

Step 11

Install management system



A scheduled desludging scheme must use a management information system (MIS) that has the ability to collect, compile, record, send, and process data of customers, operation and finance in an integrated manner. MIS will ensure that all registered buildings can receive desludging service according to the specified schedule. The use of digital information technology enables the service provider to manage desludging operation for a high number of buildings and in real-time.

11.1 ALL IS CONTROLLED

A scheduled desludging operation consists of dozens of activities carried out by different divisions within the organization of the service provider (Figure 11.1). Some activities may need to be carried out by others, such as by the operating partners and septage treatment plant managers (see Figure 11.2). Communication and coordination become critical in the scheduled desludging operation. Each party involved must work synchronized according to standard procedures and other agreements. The exchange of information between parties must run smoothly, and all information will be recorded to enable quick and accurate evaluation and verification of operating performance. Therefore, it is highly recommended that the scheduled desludging operation should be supported by a management information system (MIS) that utilizes information and communications technology.

An MIS is used for coordination, control, analysis, and visualization of information in a service provider. In full, an MIS in a scheduled desludging operation must be able to:

- store and sort data of buildings that use viable septic tanks,
- compile a list of customers who will get a desludging service in a time period,
- set weekly or monthly operating schedule of desludging,
- assign a desludging fleet according to the specified schedule,
- document desludging operation, septage transportation and septage disposal,
- create and print bills for the customers,



Figure 11.1 Scheduled desludging service provider needs to use a MIS based on digital information technology. An MIS will help service provider to control the desludging, transportation and disposal of septage to meet the planned target and time.

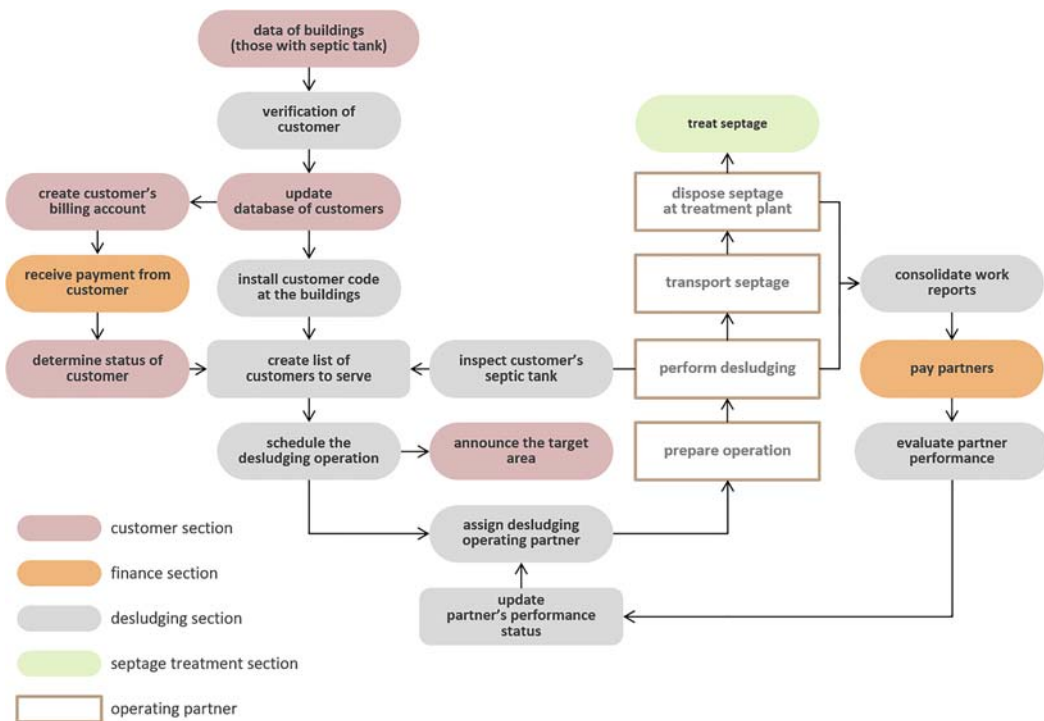


Figure 11.2 Series of activities and information exchange traffic in a scheduled desludging operation. These activities involve several parties, both inside and outside the service provider organization.

- record payment transactions of the bills,
- calculate the amount of compensation to be paid to the desludging operating partners,
- prepare technical and financial performance reports.

An MIS can also be designed to assist a service provider in assessing their own performance and their operating partner's performance. For example, assessing the average time required for desludging, the number of desludging operations over a period of time. A good MIS should have the ability to sort out information of buildings who are viable and eligible for desludging service according to a set of agreed criteria. One of these criteria is the obedience of building owners in paying desludging service bills. An MIS will help the service provider to compile a septic tank desludging plan that mentions the identity of customers along with the address and desludging schedule. An MIS will also use customer information in the database to create service bills for each customer.

Annex G briefly describes an MIS that has been developed by IUWASH PLUS program to support scheduled desludging in several cities.

11.2 RELY ON DATABASE

An MIS of a scheduled desludging operation relies on the database of buildings that use septic tanks. The customer database must at least contain information of (a) identity of buildings or customer, that is, number, name, address, telephone number and customer classification and (b) condition of the septic tank, namely location, accessibility, volume, source of waste and the last desludging year. If it is made consistent with the questionnaire used for surveying the septic tanks (see **Step 5: Assess targets**), we can use data collected to fill the database (Figure 11.3).

The database can be specially designed to have a data structure suitable for a scheduled desludging operation in a city. Creating a new database of buildings or customers may not be necessary if the desludging operation will involve an existing institution that already has a database for their customers. For example, a water utility that already has a database of their water customers. However, before it is used, we need to carefully study the existing database structure to make sure that the record type and

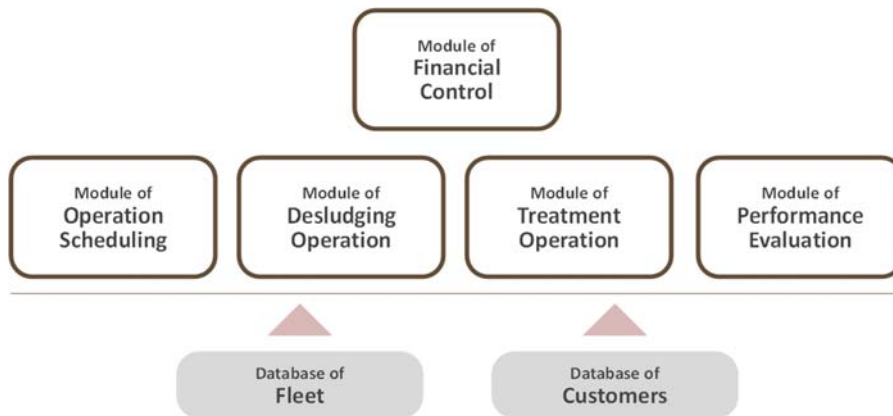


Figure 11.3 The MIS for scheduled desludging operation may consist of a set of modules to specifically support administrative, technical and financial processes of their operations. The core of an MIS is the customer database that will underlie other functions.

field type are compatible with the specific needs of a scheduled desludging operation. It is almost certain that the database of water utility should be improved to include data field for septic tank.

An MIS should also have database of the fleets, both for the desludging units and the crew members. A database of desludging unit at least needs to contain information of (a) identification and license numbers, (b) type, brand and year, (c) tank volume, (d) gross weight, (e) operating records, and (f) maintenance records. A database of crew members might include information of (a) name and birthdate, (b) identification number, (c) job title, (d) address and contact number, (e) license number, and (f) operating records.

11.3 CONNECTING THE PARTNERS

The MIS is designed to support information exchange between divisions in service provider organization, particularly between customer, technical and financial departments. The exchange of information between these three divisions is necessary for the preparation of the desludging plan. If a service provider does not want to serve buildings that have not paid the service bill, the finance department must inform the technical department to prevent desludging service to those buildings. The MIS then does the work and fleet crews are informed through their smartphones.

MIS for scheduled desludging in surakarta (indonesia)

The scheduled desludging scheme in the city of Surakarta (Indonesia) is run by the local water utility, that is, Perusahaan Daerah Air Minum (PDAM) Surakarta. They utilize an IT-based Management Information System (MIS) which consists of three parts, namely (see the diagram):

- The main MIS unit (with website) that is used by the controller at the PDAM.
- The treatment mobile MIS unit to be used by the treatment plant officer to record and report the frequency and volume of septage disposal.
- The desludging mobile MIS unit to be used by the fleet crew to record and report the desludging and transportation operations.

Based on customer database, PDAM makes a list of buildings to serve. The list is submitted to the fleet crew via the desludging mobile system. When performing desludging operation, the fleet crew will scan the customer's barcode and send information to the main MIS unit. Septage treatment plant officer will use their mobile MIS unit to record and send information on septage disposal to the main MIS unit. Treatment plant officer must scan the barcode in desludging truck.

All information is collected on the server, while the PDAM controller can monitor it through the MIS Web.



The main MIS unit operated by the PDAM controller has modules of:

- Fleet data module; to manage the data of desludging fleets.
- Request module; to manage requests of buildings on desludging outside the scheduled scheme.
- Scheduling module: to set the schedule of septic tank desludging which is based on service zones, building types or both (see picture in the right).
- Dashboard; to see the performance of desludging operations, such as locations, desludging monthly data and graphics on average septage disposal.
- Operation monitoring module; to monitor the position and time of desludging fleet activities.
- Financial reporting module: to see the status of the invoice and the amount that must be paid by a customer.
- Service billing module; to integrate billing data of desludging service with the water supply billing system.



Form Penjadwalan Penyedotan

1. Operator

2. Tahun dan Bulan Periode

3. Rayon

4. Pelanggan

The PDAM Surakarta uses an Intel Core i5-4590 desktop computer to accommodate the main MIS unit. Meanwhile, the fleet crews and septage treatment plant officers use Android-based smartphones to operate the mobile MIS units. Overall, the MIS of PDAM Surakarta has eight main application modules and three mobile application modules.