Republic of Indonesia

Ministry of Public Works and Housing

Republic of Indonesia
Study on E-Procurement System
Of
Ministry of Public Works and Housing

Final Report

January 2018

JAPAN INTERNATIONAL COOPERATION AGENCY

GLOBAL GROUP21 JAPAN, INC.
OPMAC Corporation

ABBREVIATION

ADB	-	Asian Development Bank
AIIB	-	Asian Infrastructure Investment Bank
CD	-	Continuous Delivery
CEH	-	Certified Ethical Hacking
CI	-	Continuous Integration
CIO	-	Chief Information Officer
CSIRT	-	Computer Security Incident Response Team
CSRF	-	Cross Site Request Forgery
DMZ	-	Demilitarized Zone
E/A	-	Executing Agency
EC	-	Evaluation Committee
EOI	-	Expressions of Interest
HTTPS	-	Hypertext Transfer Protocol Secure
ICB	-	International Competitive Bidding
IsDB	-	Islamic Development Bank
ISO	-	International Organization for Standardization
ITISI	-	IT infrastructure and information systems division
JICA	-	Japan International Cooperation Agency
LDAP	-	Lightweight Directory Access Protocol
LEMSANEG	-	Lembaga Sandi Negara (State Cryptography Agency in English)
LKPP	-	Lembaga Kebijakan Pengadaan Barang/Jasa Pererintah (National Public Procurement Agency in English)
NCB	-	National Competitive Bidding
ODA	-	Official Development Aid
OSFMD	-	Operations Services and Financial Management Department
OWASP	-	Open Web Application Security Project
PLN	-	Perusahaan Listrik Negara (State Electricity Company in English)
PPK	-	Pejabat Pembuat Komitmen (Authorized person/signer of a procurement package in English)
PU	-	Kementerian Pekerjaan Umum dan Perumahan Rakyat (Ministry of Public Works and Housing in English)
PQ	-	Pre-Qualification
QBS	-	Quality-Based Selection
QCBS	-	Quality- and Cost- Based Selection
RFP	-	Request for Proposal

RKAKL	-	Rencana Kerja dan Anggaran Kementerian dan Lembaga (Work Plan and Budget of Ministries and Institutions in English)
RUP	-	Rencana Umum Pengadaan (General Procurement Plan in English)
SBDs	-	Standard Bidding Documents
SPSE	-	Sistem Pengadaan Secara Elektronik (Electronic Procurement System in English)
SSTEB	-	Single-Stage Two-Envelope Bidding
STEP	-	Special Terms for Economic Partnership
STEP	-	Systematic tracking on E-procurement
SSH	-	Secured Shell
TSB	-	Two-Stage Bidding
USB	-	Universal Serial Bus
WAF	-	Web Application Firewall
WB	-	World Bank
XSS	-	Cross-Site Scripting

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1. Introduction

The Indonesian Presidential Decree No 54/2010 regarding Public Procurement of Good/Service, in Article 131 Paragraph (1) stipulates that all Indonesian Government's Ministries/Agencies/Institutions are required to implement electronic Procurement for some or all work packages in the Fiscal Year 2012. Although Kementerian Pekerjaan Umum dan Perumahan Rakyat (PU, Ministry of Public Works and Housing in English) had used own e-procurement system since 2005, PU adopted another e-procurement system called Sistem Pengadaan Secara Elektronik (SPSE, Electronic Procurement System in English) developed by Lembaga Kebijakan Pengadaan Barang/Jasa Pererintah (LKPP, National Public Procurement Agency in English) for all procurement from 2016. In accordance with PU's request to utilize SPSE for International Competitive Bidding (ICB) under the Japanese Official Development Aid (ODA) Loan projects, PU and Japan International Cooperation Agency (JICA) agreed in March 2017 that JICA would conduct its own review for the compliance check with JICA's rules for procurement and consultant selection (hereinafter referred to as "Study"). In this circumstance, JICA dispatched a Study Team for the Study.

The Study Team conducted assessment on SPSE ICB and interviews to related parties like PU, LKPP, Asian Development Bank (ADB), World Bank (WB), Islamic Development Bank (IsDB) and potential Bidders/Consultants in Jakarta, Indonesia from September 2017 to December 2017. The Study identified the points to be updated for utilizing SPSE ICB to Japanese ODA loans project in terms of JICA's rules for procurement (including consultant selection) and information security. LKPP and PU updated and the Study Team confirmed the result. This Final Report summarizes the findings and confirmed updates, and recommends SPSE ICB application to JICA funded PU projects with certain conditions and suggested follow-up measures.

2. Overview of SPSE ICB

2.1 Basic features of SPSE ICB

SPSE ICB is a tool for uploading and downloading. LKPP and PU both confirmed that JICA procurement rules would be applied to JICA funded projects. (For WB and ADB funded projects, procurement rules of WB and ADB will be applied respectively). SPSE ICB can be accessed from everywhere including overseas.

Request for concurrence will be made "outside" of SPSE ICB. Namely, PU submits manually requests for concurrence to JICA. Only after getting JICA concurrence, SPSE ICB process will be allowed to proceed to next stage.

Besides, in case that SPSE ICB is applied to procurement under Special Terms for Economic Partnership (STEP), a tied Japanese ODA loan, PU is required to check the eligibility of the Bidders/Consultants manually since there is no function to check in SPSE ICB as PU does in paper-based procurement.

Standard Request for Proposals (RFP) and Standard Bidding Documents (SBDs) (Prequalification, Works, Goods, Design Build, Plant and Small Works) will be uploaded to (or referred to) together with project specific documents (e.g., "DATA SHEET", etc.) in a project specific procurement package site to be created in SPSE ICB. The Bidder/Consultant uploads his proposals or bids to the same site in the SPSE ICB. The Bidder/Consultant can follow the progress of procurement processing by accessing to the relevant SPSE ICB site.

2.2 Procurement Procedure Using SPSE ICB

The figure below shows the flowchart of procurement procedure using SPSE ICB. As mentioned earlier, SPSE ICB is a tool for uploading and downloading between Evaluation Committee (EC) in PU and Bidders/Consultants.

Figure 1: Flowchart of Procurement Process Using SPSE ICB

(1) Bidders/Consultants' User ID Registration

Firstly, the Bidders/Consultants who want to obtain a user ID need to register basic information like company name, contact address and phone number etc. as required in the figure below and submit the request in SPSE ICB. Then they receive an e-mail from SPSE ICB and, in case of foreign companies, needs to send scanned copy of notarized article of incorporation and tax identification documents issued in their own countries with its English translation by e-mail. After checking the consistency between the input data in SPSE ICB and the submitted documents manually, PU issues the user ID. The required time for issuing user ID is one working day normally.

Figure 2: Registration Form for Creating User ID

(2) Create Bidding Package and Upload RFP or Bidding Documents

EC registers procurement package before creating bidding. Basic information of the procurement package needs to be input like package name, location, budget and PPK[1] etc. The budget amount is not disclosed to the Bidders/Consultants. In addition, an implementation plan letter is also necessary to be attached, although the letter is not disclosed to the Bidders/Consultants. Besides, RUP[2] number is also registered automatically from RKAKL[3] in case of PU. (In case of other ministries, RUP needs to be registered manually.)

Figure 3: Form for Registration New Bidding Package

Then, EC inputs details of new bidding in accordance with the figure below and uploads Request for Expressions of Interest (EOI) and RFP in case of consultant selection or Pre-Qualification (PQ) Documents and Bidding Documents in case of procurement of goods and services. Although EC inputs owner estimate price, this figure is not disclosed to the Bidders/Consultants in case of SPSE ICB.

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[1] Pejabat Pembuat Komitmen, Authorized person/signer of a procurement package
[2] Rencana Umum Pengadaan, General Procurement Plan registered in PU. RUP number is assigned to all public procurement package in Indonesia regardless of SPSE or not.
[3] Rencana Kerja dan Anggaran Kementerian dan Lembaga, Work Plan and Budget of Ministries and Institutions

New Bidding	
Bidding Code #	2334999
Package	Pemetaan Dinamika Sumberdaya Wilayah Sungai Paket 1
Remarks	
Category	Firm Consultancy ▼

Stage			
	○ Empanelment	One Envelope	Elimination System
	○ Call Down	Two Envelope	Quality and Cost Based Selection
	◉ Regular Consultant Selection	Two Envelope	Quality and Cost Based Selection
	○ Regular Consultant Selection	Two Envelope	Elimination System
	○ Regular Consultant Selection	One Envelope	Elimination System
	○ Quality Based Selection	Two Envelope	Quality Based Selection
	○ Consultant Qualification Selection	One Envelope	Elimination System

Evaluation of Bids	◉ 1 Winner

Package Price	Rp 2.000.000.000,00
Owner Estimate Price (HPS)	0,00 Format examples : *1.000.000.000* or *1.000.000.000,90* (if there is a comma)

Weight	Technical	[ ] %
	Cost	[ ] %
Passing Grade (for technical proposal)	[ ]	
Location of Work		

Contract Type	Term of Payment	Time Based ▼
	Contract Term	Multiple Year ▼
	Funding Source	Asian Development Bank ▼

Bidding Schedule	There is no schedule [Bidding Schedule]

REOI (Summary)	REOI (Summary)	Status
	Choose File	

REOI	REOI	Status
	Choose File	

RFP Document	RFP Document	Status
	Choose File	

The bidding package still can not be announced if the field is not fulfilled

[Save] [Back]

Figure 4: Form for Registration New Bidding Package (Detail)[4]

(3) Submit Proposals or Bids

The Bidders/Consultants who are interested in a consultant selection or a procurement of goods and services announced in SPSE ICB can download a request for EOI and its summary in case of consultant selection and an invitation for applicant and PQ documents in case of procurement of goods and services. After studying those documents, the Bidders/Consultants need to upload EOI or pre-qualification application onto SPSE ICB for participating their concerned procurement packages.

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[4] This form is for consultant selection. In case of construction work, the information to be input is different.

Bidding Information	
Bidding Code #	2364999
Package Name	**JICA ABC Project - Consultant Selection (QCBS)**
Status	Submission of EOI
Schedule	**View**
Agency	Badan Informasi Geospasial
Unit	SEKRETARIAT UTAMA BADAN INFORMASI GEOSPASIAL

REOI (Summary)	File Name	Send Date	Status
	[Dummy 1.pdf]	December 4, 2017 19:53	

REOI	REOI Document (Detail)	Send Date	Status
	[Dummy 2.pdf]	December 4, 2017 19:53	

Additional Document	File Name	Send Date	Status

Submission Detail*

Remarks (*Please list name of each additional associated Company, nationality of Company, and nature of assosiation (Whether Joint Venture or Sub-Consultant). Mandatory example input: Company Name (Country, JV/Sub-Consultant) Experience of only joint venture members will be considered in EOI evaluation)*

X Corporation (Indonesia, Joint Venture)
Y Corporation (Indonesia, Sub-Consultant)

If you are joint venture, please write company member

Save

EOI & Other Supporting Documents
(You may upload more than one file)

File Name	Send Date	Hash	Status
[Dummy 1.pdf]	December 6, 2017 19:52	00acf7fc016930829c5b040df342a4c0	Uploaded

Choose File

Upload   Submit EOI   Reset

* Any changes (upload/update/delete) regarding your EOI, will not be sent to committee unless you submit them using provided "Submit EOI" button after you uploaded file(s).

Figure 5: Form for Uploading EOI

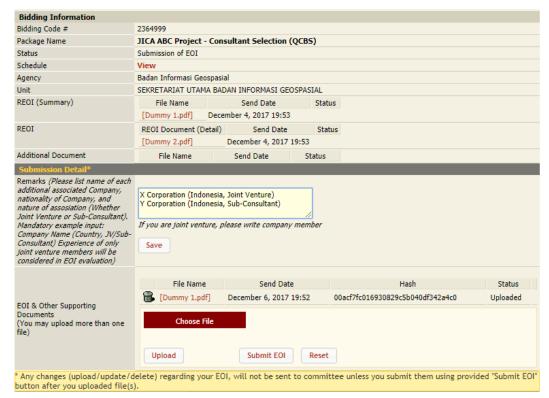| Bidding Information	
Bidding Code #	2365999
Package Name	**JICA ABC Project - Construction Works (Single-Stage Two-Envelop Bidding with PQ)**
Status	Submission of Prequalification Document
Schedule	**View**
Agency	Badan Informasi Geospasial
Unit	SEKRETARIAT UTAMA BADAN INFORMASI GEOSPASIAL

Invitation for Applicant	File Name	Send Date	Status
	[Dummy 1.pdf]	December 1, 2017 19:54	

PQ Document	REOI Document (Detail)	Send Date	Status
	[Dummy 2.pdf]	December 1, 2017 19:54	

Additional Document	File Name	Send Date	Status

Submission Detail*

Remarks (*Please list name of each additional associated Company, nationality of Company, and nature of assosiation (Whether Joint Venture or Sub-Contractor))*

Please use the following format:
Company Name (Country, JV/Sub-Contractor)

For Example:
PT.A (Indonesia, JV)

PT.A (Indonesia, JV)
PT.B (Indonesia, Sub-Contractor)

If you are joint venture, please write company member

Save

Prequalification Application & Other Supporting Documents
(You may upload more than one file)

File Name	Send Date	Hash	Status
[Dummy 1.pdf]	December 6, 2017 19:53	00acf7fc016930829c5b040df342a4c0	Uploaded

Choose File

Upload   Submit Prequalification Application   Reset

* Any changes (upload/update/delete) regarding your Prequalification Application, will not be sent to committee unless you submit them using provided "Submit Prequalification Application" button after you uploaded file(s).
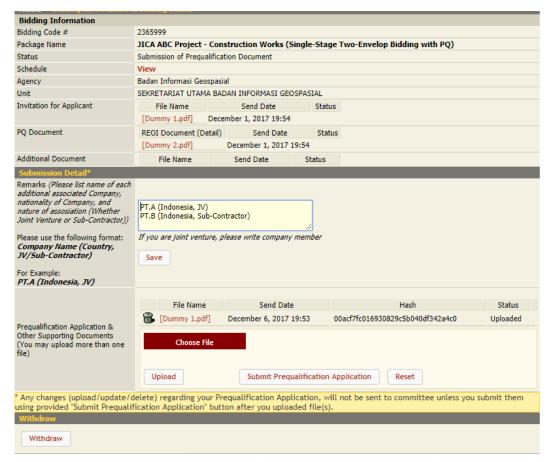
Withdraw

Withdraw

Figure 6: Form of Uploading Pre-Qualification Application

The Bidders/Consultants who are short listed or pre-qualified can download RFP or Bidding Documents. If having questions on these documents, they can ask through SPSE ICB as shown in the figure below. The explanation from EC can be also checked in SPSE ICB. All of questions and answers are disclosed to short listed or pre-qualified Bidders/Consultants.
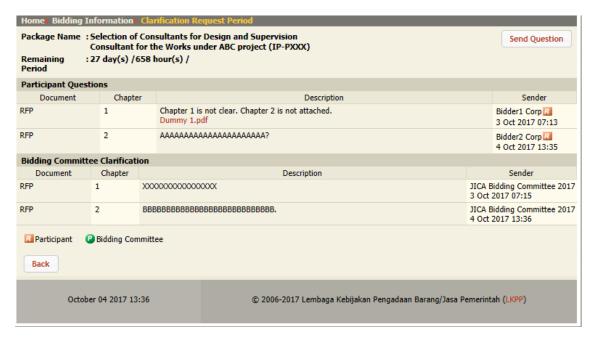

Figure 7: Form for Questions and Explanations

Then, the Bidders/Consultants are required to upload proposals or bids before the submission deadlines stipulated in SPSE ICB. When uploading files, they can upload only pdf-format files except financial proposal or bid in order to prevent falsification. In case of financial proposal or bid, for EC's easier checking, excel-format files also need to be attached in addition to the pdf-format files. There is no limit of the size and number of files to be uploaded. Moreover, those who have difficulty to upload due to poor network condition in their offices can visit PU's bidding room to upload files.

Even if the Bidders/Consultants upload proposals or bids before the submission deadline, EC cannot open these files before the deadline systematically. The Bidders/Consultants can also replace/add/delete these files before the deadline as much as they want.
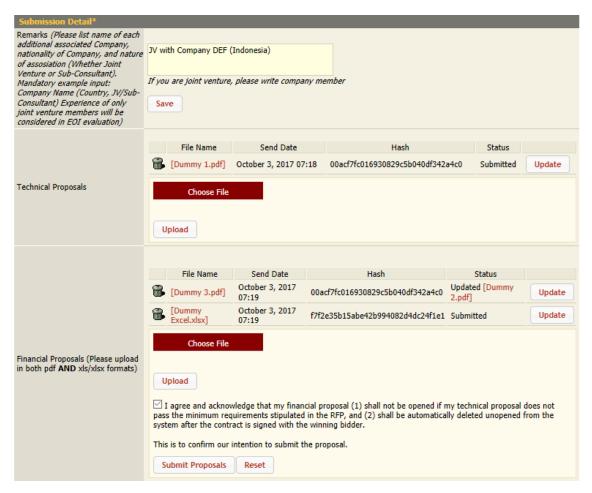
Figure 8: Form for Submission of Proposal

(4) Evaluation

Once the submission deadline comes, EC can download proposals or bids from SPSE ICB and start evaluation manually. After completion of evaluation with donor's concurrence, if required, EC inputs only the evaluation scores in SPSE ICB as shown in the figure below. Once EC saves the score in SPSE ICB, EC cannot modify by itself. System administrator of SPSE ICB can modify based on the written request from the EC. In case of QCBS, at the time of public opening of financial proposals, technical score and proposed financial amount are disclosed to all short-listed consultants who passed the technical evaluation. On the other hand, in case of QBS, these information is not disclosed to them.
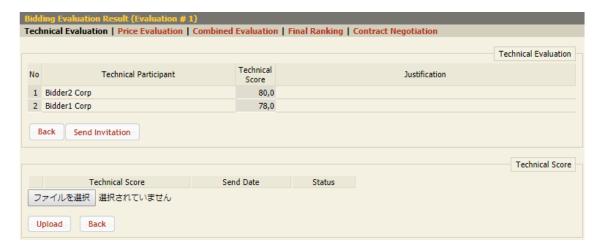
Figure 9: Form for Inputting Evaluation Score

(5) Contract Negotiation

Contract negotiation is conducted outside of SPSE. EC is required to input only the result in SPSE ICB. This result is not disclosed to the Bidders/Consultants.

Figure 10: Form for Contract Negotiation

(6) Notification of Award of Contract

When a Bidder/Consultant is awarded, the notification will be sent from SPSE ICB to all participated Bidders/Consultants as shown in the figure below. The notification can be sent after donor's review and concurrence systematically, since EC is required to approve the notification before sending.

Figure 11: Form for Notification of Award of Contract

2.3 Responsible Entity to Update SPSE ICB

Original SPSE has been developed by LKPP and utilized for National Competitive Bidding (NCB). For making the original SPSE applicable to ICB under PU's projects, LKPP developed SPSE ICB with the support by ADB[5] and PU installed SPSE ICB. Therefore, responsible entity to update SPSE ICB as system is LKPP. For example, in case that a new function is required to be added into SPSE ICB, LKPP needs to develop the function rather than PU.

Besides, PU is responsible to execute procurement using SPSE ICB. For example, in case that a Bidder/Consultant complained uploading/downloading speed of files, PU needs to check network condition in PU, since sever of SPSE ICB is in PU instead of LKPP.

2.4 System management of SPSE ICB and information security

System management of SPSE ICB is performed by both PU and LKPP, with their responsibilities divided as shown below.

> LKPP: Development, installation, and update of SPSE system software
> PU: All other managements including server maintenance, operation, security, etc.

2.4.1 Development, installation, and update of SPSE ICB

(1) Organization in charge of SPSE ICB development

Directorate of SPSE Development in LKPP is responsible for the system development, installation, and update. The figure below shows the position of the directorate in LKPP's organization structure.

Figure 12: Organizational position of Directorate of SPSE Development in LKPP[6]

The directorate has the following IT engineers.

Table 1: IT engineers in Directorate of SPSE development, LKPP

Engineer	Permanent	Outsourced
Software Engineer	6 persons	4 persons
Security Engineer & Tester	1 person	
Technical Writer	2 persons	

SPSE is developed by the joint development team that consists of permanent LKPP engineers and engineers from IT development company called Javan IT Services. (See Appendix 2). LKPP has a CIO who oversees IT-related issues as a top management.

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[5] Aligning ADB and Country System for Improved Project Performance and Stepping Up Investments for Growth Acceleration Program
[6] http://www.lkpp.go.id/v3/#/page/1246

(2) Development process of SPSE ICB

SPSE ICB is developed by using following software components. All these software components are popular open-source software with large and active user base in the world.

Table 2: Software components used in SPSE ICB

Category	Component Name	URL
Programming Language	Java	https://www.java.com/
Application framework	Spring	https://spring.io/
Web Application Framework	Tapestry	http://tapestry.apache.org/
JavaScript Library	jQuery	https://jquery.com/
Database server	PostgreSQL	https://www.postgresql.org/
Web server (Servlet Container)	Jetty	https://www.eclipse.org/jetty/

SPSE ICB development process is managed by following tools and methodologies. These tools and methodologies are also quite popular and well established in the world.

Table 3: Development management tools and methodologies used for SPSE ICB

Category	Name	URL
Configuration Management tool	Git (system) Gitlab (Web service)	https://git-scm.com/ https://gitlab.com/
Project Management Methodology	Scrum	https://en.wikipedia.org/wiki/ Scrum_(software_development)
Software Testing Methodology	Black-box Testing	https://en.wikipedia.org/wiki/ Black-box_testing

Currently the development team does not employ process automation methodology like CI (Continuous Integration) and CD (Continuous Delivery) using such tools as Jenkins (https://jenkins.io/), but the team considers utilizing these technologies in the near future.

The source code of SPSE ICB is stored in a Git repository on Gitlab, and is managed as a branch[7] from original source code of SPSE for domestic procurement. This means that any bug fix applied to the SPSE domestic version can also be applied to SPSE ICB easily.

(3) Installation and Update of SPSE ICB

"IT Operation" sub-division of the Directorate of SPSE development is in charge of installing and updating the SPSE ICB. Their engineers go to the target Ministry for setting up the SPSE server. Regular monitoring of SPSE is done remotely from LKPP by using the monitoring software called "splunk" (https://www.splunk.com/). This software enables monitoring such information as on/off status of the system, storage usage, any log file, and detection of attack. But it does not monitor the history of user login. All other regular maintenance of the server and network, including system backup, are handled by the target Ministry (PU in this case).

When an update of SPSE ICB is developed by LKPP team, it will not be automatically applied to SPSE ICB at PU. The update will be applied only when PU officially requests LKPP to do so, because updating the system without consent from PU could cause unexpected confusion

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[7] https://en.wikipedia.org/wiki/Branching_(version_control)

among the users of SPSE ICB at PU.

Once officially requested by PU, updating of SPSE ICB at PU is performed manually by LKPP engineer through remote connection to the SPSE ICB server. Update is done as Java component file (jar file) based, by using "git pull" command.

In case existing functions of SPSE ICB become unusable or not functioning due to a system update, PU or committee should temporally postpone ongoing procurement processes using SPSE ICB and should wait until necessary corrections will be implemented in the system.

2.4.2 Operation management and information security of SPSE ICB

(1) Organization in charge of SPSE ICB operation

ITISI (IT infrastructure and information systems division) in PU is in charge of SPSE ICB operation and Information Security. The figure below shows the position of ITISI in PU's organization structure.
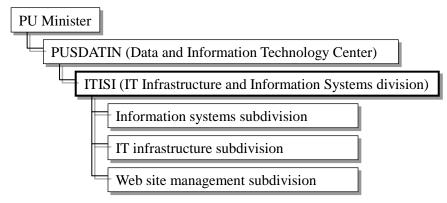

Figure 13: Organizational position of ITISI in PU[8]

Under ITISI, there are 3 subdivisions. Information systems subdivision is in charge of SPSE ICB operation and Information Security. IT infrastructure subdivision oversees the management of SPSE ICB infrastructure including the server and network environment. Web site management subdivision is responsible for the content of PU Web sites and is not directly related to SPSE ICB.

ITISI has following IT engineers. All outsourced engineers are not from private company, but are employed individually as full-time staffs working at PU.

Table 4: IT engineers in ITSI, PU

Engineer	Permanent	Outsourced
Software Engineer	5 persons	1 person
Network Engineer	2 persons	3 persons
System Administrator	2 persons	
Network Administrator	2 persons	1 person
Security Engineer *	5 persons	1 person

* Members of CSIRT

There is no CIO in PU, but the head of ITISI (Ir. Julianti Handayani, MA) acts like CIO and is responsible for all issues regarding SPSE ICB and Information Security in PU.

(2) Server room for SPSE ICB

SPSE ICB is installed at PU's data center server room which is located at the ground floor of main building. The server room has following facilities and measures for the security.

- ➢ Rack-mounted server hardware and network appliances
- ➢ UPS (Uninterruptible Power Supply), Redundant Power Supply, and Power Generator
- ➢ Air conditioner
- ➢ Gas-based Fire Extinguisher System
- ➢ Surveillance camera and Burglar alarm
- ➢ Security guard room next to the server room. Anyone must first enter the guard room before entering the server room. Full-time security guard is on duty during working hours.
- ➢ The door to the security guard room is always locked, and entering the server room requires a security card-key
- ➢ Taking photographs and bringing PCs are prohibited in the server room.
- ➢ Every time a person enters the server room, following information must be recorded.
  - ✧ Date / Time of entry to the server room
  - ✧ Name of person who enters the server room
  - ✧ Purpose of entry to the server room

(3) Client PC for SPSE ICB

There are 3 types of user access to SPSE ICB. Bidders/Consultants, Committee members, and a special user who can modify the system settings of SPSE ICB. Bidders/Consultants and committee members can use any normal PCs as well as smartphones / tablets to access to the SPSE ICB from the internet. However, the third user (administrator) can access to SPSE ICB from a dedicated client PC in ITISI office only. Only one staff who oversees SPSE ICB management can login to the dedicated PC by using administrator's account.

The dedicated client PC for the administration of SPSE ICB is a normal desktop PC. It is placed in the same room as other staffs, but a different network access policy is applied the PC so that no other PCs in the ITISI office can login to SPSE ICB as administrator.

All client PCs in ITISI are managed by the staff of IT infrastructure subdivision. They setup network configuration and install Anti-virus software (Kaspersky Antivirus with corporate license). All client PCs are using properly licensed Microsoft Windows and Office software, but there are some different versions of Windows depending on the purchase date of the PC. Usage of USB memory in the office is not prohibited.

Currently PU does not employ centralized user account management (such as Active Directory[9] or LDAP[10]) for their staffs, but they plan to introduce Active Directory in the near future.

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[9] https://en.wikipedia.org/wiki/Active_Directory
[10] https://en.wikipedia.org/wiki/Lightweight_Directory_Access_Protocol

(4) Information Security Policy and Guideline

PU has already established its own Information Security Policy and Guideline based on the ISO27001:2013 standard[11] in 2015, and is regularly updating the policy / guideline every year. PU's Information Security Policy covers all control items in ISO27001:2013 (113 controls in 14 categories), and its guideline covers all important areas of information security described in ISO27001:2013 such as the followings.

> Accountability for Assets (Inventory, Ownership, Acceptable use, Return, etc.)

> Information Classification (Access control, Secure areas, Operation security, etc.)

> Incidents and Malfunctions (Definition, Risk, Protection, Prevention, etc.)

> Information Security Response (Procedure, Responsibility, etc.)

All guidelines in PU are for general purpose, and there is no specific guideline regarding SPSE ICB. PU plans to apply for ISO27001:2013 certification in 2018.

(5) CSIRT

Based on the PU's Information Security Policy, CSIRT has been established in ITISI with 5 members (5 permanent Security Engineers in Table 4). Among 5 members, 2 of them have acquired CEH (Certified Ethical Hacking)[12] which is an international certificate for information security technology skill for protecting from security attacks. CSIRT is in charge of detecting, analyzing, and taking actions for information security threats and incidents. According to ITISI, following actions would be taken in case of security incidents.

1) CSIRT identifies the trace / proof of incident.

2) Isolate / block the attacker's IP address.

3) If the shutdown of PU's network is required for protection and / or prevention of further damage, the head of IT infrastructure subdivision of ITISI can make decision.

4) Report the incident to authority (Indonesian National Police Cyber Crime Division)

5) Report the incident to the head of ITISI.

CSIRT at ITISI also adopts information security methodologies of OWASP[13] which is one of the most reliable worldwide NPOs focused on improving the security of software. As of the time of this survey, no information security incident has been reported regarding SPSE ICB.

(6) Security audit for SPSE

PU has MoU with LEMSANEG to get external security audit for SPSE (domestic version) every year since 2015. Result of this year's audit (by LEMSANEG) was issued in October 2017. According to PU, there was no critical issues reported in the audit report.

(7) Liability of damage caused by security incident of SPSE ICB

In case bidders/consultants claim compensation for damage or loss caused by security incidents of SPSE ICB, PU would handle such cases through its legal department. But it would be sometimes difficult to identify the cause or responsibility of such incidents because of typical

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[11] JICA's Information Security Policy and Guideline are based on the Japanese standard JIS Q 27000:2014, which is also in line with the same ISO27001:2013 standard.

[12] https://www.eccouncil.org/programs/certified-ethical-hacker-ceh/

[13] https://www.owasp.org/

anonymity of attackers.

2.5 Experience, Operational Status and Procurement Process of SPSE ICB

2.5.1 Experience

As of December 2017, SPSE ICB is installed in PU only and there are 21 consultant selection packages using SPSE ICB as shown in Table 5. All packages are under the process of the selection by QCBS. Funding sources are ADB, WB including co-financing with Asian Infrastructure Investment Bank (AIIB) and IsDB only and there are no packages by PU's own budget.

Table 5: List of Consultant Selection Packages under SPSE ICB

No.	Name of Package	Selection Method	Funding Source
1	Project Management Consultancy (PMC) Development of Trans South-South Java Road Project	QCBS	IsDB
2	Technical Management Consultant (TMC) Package - 6 Province: South Sulawesi, North Sulawesi, Central Sulawesi, Gorontalo, South East Sulawesi, Maluku, North Maluku, Papua, West Papua	QCBS	WB & AIIB
3	Technical Management Consultant (TMC) Package - 5 Province: East Java, NTB, NTT, South Kalimantan, Central Kalimantan, East Kalimantan	QCBS	WB & AIIB
4	Technical Management Consultant (TMC) Package - 4 Province: Central Java And DIY	QCBS	WB & AIIB
5	Konsultan TA CPMU DOISP 2	QCBS	WB & AIIB
6	Konsultan TA CPIU DOISP 2	QCBS	WB & AIIB
7	Selection of the Panel of Project Preparation Firms (Consortia of Firms) for Directorate General of Highways	QCBS	ADB
8	Project Management and Construction Supervision for Sewerage System Medan Optimization Zone 10 and 11 (PMCS SSMOZP_MDN)	QCBS	ADB
9	Establishment of a Panel of Consulting Firms for Preparation of Water Supply and Waste Water Projects	QCBS	ADB
10	Establishment of a Panel of Consulting Firms for Preparation of Water Resources Projects	QCBS	ADB
11	Project Management Consultant Firm to Support the Directorate of Water Resources with Implementation of The Accelerating of Infrastructure Delivery Through Better Engineering Services Project (ESP)	QCBS	ADB
12	National Management Consultant (NMC) Region 2	QCBS	WB & AIIB
13	Integrated Tourism Masterplan For Lombok	QCBS	WB
14	Tourism Development Program Management Consultancy	QCBS	WB
15	Integrated Tourism Masterplan for Lake Toba	QCBS	WB

No.	Name of Package	Selection Method	Funding Source
16	Integrated Tourism Masterplan for Borobudur	QCBS	WB
17	Project Management Consultant (PMC) Firm to Support the Directorate General of Highways with Implementation of The Accelerating Infrastructure Delivery Through Better Engineering Services Project (ESP)	QCBS	ADB
18	PREPARATION OF JRAGUNG MULTIPURPOSE DAM PROJECT	QCBS	ADB
19	Project Management Consultant Firm to Support the Directorate General of Human Settlements with Implementation of The Accelerating Infrastructure Delivery Through Better Engineering Services Project	QCBS	ADB
20	PROJECT IMPLEMENTATION MANAGEMENT SERVICES	QCBS	ADB
21	FLOOD RISK MANAGEMENT AND ENGINEERING SERVICES	QCBS	ADB

Source: SPSE ICB-PU[14]

2.5.2 Operational Status

Serious operational problems due to malfunction of SPSE ICB was not observed in consultant selection packages listed in Table 9 as the result of interviews to PU, LKPP, donors and consultants.

2.5.3 Procurement Process

In SPSE ICB, the following procurement processes were available as shown in Table 6 as of September 2017.

Table 6: Available Procurement Process in SPSE ICB

Type of Procurement	Procurement Process
Firm Consultancy	(1) Empanelment, One Envelope, Elimination System
	(2) Call Down, Two Envelope, Quality and Cost Based Selection
	(3) Regular Consultant Selection, Two Envelope, Quality and Cost Based Selection
	(4) Regular Consultant Selection, Two Envelope, Elimination System
	(5) Regular Consultant Selection, One Envelope, Elimination System
	(6) Quality Based Selection, Two Envelope, Quality Based Selection
	(7) Consultant Qualification Selection, One Envelope, Elimination System
Construction Work	(1) Post Qualification, One Envelope, Pass - Fail System
	(2) Pre Qualification, One Envelope, Pass - Fail System

Source: SPSE ICB demonstration version

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[14] http://spseicb.pu.go.id/eproc-icb/lelang, accessed 4 October 2017

In case of consultant selection, "(3) Regular Consultant Selection, Two Envelope, Quality and Cost Based Selection" and "(6) Quality Based Selection, Two Envelope, Quality Based Selection" can be used for QCBS and QBS respectively in line with the Guidelines for the Employment of Consultants under Japanese ODA Loans dated April 2012 with some modifications as specified in Appendix 1.

However, in case of procurement of goods and services except consultant selection, single-stage two-envelop bidding and two stage bidding stipulated in the Guidelines for Procurement under Japanese ODA Loans dated April 2012 are not available in SPSE ICB. Without these procurement processes are programmed in SPSE ICB, SPSE ICB could not be used for procurements under Japanese ODA loan projects.

Besides, the Bidders/Consultants can download a user guide[15] for Bidder/Consultant from SPSE ICB to learn how to use SPSE ICB. This guide is written in English. However, this guide was developed for regular consultant selection under ADB funded project. Since this selection method includes QCBS, this guide can be used for the consultant selection by QCBS under Japanese ODA loans projects. Other user guides for QBS or procurement of goods and services are recommended to be developed for increasing Bidders/Consultants' usability.

2.6 SPSE ICB configuration and structure

(1)   Network infrastructure of SPSE ICB

SPSE ICB is installed at PU's data center. Figure on the next page shows the network topology of PU's data center.

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[15]   http://103.12.84.104/eproc-icb/publicberitadetail.filedownload:download/35303631363939393b31?t:ac=772999, accessed 5 October 2017
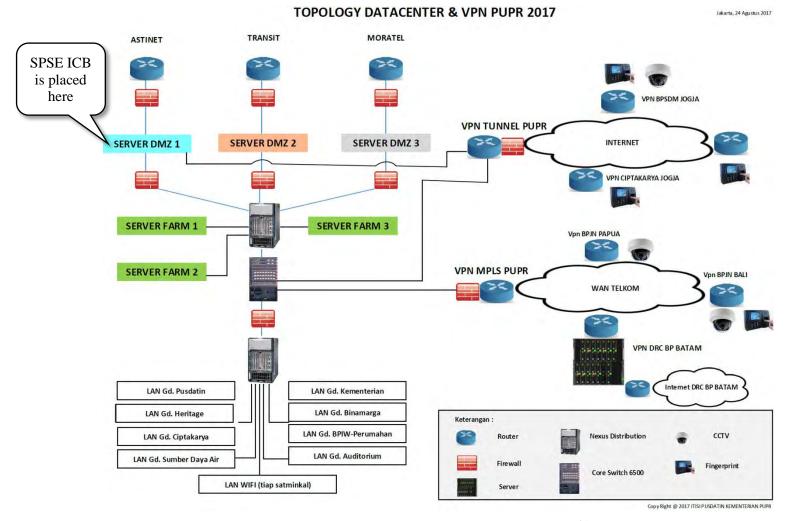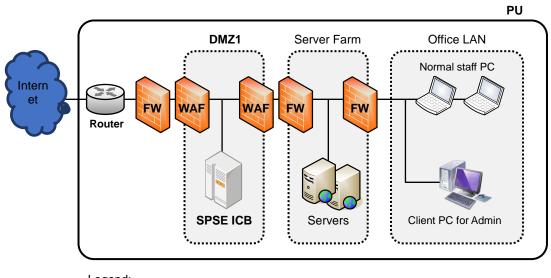
Figure 14: Network topology of PU's data center[16]

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[16] Obtained from ITISI on 22nd September 2017

As indicated in the network topology above, there are 3 independent internet connections to different providers, so if one provider connection becomes down, other connections are still available. Total (aggregated) bandwidth of 3 internet connections at PU is 1Gbps.

The following figure shows network security configuration of SPSE ICB (which is a part of above data center topology).

Legend:

Term	Definition	Manufacturer / Model
Router	Internet Router	Cisco 3900 series
FW	Firewall	FortiGate 3000D
WAF	Web Application Firewall	Imperva SecureSphere X2510

Figure 15: Network security configuration of SPSE ICB

The server of SPSE ICB is placed in DMZ, and the access to the SPSE ICB is protected by both Firewall (for network packet-level inspection) and WAF (for application-level protection). WAFs are installed not only for outgoing connection (to the Internet), but also for internal connection (to the office LAN through server farm section).

As described in 2.4.1 (3), LKPP engineer can use remote access to SPSE ICB for system maintenance and update. In this case, for security reasons, LKPP must first remote-login to the said client PC for administration (by using Remote Desktop), then must login to SPSE ICB server from the client PC by using SSH[17]. No one can login to SPSE ICB server as administrator directly from the Internet.

(2) System structure of SPSE ICB

The figure below shows the system structure and specification of SPSE ICB.

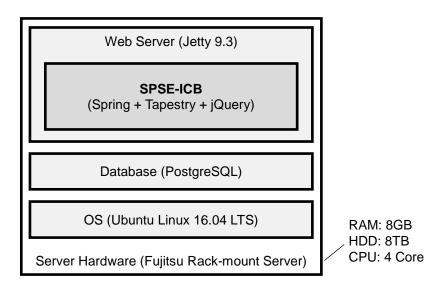[17] https://en.wikipedia.org/wiki/Secure_Shell

Figure 16: System structure and specification of SPSE ICB

The specification of the server hardware and software components are considered sufficient to handle expected load of SPSE ICB tasks.

Regarding the information security, SPSE ICB utilizes following technologies.

> File encryption (Uploaded files are automatically encrypted when stored on the server by using Blowfish[18] codec.)

> User password is sent (from the Web browser) and stored as Md5[19] hash.

> Software framework has basic security filter that protects from popular attacks (such as XSS[20], SQL injection[21], etc.).

2.7 Right of Donors and Way of Concurrence

In case of Japanese ODA Loan projects, JICA has a right to review the Borrower's procurement procedures, documents and decisions and the Borrower shall submit to JICA, for JICA's reference, any related documents and information as JICA may reasonably request in accordance with Section 1.05 in the Guidelines for Procurement under Japanese ODA Loans and Section 1.05 in the Guidelines for the Employment of Consultants under Japanese ODA Loans as well as Loan Agreements of Japanese ODA Loans. In case of paper-based procurement in previous PU's projects, PU on behalf of the Borrower submitted request for concurrence to JICA by a written letter and then, JICA issued no objection letter to PU after JICA's review. This is a procedure of concurrence.

Even if SPSE ICB is applied to procurements under Japanese ODA loan projects (or other donors' funded projects), the procedures of concurrence do not change. Since SPSE ICB is just a tool for uploading and downloading, there is no function of the concurrence in the system and the concurrence is requested and given by written letter outside of SPSE ICB. In actual, PU is selecting or selected consultants using SPSE ICB under ADB and WB funded projects respectively and obtain concurrence (or no objection letter) outside of SPSE ICB.

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[18] https://en.wikipedia.org/wiki/Blowfish_(cipher)
[19] https://en.wikipedia.org/wiki/MD5
[20] https://en.wikipedia.org/wiki/Cross-site_scripting
[21] https://en.wikipedia.org/wiki/SQL_injection

Therefore, JICA, as well as ADB and WB, does not have to access SPSE ICB even if accepting SPSE ICB and, consequently, JICA's action to be taken during procurement stage will not change at all.

2.8 Excess Burden to Bidders/Consultants

Through interviews to potential users of SPSE ICB including foreign companies, the following issues were observed as potential excess burdens to Bidders/Consultants. Issue (1) and (4) are subjected only to foreign companies.

(1) Announcement of New Bidding

New bidding is announced only at home page in SPSE ICB-PU and not advertised in a newspaper of general circulation in Indonesia. Those who are not familiar with e-procurement in Indonesia cannot obtain information easily.

(2) Notification to Bidders/Consultants

In case that there is a progress of procurement, such notification is posted in mailbox of Bidders/Consultants in SPSE ICB and is not e-mailed to the registered e-mail address. Unless logging in SPSE ICB and checking the mailbox regularly, the Bidders/Consultants cannot know the progress of the bidding.

(3) Information Security

How SPSE ICB prevents information leakage from bid/proposal which Bidders/Consultants submitted is not explained to Bidders/Consultants and, therefore, some Bidders/Consultants worry about information leakage to a third party. They might password to open their bids/proposals when uploading, which requires additional step for PU for unencrypting these files.

(4) Language

Previously, some technical terms and abbreviations were written in Bahasa Indonesia and some Bidders/Consultants could not know the meaning and faced difficulties to understand. It should be written in English in all parts of SPSE ICB where Bidders/Consultants can access. However, this was modified and the Study Team confirmed all of the parts were written in English as of October 2017.

(5) Sorting out of List of Procurement Package

In case number of on-going projects increased, it would be hard for Bidders/Consultants to find the procurement package which they are interested in from the list. The list of procurement package should be sorted out by sector in addition to funding source and category of procurement.

(6) Bandwidth of Internet Connection

Bid document tends to be very big (hundreds of pages and drawings), and the file size could reach more than 100MB. Considering unstable and slow Internet connection in Indonesia, Bidders/Consultants may experience difficulties in uploading those large files. For example, once the connection is cut off during the upload, the sender must start over the uploading again.

2.9 Pros and Cos of SPSE ICB

2.9.1 Pros

(1) Transparency

Once SPSE ICB is introduced, all procurement processes are monitored by the system. SPSE ICB decreases interaction among people during the procurement process and, therefore, the possibility of fraud and corruption also decreases.

(2) Workload

Once SPSE ICB is introduced, PU does not have to print request for proposal and bidding documents, but upload them to SPSE ICB only. In addition, since notification to Bidders/Consultants for the next step of procurement is sent to the mailbox in SPSE ICB, PU does not have to prepare and issue such notification letter to Bidders/Consultants. These features contribute to reduce PU's workload.

On the other hand, Bidders/Consultants can also reduce their workloads. Bidders/Consultants can submit proposal or bid through SPSE ICB without visiting PU or even in Indonesia.

(3) Fee for Bidding Documents

In case of procurement of goods and services excluding consultant selection, PU charged a fee for bidding documents since PU needed to compensate for printing. However, once SPSE ICB is introduced, since PU does not have to print the bidding documents but upload them only, Bidders/Consultants can download by free of charge.

2.9.2 Cons

(1) Excess Burden to Bidders/Consultants

As stated in 2.8, applying SPSE ICB to Japanese ODA loans projects could impose extra burdens on users, especially Bidders/Consultants. However, these burdens could be relieved by appropriate preventive measures. The table below shows the issues as potential excess burden and recommended preventive measures.

Table 7: Excess Burden to Bidders/Consultants and Its Preventive Measures

No.	Issues[22]	Background	Recommended Preventive Measures
1	Announcement of New Bidding	New bidding is announced only in SPSE ICB-PU.	New bidding should be advertised in a newspaper of general circulation in Indonesia.
2	Notification to Bidders/Consultants	Notification is posted in mailbox of Bidders/Consultants in SPSE ICB only.	Notification should be e-mailed to the registered e-mail address.
3	Information Security	There is no explanation about information security in SPSE ICB.	Information security policy should be explained in Q&A or user manual of SPSE ICB.
4	Sorting out of List of Procurement Package	There is no function to sort out by sector.	SPSE ICB should be modified.

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[22] The language problem, stated in 2.8, is excluded from the table, since it has been resolved.

No.	Issues[22]	Background	Recommended Preventive Measures
5	Bandwidth of Internet Connection	There is no explanation about bandwidth of internet connection in SPSE ICB.	Bandwidth of internet connection should be explained in Q&A or user manual of SPSE ICB.

2.9.3 Summary

The above-mentioned pros and cons by utilizing SPSE ICB are summarized in the table below.

Table 8: Pros and Cons by Utilizing SPSE ICB

Pros	Cons
(1) Increasing Transparency (2) Reducing Workload (3) No Charge for Bidding Documents	(1) Excess Burden to Bidders/Consultants ➢ Announcement of New Bidding ➢ Notification to Bidders/Consultants ➢ Information Security ➢ Sorting out of List of Procurement Package ➢ Bandwidth of Internet Connection

2.10 Further Expansion of SPSE ICB to other executing agencies

SPSE ICB is installed in PU only. Other ministries have not requested to LKPP[23] the installment of SPSE ICB yet except Ministry of Education and Culture. Ministry of Education and Culture is interested in utilizing SPSE ICB for a project funded by IsDB.

Besides, Perusahaan Listrik Negara (PLN, State Electricity Company in English), one of the major executing agencies for donors-funded projects, does not install SPSE ICB. Instead, PLN uses another e-procurement system. This is because PLN is neither ministry nor agency, but state-owned enterprise and, thus, it is not mandatory for PLN to procure goods and services using SPSE ICB.

2.11 Use of SPSE ICB to MBDs-funded Project

PU started to use SPSE ICB for consultant selection by QCBS funded by some MDBs-funded projects. As of December 2017, MDBs have not encountered serious problems stemming from SPSE ICB. Regarding procurement of good and services except consultant selection, no MDBs have not accepted PU to use SPSE ICB.

2.11.1 Asian Development Bank

ADB allows PU to use SPSE ICB for consultant selection by QCBS only under ADB-funded projects, since there is no consultant selection by QBS under ADB-funded projects. As of December 2017, 10 consultants are under selection process by using SPSE ICB and ADB has not encountered problems stemming from SPSE ICB. Regarding procurement of goods and services (except consultant selection), although ADB has not accepted SPSE ICB yet, ADB is assessing civil works in SPSE ICB.

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[23] In case that a ministry wants to install SPSE ICB, the ministry is required to request to LKPP and obtain the approval from LKPP.

In using SPSE ICB, PU accepts to prepare bidding documents and request for proposal based on ADB's SBDs and request for proposal.

2.11.2 World Bank

WB has allowed PU to use SPSE ICB for consultant selection by QCBS only under WB-funded projects since January 2017. As of December 2017, 10 consultants' packages are under selection process by using SPSE ICB. Other types of procurement including consultant selection by QBS has been neither accepted nor assessed. However, since there will be consultant package selected by QBS in future projects funded by WB, assessment to QBS would be required if PU requests WB for applying SPSE ICB to QBS.

In using SPSE ICB, PU accepts to prepare request for proposal based on WB's standard request for proposal.

Besides, Executing Agencies (EAs) including PU are required to submit the request for review through a platform called STEP (Systematic tracking on E-procurement) which is outside of SPSE ICB instead of sending paper-based request. The STEP is a platform developed by WB for all WB-funded projects around the world and introduced in 2015.

2.11.3 Islamic Development Bank

IsDB has allowed PU to use SPSE ICB for consultant selection by QCBS only under IsDB-funded projects since October 2017. As of December 2017, 1 consultant selection using SPSE ICB is commenced. Other types of procurement including consultant selection by QBS has been neither accepted.

In using SPSE ICB, PU accepts to prepare request for proposal based on IsDB's standard request for proposal.

3. Points to be updated in terms of JICA Procurement Rules

Using dummy IDs, the Study Team followed every procurement step for SPSE ICB (Consultancy and Civil Work).

The points that need some adjustments were identified and discussed during the second mission.

Following Monitoring Sheet shows the points already adjusted since then and remaining points to be addressed in future.

SPSE ICB (General)

No.	Points to be Updated	Background	Inconsistency[24]	Priority[25]	Responsible Entity	Expected Time of Completion
1	"JICA" to be added to "Funding Sources"	When a new Bid Package is created, "JICA" should be added to as one of the "Funding Sources".	High	A	LKPP	Done
2	Except for QCBS, there are no users' manual for Bidders/Consultants	(Not yet prepared.)	Moderate	A	PU and LKPP	After installing complete QBS and Civil Works
3	The change of registered Bidder/Consultant email address to be accommodated	The person in charge of the Bidder/Consultant might be moved to other post.	Low	A	PU	Done
4	E-mail notification to Bidders/Consultants	In addition to mailbox in SPSE ICB, the notification should be e-mailed to Bidders/Consultants' registered e-mail address for increasing Bidders/Consultants' usability.	Low	B	LKPP and PU	Done (PU linked own e-mail server to SPSE ICB.)
5	Explanation of Information Security and Bandwidth	Information security policy and bandwidth of internet connection should be explained in Q&A and/or users' manual for increasing Bidders/Consultants' usability	Low	B	PU	Done
6	Sorting by Sector	The list of procurement package should be sorted out by sector in addition to funding source and category of procurement for increasing Bidders/Consultants' usability.	Low	B	LKPP in consultation with PU	Later

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[24] High: In order to be in line with JICA Procurement Guideline or JICA Guidelines for Employments of Consultants (collectively referred to as "JICA Guidelines"), SPSE ICB is to be modified;
Moderate; Without modifying SPSE ICB, some measures can be taken to be in line with JICA Guidelines;
Low: Some minor adjustments may be made due to online (rather than paper-based) processing. Other minor points are also included.
[25] A: Required before applying to JICA funded projects, B: System modification can be after applying to JICA funded projects.

SPSE ICB (Consultancy)

No.	Points to be Updated	Background	Inconsistency[26]	Priority	Responsible Entity	Expected Time of Completion
1	Number of QBS Short Listed consultant will be better not to be mentioned.	According to Section 2.8 of Guidelines on the Use of Consultants by ADB, for QBS, six consultants should be listed, while JICA Guidelines for Consultant Employment specifies "Three to Five". In a side letter signed with a recently concluded Loan Agreement, JICA and PU agreed that the Short-Listed consultant can be two,	High (Section 3.04)	A	LKPP	Done
2	Can the selection process starting with Short List be accommodated?	JICA considers that the EOI process is not mandatory, while in Indonesia it is for the most of cases. SPSE ICB can accommodate the selection process without EOI, though LKPP needs to consult internally.	Moderate (Section 3.04)	B	LKPP	Later
3	Request for EOI to be announced in only in SPSE ICB-PU Website. It should be announced also in a newspaper.	JICA Guidelines for the Employment of Consultants (Section 3.04 Note 5) provides that if EOI are invited, the invitations shall be advertised in at least one newspaper of general circulation in the Borrower's country. While, the "Summary Information" concerning a specific REOI can be seen in the "Bidding Information" of SPSE ICB Website, request for EOI should be announced also in at least one newspaper of general circulation in Indonesia.	High (Section 3.04 Note 5)	B	PU (Tender Committee)	At the next invitation for EOI for a Japanese ODA loan project

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[26] Section numbers are taken from JICA "Guidelines for Employment of Consultants under Japanese ODA Loans dated April 2012".

SPSE ICB (Civil Work)

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[27]	Priority	Responsible Entity	Expected Time of Completion
1	"Bid Opening Document" should not be disclosed to bidders during technical evaluation stage.	This Document contains such information as "Bidder Name" and "Bid Amount". Thus, this Document should not be disclosed during technical evaluation stage.	High (Section 5.04)	A	LKPP	Done
2	Technical envelop and Financial envelop should be separated.	Under JICA Procurement Guidelines (Single stage Two-Envelope Bidding), bidders should submit technical and financial bids simultaneously in two separate envelopes. (In case of ADB, while "Single stage One-Envelope Bidding" is commonly adopted, in case of "Single stage Two-Envelope Bidding" they also should be contained in two separate envelopes as provided in II-A-2.6 (b) of ADB's Procurement Guidelines). Once technical evaluation is over, the successful bidder should be decided based on the "lowest evaluated cost". LKPP stated that after an ongoing SPSE modification process, "Minutes of Financial Evaluation" will be corrected in such a way that the bidder names will not be disclosed. Deleting the table showing financial and technical proposals together with bidder ranking will be a major modification that needs to be discussed in LKPP.	High (Section 2.03)	A	LKPP	Done

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[27] Section numbers are taken from JICA "Guidelines for Procurement under Japanese ODA Loans dated April 2012".

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[27]	Priority	Responsible Entity	Expected Time of Completion
3	Single-Stage Two-Envelope Bidding (SSTEB) <u>with PQ</u> need to be accommodated. [Sequencing of SSTEB]; (With PQ) (1) PQ advertisement (2) PQ document submission (3) Evaluation and selection of pre-qualified bidders (4) Announcement and Distribution of Bidding Documents (5) Simultaneous Submission of Technical and Financial Bids in separate envelope (6) Evaluation of Technical Bids (7) Opening of Financial bids of bidders that have passed technical evaluation (8) Award to the bidder who submitted the lowest evaluated financial bid.	JICA Procurement Guidelines recommend Single-Stage Two-Envelope Bidding with PQ.	High (Section 2.03 and 3.02)	A	LKPP	Done

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[27]	Priority	Responsible Entity	Expected Time of Completion
4	Single-Stage Two-Envelope Bidding (SSTEB) <u>without PQ</u> need to be accommodated. [Sequencing of SSTEB without PQ]; Steps (1) to (3) above are skipped. (4) Announcement and Distribution of Bidding Documents (5) Simultaneous Submission of Technical and Financial Bids in separate envelope (6) Evaluation of Technical Bids (7) Opening of Financial bids of bidders that have passed technical evaluation (8) Award to the bidder who submitted the lowest evaluated financial bid	JICA Procurement Guidelines recommend one stage two envelope bidding without PQ.	High (Section 2.03 and 3.02)	A	LKPP	Done

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[27]	Priority	Responsible Entity	Expected Time of Completion
5	Two-Stage Bidding (TSB) <u>with PQ</u> needs to be accommodated. [Sequencing of TSB with PQ]; Steps (1) to (3) are the same. (4) Distribution of Bidding Documents to the Qualified Bidders (First Stage) (5) Pre-qualified Bidders submit technical proposal without prices on the basis of minimum operating and performance requirements. (6) Technical and commercial clarifications and adjustments (Second Stage) (7) Distribution of amended Bidding Documents based on (6) above. (8) Submission of final technical and financial bids (9) Evaluation and award	JICA Procurement Guidelines accept Two-Stage Bidding.	High (Section 2.03 and 3.02)	A	LKPP	June 2018[28]

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[28] PU plans to adopt Two-Stage Bidding (TSB) in the ongoing Project.

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[27]	Priority	Responsible Entity	Expected Time of Completion
6	Two-Stage Bidding (TSB) <u>without PQ</u> needs to be accommodated. [Sequencing of TSB without PQ]; Steps (1) to (3) are skipped. (4) Announcement and Distribution of Bidding Documents (First Stage) (5) Bidders submit technical proposal without prices on the basis of minimum operating and performance requirements. (6) Technical and commercial clarifications and adjustments (Second Stage) (7) Distribution of amended Bidding Documents based on (6) above. (8) Submission of final technical and financial bids (9) Evaluation and award	JICA Procurement Guidelines accept Two-Stage Bidding.	High (Section 2.03 and 3.02)	A	LKPP	June 2018 [29]

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[29] See the footnote above.

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[27]	Priority	Responsible Entity	Expected Time of Completion
7	Single qualified bidder accepted under PQ	While WB accepts such single bidder qualified under PQ, ADB and JICA do not.	Moderate (Section 3.02)	B	LKPP	No Modification needed.[30]
8	Lump sum or Unit price contract (and their mix) and Turnkey contract to be added to type of contract. This category can be deleted if this part is not related to other parts. Or create new option "Based on Bidding Documents".	SPSE ICB has only two types of contract; Construction Work and Consultancy.	Moderate (Section 2.01)	+B	LKPP	Done
9	Change in JV members firms can be known to other bidders	In case of a change in members of a pre-qualified firm at the time of bidding, such member change can be known to other bidders participating to the same bidding. In conventional paper-based bidding, such member change will not be known to other participating bidders.	Low	B	LKPP	No Modification needed.[31]
10	The term, "Unsuccessful" for the bidders that passed technical evaluation (but not the best one) needs to be modified.	According to Section 83, Indonesian Presidential Decree No 54/2010, in case the contract negotiation fails with the technically-best-evaluated bidder, the negotiation with the technically-second-evaluated bidder will start. But, in current SPSE ICB, the latter is shown as "Non-successful" bidder. According to Section 2.03(and its Note) of JICA Procurement Guidelines, however, the price competition will be made only among bidders who have passed the technical evaluation under the "Single-stage two-envelope bidding". Thus the contract negotiation with the technically-second-evaluated bidder will be made only in an exceptional circumstance as provided in Section 5.10 (3) of JICA Procurement Guidelines.	Low	B	LKPP	Done[32]

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[30] For WB funded project, in case of single prequalified bidder, the subsequent process will go on, while for ADB and JICA funded projects, the PQ process will be re-initiated with certain modifications of conditions or other relevant methods based on the basic principles of Procurement Guidelines.

[31] From fair-competition point of view, such important change should be known to other bidders.

[32] The bidders that passed technical evaluation are now shown as "Pass Technical Evaluation".

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[27]	Priority	Responsible Entity	Expected Time of Completion
11	Announcement of New Bidding	A new bidding is announced only in SPSE ICB-PU website. It is not advertised in a newspaper of general circulation in Indonesia.	High (Section 3.01)	B	PU (Tender Committee)	Newspaper advertisement accepted

4. Evaluation on Safety and Vulnerabilities of SPSE ICB

4.1 Institutional Aspect

Regarding the institutional aspect of SPSE ICB, the study team confirmed followings about safety, vulnerabilities and information security of SPSE ICB.

> ➤ PU has a modern server room with quality hardware and facilities with good security measures. Redundant installation of 2 FWs and 2 AFWs for both directions (to the Internet and to office LAN) of DMZ is a particularly good measure for the information security. Server hardware for SPSE ICB has enough capacity, and internet connection has enough bandwidth.

> ➤ ITISI has good IT engineers who are taking care of SPSE ICB infrastructure and operation.

> ➤ PU has already established Information Security Policy and Guideline based on ISO 27001:2013 standard since 2015, and is updating them every year. It covers all controls items described in the ISO standard. PU plans to apply for the ISO certification in 2018.

> ➤ ITISI has dedicated CSIRT with 2 internationally certified CEH engineers

> ➤ ITISI gets annual security audit from reliable external organization (LEMSANEG)

However, the study team also observed some areas to be improved for better security and safety of SPSE ICB as follows.

> ➤ Introduction of centralized user account / IT asset management by using Active Directory or LDAP is recommended.

> ➤ USB memory usage in the office should be restricted or prohibited.

> ➤ Windows / office software version in the PCs should be properly planned to be upgraded. Especially, Windows 7 used in the dedicated client PC for SPSE ICB administration should be upgraded to a newer version of Windows before the extended support of Windows 7 will be terminated in 2020.

During the survey, some Bidders/Consultants with experiences in using PU's online procurement system mentioned the slow / unstable connection of the system. But the study team estimates that it might not be the problem of PU, but the problem of general internet environment of Indonesia because PU has considerably high-performance infrastructure. In case bidders/consultants have problem of slow connection to SPSE ICB, they can still come to PU office and upload their documents to SPSE ICB through PU's much faster LAN connection. The study team also confirmed that SPSE ICB can be accessed from outside of Indonesia including Japan, USA, UK, Russia, and Australia[33].

4.2 Technological Aspect

4.2.1 How the study team tested SPSE ICB

The study team has tested SPSE ICB for information security issues by using a security testing tool called OWASP ZAP[34] with the following conditions.

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[33] Tested by using open VPN connection service called VPN Gate (http://www.vpngate.net/)
[34] https://www.owasp.org/index.php/ZAP

- Tested mostly on LKPP training site[35] for SPSE ICB with dummy account of bidder, committee member, and trainer that were provided by LKPP.
- Also tested on real SPSE ICB site at PU[36] with dummy bidder account provided by PU.
- Performed automatic test with no user (no login) and with user (bidder, committee).
- Performed semi-automatic test with user (bidder, committee).
- Performed detailed manual test based on the result of the above tests.
- All tests were non-destructive (no damage to the system)

The study team also performed manual test on SPSE ICB for usability / operation issues.

4.2.2 Result of the test on information security issues

The study team has identified the following information security issues in SPSE ICB. These issues have already been reported to LKPP on 26th September 2017 together with the recommended solutions. The survey team also provided a technical seminar on secure programming to LKPP development team on 20th October 2017 and to PU ITISI on 1st November 2017 that covers technical details how to prevent or protect from these vulnerabilities. LKPP agreed to fix these (at least high severity) issues as soon as possible. These issues are also included in the monitoring sheet for updating SPSE ICB (Appendix 1).

Table 9: Summary of identified information security issues of SPSE ICB

Priority*	Severity	Issues Found
1	High	No HTTPS[37] (for real site)
2	High	Vulnerable to Replay attack[38]
3	High	Vulnerable to CSRF[39] attack
4	High	Vulnerable to Click-jacking[40] attack
5	Middle	Vulnerable to Rainbow Table[41] cracking
6	Middle	Application error (HTTP 500) disclosure
7	Low	No X-Content-Type-Options header
8	Low	No HttpOnly flag in Cookie[42]

* This priority reflects "the order" to apply solutions, since a solution affects others

Below are brief explanations for high severity issues.

(1) No HTTPS (for real site)

Current SPSE ICB does not use HTTPS encrypted connection. This means all information sent to and received from SPSE ICB (including user ID, password hash, uploaded files, etc.) can be eavesdropped or stolen by the third party at any point of the connection such as Wi-Fi access point or network switches. As of 26th September 2017, PU is trying to install TLS certificate

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[35] http://latihan-lpse.lkpp.go.id/esp-adb/
[36] http://spseicb.pu.go.id/eproc-icb/
[37] https://en.wikipedia.org/wiki/HTTPS
[38] https://en.wikipedia.org/wiki/Replay_attack
[39] Cross Site Request Forgery (https://en.wikipedia.org/wiki/Cross-site_request_forgery)
[40] https://en.wikipedia.org/wiki/Clickjacking
[41] https://en.wikipedia.org/wiki/Rainbow_table
[42] https://en.wikipedia.org/wiki/HTTP_cookie

which is required to implement HTTPS connection onto SPSE ICB, and LKPP engineer cooperate with them.

LKPP's training site also does not employ HTTPS connection. Despite that it is not real site, attackers can get valuable information on the structure of SPSE ICB (including all pages for committee members) that can be utilized for the attack on the real site.

(2) Vulnerable to Replay attack

Attackers can "record" the traffic between legitimate user and SPSE ICB, then can playback the traffic data to gain access as the legitimate user. For example, current SPSE ICB tries to hide the user's password by using MD5 hash in the login page, but attacker can record the hash and replay it to login to the system even if the attacker doesn't know the password.
Solutions include implementing HTTPS, CSRF protection, etc.

(3) Vulnerable to CSRF attack

Attackers can embed special code into other Web pages, and lure legitimate users to visit those pages in order to automatically send request (on behalf of the legitimate user) to SPSE ICB. For example, attacker can force a user (without noticing) withdraw from the bidding. This type of attack is particularity dangerous because FW / WAF may not be able to protect from these attacks.
Typical solution to this issue is adding and checking random information on every form page.

(4) Vulnerable to Click-jacking attack

Attackers can place fake buttons and inputs on top of the real site to fool user think that they are real buttons and inputs, and can steal such information as ID, password from the user.
Typical solution to this issue is adding an HTTP header to every response from SPSE ICB.

4.2.3 Result of the test on usability / operation issues

The study team has identified the following usability / operation issues on the SPSE ICB. These issues have already been reported to LKPP on 26th September 2017, and LKPP agreed to fix them at least for high priority issues. These issues are also included in the monitoring sheet for updating SPSE (Appendix 1).

Table 10: Summary of identified usability / operation issues of SPSE ICB

Priority	Issues Found
High	Page crashes when push Refresh button next to Unit input
Middle	Refresh button not only load the item list that would be rendered to the targeted combo-box but it commands the browser to re-load the whole page.
Middle	Inconsistent behavior of RUP list when choosing Agency from combo-box
Middle	Choosing a funding source of a budget will erase data in other budgets
Middle	Automatic digit formatting (inserting thousands period) doesn't work in the newly added budget field
Low	A term "Instansi" in error message has not been translated into English yet.

5. Conclusion

5.1 JICA Procurement Rules

There are no major issues in introducing SPSE ICB to JICA funded PU project procurement.

Regarding consultant selection, in addition to QCBS, QBS was added to SPSE ICB. On the consultants short-listing process, JICA considers that the EOI process is not mandatory, while in Indonesia it is for the most of cases. While current SPSE ICB starts with EOI process, in future, for JICA funded projects SPSE ICB needs to be modified to accept consultant shortlist prepared without EOI process. Currently, the Request for EOI is being announced in only in SPSE ICB-PU Website. Since JICA Guidelines for the Employment of Consultants (Section 3.04 Note 5) provides that if EOI are invited, the invitation shall be advertised in at least one newspaper of general circulation in the Borrower's country, the Request for EOI should also be advertised in at least one newspaper of general circulation in Indonesia.

Regarding civil works, Single-Stage Two-Envelope Bidding with or without PQ was incorporated in SPSE ICB. As shown in the footnote No.28, PU plans to adopt TSB in an ongoing Project, PU and LKPP should develop TSB in SPSE ICB to accommodate TSB. SPSE ICB can also be applied to procurement using JICA Standard Bidding Documents for "Plant" and for "Design Build", if the procurement is made under Single-Stage Two-Envelope Bidding.

Although Single-Stage One-Envelope Bidding is incorporated in construction work in SPSE ICB, it is bundled with pre-qualification or post-qualification as shown in Table 6. Since Single-Stage One-Envelope Bidding cannot be conducted without pre-qualification or post-qualification, PU and LKPP should adjust system for applying SPSE ICB to procurement of "Goods" or "Small Works" in accordance with JICA's SBDs.

5.2 Information Security

On the institutional aspect, both PU and LKPP have good information security management system and organization. Especially, PU has comprehensive information security policy and guideline based on ISO 27001:2013 standard, has a dedicated CSIRT for handling security incidents, and has regular security audit by trusted external entity. Therefore, the survey team concludes that both PU and LKPP have sufficient capability to operate SPSE ICB in secure manner.

On the technical aspect, LKPP has up to date, modern software development team with quality engineers. SPSE ICB is built with mature, stable software components running on reliable hardware within very secure network environment. Though the survey team has discovered several critical security vulnerabilities in SPSE ICB, the development team has promptly responded to the survey team's report and fixed those vulnerabilities before the final report of the survey. Therefore, the survey team concludes that SPSE ICB is now sufficiently secure for the use of JICA procurement.

5.3 Recommendation to JICA

Considering the above, the Study Team recommends that JICA allow PU to use SPSE ICB for the following procurement packages under Japanese ODA Loan Projects.

➢ Consultant Selection using QCBS or QBS

➢ Civil Works, Plant and Design Build using Single-Stage Two-Envelope Bidding with or without PQ

However, the following conditions should be applied for using SPSE ICB.

➢ JICA's Guidelines (e.g. Guidelines for the Employment of Consultants and Guidelines for Procurement under Japanese ODA Loans) and JICA's Standard Bidding Documents should be applied. Especially but not limited to, following points should be considered carefully by Evaluation Committee in PU:

◈ New bidding except consultant selection should be announced in at least one newspaper of general circulation in Indonesia;

◈ All pages of bid shall be signed or initialed by the person signing the bid in accordance with JICA's SBDs unless it is assured that the bid is prepared/submitted by the authorized signer and a third party cannot falsify the bid;

◈ In case only one applicant is prequalified as the result of the PQ evaluation, while no modification SPSE ICB is needed, according to Note 3 (02) of Section 3.02 of JICA Procurement Guidelines, the PQ process should be rejected and PU should initiate another prequalification process with certain modifications of conditions or other relevant methods based on the basic principles of JICA Procurement Guidelines; Economy, Efficiency, Transparency and Non-discrimination;

◈ The Short List of Consultants "shall normally consist of not less than three and not more than five consultants." (JICA Guidelines for the Employment of Consultants (Section 3.04 (2)); and

◈ In addition to uploading PDF file, the original of Bid Security should be submitted before the bid closing date. PU should manually check the submission of the original.

➢ Additional assessment should be required in case Functional update of SPSE ICB. (See 6.3 below for the details.)

6. Follow-up Items

6.1 JICA Procurement Rules

The issue to be addressed in immediate future is the Preparation of users' manual for Bidders/Consultants, except for QCBS for which such manual already exists.

Issues to be addressed later are:

(1) The list of procurement package to be sorted out by sector in addition to funding source and category of procurement for increasing Bidders/Consultants' usability;
(2) Request for EOI and Announcement of New Bidding to be advertised in a newspaper of general circulation in Indonesia in addition to the announcement in the PU website (SPSE ICB-PU);
(3) Uploading of signed bid (See 6.1.4 and 6.1.5 below for the details);
(4) Consultant Selection process starting with Short List to be accommodated;
(5) Two-Stage Bidding (TSB) to be installed to SPSE ICB for an on-going Japanese ODA loan project expected to use TSB; and
(6) Confirmation of Bid security submission before the bid closing date, both in PDF and hardcopy.

The above issues except issue (5) are technical questions that can be resolved in a due time, issue (5) is to be examined both by PU and JICA.

6.1.1 Preparation of users' manual for Bidders/Consultants

Preparation of users' manual for Bidders/Consultants, except for QCBS, is to be conducted by PU after finalization of the present report, in close coordination with LKPP. Such manual should be ready before next process of EOI invitation or PQ/Bid announcement will be made.
It is desirable that JICA and other donors be involved in such manual preparation process.

6.1.2 Sorting by Sector

In future, when the number of procurement package is increased, the Bidders/Consultants may face difficulty in identifying the procurement package to download. In addition to funding source and category of procurement, the list of procurement package should be sorted out by sector for increasing Bidders/Consultants' usability. It is desirable that LKPP inform JICA and other donors on the progress of introduction of such change.

6.1.3 Announcement of New Bidding

JICA Guidelines for Consultant Employment (Section 3.04 Note 5) and JICA Guidelines for Procurement (Section 3.01) stipulates that Request for EOI, Invitations to PQ or Bid announcement shall be advertised in at least one newspaper of general circulation in the Borrower's country". Thus, for the time being, newspaper advertisement needs to be made.

6.1.4 Uploading of Signed Bid

On the issue (3) (Uploading of signed bid), JICA's SBDs provide that "All pages of the Bid where entries or amendments have been made shall be signed or initialed by the person signing the Bid." If the bid is to be uploaded, this causes a practical big burden to bidders. The possible options are described in 6.1.5 below.

On the issue of the bid announcement in newspaper and uploading of signed bid, JICA might exchange view with MDBs (World Bank, ADB and Islamic Development Bank) that are

examining these issues in a working group preparing new SBDs for e-procurement. The working group report is expected to be finalized in June 2018.

MDBs current position is shown in the table below.

Table 11: MDB Position on Bid Advertisement and Signature on Bid/ Proposal[43]

MDB	Bid Advertisement	Signature on every page of Bid/Proposal
World Bank	WB's new procurement regulation (Clause 6.11) stipulates that timely and adequate advertisement of a Borrower's requirement is required. In case of WB-funded PU projects, no newspaper advertisements have been made.	In case of SPSE ICB, needs to be examined with legal expert. Naturally, such requirement will impose extra burden on bidders/consultants.
ADB	**(1) Consultant Selection** In accordance with Clause 2.6 of ADB's consultant guidelines, a new selection package shall be advertised in ADB's website (CSM-CS Recruitment Notice). Advertisement in an appropriate national journal, newspaper, or PU website is optional. **(2) Procurement of Goods and Services** In accordance with Clause 2.8 of ADB's procurement guidelines, a new bidding, shall be advertised as specific procurement notices in ADB's website **as well as** in (i) a newspaper of national circulation in the borrower's country (at least in one English language newspaper, if available), **or** (ii) on an internationally known and freely accessible website in English. (In case of NCB, sole advertisement at SPSE-PU is accepted.)	ADB will consider that signature on every page of bid/proposal is necessary to confirm the original of the documents in accordance with Clause 20.2 of ADB's SBD (Works). On the other hand, **a MDB's working group is preparing new SBDs for e-procurement where the signature on every page might be unnecessary.** At ADB Head Office, OSFMD (Operations Services and Financial Management Department) is representing ADB at the MDB's working group.
IsDB	In new guidelines to be published in January 2018, advertisement on web site where everyone can access freely and easily find procurement information will be required instead of advertisement in a newspaper.	Needs to be examined with legal expert. The PDF bid/proposal without signature could be accepted, if a proper digital signature system is introduced.

6.1.5 Available options for signature / initial in digital format

In case JICA considers introducing some forms of signature / initial in digital format for the uploaded documents from bidders/consultants, there are following options available that can be used with SPSE ICB.

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[43] Based on the meetings during the second and the third mission in October and December 2017.

Table 12: Technical options for signature in digital format

No.	Option	Security Level	Burden on Bidder / Consultant	Modification of SPSE ICB
0	Paper-based with signature	High	Middle	N/A
1	No signature (Plain PDF)	Acceptable	Low	No need
2	Scan of signed paper	Acceptable	High	No need
3	PDF with scanned / pre-written signature	Acceptable	Low	No need
4	Digital signature	Very High	Middle (preparation) / Low (creation)	No need

Note that none of these options requires modification of SPSE ICB.
Below are detailed explanation and evaluation of each option in the above table.

(1)　Option 1: No Signature (Plain PDF)

Plain PDF with no signature can be used in SPSE ICB with acceptable security for 2 reasons. First, the owner of document must first login to the system, thus it automatically satisfies the authenticity (who the owner is). Second, the uploaded document is automatically encrypted while stored in the system, thus it's impossible to modify the document unless the third person could obtain both the encrypted file and the decryption key. The only possible security problem of this option is in case the third person (attacker) could break into the system.

(2)　Option 2: Scan of signed paper

This option is basically the same as option 0 (manual paper-based process), but it causes heavy workload on the bidder / consultant because they must first print all documents onto papers, then manually sign them, then must scan them all into PDF files. It is particularly difficult to scan drawings of civil work because the size of drawing tends to be very large (A0 or A1). It is also less secure than paper-based document because it is possible to digitally erase or substitute signatures on the scanned document image.

(3)　Option 3: PDF with scanned / pre-written signature

It is possible to attach scanned or pre-written signature into documents. For example, you can embed scanned image of signer's initial into every page's footer in Microsoft Word. It is also possible to register the signer's signature and initial in Adobe Reader (free software), then add the registered signature / initial into any PDF file[44]. This option is easy to implement with no cost. The security level of this option is acceptable and is effectively the same as option 1 and option 2 for the use in SPSE ICB.

(4)　Option 4: Digital signature

The security level of Digital signature is the highest among all possible options, and is even higher than paper-based document with hand-written signature because it is possible to guarantee the authenticity (who the owner is) and non-repudiation (prohibition of ownership denial) by the trusted third party. In order to use digital signature, the bidder / consultant must first obtain its own digital certificate from trusted CA (Certificate Authority), and it might cost up to around a hundred US dollar per year. But once they have obtained the digital certificate, digital signature can be rather easily applied to any PDF file by using such tool as Adobe Reader[45]. On the committee side, they don't need any special software to view and verify the

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[44] https://helpx.adobe.com/reader/using/sign-pdfs.html
[45] https://helpx.adobe.com/acrobat/using/certificate-based-signatures.html

digitally signed PDF because most PDF reader software can automatically verify the signature.

(5) Recommendation

The survey team recommends the following option for JICA procurement on SPSE ICB.

Option 1 is the most recommended for its simplicity and acceptable security.

Option 3 is also recommended in case "visible" signature on the document is mandatory, but the security level is effectively the same as Option 1.

Option 4 is recommended in case the highest security level (with guarantee from trusted third party) is required.

6.1.6 Uploading Financial Bids/Proposals

A Bidder/Consultant needs to upload excel-format file in addition to pdf-format one in case of financial bids/proposals. For reference to the Bidder/Consultant, EC in PU should stipulate in Bid Data Sheet (or Date Sheet) that the Bidder/Consultant shall prepare excel-format financial bids/proposals as well as pdf-format ones and the pdf-format bids/proposals shall prevail to excel-format ones in case of inconsistency between them.

6.1.7 Consultant Selection process starting with Short List to be accommodated

While in Indonesia the EOI process mandatory for the most of cases to prepare the Short List of consultants, JICA considers that the EOI process is not mandatory. SPSE ICB should accommodate the selection process without EOI in case PU plans such selection process.

6.1.8 Two-Stage Biddings

Since PU plans to adopt TSB in the ongoing Project, PU and LKPP should develop TSB in SPSE ICB. Once developing the trial version, PU and LKPP should request for review to JICA. Until the completion of the TSB system in SPSE ICB, PU is required to conduct TSB on manual basis.

6.1.9 Bid Security

In addition to uploading pdf file, the original of Bid Security should be submitted before the bid closing date. This is because a scanned pdf file of bid security is not valid. In case there is consistency between the original bid security and the scanned-one, the original shall prevail. EC in PU should manually check the presence or absence of the original bid security at the time of opening Bids.

6.2 Information Security

As of the time of FR, not all fixes and improvements to SPSE ICB are applied to PU's real site despite that they are already applied to LKPP's training site. Therefore, JICA should follow-up whether all fixes and improvements are finally applied to the PU's real SPSE ICB site.

It is also worth following up whether PU would be able to acquire ISO 27001 certificate in 2018 as planned because the certification ensures that PU has established objectively verifiable information security management system of internationally acclaimed ISO standard.

6.3 Establishment of Procedures for SPSE ICB System Update

Any computer system should have regular bug fixes and updates in order to maintain good functionalities and information security. However, these updates for SPSE ICB could also affect existing users and ongoing e-procurement processes. Therefore, procedures for SPSE ICB system update should be carefully determined and agreed among all stakeholders including PU, LKPP, and JICA. The survey team proposes following procedures for SPSE ICB system update.

- All available system updates of SPSE ICB should be informed to PU by LKPP on regular basis (such as weekly, monthly, etc.).

- System updates should be categorized into following 2 categories.

  - Functional update: Addition of a new functionality or modification of an existing functionality of the system. Any (even small) change of the system that alters user's interaction with SPSE ICB should be categorized in this category.

  - Fix: Correction of bugs, malfunctions, and security problems that does not alter user's interaction with SPSE ICB. Basically, all these fixes must be invisible to the user of SPSE ICB, but some cosmetic changes of user interface or small corrections of message texts (that don't affect user's interaction with the system) can also be in this category.

- All fixes can be directly applied to PU's SPSE ICB by LKPP team without official request from PU because some of them can be critical and urgent (such as security fixes).

- All functional updates must be applied to PU's SPSE ICB upon official request from PU only. Without the request from PU, LKPP should not apply these functional updates to PU's SPSE ICB.

- Before sending the official request, PU should notify the functional update to JICA.

- JICA should examine the content of functional update by using LKPP's training SPSE ICB site (before PU will send the request to LKPP). In case JICA finds problem with the update, JICA should request LKPP for the correction of the functional update.

- PU should request LKPP to apply the functional update only after JICA confirms and accepts the content of update.

- After applying the functional update, PU should announce the content of update on the SPSE ICB site, and should send notification email to registered users of the system (bidders/consultants, committee members).

The flowchart on the next page illustrates the proposed procedures for SPSE ICB system update.

LKPP

PU

JICA

New system update is developed

Category?

Fix

Functional update

Notify PU (on regular basis)

Directly apply fix to SPSE ICB

Correction to function update

Apply functional update to SPSE ICB

Notify JICA
(and other donors, if necessary)

Informed of the applied fix from LKPP

Officially request LKPP to apply the
functional update to SPSE ICB

Announce the functional update
on SPSE ICB Web site

Send notification email about the functional
update to registered users

Examine the content of functional update
by using LKPP's training site

Any problem?

No

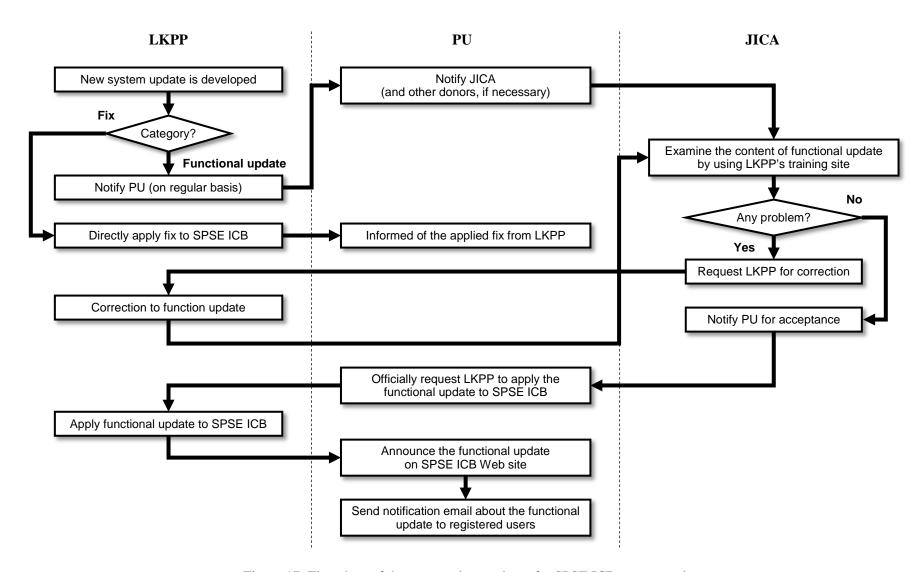**Yes**

Request LKPP for correction

Notify PU for acceptance

Figure 17: Flowchart of the proposed procedures for SPSE ICB system update

Appendix 1: Monitoring Sheet for Updating SPSE ICB

SPSE ICB (General)

No.	Points to be Updated	Background	Inconsistency[46]	Priority[47]	Responsible Entity	Expected Time of Completion
1	"JICA" to be added to "Funding Sources"	When a new Bid Package is created, "JICA" should be added to as one of the "Funding Sources".	High	A	LKPP	Done
2	Except for QCBS, there are no users' manual for Bidders/Consultants	(Not yet prepared.)	Moderate	A	PU and LKPP	After installing complete QBS and Civil Works
3	The change of registered Bidder/Consultant email address to be accommodated	The person in charge of the Bidder/Consultant might be moved to other post.	Low	A	PU	Done
4	E-mail notification to Bidders/Consultants	In addition to mailbox in SPSE ICB, the notification should be e-mailed to Bidders/Consultants' registered e-mail address for increasing Bidders/Consultants' usability.	Low	B	LKPP and PU	Done (PU linked own e-mail server to SPSE ICB.)
5	Explanation of Information Security and Bandwidth	Information security policy and bandwidth of internet connection should be explained in Q&A and/or users' manual for increasing Bidders/Consultants' usability	Low	B	PU	Done
6	Sorting by Sector	The list of procurement package should be sorted out by sector in addition to funding source and category of procurement for increasing Bidders/Consultants' usability.	Low	B	LKPP in consultation with PU	Later

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[46] High: In order to be in line with JICA Procurement Guideline or JICA Guidelines for Employments of Consultants (collectively referred to as "JICA Guidelines"), SPSE ICB is to be modified;
Moderate; Without modifying SPSE ICB, some measures can be taken to be in line with JICA Guidelines;
Low: Some minor adjustments may be made due to online (rather than paper-based) processing. Other minor points are also included.
[47] A: Required before applying to JICA funded projects, B: System modification can be after applying to JICA funded projects.

SPSE ICB (Consultancy)

No.	Points to be Updated	Background	Inconsistency[48]	Priority	Responsible Entity	Expected Time of Completion
1	Number of QBS Short Listed consultant will be better not to be mentioned.	According to Section 2.8 of Guidelines on the Use of Consultants by ADB, for QBS, six consultants should be listed, while JICA Guidelines for Consultant Employment specifies "Three to Five". In a side letter signed with a recently concluded Loan Agreement, JICA and PU agreed that the Short-Listed consultant can be two,	High (Section 3.04)	A	LKPP	Done
2	Can the selection process starting with Short List be accommodated?	JICA considers that the EOI process is not mandatory, while in Indonesia it is for the most of cases. SPSE ICB can accommodate the selection process without EOI, though LKPP needs to consult internally.	Moderate (Section 3.04)	B	LKPP	Later
3	Request for EOI to be announced in only in SPSE ICB-PU Website. It should be announced also in a newspaper.	JICA Guidelines for the Employment of Consultants（Section 3.04 Note 5）provides that if EOI are invited, the invitations shall be advertised in at least one newspaper of general circulation in the Borrower's country. While, the "Summary Information" concerning a specific REOI can be seen in the "Bidding Information" of SPSE ICB Website, request for EOI should be announced also in at least one newspaper of general circulation in Indonesia.	High (Section 3.04 Note 5)	B	PU (Tender Committee)	At the next invitation for EOI for a Japanese ODA loan project

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[48] Section numbers are taken from JICA "Guidelines for Employment of Consultants under Japanese ODA Loans dated April 2012".

SPSE ICB (Civil Work)

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[49]	Priority	Responsible Entity	Expected Time of Completion
1	"Bid Opening Document" should not be disclosed to bidders during technical evaluation stage.	This Document contains such information as "Bidder Name" and "Bid Amount". Thus, this Document should not be disclosed during technical evaluation stage.	High (Section 5.04)	A	LKPP	Done
2	Technical envelop and Financial envelop should be separated.	Under JICA Procurement Guidelines (Single stage Two-Envelope Bidding), bidders should submit technical and financial bids simultaneously in two separate envelopes. (In case of ADB, while "Single stage One-Envelope Bidding" is commonly adopted, in case of "Single stage Two-Envelope Bidding" they also should be contained in two separate envelopes as provided in II-A-2.6 (b) of ADB's Procurement Guidelines). Once technical evaluation is over, the successful bidder should be decided based on the "lowest evaluated cost". LKPP stated that after an ongoing SPSE modification process, "Minutes of Financial Evaluation" will be corrected in such a way that the bidder names will not be disclosed. Deleting the table showing financial and technical proposals together with bidder ranking will be a major modification that needs to be discussed in LKPP.	High (Section 2.03)	A	LKPP	Done

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[49] Section numbers are taken from JICA "Guidelines for Procurement under Japanese ODA Loans dated April 2012".

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[49]	Priority	Responsible Entity	Expected Time of Completion
3	Single-Stage Two-Envelope Bidding (SSTEB) <u>with PQ</u> need to be accommodated. [Sequencing of SSTEB]; (With PQ) (1) PQ advertisement (2) PQ document submission (3) Evaluation and selection of pre-qualified bidders (4) Announcement and Distribution of Bidding Documents (5) Simultaneous Submission of Technical and Financial Bids in separate envelope (6) Evaluation of Technical Bids (7) Opening of Financial bids of bidders that have passed technical evaluation (8) Award to the bidder who submitted the lowest evaluated financial bid.	JICA Procurement Guidelines recommend Single-Stage Two-Envelope Bidding with PQ.	High (Section 2.03 and 3.02)	A	LKPP	Done

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[49]	Priority	Responsible Entity	Expected Time of Completion
4	Single-Stage Two-Envelope Bidding (SSTEB) without PQ need to be accommodated. [Sequencing of SSTEB without PQ]; Steps (1) to (3) above are skipped. (4) Announcement and Distribution of Bidding Documents (5) Simultaneous Submission of Technical and Financial Bids in separate envelope (6) Evaluation of Technical Bids (7) Opening of Financial bids of bidders that have passed technical evaluation (8) Award to the bidder who submitted the lowest evaluated financial bid	JICA Procurement Guidelines recommend one stage two envelope bidding without PQ.	High (Section 2.03 and 3.02)	A	LKPP	Done

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[49]	Priority	Responsible Entity	Expected Time of Completion
5	Two-Stage Bidding (TSB) <u>with PQ</u> needs to be accommodated. [Sequencing of TSB with PQ]; Steps (1) to (3) are the same. (4) Distribution of Bidding Documents to the Qualified Bidders (First Stage) (5) Pre-qualified Bidders submit technical proposal without prices on the basis of minimum operating and performance requirements. (6) Technical and commercial clarifications and adjustments (Second Stage) (7) Distribution of amended Bidding Documents based on (6) above. (8) Submission of final technical and financial bids (9) Evaluation and award	JICA Procurement Guidelines accept Two-Stage Bidding.	High (Section 2.03 and 3.02)	A	LKPP	June 2018 [50]

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[50] PU plans to adopt Two-Stage Bidding (TSB) in the ongoing Project.

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[49]	Priority	Responsible Entity	Expected Time of Completion
6	Two-Stage Bidding (TSB) <u>without PQ</u> needs to be accommodated. [Sequencing of TSB without PQ]; Steps (1) to (3) are skipped. (4) Announcement and Distribution of Bidding Documents (First Stage) (5) Bidders submit technical proposal without prices on the basis of minimum operating and performance requirements. (6) Technical and commercial clarifications and adjustments (Second Stage) (7) Distribution of amended Bidding Documents based on (6) above. (8) Submission of final technical and financial bids (9) Evaluation and award	JICA Procurement Guidelines accept Two-Stage Bidding.	High (Section 2.03 and 3.02)	A	LKPP	June 2018 [51]

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[51] See the footnote above.

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[49]	Priority	Responsible Entity	Expected Time of Completion
7	Single qualified bidder accepted under PQ	While WB accepts such single bidder qualified under PQ, ADB and JICA do not.	Moderate (Section 3.02)	B	LKPP	No Modification needed.[52]
8	Lump sum or Unit price contract (and their mix) and Turnkey contract to be added to type of contract. This category can be deleted if this part is not related to other parts. Or create new option "Based on Bidding Documents".	SPSE ICB has only two types of contract; Construction Work and Consultancy.	Moderate (Section 2.01)	+B	LKPP	Done
9	Change in JV members firms can be known to other bidders	In case of a change in members of a pre-qualified firm at the time of bidding, such member change can be known to other bidders participating to the same bidding. In conventional paper-based bidding, such member change will not be known to other participating bidders.	Low	B	LKPP	No Modification needed.[53]
10	The term, "Unsuccessful" for the bidders that passed technical evaluation (but not the best one) needs to be modified.	According to Section 83, Indonesian Presidential Decree No 54/2010, in case the contract negotiation fails with the technically-best-evaluated bidder, the negotiation with the technically-second-evaluated bidder will start. But, in current SPSE ICB, the latter is shown as "Non-successful" bidder. According to Section 2.03(and its Note) of JICA Procurement Guidelines, however, the price competition will be made only among bidders who have passed the technical evaluation under the "Single-stage two-envelope bidding". Thus the contract negotiation with the technically-second-evaluated bidder will be made only in an exceptional circumstance as provided in Section 5.10 (3) of JICA Procurement Guidelines.	Low	B	LKPP	Done[54]

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[52] For WB funded project, in case of single prequalified bidder, the subsequent process will go on, while for ADB and JICA funded projects, the PQ process will be re-initiated with certain modifications of conditions or other relevant methods based on the basic principles of Procurement Guidelines.

[53] From fair-competition point of view, such important change should be known to other bidders.

[54] The bidders that passed technical evaluation are now shown as "Pass Technical Evaluation".

No.	Points to be Updated	Background	Inconsistency with JICA Guidelines[49]	Priority	Responsible Entity	Expected Time of Completion
11	Announcement of New Bidding	A new bidding is announced only in SPSE ICB-PU website. It is not advertised in a newspaper of general circulation in Indonesia.	High (Section 3.01)	B	PU (Tender Committee)	Newspaper advertisement accepted

SPSE ICB (Information Security)

No.	Points to be Updated	Background	Priority	Responsible Entity	Expected Time of Completion
1	Implement HTTPS-only connection	Current SPSE ICB does not use encrypted connection, so all information sent to and received from SPSE ICB can be eavesdropped or stolen by the third party.	High	LKPP	Done
2	Protect from Replay attack	Attackers can record and replay any legitimate user's traffic.	High	LKPP	Done
3	Protect from CSRF attack	Attackers can force legitimate user to send any request on behalf of the user.	High	LKPP	Done
4	Protect from Click-jacking attack	Attackers can place fake buttons and inputs on the real site.	High	LKPP	Done
5	Protect from Rainbow Table cracking	Attackers can crack password hash by using MD5 rainbow tables	Middle	LKPP	Done
6	Application error (HTTP 500) disclosure	SPSE ICB sometimes show raw error messages on the page, so attackers can get internal technical information of the site.	Middle	LKPP	Done
7	No X-Content-Type-Options header	Attackers may use malicious image files to attack users who use older versions of Internet Explorer.	Low	LKPP	Later
8	No HttpOnly flag in Cookie	Attackers may use malicious code to eavesdrop HTTP cookies.	Low	LKPP	Later
9	USB memory usage should be restricted in ITISI office	USB memory might contain malicious code that can bypass anti-virus software	Low[55]	PU	Later
10	Windows OS on the dedicated PC for admin access to SPSE ICB should be planned to upgrade to Windows 10 or later before 2020	Mainstream support for Windows 7 is already terminated, and extended support for security update will be terminated in 2020.	Low	PU	Done

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[55] Since the recent trend of attacking method is shifting from physical device (such as USB) to network (such as SNS and Email), the priority is considered rather low as far as good Anti-Virus tool is used.

SPSE ICB (Usability and Operation)

No.	Points to be Updated	Background	Priority	Responsible Entity	Expected Time of Completion
1	Fix code of "Refresh" button next to Unit input to prevent crashing.	Page crashes when push Refresh button next to Unit input	High	LKPP	Done
2	Improve code of reloading the item list of combo-box so that no page reload will occur	Refresh button not only load the item list that would be rendered to the targeted combo-box but it commands the browser to re-load the whole page.	Middle	LKPP	Done
3	Improve code of RUP list combo-box to function consistently	Inconsistent behavior of RUP list when choosing Agency from combo-box	Middle	LKPP	Done
4	Fix code of "funding source" combo-box so that no data erasure will occur in other fields	Choosing a funding source of a budget will erase data in other budgets	Middle	LKPP	Done
5	Automatic digit formatting should occur in all budget field	Automatic digit formatting (inserting thousands period) doesn't work in the newly added budget field	Middle	LKPP	Done
6	Translate "Instansi" into "Agency" in error message	A term "Instansi" in error message has not been translated into English yet.	Low	LKPP	Done

Appendix 2: Company profile of Javan IT Services

(Outsourcing company working with LKPP for SPSE development)

I. Company Profile

Background
JAVAN IT Services is one of the divisions of the company from JAVAN (PT. Javan Cipta Solusi). It was founded by a group of young information technology enthusiast who have a common dream to create IT solutions for humankind. Now Javan focuses on delivering IT solutions to businesses and government organizations. We help them to develop their competitive advantages which contribute direct impact to working efficiency, sales growth, profit, and realization of good governance. Our team consist of talented people in IT engineering who graduated from precious university in Indonesia and experienced in doing many software development projects for local and multinational companies. (ref. App. 2-2)

Business name
PT. Javan Cipta Solusi

Business phone #	Business fax #	Business email address
+62-22-87831878	-	info@javan.co.id

Business Website
https://www.javan.co.id (ref. App. 2-2)

Business mailing address (Head Quarter)
Komplek Daichi No. 55, Jl. Terusan Jakarta, Bandung, Jawa Barat, Indonesia (ref. App. 2-2)

Type of business	Year established	Hours of operation	Number of employees
Create integrated, innovative and creative IT solutions that meet market needs. (ref. App. 2-2)	2008 (ref. App. 2-2)	24/7 Helpdesk & Support (ref. App. 2-2)	30 persons (ref. App. 2-2)

Additional Information
PT. JAVAN Cipta Solusi is registered as a Bidder/Consultant member in LPSE Kominfo or SPSE for Ministry of Communications and Informatics of Indonesia (http://lpse.kominfo.go.id/eproc/) with its Bidder/Consultant ID 31.468.687.4-423.000 (ref. App. 2-4)

II. Main Contact Information

Name
Wisnu Manupraba

Title	Phone #	Email address
Commissioner & CEO (ref. App. 2-1)	-	wisnu@javan.co.id (ref. App. 2-1)

Experience in SPSE
As a Team Leader in LKPP (Lembaga Kebijakan Pengadaan Barang dan Jasa Pemerintah) from Feb 2016 – Dec 2016 (11 months) and had led a team to develop "Aplikasi Pendukung SPSE", several applications to support E-Procurement System in Indonesia. (ref. App. 2-1)

III. List of managers

Name	Job Title
Wisnu Manupraba	Commissioner & CEO [(ref. App. 2-1)]
Indra Sakti Wijayanto	Head of Business Development [(ref. App. 2-2)]
Bayu Hendra Winata	Head of Software Development [(ref. App. 2-2)]
Yudi Haribowo	Head of Project Management [(ref. App. 2-2)]

IV. Major Clients and their Web Application that has been developed

Company Name	Background of company or products	Web URL
PT. Konten Digital Indonesia [(ref. App. 2-1)]	A company that focused on digital publishing platform	http://ngomik.com
JavanLabs [(ref. App. 2-1)] (Own Product)	It is one of the divisions of the company from Javan (PT. Javan Cipta Solusi) that focus on research and product development.	https://javanlabs.com/
PT. Javan Cipta Solusi (Own product)	Hartaku.com is an online cloud Accounting software that provides many benefits for everyone in performing analysis and making financial reports with ease, quickly and accurately.	https://hartaku.com/
PT. Javan Cipta Solusi (Own product)	Ngasong.com is a dropship platform that allows online business persons to market a wide range of quality products. Ngasong products can be sold through martketplace, social media, or direct sales. Resellers benefit from the difference between Reseller Price and Retailer price.	https://www.ngasong.com/
BTPN Bank* [(ref. App. 2-2)]	Commercial Bank	https://www.btpn.com/
Ministry of Maritime Affaris and Fisheries* [(ref. App. 2-2)]	Government	http://kkp.go.id/
Ministry of Communication and Informatics* [(ref. App. 2-2)]	Communication and Informatics	https://www.kominfo.go.id/
McDonalds Indonesia* [(ref. App. 2-2)]	Fast food	http://www.mcdonalds.co.id/
Telkomsigma* [(ref. App. 2-2)]	a leading integrated End-to-End ICT Solutions company for more than 29 years in Indonesia, currently employing more than 1200 personnel including internationally certified IT professionals. With our experiences and competencies, we have been at the forefront of innovative IT solutions, development and operations, delivering IT benefits both at home and abroad.	http://www.telkomsigma.co.id/

Company Name	Background of company or products	Web URL
Bandung Institute of Technology* (ref. App. 2-3)	Public Colleges in Bandung, Indonesia	https://www.itb.ac.id/
SC Johnson Indonesia* (ref. App. 2-3)	PT SC JOHNSON & SON INDONESIA is a company established in 1971 and is a partnership between SC Johnson & Son, Inc., a multinational company headquartered in Racine, Wisconsin, USA with the majority shareholder of Indonesia.	http://www.scjohnson.co.id/
Directorate General of Immigration * (ref. App. 2-3)	Ministry of Law and Human Rights of Indonesia	http://www.imigrasi.go.id/

* Web might not be developed by PT. JAVAN Cipta Solusi

V. References

No.	Sites
App. 2-1	https://www.linkedin.com/in/wisnu-manupraba-a61199b/
App. 2-2	https://www.javan.co.id/
App. 2-3	https://www.slideshare.net/inoex135
App. 2-4	https://lpse.kominfo.go.id/eproc/rekanan/lelangpeserta/46683