ALPMS

(Automated Loan Processing & Monitoring System)

By

Group 04

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Approval

This report entitled

ALPMS

(Automated Loan Processing & Monitoring System)

by

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has been approved by

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The final copy of this report has been examined by the signatory and we find that both the content and the form meet acceptable presentation standards of scholarly work in the above mentioned discipline.

Originality Statement

I hereby declare that this submission is my own work and to the best of my knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the award of any other degree or diploma at IUB or any other educational institution, except where due acknowledgement is made in the report. Any contribution made to the research by others, with whom I have worked at IUB or elsewhere, is explicitly acknowledged in the report. I also declare that the intellectual content of this report is the product of my own work, except to the extent that assistance from others in the project's design and conception or in style, presentation and linguistic expression is acknowledged.

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Reference:

www.sreda.gov.bd/ , 5/07/17

www.biffl.org.bd/ , 5/07/17

www.idcol.org , 5/07/17

Appendix (To reduce the size of the main report an extension of the report is given in this area. The main report should refer to this area. The part that is so important that you can't exclude it from the report neither can include in the main part is normally placed in this section.)

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BACKGROUND OF THE PROJECT

In our CSE 303 Database Management System course we have been instructed to create a software which automates the loan processing system for Implementing financial institutions (IDCOL/BIFFL) as our term project. Automated Loan Processing & Monitoring System allows to organize the loan distribution procedure in a more systematic, logical, and orderly fashion. It also enables the stakeholders to track the project's progress and to keep record of it. This software will store data concerning the progression of the project, reports, eligibility conformities more efficiently and accurately. This software intentionally won't store any sensitive or confidential data of the proponents as a precaution for avoiding any security incident. Financial institutions will face an enormous challenge if the procedures are done manually which prevents loans from closing on schedule. An automated system is a solution, which allows these organizations to close loans in time, keep track of projects while eliminating the monotonous stream of manual data entry which can be error prone and costly.

The entire existing loan processing system of the IFI at present is done manually. Our job is to automate the system where needed and make it as efficient as possible. The clients of our software are the proponents, IFI (Implementing financial institutions), SREDA(Sustainable and Renewable Energy Development Authority), PD (Participating distributor), JICA(Japan International Cooperation Agency) and also MPEMR (Ministry of Power,Energy and mineral Resources). IFI basically provides the loan and SREDA decides if the proponent eligible for the loan or not. The job of SREDA is to examine the proposed list of energy efficient equipments and to monitor the project of the proponent after receiving the loan.

The initial change to the process of loan type A & loan type B is to provide the proponent with the ability to fill and submit the forms online. The application case number will be generated automatically, thus making it easier to track the progress of the case for IFI and SREDA. We will create a management information system (MIS) using RDBMS (MySQL) where we can save all the data of the proponent and the results after evaluating in each step. The proponent shall also be notified about the result via e-mail notification. The advantage that we would get by using MIS is immense. We can eliminate the possibility of receiving duplicate application, easier to track down precedence cases which will be highly beneficial for the IFI. Searching submitted forms and

analyzing them will become easier and employees will be able to get their work done more efficiently. Record keeping, tracking and storing reports on individual cases will become possible for IFI and SREDA. Energy usage and production related data can be stored also.

The software will reduce redundant manual data entry. Thus, more cases can be handled comparatively; increasing efficiency and ensuring accuracy. However, for using automated system there will be quite a few constraints. Such as- keeping backup of the data, providing security, and a 24/7 online server. Managing all these constraints will result in a decent software which will serve to be more systematic, logical, and orderly. This software will cater to two types of loans.

There are two loans for extending the EE&C promotion financing loan, which are:

(a) A-type loan: IFIs lend money directly to the companies and organizations who are introducing the EE&C equipment, and;

(b) B-type loan: There is an intermediary distribution organization called "participating distributors (PDs)" who supply EE&C equipment (home appliances).

BACKGROUND OF THE ORGANIZATION

Energy Efficiency & conservation (EE&C) Promotion Financing Project's goal is to equip Bangladesh with quality certified EE&C materials to ensure the sustainability and development of the country. Such steps could curb the carbon & other greenhouse effect gas emissions significantly while maintaining a balanced supply/demand situation. This project was introduced in December 2015 in response to Bangladesh's seventh five-year plan. The Govt. of Japan (represented by JICA) extended the concessional loan (11.5 Billion JPY) to the Govt. of Bangladesh (represented by Finance Division, Ministry of Finance) with an interest rate of 0.01%.

Three types of organization are directly included in this system. They are:

Administrative authority: SREDA (Sustainable and Renewable Energy Development Authority)

Implementing Financial Institution: IDCOL (Infrastructure Development Company Limited)

Implementing Financial Institution: BIFFL (Bangladesh Infrastructure Finance Fund Limited)

SREDA

SREDA (Sustainable and Renewable Energy Development Authority) is the administrative authority which decrees the contribution of energy management to the demand side through the supply of loans with low interest. SREDA pilots new technologies and takes responsibility for its expansion, establishes linkage with regional and international organizations. Bangladesh Government recognized the due importance on renewable energy and energy efficiency issues and as such enacted Sustainable and Renewable Energy Development Authority (SREDA) Act in 2012 to facilitate, regulate and to promote all aspects of energy conservation and development of sustainable renewable energy in the country.

SREDA'S general direction and management of the Authority is vested on the Board. The Board is constituted by Chairman and members, not more than sixteen. Chairman and five members are the honorary and full-time members and eleven members are nominated by the government from different Ministries/Divisions and representatives from academicians, professionals, technical experts, non-governmental organizations (NGOs) and business communities. They are officiated for the term of 2 years from the date of their nomination. The Board takes all the policy decisions of the Authority.

VISION

SREDA encourages sustainable energy and helps to construct an energy efficient nation to ensure responsible energy usage and to reduce carbon footprint

MISSION

SREDA's mission is to organize and facilitate the development sustainable renewable energy and energy efficiency to increase usage of renewable energy to decrease carbon emission, taking appropriate measures for efficient energy use, assessing for new potential sustainable efficient energy solutions.

GOAL

- Increase renewable energy production
- Increase responsible usage of renewable energy
- Decrease dependency on fossil fuels

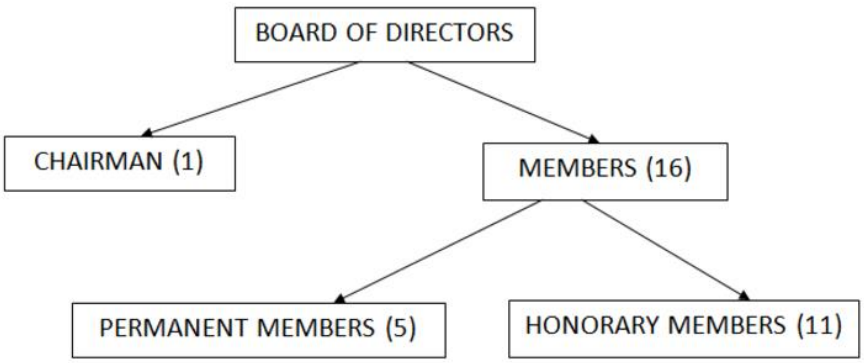
OBJECTIVES

1. The renewable energy share will be increased to 10%, which will be 2000 MW by 2020 and 4000 MW by 2030

2. The energy saving will be 10% by 2020 and 15% by 2030 of total energy consumption

ORGANOGRAM

Organogram of SREDA:

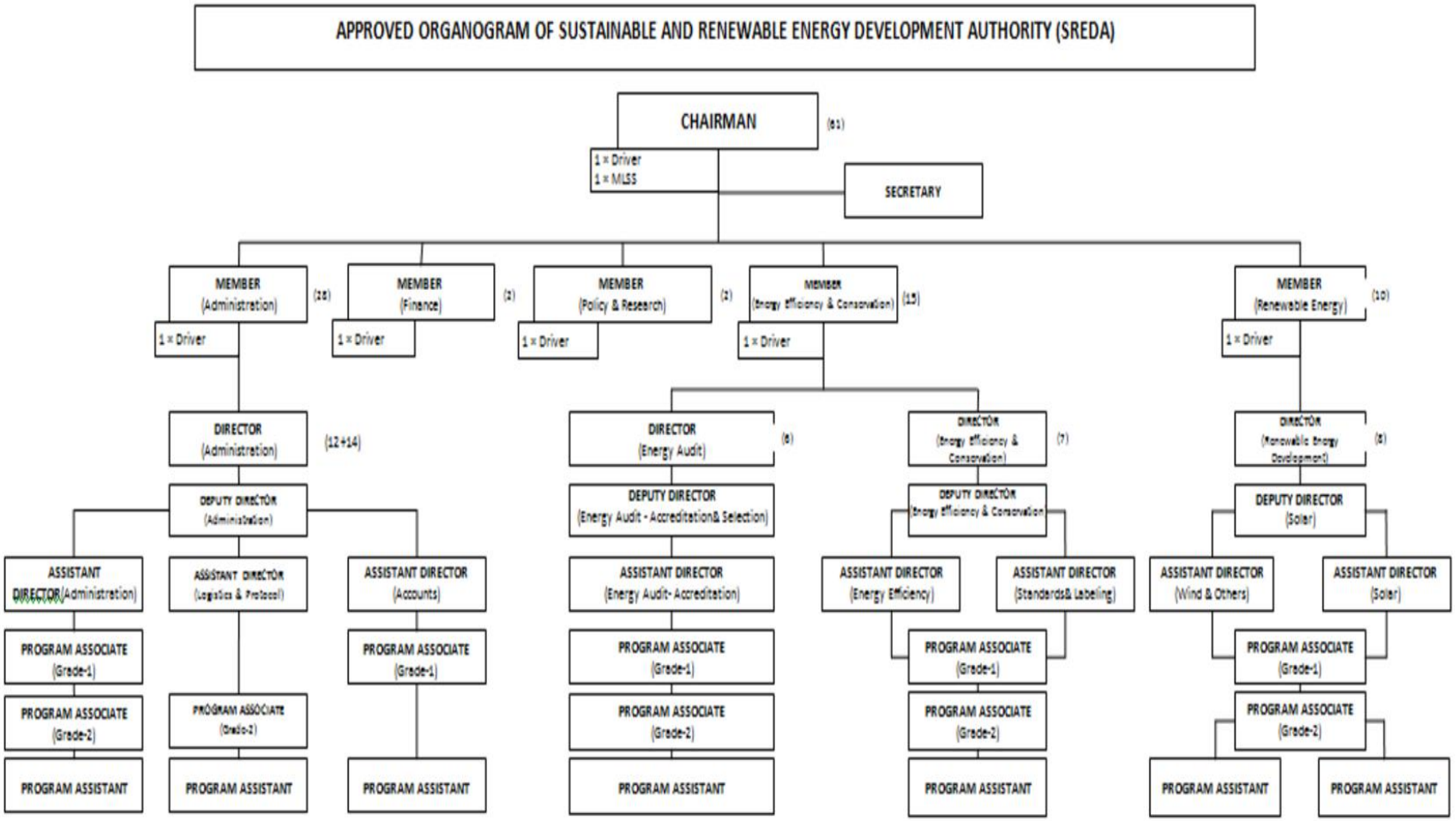


As per SREDA Act- 2012 the functions of the Authority, broadly are as follows:

- Coordinate renewable energy and energy efficiency issues of the government.
- Promote sustainable energy.
- Standardize and legalize the products for RE and EE.
- Pilot new technologies, and take initiatives for its expansion.
- Create congenial environment for the investors.
- Research and development on RE and EE.
- Capacity development.
- Create awareness for RE and EE and
- Establish linkage with regional and international organizations.

The Organizational Structure of SREDA

SREDA Organizational Structure:



IDCOL

Infrastructure Development Company Limited (IDCOL) as an implementing financial institution (IFI).Infrastructure Development Company Limited (IDCOL) was established on 14 May 1997 by the Government of Bangladesh. The Company was licensed by the Bangladesh Bank as a non-bank financial institution (NBFI) on 5 January 1998. Since its inception, IDCOL is playing a major role in bridging the financing gap for developing medium to large-scale infrastructure and renewable energy projects in Bangladesh. The company now stands as the market leader in private sector energy and infrastructure financing in Bangladesh.

IDCOL is managed by an eight-member independent Board of Directors comprising four senior government officials, three representatives from the private sector and a full time Executive Director and Chief Executive Officer. It has a small and multi-skilled work force comprising financial and market analysts, engineers, lawyers, IT experts, accountants and environmental and social safeguard specialists. IDCOL's stakeholders include the government, private sector, NGOs, multilateral and bilateral institutions, academics and the people of Bangladesh at large.

VISION

IDCOL’s vision is to increase the living standards of the people and ensuring the economic growth of the country by introducing sustainable & environment-friendly investments.

MISSION

IDCOL’s mission is to organize and increase the optimality of the private sector’s participation in developing, financing & promoting infrastructure, Sustainable Energy efficient projects, Energy efficient equipments and renewable energy through joint initiatives by public-private partnerships.

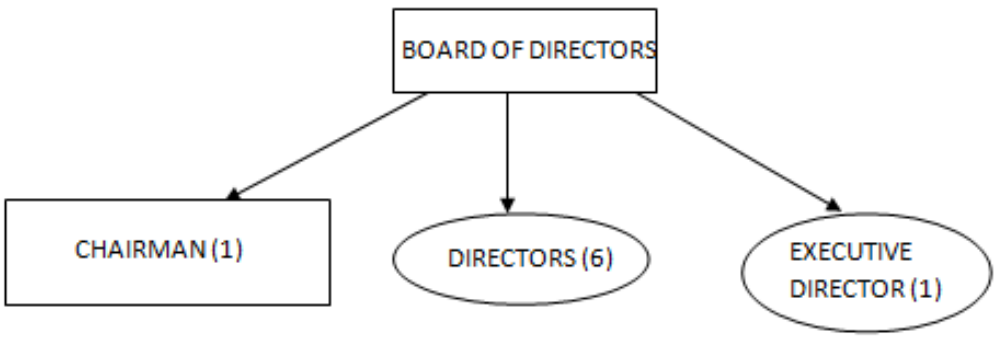
GOAL

- Increase optimality of private sector's participation in the development, promotion & financial support of green infrastructure.
- Increase distribution & usage of Energy efficient equipments and projects
- Organize private sector's participation of joint initiatives created by public-private partnerships
- Ensuring economic development of the country by introducing sustainable & environment-friendly investments

OBJECTIVES

- Catalyze & optimize private sector's participation in the joint ventures of public-private partnerships supporting renewable energy
- Increasing development and economic growth of the country
- IDCOL complements the Government's mission of generating five percent of the country's total electricity from renewable sources by 2015 and 10 percent of the total electricity from renewable energy by 2021.

ORGANOGRAM



BIFFL

Bangladesh Infrastructure Finance Fund Limited (BIFFL) is also an IFI. Bangladesh Infrastructure Finance Fund Limited (BIFFL) is a Government-owned Non-Banking Financial Institution, operating since 2011. It is established by a resolution of the Cabinet of the Government of Bangladesh and owned by the Ministry of Finance.

BIFFL is ensuring a greener Bangladesh by investing in sustainable development projects with emphasis on renewable energy, energy efficiency and eco-friendly projects.

Bangladesh Infrastructure Finance Fund Limited (BIFFL) is also an IFI. Fund allocation from SREDA will be distributed equally to both IFI, which will then be dispersed among eligible proponents for loan with the goal of increasing the usage of energy efficient equipments throughout the country. To use the fund effectively there will be an efficient method for adjustment and assessment of the fund distribution.

Our project is to help them build a system that will store data efficiently, making the decision-making process more organized while eliminating unnecessary manual labor. The automated system will give services to the prospective project clients, IFI, SREDA, PD.

The goal of this project is to make the loan processing system more efficient and automated through online integrated software completed with database server and web server. A unique interface will be created for the users for a better interaction with the software and to make the task less hectic, time consuming and error prone.

VISION

BIFFL's vision is to accelerate the economic development by interlinking the Public –Private sector through the financing infrastructure.

MISSION

BIFFL's mission is to act as a financial institution maintaining moral and ethical standards promoting the economic growth by organizing and optimizing private sector investment in all infrastructure projects, supporting sustainable economic growth of the country.

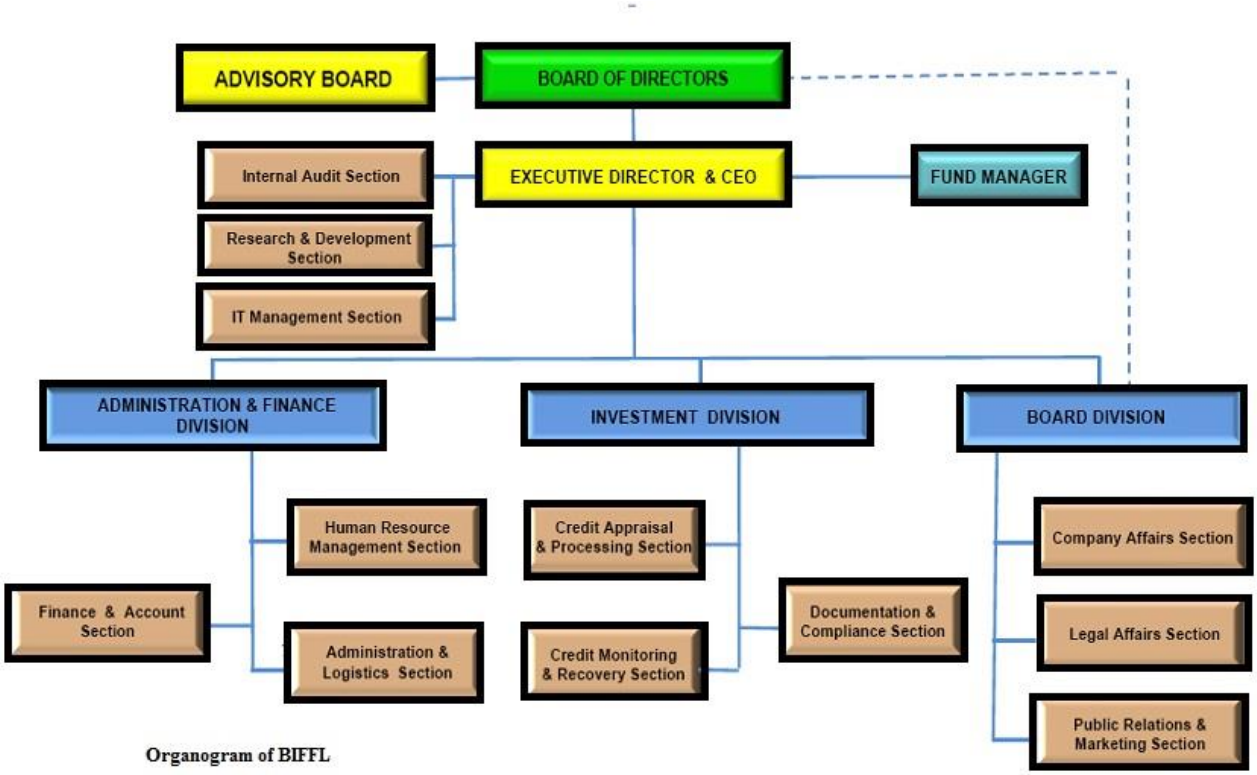
GOAL

- To facilitate long term financial loan for green infrastructure projects
- To organize joint initiative from private financial sources
- To create unique medium for capital market development of the country by creating opportunities for public private joint initiatives

OBJECTIVES

- To facilitate, produce and finance Private Sector Investment in all infrastructure sector.
- To broaden financing facilities for the infrastructure projects in the form of debt or equity.
- To encourage private investment in long term infrastructure projects: overcoming the asset liability mismatch of existing bank finance
- To produce funds, sub-funds, including Islamic Funds, and any other type of Funds as deemed appropriate by the Company.

ORGANOGRAM



Organogram of BIFFL

OBJECTIVE OF THE PROJECT

The main objectives of the project are given below:

- To record and manage the progress of the project in MIS.
- To store energy usage and production related data in MIS.
- To maintain data consistency and integrity.
- To automate the loan to process it efficiently.
- To reduce manual data entry.
- To reduce paperwork.
- To speed up the loan process by processing in parallel.
- To avoid processing duplicate application.
- Not storing sensitive data or personal information to avoid any casualties regarding security.

Overall the main objective of the project is to propose and design a system where the stakeholders can access and store information about the loan projects efficiently without the risk of data loss and security casualty.

SCOPE OF THE PROJECT

In this section, we will describe the objectives of the project elaborately for better understanding of the project. Four main users have been identified in this system. Sub- project proponent, IFI, SREDA, PD. We will focus on the activities they can do throughout this system in form of objectives

Online form & Contact details: Sub-project proponents and PDs can view the pre-screening application forms, technical pre screening application forms.

They can also view the contact details in the IFI website for necessary consultation.

Equipment List: Sub-project proponents and PDs can view the list for eligible Energy efficient equipment list for their benefit for applying for loans

Eligibility Check list: Eligibility check list for the loans will be saved in the system for better evaluation conduction by the IFIs and SREDA.

Name clearance: Name clearance evaluation and the registration for the clients will be tracked by both IFI & SREDA. This will ensure no loss of data, better evaluation, efficient for decision making and keeping better track for the progression of the cases.

Notifying Rejection/Acceptance of Loan: This system will allow the IFI and SREDA to notify the clients of their rejection/acceptance of their cases. And if the case is rejected it will also let the client know the reason for rejection.

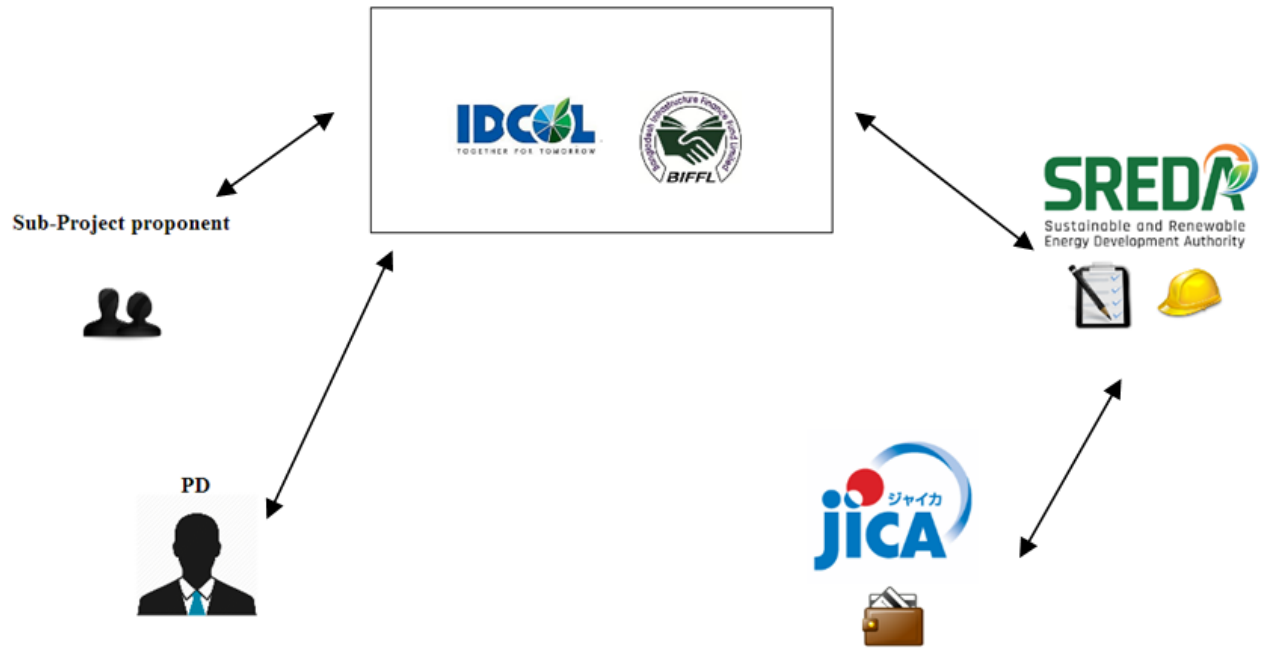
Activities of IFI Employee/Manager/B.O.D: This system will have separate encrypted modules for managers, employees and Board of directors of IFI to evaluate, save results and notify the rejection/acceptance of the loan cases.

Activities of SREDA Employee/Manager/B.O.D:SREDA employees, B.O.D will be able to track the progression of the loan cases and track the projects for which loan has been granted, it can also save reports and modify them

EXISTING BUSINESS SYSTEM WITH RICH PICTURE

The entire existing loan processing system of the IFI at present is done manually. Our job is to automate the system where needed and make it as efficient as possible. The clients of our software are the proponents, IFI (Implementing financial institutions), SREDA (Sustainable and Renewable Energy Development Authority), PD (Participating distributor), JICA(Japan International Cooperation Agency) and also MPEMR (Ministry of Power, Energy and mineral Resources). IFI basically provides the loan and SREDA decides if the proponent eligible for the loan or not. The job of SREDA is to examine the proposed list of energy efficient equipments and to monitor the project of the proponent after receiving the loan. The entire

existing system is run by manual data entry which is infested with the risk of data loss resulting in huge economic loss for all the stakeholders participating.



EXISTING BUSINESS SYSTEM WITH RICH PICTURE DESCRIPTION

For loan type A, Sub project proponent contacts with IDCOL/ BIFFL (Financial institution) to enquire about the loan, collecting necessary eligibility information, collect the application forms to apply for the loan and provide them with necessary financial statements, credit report, equipment list and other necessary documents. IDCOL/BIFFL does preliminary checks, eligibility check, evaluates them for NOC and forwards all information to SREDA. SREDA distributes the financial fund which they achieved from JICA for the sustainable renewable energy projects and energy efficient purchasable equipment loans to IDCOL/BIFFL. Sub project proponent doesn't have any direct interaction with SREDA. Financial Institutions work as an intermediate source of communication of loan approval between sub project proponent and SR

EXISTING PROCESSES ALONG WITH SIX SYSTEM ELEMENTS (LOAN TYPE A)

Process	Human	Non-computing hardware	Hardware	Software	Database	Connectivity
Submitting Application Form	1. Proponent(Submit the application form) 2. IFI employee(Ask for the documents)	1. Financial statements 2. Credit Rating Report	_	_	_	_
Preliminary Eligibility checking	1. IFI employee(Conduct the checking, consult with the manager and save the checking result) 2. SREDA employee (Provide preliminary comments if required)	1. Eligibility Check Sheet (Annex 12)	_	_	_	_

Conducting & registering Name Clearance Evaluation	1. IFI employee(Check the items in the Name Clearance Evaluation Sheet) 2. IFI manager (Approve/Decline the case) 3. IFI Institutional Approval 4. SREDA employee (Checking appraisal status from IFI) 5. Sub-project proponent(Get the result of the Name Clearance Evaluation)	1. CIB Report 2. Credit Rating report 3. Financial Statement 4. Record Book (for recording result)	-	-	-	-

Submission of request for NOC	1. IFI employee(Checking for new cases that completed Institutional Clearance, Submit request for NOC) 2. IFI Manager(Input necessary Information from Annex 2,Revisions & updates) 3. Sub-project proponent (Submit two sets of equipment catalogues) 4. SREDA employee (Check NOC request from IFI, Receive documents, Physically forward and register the date)	1. Two set of equipment catalogues(marked with application number) 2. Original Copy of Annex 2 3. Record Book (for recording result)	-	-	-	-

Eligibility checking	1. SREDA Employee(Check for Precedent cases, Inquire about additional information of equipments, NOC letter drafting /rejection letter) 2. IFIs Employee(Relay inquires ,forward information) 3. Sub Project Proponent(Provide information if required)	1. NOC draft/Rejection letter 2. Documents(Equipment list)	-	-	-	-
Due Diligence	1. Proponent (Prepare and send documents) 2. IFI (Conduct due diligence)	1. Annex 6 2. Documents specified in Annex 7				

	3. SREDA (check due diligence status)					
Institutional Clearance	1. Manager (For completion of loan decision) 2. Employee(PIU secretariat)	1. Credit report 2. Loan decision sheet 3. Loan term sheet 4. Credit rating rate by Bangladesh bank 5. Rejection/Approval Letter 6. Record book	-	-	-	-
Documentation for loan	1. IFIs employee(Draft loan documents, Negotiate with sub project proponent and register the date of contract)	1. Loan documents 2. Contract Paper	-	-	-	-

	2. Sub Project Proponent(Sign the Contract)					
Disbursement	1. Sub-project owner (open L/C account ,Negotiate Disbursement, receive money) 2. IFI(Negotiate Disbursement, Transfer money)	1. Documents(Negotiating papers)	Computer	-	-	-
Checking repayment status	1. Sub-project owner(Remit the repayment money, open repayment account) 2. IFI Employee (Monitor the repayment Status, draft repayment schedule)	1. Financial report Form(Annex 367)	Computer	-	-	-

	3. IFI manager (Monitor repayment status)					
Registration of approved Sub-Project proponent	1. IFI (Registering the Proponent) 2. Sub-project proponent (Acknowledge approval)	1. Record Book	-	-	-	-
Verifications of Document and Evidences on Purchasing and Installation	1. Proponent (Provide Documents & evidences) 2. IFI Manager (Check & verify documents)	1. EE&C equipment Purchasing and Installation Status Form (Annex 31) 2. Document & evidence regarding purchase and installation of equipments	-	-	-	-

On-site Inspection	1. Proponent (Cooperate with IFI, SREDA) 2. IFI (Conduct On site inspection) 3. SREDA(Conduct Site observation)	1. Inspection Report Form	-	-	-	-
Requesting sub-project Owner to submit required data and cooperate for inspection	1. Proponent (Register Data) 2. IFI (Check data) 3. SREDA (Collect Energy and production related Raw data, prepare conservation data analysis sheet, disclose the draft report to public)	1. Annex 33 2. Annex 2	-	-	-	-

EXISTING PROBLEMS & ANALYSIS OF THE PROBLEM ALONG WITH SOLUTION (LOAN TYPE A)

Process	Problem	Analysis	Solution	Constraints
Preliminary Eligibility checking	1. Loss of data	1. The result is written down on a paper which might get lost	1. Save the result in ALPMS database	1. Data backup
Conducting & registering Name clearance Evaluation	1. Data loss 2. Hectic	1. Manual Conduction of Name clearance Evaluation & registration might result in loss of important documents. 2. There is a lot of paper work involved which will be a hectic job to do.	1. Saving the result in ALPMS database. 2. It is automated, therefore paperwork is reduced.	1. Data backup 2. 24/7 online server
Submission of request for NOC	1. Data loss	1. Manual Conduction of submission for NOC	Updating information in ALPMS, checking for new requests for NOC (with institutional clearance by SREDA), Submitting request for	1. Data backup

			NOC to SREDA via ALPMS, Checking for precedence cases on database, Eligibility checking by SREDA, Register & notify Evaluation Judgment, Check for duplicate application.	
Eligibility Checking	1. Time Consuming	1. Documents have to be checked one by one for precedent cases which is hectic and time consuming	1. Precedent cases would be stored in the database.	1. 24/7 online server
Due Diligence	1. Loss of information	1. Track of date and information about the due diligence can be lost as it is recorded manually.	1. Register the dates and result in ALPMS database so that it will be easy to access in the future.	1. Data backup
Institutional Clearance	1. Data loss	1. The result will be recorded in a record book which might get lost.	1. Saving the result and decision in ALPMS database.	1. Data backup

Documentation for loan	1. Data loss	1. Information about the contract can be lost.	1. Register the date and other information about the contract in the database	1. Data backup
Registration of approved sub project proponent	1. Time consuming 2. Expenditure of money 3. Data Loss	1. Manual input is required for every proponent which is really time consuming. 2. The data will be stored in a book which has to be bought. 3. The book in which the proponent is registered might get lost.	1. Register an online account for the proponent. 2. No paperwork is required as the data is entered online. 3. Data saved in ALPMS database.	1. System Security 2. 24/7 online server 3. Data backup
Verification of documents and Evidences on Purchasing and Installation	1. Time Consuming 2. Expensive	1. Forms and documents have to be submitted manually which will lead to transportation cost.	1. Input the form on MIS. 2. Submit the documents online.	1. 24/7 online server. 2. Data backup

		2. Transportation cost should also be taken in account.		
On-site Inspection	1. Data loss	1. Inspection form can get lost	1. Register the physical inspection form in ALPMS	1. Data backup
Requesting sub-project Owner to submit required data and cooperate for inspection	1. Time Consuming 2. Expensive	1. Energy related data has to be provided by the proponent by actually going to the IFI. It's time consuming. 2. Transportation cost is involved.	1. Input the energy related data in ALPMS. 2. Submit the data online.	1. 24/7 online server 2. Data backup

EXISTING PROCESSES ALONG WITH SIX SYSTEM ELEMENTS (LOAN TYPE B)

Process	Human	Non-computing Hardware	Computing Hardware	Software	Database	Connectivity
Submitting application form and Checking eligibility of the applicants	1. Participating Distributor(PD)(Submit application form) 2. PIU Secretariats(Check eligibility)	1. Application form 2. Annex 21(Check List) 3. Pen	-	-	-	-
Registration of Participating Distributor(PD)	PIU Secretariats(IFIs)	1. Record Book 2. Pen	-	-	-	-
Reporting and checking sales record	1. Participating Distributor(Report sales record) 2. PIU Secretariats (Check sales)	1. Annex 27(Sales Record) 2. Pen	-	-	-	-

Fund transfer request	1. Participating Distributor(PD)(Request for fund transfer) 2. PIU Secretariats(IFIs) (Check, Accept/Reject)	1. Annex 25(Fund transfer request form) 2. Record Book(Amount ,Date) 3. Pen	-	-	-	-
Request for Advance Payment Option(APO)	1. Participating Distributor(PD)(Request for APO) 2. IFIs(Consult, Accept/Reject, Record data)	1. Application for APO 2. Record Book 3. Pen	-	-	-	-

Fund Request	1. Participating Distributor(PD)(Submit the request) 2. IFIs(Approve/Reject, Record data)	1. Annex 26(Fund request form) 2. Record Book 3. Pen	-	-	-	-
Updating sales record(Installation reporting form)	Participating Distributor(PD)	1. Annex 27(Sales record form) 2. Pen	-	-	-	-
Adjusting against Advance Payment Option(APO)	1. Participating Distributor(PD) 2. IFIs(Verify, Approve/Reject, Record data)	1. Annex 28(Adjustment Request form) 2. Record Book(Record Adjusted amount, date)	-	-	-	-

		3. Pen				
Installation Inspection	1. Participating Distributor(PD)(Submit Financial Report) 2. IFIs(On-site inspection, Record data)	1. Annex 52(Financial Report) 2. Record Book 3. Pen	-	-	-	-

EXISTING PROBLEMS & ANALYSIS OF THE PROBLEM ALONG WITH SOLUTION (LOAN TYPE B)

Process	Problem	Analysis	Solution	Constraints
Submitting application form and Checking eligibility of the applicants	1. Expenditure of money. 2. Error prone 3. Time Consuming	1. Filling up the form manually needs to be printed, which costs money. Moreover, transportation cost is also involved.	1. Forms are filled up online. 2. Verification of information should be incorporated in the ALPMS software.	1. 24/7 Online server 2. API crash 3. Data Backup

		2. While filling up the form, there might be overwriting which will look hazy. 3. Checking the eligibility manually is time consuming.	3. Data will be saved in ALPMS therefore, checking eligibility will be easier.	
Registration of Participating Distributor(PD)	1. Time consuming 2. Expenditure of money 3. Data Loss	1. Manual input is required for every PD which is really time consuming. 2. The data will be stored in a book which has to be bought. 3. The book in which the proponent is registered might get lost.	1. Register an online account for the proponent. 2. No paperwork is required as the data is entered online. 3. Data saved in ALPMS database.	1. System Security 2. 24/7 online server 3. Data backup

Reporting and checking sales record	1. Communication problem 2. Expenditure of money	1. It will be difficult to inform IFIs about daily sales. 2. To record the data, a record book is required which costs money.	1. Store the daily sale record in ALPMS so that IFI can view it. 2. The process is computerized which will eliminate paper cost.	1. 24/7 online server 2. Data Backup
Fund transfer request	1. Expenditure of money 2. Time Consuming	1. Filling up the form manually needs to be printed, which costs money. Moreover, transportation cost is required to submit the request. 2. To submit the request PD needs to go to IFIs office which is time consuming	1. Include the fund transfer request form into the user end of the software. 2. Submit the documents online.	1. Internet 2. 24/7 online server

Request for Advance Payment Option(APO)	1. Time Consuming 2. Expenditure of money 3. To maintain a record book	1. To submit the request, PD needs to go to IFIs office which is time consuming. 2. Transportation cost is also involved to submit the request to the IFI's office. 3. It's problematic for IFIs to use some papers to record data. These might be lost.	1. Include the APO request form into the user end of the software. 2. Submit the form online. 3. Data will be saved in ALPMS	1. Internet 2. 24/7 online server 3. Data Backup
Fund Request (APO request)	1. Expenditure of money 2. Time Consuming	1. Filling up the form manually needs to be printed, which costs money. Moreover, transportation cost is required to submit the request.	1. Include the fund transfer request form into the user end of the software. 2. Submit the documents online.	1. Internet 2. 24/7 online server

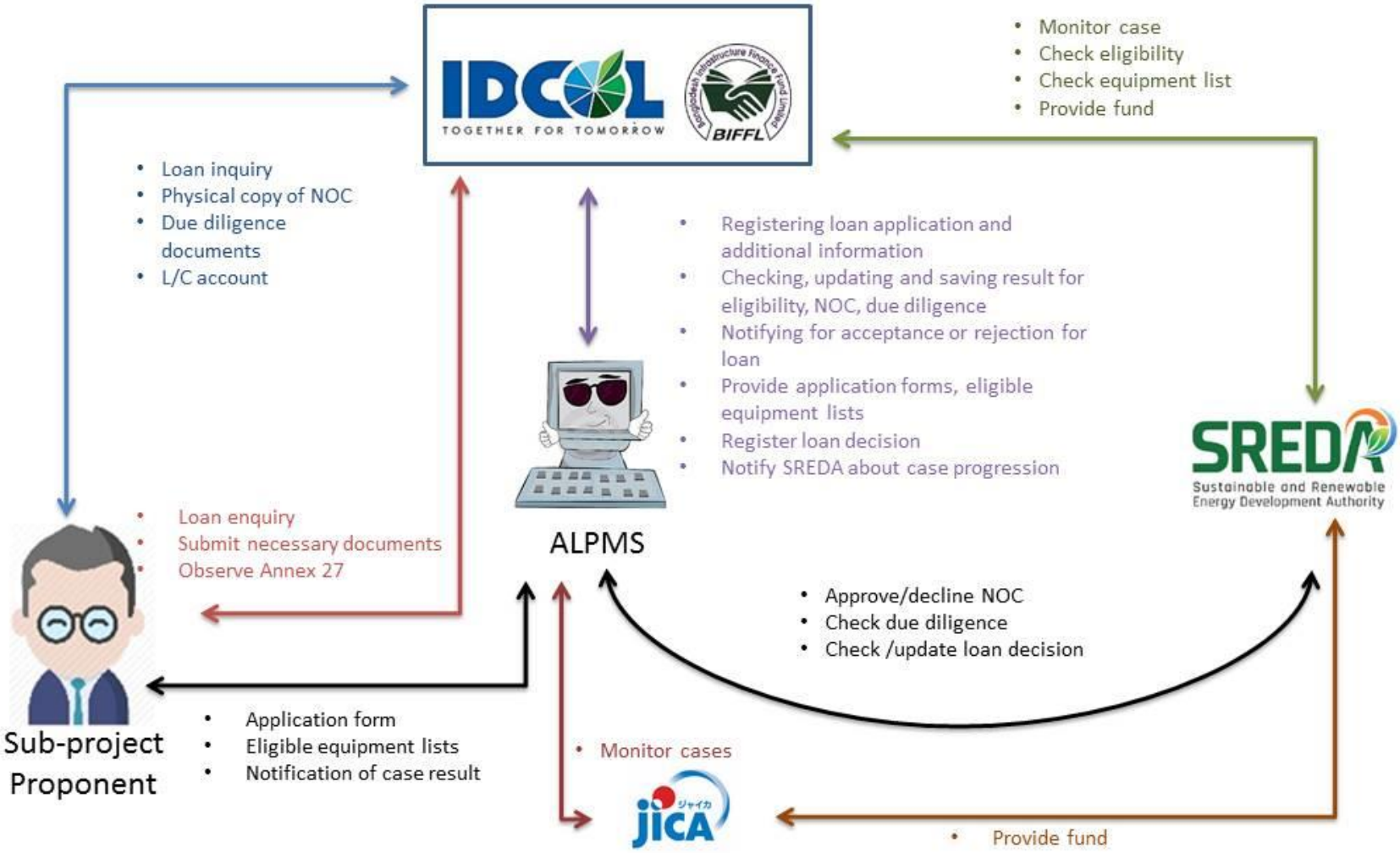
		2. To submit the request PD needs to go to IFIs office which is time consuming		
Updating sales record(Installation reporting form)	1. Communication problem 2. Expenditure of money	1. It will be difficult to inform IFIs about daily sales. 2. To record the data, a record book is required which costs money.	1. Store the daily sale record in ALPMS so that IFI can view it. 2. The process is computerized which will eliminate paper cost.	1. 24/7 online server 2. Data Backup
Adjusting against Advance Payment Option(APO)	1. Time Consuming 2. Expenditure of money 3. To maintain a record book	1. To submit the request, PD needs to go to IFIs office which is time consuming. 2. Transportation cost is also involved to submit the request to the IFI's office.	1. Include the adjustment form into the user end of the software. 2. Submit the form online. 3. Data will be saved in ALPMS	1. 24/7 online server 2. Data Security 3. Data Backup

		3. It's problematic for IFIs to use some papers to record data. These might be lost.		
Submission of financial report	4. Time Consuming 5. Expenditure of money 6. To maintain a record book	4. To submit the financial report, PD needs to go to IFIs office which is time consuming. 5. Transportation cost is also involved to submit the request to the IFI's office. 6. It's problematic for IFIs to use some papers to record data. These might be lost.	4. Include the submission of financial report into the user end of the software. 5. Submit the form online. 6. Data will be saved in ALPMS	4. 24/7 online server 5. Data Security 6. Data Backup

PROPOSED BUSINESS SYSTEM WITH RICH PICTURE

A pictorial representation of a bird's eye view of our proposed business model will be presented below. We will introduce how the six system elements are interacting with each other & the roles they play within the system. We will try to simplify the processes of the whole system along with the elements interacting with each other. We will cover various activities and automation with the project "Automated Loan Processing & Monitoring System". The data storing facilities will be effective and there will be more versatility in data sharing and extracting meaningful information from it to assist in future decision for the manager, Board of directors from both IFI and SREDA. This representation of our business model is for the naïve users who have no knowledge about the technical details or how the computer works. Automated Loan Processing & Monitoring System (ALPMS) is an online system that is designed to facilitate the activities of the stakeholders that are involved in the project. It is an automated system that will give services to the Implementing Financial Institution (IFI), SREDA, Ministry of Power, Energy and Mineral Resources, JICA, PD (Participating Distributor), Sub-project proponents.

Moreover we want to automate the whole loan application submission sector and monitoring the projects. Like- Online form application system, Lists provided for eligible equipments, progression of the project, reports, eligibility conformities, surveying on-site and off-site, keeping records of supervision efficiently and accurately. Automated Loan Processing & Monitoring System can be used to maintain the records of sub-project proponents and PDs easily. It also provides a less time consuming process for viewing, adding, editing and deleting the information of the ongoing loan projects. Online System Project consists many useful elements: an enhanced Sub-Project/PD module for online form, View Project Overview, Contact details for IFI, Necessary information for gaining the eligibility for the loan. The project provides facilities like online loan application form thus reducing paperwork and automating the record generation process in a financial institution.



Rich picture for Loan Type A

PROPOSED SYSTEM RICH PICTURE DESCRIPTION (LOAN TYPE A)

By observing the bird's eye view of the loan type A presented above we can see that there is no direct interaction with the sub project proponent and the authorative institution SREDA. Sub project proponent enquires about the loan, eligibility information, eligible energy efficient equipment list, application forms from IDCOL through the ALPMS (Automated Loan processing & Monitoring System) . JICA provides the fund to SREDA which distributes the fund among two financial institutions (IDCOL & BIFFL). Sub project proponent submits the necessary documents, financial statements, credit report etc manually to the IFIs in order to avoid information leak and security breaches. IFIs register, record reports, track progress of loan requests through the software. They record the eligibility checklist for each cases and store the approval/rejection of any case and notify the proponent through email about the result of loan approval and if rejected, they also notify them about the reason behind rejection of loan approval through the software. SREDA can monitor and track the progression and current status about each case through the software. Administrative access is saved for the board of directors of IFI and SREDA. Institutional clearance approval can be only accessed by the respective authority only. SREDA can check/update the loan decisions, check due diligence approval status and update it, it also holds the access to approve or decline NOC all through the software which can notify the IFI and then the proponent will be notified through IFI about the rejection/approval. SREDA can request additional information from the IFI about the sub project proponents. IFIs can notify SREDA about the progression of the cases and provide all the information. Sub project proponents have to open LC accounts through IFIs. Submit the due diligence documents manually, physical copy of NOC, physical copy of equipment list to the IFI. JICA can monitor all the progression of the cases and track the inspection and approvals/rejections of the cases.

PROPOSED PROCESSES ALONG WITH SIX SYSTEM ELEMENTS (LOAN A)

Process	Human	Non computing hardware	Hardware	Software	Database	Connectivity
Submitting Application form	1. Sub project proponent(Submit the application form online)	-	Computer	ALPMS	MySQL	Internet
Preliminary Eligibility checking	1. Proponent(Submit the documents manually) 2. IFI employee(Check the application form stored in the database with the submitted documents)	1. CIB Report 2. Credit Rating report 3. Financial Statement	Computer	ALPMS	MySQL	Internet
Conducting & Registering Name clearance Evaluation	1. IFI employee(Checking Annex5:Name clearance Evaluation Sheet)	1. CIB Report 2. Credit Rating report 3. Financial Statement	Computer	ALPMS	MySQL	Internet

	2. IFI manager Approval(Approve the Name clearance) 3. IFI Institutional Approval(Approve the Name clearance) 4. SREDA employee (Checking appraisal status from IFI) 5. Sub-project proponent(Get informed about name clearance via mail, phone call and text message)					
Submission of request for NOC	1. IFI employee(Checking for new cases that completed Institutional Clearance, Submit	1. Two set of equipment catalogues(marked with application number)	Computer	ALPMS	MySQL	Internet

	request for NOC via ALPMS) 2. IFI Manager(Input necessary Information from Annex 2,Revisions & updates by ALPMS) 3. Sub-project proponent (Submit two sets of equipment catalogues manually) 4. SREDA employee (Check NOC request from IFI by ALPMS, Receive documents, Physically forward and register the date by ALPMS in the database)	2. Original Copy of Annex 2				
Eligibility Checking	1. SREDA Employee(Check for	1. NOC draft	Computer	ALPMS	MySQL	Internet

	Precedent cases, Inquire about additional information of equipments, NOC letter drafting /rejection letter by ALPMS and submitted documents) 2. IFIs Employee(Relay inquires ,forward information) 3. Sub Project Proponent(Provide information manually if required)	2. Documents(Equipment list)				
Due Diligence	1. Proponent (prepare and send documents manually) 2. IFI (conduct due diligence comparing the	1. Annex 6 2. Documents specified in Annex 7	Computer	ALPMS	MySQL	Internet

	database and the submitted documents) 3. SREDA (check due diligence status by ALPMS)					
Institutional Clearance	1. Manager (For completion of loan decision) 2. Employee(PIU secretariat)(For completion of loan decision)	1. Credit report 2. Loan decision sheet 3. Loan term sheet 4. Credit rating report by Bangladesh bank	Computer	ALPMS	MySQL	Internet
Registration of approved sub project proponent	1. IFI (Registering the Proponent details online) 2. Sub-project proponent (Acknowledge approval)		Computer	ALPMS,Mail	MySQL	Internet

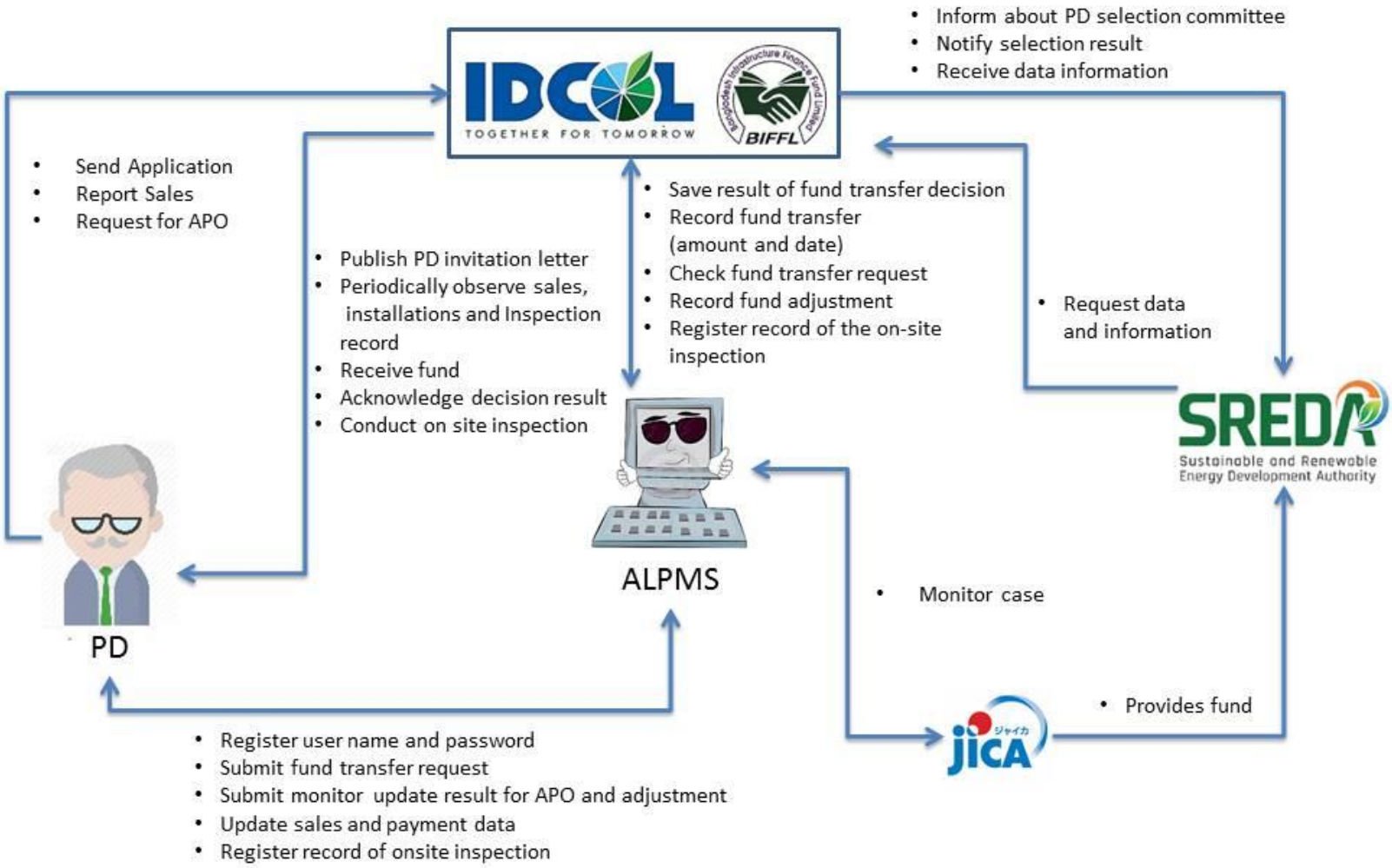
Verification of document and Evidences on Purchasing and Installation	1. Proponent (Provide Documents & evidences manually) 2. IFI Manager (Check & verify documents)	1. EE&C equipment Purchasing and Installation Status Form (Annex 31) 2. Document & evidence regarding purchase and installation of equipments	Computer	-	MySQL	Internet
On-site Inspection	1. Proponent (Cooperate with IFI, SREDA) 2. IFI (Conduct On site inspection and store the inspection result in the database) 3. SREDA(Conduct Site observation)	1. Inspection Report Form	Computer	-	MySQL	Internet

EXISTING PROBLEMS & ANALYSIS OF THE PROBLEM ALONG WITH SOLUTION (LOAN TYPE A)

Process	Concern	KPI	Annual benefit/loss
Preliminary Eligibility checking	1. Loss of data	1. Data Security	1. Record book = 100 tk 2. Stationaries = 200 tk Total= 300tk
Conducting & Registering Name clearance Evaluation	1. Loss of data	1.Data Security	1. Record book = 100 tk
Submission of request for NOC	1. Data loss 2. Hectic	1. Data Security 2. Manual Data entry	1. Printing cost: 10 × 10 = 100tk per person

Eligibility Checking	1. Data loss	1. Time 2. Error free data entry	1. Papers cost: 30*10=300 tk
Due Diligence	1. Time Consuming	1. Time 2. Error free data entry 3. Data Security	1. Record book = 100 tk
Institutional Clearance	1. Loss of information	1. Time 2. Error free maintains	1. Transport Cost: 500 × 4 = 2000tk

Documentation for loan	1. Data loss	1. Time 2. Cost 3. Data Security	1. Record book = 100 tk
Registration of approved sub project proponent	1. Time consuming 2. Expenditure of money 3. Data Loss	1. Time 2. Cost	1. Transport Cost: 500 × 4 = 2000tk 2. Record book = 100 tk Total = 2100 tk
Verification of document and Evidences on Purchasing and Installation	1. Time Consuming 2. Expensive	1. Data security	1. Record book = 100 tk
On-site Inspection	1. Data loss	1. Time 2. Cost	1. Record book = 100 tk



Rich picture Loan Type B

PROPOSED PROCESS RICH PICTURE WITH DESCRIPTION (LOAN TYPE B)

By observing the bird's eye view of the proposed process of loan type B we can observe that PD sends the loan application with the necessary documents, credit report, financial statements etc manually. IFIS publish PD invitation letter manually. PD uses the software ALPMS to register user name and password to submit/update sales report, payment data, APO request, Fund transfer request, Adjustment. SREDA monitors the case through the software while consulting with IDCOL. SREDA approves/reject cases, checks/updates loan decisions, Checks eligibility of PD and eligible equipment list and updates, records all the necessary approval decisions through the software while notifying IDCOL about the changes. IDCOL registers, tracks, records the cases through the software and updates the necessary information. ON site and off site inspection results are also recorded in the software for better observation of the overall progression of the cases. PD sends the documents which does not possess a threat of a major information leak through the software. JICA monitors all the progression of the cases and the approval

PROPOSED PROCESSES ALONG WITH SIX SYSTEM ELEMENTS (LOAN B)

Process	Human	Non-computing Hardware	Computing Hardware	Software	Database	Connectivity
Submitting application form and Checking eligibility of the applicants	1.Participating Distributor(PD)(Submit application form online) 2.PIU Secretariats(IFIs)(Check eligibility comparing with database)	-	Computer, Scanner	ALPMS(Automated Loan Processing & Monitoring System)	-	Internet
Registration of Participating Distributor(PD)	1. PIU Secretariats(IFIs)(Register the PD details in the database)	-	Computer	ALPMS	MySQL	Internet

Reporting and checking sales record	1.Participating Distributor(PD)(Report sales record online) 2.PIU Secretariats(IFIs) (Check sales record stored in the database)	-	Computer	ALPMS	MySQL	Internet
Fund transfer request	1.Participating Distributor(PD)(Online request for fund transfer) 2.PIU Secretariats(IFIs) (Check, Accept/Reject)	-	Computer	ALPMS	MySQL(Amount, Date)	Internet

Request for Advance Payment Option(APO)	1. Participating Distributor(PD)(Online request for APO) 2. IFIs(Consult, Accept/Reject, Record data in the database)	-	Computer	ALPMS	MySQL(Loan type)	Internet
Fund Request	1. Participating Distributor(PD)(Submit the online request) 2. IFI (Approve/Reject, Record data in the database)	-	Computer	ALPMS	MySQL(Amount, Date)	Internet
Updating sales record(Installation reporting form)	1. Participating Distributor(PD)(Update the online form regularly)	-	Computer	ALPMS	MySQL	Internet

Adjusting against Advance Payment Option(APO)	1.Participating Distributor(PD)(Forward the online request for APO) 2.IFIs(Verify, Approve/Reject, Record data)	-	Computer	ALPMS	MySQL(Amount, Date)	Internet
Installation Inspection	1. IFIs(On-site inspection, Record data in the database)	-	Computer	ALPMS	MySQL(Record of on-site inspection)	Internet
Additional Info from PD	1. SREDA(Ask for the info to IFIs)	-	Computer	Mail	-	Internet

EXISTING PROBLEMS & ANALYSIS OF THE PROBLEM ALONG WITH SOLUTION (LOAN TYPE B)

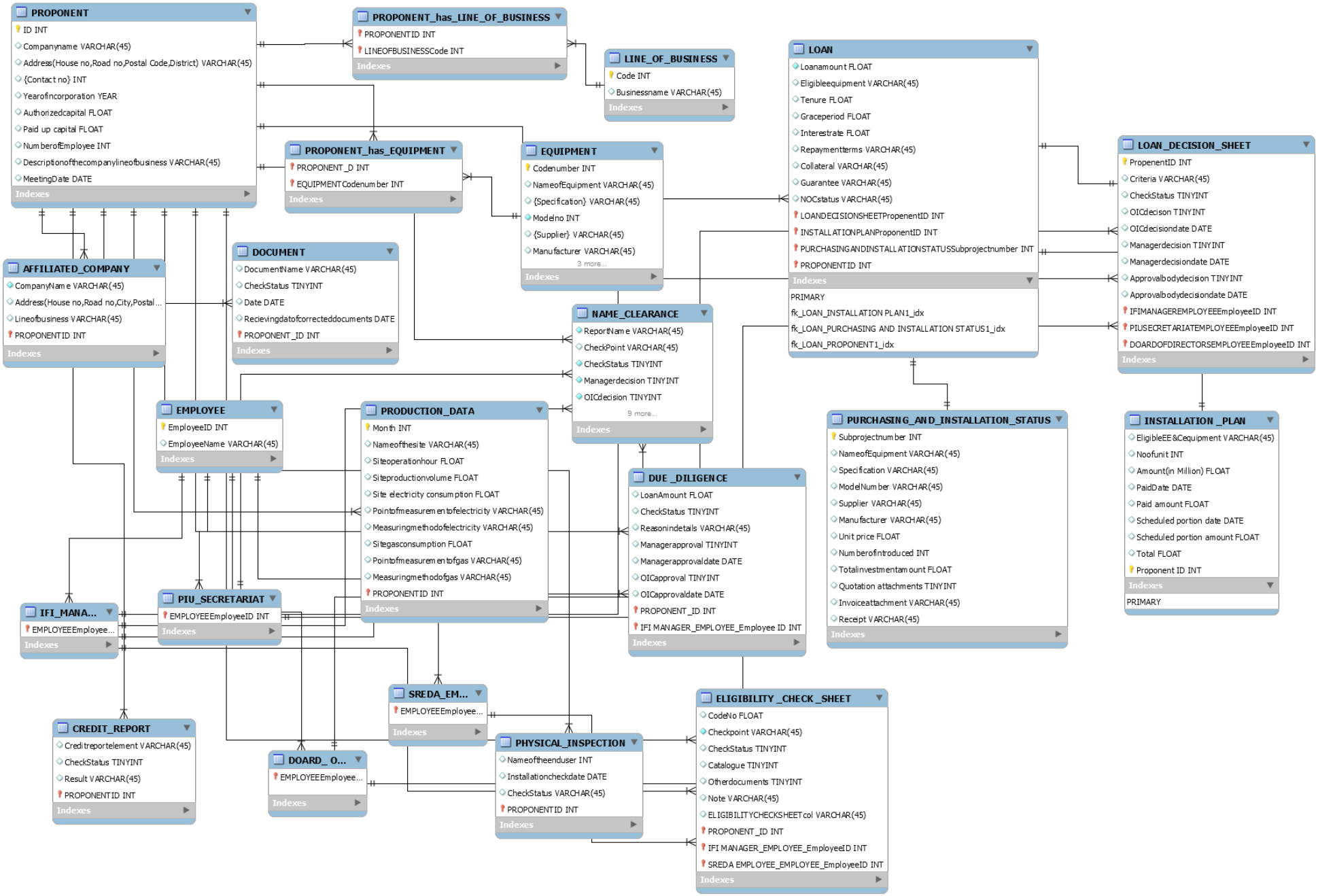
Process	Concern	KPI	Annual profit/loss
Submitting application form and Checking eligibility of the applicants	1.Error prone 2.Time Consuming 3.Hectic 4.Expendeture of money	1.Error free data entry 2.Takes less time 3.Saves money	1.Printing cost: 20*10 = 200 tk 2.Transport: 500(Fair)*4(No of trip) = 2000 tk Total = 2200 tk
Registration of Participating Distributor(PD)	1.Hectic 2.Expenditure of money 3.Time Consuming	1. Takes less time 2.Saves money	1. Record book = 100 tk 2. Stationaries = 200 tk Total = 300 tk
Reporting and checking sales record	1.Error prone 2.Difficult for PD to inform daily sales record to IFIs	1. Takes less time 2.Saves money	1.Printing cost: 20*10 = 200*12(1 year) =2400 tk 2.Transport:

	3. Expenditure of money	3.Transparency(Between PD & IFIs)	500(Fair)*4(No of trip) = 2000*12(1 year) =24000 tk Total = 26400 tk
Fund transfer request	1.Error prone 2.Time Consuming 3.Expendeture of money	1. Takes less time 2.Saves money 3.Less labor	1. Transport: 500(Fair)*4(No of trip) = 2000*12(1 year) =24000 tk
Request for Advance Payment Option(APO)	1.Time Consuming 2.Expendeture of money 3.To maintain a record book	1. Takes less time 2.Saves money 3.Less labor	1. Transport: 500(Fair)*4(No of trip) = 2000*12(1 year) =24000 tk
Fund Request	1.Time Consuming 2.Expendeture of money 3.To maintain a record book	1. Takes less time 2.Saves money 3.Less labor	1. Transport: 500(Fair)*4(No of trip) = 2000*12(1 year) =24000 tk

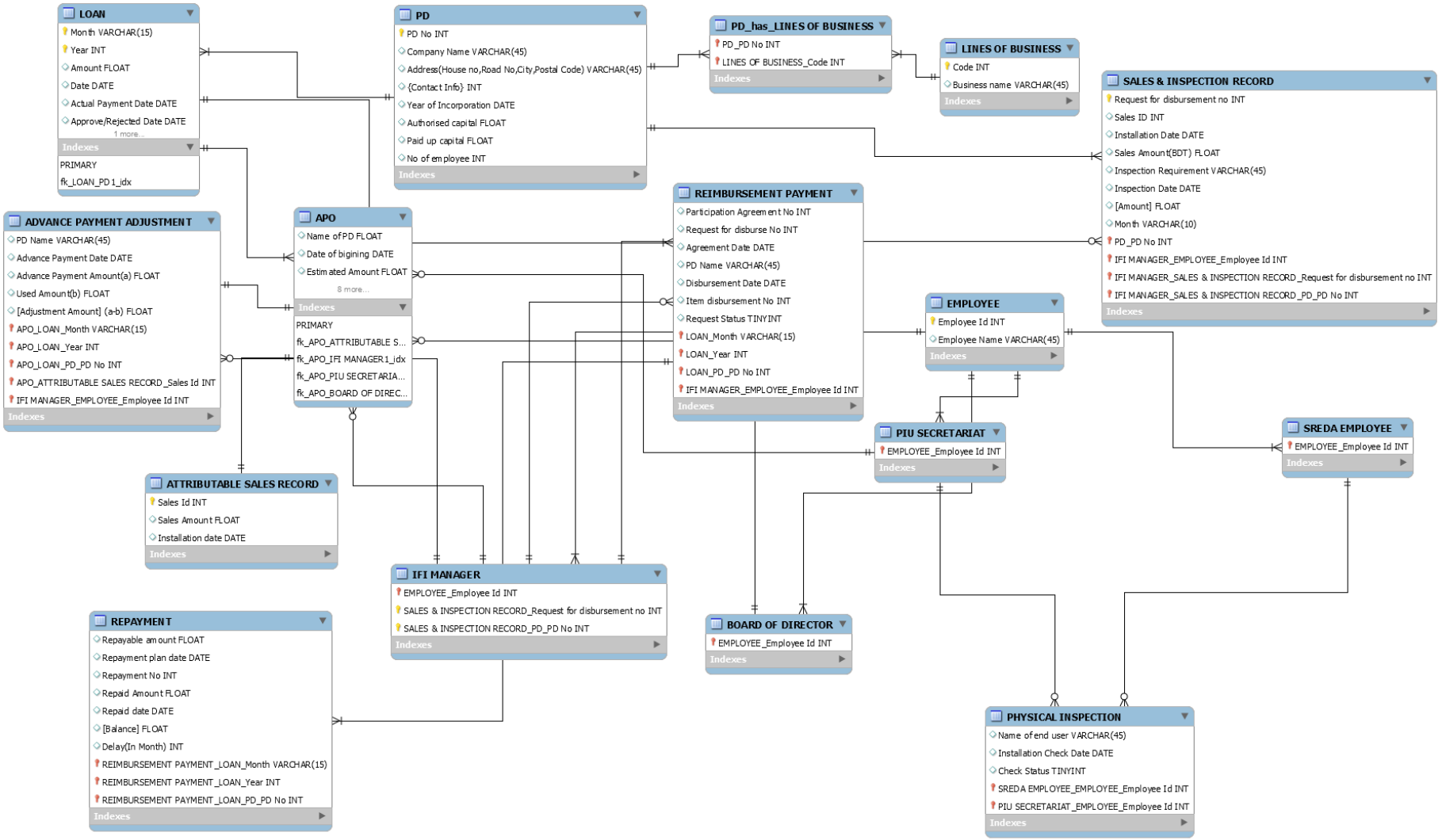
Updating sales record(Installation reporting form)	1.Error prone 2.Difficult for PD to inform installation report to IFIs 3. Expenditure of money	1.Errorlessness 2.Increase Transparency 3.Saves money	1.Phone call=(1.5*10minutes) =15*30(1 month)=450*12(1 year)=5400tk 2. Transport: 500(Fair)*4(No of trip) = 2000*12(1 year) =24000 tk Total = 29400 tk
Adjusting against Advance Payment Option(APO)	1.Time Consuming 2.Expendeture of money 3.To maintain a record book	1.Saves time 2.Saves money 3.Keep the data safe	1. Transport:500(Fair)*4(No of trip) = 2000*12(1 year) =24000 tk 2.Printing = 5*12(1 year) = 60 tk Total = 24060 tk
Submission of financial report	1.Time Consuming	1.Saves time	1. Transport:

	2.Expendeture of money 3.To maintain a record book	2.Saves money 3.Less labor	500(Fair)*4(No of trip) = 2000*12(1 year) =24000 tk 2.Printing = 100*12(1 year) = 1200 tk Total = 25200 tk

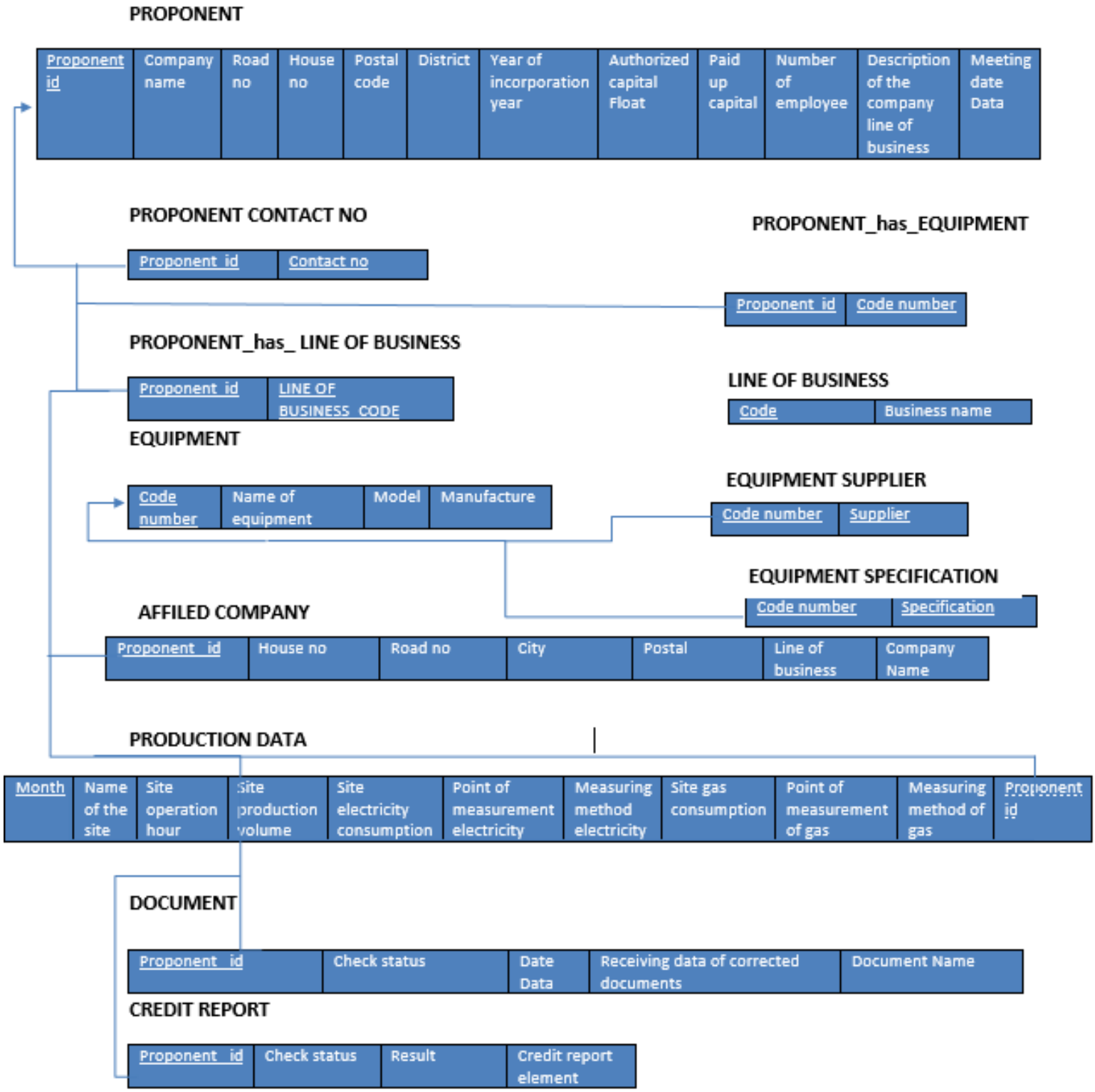
LOAN TYPE A ERD

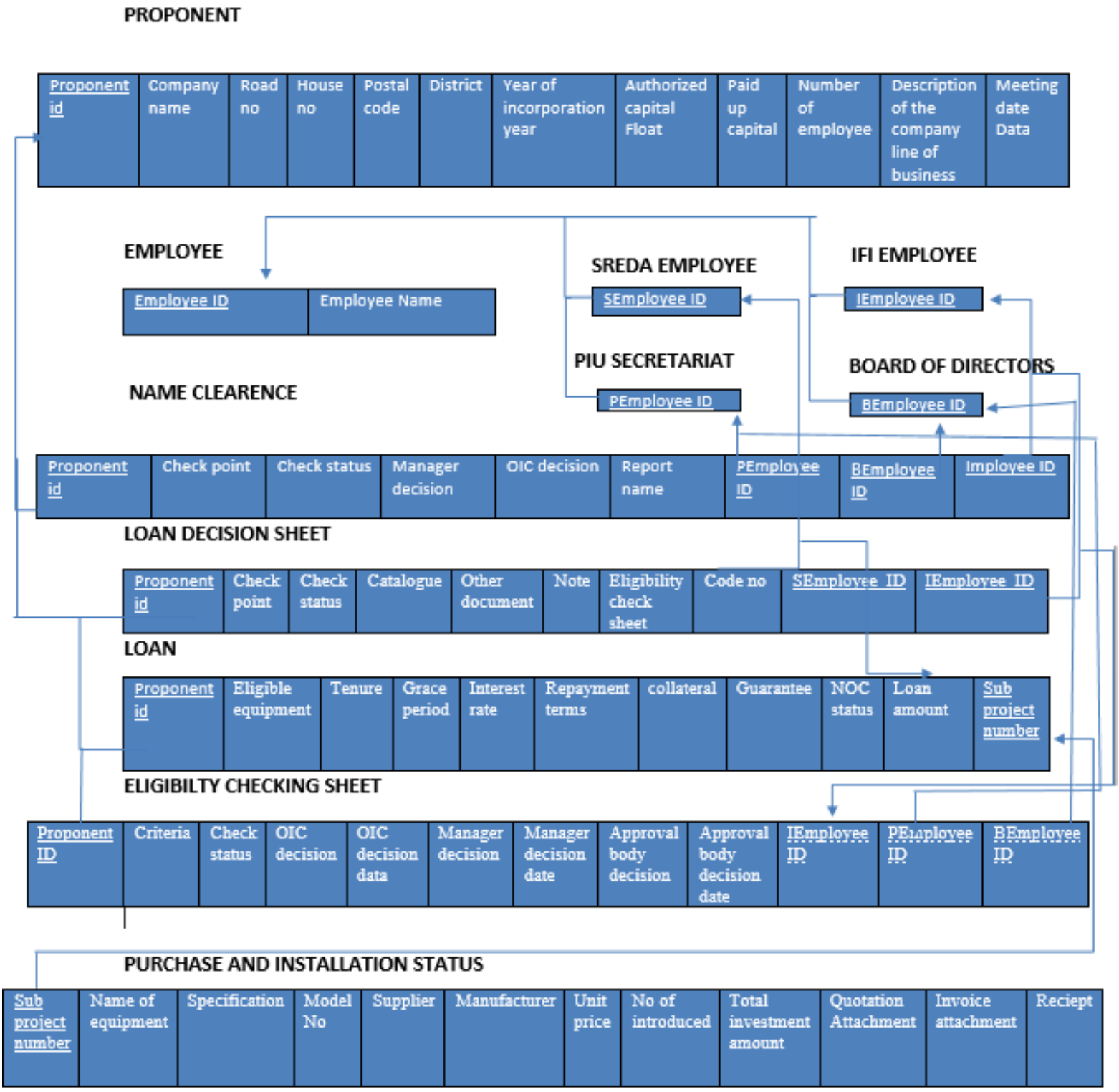


LOAN TYPE B ERD



LOAN TYPE A RELATION SCHEMA

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Proponent id
Company name
Road no
House no
Postal code
District
Year of incorporation year
Authorized capital Float
Paid up capital
Number of employee
Description of the company line of business
Meeting date Data
EMPLOYEE
Employee ID
Employee Name
SREDA EMPLOYEE
SEmployee ID
IFI EMPLOYEE
IEmployee ID
PIU SECRETARIAT
PEmployee ID
BOARD OF DIRECTORS
BEmployee ID
NAME CLEARENCE
Proponent id
Check point
Check status
Manager decision
OIC decision
Report name
PEmployee ID
BEmployee ID
Imployee ID
LOAN DECISION SHEET
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Manager decision
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Approval body decision
Approval body decision date
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PEmployee ID
BEmployee ID
PURCHASE AND INSTALLATION STATUS
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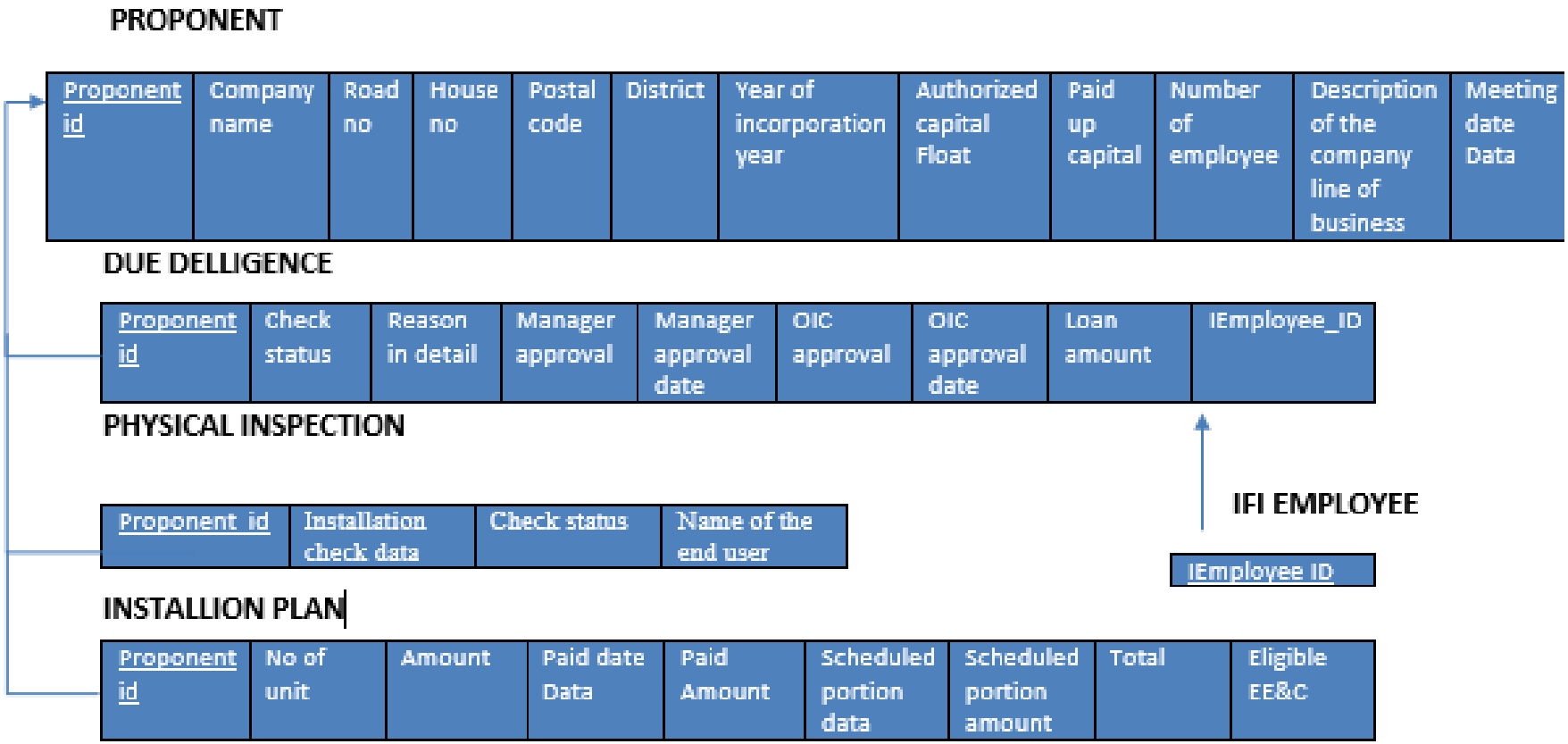
Specification
Model No
Supplier
Manufacturer
Unit price
No of introduced
Total investment amount
Quotation Attachment
Invoice attachment
Reciept


PROPONENT
Proponent id
Company name
Road no
House no
Postal code
District
Year of incorporation year
Authorized capital Float
Paid up capital
Number of employee
Description of the company line of business
Meeting date Data
DUE DELLIGENCE
Proponent id
Check status
Reason in detail
Manager approval
Manager approval date
OIC approval
OIC approval date
Loan amount
IEmployee_ID
PHYSICAL INSPECTION
Proponent id
Installation check data
Check status
Name of the end user
IFI EMPLOYEE
IEmployee ID
INSTALLION PLAN
Proponent id
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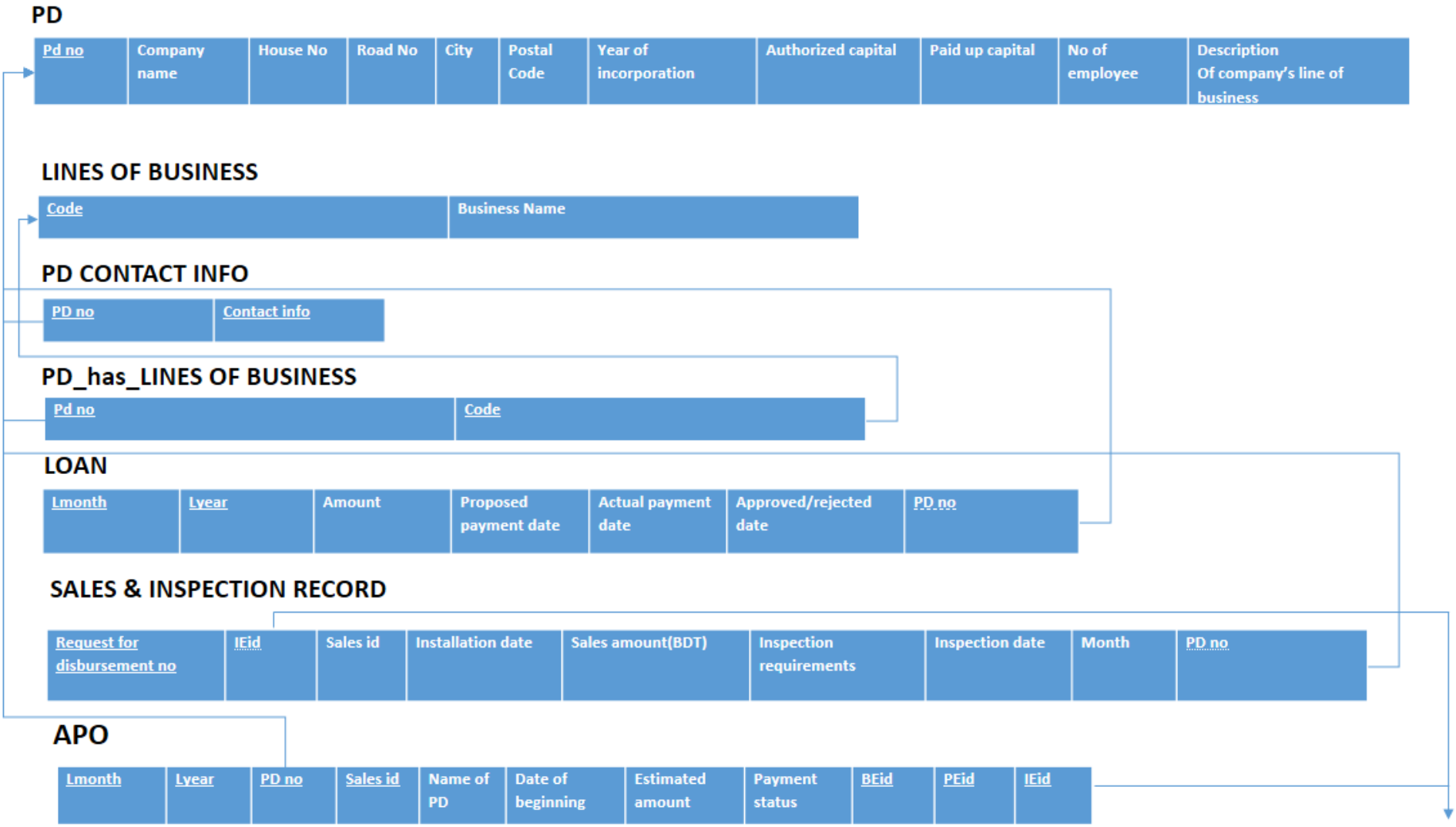
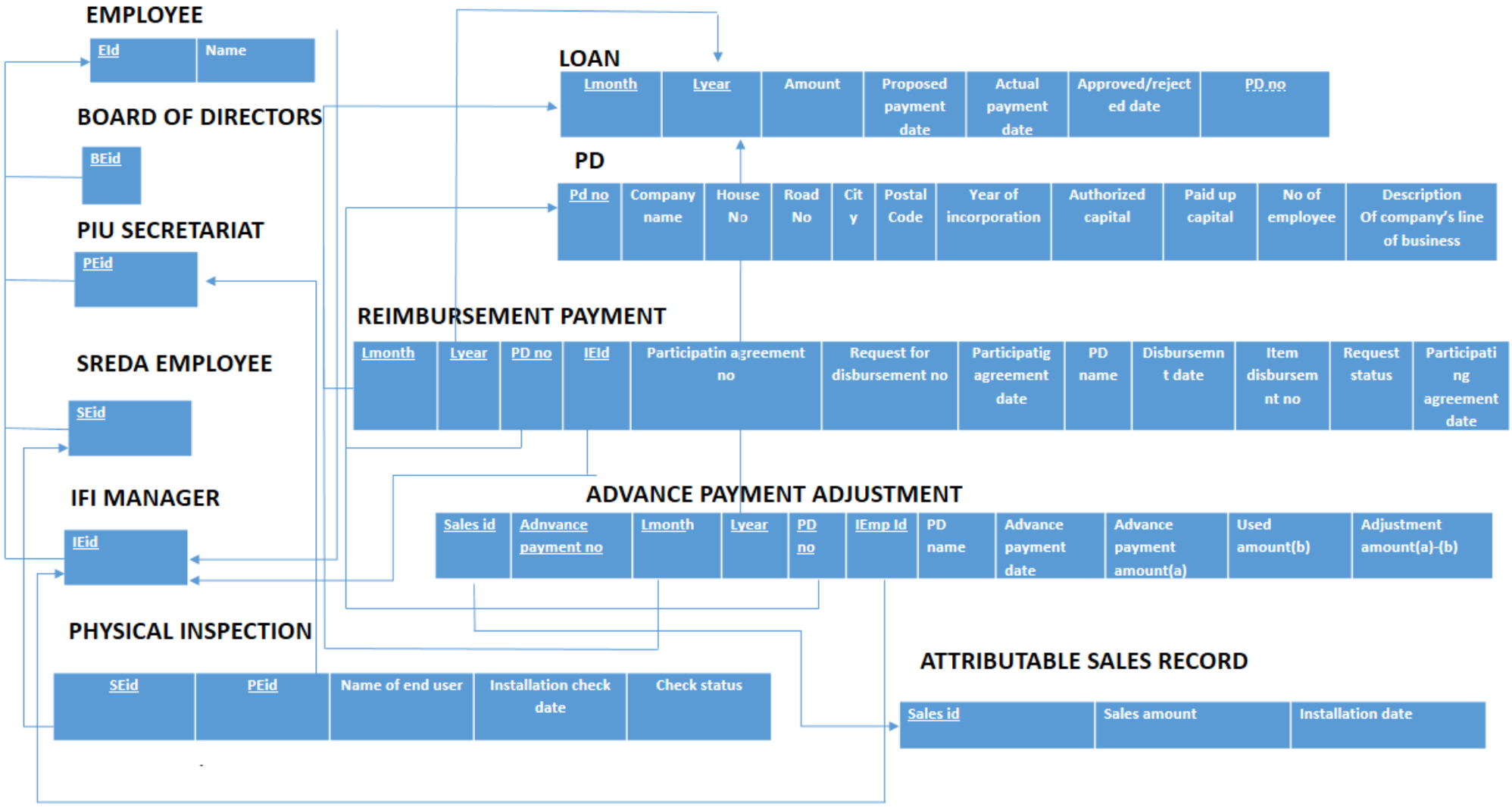
Amount
Paid date Data
Paid Amount
Scheduled portion data
Scheduled portion amount
Total
Eligible EE&C

LOAN TYPE B RELATION SCHEMA




EMPLOYEE
EId
Name
BOARD OF DIRECTORS
BEid
PIU SECRETARIAT
PEid
SREDA EMPLOYEE
SEid
IFI MANAGER
IEid
PHYSICAL INSPECTION
SEid
PEid
Name of end user
Installation check date
Check status
LOAN
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Lyear
Amount
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Actual payment date
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PD no
PD
Pd no
Company name
House No
Road No
City
Postal Code
Year of incorporation
Authorized capital
Paid up capital
No of employee
Description Of company's line of business
REIMBURSEMENT PAYMENT
Lmonth
Lyear
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IEId
Participatin agreement no
Request for disbursement no
Participatig agreement date
PD name
Disbursemnt date
Item disbursement no
Request status
Participating agreement date
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Adnvance payment no
Lmonth
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PD no
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PD name
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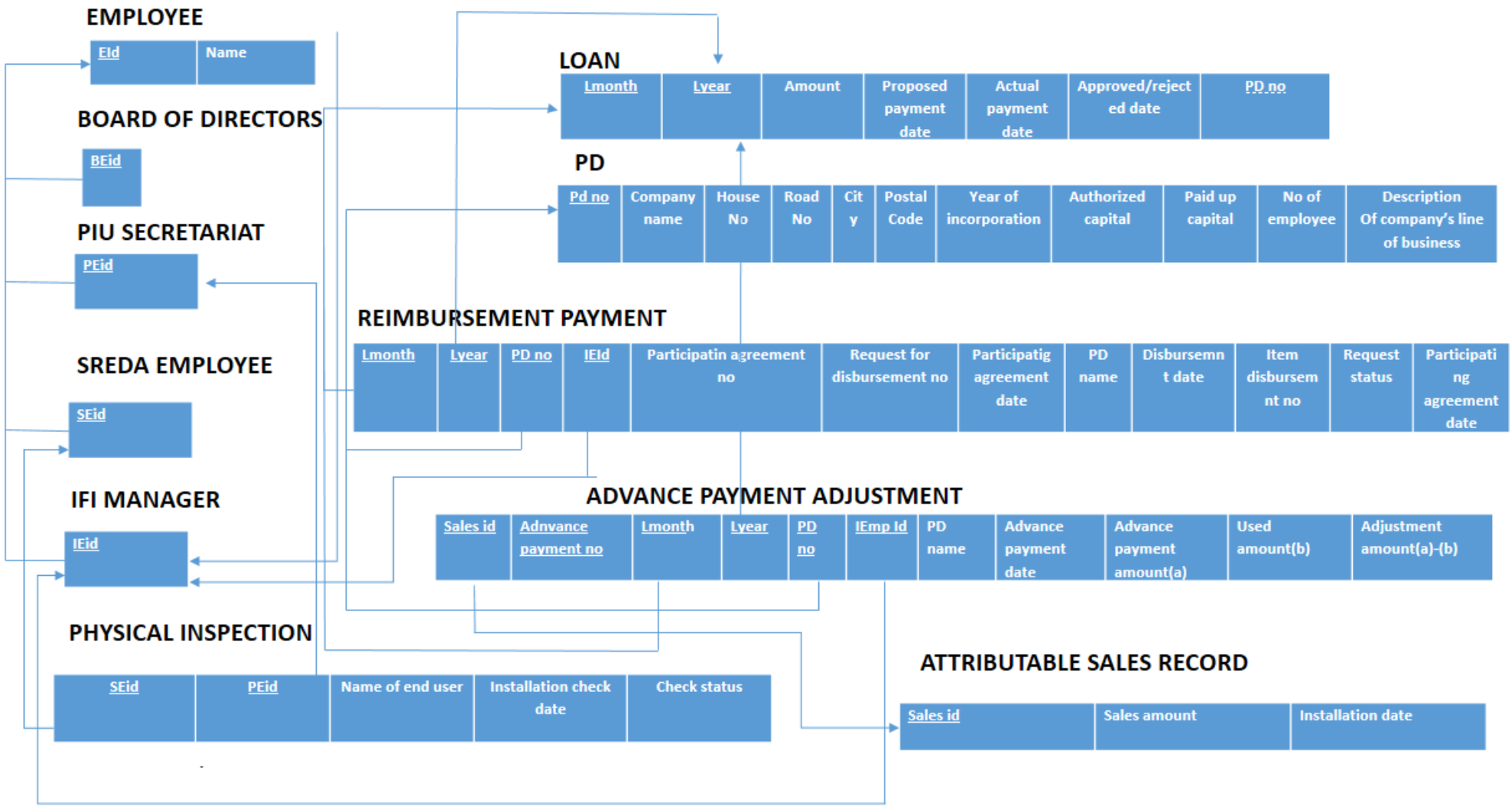
Installation date


EMPLOYEE
EId
Name
BOARD OF DIRECTORS
BEid
PIU SECRETARIAT
PEid
SREDA EMPLOYEE
SEid
IFI MANAGER
IEid
PHYSICAL INSPECTION
SEid
PEid
Name of end user
Installation check date
Check status
LOAN
Lmonth
Lyear
Amount
Proposed payment date
Actual payment date
Approved/rejected date
PD no
PD
Pd no
Company name
House No
Road No
City
Postal Code
Year of incorporation
Authorized capital
Paid up capital
No of employee
Description Of company's line of business
REIMBURSEMENT PAYMENT
Lmonth
Lyear
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IEId
Participatin agreement no
Request for disbursement no
Participatig agreement date
PD name
Disbursemnt date
Item disbursemnt no
Request status
Participating agreement date
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IEmp Id
PD name
Advance payment date
Advance payment amount(a)
Used amount(b)
Adjustment amount(a)-(b)
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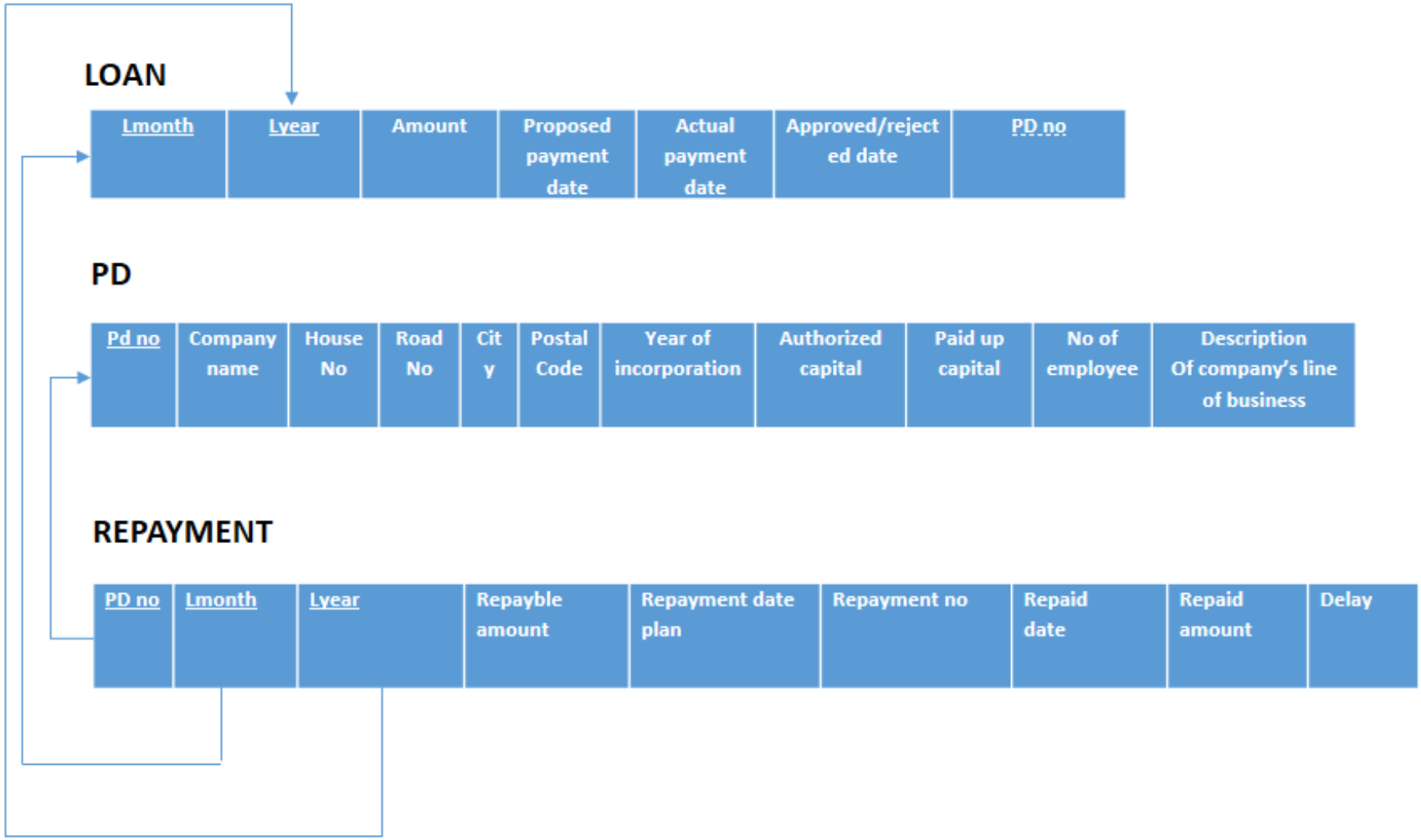
LOAN
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Lyear
Amount
Proposed payment date
Actual payment date
Approved/rejected date
PD no
PD
Pd no
Company name
House No
Road No
City
Postal Code
Year of incorporation
Authorized capital
Paid up capital
No of employee
Description Of company's line of business
REPAYMENT
PD no
Lmonth
Lyear
Repayble amount
Repayment date plan
Repayment no
Repaid date
Repaid amount
Delay

NORMALIZED FORM OF LOAN TYPE A ENTITIES

Proponent id	Company name	Road no	House no	Postal code	District	Year of incorporation year	Authorized capital Float	Paid up capital	Number of employee	Description of the company line of business	Meeting date Data

No of unit	Amount	Paid date Data	Paid Amount	Scheduled portion data	Scheduled portion amount	Total	Eligible EE&C

Check status	Date Data	Receiving data of corrected documents	Document Name

Installation check data	Check status	Name of the end user

Month	Name of the site	Site operation hour	Site production volume	Site electricity consumption	Point of measurement electricity	Measuring method electricity	Site gas consumption	Point of measurement of gas	Measuring method of gas	Proponent id

Proponent id	Check point	Check status	Catalogue	Other document	Note	Eligibility check sheet	Code no	SEmployee ID	IEmployee ID

Proponent id	Eligible equipment	Tenure	Grace period	Interest rate	Repayment terms	collateral	Guarantee	NOC status	Loan amount	Sub project number

SEmployee ID	SEmployee Name

PEmployee ID	PEmployee Name

IEmployee ID	IEmployee Name

BEmployee ID	BEmployee Name

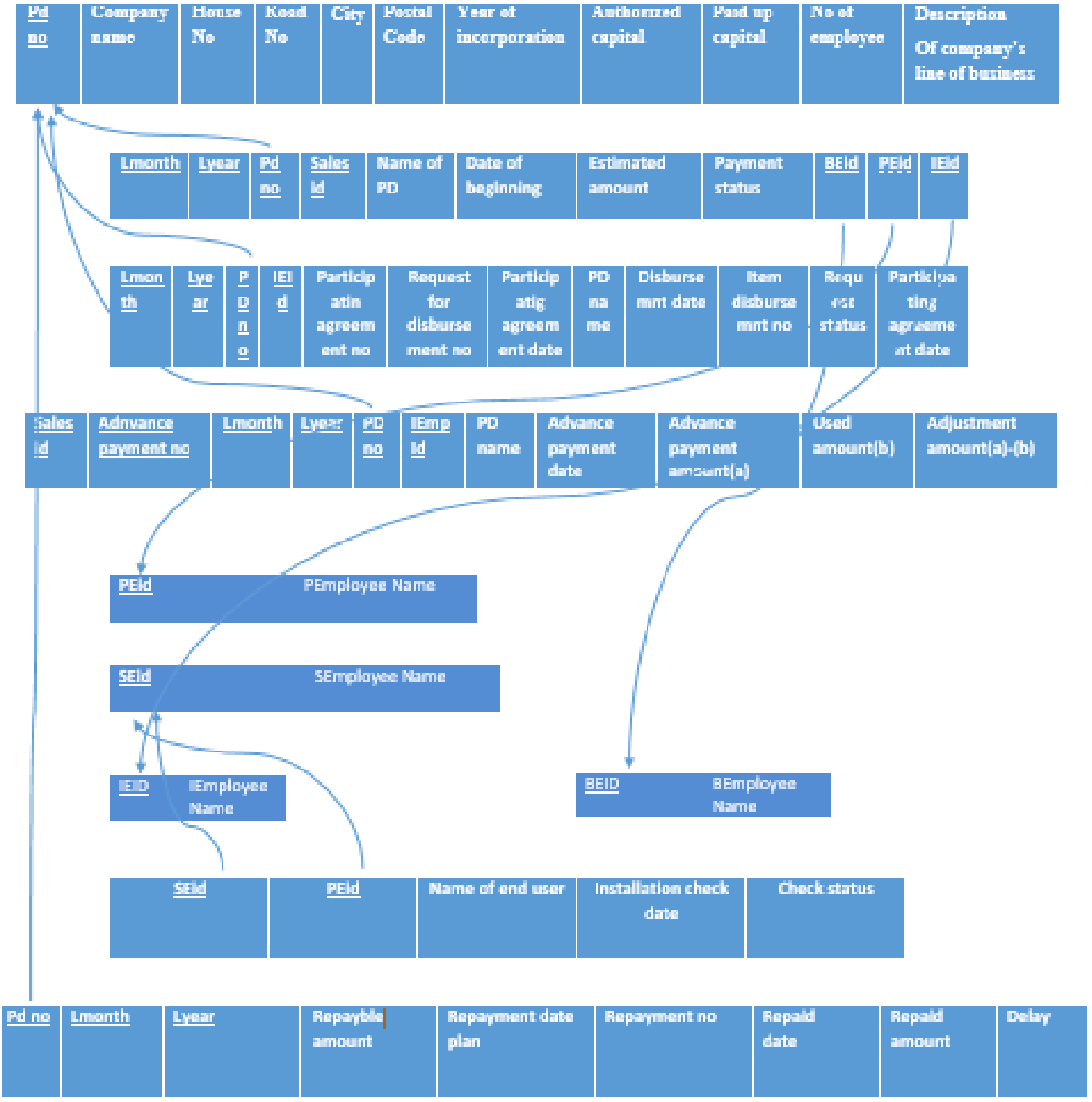
Proponent id	Check point	Check status	Manager decision	OIC decision	Report name	PEmployee ID	BEmployee ID	Imployee ID

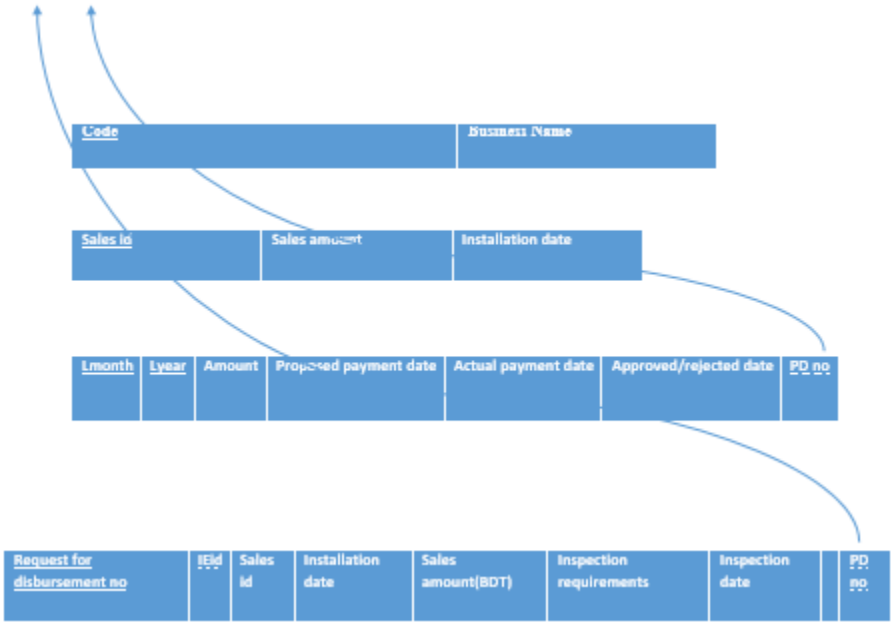
Proponent ID	Criteria	Check status	OIC decision	OIC decision data	Manager decision	Manager decision date	Approval body decision	Approval body decision date	IEmployee ID	PEmployee ID	BEmployee ID

Sub project number	Name of equipment	Specification	Model No	Supplier	Manufacturer	Unit price	No of introduced	Total investment amount	Quotation Attachment	Invoice attachment	Reciept

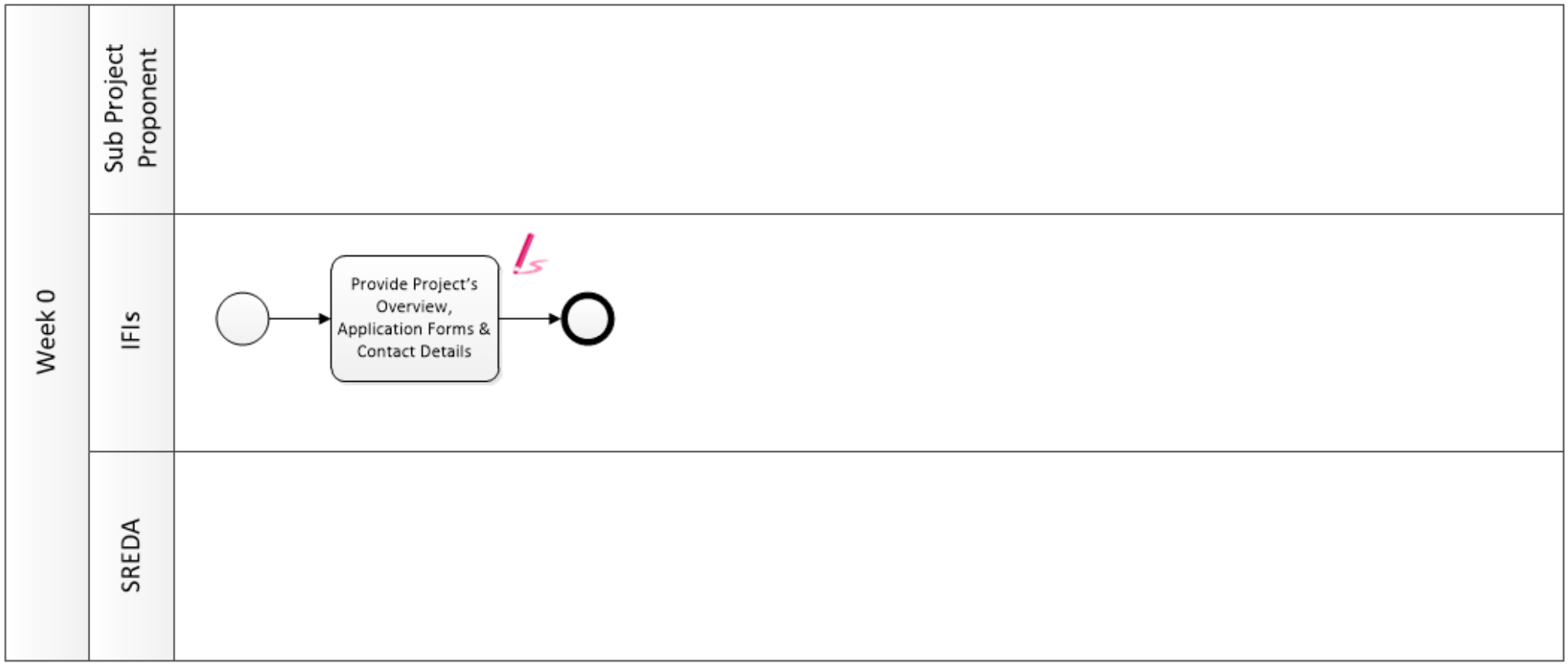
Code number	Name of equipment	Model	Manufacture

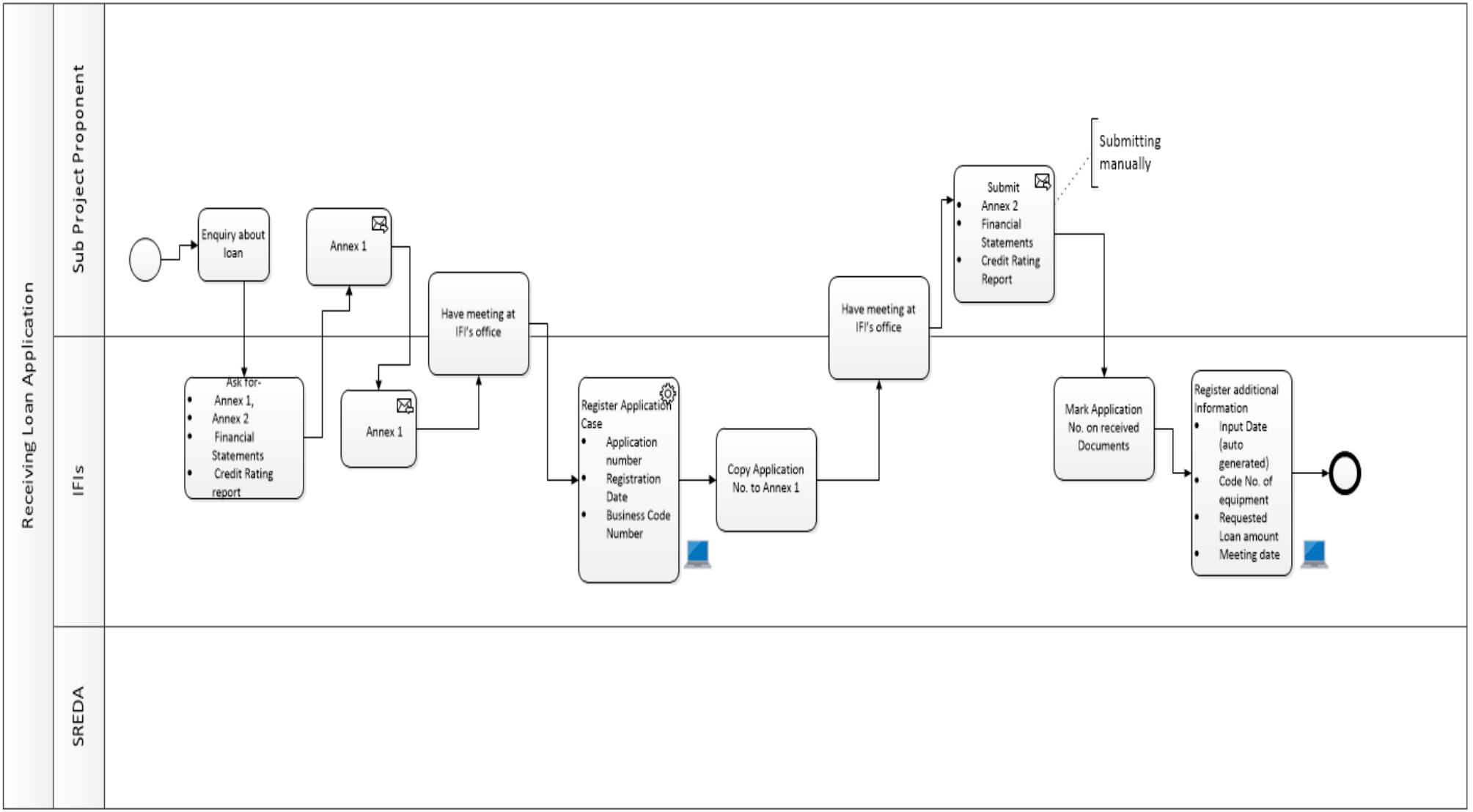
NORMALIZED FORM OF LOAN TYPE B ENTITIES

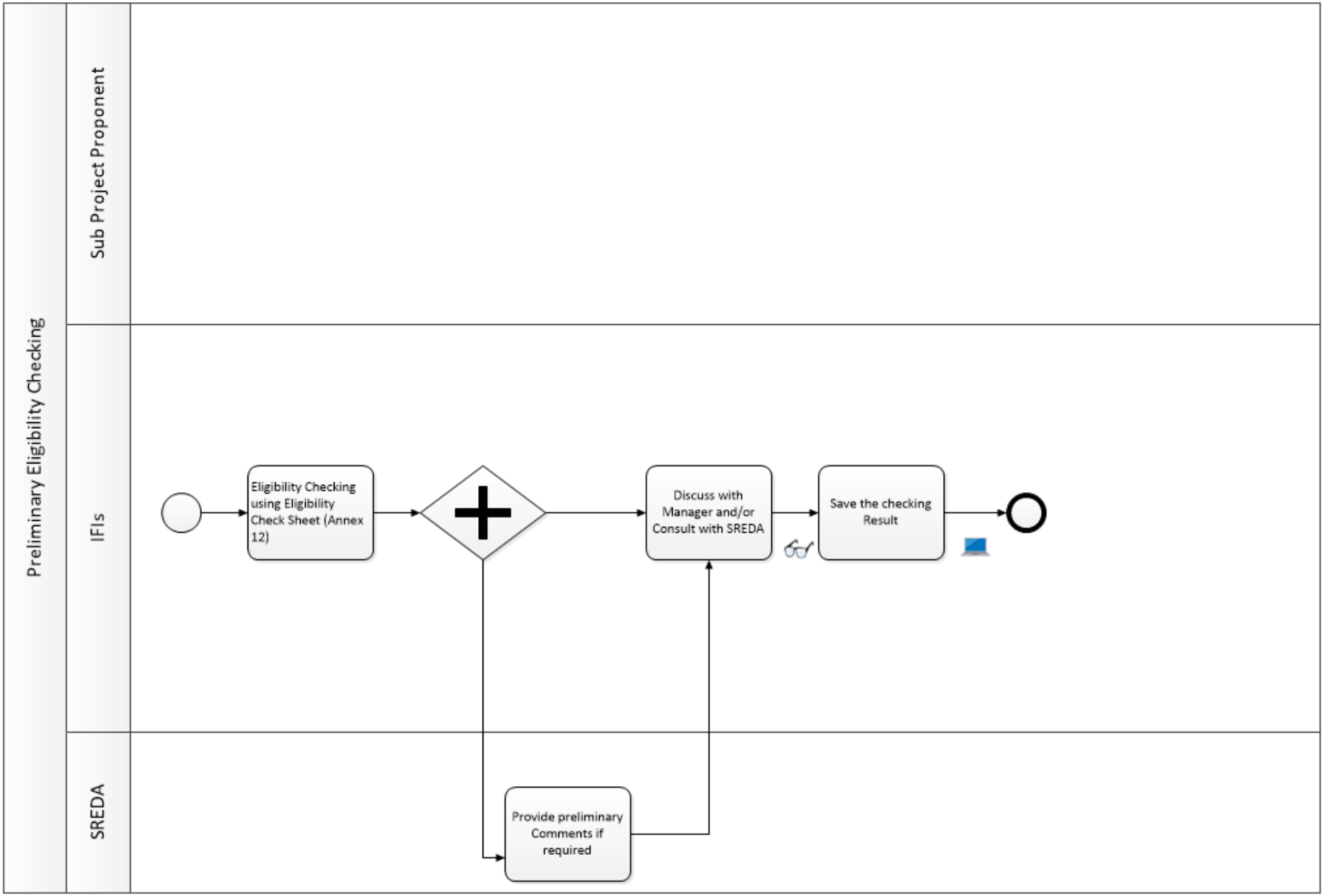


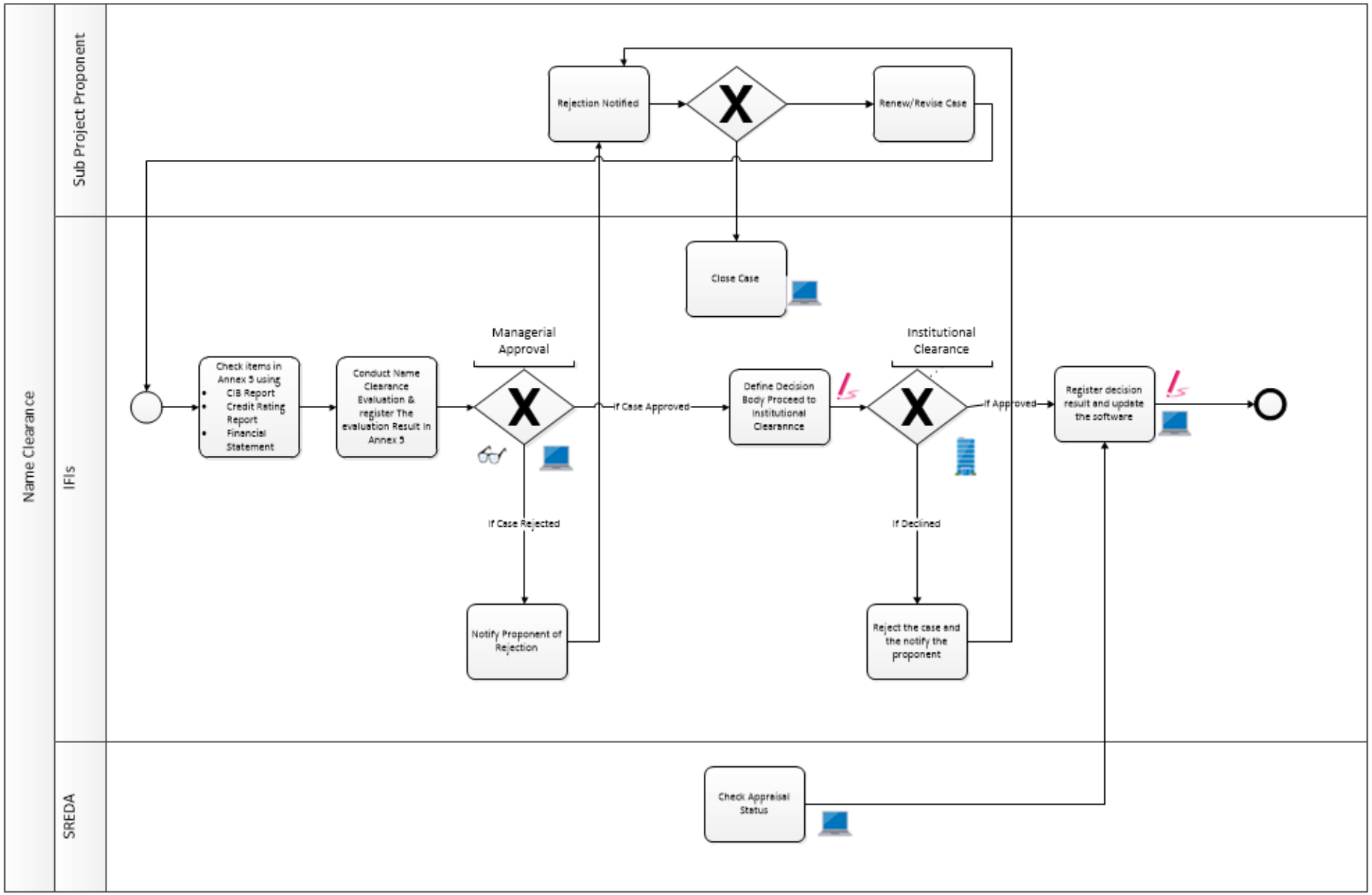

Code
Business Name
Sales id
Sales amount
Installation date
Lmonth
Lyear
Amount
Proposed payment date
Actual payment date
Approved/rejected date
PD no
Request for disbursement no
IEid
Sales id
Installation date
Sales amount(BDT)
Inspection requirements
Inspection date
PD no

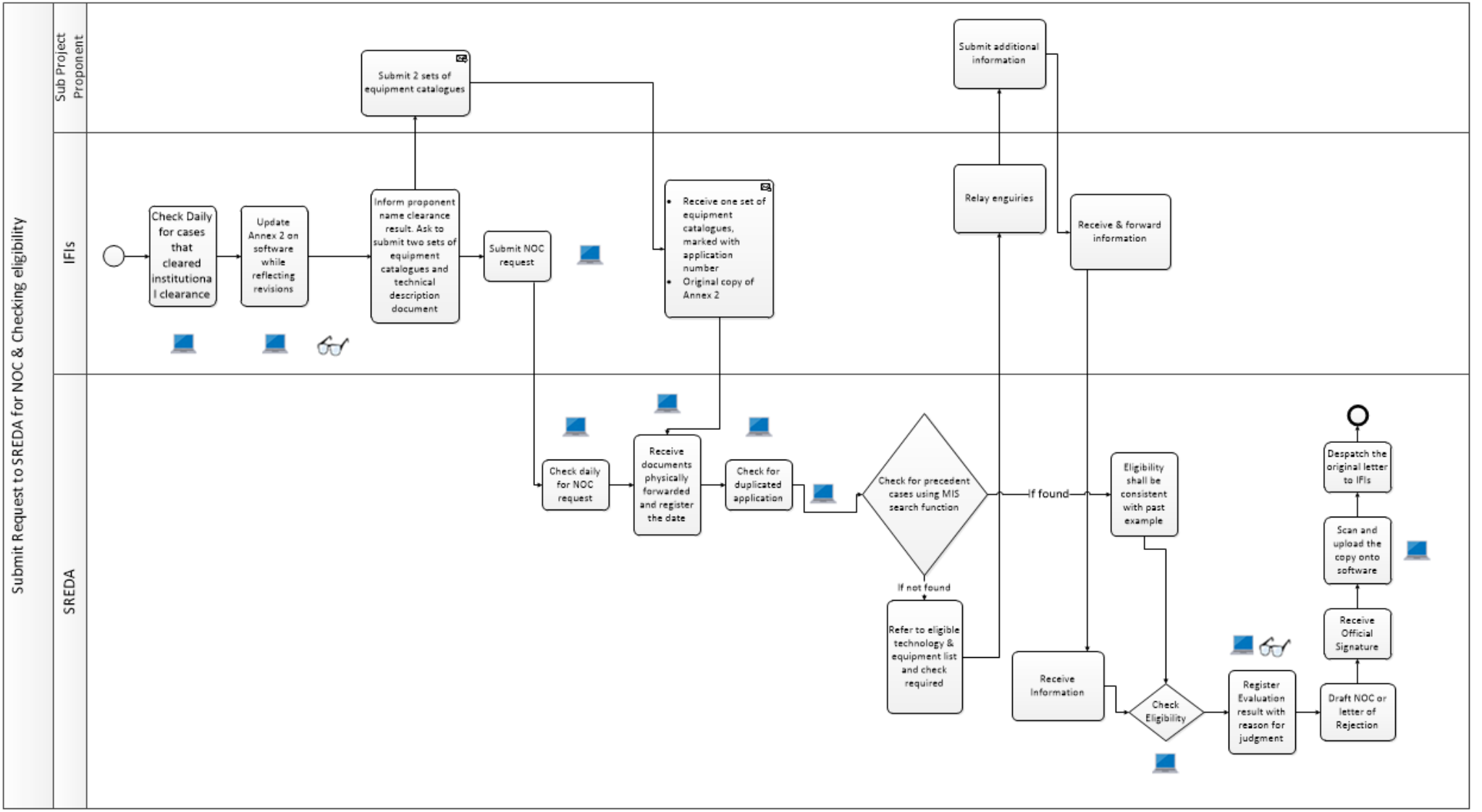
PROCESS MODELING OF LOAN TYPE A

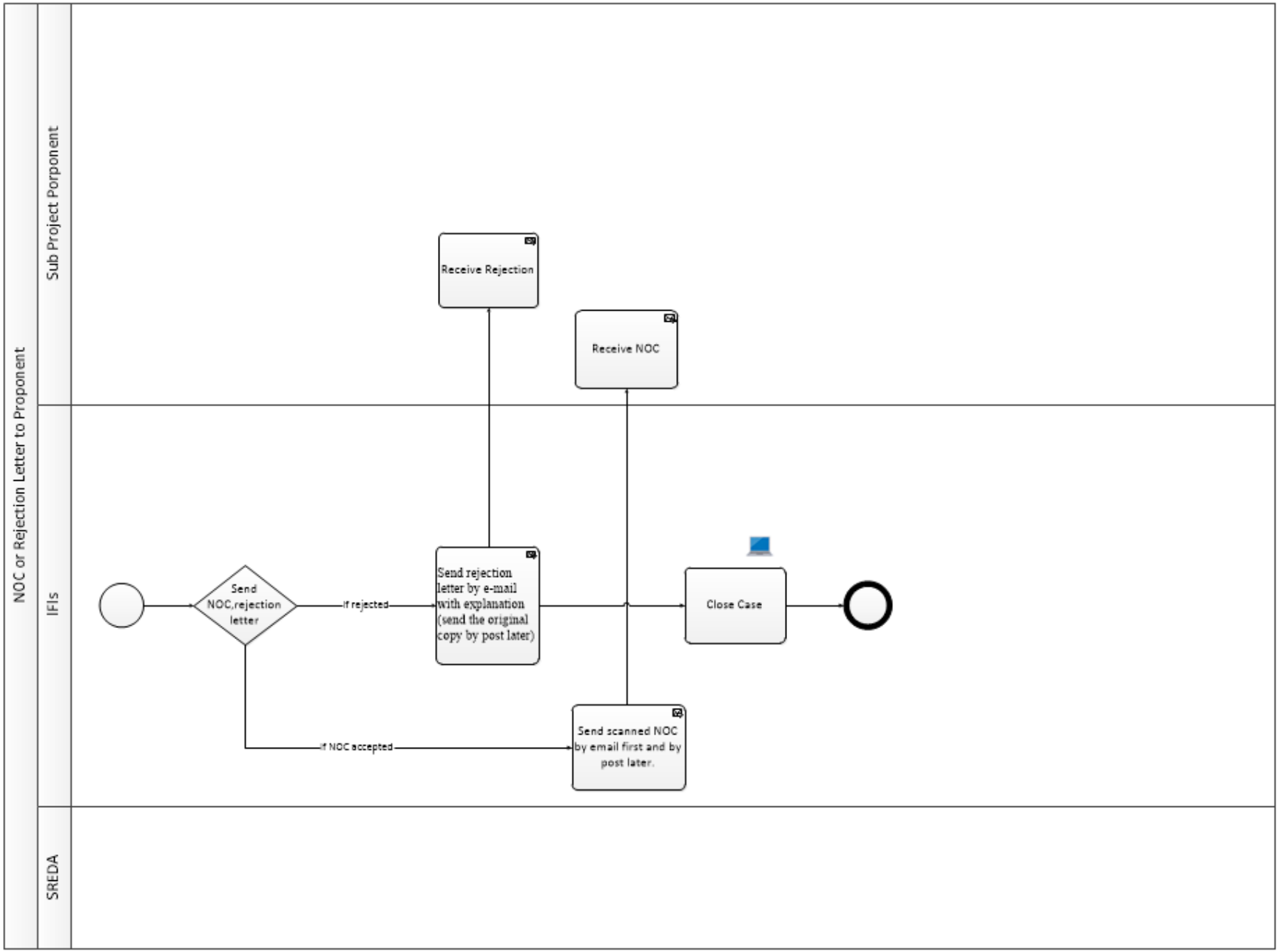


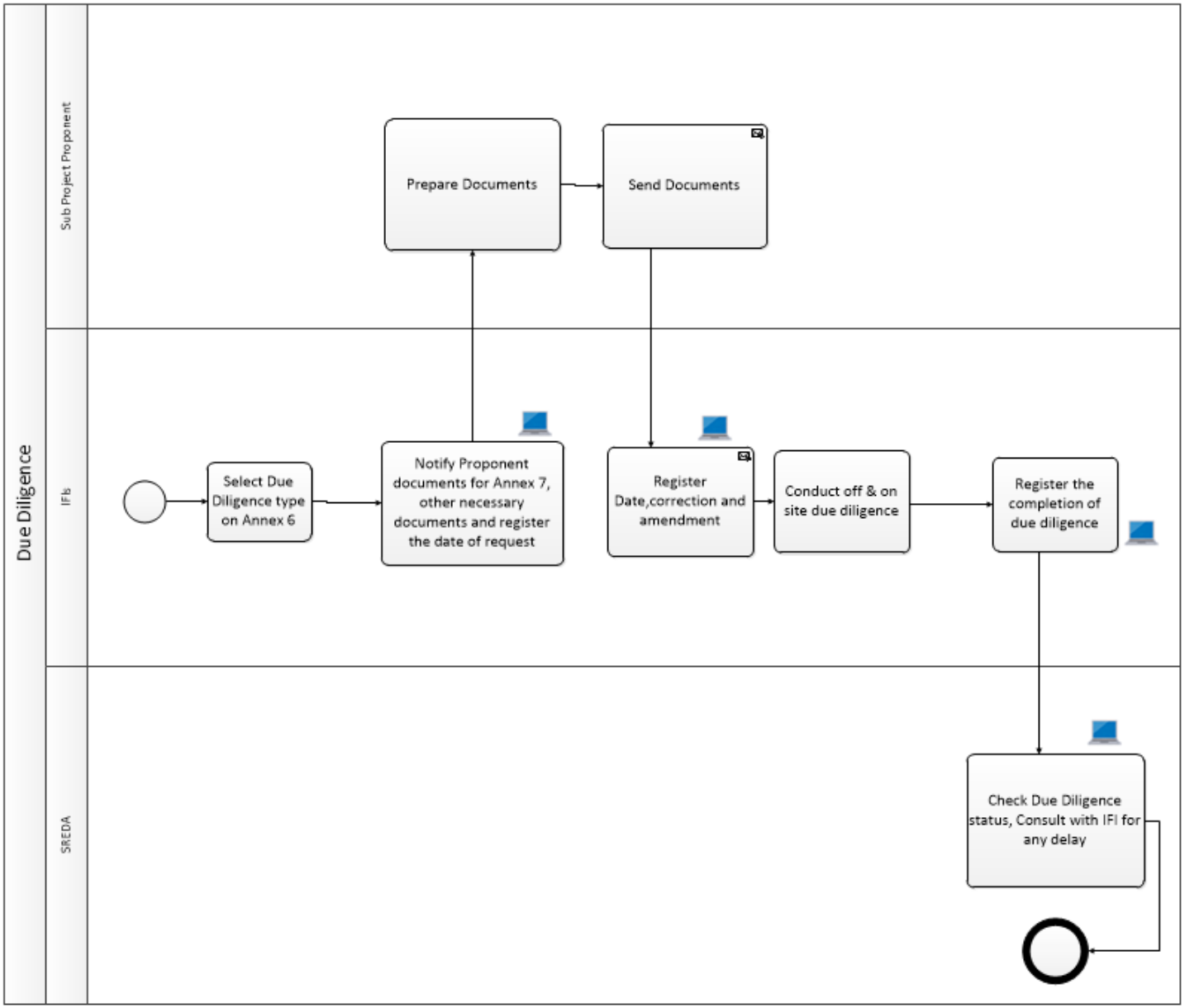

Receiving Loan Application
Sub Project Proponent
IFIs
SREDA
Enquiry about loan
Annex 1
Have meeting at IFI's office
Submit
Annex 2
Financial Statements
Credit Rating Report
Submitting manually
Ask for-
Annex 1,
Annex 2
Financial Statements
Credit Rating report
Annex 1
Register Application Case
Application number
Registration Date
Business Code Number
Copy Application No. to Annex 1
Have meeting at IFI's office
Mark Application No. on received Documents
Register additional Information
Input Date (auto generated)
Code No. of equipment
Requested Loan amount
Meeting date

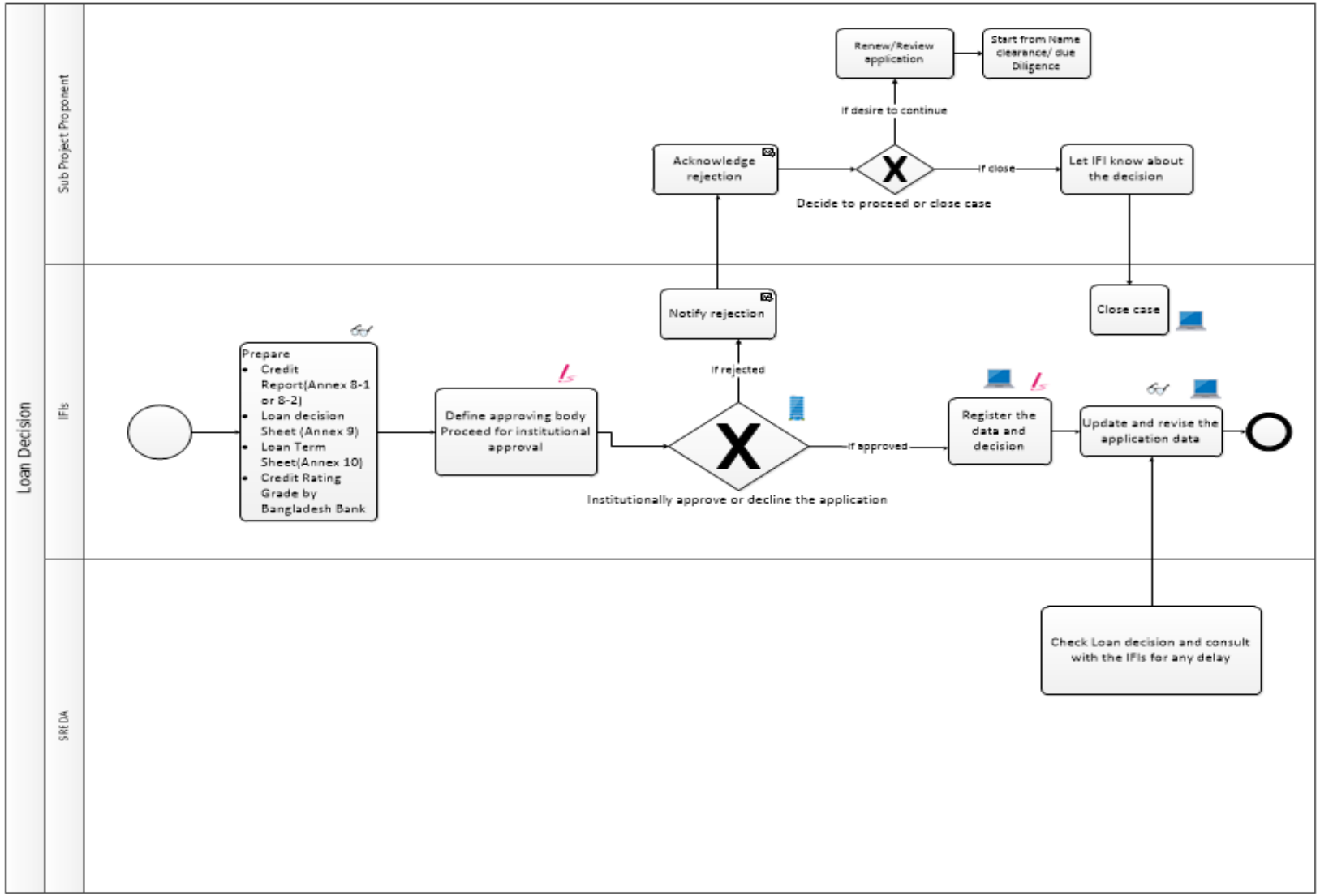

Preliminary Eligibility Checking
Sub Project Proponent
IFIs
SREDA
Eligibility Checking using Eligibility Check Sheet (Annex 12)
Discuss with Manager and/or Consult with SREDA
Save the checking Result
Provide preliminary Comments if required

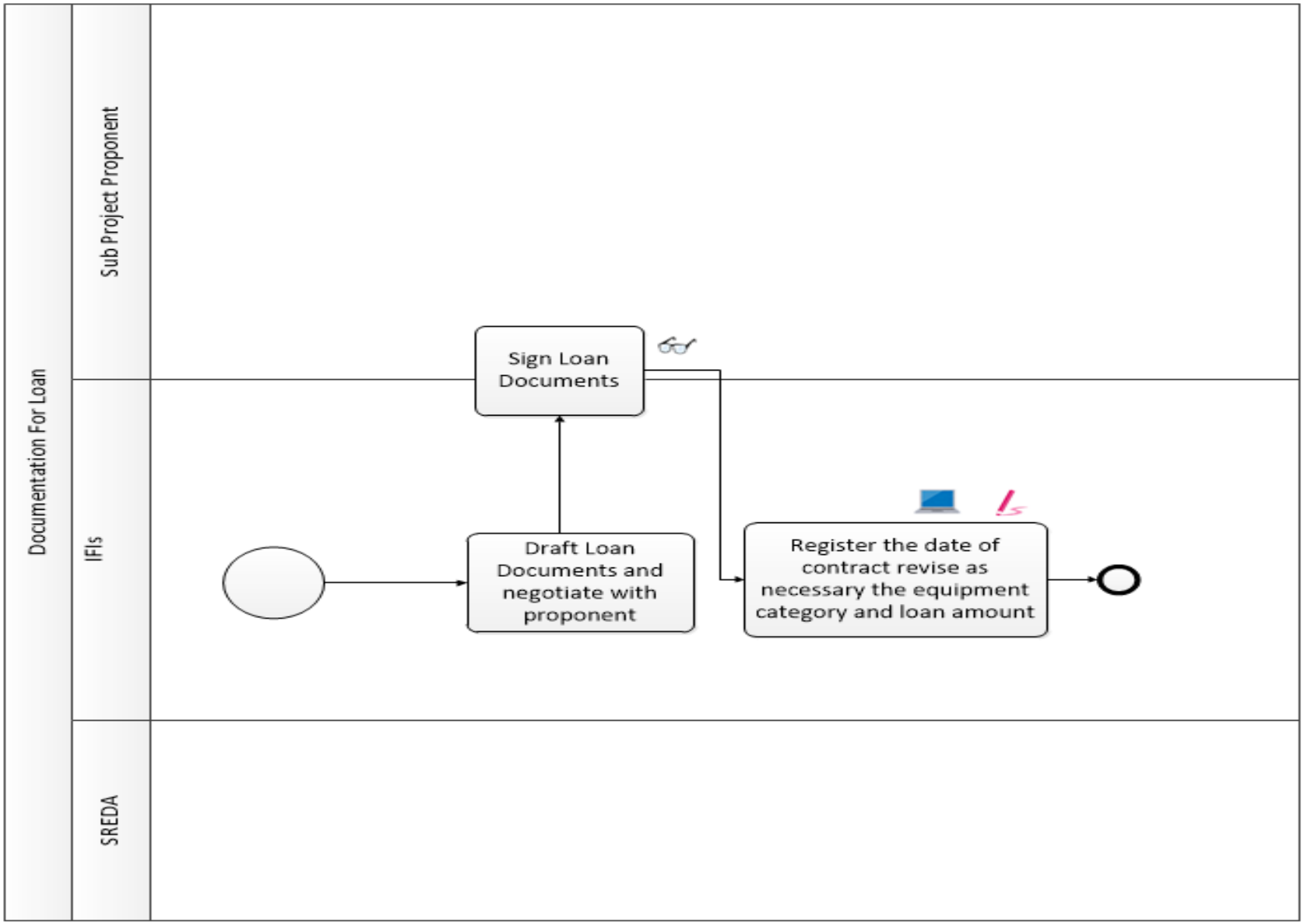

Name Clearance
Sub Project Proponent
IFIs
SREDA
Rejection Notified
Renew/Revise Case
Close Case
Check items in Annex 3 using
CIB Report
Credit Rating Report
Financial Statement
Conduct Name Clearance Evaluation & register The evaluation Result in Annex 3
Managerial Approval
If Case Approved
If Case Rejected
Notify Proponent of Rejection
Define Decision Body Proceed to Institutional Clearannce
Institutional Clearance
If Approved
If Declined
Reject the case and the notify the proponent
Register decision result and update the software
Check Appraisal Status

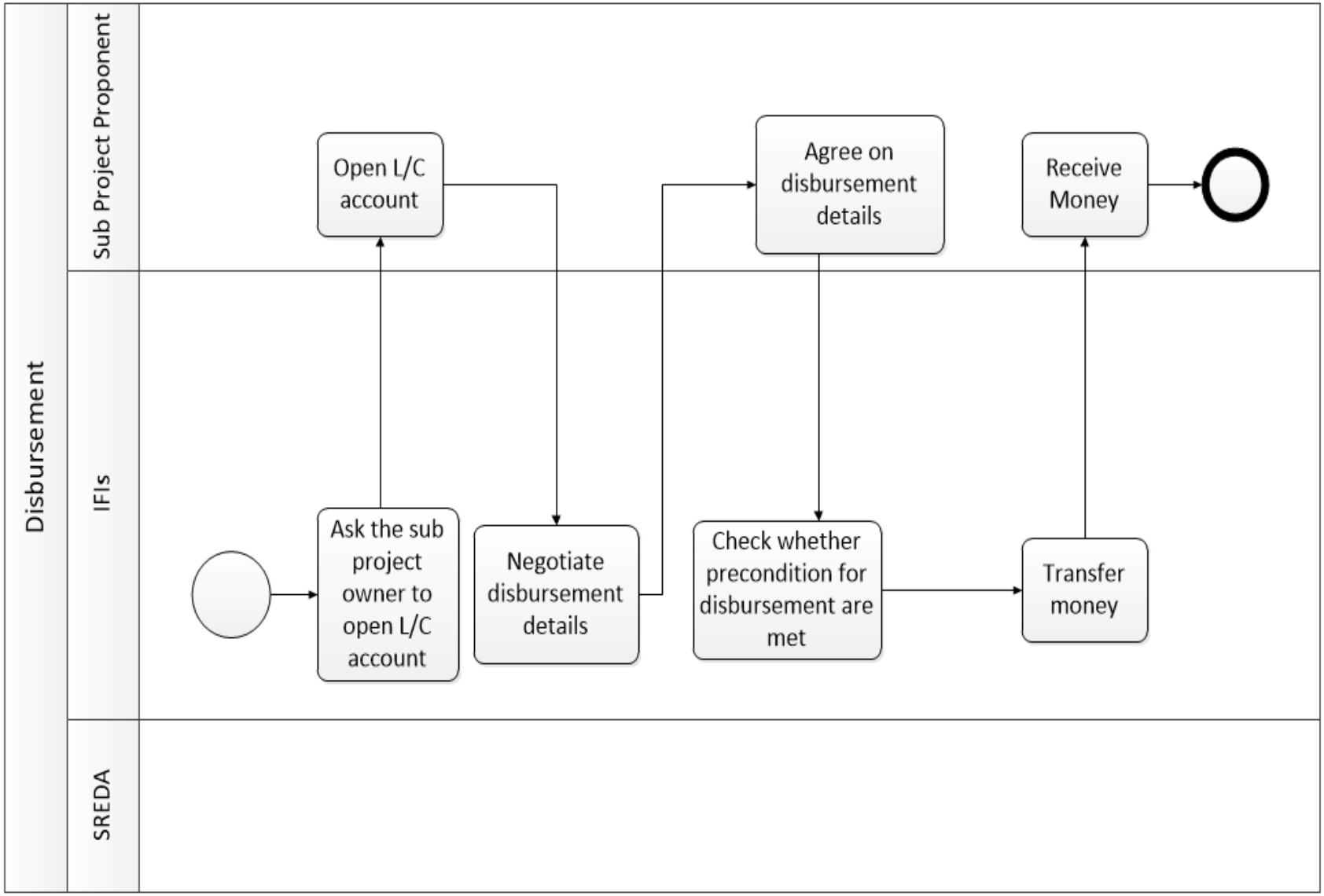

Submit Request to SREDA for NOC & Checking eligibility
Sub Project Proponent
IFIs
SREDA
Submit 2 sets of equipment catalogues
Submit additional information
Check Daily for cases that cleared institutional clearance
Update Annex 2 on software while reflecting revisions
Inform proponent name clearance result. Ask to submit two sets of equipment catalogues and technical description document
Submit NOC request
Receive one set of equipment catalogues, marked with application number
Original copy of Annex 2
Relay enguiries
Receive & forward information
Check daily for NOC request
Receive documents physically forwarded and register the date
Check for duplicated application
Check for precedent cases using MIS search function
If found
If not found
Refer to eligible technology & equipment list and check required
Eligibility shall be consistent with past example
Receive Information
Check Eligibility
Register Evaluation result with reason for judgment
Draft NOC or letter of Rejection
Receive Official Signature
Scan and upload the copy onto software
Despatch the original letter to IFIs

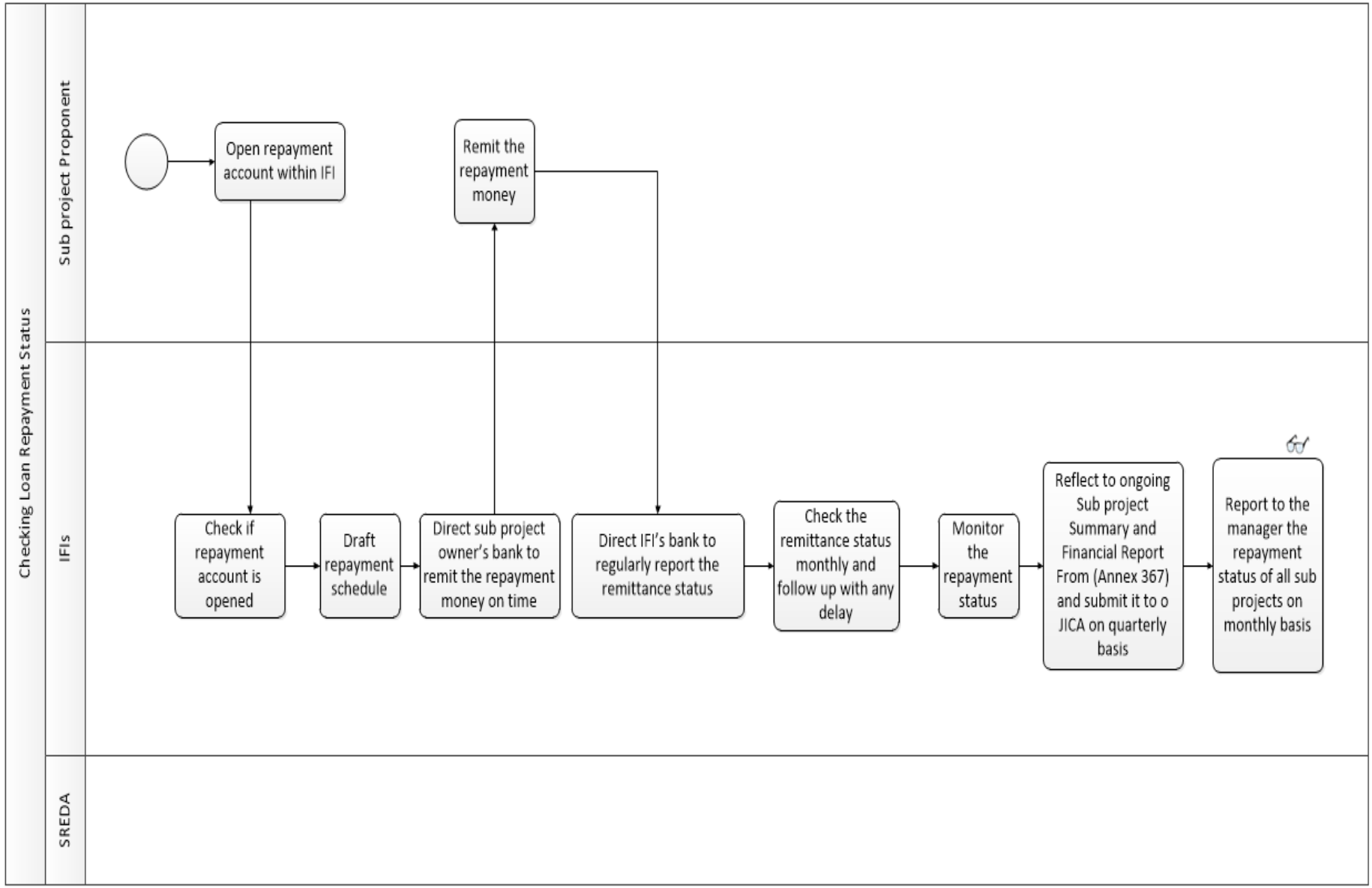

NOC or Rejection Letter to Proponent
Sub Project Porponent
IFIs
SREDA
Receive Rejection
Receive NOC
Send NOC,rejection letter
If rejected
Send rejection letter by e-mail with explanation (send the original copy by post later)
Close Case
If NOC accepted
Send scanned NOC by email first and by post later.

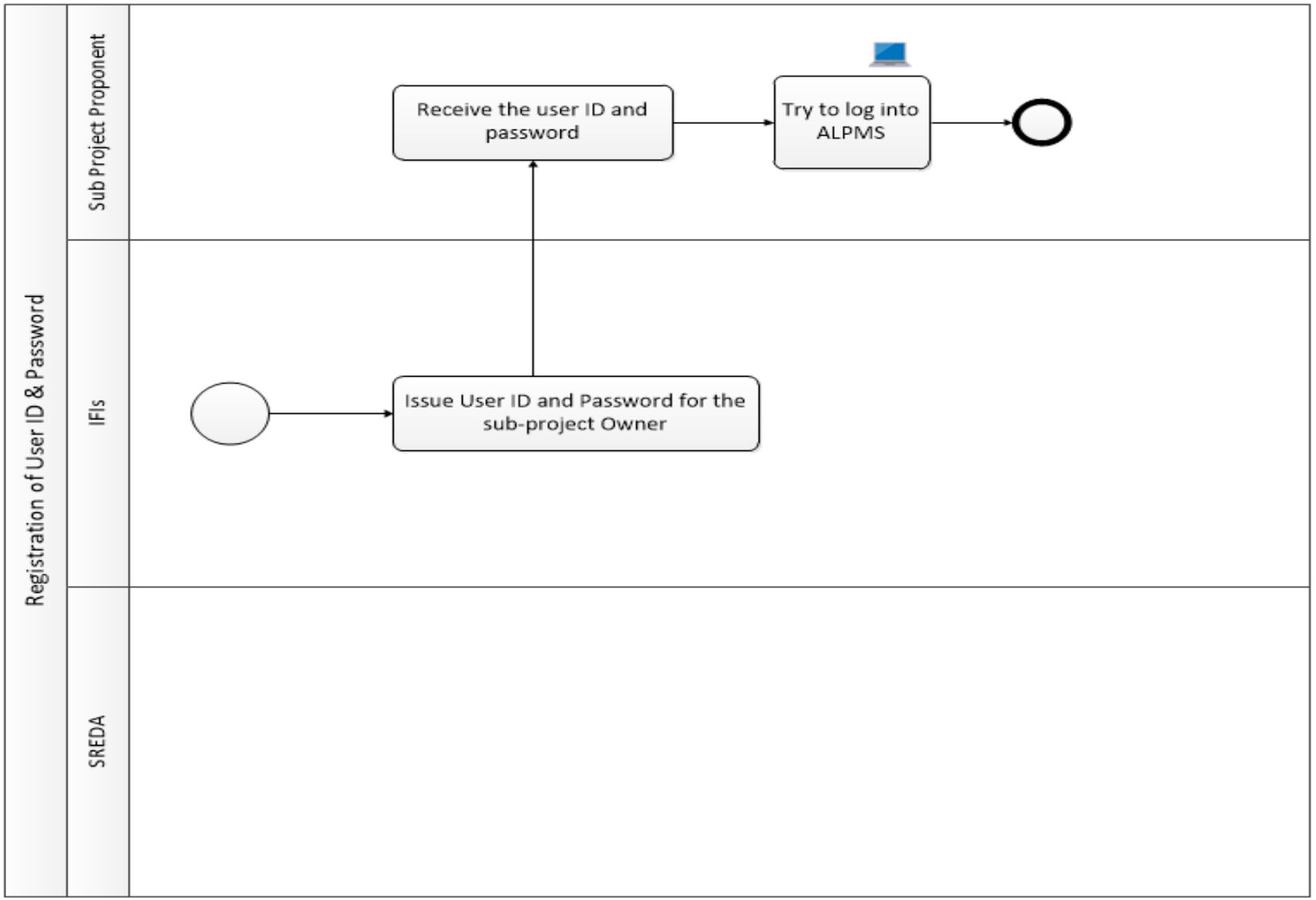

Due Diligence
Sub Project Proponent
IFIs
SREDA
Prepare Documents
Send Documents
Select Due Diligence type on Annex 6
Notify Proponent documents for Annex 7, other necessary documents and register the date of request
Register Date,correction and amendment
Conduct off & on site due diligence
Register the completion of due diligence
Check Due Diligence status, Consult with IFI for any delay

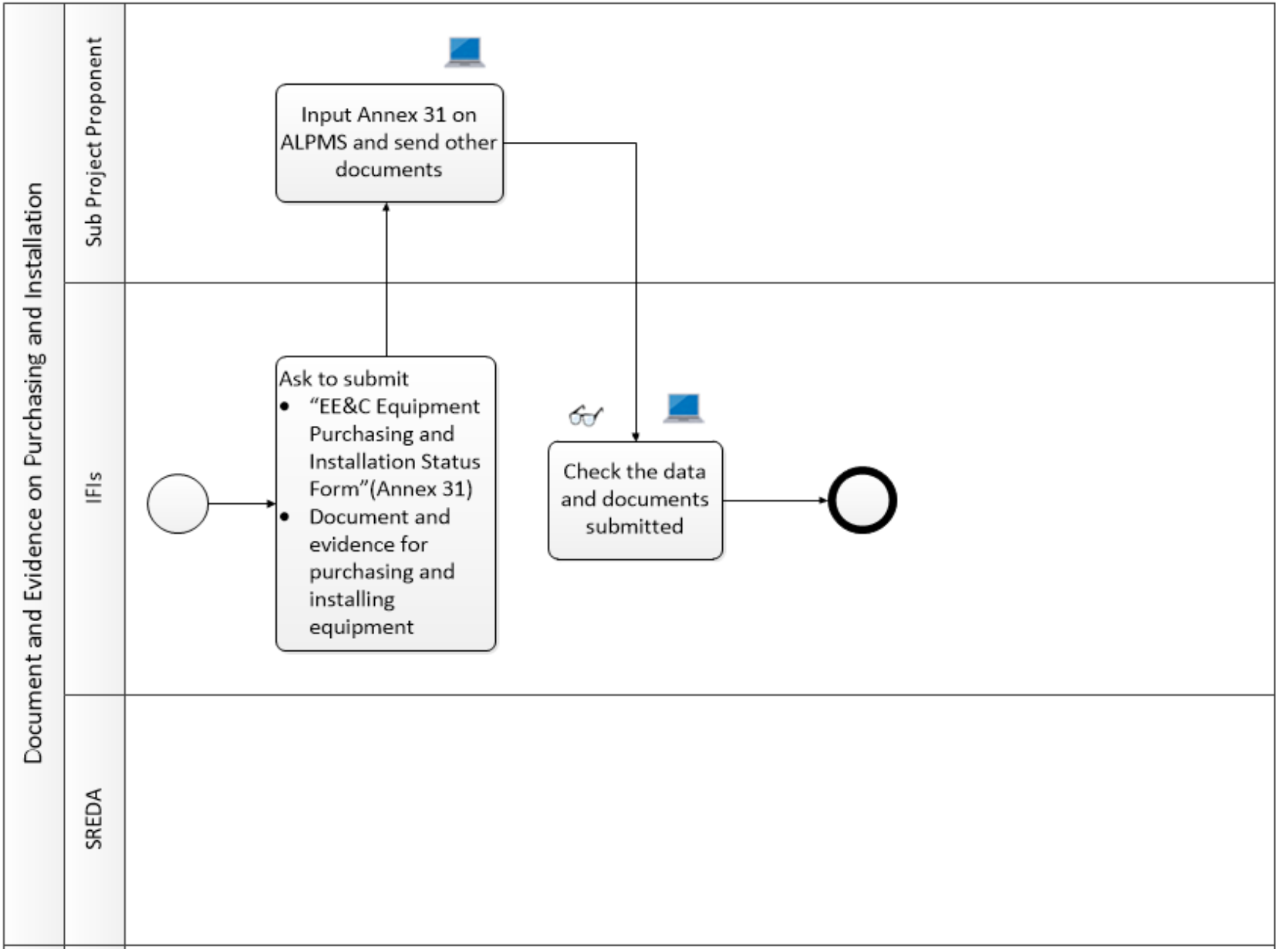

Loan Decision
Sub Project Proponent
IFIs
SREDA
Renew/Review application
Start from Name clearance/ due Diligence
If desire to continue
Acknowledge rejection
If close
Let IFI know about the decision
Decide to proceed or close case
Notify rejection
Close case
Prepare
Credit Report(Annex 8-1 or 8-2)
Loan decision Sheet (Annex 9)
Loan Term Sheet(Annex 10)
Credit Rating Grade by Bangladesh Bank
Define approving body Proceed for institutional approval
If rejected
If approved
Register the data and decision
Update and revise the application data
Institutionally approve or decline the application
Check Loan decision and consult with the IFIs for any delay

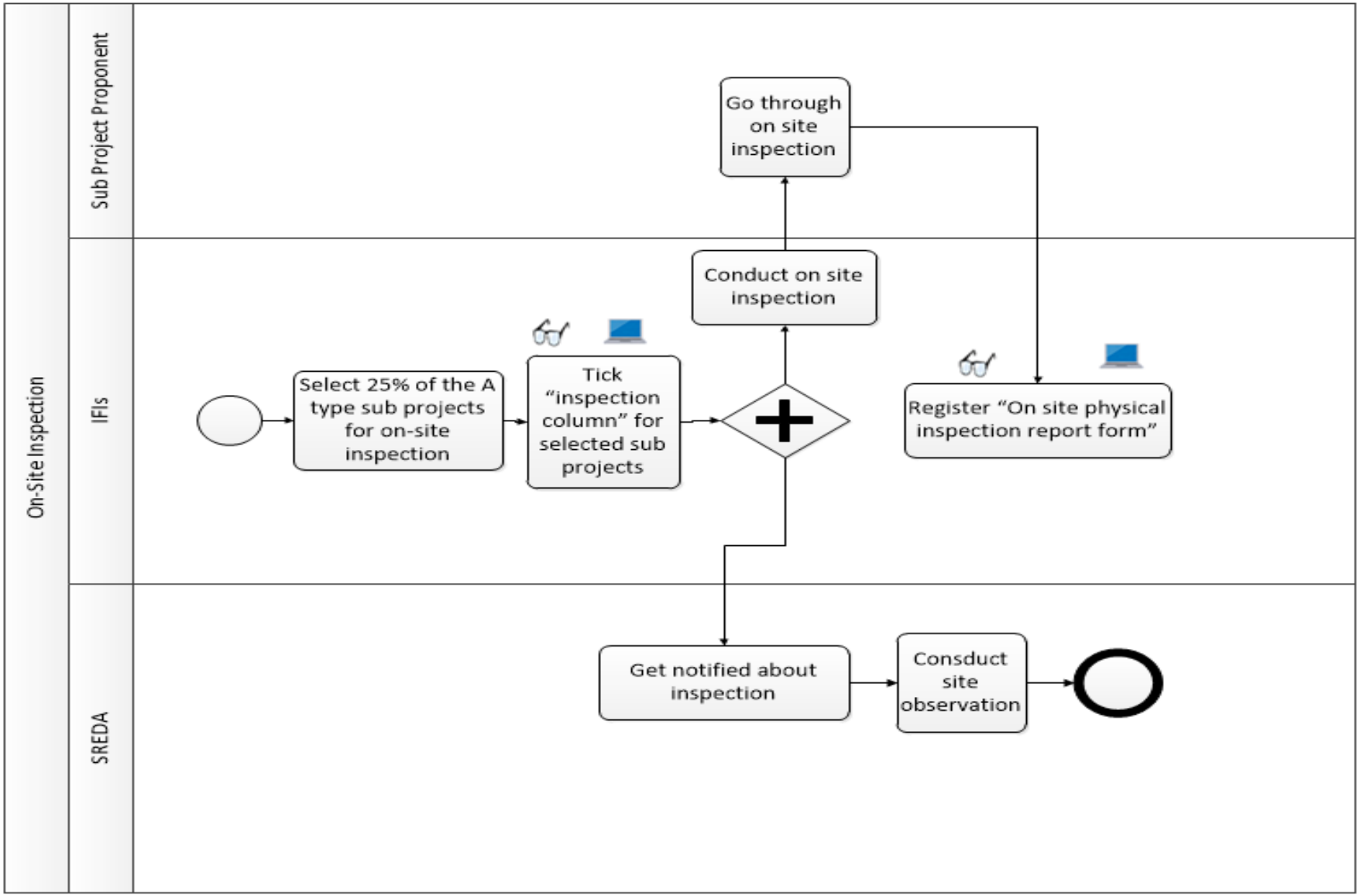

Documentation For Loan
Sub Project Proponent
IFIs
SREDA
Sign Loan Documents
Draft Loan Documents and negotiate with proponent
Register the date of contract revise as necessary the equipment category and loan amount

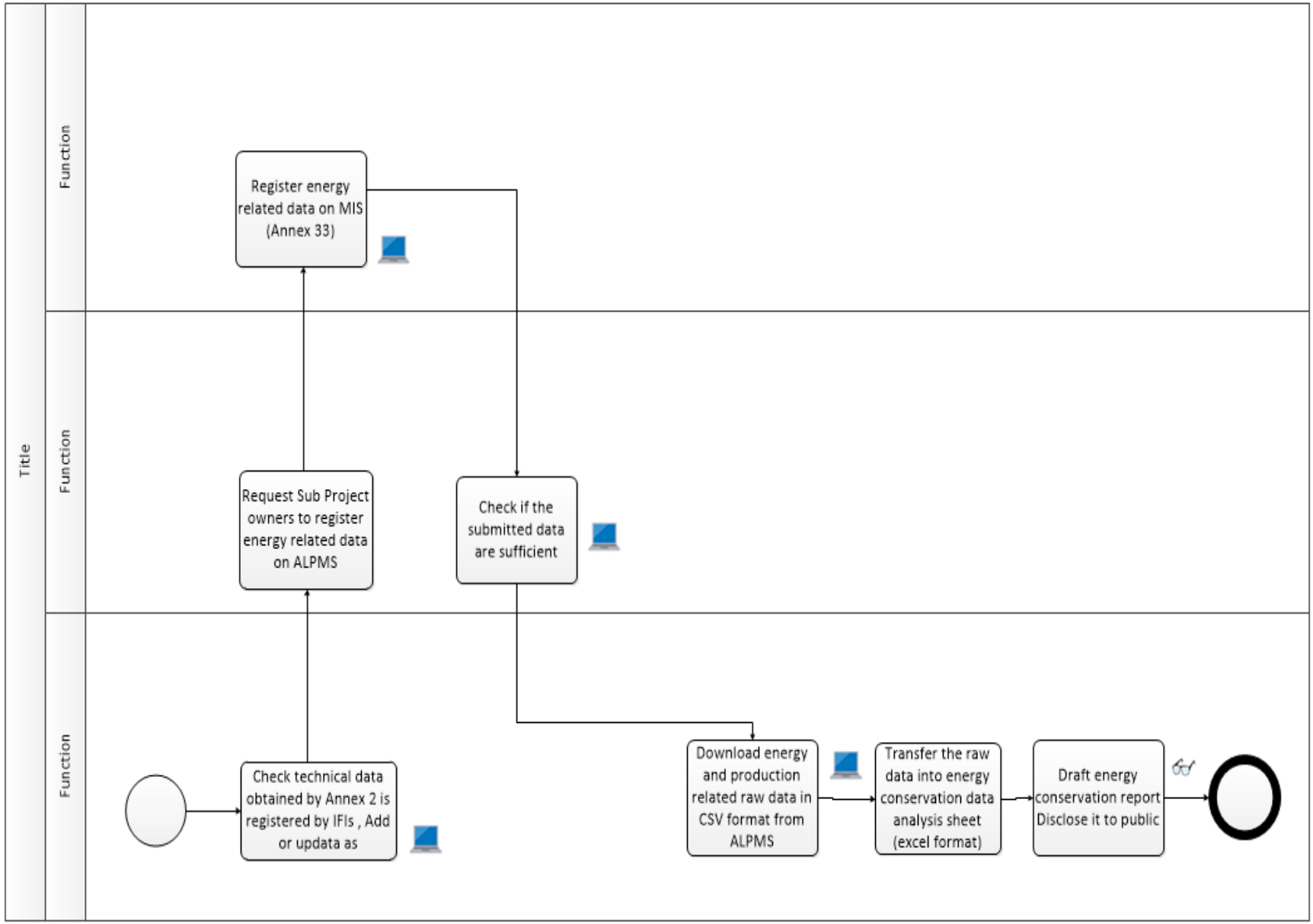

Disbursement
Sub Project Proponent
IFIs
SREDA
Open L/C account
Agree on disbursement details
Receive Money
Ask the sub project owner to open L/C account
Negotiate disbursement details
Check whether precondition for disbursement are met
Transfer money


Checking Loan Repayment Status
Sub project Proponent
IFIs
SREDA
Open repayment account within IFI
Remit the repayment money
Check if repayment account is opened
Draft repayment schedule
Direct sub project owner's bank to remit the repayment money on time
Direct IFI's bank to regularly report the remittance status
Check the remittance status monthly and follow up with any delay
Monitor the repayment status
Reflect to ongoing Sub project Summary and Financial Report From (Annex 367) and submit it to o JICA on quarterly basis
Report to the manager the repayment status of all sub projects on monthly basis

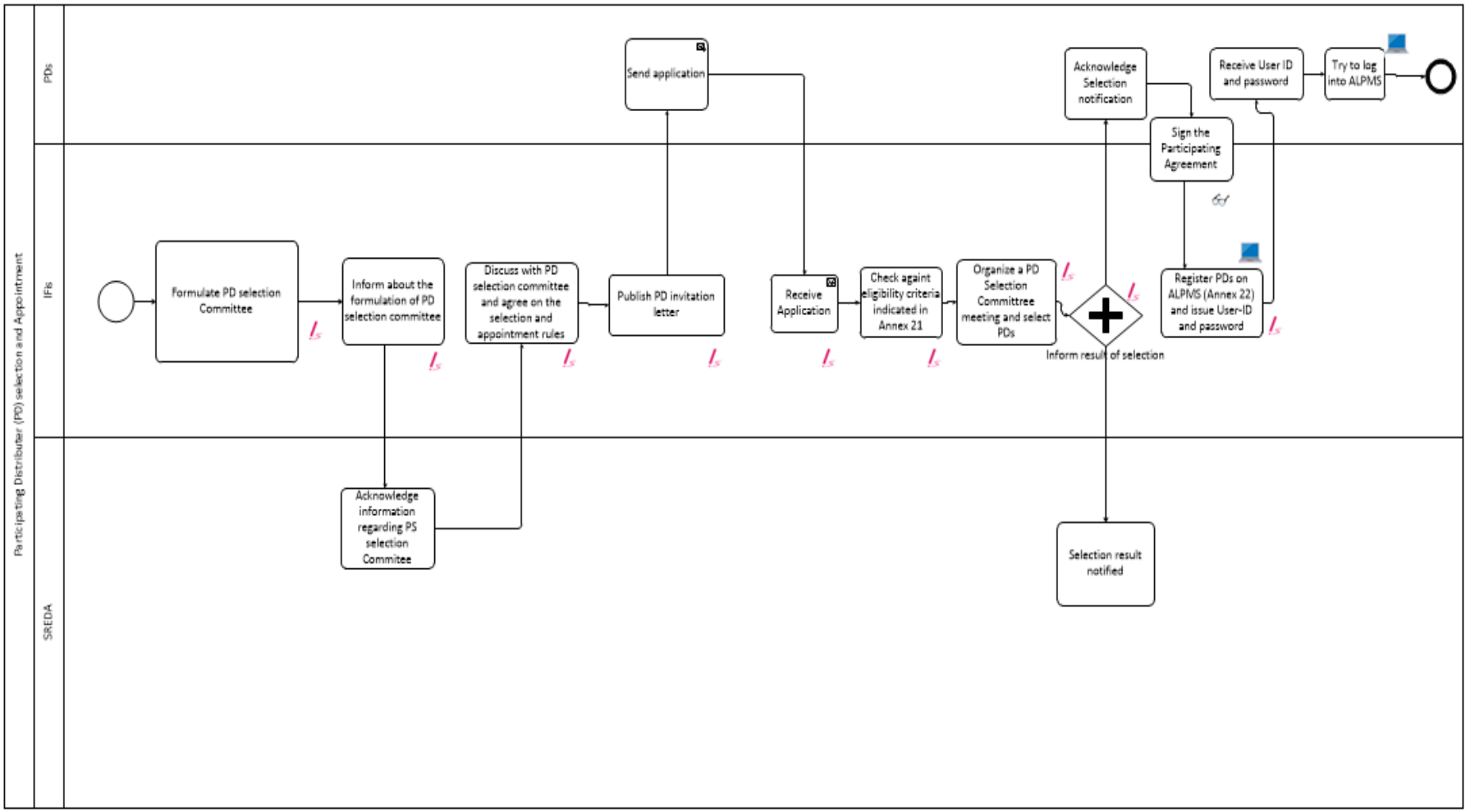

Registration of User ID & Password
Sub Project Proponent
IFIs
SREDA
Receive the user ID and password
Try to log into ALPMS
Issue User ID and Password for the sub-project Owner

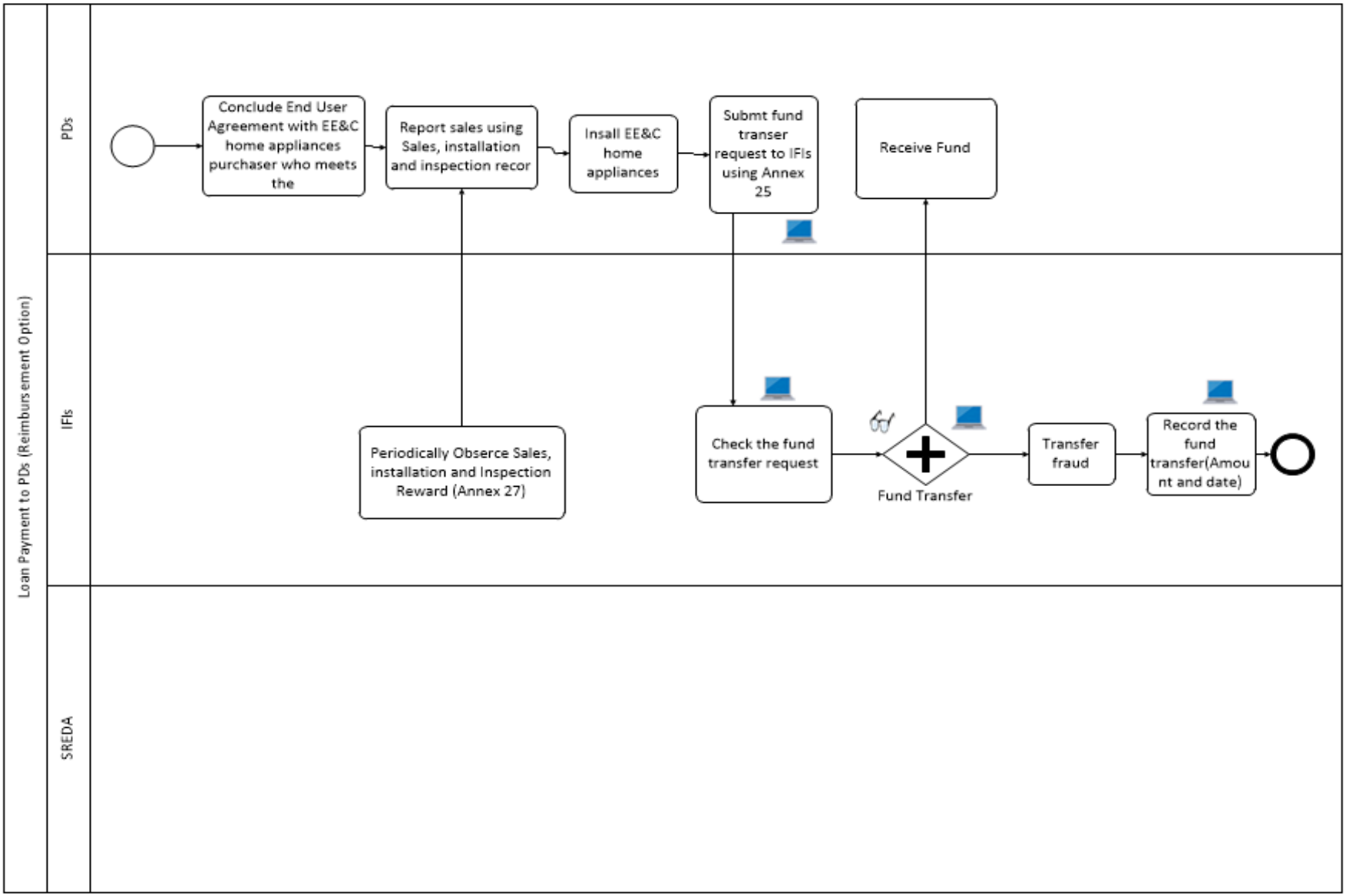

Document and Evidence on Purchasing and Installation
Sub Project Proponent
IFIs
SREDA
Input Annex 31 on ALPMS and send other documents
Ask to submit
"EE&C Equipment Purchasing and Installation Status Form"(Annex 31)
Document and evidence for purchasing and installing equipment
Check the data and documents submitted

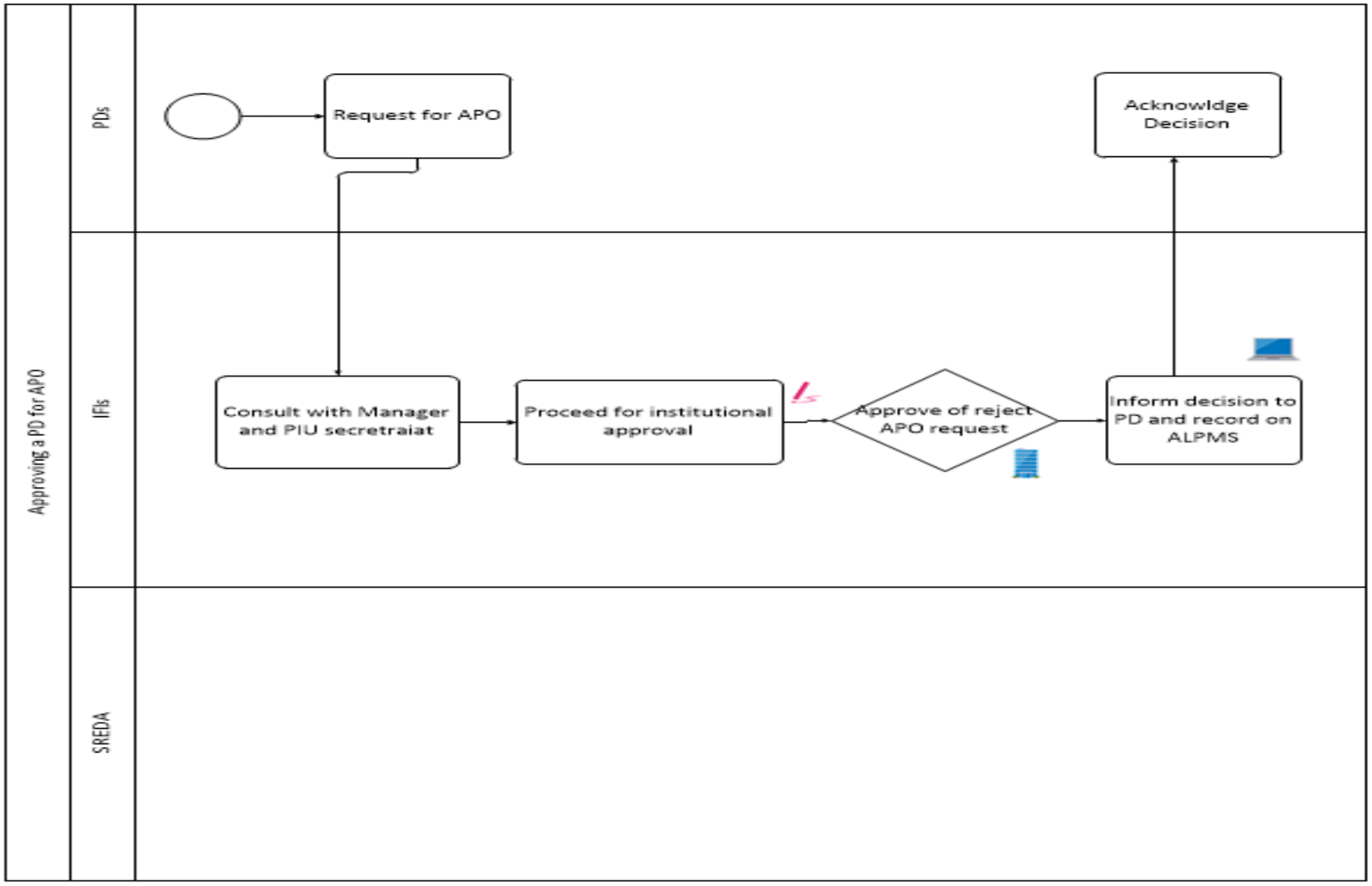

On-Site Inspection
Sub Project Proponent
IFIs
SREDA
Go through on site inspection
Conduct on site inspection
Select 25% of the A type sub projects for on-site inspection
Tick "inspection column" for selected sub projects
Register "On site physical inspection report form"
Get notified about inspection
Consduct site observation

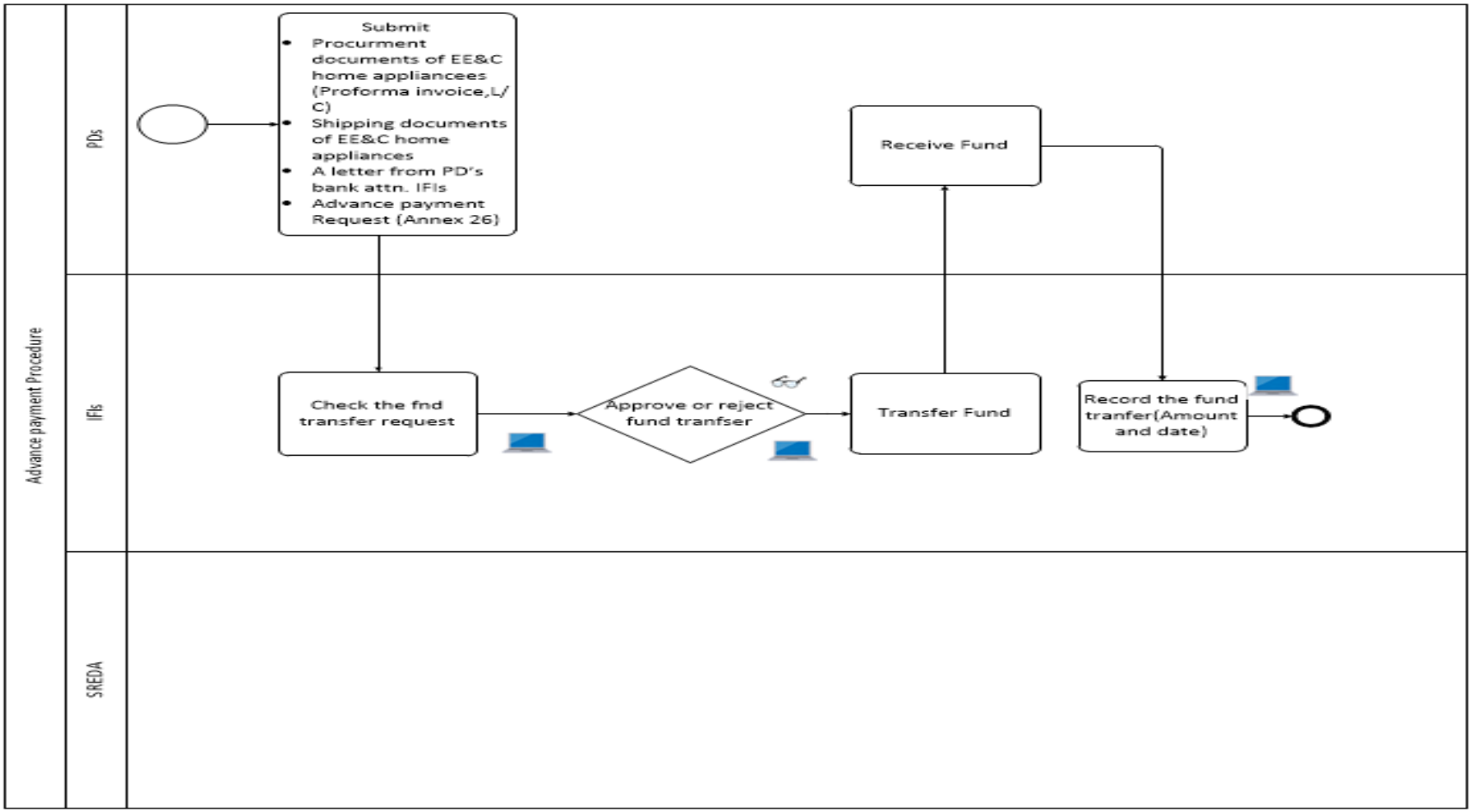

Title
Function
Function
Function
Register energy related data on MIS (Annex 33)
Request Sub Project owners to register energy related data on ALPMS
Check if the submitted data are sufficient
Check technical data obtained by Annex 2 is registered by IFIs , Add or updata as
Download energy and production related raw data in CSV format from ALPMS
Transfer the raw data into energy conservation data analysis sheet (excel format)
Draft energy conservation report Disclose it to public

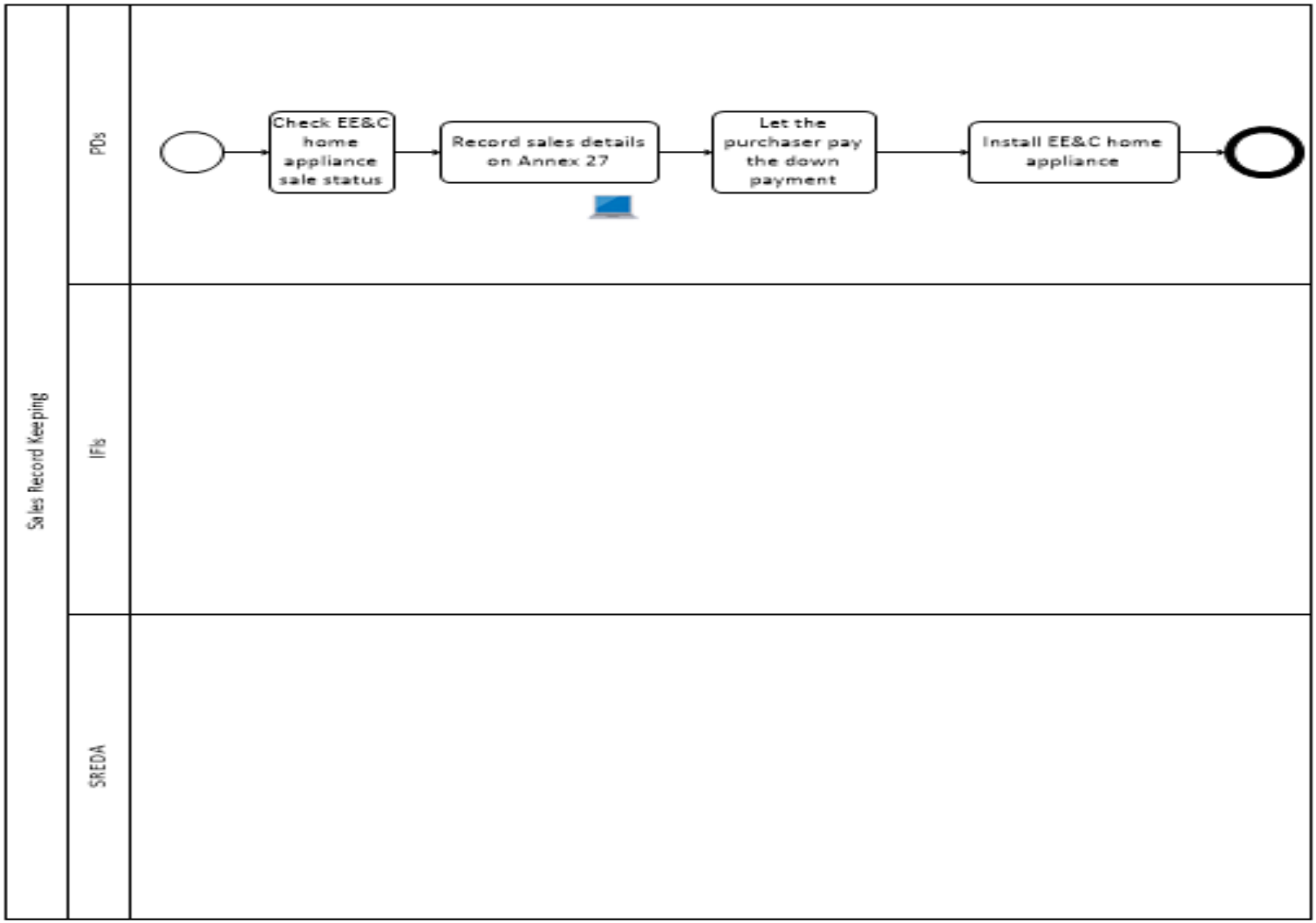
PROCESS MODELING OF LOAN TYPE B

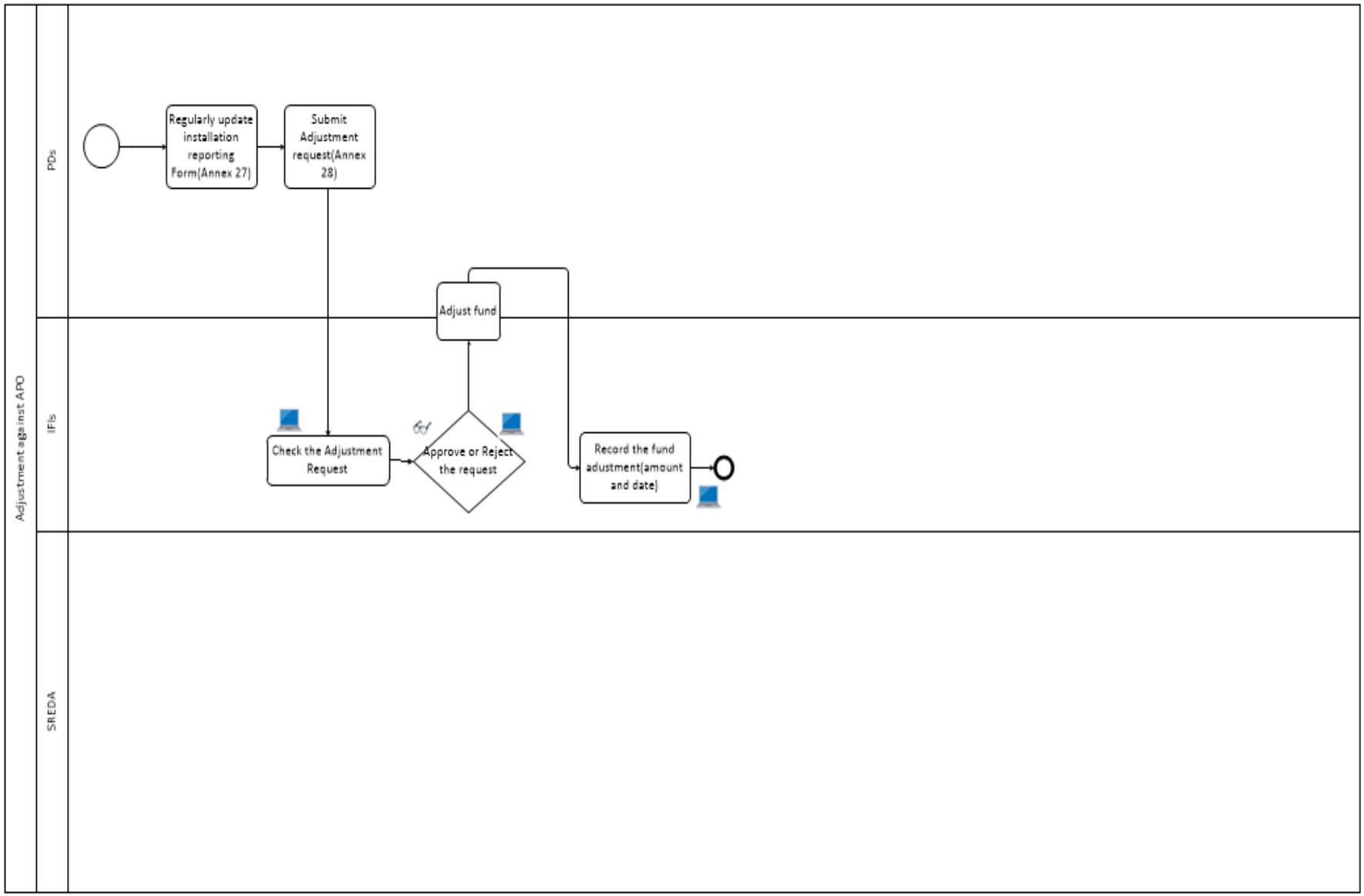



Loan Payment to PDs (Reimbursement Option)
PDs
IFIs
SREDA
Conclude End User Agreement with EE&C home appliances purchaser who meets the
Report sales using Sales, installation and inspection recor
Insall EE&C home appliances
Submt fund transer request to IFIs using Annex 25
Receive Fund
Periodically Obserce Sales, installation and Inspection Reward (Annex 27)
Check the fund transfer request
Fund Transfer
Transfer fraud
Record the fund transfer(Amount and date)

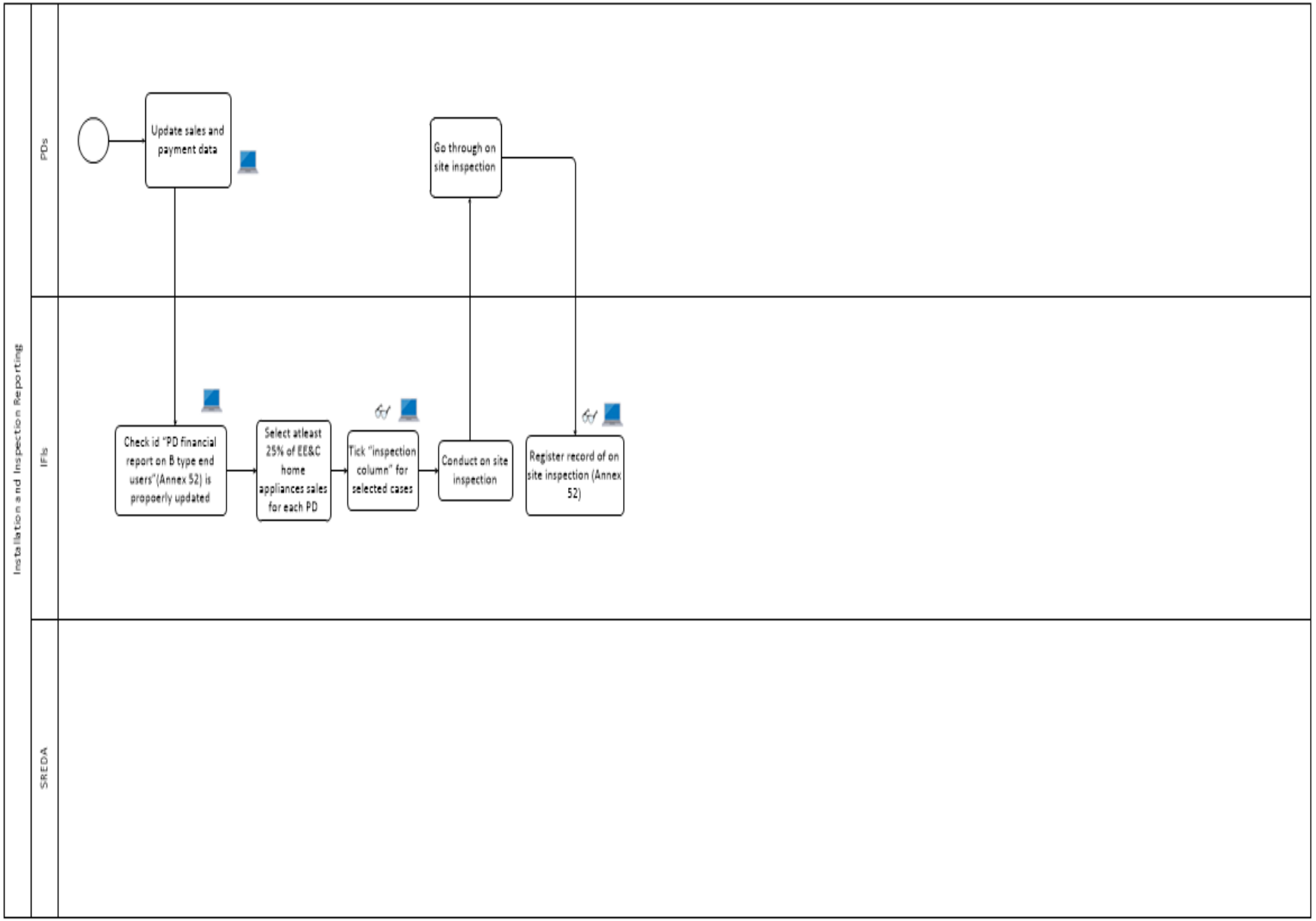

Approving a PD for APO
PDs
IFIs
SREDA
Request for APO
Acknowldge Decision
Consult with Manager and PIU secretraiat
Proceed for institutional approval
Approve of reject APO request
Inform decision to PD and record on ALPMS

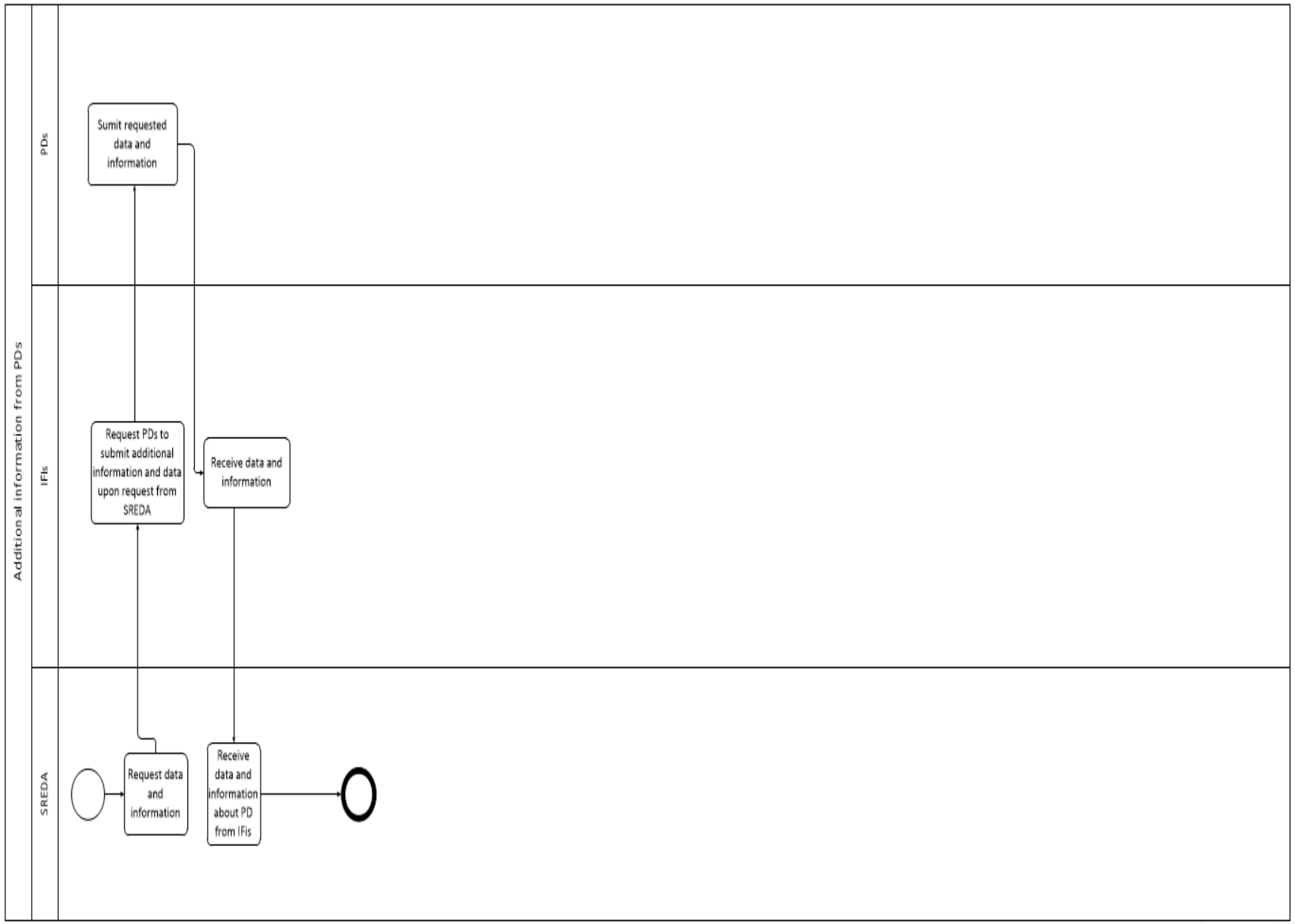

Advance payment Procedure
PDs
IFIs
SREDA
Submit
Procurment documents of EE&C home appliancees (Proforma invoice,L/C)
Shipping documents of EE&C home appliances
A letter from PD's bank attn. IFIs
Advance payment Request (Annex 26)
Receive Fund
Check the fnd transfer request
Approve or reject fund tranfser
Transfer Fund
Record the fund tranfer(Amount and date)


Sales Record Keeping
PDs
IFIs
SREDA
Check EE&C home appliance sale status
Record sales details on Annex 27
Let the purchaser pay the down payment
Install EE&C home appliance


Adjustment against APO
PDs
IFIs
SREDA
Regularly update installation reporting Form(Annex 27)
Submit Adjustment request(Annex 28)
Adjust fund
Check the Adjustment Request
Approve or Reject the request
Record the fund adustment(amount and date)

User Registration for PDs
PDs
IFIs
SREDA
Try to log in with provided User ID and Password


Installation and Inspection Reporting
PDs
IFIs
SREDA
Update sales and payment data
Go through on site inspection
Check id "PD financial report on B type end users"(Annex 52) is propoerly updated
Select atleast 25% of EE&C home appliances sales for each PD
Tick "inspection column" for selected cases
Conduct on site inspection
Register record of on site inspection (Annex 52)


Additional information from PDs
PDs
IFIs
SREDA
Sumit requested data and information
Request PDs to submit additional information and data upon request from SREDA
Receive data and information
Request data and information
Receive data and information about PD from IFis

LOAN TYPE A

1. Proponent- This is taken as an entity as it has got multiple instances. ID is the primary key as it is unique. The other attributes are company name, address which is a composite attribute, contact number is multivalued. Proponent and line of business have a M:M relationship cardinality. Proponent also has a M:M relationship with the equipment entity.

2. Line of business's pk is code of business type. Proponent and line of business have an associative entity where proponent ID and line business are the primary key

3. Loan- This entity has two primary keys as foreign keys. Proponent and loan entity has a 1:M relationship.

4. Loan Decision Sheet- Here the proponent ID is the primary key, employee ID from IFI manager, employee ID from PIU secretariat and employee ID from Board of Directors as Foreign keys . Each loan decision sheet have a connection with only one loan. PIU secretariat overlooks multiple loan decision sheets from different loan application cases. IFI manager also overlooks multiple loan decision sheets. Board of directors also look over multiple loan decision sheets and update the decision type accordingly.

5. Eligibility Checksheet- This entity has a M:1 relationship with the proponent entity. IT also has a M:1 relationship with the IFI manager. This entity also can be connected with SREDA employee in a M:1 relationship where one sreda employee supervises many eligibility checksheets.

6. Physical inspection- Multiple physical inspections are reserved for each proponents. Thus the relationship between the two entities are M:1 .

7. Credit report- One proponent can have multiple credit reports.

8. Affiliated Company- One proponent can have affiliation with many companies. Thus resulting in M:1 relationship with proponent entity

9. Document- Each proponent has to submit multiple documents during the whole application system and also the checking system. So, Document entity and Proponent entity have an M:1 relationship. Proponent ID came as a foreign key into the document entity.

10. Name Clearance- Each proponent can have multiple attempts at name clearance thus the relationship between these two entities will be M:1. PIU secretariats supervise multiple name clearance cases in parallel. Board of directors also can overlook over multiple name clearance cases

11. Purchasing and installation status- Each loan will have only one purchasing and installation status will be updated and checked accordingly.

12. Installation Plan- Each loan has only one installation plan to see through.

13. Due Diligence- Each IFI manager takes care of multiple due diligence cases. Each Proponent can attempt multiple times for due diligence clearance.

14. Employee- Employee is a supertype of four sub types. IFI manager, PIU secretariat, SREDA employee, Board of directors

15. Production data- Each proponent will provide with multiple production data.

LOAN TYPE B

1. Loan- PD can apply for multiple loans. Each loan has multiple reimbursement plans. Multiple APO (Advanced payment option) are eligible for each loan

2. PD- Multiple PDs can be affiliated with multiple line of businesses. Each PD has many sales and inspection record.

3. APO- PIU secretariats & IFI manager can look over multiple APOs. Board of directors can also look over multiple APOs. Advanced payment adjustment and APO has 1:1 relationship

4. Attributable Sales Record- Each attributable sales record with APO.

5. Repayment- Each reimbursement payment has multiple repayment plans. Thus resulting in Repayment and Reimbursement payment having 1: M relationship.

6. Reimbursement payment- Each IFI manager can have multiple reimbursement payment plans. Each loan can have multiple reimbursement payments.

7. Advanced Payment Adjustment - Each advanced payment adjustment have one APO. IFI manager looks over multiple Advanced payment Adjustment.

8. Line of Business- Multiple PDs can have multiple lines of businesses.

9. Sales And Inspection Record- each PD has multiple sales and inspection records. Each IFI manager can be in charge of looking at multiple sales and inspection record.

10. Physical Inspection- Each PIU secretariat can be overlooking at multiple physical inspections. Each SREDA employee can also be in charge of inspection multiple inspection cases.

11. Employee- Employee is a super type which has four subtypes. IFI manager, Board of Directors, SREDA employee, PIU secretariat.

LOAN TYPE A DATA DICTIONARY

1.tblProponent:

Name	Data Type	Size	Remark
nId	Number	7	Id is the primary key in this Table. This contains the proponetId.Example:"1331235"
cCompanyName	Text	100	This contains company name. Example: “Abul Kasem treading limited”
nHouseNo	Number	5	This contains proponent house no. Example: “house#23”
nRoadNo	Number	15	This contains proponent road no. Example: "Road#6"
nMobileNo	Number	13	This contains proponent mobile no. Example: "8801834320246"
dYearOfIncorporation	Date	"yyyy-mm-dd"	This contains proponent year of incorporation Example: "21/04/2011"
nAuthorizedCapital	Number	10	This contains proponent authorized capital.

			Example: "10 Million"
nNumberOfEmployee	Number	6	This contains the proponent company employee number Example"67"
cDescriptionOfTheCompanyLineOfBusiness	Text	100	This contains which type of company Example :"Dairy firm ,Electronics"

2.tblproponentHasLineOfBusiness:

Name	Data type	size	Remark
nProponentID	Number	11	This contain Proponent ID Example: "14212641401"
nLineOfBusinessCode	Number	11	This contain Proponent Business Code Example:"23112"

3.tblLineOfBusiness:

Name	Data type	Size	Remark
nCode	Number	11	This contain Auto generate code Number Example:”13142050301”
cBusinessName	Text	45	This contain Type of Business Example:” Electronics”

4.tblEquipment:

Name	Data type	Size	Remark
nCodenumber	Number	11	This contain Equipment code number Example:”12346”
cNameofEquipment	Text	45	This contain Equipment name Example: “light, ac”
cSpecification	Text	45	This contain Equipment Specification Example: "equipment fixture”
nModelno	Number	11	This contain Equipment Specification Example: "equipment fixture”

cSupplier	Text	45	This contain Supplier name Example:"shuvo ,rabbi"
cManufacturer	Text	45	This contain Supplier supplier name Example:" shuvo, rabbi"
booleanBrandnewfacilitystatus	Boolean	4	This contain brand-new facility status of equipment Example:" yes or no"
Boolean ReplacementofExistingFacilityStatus	Boolean	4	This contain Replacement of Existing Facility Status of equipment Example: "yes or no"
Boolean Productioncapacityenhancementstatus	Boolean	4	This contain Production capacity enhancement status of equipment Example: "yes or no"

5.tblaffiliatedCompany:

Name	Data type	Size	Remark

cCompanyName	Text	70	This contain Production capacity enhancement status of equipment Example: “yes or no”
cAddress	varchar	100	This contain affiliate company address.
cLineofbusiness	Text	100	This contain which type of company.
nProponentId	Number	11	This is the foreign key in this table

6.tblcreditReport:

Name	Data Type	Size	Remark
cCreditReportElement	Text	100	This is main report of credit This correctness is very important
BooleanCheckStatus	Boolean	3	This contain check the status accept or not
BooleanResult	Boolean	3	This contain credit report is accept or not

nProponentId	Number	11	Proponent is the primary in this table Example:"1248979876"

7.tblDueDiligence:

Name	Data Type	Size	Remark
nProponentId	Number	11	This is the primary key in this table, This contain proponent Example:"88754542245"
booleanCheckStatus	Boolean	3	Check check status approve or not Example: "no";
cReasonIndetails	Text	100	
booleanManagerApproval	Boolean	3	This contain Manager approve or not Example: "Yes"
dManagerApprovalDate	Date	"yyyy-mm-dd"	This is the date of manager approve Example:"2014-07-22"

booleanOICapproval	Boolean	3	This contain OTC approve or not Example: "Yes"
dOICapprovalDate	Date	"yyyy-mm-dd"	This is the date approve Example:"2011-05-22"
nloanAmount	Number	11	This contain amount of lone Example:"10 million"
EmployeeId	Number	11	This is the foreign key in this table Example:"98564219764"

8.tblEligibilityCheckSheet:

name	DataType	Size	Remark
nCodeNo	Number	11	Code no is the primary key in this table, This contain eligibility check sheet Example:"12387645843"
booleanCheckpoint	Boolean	3	Check document which accepted or not .Example: "no"

booleanCheckStatus	Boolean	3	This is contain check status right or wrong
cCatalogue	Text	100	This is contain catalogue of eligibility check sheet
cOtherdocuments	Text	100	This is contain other documents of eligibility check sheet
cNote	Text	70	Note contain general note of eligibility check sheet
EmployeeID	Number	11	This is the foreign key in this table example:”9834576431”
nProponentId	Number	11	This is the foreign key in this table example:”09864678765”

9.tblLoan:

Name	Data Type	Size	Remark
nLoanamount	Number	11	This is contain amount of loan

tEligibleEquipment	Text	100	This is contain eligible equipment of loan
nTenure	Number	45	This contain grace period of tenure
dGracePeriod	Date	"yyyy-mm-dd"	This contain grace period of loan
nInterestrate	Number	11	This is contain rate of interstate
cRepaymentTerms	Text	45	This attribute contain condition of repayment
tCollateral	Text	45	This is contain collateral of the lone
tGuarantee	Text	100	This is contain guarantee of the lone
BooleanNocStatus	Boolean	4	This contain noc approve or not example: “no”;
nProponentId	Number	11	This is the primary in this table, this contain loan proponent id example:”12344566”;

10.tblLoanDecisionSheet:

Name	DataType	Size	Remark
nPropenentID	Number	11	This is the primary key in this table, this

			contain loan decision sheet proponent id
cCriteria	Text	100	This is the criteria of loan
bCheckStatus	Boolean	4	This contain loan decision sheet approve or not
bOICdecison	Boolean	4	This contain oic decision of loan
dOICdecisiondate	Date	"yyyy-mm-dd"	This contagion store decision of loan
booleandecision	Boolean	4	This contain decision approve or not
nEmployeeID	Number	11	This is the foreign key in this table

11.tblNameClearance:

Name	DataType	Size	Remark
cCreditRatingReport	Text	100	This contain credit rating report

cFinancialStatement	Text	100	This contain store financial statement
cInfoFromOtherFI	Text	15	This contagion store financial statement
BooleanDecision	Boolean	4	This contagion store financial statement
dDecisiondate	Date	"yyyy-mm-dd"	This contain store financial statement
BooleanOicDecision	Boolean	4	This contain store financial statement
BooleanResult	Boolean	4	This contain store financial statement
cOverview	Text	100	This contain store financial statement
nEmployeeId	Number	11	This contain store financial statement
nProponentId	Number	11	This is the foreign key in this table, This table store financial statement

18.TblPhysicalInspection:

Name	Data Type	Size	Remark
cNameOfTheeEndUser	Text	40	This attribute contain name of the end user
dInstallationCheckDate	Date	"yyyy-mm-dd"	This attribute contain installation check date
Boolean CheckStatus	Boolean	4	Approve or not
nProponentId	Number	11	This is the primary key is this table, this contain proponent ID.

19.tblPurchasingAndInstallatiOnStatus:

Name	Data Type	Size	Remark
nSubProjectNumber	Number	11	This is the primary key of the table; contain sub project number
cNameOfEquipment	Text	100	This is contain name of equipment.
cSpecification	Text	100	This is contain name of Speciation.

nModelNumber	Number	13	This is the contain store mobile number
cSupplier	Text	30	This contain name of supplier
cManufacturer	Text	30	
nUnitPrice	Number	11	
nNumberOfIntroduced`	Number	11	
nTotalInvestmentAmount	Number	11	
cAttachments	Text	100	

20:tblEmployee:

Name	DataTyoe	Size	Remark
nEmployeeID	Number	11	This is the primary key in this table, This contain employee id Example:”45772346467”
cEmployeeName	Text	30	This contain name of employee: ”al Mahmud”

21.tblSredaEmployee

Name	DataType	Size	Remark
nEmployeeID	Number	11	This is the primary key in this table, This contain sreda employee id Example:”09672346467”

22.tblPiuSecretariat:

Name	DataType	Size	Remark
nEmployeeID	Number	11	This is the primary key in this table, This contain piu secretariat employee id Example:”0967421467”

23.tblDocument:

Name	Data Type	Size	Remark
cDocumentName	Text	30	This is contain overall document of project
booleanCheckStatus	Boolean	3	This is the contain approve or not example: “no”
dDate	Date	"yyyy-mm-dd"	This is contain submission date of documents example:”2012-09-22”
cDocuments	Text	100	This is contain full documents of loan
nProponentId	Number	11	This is the primary key is this table,example:”324354365454”

LOAN TYPE B DATA DICTIONARY

1.tblPD:

Name	Data Type	Size	Remark
nPDno	Number	11	PD is the primary key. This contain is the PD. Example “Best Electronics”
cCompanyName	Text	50	This contain Name of the PD.Example :”RFL”
nHouseNO	Number	7	This contain PD house Number example: House 12”
nRoadNO	Number	3	This contain PD Road Number example:”RoadNo:12”
cCity	Text	20	This contain PD Of the City.Example:”Dhaka”
nPostalCOde	Number	6	This contain PD Of the Postal Code.Example:”Dhaka1229”

dYearOfCorporation	Date	"yyyy-mm-dd"	This Contain When PD starts Business. Example:12 May2006"
nAuthorizedCapital	Number	12	This contain Authorized capital .Example :"123232"
nPaidUpCapital	Number	12	This contain Paid of Capital
cDescriptionOfComapny'sLineOfBusiness	Text	50	This contain details Company's line of Business

Name	Data Type	Size	Remark
nPDno	Number	11	PD is the primary key. This contain is the PD. Example "Best Electronics"
cCompanyName	Text	50	This contain Name of the PD.Example :"RFL"
nHouseNO	Number	7	This contain PD house Number example: House 12"
nRoadNO	Number	3	This contain PD Road Number example:"RoadNo:12"

cCity	Text	20	This contain PD Of the City.Example:”Dhaka”
nPostalCOde	Number	6	This contain PD Of the Postal Code.Example:”Dhaka1229”
dYearOfCorporation	Date	“yyyy-mm-dd”	This Contain When PD starts Business. Example:12 May2006”
nAuthorizedCapital	Number	12	This contain Authorized capital .Example :”123232”
nPaidUpCapital	Number	12	This contain Paid of Capital
cDescriptionOfComapny’sLineOfBusiness	Text	50	This contain details Company’s line of Business

Name	Data Type	Size	Remark
nPDno	Number	11	PD is the primary key. This contain is the PD. Example “Best Electronics”
cCompanyName	Text	50	This contain Name of the PD.Example :”RFL”

nHouseNO	Number	7	This contain PD house Number example: House 12”
nRoadNO	Number	3	This contain PD Road Number example:”RoadNo:12”
cCity	Text	20	This contain PD Of the City.Example:”Dhaka”
nPostalCOde	Number	6	This contain PD Of the Postal Code.Example:”Dhaka1229”
dYearOfCorporation	Date	“yyyy-mm-dd”	This Contain When PD starts Business. Example:12 May2006”
nAuthorizedCapital	Number	12	This contain Authorized capital .Example :”123232”
nPaidUpCapital	Number	12	This contain Paid of Capital
cDescriptionOfComapny’sLineOfBusiness	Text	50	This contain details Company’s line of Business

Name	Data Type	Size	Remark

nPDno	Number	11	PD is the primary key. This contain is the PD. Example “Best Electronics”
cCompanyName	Text	50	This contain Name of the PD.Example :”RFL”
nHouseNO	Number	7	This contain PD house Number example: House 12”
nRoadNO	Number	3	This contain PD Road Number example:”RoadNo:12”
cCity	Text	20	This contain PD Of the City.Example:”Dhaka”
nPostalCOde	Number	6	This contain PD Of the Postal Code.Example:”Dhaka1229”
dYearOfCorporation	Date	“yyyy-mm-dd”	This Contain When PD starts Business. Example:12 May2006”
nAuthorizedCapital	Number	12	This contain Authorized capital .Example :”123232”

nPaidUpCapital	Number	12	This contain Paid of Capital
cDescriptionOfComapny'sLineOfBusiness	Text	50	This contain details Company's line of Business

2.tblLINES OF BUSINESS:

Name	Data Type	Size	Remark
nCode	Number	8	This is the Primary key. It contain Lines Of Business code number
cBusinessName	Text	25	This contain Lines of Business Name

3.tblPD CONTACT INFO:

Name	Data Type	Size	Remark
nPDno	Number	11	This is the foreign key in this Relation From table PD.

			;
nContactInfo	Number	15	This is the primary in this table. This contain contact information PD

4. tblPDHasLINES OF BUSINESS:

Name	Data Type	Size	Remark
nPDno	Number	11	This is the foreign key in this relation From table PD
nCode	Number	8	This is the foreign key in this relation From table LINES OF BUSINESS Example:1232”

5.tblLOAN:

Name	Data Type	Size	Remark

dLmonth	Date	"yyyy-mm-dd"	This is the primary key in this table
dLyear	Date	"yyyy-mm-dd"	This is the Primary key in this Table .it contain starting of month when
nAmount	Number	11	It contain Loan Amount Example: "21212111"BDT
dProposedPaymentDate	Date	"yyyy-mm-dd"	It contain when payment date Proposed Example:2016-11-01
dActualPaymentDate	Date	"yyyy-mm-dd"	It Contain fixed Actual Payment Date. Example :2016-11-18
cApproved/RejectedDate	Text	3	This contain Payment Approved or rejected
nPDno	Number	11	This is the foreign Key in this relation from table PD

6.tblSALES AND INSPECTION RECORD:

Name	Data Type	Size	Remark
nRequestForDisbursementNO	Number	11	This is the Primary key in this Table
nIEId	Number	8	This is the foreign key in this relation from APO
nSalesID	Number	8	It contains sales id .Example:"1235"
dInstallionDate	Date	"yyyy-mm-dd"	It contain date of installation
nSalesAMount	Number	15	It contain Sale .Example:233313"
cInspectionREquirements	Text	50	This contain Inspection Requirements.
dInspectionDate	Date	"yyyy-mm-dd"	This contain inspection date .Example:2016-12-2
dMonth	Date	"yyyy-mm-dd"	This contain Inspection of Month

			Example:” 2016-12-2”
PDno	Number	11	This is the foreign in this relation from PD

7.tblAPO:

Name	Data Type	Size	Remark
dLmonth	Date	“yyyy-mm-dd”	This contain Advanced Loan month. example:2017-8-11
dLyear	Date	“yyyy-mm-dd”	This contain Advanced Loan Year. example:2017-8-11
nPDno	Number	8	This is the foreign in this relation from Table PD

nSalesID	Number	8	This contain Sales id.
cNameOfPd	Text	20	This contain name of PD
dDateOfBeginning	Text	“yyyy-mm-dd”	This contain starting date
nEstimateAmount	Number	11	This contain Estimate Money. Example :”213131”
booleanPaymentStatus	Boolean	3	This contain payment Approved or not
nBEid	Number	8	This is the foreign key in this relation from BOARD OF DIRECTORS TABLE
nPEid	Number	8	This is the foreign key in this relation from PIU TABLE
nIEid	Number	8	This is the foreign key in this relation from IFI MANAGER TABLE

8.tblREIMBURSEMENT PAYMENT:

Name	Data Type	Size	Remark
dLmonth	Date	“yyyy-mm-dd”	This contain Reimbursement Loan month.
dLyear	Date	“yyyy-mm-dd”	This contain Reimbursement Loan Year.
nPDno	Number	11	This is foreign key in this relation from PD table
nIEId	Number	8	Its IFI Manager ID
dParticipantAgreementData	Date	“yyyy-mm-dd”	Its contain participant Agreement data
cPdName	Text	20	Its contain PdName .example”:xyx”
dDisbursementDate	Date	“yyyy-mm-dd”	Its Loan Disbursement date.
nItemDisbursementNo	Number	11	Its item disbursement number
booleanRequestStatus	Boolean	3	It contain yes or no

9.tblADVANCE PAYMENT ADJUSTMENT :

Name	Data Type	Size	Remark
nSalesID	Number	8	It contain sale id
booleanAdvancePaymet	Boolean	3	It contain approved or rejected
dLmonth	Date	“yyyy-mm-dd”	This contain Loan Advance Payment Adjustment
nPDNo	Number	8	Its foreign key
dAdvancePaymentDate	Date	“yyyy-mm-dd”	Its contain Loan Advance payment date
nAdvancePaymentAmount	Number	15	Its contain Loan Advance payment amount
nUsedAMount	Number	15	Its contain Amount of Loan used

nAdjustmentAmount	Number	15	It contain Loan Adjustment Amount

10.tblATTRIBUTAL SALES RECORD:

Name	Data Type	Size	Remark
nSalesID	Number	8	It contain sale id
nSalesAmount	Number	15	It contain sales Amount
dInstallationDate	Date	"yyyy-mm-dd"	It contain sales Installation date

11.tblEMPLOYEE:

Name	Data Type	Size	Remark
nEId	Number	8	This is the Primary Key

cName	Text	20	This contain Employee Name

12.tblBOARD OF DIRECTOR :

Name	Data Type	Size	Remark
nEId	Number	8	This is the Primary Key

13.tblPIU SECRETARIAT:

Name	Data Type	Size	Remark
nPEid	Number	8	This is the Primary Key of PIU SECRETARIAT

14.tblSREDA EMPLOYEE:

Name	Data Type	Size	Remark

nSEid	Number	8	This is the Primary key of SREDA EMPLOYEE

15.tblIFI MANAGER:

Name	Data Type	Size	Remark
nIEid	Number	8	This is the Primary key of IFI Manager

16.tblPHYSICAL INSPECTION:

Name	Data Type	Size	Remark
nSEid	Number	8	This is the foreign key in this relation From Employee Table
nPEid	Number	8	This is the foreign key in this relation From PIU SECRETARIAT table

cNameOfEndUser	Text	30	This contain client Name
booleanCheckStatus	Boolean	3	Approved or rejected

17.tblRepayment:

Name	Data Type	Size	Remark
nPDNo	Number	8	This is the foreign key in this relation from PD table
dLmonth	Date	“yyyy-mm-dd”	This contain Loan Repayment Month .Example2017-08-13
dLyear	Date	“yyyy-mm-dd”	This contain Loan Repayment year .Example2017-08-13
nRepaybleAmount	Number	15	This contain Loan repayment Amount .Example “120000000”

dRepaymentDatePlane	Date	“yyyy-mm-dd”	This contain Loan repayment Date plane. Example2017-08-13
nRepaymentNo	Number	11	This contain Loan repayment number. example :1233,12345,
dRepaidDate	Date	“yyyy-mm-dd”	This contain Repaid date .Example :2017-11-11
nRepaidAmount	Number	15	This contain Repaid Amount
nDelay	Number	12	This contain Late Repaid

PHYSICAL SYSTEM DESIGN

DDL Statements

Table structure for table `affiliated_company`

```
CREATE TABLE `affiliated_company` (
  `CompanyName` varchar(45) NOT NULL,
  `Address(House no,Road no,City,Postal code,Country)` varchar(45) DEFAULT NULL,
  `Lineofbusiness` varchar(45) DEFAULT NULL,
  `PROPONENTID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `credit_report`

```
CREATE TABLE `credit_report` (
  `Creditreportelement` varchar(45) DEFAULT NULL,
  `CheckStatus` tinyint(4) DEFAULT NULL,
  `Result` varchar(45) DEFAULT NULL,
  `PROPONENTID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `document`

```
CREATE TABLE `document` (
  `DocumentName` varchar(45) DEFAULT NULL,
  `CheckStatus` tinyint(4) DEFAULT NULL,
  `Date` date DEFAULT NULL,
  `Recievingdatofcorrecteddocuments` date DEFAULT NULL,
```

```
  `PROPONENT_ID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `due _diligence`

```
CREATE TABLE `due _diligence` (
  `LoanAmount` float DEFAULT NULL,
  `CheckStatus` tinyint(4) DEFAULT NULL,
  `Reasonindetails` varchar(45) DEFAULT NULL,
  `Managerapproval` tinyint(4) DEFAULT NULL,
  `Managerapprovaldate` date DEFAULT NULL,
  `OICapproval` tinyint(4) DEFAULT NULL,
  `OICapprovaldate` date DEFAULT NULL,
  `PROPONENT_ID` int(11) NOT NULL,
  `IFI MANAGER_EMPLOYEE_Employee ID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `eligibility _check _sheet`

```
CREATE TABLE `eligibility _check _sheet` (
  `CodeNo` float DEFAULT NULL,
  `Checkpoint` varchar(45) NOT NULL,
  `CheckStatus` tinyint(4) DEFAULT NULL,
  `Catalogue` tinyint(4) DEFAULT NULL,
  `Otherdocuments` tinyint(4) DEFAULT NULL,
  `Note` varchar(45) DEFAULT NULL,
  `ELIGIBILITYCHECKSHEETcol` varchar(45) DEFAULT NULL,
  `PROPONENT_ID` int(11) NOT NULL,
  `IFI MANAGER_EMPLOYEE_EmployeeID` int(11) NOT NULL,
  `SREDA EMPLOYEE_EMPLOYEE_EmployeeID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `employee`

```
CREATE TABLE `employee` (
  `EmployeeID` int(11) NOT NULL,
  `EmployeeName` varchar(45) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `equipment`

```
CREATE TABLE `equipment` (
  `Codenumber` int(11) NOT NULL,
  `NameofEquipment` varchar(45) DEFAULT NULL,
  `{Specification}` varchar(45) DEFAULT NULL,
  `Modelno` int(11) NOT NULL,
  `{Supplier}` varchar(45) DEFAULT NULL,
  `Manufacturer` varchar(45) DEFAULT NULL,
  `Brandnewfacilitystatus` tinyint(4) DEFAULT NULL,
  `Replacementofexistingfacilitystatus` tinyint(4) DEFAULT NULL,
  `Productioncapacityenhancementstatus` tinyint(4) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `ifi_manager`

```
CREATE TABLE `ifi_manager` (
  `EMPLOYEEEmployeeID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `installation _plan`

```
CREATE TABLE `installation _plan` (
  `EligibleEE&Cequipment` varchar(45) DEFAULT NULL,
  `Noofunit` int(11) DEFAULT NULL,
  `Amount(in Million)` float DEFAULT NULL,
  `PaidDate` date DEFAULT NULL,
  `Paid amount` float DEFAULT NULL,
  `Scheduled portion date` date DEFAULT NULL,
  `Scheduled portion amount` float DEFAULT NULL,
  `Total` float DEFAULT NULL,
  `Proponent ID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `line_of_business`

```
CREATE TABLE `line_of_business` (
  `Code` int(11) NOT NULL,
  `Businessname` varchar(45) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `loan`

```
CREATE TABLE `loan` (
  `Loanamount` float NOT NULL,
  `Eligibleequipment` varchar(45) DEFAULT NULL,
  `Tenure` float DEFAULT NULL,
  `Graceperiod` float DEFAULT NULL,
  `Interestrate` float DEFAULT NULL,
  `Repaymentterms` varchar(45) DEFAULT NULL,
```

```
  `Collateral` varchar(45) DEFAULT NULL,
  `Guarantee` varchar(45) DEFAULT NULL,
  `NOCstatus` varchar(45) DEFAULT NULL,
  `LOANDECISIONSHEETPropenentID` int(11) NOT NULL,
  `INSTALLATIONPLANProponentID` int(11) NOT NULL,
  `PURCHASINGANDINSTALLATIONSTATUSSubprojectnumber` int(11) NOT NULL,
  `PROPONENTID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `loan_decision_sheet`

```
CREATE TABLE `loan_decision_sheet` (
  `PropenentID` int(11) NOT NULL,
  `Criteria` varchar(45) DEFAULT NULL,
  `CheckStatus` tinyint(4) DEFAULT NULL,
  `OICdecison` tinyint(4) DEFAULT NULL,
  `OICdecisiondate` date DEFAULT NULL,
  `Managerdecision` tinyint(4) DEFAULT NULL,
  `Managerdecisiondate` date DEFAULT NULL,
  `Approvalbodydecision` tinyint(4) DEFAULT NULL,
  `Approvalbodydecisiondate` date DEFAULT NULL,
  `IFIMANAGEREMPLOYEEEmployeeID` int(11) NOT NULL,
  `PIUSECRETARIATEMPLOYEEEmployeeID` int(11) NOT NULL,
  `DOARDOFDIRECTORSEMPLOYEEEmployeeID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `name_clearance`

```
CREATE TABLE `name_clearance` (
  `CreditRatingReport` varchar(45) NOT NULL,
```

```
  `Financial_Statement_a` varchar(45) NOT NULL,
  `Financial_Statement_b` varchar(45) NOT NULL,
  `InfoFromOtherFI` varchar(15) NOT NULL,
  `Managerdecision` tinyint(4) DEFAULT NULL,
  `OICdecision` tinyint(4) DEFAULT NULL,
  `Managerdecisiondate` date DEFAULT NULL,
  `OIC decision date` date DEFAULT NULL,
  `SREDANOCResult` tinyint(4) DEFAULT NULL,
  `SREDAoverview` varchar(45) DEFAULT NULL,
  `PROPONENTID` int(11) NOT NULL,
  `IFIMANAGEREMPLOYEEEmployeeID` int(11) NOT NULL,
  `PIUSECRETARIATEMPLOYEEEmployeeID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `physical_inspection`

```
CREATE TABLE `physical_inspection` (
  `Nameoftheenduser` int(11) DEFAULT NULL,
  `Installationcheckdate` date DEFAULT NULL,
  `CheckStatus` varchar(45) DEFAULT NULL,
  `PROPONENTID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `piu_secretariat`

```
CREATE TABLE `piu_secretariat` (
  `EMPLOYEEEmployeeID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `production_data`

```
CREATE TABLE `production_data` (
  `Month` int(11) NOT NULL,
  `Nameofthesite` varchar(45) DEFAULT NULL,
  `Siteoperationhour` float DEFAULT NULL,
  `Siteproductionvolume` float DEFAULT NULL,
  `Site electricity consumption` float DEFAULT NULL,
  `Pointofmeasurementofelectricity` varchar(45) DEFAULT NULL,
  `Measuringmethodofelectricity` varchar(45) DEFAULT NULL,
  `Sitegasconsumption` float DEFAULT NULL,
  `Pointofmeasurementofgas` varchar(45) DEFAULT NULL,
  `Measuringmethodofgas` varchar(45) DEFAULT NULL,
  `PROPONENTID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `proponent`

```
CREATE TABLE `proponent` (
  `ID` int(11) NOT NULL,
  `Companyname` varchar(45) DEFAULT NULL,
  `houseNo` varchar(45) DEFAULT NULL,
  `roadNo` varchar(15) NOT NULL,
  `postalCode` int(5) NOT NULL,
  `mobileNo` int(11) DEFAULT NULL,
  `yearofincorporation` year(4) DEFAULT NULL,
  `authorizedcapital` float DEFAULT NULL,
  `paidUpCapital` float DEFAULT NULL,
  `numberOfEmployee` int(11) DEFAULT NULL,
  `descriptionOfTheCompanyLineOfBusiness` varchar(45) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `proponent_has_equipment`

```
CREATE TABLE `proponent_has_equipment` (
  `PROPONENT_D` int(11) NOT NULL,
  `EQUIPMENTCodenumber` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

Table structure for table `proponent_has_line_of_business`

```
CREATE TABLE `proponent_has_line_of_business` (
  `PROPONENTID` int(11) NOT NULL,
  `LINEOFBUSINESSCode` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

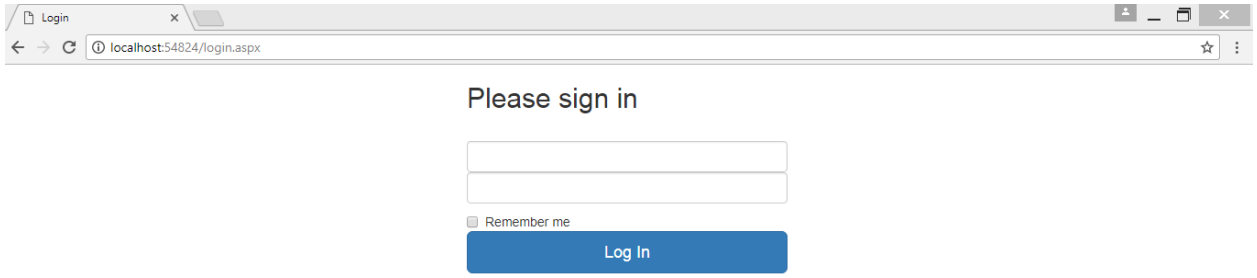
Table structure for table `purchasing_and_installation_status`

```
CREATE TABLE `purchasing_and_installation_status` (
  `Subprojectnumber` int(11) NOT NULL,
  `NameofEquipment` varchar(45) DEFAULT NULL,
  `Specification` varchar(45) DEFAULT NULL,
  `ModelNumber` varchar(45) DEFAULT NULL,
  `Supplier` varchar(45) DEFAULT NULL,
  `Manufacturer` varchar(45) DEFAULT NULL,
  `Unit price` float DEFAULT NULL,
  `Numberofintroduced` int(11) DEFAULT NULL,
  `Totalinvestmentamount` float DEFAULT NULL,
  `Quotation attachments` tinyint(4) DEFAULT NULL,
  `Invoiceattachment` varchar(45) DEFAULT NULL,
  `Receipt` varchar(45) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

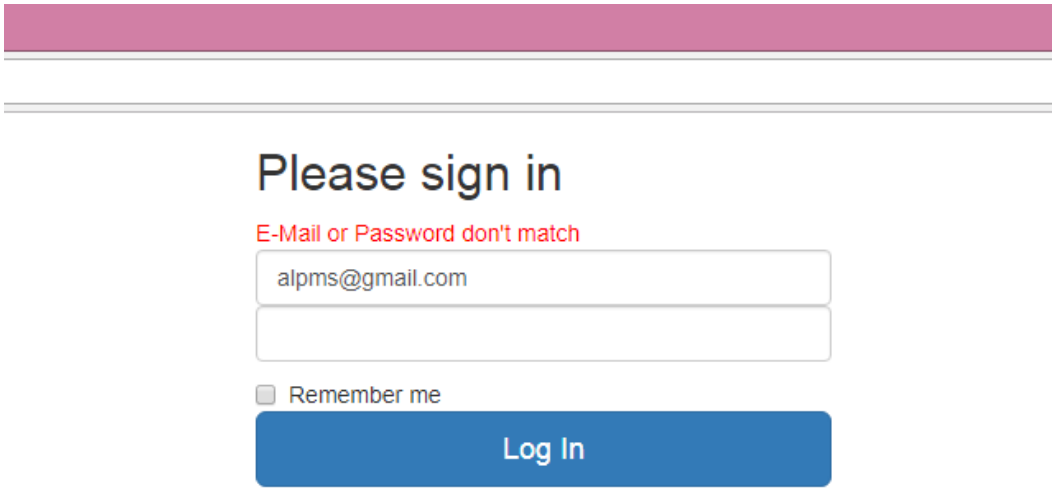
Table structure for table `sreda_employee`

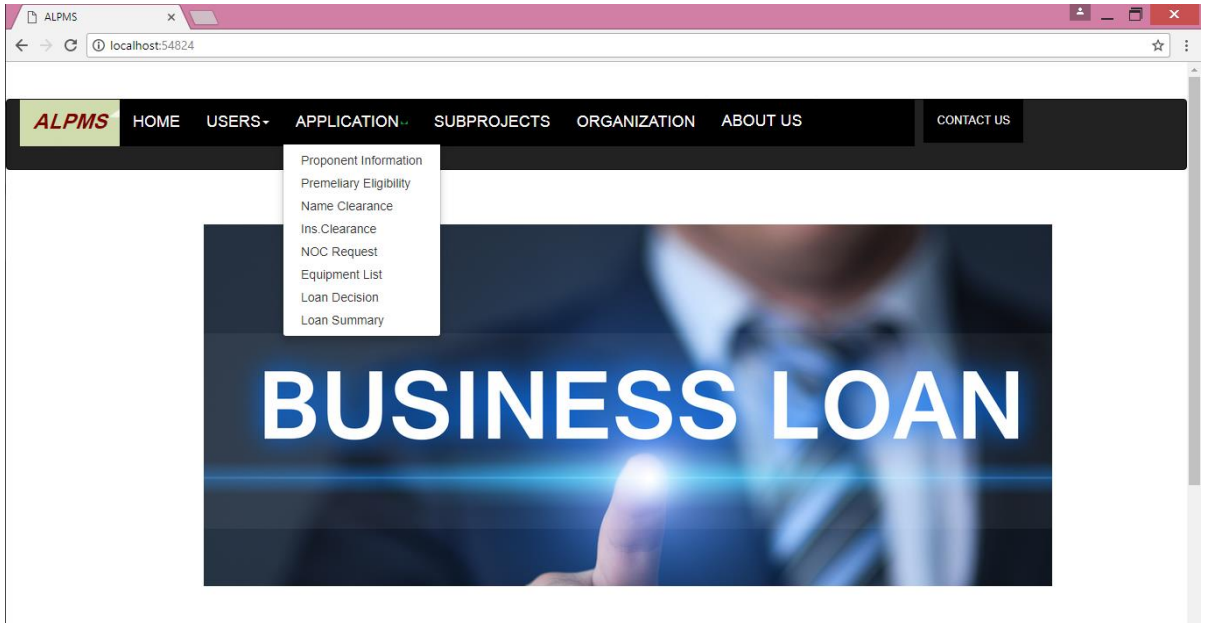
```
CREATE TABLE `sreda_employee` (
  `EMPLOYEEEmployeeID` int(11) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

GUI AND QUERY

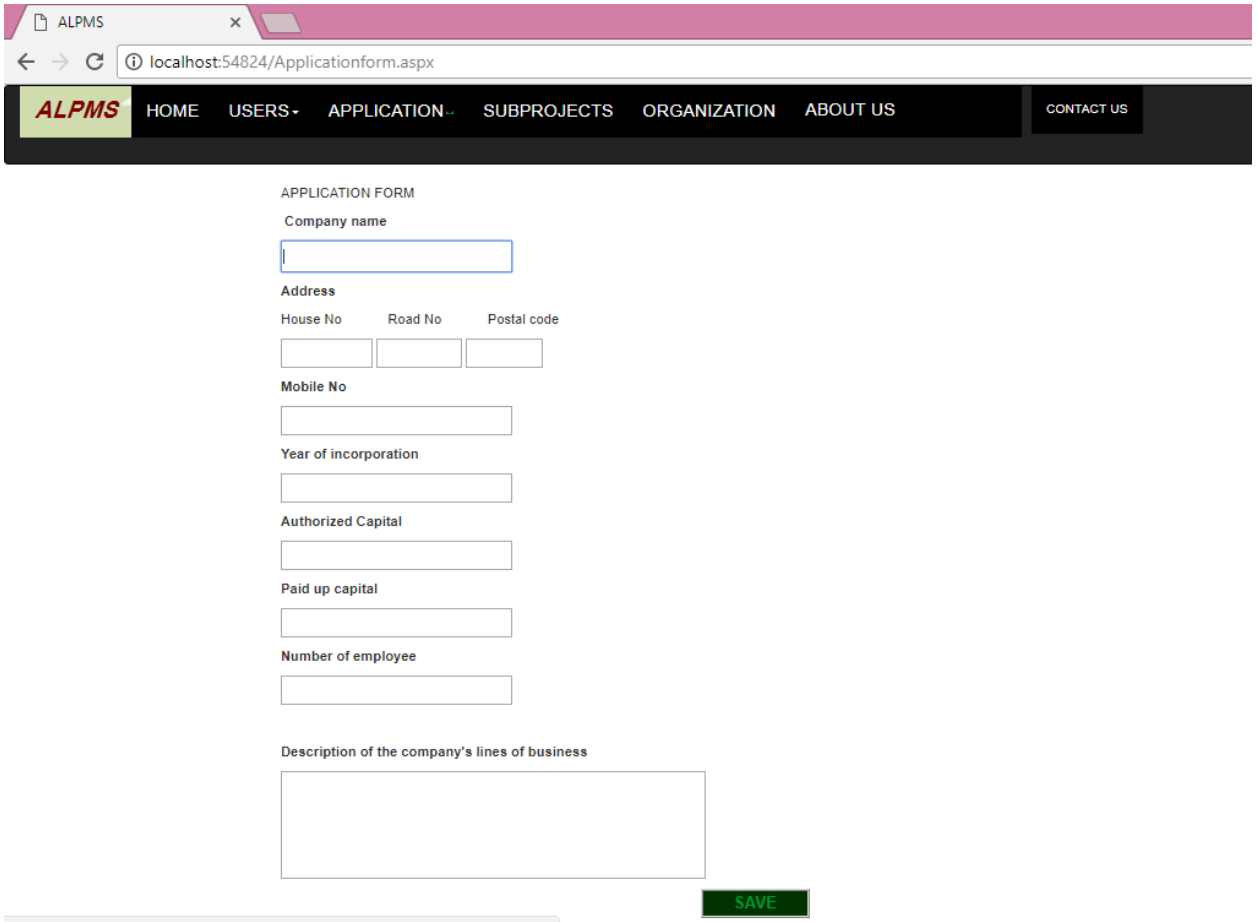


The user will enter their e-mail and password in this page and will be redirected to the website if the email and password matches. The following will be shown if wrong e-mail or password is entered.





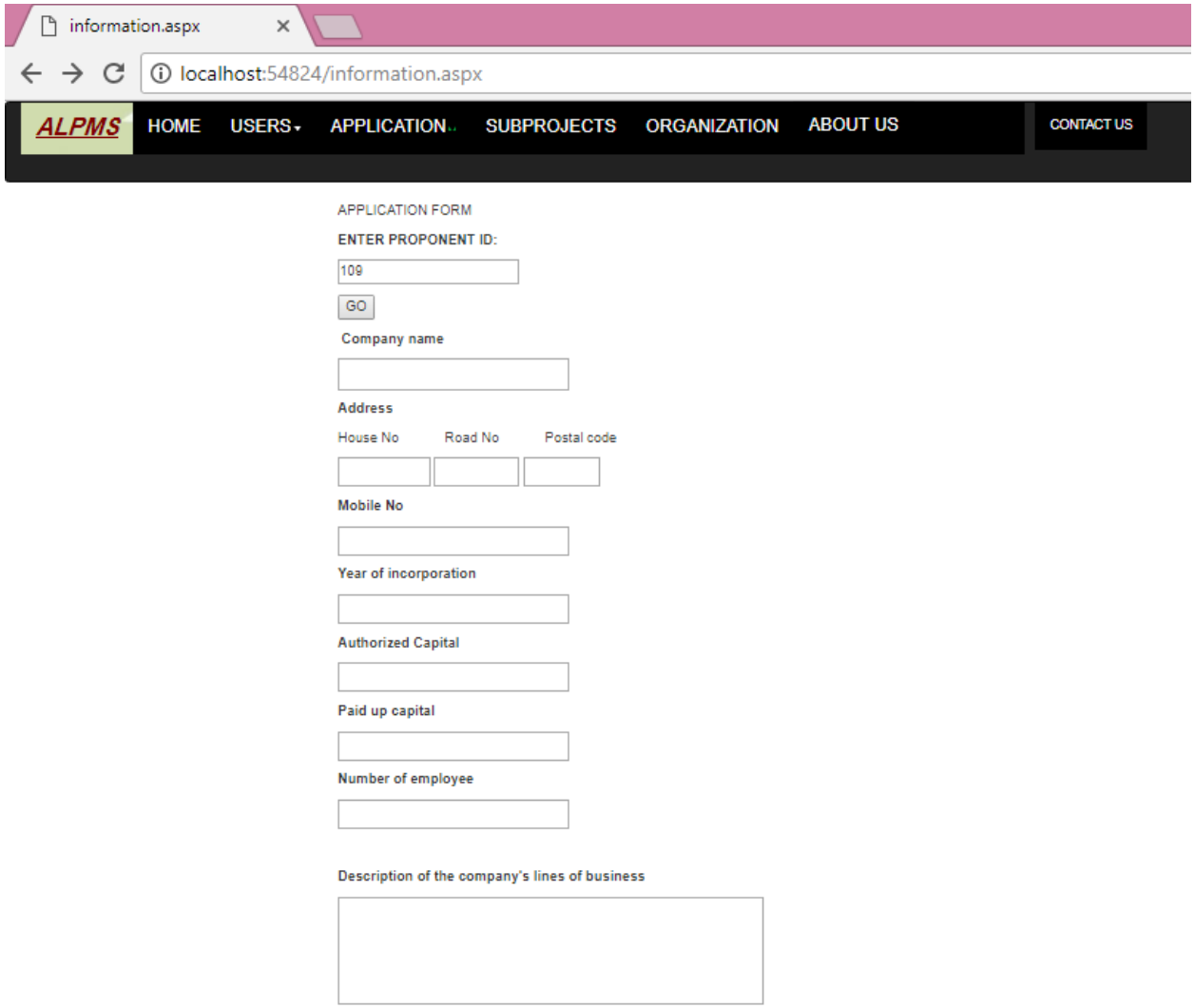
This is the home page of the website. Drop down menu has been added so that the user can access any page within the website.



This is the page where the proponent provides with their information. The information is then stored into the database. The ID of the proponent is generated automatically.

The query used to store the information into the database is the following:

INSERT INTO `proponent` (`ID`, `Companyname`, `houseNo`, `roadNo`, `postalCode`, `mobileNo`, `yearofincorporation`, `authorizedcapital`, `paidUpCapital`, `numberOfEmployee`, `descriptionOfTheCompanyLineOfBusiness`) VALUES (NULL, '"+TextBox1.Text+ "', '" + TextBox2.Text + "','" + TextBox6.Text + "','" + TextBox7.Text + "','" + TextBox3.Text + "','" + TextBox4.Text + "','" + TextBox5.Text + "','" + TextBox8.Text + "','" + TextBox9.Text + "','" + TextBox10.Text + "')

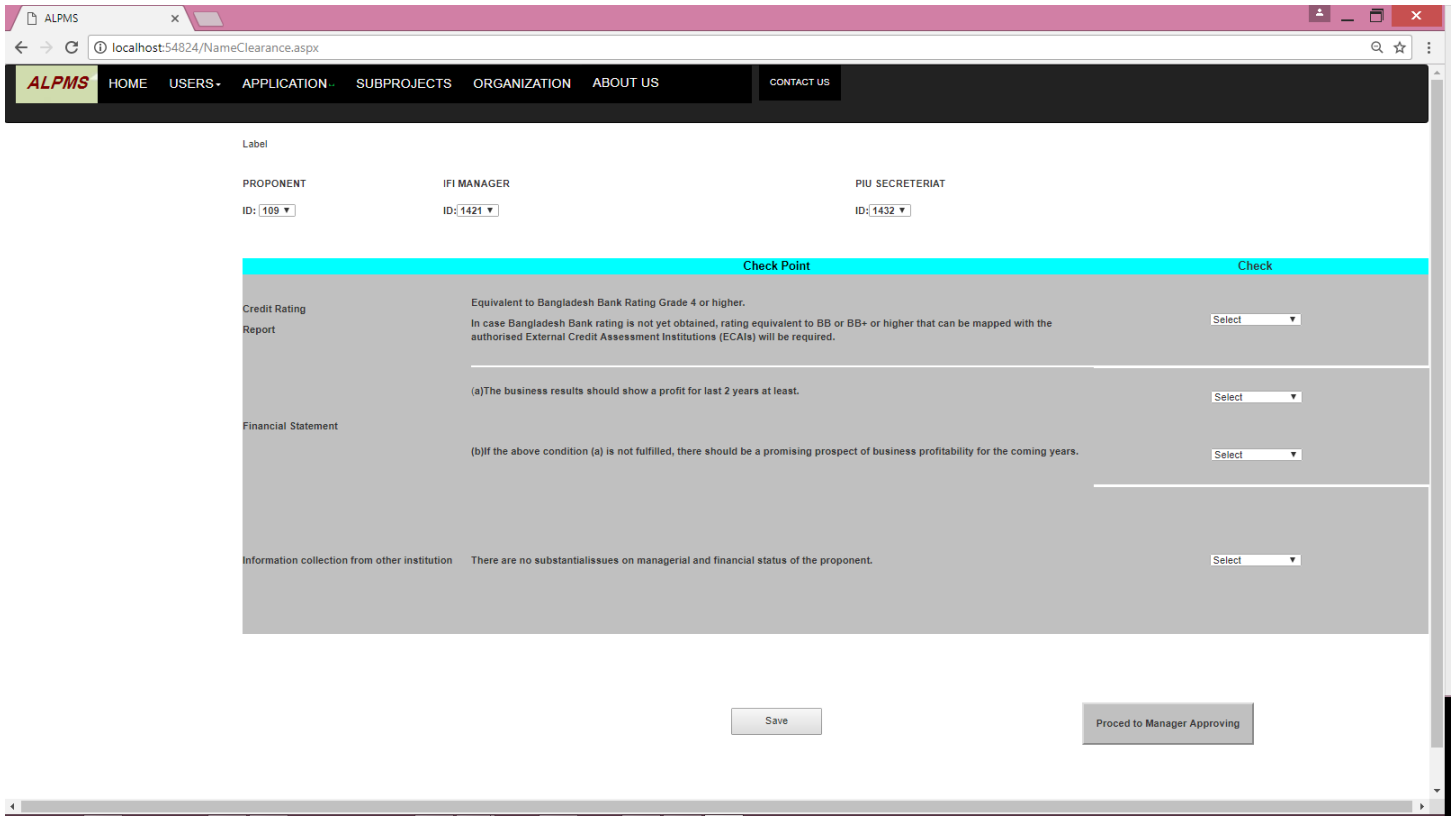


– – –

Here, if we enter a proponent id, we can view all the information of that proponent. The query used to achieve this is as follows:

SELECT *FROM proponent WHERE ID=" + int.Parse(TextBox11.Text)

```
 TextBox1.Text = mdr.GetString("CompanyName");
TextBox2.Text = mdr.GetString("houseNo");
TextBox6.Text = mdr.GetString("roadNo");
TextBox7.Text = mdr.GetString("postalCode");
TextBox3.Text = mdr.GetString("mobileNo");
TextBox4.Text = mdr.GetString("yearofincorporation");
TextBox5.Text = mdr.GetString("authorizedcapital");
TextBox8.Text = mdr.GetString("paidUpCapital");
TextBox9.Text = mdr.GetString("numberOfEmployee");
TextBox10.Text = mdr.GetString("descriptionOfTheCompanyLineOfBusiness");
```



Above is the name clearance form. Drop down menu has been added for the check column. The officer manger will choose the decision accordingly. The query used to save the result into the database is as follows:

```
int a = Int32.Parse(DropDownList5.SelectedItem.Text);
int b = Int32.Parse(DropDownList7.SelectedItem.Text);
int c = Int32.Parse(DropDownList9.SelectedItem.Text);

INSERT INTO name_clearance(CreditRatingReport, Financial_Statement_a, Financial_Statement_b, InfoFromOtherFI, PROPONENTID, IFIMANAGEREMPLOYEEEmployeeID, PIUSECRETARIATEMPLOYEEEmployeeID) VALUES('" + DropDownList2.SelectedItem.Text + "', '" + DropDownList1.SelectedItem.Text + "', '" + DropDownList4.SelectedItem.Text + "', '" + DropDownList3.SelectedItem.Text + "', " + a + ", " + b + ", " + c + ")
```

Problems faced

The challenge was to code in c#. No members had any prior knowledge of c#. Everyone had to learn through trial and error. We also faced a lot of problem in connecting the database with the website. There were many times when the server was not coming online. The website also crashed quite a lot of times. Moreover, there were a lot of problems in the ERD after importing it in Xamp.

Solution

Dr. Mahady Hasan has helped in understanding the ERD which eventually proved to be very valuable. We also used the help of google to get online tutorials on coding and sql. Dr Mahady Hasan's software management team has also helped us to overcome some of the major issues.