

**UPGRADING SOCIAL PROTECTION INFORMATION TECHNOLOGY PROCESSES AND
SYSTEMS:
IMPLEMENTATION PLAN (OUTPUT 3.2)**

1. This document serves as a guideline to understand how information technology (IT) processes and systems of the social protection subsector will be upgraded.

A. Objectives

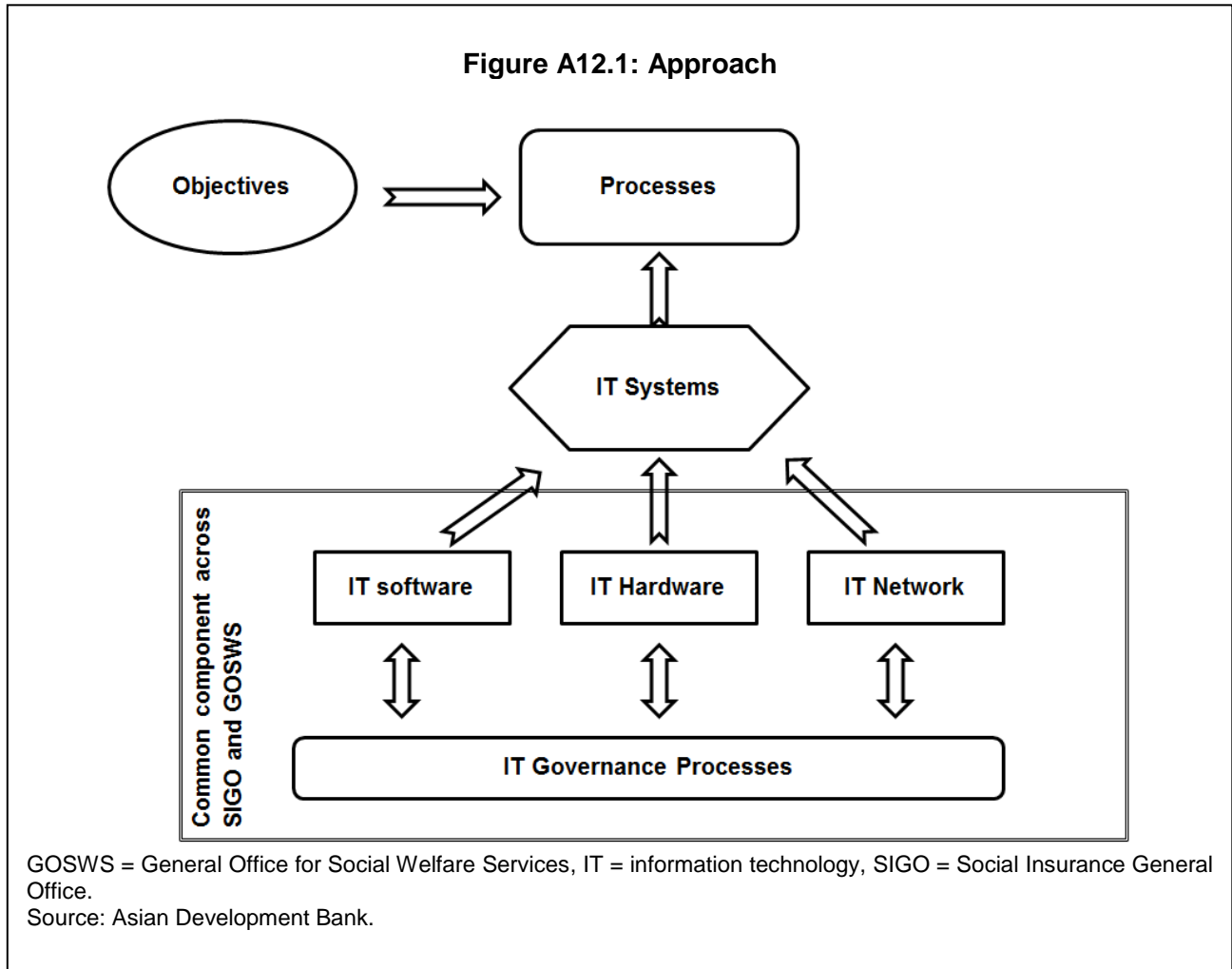
2. The main objectives of the upgrading of IT processes and systems of the social protection subsector are to:

- (i) improve IT system to support International accounting standard for the Social Insurance General office (SIGO),
- (ii) automate periodic reporting and reduce manual processing,
- (iii) enhance transparency of SIGO operation,
- (iv) share relevant information at the right time with the right group,
- (v) establish data analytics and business intelligence environment for better decision making, and
- (vi) set up information security infrastructure.

3. These are the bases for designing the IT systems under the project.

B. Approach

4. For any business operation to succeed, a robust business process is the most essential component. Then a proper IT system can be implemented to support the business process efficiently. In this project, the same principle is followed. Each objective is linked with a business process and an IT system is envisioned to support it. Moreover, each IT system requires a combination of software, hardware, and network connectivity to be operational. Again these software and hardware must be under a strict IT governance process to be sustainable. The process itself in turn requires some IT systems to operate. Under the project, each of these components is evaluated and included in the scope wherever required.

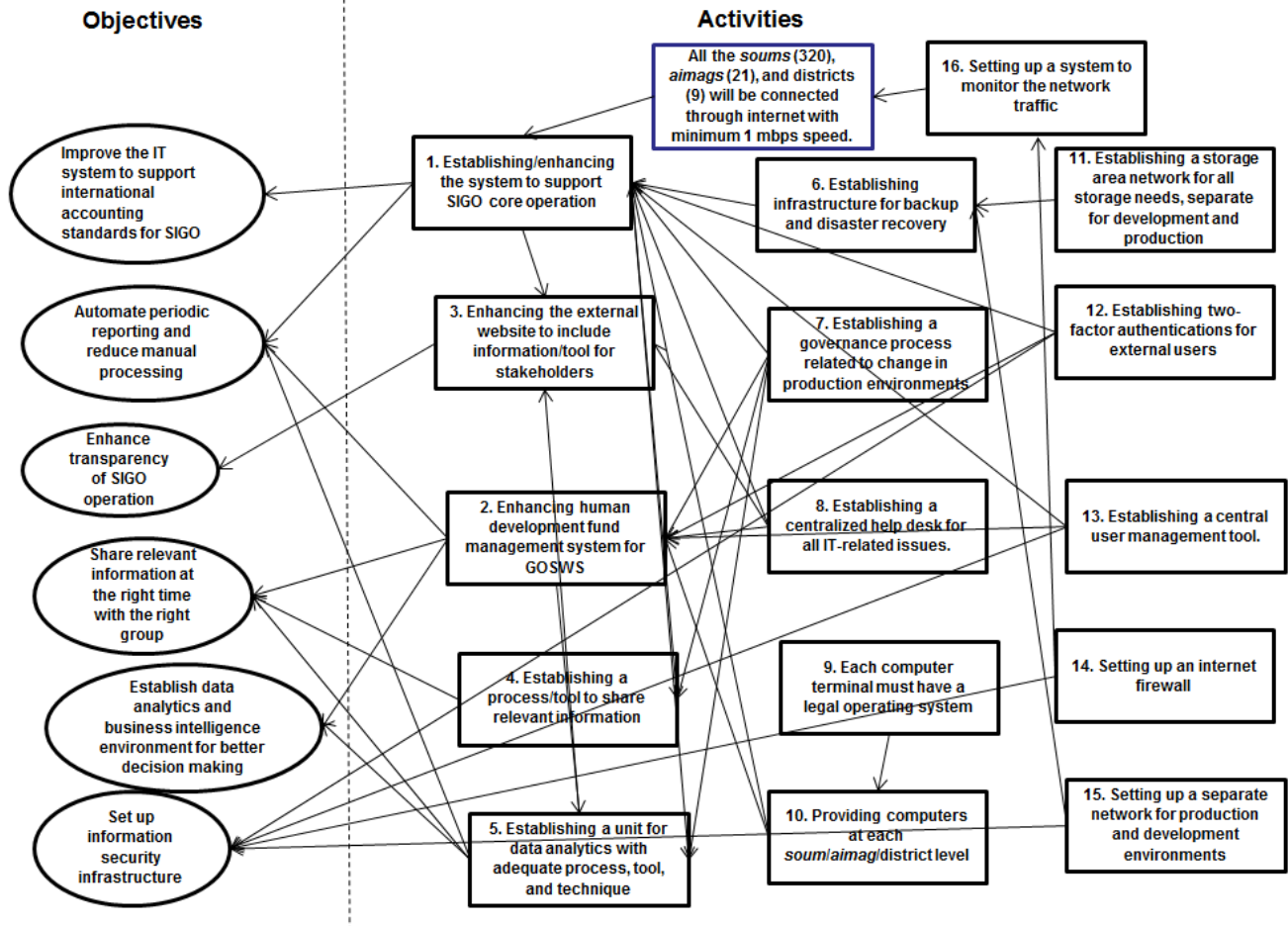


5. Another important consideration is made related to the common IT components across SIGO and GOSWS. A central IT group for the common functionality will increase efficiency, redundancy, and lower support-maintenance cost.

C. Objective-Activity Relation

6. Activities are defined as a set of tasks to deliver a particular output. Each objective is divided into multiple activities to meet its goal. Each activity is then linked to each other to depict the dependency. It gives a clear idea on how to plan for executing the activity. Unrelated activities can be planned in parallel whereas dependent activities should be in sequence.

Figure A12.2: Activity Structure

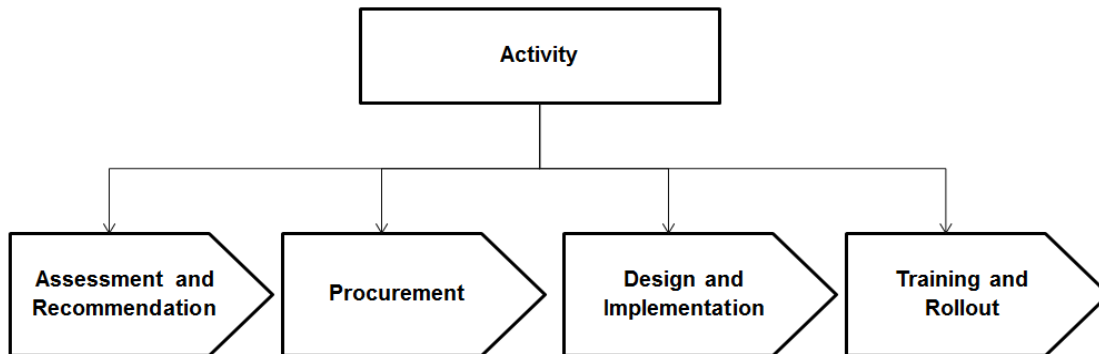


GOSWS = General Office for Social Welfare Services, IT = information technology, SIGO = Social Insurance General Office. Source: Asian Development Bank.

D. Activity Components

7. For better management of the activity, it is subdivided into four components.

Figure A12.3: Activity Components



Source: Asian Development Bank.

8. **Assessment and recommendation.** This is the first step of the activity and the most important one. This is where the current state of the process (if it exists) is evaluated against the objective the activity is associated with. It also considers the dependency and the impact of the activity to other upstream and downstream activities. Finally it produces the business process that meets intended objective(s). It recommends a possible IT solution platform for future implementation.

9. **Procurement.** The main purpose of this component is to initiate and complete the procurement process for IT software and hardware. It involves setting the selection criteria and evaluation of different software/hardware as per the recommendations in the previous step. It must follow the required procurement guidelines.

10. **Design and implementation.** It is typically the software development life cycle involving requirement analysis, design, development, and testing. It will follow the process set in assessment and recommendation and implement the IT solution to fulfill the objectives. A rigorous testing will make sure that the IT solution indeed meets the objective of the activity.

11. **Training and rollout.** Once the IT system is tested and ready to be used, users must undergo a thorough training to use the solution to meet the objectives. Depending upon the IT systems, various levels of training are planned and imparted under this component. Preparing the training material, arranging training sessions, facilitating the training program and finally getting the users for the training are the main tasks under it. Finally rolling out the system to the users and handing it over to the IT support and maintenance team complete the whole activity.

E. Implementation Guidelines

12. Each of the activities is elaborated in detail to help implementation agencies have a clear idea about the outcome expected. Each activity is divided into the following broad categories:

- (i) **Background.** It describes the current practice in the activity domain.
- (ii) **Expected output.** It writes down the detailed level output expected from the activity.
- (iii) **Key consideration.** It details down the key components that must be considered along with others while designing the activity to achieve the output.
- (iv) **Key success factor.** It summarizes the key success factors to make the activity successful.

1. Establishing/Enhancing the System to Support SIGO Core Operation

13. **Background.** Currently SIGO is using around 21 applications to run their operation related to social insurance and pension service. The systems are in isolation and mostly reside independently at *aimag* (province) and/or *soum* (administrative subdivision of the *aimag*) level. The systems are in place since 2008.

14. Current systems are not connected centrally, rather all financial and analytical reports need to be created at *aimag* level and manually collated to produce the required agency level reports. Moreover, the systems are not supporting international accounting standards adopted in previous years. Agency staffs have to work outside the system to comply with the standard.

15. The major stakeholders of the agency, namely hospitals and pharmacies can send their claims only twice a month through emails and cannot get the status of their claim without manual inquiry.

16. Processing claims also undergoes long delay when the system cannot find relevant information in the same *aimag/soum* level. Staffs have to manually search through different databases to find relevant information for further processing.

a. Expected Outputs

- (i) A centralized system to support each line of SIGO business
- (ii) Minimize processing outside the IT system.
- (iii) Support international accounting standards.
- (iv) System accessibility from all *soum/aimag*/district centers.
- (v) Support interaction with relevant information with Hospitals and pharmacy.
- (vi) Capture information related to strategy-policy related decision makers.
- (vii) Support financial reporting.
- (viii) Support information security as per information security guideline.

b. Key Considerations

- (i) Establish a sound business process for each SIGO operation preferably following industry standards.
- (ii) Procure packaged product software wherever possible.
- (iii) Web-based solution for easy accessibility
- (iv) Minimize any customization of the packaged software.
- (v) Performance of the systems must be assessed considering limited connectivity at *soum* level.
- (vi) Open source supporting software must be considered given any opportunity.
- (vii) Integration with the user management system and access control framework
- (viii) Elaborate training arrangement
- (ix) Significant importance to data migration process

c. Key Success Factors

- (i) Setting up a sound business process
- (ii) Selecting correct software
- (iii) Establishing and integrating proper security framework.
- (iv) System accessibility at *soum* level
- (v) Successful migration of existing data
- (vi) Adequate training and support mechanism

2. Enhance Human Development Fund Management System for the General Office for Social Welfare Services

17. **Background.** Currently the General Office for Social Welfare Services (GOSWS) is using three major systems to support their operations. They are social welfare, child benefit, and human development fund. The child benefit system is web-based and recently developed whereas the social welfare system is currently re-architected to be a web-based solution. Human development fund application is still personal computer-based and residing at *aimag/soum* level with local databases. It creates a bottleneck to consolidate the data in a

central place without manual intervention. Moreover these isolated systems are difficult to manage and support remotely from the central office. It also runs the risk of security breaches and sudden loss of data with no backup process.

a. Expected Outputs

- (i) Web-based solution for the human development fund
- (ii) Centralized database
- (iii) Effective security setup

b. Key Considerations

- (i) Open source platform must be given priority.
- (ii) Integration with security platform
- (iii) Considering packaged solution if found suitable
- (iv) Accessible from all *soum/aimag*/district centers
- (v) Performance of the systems must be assessed considering limited connectivity at *soum* level.
- (vi) Importance to data migration process
- (vii) Adequate training arrangements

c. Key Success Factors

- (i) Successful data migration
- (ii) Integration to security platform

3. Enhancing the External Website to Include Information/Tool for Stakeholders

18. **Background.** This is one of the major requirements from the minister and director for SIGO. The current website is very static and does not provide enough information related to their benefits. Also it should provide some mechanism to validate eligibility and calculate contribution, etc. Moreover, the website should serve as a single point of contact for stakeholder like Hospitals and pharmacies to upload their claim and check their status. Also GOSWS did not specify anything explicitly for their website, but it is worth checking if similar functionality can enhance and add value to their operation.

a. Expected Outputs

- (i) Interactive website with relevant information for the stakeholders
- (ii) Provision to upload claim and check status for hospitals and pharmacies
- (iii) Proper security integration
- (iv) Attractive look and feel

b. Key Considerations

- (i) High response time even with limited connectivity
- (ii) Integration with security framework wherever required

c. Key Success Factors

- (i) Awareness and training for stakeholders
- (ii) Regular update and communications
- (iii) High response time

4. Establishing a Process/Tool to Share Relevant Information

19. **Background.** There is a strong need from the different agencies, groups, etc. to have access to the data that SIGO and GOSWS have in their system, especially the data related to individual benefits for more efficient and effective policy. Currently, the intersectoral database is being developed to provide insight on the proxy means test database to selected users. The same kind of the facility is expected for various analytical reports (using the data captured in SIGO and GOSWS IT systems). The analytical reports will be the output of the business intelligence platform.

a. Expected Outputs

- (i) Web-based facility to share relevant information
- (ii) Strict user access control to keep confidentiality of the information
- (iii) Provide download features in different format (text, excel)

b. Key Considerations

- (i) Dependency on business intelligence IT systems
- (ii) High performance to display/download the information
- (iii) Notification on availability of new information

c. Key Success Factors

- (i) Periodic update of the information
- (ii) Awareness among the user community
- (iii) Availability of relevant information

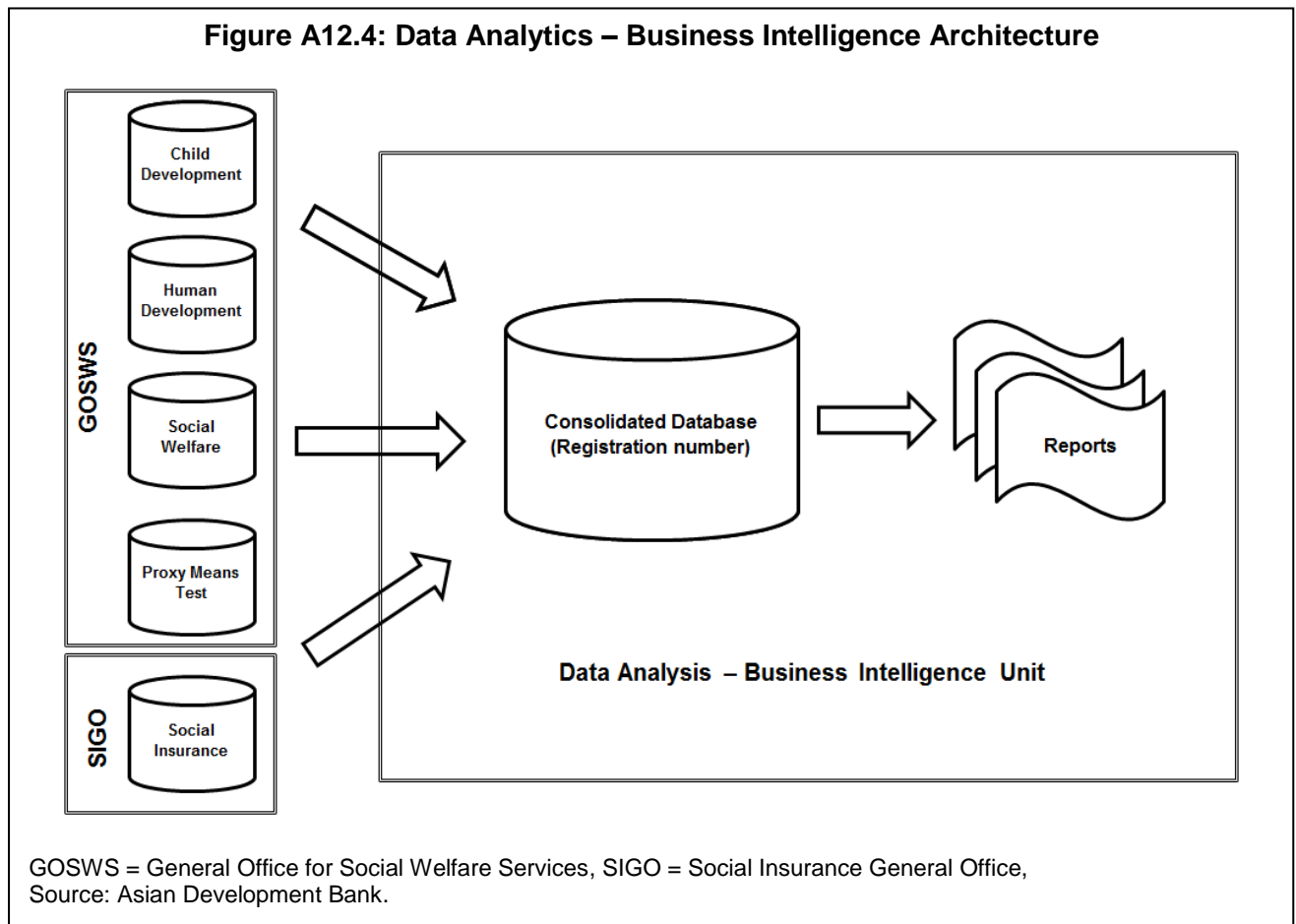
5. Establishing a Unit for Data Analytics with Adequate Process, Tool, and Technique

20. **Background.** SIGO and GOSWS are using isolated systems to execute their operations. Each system is responsible for capturing a specific set of information and can generate reports only to that specific domain. With the demand from the ministry to have a holistic view of the information across different benefits, the information from different systems needs to be collated, analyzed, and used for better decision making. It requires automated processes supported by various IT tools to collate the data and various analytic techniques to analyze the data to reveal the hidden insights. Moreover, a dedicated group with adequate skills in IT and data analytics is the key to succeed in this activity.

a. Expected Outputs

- (i) A dedicated data analytics group consisting of IT and data specialists directly under the ministry

- (ii) Web-based IT system to support the reporting needs
- (iii) Automated IT system to consolidate the information from various sources periodically
- (iv) Easy interface for the user to access the information in a structured manner
- (v) Various automatically generated various analytical reports as per user requirements
- (vi) Access control to keep the confidentiality of the information
- (vii) Sufficient training for users to introduce various data analytic techniques



b. Key Considerations

- (i) Detailed consultation to understand the information requirements for analytics
- (ii) Open source reporting and data collating tools to be given priority
- (iii) Adequate training for the IT developers
- (iv) Robust and flexible platform for future growth and reporting requirements

c. Key Success Factors

- (i) User-friendly IT systems for reporting
- (ii) Faster report development
- (iii) Periodic training for data analytics groups to use the IT systems
- (iv) Promoting fact-based decision making

6. Establishing Infrastructure for Backup and Disaster Recovery

21. **Background.** SIGO and GOSWS have been implementing backup process for their IT systems periodically, but it is only limited to centralized systems as remote desktop systems are difficult to access and manage. Moreover, the backup is kept in the same data center and has never been recovered to test its effectiveness. Also, there is no disaster recovery site in case the existing data center goes down. An effective solution is to use the national data center as a backup and disaster recovery site, and set up a process for regular backup there. Periodic drill recovery process will ensure the effectiveness of the whole setup.

a. Expected Outputs

- (i) National data center as backup and disaster recovery site
- (ii) Periodic backup process
- (iii) Periodic drill to test recovery process
- (iv) Strategy for disaster recovery

b. Key Considerations

- (i) Monitoring process for backup
- (ii) Optimum downtime during backup process

c. Key Success Factor

- (i) Periodic drill to test backup recovery

7. Establishing a Governance Process related to Change in Production Environments

22. **Background.** SIGO and GOSWS make regular enhancement to the production systems for various reasons. Sometime it is related to IT support or sometimes to support evolving operational needs. Currently all these changes go through an approval process, but are not documented with an audit trail for future reference. It becomes a compliance issue especially for the financial IT systems.

a. Expected Outputs

- (i) Logging and approval process for all production changes
- (ii) Reports to monitor changes in production
- (iii) Tool to capture production changes

b. Key Considerations

- (i) Comprehensive IT system catalog
- (ii) Open source tool to capture production changes

c. Key Success Factor

- (i) Discipline to implement change management process

8. Establishing a Centralized Help Desk for all IT-Related Issues

23. **Background.** SIGO and GOSWS are managing IT support locally with staff trained in IT skills. There is also no mechanism to track the problems and/or issues reported at different locations against different systems. With the new centralized IT systems, it is no longer required to maintain IT support staff at each location, rather it can be centralized with a proper issue tracking system. Moreover, few of the IT systems will be used by external parties like beneficiaries, hospitals, other agencies, etc. They also need to have access to an IT support team to resolve any issue that they encounter. This support team must have a dedicated phone number and email published for the users.

a. Expected Outputs

- (i) Dedicated IT help desk unit
- (ii) A tool to track issues and/or problems against the IT systems
- (iii) Dedicated phone number and email ID to capture issues and/or problems
- (iv) Predefined time line to resolve different categories of problems

b. Key Considerations

- (i) Open source tool in problem management
- (ii) Clear roles and responsibility to capture, analyze, and resolve an issue
- (iii) Dedicated staff for help desk

c. Key Success Factors

- (i) Transparent process to track the status of each issue
- (ii) Strict monitoring of issue resolution

9. Each Computer Terminal Must Have a Legal Operating System

24. **Background.** SIGO and GOSWS are currently using hundreds of computers with a need of a total of 1,000 computer terminals. They also have a number of servers to support their IT applications. Surprisingly, most of the computers do not have any legal operating system. It is very important especially for a government agency to use legal software at all times.

a. Expected Output

- (i) Legal operating system in all SIGO and GOSWS computers

b. Key Considerations

- (i) Negotiation for a better price at agency level
- (ii) Retaining existing files and folders in the new system

c. Key Success Factors

- (i) Phased rollout of the new system
- (ii) Immediate support to users for any issue

10. Providing Computers at each *Soum/Aimag/District* Level

25. **Background.** With the objectives to centralize all the information and providing transparency to the beneficiaries, it is critical to establish web-based IT systems and provide access to each *soum/aimag/district* center. It requires each center to have access to computers. A total of 1,000 computers (SIGO – 500 and GOSWS – 500) will be required to make the new IT systems effective.

a. Expected Output

- (i) One computer at each center for SIGO and GOSWS

b. Key Consideration

- (i) Laptop computers should be preferred at remote centers for built-in battery in case of power failure.

c. Key Success Factor

- (i) Setting up support system for any issue

11. Establishing a Storage Area Network for all Storage Needs, Separate for Development and Production

26. **Background.** SIGO and GOSWS are currently using built-in storage in the individual servers to store the information. It is not centralized and requires manual effort to monitor and back up information. Also it restricts the IT support team to optimally use the storage capacity. A storage area network (SAN) will enable a central storage system and help to use the capacity efficiently. It will also make the whole backup process very efficient. Moreover, a separate SAN for the development and production environment will save on costs and introduce better management.

a. Expected Outputs

- (i) Separate SAN for production and development environments
- (ii) Optimum usage of storage capacity
- (iii) Centralized backup process

b. Key Considerations

- (i) High-end storage for production and normal storage for development environments
- (ii) Monitoring process at each node

c. Key Success Factor

- (i) Periodic monitoring of the capacity

12. Establishing Two-Factor Authentications for External Users

27. **Background.** With the new web-based IT systems in place for SIGO and GOSWS, it is very important to strengthen the access control mechanism. Current systems only depend on user ID and password which is definitely not enough especially when users are from outside the IT network environments. Two-factor authentications will introduce another layer of security to prevent any unsolicited attempt to access confidential information. It must be integrated with all the systems wherever it will be accessed from outside the network.

a. Expected Outputs

- (i) Two-factor authentication mechanism for IT systems accessed from outside
- (ii) Only valid for confidential information, not general information

b. Key Considerations

- (i) Phased approach to include existing IT systems
- (ii) Innovative method to provide the token, not necessarily using a separate device

c. Key Success Factors

- (i) Adequate training for the users
- (ii) Prompt delivery of the token

13. Establishing a Central User Management Tool

28. **Background.** SIGO and GOSWS are managing IT system users in each IT system in isolation. This restricts generating a complete view of the roles and responsibilities each user has across multiple systems. Moreover, there is no way one can validate conflict of interest for any particular user when he/she has multiple roles/responsibilities. The IT support team also needs to create the same user at multiple systems and most importantly, remove them from all the systems as and when required. This creates a potential risk of missing one system and keeping the user active even after the end of an assignment. A centralized user base can easily resolve all these issues and help in implementing a sound authentication mechanism.

a. Expected Output

- (i) Centralized user base with proper approval mechanism
- (ii) Integrated with two-factor authentication
- (iii) Periodic reports on user access

b. Key Consideration

- (i) Phased approach to connect existing IT systems

c. Key Success Factor

- (i) Seamless migration of existing user base

14. Setting up an Internet Firewall

29. **Background.** In the existing network architecture, SIGO and GOSWS have a firewall to prevent external intrusion, but it does not prevent any access to suspicious sites. Therefore, the

network is always at risk to get infected by some spyware. A robust internet firewall can prevent internal users to access unauthorized internet addresses.

a. Expected Output

- (i) Firewall to restrict access to internet sites

b. Key Consideration

- (i) Package software solution

c. Key Success Factor

- (i) Quick response time to include and/or exclude internet sites

15. Setting up Separate Networks for Production and Development Environments

30. **Background.** Currently SIGO and GOSWS are using same network connectivity across all environments. Given the nature of confidential information they use for their day-to-day operation, it is very important to have multiple layers of access control to prevent any misuse of information. One common way to expose confidential information is through the IT system development process. Therefore, it is recommended that development and production environments should reside separately and IT developers by default cannot have access to the production network. This will create an additional security layer.

a. Expected Output

- (i) Two separate networks for production and development IT environments
- (ii) Monitoring and approval process for access to both environments

b. Key Consideration

- (i) Faster turnaround time for access request

c. Key Success Factor

- (i) Regular monitoring of access to the network

31. All the *soums* (320), *aimags* (21), and districts (9) will be connected through the internet with minimum 1 mbps speed.

32. **Background.** To effectively use the IT systems, it is a must that all the *soum* centers can access these applications. With current scenario, only very few *soums* have internet connectivity. Connecting each *soum* through VPN is very costly and cannot be budgeted under this project. Rather using USB-based internet connection by mobile phone provider seems to be a feasible and cost-effective solution.

a. Expected Output

- (i) Internet connectivity at *soum* centers

b. Key Consideration

- (i) Sufficient bandwidth to access SIGO and GOSWS IT systems

c. Key Success Factors

- (i) Uninterrupted service by the mobile phone provider
- (ii) Sufficient bandwidth to access IT applications.

16. Setting up a System to Monitor the Network Traffic

33. **Background.** With so many web-based IT systems in SIGO and GOSWS, it is very important keep the network connectivity up and running every time. It requires a constant monitoring of the network to resolve issues proactively.

a. Expected Output

- (i) Tools to monitor network traffic and bottlenecks

b. Key Consideration

- (i) Automatic notification for any breach of threshold

c. Key Success Factor

- (i) Dedicated resource to monitor and take proactive action on any issue