

v) Estimation of direct benefits

a) Establishment of unit prices for export and import cargoes in 1998.

Unit prices of export and import cargoes in 1998 are not available yet and are estimated on the basis of the average prices in the past five years.

- Import cargo

  The average price of import cargo during the past five years is US$1,228/ton at the Tanjung Priok port and US$17,039/ton at the Soekarno Hatta airport.

- Export cargo

  The average price of export cargo during the past five years is US$1,126/ton at the Tanjung Priok port and US$23,851/ton at the Soekarno Hatta airport.

b) Estimation of values of export/import cargoes

The values of export and import cargoes are estimated by multiplying the volume of export or import cargo by the export or import unit price in 1998.

c) Estimation of congestion cost saved

The amount of reduction in the congestion cost as the direct benefits from the project is obtained by calculating the congestion cost of export/import cargo in the "Without" and "With" case.

- Import cargo
  - Inventory cost

    Inventory cost in "Without" case = Annual value of import cargo x Clearance time (days) in "Without" case / 365 days

    Inventory cost in "With" case = Annual value of import cargo x Clearance time (days) in "With" case / 365 days

  - Congestion cost

    Congestion cost in "Without" case = Inventory cost in "Without" case x Opportunity cost of capital

    Congestion cost in "With" case = Inventory cost in "With" case x Opportunity cost of capital

  - Congestion cost saved

    Congestion cost saved = Congestion cost in "Without" case - Congestion cost in "With" case

- Export cargo

  Idea is the same as import cargo.

- Total congestion cost saved

  Total cost saved = Congestion cost saved for import cargo + Congestion cost saved for export cargo

3) Estimation of costs

i) System development costs

The breakdown of annual system development costs for CIS and CSS is shown in below.

Table 5.3.2.2-5: Breakdown of System Development Costs

(Unit: US$ million)

Year	CIS	CSS	Total
2000	7.00	6.28	13.28
2001	5.08	5.26	10.34
2002	4.02	14.12	18.14
2003	1.62	—	1.62
Total	17.72	25.66	43.38

Note: Costs exclude VAT.
For reference, in case that CIS development is the first stage only, total development costs are US$ 33.24 million (US$ 7.58 million for CIS and US$ 25.66 million for CSS).

ii) Annual operation costs

Additional annual operation costs such as maintenance cost and network fee due to the implementation of CIS and CSS are summarized below.

Table 5.3.2.2-6: Annual Operation Costs

(Unit: US$ million)

Year	CIS	CSS	Total
2003	0.62	1.43	2.05
2004-2012	1.48	1.43	2.91

Note: Costs exclude VAT.

4) Results of economic analysis

On the basis of the various assumptions, the economic internal rate of return (EIRR) of the project is 24.63%, and the net present value (NPV) is US$ 51.0 million discounted by opportunity cost of capital (OCC) of 10%. (For reference, the EIRR is 28.91% in case that CIS development is the first stage only.) Therefore, it is considered that the project has reasonable feasibility.

Table 5.3.2.2-7: Economic Calculation Sheet
-Base Case-

(Unit: US$ million)

Year	CIS Cost (1)	CSS Cost (2)	Total Cost (3) = (1) + (2)	Saving of Imports (4)	Saving of Exports (5)	Total Benefit (6) = (4) + (5)	Benefit - Cost (7) = (6) - (3)	Net Present Value (8) $=(7) / (1+OCC)^{t-1}$
2000	7.00	6.28	13.28	0.00	0.00	0.00	-13.28	-13.28
2001	5.08	5.26	10.34	0.00	0.00	0.00	-10.34	-9.40
2002	4.02	14.12	18.14	0.00	0.00	0.00	-18.14	-14.99
2003	2.24	1.43	3.67	4.67	0.03	4.70	1.03	0.77
2004	1.48	1.43	2.91	12.81	0.06	12.87	9.96	6.81
2005	1.48	1.43	2.91	16.02	0.09	16.11	13.20	8.19
2006	1.48	1.43	2.91	19.36	0.12	19.48	16.57	9.35
2007	1.48	1.43	2.91	23.00	0.16	23.16	20.25	10.39
2008	1.48	1.43	2.91	25.18	0.20	25.38	22.47	10.48
2009	1.48	1.43	2.91	27.62	0.24	27.86	24.95	10.58
2010	1.48	1.43	2.91	30.16	0.28	30.44	27.53	10.61
2011	1.48	1.43	2.91	33.10	0.32	33.42	30.51	10.69
2012	1.48	1.43	2.91	36.27	0.37	36.64	33.73	10.75
Total	31.66	39.96	71.62	228.18	1.87	230.05	158.43	50.96

EIRR: 24.63 %

NPV: US$50.96 million
(Discount rate: 10% (OCC))

EIRR is calculated by using the following formula:

$$\sum_{t=1}^{n} R_{t-1} / (1+d)^{t-1} = 0$$

Where d : EIRR
R : The value in each year in (7)
t : The t th year
n : The 13 th year (in 2012)

5.3.2.3 Indirect benefits

Indirect benefits, the benefit to the government and society, of the project are classified and analyzed in detail. Those benefits are:

1) Benefits from the establishment of appropriate and streamlined clearance processes

Analyzing CIS data carefully, Customs evaluates future risks. Based on the risk assessment, customs can identify high-risk import/export goods and border crossing peoples and can allocate its maximum resources to item and minimize intervention to those of low risk.

Consequently, law-abiding importer/exporter can get privilege of faster clearance service, and Customs can reduce its inspection-related time.

2) Benefits from improved transparency of clearance service (standardization)

CSS cover all Customs formalities and CIS stores all customs related information with electric media. By using item effectively, Customs can provide unified Customs clearance procedure all over Indonesia, which also increase transparency of its procedures As the result, importer can predict its clearance time and costs and can reduce unclear expenditures.

3) Effects of computerization of Customs

Computerization of Customs will promote computerization of government organizations as a whole. Computerization is expected to have significant impacts on management and operation of bonded warehouses and zones, which will stimulate the development of domestic industries and increase domestic employment opportunities.

4) Effects on foreign direct investment and benefits from growth of international cargo

Improved Customs clearance service will increase foreign investment in Indonesia. As a result of the increase in foreign direct investment, domestic employment and exports will increase. The Customs clearance system will realize smooth flow of import/export cargo, accelerate division of labor, and expand trade within ASEAN countries.

5) Benefits from effective prevention of illegal trade

High quality risk assessment provided by CIS is expected to become a powerful weapon in order to detect smuggling and commercial frauds. Detection of such activities contributes to an increase in revenue of the government, protection of domestic industries and society, and prevention of the outflow of black money.

6) Benefits from accurate statistical data on Customs clearance

Efforts to develop reliable database including import and export statistics in CIS and CSS will help improve the country's credibility in the international economy, while assisting the country to establish its export/import strategies and industrial policy.