Scope of Business Functions

This description of the scope of business functionality delivered by the industry-specific IS-U/CCS component is organized according to the hierarchy of the components that comprise IS-U/CCS, and therefore parallels the layout of the IS-U/CCS menus. This approach will enable you to quickly locate the functions being discussed in the IS-U/CCS menu. Where it is helpful, we also introduce the standard R/3 System functions that are integrated with IS-U/CCS, such as the organizational structure of a company.

Basic Functions

Regional Structure

The postal regional structure divides a service territory according to postal criteria. The primary elements are cities and streets with their street sections. You can also store city districts and post office boxes and the postal code for each connection object.

When maintenance of the postal regional structure is complete, all the addresses of IS-U/CCS objects reference regional structure elements. Correct spelling and structuring of addresses is ensured by the central file for city and street names with their corresponding postal codes. This task is handled by the Address Management (CA-GTF-ADR) component of the standard R/3 System.

Country-specific algorithms simplify entering addresses. In the Netherlands, for example, users can enter the postal code and the house number in order to fully specify an address. In Germany, the postal code can be derived simply from the city in many cases.

You can store data relevant to billing, such as temperature area and air pressure area, calorific value district, and meter reading units (see below) for specific cities and streets. The system proposes these values when you create utility installations.

The political regional structure divides the service territory according to political and administrative criteria. Unlike the postal regional structure, you can define the political regional structure as you choose. First you define the hierarchy (for example, state, county, and city), and then you assign elements, meaning the corresponding political entities (for example, Orlando, Florida) to the hierarchical levels.
The political regional structure is linked to the addresses of the connection objects by the postal regional structure. The elements of the political regional structure are stored for cities and streets (or street sections).

![Interaction of the Various Regional Structures](image)

**Organizational Structure**

To allow strategic planning of personnel placement and efficient control and monitoring of business processes, the utility company’s organizational structure must be stored in IS-U/CCS, where it must be quickly accessible. For that reason, IS-U/CCS uses the **Organizational Management** (BC-BMT-OM) component from R/3 Basis.

The organizational structure enables clerk determination to be performed (see **Clerk Determination**) in the case of a workflow, for example. This means that you can assign each task and each business process automatically to the appropriate employee or group of employees. In addition, you need the organizational structure for setting up access authorizations and for billing employees (Release 4.51).

All company data can be stored centrally in the organizational structure and used graphically or as text. This data includes:

- Employee data, including work center, telephone number, and address
- Job descriptions, positions and their staff assignment
- Organizational setup, for example, according to groups, departments, or areas, including hierarchies
- Tasks and responsibilities
- Vacation and substitute employee information
In the company regional structure, the units of the utility company as defined in the organizational structure (for example, administrative areas and district offices) are linked to the postal regional structure. As a consequence, you can perform clerk determination on the basis of regional criteria. This results in optimum support, particularly for business processes in companies with decentralized structures. In addition, you can manage statistics on the basis of an internal division of the service territory.

The R/3 System provides a variety of organizational units that you can use to model your company structure:

- **The client** (usually a group or corporation) is the highest hierarchical level in the R/3 System. In commercial, organizational, and technical terms, a client is a self-contained unit with separate master records and its own set of tables. The client largely serves only one technical function; it enables you to use several logically independent R/3 systems within one physical R/3 installation.

- **The company code** (for example, a company) is the smallest organizational unit for which a complete, self-contained set of accounts can be drawn up for the purposes of external reporting. At least one company code must be set up for each client. Generally, one company code corresponds to one legally independent company.

- **The business area** is an organizational unit in external accounting that represents a separate area of operations or responsibilities within an organization and to which you can allocate value changes recorded in Financial Accounting.

- **Plants** (for example, branches) structure the company according to aspects of production, procurement, plant maintenance, and materials planning.

- **Sales organizations** structure the company according to its sales requirements.

- **Profit centers** structure the company for the purposes of controlling.

The customer information system supports these organizational units as far as they are relevant.

### Clerk Determination

Clerk determination allocates the appropriate contact persons to business partners (on a bill, for example) and automatically distributes the individual workflow tasks to the clerks responsible. This ensures that a task is always sent to the electronic inbox of the appropriate employee no matter what medium is used (letter, workflow, telephone).

Clerk determination is based on the organizational structure of the utility company (for example, organizational unit, position), with each employee being an element of that organizational structure.

Tasks are distributed on the basis of organizational units (for example, department, substitute employees), the properties of the task itself (such as division or regional allocation), and the data object. In many cases, this is a business partner, but it can also be a bill or a utility installation.
Consequently, the criteria that can be used in clerk determination include:

- Company code
- Division
- Billing class (classification of contracts within one division, for example, residential contract or nonresidential contract)
- Regional allocation (for objects with an address)
- The first letter of the business partner’s last name

The utility company can define other attributes for use in clerk determination. You can define the allocation of employees to those criteria.

Fig. 5-2: Clerk Determination

**Portioning and Scheduling**

Scheduling periodically generates dates for meter reading, billing, and budget billing plans. Before you can generate these schedule records, you must create the schedule master records for meter reading (the meter reading units) and for billing (the portions).

**Portions** are groups of contracts that are to be billed together. A contract is allocated to a portion either directly in the contract or indirectly via the meter reading units that are specified in the utility installation belonging to the contract.

**Meter reading units** group together utility installations according to regional criteria. They contain all data relevant to meter reading scheduling. You can only create meter reading units if a portion already exists.
To generate due dates for budget billing payments, you have to maintain not only the portion, but also the parameter record. The parameter record contains the data either for the planned debit entry or for printing the budget billing amounts. A single parameter record can be used for more than one portion.

**Master Data**

Master data is data in IS-U/CCS that remains unchanged over an extended period of time. It is subdivided into commercial and technical master data.

**Business master data** consists of:
- Business partner
- Contract account
- Utility contracts

**Technical master data** consists of:
- Connection object
- Connection
- Premise
- Device location
- Utility installation
In R/3 a business partner can fill a number of roles simultaneously. However, a business partner’s data is stored just once in a central master record. This reduces the amount of maintenance required, saves memory, and prevents data inconsistency.

In IS-U/CCS, the business partner is classified according to the business partner categories natural person, group, and organization. You can store different information depending on the business partner category you choose.

IS-U/CCS uses the following roles for the business partner:

- Contract partner who has a contract with a utility company for delivery and purchase of utility services. A contract partner could be a residential customer, nonresidential customer, other utility company, service provider, local authorities, property owners, or third parties.
- Prospective customer, who is the target of marketing or sales activities
- Contact person for a contract partner of the utility company
- Installer who is authorized by the utility company to install devices and who is issued a license for that purpose
- General business partner
  The general business partner is stored as information only and is neither a contract partner of the utility company nor a contact person or prospective customer.

When you change or create a business partner, you can create a standard customer in the Sales and Distribution application component. This customer takes advantage of service and maintenance offerings.
You can link business partners to one another using relationship categories. Examples include linking an organization and a contact person with the relationship category contact partner and the relationship categories marriage and shared living arrangement.

Fig. 5-6: Business Partners and Relationship Categories

The master record of a business partner contains data from the following areas:

- Name
- Personal data
- Search terms that can be defined by the user
- Address, including telephone and fax numbers. You can enter other addresses in addition to the standard address. The Address Management component manages the addresses centrally and with a uniform structure. It determines whether the address entered meets country-specific rules and whether the city and street exist in the postal regional structure. It also allocates the business partner to the political regional structure and, if applicable, to the company regional structure.
- Bank details. More than one set of bank data can be entered (for example, one account for incoming payments and one for outgoing payments)
- General data (for example, credit rating, and country-specific data)

A standard customer is created in the Sales and Distribution component for a contract partner or prospective customer in IS-U/CCS. That SD customer can:

- Take advantage of service or maintenance offerings
- Purchase goods
- Pay fees and taxes
- Be the target of marketing activities

To create a standard customer, you use a predefined reference customer. You can then change the data of that reference customer.
**Contract Account**

A contract account groups together all of a business partner’s contracts to which the same payment and dunning data applies. The following payment transaction data is stored in the contract account:

- Bank details
- Dunning data
- Payment data
- Alternative payer, payee, bill recipient, and dunning recipient

If you want to create a collective bill for more than one contract account, you can group the accounts together in a **collective bill account**. Collective bills are used, for example, for property management companies, city councils, and large companies. In the collective bill account, which is itself a contract account, you define the recipient of the collective bill and the payment and dunning procedures for all the contract accounts that belong to that collective bill. (See also the section *Contract Accounts Receivable and Payable/Business Transactions*).

You can perform mass changes on the bank data (Release 4.51). This may be necessary if restructuring activities at banks result in changes in the bank number or account number. In such cases, a tape or a listing containing the relevant customers and their bank data is generated.

**Utility Contract**

A contract is an agreement between the utility company and a business partner relating to a utility service. It is the basis for billing the following contract categories:

- Delivery contracts
  You can conclude delivery contracts for electricity, gas, water, waste water, district heating, and cable TV. You can also use other service-related divisions if IS-U/CCS can bill them. The contracts may relate to the entire division or to **basic services** for that division Basic services might be energy supply, transmission, distribution, meter reading, customer service or billing. (See also the section *Deregulated Utility Contracts*).
- Purchase contracts for small power producers, solar plants, and other cogenerators
- Plant consumption contracts for the utility company’s generation and distribution installations
- Company consumption contracts (the utility’s own consumption), for example, for electricity consumption in the utility company’s offices

Service contracts (for maintenance and repairs, for example) are not managed by IS-U/CCS but instead by the *Sales and Distribution* component in conjunction with the *Service Management* component.
The contract data includes the following control data for consumption billing and contract accounts receivable and payable:

- General data (such as contract account)
- Data relevant to budget billing
- Account assignment data (such as account determination ID)
- Data relevant to billing
- Contract validity periods
- Move-in and move-out data

A utility contract is allocated to one single contract account. You can allocate more than one contract to an account and then bill those contracts together. However, only one utility installation can be allocated to one contract.

With the exception of move-in and move-out data, you can change, display, and check all the data of multiple contracts of a contract account simultaneously (this applies to those contracts that have not been terminated).

The move-in or move-out date represents the beginning or the end of energy supply in the division specified in the contract or of partial service in a division. If a particular utility service ends, the customer with that service is identified as moving out, and the utility contract is classified as terminated. (See also the section Move-In/Move-Out). The possible reasons for these events include the following:

- The customer is no longer interested in that utility service.
- The customer changes suppliers.
  - Immediately following move-out, a new contract goes into effect with the new supplier (upon move-in).
- The customer moves out of the premise.
  - In this case, all the customer’s utility contracts are canceled (in move-out for all contracts).

Connection Object

A connection object is usually a building, but it can also be a piece of property or other entity, such as a fountain or a construction site). Since a connection object is allocated an address, it links premises, device locations, and connections with the postal regional structure.

The connection object is a functional location from the Plant Maintenance application component. This means that you can use the functions of the Service Management component to organize move-in and move-out or the repair and maintenance of devices in connection objects. In addition to the general functional location data, the connection object contains industry-specific data.

Connection

A connection is the technical link between a utility company and the connection object. Since it is division-specific, several connections for different divisions or several connections for the same division can be located in one connection object. The connection is a piece of equipment from the Plant Maintenance component with no industry-specific enhancement in IS-U/CCS.
Premise
The term “premise” refers to an enclosed spatial unit to be supplied with a utility service (such as an apartment or a factory). Several utility installations can be allocated to one premise (for different divisions, for example). The premise is therefore not related to one specific division. It is allocated to a connection object and to the address of that connection object. In addition, you can maintain more detailed data about the location of the premise (for example, which floor).

You can enter an owner for a premise, who is responsible for paying outstanding bills if the premise is empty.

A deregulated scenario exists if more than one utility installation of the same division is allocated to a premise. Because utility services are being unbundled, more than one utility contract for the same division is allocated to the same premise via the unique allocation of the utility installation. (See also the section Deregulated Utility Contracts).

Device Location
A device location is a place within a connection object where devices are installed. Those devices can belong to different divisions. You can allocate both the address of the connection object and a particular premise to the device location, and you can and enter a description to define the exact location of the device. This means that you can use the device location to locate an installed device.

The device location is, like the connection object, a functional location from the Plant Maintenance application component. This means that you can use the PM functions in the device location, too.

Utility Installation
In IS-U/CCS, grouping a premise with the devices and contracts is referred to as a “utility installation” (or “installation” for short). The installation contains data relevant to the billing of the contracts, for example the reference values (see below).

Several devices can be installed in a utility installation, with a variety of different relationships existing between them. The devices can also comprise several registers, each with a different rate allocation. All the information about device allocations, register relationships, and rate allocations is stored in the installation structure. (See the section Device Management/Installation Structure.)

At any given time, the installation is allocated to one single contract. If the contracts in a deregulated scenario contain only partial services from a single division, an installation in the same premise and with the same devices exists for each contract. (See the section Deregulated Utility Contracts). Only in exceptional cases (for example, installation under construction, installation vacant and not allocated to an owner) is an installation not allocated to a contract.

Scheduling determines the meter reading dates for the installation. These dates are governed by the meter reading unit to which the installation is allocated. The meter reading unit also links the installation to the portion in which the billing dates are defined. You can, however, override the portion in the contract.
The rate used to bill the installation is derived from a combination of:

- The general rate category to which the installation is allocated
  You can override the general rate category data in the installation by using an individual rate category. This allows you to take individual customer agreements into account.

- The device-specific rate type
  For a full description, refer to the section on Contract Billing/Rate Structuring.

The installation data relevant to billing is managed historically so that a rate category change within a billing period, for example, does not present a problem.

Reference values are used to calculate payments that are not based on measurements. Generally, these payments are charged for the provision of energy or water. They are part of the individual rate category for the installation.

The following types of reference values may be used:

- General reference values (for example, location, value to be billed, or indicator for billing relevance)
- Streetlights (for example, address, ownership status, or operating types)
  The energy price is calculated in conjunction with the burning hour calendar.
- Heating installations (for example, description, charging control, or special agreements)
Deregulated Utility Contracts

Deregulation results in an unbundling of the utilities value chain into:

- generation → transmission → distribution → customer service.

Various suppliers can provide each of these basic services for any given division. It is also possible for more than one supplier to deliver the same basic service. For example, one supplier may deliver an invariably constant quantity of energy per unit of time, while a second supplier provides all additional energy.

Consequently, one technical installation can be assigned several utility contracts that together must be consistent. This means that only certain combinations of utility contracts are allowed for an individual installation. You can achieve this by maintaining the permitted combinations of basic services in a product catalog (Release 4.51).

Fig. 5-8: Deregulated Utility Service in IS-U/CCS

Example

The utility service for a specific division is subdivided into two partial services that are supplied by different service providers: the basic services of energy and transmission, and distribution and customer service. The two contracts for those basic services are therefore managed in different company codes.

Figure 5-8 shows how you define a deregulated utility service in IS-U/CCS. For each of the contracts, you can define the data relevant to billing in the utility installation and in the installation structure. This requires that you create for each premise two installations for the same division. Consequently, the devices are also assigned twice.
If both contracts are managed in the same system, one of the two companies can handle billing and numerous customer service tasks for the other, or a third company can take care of these activities for both service providers. The customer then receives just one bill for both partial services and only needs to be in contact with one company.

**Device Management**

You use device management to manage technical data, installations, meter readings, and device inspections. By **devices** we mean the IS-U/CCS specific form of the **equipment** of the **Plant Maintenance** component. Devices can perform the following functions:

- Count (for example, meters)
- Control (for example, ripple-control receivers)
- Process data (for example, converters)
- Protect or adjust (for example, pressure regulators)

A device is identified by its **device number**. You can create the device number in the **Materials Management** component (where it is known as a serial number) by using the goods receipt function. The device number is physically located on the device.

Each device belongs to a specific **device category**. The device category is a group of devices with similar technical characteristics. It contains the data common to those devices. Examples include the description of the devices or the associated register group (see below). The device category is the IS-U/CCS specific form of the **material** in the **Materials Management** component.

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**Fig. 5-9: Device, Device Category, and Basic Device Category**
The various device categories are, in turn, assigned to the following basic device categories:

- Meter
- Transformer
- Audiofrequency ripple-control receiver
- Remote meter
- Counter
- Corrector
- Pressure regulator
- Sensor
- Other

A device category can also be a combination of different basic device categories.

**Device Movements**

Device movements are implemented in IS-U/CCS through the integration of the Materials Management component. It provides the following functions:

- **Procurement**
  The procurement of devices is handled in Purchasing (MM-PUR) using the Purchase Requisition and Purchase Order components.

- **Delivery**
  The delivery of devices is entered in Inventory Management (MM-IM) using the Goods Receipt component. Since equipment records are automatically generated, you can use functions from the Plant Maintenance component, such as creating preventive maintenance plans, routing, and standard order management.

- **Device transfer**
  Transfers are carried out in Inventory Management using the Stock Transfer/Transfer Posting component. You can transfer individual devices, which are identified by their device numbers, or entire device stocks.

- **Device retirement**
  Devices that are no longer part of the company’s device stock because they have been scrapped or sold are processed in Inventory Management using the Goods Issue and Return component. The master records of those devices are saved.

**Technical Device and Connection Data**

Technical device and connection data is grouped as follows:

- **Register group**
  A register group is a group of registers belonging to a device category or device. Registers measure consumption and demand. A register may be an actual physical register or a display in an electronic device. The technical data (such as the number of digits or type of display) and the billing-related data (such as the rate usage type) of the registers are stored here.
Input/output group

An input/output group is a group of inputs and outputs belonging to a device category or device and describes the technical data. Inputs and outputs are device interfaces. For example, in the case of remote meters, this means several pulse input points and a modem interface.

Command group

A command group is a group of several commands. A command is a signal sent out by a utility company that causes an audiofrequency ripple-control receiver to trigger a switching procedure. For example, in the case of street lighting, a command group may consist of the commands “switch on,” “reduce power,” and “switch off.”

Winding group

A winding group is a group of windings that apply to a device or device category. Windings define the transformation ratio (for example, of transformers) and are divided into primary and secondary windings.

Key Management

Key management allows you to define and manage keys and key boxes. A key provides access to connection objects, premises, device locations, and the installed devices. A key box allows you to manage several keys jointly. This component is expected to be available in Release 3.

Device Installation

With regard to device installation, we distinguish between technical installation, or linking to the device location, and billing-related installation, or linking to a utility installation.

In the case of technical installation, a device is first installed in exactly one device location. Subsequently, you can assign it to any number of installations using billing-related installation. In the case of full installation, the device is linked to a device location and an installation in a single step.

Consequently, the options available for the installation of devices are as follows:

- Technical installation only where, for example, a meter is not billed (such as a control meter or meter for the utility company)
- Technical installation followed by billing-related installation where:
  - Meters are first mounted in a high-rise and subsequently assigned to specific apartments.
  - The two steps are handled by different employees
- One technical installation and several billing-related installations where, for example, a pressure regulator or an audiofrequency ripple-control receiver regulates or controls several installations
- Full installation, for example, in a single-family home

The functions available for installation include:

- Allocation of devices (for example, transformer to meter)
- Entry of period consumption
- Entry of installation meter readings
With regard to removal, we also distinguish between technical, billing-related, and full removal. All rate data and relationships to other devices become invalid on the removal date although they can still be traced historically thanks to **time slices**. Time slices are periods of time during which a given object is not changed. Reference values are not deleted automatically, but may be deleted manually. You can enter the removal meter reading when you remove a device.

**Replacement**

Replacement means that a device is replaced with another device of the same or a similar device category. The replacement device takes over the function of the device being replaced. Unlike removal and subsequent installation, a device is replaced if the following data are to be automatically transferred to the new device:

- Rate data
- Register relationships
- Device relationships
- Register-related period consumption
- Disconnection status

Replacement makes sense where, for example, an installed device is damaged or needs to be certified.

You can enter removal and installation meter readings for a replacement.

**Deregulated Contracts**

With deregulated contracts, you have to check and, where applicable, execute technical and billing-related installation, removal, and replacement for all related contracts.

**Modification**

Modifying a non-installed device allows you to change the following data for that device:

- Register group
- Input/output group
- Command group

You can also modify an installed device. Which data may be changed depends on the device category. In the case of installed electronic meters, modification is the same as reprogramming.

**Device Grouping**

A device group is a group of devices that make up a logical unit. Either all the devices must be installed or they must all be non-installed.

If you want to install or remove a device belonging to a device group, the system automatically displays all the other devices in that group for you to process. This eliminates the possibility of installing or removing logically related, individual devices by mistake.

It makes sense to form a device group if, for example,

- Current and voltage transformers are combined to form transformer banks, resulting in a certain transformation ratio
- Two integrated water meters are installed together as a unit, but count and are billed separately

A device group is managed with histories.
The term “installation structure” refers to the devices installed in a utility installation plus their registers and including their rate allocations. You can maintain the technical and billing-related data of devices and registers here.

You can maintain the following technical data:

- **Device allocations**
  Device allocations describe the interdependencies of devices, for example, the control of a meter by a ripple-control receiver or the switching of a transformer group in front of a meter.

- **Register relationships**
  They describe the relationships that exist between registers. The following relationships are accepted for the creation of a meter reading order:
  - Allocation of reactive registers to active registers for calculating cosine phi
  - Serial switching of several registers (primary or secondary meter relationships)
  - Interconnection of registers of different usage types (on-peak or off-peak check)

- **Control relationships**
  - Special relationships for allocating thermal gas factors

The registers may belong to different contracts.

- **Logical registers**
  Logical registers describe the allocation of a particular function to a register and are important primarily in device replacement. The register of the old device being replaced and the register of the new device must have the same logical register number because billing-related data is transferred to the new register and billing – particularly in the case of demand values – must recognize which register is taking over the role of the old register.

Billing-related data, or rate data, depends on the utility installation and can, therefore, only be maintained if the device is allocated to an installation. The rate data you can maintain include:

- A register’s relevance to billing
- A register’s rate type
- Price class

In deregulated scenarios, the data on the installation structure of the partial service contracts can differ. Differences can include the following:

- Rental and settlement prices are entered only in the installation of the service provider
- Consumption-dependent rate types are only entered in the installation of the energy supplier
- Additional devices (for example, ripple-control receivers) are only installed in the installation of the service provider
Device Inspection

If a measuring device is inspected and found to be in compliance with prescribed error limits, it is certified for a certain period of time and can be installed or reinstalled. You can inspect and certify a device either as part of a lot in a sampling procedure, in the course of periodic replacement, or individually. The scope of the inspections is based on the inspection plan of the relevant material master record.

Fig. 5-10: Sampling Procedure and Periodic Replacement

The types of certification available are:

- External certification by a government-recognized inspection agency, regulated by statutory provisions and regulations, renews the calibration validity of the device.
- Internal certification governed by company guidelines concerns the inspection of the device to determine its quality.

Before an installed device can be inspected, that device must generally first be removed or replaced. This entails using the Service Management component to create a work order, which is then billed in the Sales and Distribution component. You must create a work order even if you can inspect the device while it is installed.

Device inspection contains the following components:

- Device requirements planning
  Device requirements planning (expected to be available with Release 2) helps you plan device requirements and work load relating to the statutorily regulated periodic replacement of devices.
You can use device requirements planning to obtain an overview of how many devices of a given device category will be due for replacement next year. If the number arrived at is too high, you can move inspection up.

**Sampling procedure**

The sampling procedure is the basis for renewing the calibration validity of devices. You must first create sampling lots from the devices that have to be certified. From each lot you then draw a sample of a defined number of devices. The inspection results for those sample devices determine the renewal of the entire lot. If a lot fails, all the devices must be included in the periodic replacement list and certified individually.

You can create lots for devices requiring certification for electricity, gas, water, and district heating divisions.

Differentiating between external and internal sampling lots fulfils the legal requirement and the company’s quality control requirement.

![Diagram of Sampling Procedure](image)

**Fig. 5-11: Execution of the Sampling Procedure**

**Periodic replacement**

In the case of periodic replacement, devices due for certification are removed and replaced with devices with the same characteristics. The devices to be replaced are managed in the periodic replacement list. Other devices (for example, all the devices in a given lot) can also be included in that list. The devices that are to be replaced at a given time are then removed from the list.

**Certification**

Devices can be certified not only based on the sampling procedure, but also individually. If a lot fails, all the devices have to be certified individually.

**Inspection results management**

You can transfer and manage inspection results using the standard Quality Management component. However, this is not a prerequisite for certification.