

FSys – FACILITIES SYSTEMATIZATION

Functional Systematization for Facilities

Edited by: Navaltik Management, organização da manutenção Lda.

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I. FSys-ManWinWin concept

The systematization methodology FSys-ManWinWin developed by Navaltik Management is available in www.manwinwin.com where it can be freely accessed, downloaded and used; please state origin when using it.

FSys is a functional systematization to be used for any type of civil assets. It has been developed to be used with the maintenance management application *ManWinWin*, but can be used with any other application or simply to organize the information related to assets.

The functional systematization consists of a three digit code as in the following examples:

- 124 – Fixed fire fighting (water based)
- 327 – Sanitary hot water production and distribution
- 400 – Fleet and vehicles

Where:

- First digit = *Major Group* (1 to 4)
- 2nd digit defines the *sub-group*: 12 = Fire, safety and security systems; 32 = Production and distribution of hot water; 40 = Fleet and control equipment
- 3rd digit defines the *system*

Further to the root systematization with the 3 digit code, second level systems can be developed as required to cope for more complex installations, eg:

- 124.001 – Fire tank no. 1
- 124.002 – Fire tank no. 2
- 124.003 – Fire pump set
- 124.004 – Sprinkler system
- 124.005 – Fire hydrants
- ...
- 327.001 – Sanitary hot water rooms
- 327.002 – Sanitary hot water swimming pool bath

As a rule the 3-digit root systematization should not be changed as it is part of an overall concept.. Should it be changed it would imply the change in the description of the scope of the system and in most cases alterations in related systems. The descriptions of the second level systems on the other hand, should be made by the User, conforming to the consolidated language in the organization. In a particular organization root and second level systems can coexist.

An outline of the systematization in MS Excel – Fsys_AeriaView - can be obtained in www.manwinwin.com as well as this document.

Working with the application is self explanatory: Some basic hints:

- Choose the language – Portuguese or English
- Open / close tree branches – read descriptions on the right
- Where shall I coordinate “Boiler” . In the <Search...> field write “boiler”. Press Enter or the Lens to get the possibilities. Select each one and read the description. Try other searches.

II. Worked example

Want to organize a building?

First, remember that you have to decide the scope of your management, the deepness and the perspective under which you shall be looking at the things: Are you to manage the lighting systematically or you shall consider it as part of your class rooms and corridors? The windows are to be looked as a closing means of your building or as part of your class rooms? Are you concerned with energy consumption? Normally you will be, therefore, you have to elect the energy meters as a maintenance item.

Once you have given some thought to this broad mind but very important issues you may start organizing your assets the way it best suits your objectives.

Start from the very beginning and proceed sequentially:

1. Select each root system (3 digit) starting in the 100 and ask yourself: 1. Do I have items in this system?; 2. Do I want to manage them on their own? If both are affirmative, tick in the box at the tree. Otherwise, proceed to the next system
2. Repeat step 1, ask the same questions and proceed accordingly.
3. In the end you will have the tree with a number of systems marked. Choose in the upper line of the form the icon "Printable version of the checked nodes" (the utmost right)
4. Print Tree. You get a preview of the tree you have just designed to your case. You may export to MS Excel or to Word with Copy & Paste.
5. Print Book. You get the same contents but including the full description of the system. You may also export.
6. Should you like to have the full view of the systematization methodology choose in the upper line of the form the icon "Printable Version" (second from right)

These documents may be useful to your Organization. You may use the raw material and adjust to your particular needs.

Note: This is a non editable resource therefore you cannot use the edit icon (1st from left).

Some people, instead of the step by step method described along 1 and 2 prefer:

1. Print the MS Excel file Fsys_AeriaView downloaded from the site
2. Painting the relevant squares, clarifying any doubts in the web application when necessary
3. Transcribing the selected systems to the tree in the web proceeding as described above along steps 3 to 6.

Next pages illustrate a printed example of an organization worked out for a school.

Your comments and suggestions will be welcome. Please refer "FSys" and direct them to support@manwinwin.com

EXAMPLE: SMALL SCHOOL
PRINT OF THE TREE AS MARKED

1 - FACILITY / BUILDING GENERAL

10 - Identification and main particulars

100 - BUILDING / COMPLEX ID
102 - ACCESSORY CONSTRUCTIONS
104 - ENERGY AND FLUIDS METERS

11 - Documentation

112 - CERTIFICATES
114 - TRAINING AND DRILLS

12 - Fire, safety and security systems

120 - GENERAL SAFETY AND EMERG.SIGNS
121 - FIRE DETECTION SYSTEM
123 - FIRE EXTINGUISHERS
124 - FIXED FIRE FIGHTING (WATER BASED)

14 - Electricity

141 - POWER TRANSFORMER
142 - MAIN ELECTRICAL SWITCHBOARDS
144 - EMERGENCY GENERATION

15 - Communications and IT

153 - SOUND AND VIDEO NETWORKS

16 - Water

161 - WATER DISTRIBUTION

18 - Sport and leisure

184 - OTHER OUTDOOR SPORTS

19 - Outdoor

193 - LANDSCAPE AND GREEN AREAS

2 - INDOOR AREAS AND DIVISIONS

20 - Circulation areas

203 - CORRIDORS AND ACCESSES
204 - PUBLIC TOILETS

22 - Collective meeting rooms

221 - CLASS AND CONFERENCE ROOMS

23 - Leisure, restaurant and bar

231 - RESTAURANTS, BARS AND CAFETERIAS

29 - Building functions and services

293 - MAINTENANCE WORKSHOPS

3 - HVAC

34 - Air Conditioning

343 - MULTI-SPLIT AND VRV SYSTEMS
347 - SINGLE SPLIT AC SETS

4 - EQUIPMENT FOR OPERATION

41 - Hardware, software and IT equipment

411 - NETWORK EQUIPMENT
412 - DATA CENTRES AND SERVERS
413 - COMPUTERS
414 - PRINTING, SCAN AND DATA COLLECT
415 - SOFTWARE

42 - Building service equipment

425 - MAINTENANCE & CLEANING EQUIP

44 - Operation equipment

443 - AUDIOVISUAL AND DIDATIC EQUIPT

EXAMPLE OF PRINT OF THE DESCRIPTIVE SYSTEMATIZATION

1 - FACILITY / BUILDING GENERAL

Systems to coordinate the identification and main particulars of the building or facility as a whole; its building fractions; key items to the proper management of the building and its constituents, such as: energy and fluid meters; construction fitting out, such as electrical installation; communications network; water and gas systems; open air infrastructures; structural civil works. NB: only the applicable systems should be used.

10 - Identification and main particulars

Use as necessary the systems in this sub-group to identify:

- The building or complex
- Constituent building units (eg. flat; office)
- Accessory constructions (e.g. porter cabin)
- Construction accessories (e.g. portable cover; bridge passage way;)
- All meters and counters (electricity; gas; water; fuel)
- Centralized technical control and automation systems

100 - BUILDING / COMPLEX ID

Supports the coordination of the **whole building** and its main particulars. NB: each building aimed at being treated as a single management object should have a separate functional organisation. Should a partial management of the building components be sought (e.g. some building units; a shop; restaurant, etc) a single functional organisation can be used and the different constituents can be identified by an administrative type coordinate, such as *Cost Centre*, *Entity* or *Client*.

Includes:

- Record of the building or complex as a whole.

Excludes:

- Components, technical systems and management items included in other major groups.

Keywords: BUILDING, FACILITY, IDENTIFICATION, MAIN PARTICULARS, HOSPITAL, HOTEL, HALL, POOL, CAMPUS

102 - ACCESSORY CONSTRUCTIONS

Systems to coordinate, identify and describe independent accessory constructions of the building such as porter cabin; guard house; general store; emergency generator house, and the like, necessary to the functioning of the building, including internal divisions, partitions and fittings.

Includes:

- The abovedescribed items

Excludes:

- Extension constructions of the main building

Keywords: PORTER, GUARD HOUSE, STORE, ANNEX, GENERATOR HOUSE

104 - ENERGY AND FLUIDS METERS

Coordination of energy and fluids supply meters both to the main building and the individual building units.

Includes:

- Main supply meters to the whole building (electricity; gas; enthalpy; fuel)
- Supply meters (electricity; gas; enthalpy; fuel) to individual building units
- Irrigation meter
- Swimming pool main supply

Excludes:

- Individual meters for specific equipments such as: fuel for a boiler; other operational meters which are registered in the item system.

Keywords: GAS METER, ELECTRICITY METER, WATER METER, IRRIGATION METER, ENTHALPY METER, RUNNING COUNTER

11 - Documentation

Use systems in this sub-group to coordinate documentation that is under your management scope:

- Drawings
- Certificates
- Insurance
- Training and drills

112 - CERTIFICATES

Statutory certificates pertaining to the building or its building units required by the official authorities, normally subject to periodic inspection and renewal.

Includes:

- Energy certificate
- Internal air quality certificate
- Gas certificate
- Transformer inspection
- Safety certificate
- Sanitary certificate

Excludes:

- Specific materials and equipment's certificates (linked to the respective item)

Keywords: CERTIFICATE, SAFETY PLAN, INTERNAL AIR QUALITY, ENERGY CERTIFICATE, TRANSFORMER CERTIFICATE, GAS CERTIFICATE, SANITARY, LIFT, ELEVATOR

114 - TRAINING AND DRILLS

Documentation used to support and certify the accomplishment of personnel training initiatives and emergency drills, namely those required by Law concerning fire fighting and emergency simulation. Each action should be attached to a Work Order directed to the maintenance item (which in this case is a document) duly documented with performance datasheets, validating signatures, etc..

Keywords: DRILLS, TRAINING DOCUMENTATION, FIRE DRILLS, EMERGENCY SIMULATION

12 - Fire, safety and security systems

120 - GENERAL SAFETY AND EMERGENCY SIGNS

General items relating to safety and emergency not covered by systems 121 to 129 below.

Includes:

- Safety items not covered by other systems of this sub-group
- Emergency lighting
- Safety plans and emergency instruction boards
- Emergency signalling and labelling

Excludes:

- General purpose signs and nameplates covered by system 205

Keywords: SAFETY, EMERGENCY, EMERGENCY LIGHT, SIGNALLING, SAFETY PLAN

121 - FIRE DETECTION SYSTEM

Items related to the fire detection system.

Includes:

- Fire detection central unit
- Fire detector sensor network
- Fire detection control units
- Emergency shut off of fire doors, dampers, fuel and gas supply, ventilators, lifts
- Emergency signalling for sprinkler system; smoke control, and the like

Excludes:

- Items included in detection systems of specific equipments such as hottes in system 365

Keywords: FIRE DETECTION SYSTEM, AUTOMATIC FIRE DETECTION, SENSOR, FIRE CENTRAL UNIT, SMOKE DETECTOR, FIRE DETECTOR

123 - FIRE EXTINGUISHERS

Each system to include a set of fire extinguishers, either hand or carriage based, grouped in a convenient form: typically, one single set for smaller buildings; grouped by floor, section or area in larger facilities. In convenient may be distributed in sub-systems.

Includes:

- Portable fire extinguishers
- Carriage based extinguishers

Excludes:

- Fixed fire fighting and extinguishing systems in appropriate system: water sprinklers, 124; CO2 fire fighting, 125.

Keywords: FIRE EXTINGUISHER, PORTABLE EXTINGUISHER

124 - FIXED FIRE FIGHTING (WATER BASED)

Systems covering all resources for water based fire fighting.

Includes:

- Fire water tanks and ponds
- Fire pump sets
- Sprinkler systems
- Hydrant systems
- Water curtains
- Hose reels

Excludes:

- Fire fighting of specific equipment covered in other major groups

Keywords: SPRINKLER, WATER TANK, FIRE PUMP, EMERGENCY PUMP, WATER CURTAIN, HYDRANT, HOSE REEL, FIRE MAIN

14 - Electricity

141 - POWER TRANSFORMER

In facilities with power transformer station to coordinate transformers, medium voltage electrical switchboard and related equipment.

Includes:

- Transformer
- Medium voltage electrical switchboard

Excludes:

- Main switchboard, in system 142
- Climatization and ventilation in appropriate system of MG 3
- Safety equipment in appropriate system of sub-group 12.

Keywords: POWER TRANSFORMER, MEDIUM VOLTAGE, ELECTRICAL SWITCHBOARD

142 - MAIN ELECTRICAL SWITCHBOARDS

Main electrical switchboards of the facility, main switchboards of independent building units and of independent common areas.

Includes:

- Facility main electrical switchboards
- Electrical switchboards of independent building units, individual areas and shops

Excludes:

- Specific electrical supply switchboards, such as:
- Fire pump unit switchboard, system 124
- Emergency generator switchboard in 144
- DC switchboards in 148
- All distribution switchboards in public areas in 143.

Keywords: MAIN SWITCHBOARD

144 - EMERGENCY GENERATION

Emergency generators or co-generating diesel sets. Use one sub-system for each generating set. In large and complex systems with auxiliary equipment, may use sub-systems for individual systems. Each system:

Includes:

- Generator set
- Electrical switchboard
- Control equipment
- Starting batteries and respective battery chargers
- Own auxiliary components
- NB: In large and complex installations some systems eventually common to more than one generating set may be included in a sub-system: e.g. cooling; lubricating; fuel supply

Excludes:

- Fuel supply up to the daily tank, in 172; or 171 if gas
- Photovoltaic and other alternative energy in system 145
- Generator room ventilation in appropriate system: 360 or 361.

Keywords: GENERATOR, EMERGENCY GENERATOR, CO-GENERATOR, SWITCHBOARD, STARTING BATTERY, DIESEL ENGINE, ALTERNATOR

15 - Communications and IT

153 - SOUND AND VIDEO NETWORKS

System for ambient music and video including the production equipment and the terminal components (loudspeakers; TV sets). Each system:

Includes:

- Cabling and accessories
- Main and auxiliary sets for production and control
- Terminal components

Excludes:

- Safety, security and general alarm, in appropriate system of sg 12
- Internal video network, in 127

Keywords: MUSIC, VIDEO, TELEVISION

16 - Water

161 - WATER DISTRIBUTION

Cold water distribution systems either sanitary or industrial from reception up to delivery to the consumer. Each system:

Includes:

- Piping and valves
- Water filtering and treatment
- Pumps and hydrophores
- Instrumentation

- Control switchboards

Excludes:

- Water supply, wells and water generators, in system 162
- Irrigation, in 193
- Terminal components such as taps; sanitary equipment, etc., if required, to be picked up from the materials master file and referenced to the item (e.g. room) in the area where fitted
- Water treatment for boilers and chillers, respectively in 321 and 301
- Sanitary hot water, in 327
- Fire fighting water, in 124
- Water treatment for swimming pools in appropriate system: either 185 or from SG 28.

Keywords: WATER, COLD WATER, WATER TREATMENT, FILTER, PUMP, HYDROPHORE, SANITARY WATER

18 - Sport and leisure

184 - OTHER OUTDOOR SPORTS

To coordinate the areas for the practice of other open air sports such as cricket; rugby; etc. including the ground pitches and the spectators areas. Use sub-systems to group several sports. Interior areas to be coordinated in an appropriate system of major group 2. Each system:

Includes:

- Ground pitch and surrounding areas
- Fixed sport equipment
- Spectator standings
- Fencing

Excludes:

- The overall building or premises to be coordinated in system 100
- Fixed or movable covers, in 139
- Lighting, in 147
- Water, in systems 161 and 162
- Open air furniture, in 195
- Interior areas and divisions in appropriate system of MG 2
- Exterior public areas, circulation and access ways, green areas, in 193
- Centralized access control in system 401.

Keywords: RUGBY, HANDBALL, BASKETBALL, VOLLEYBALL, SPORT, SPECTATOR, OPEN AIR

19 - Outdoor

193 - LANDSCAPE, GARDEN AND GREEN AREAS

Systems to coordinate garden and green areas. If required individual trees and bushes may be registered. Each system:

Includes:

- Abovedescribed items
- Fences and gates
- Walkways

- Automatic watering

Excludes:

- Items in other systems such as:
- Shadowing systems, in 134
- Covers and canvasses, in 139
- Draining, in 164
- Accessory constructions such as guard house; garden store, in 102
- Open car parking in 194
- Adjacent interior areas in appropriate system of MG 2.

Keywords: TREE, BUSH, FENCE, GATE, LANDSCAPE, WATERING, WALKWAY, WAY, GREEN, GARDEN

2 - INDOOR AREAS AND DIVISIONS

Major system as the root of systems to coordinate as maintenance items the interior areas in the building under the perspective of their use and to specify their technical particulars covering features such as: area; dimensions; sheathing; finishing and fittings not included in other systems. Fittings understood as: electrical accessories; switches; sockets; lamps; ventilating gratings; air difusers; toilet accessories; sanitaires; common furniture, etc. which should be included as stock items duly registered in the materials master file and linked to the given maintenance área. Eg. room 1 has: 2 electrical switches ref. A; 6 sockets ref. B; ect.

Keywords: INDOOR AREA

20 - Circulation areas

203 - CORRIDORS AND ACCESSES

Includes:

- All corridors inside the building either public or service

Excludes:

- Circulation areas in open comercial spaces, in system 211; and in open office areas, in 215.

Keywords: CORRIDOR

204 - PUBLIC TOILETS

To coordinate all public toilets including their fitting out.

Includes:

- All public toilets

Excludes:

- Private toilets in such areas as shops; rooms; offices, etc. which should be coordinated in their respective system
- Toilets in bathhouses, in system 251

Keywords: PUBLIC TOILET

22 - Collective meeting rooms

221 - CLASS ROOMS AND CONFERENCE ROOMS

To coordinate colective rooms for people to attend to meetings, classes, etc.. Each system:

Includes:

- Divisions with the abovereferrred scope

Excludes:

- Divisions included in other systems of MG 2, namely:
- Amphiteatres, in 222.

Keywords: CONFERENCE ROOM, HALL, MEETING ROOM, CLASS ROOM

23 - Leisure, restaurant and bar

231 - RESTAURANTS, BARS AND CAFETERIAS

To coordinate areas and divisions for restaurants, bars and cafeterias with the exception of kitchen and pantries which should be coordinated in system 261. Consider one sub-system for each restaurante, bar or café. Each system:

Includes:

- All divisions as described above

Excludes:

- Industrial kitchens in system 261
- Kitchen exhaust, in 365
- HVAC in appropriate system of MG 3
- Furniture and specialized equipment in 442.

Keywords: RESTAURANT, BAR, PUB, CAFETERIA

29 - Building functions and services

293 - MAINTENANCE WORKSHOSHOPS

To coordinate in a building the areas and divisions used for maintenance purposes, understood in broad sense to include gardening equipment; cleaning equipment and the like. NB: a) may adjust the description of the sub-systems to the consolidated language in the organisation; b) if workshop in another annex place, coordinate system in 102; c) should normally use 1 (one) system for each workshop.

Includes:

- All divisions with the above scope

Excludes:

- Maintenance manager and foremen offices, if not integrated in the workshop area, in 213
- Administrative open space, in 215
- General purpose technical areas not actually used as workshops in 294
- Maintenance stores for materials and spares, in 295
- Tools and machine tools in 425
- Individual tools and tool boxes are normally registered in the materials master file, related to an equipment in system 425 and managed under a logistic perspective only.

Keywords: WORKSHOP, TOOLS, CLEANING, GARDENING

3 - HVAC - HEAT VENTILATION AND AIR CONDITIONNING

Major group to coordinate all the equipment conneted with heating or cooling the air and the sanitary water, renewal and conditionning of the interior air so as to render it in the appropriate conditions of purity, temperature and humidity.

Keywords: HVAC

34 - Air Conditioning

343 - MULTI-SPLIT AND VRV SYSTEMS

Multi-split AC systems of the VRV or similar type with one exterior unit and 2 or more interior units, own pipping and drain. May use 1 sub-system for each exterior unit. Each system:

Includes:

- External unit
- Associated internal units
- Pipping
- Instrumentation and dedicated control

Excludes:

- Auxiliary systems common to more than 1 AC system, in 341
- Control and automation systems common to more than 1, in 349
- Centralized control, in 109

Keywords: VRV, MULTI-SPLIT, EXTERNAL UNIT, AIR CONDITIONNING

347 - SINGLE SPLIT AC SETS

To coordinate single split AC sets grouped in some logical way, normally localisation. Each system:

Includes:

- Group of equipments including:
- External unit and internal unit
- Pipping and drainage
- Instrumentation and dedicated control

Excludes:

- Auxiliary systems common to more than 1 AC system, in 341
- Multi-split systems, in 343

Keywords: SPLIT, AC SET, EXTERNAL UNIT, INTERNAL UNIT, , AIR CONDITIONNING

4 - EQUIPMENT FOR OPERATION

The scope of this major group may be briefly defined as follows: with the physical building or plant duly characterized along major groups 1, 2 and 3 this major group aims at coordinating the equipments and items that enable the plant to perform the desired tasks. It embodies thus the set of systems necessary to coordinate the items that enable the building to perform the function for which it is used. As such it will require to be developed for specific aims and production objectives.

Keywords: OPERATION

41 - Hardware, software and IT equipment

411 - NETWORK EQUIPMENT

To coordinate the computer network with its components installed in the construction infrastructure. Each system:

Includes:

- Equipment and components to make the computer and communications network available, such as: wireless transmitters; switches; hubs, etc.

Excludes:

- UPS and emergency power in system 148 or 412, the latter in data centres
- Cabling and physical infrastructure, in system 152.

Keywords: NETWORK, WIRELESS, SWITCH, HUB, COMPUTER

412 - DATA CENTRES AND SERVERS

System to coordinate data centre equipments and respective servers.

Includes:

- Servers and computers in data centres
- Storage and data security equipments
- Cabling and network accessories
- UPS specific of data centre

Excludes:

- General purpose UPS, in system 148
- HVAC of data centre in appropriate system of major group 3.

Keywords: DATA CENTRE, SERVER, STORAGE, UPS

413 - COMPUTERS

To coordinate all computers and related items (display; keyboard). In large organisations may be distributed over sub-systems. Each system:

Includes:

- Personal computers
- Laptops and other portable devices
- Associated hardware (keyboard; monitor; dock station; external discs...)

Excludes:

- Equipment for communication and data transmission, in system 151
- PCs with specific production functions (eg monitoring; process; energy management; running, to be included in respective system
- Printers, in system 414.

Keywords: COMPUTER, PC, PORTABLE, LAPTOP, MONITOR, KEYBOARD, HARDWARE

414 - PRINTING, SCANNING AND DATA COLLECTION

To coordinate equipments such as: printers; photocopiers; scanners; fax; bar and smart code collector and printers, etc.. May be distributed over sub-systems. Each system:

Includes:

- Abovedescribed equipments

Excludes:

- Printing equipment not computer based, in system 443

Keywords: PRINT, PRINTER, SCAN, DATA COLLECTOR, BAR CODE, SMART CODE, FAX, PHOTOCOPY, OFFICE

415 - SOFTWARE

Systems to coordinate software application licences.

Includes:

- Software license
- Software maintenance and updating contracts

Keywords: SOFTWARE, LICENCE, MAINTENANCE CONTRACT, UPDATE

42 - Building service equipment

425 - MAINTENANCE AND CLEANING EQUIPMENT

To coordinate the equipment and tools for maintenance and cleaning. Each system:

Includes:

- Manual, powered and machine tools
- Workshop fittings and equipments
- Cleanning equipment
- Suspensions for window cleanning complete
- Garden tools and machines

Excludes:

- Equipments and fittings covered by other systems, such as the folowing:
- Divisions used as maintenance or cleaning workshops, in 293 or 294
- Forklifts and other handling equipment in 462

Keywords: MAINTENANCE, WORKSHOP, TOOL, CLEANING, SUSPENSION, GARDEN, MECHANICAL SWEEPER

44 - Operation equipment

443 - AUDIOVISUAL AND DIDATIC EQUIPMENT

To coordinate audio, video, projection equipment and other didatic aids typically present in schools, conference rooms and the like. Each system:

Includes:

- Abovedescribed items which include equipments such as:
- Video projector, screen, etc.
- Headphone system (simultaneous translation, ...)

Excludes:

- Music and ambient sound system, in 153
- Domestic vídeo and sound systems, in 441.

Keywords: VIDEO PROJECTOR, DIDATIC, AUDIOVISUAL