

# **SeaFM Facility Management Project. Integrated Management Methodology for the Property and Facility of Companies**

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*Abstract: Computer aided facilities management system is an information system integrating multi-disciplinary activities within the built environment and the management of their impact upon people and the workplace. Present paper contains the methodology of building an intelligent system that optimizes people, process, assets and the work environment to support delivery of the organisation's business objectives.*

*Keywords: computer aided facility management, intelligent information system*

## **1 Introduction**

In business, facility management (FM) is an effective management of buildings and services. FM, combining resources and activities, is vital to the success of any organization. At a corporate level, it contributes to the delivery of strategic and operational objectives. On a day-to day level, effective FM provides a safe and efficient working environment, which is essential to the performance of any business – whatever its size and scope.

The International Facility Management Association (IFMA) defines facility management as the practice of coordinating the physical workplace with the people and work of the organization. [1] Within this fast growing professional discipline, FM has extensive responsibilities for providing, maintaining and

developing a lot of services. These range from property strategy, space management and collaborative interaction among maintenance, administration and document management.

The object of SeaFM Facility Management Project is design and implementation of an integrated computer aided facility management system (CAFM) for the property and facility of companies. The project is supported by Hungarian Baross Gabor Grant and realizing by consortium of SeaCon Europe Ltd, Budapest Polytechnic, and BakonySoft Ltd. The first phase of the project is the elaboration of the main system features and methodology of intelligent FM solutions.

## 2 System Modeling of Information Systems

The modeling of complex systems requires a system modeling approach. The modeling of the real world has two ways, one of them is a physical model, and the second one is a system model for computer aided realization.

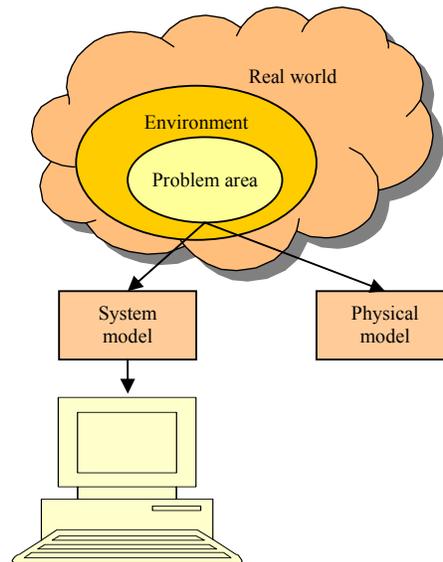


Figure 1  
Modeling of real world

The first step of modeling is the choosing of problem area in the real world. Each problem area has an own environment that will be realized as the interface of this model to users or to the other models collaborating with actual model.

The second step of model's building is the choosing of the type. The most prevalent is the hierarchical model but in several cases the matrix model is frequent, too.

The next is the determination of entities, objects, features and functions of objects, furthermore the processes executable for the goals of system. Several entities can have different goals. The functionality of a CAFM depends on the role of user in the field of facility management, there are:

- Owner
- Landlord
- Tenant
- Surveyor
- Service
- Municipal, etc.

An optimal application of CAFM can support all of these entities through modular structure and matrix access system.

### **3 System Design for Facility Management**

A CAFM maintains a computer database of information about an organization's properties and equipment to plan, provide and manage the most efficient, humane and productive work environment possible. CAFM is an important link in the integration of telecommunication, information management systems, maintenance, security and general administrative services.

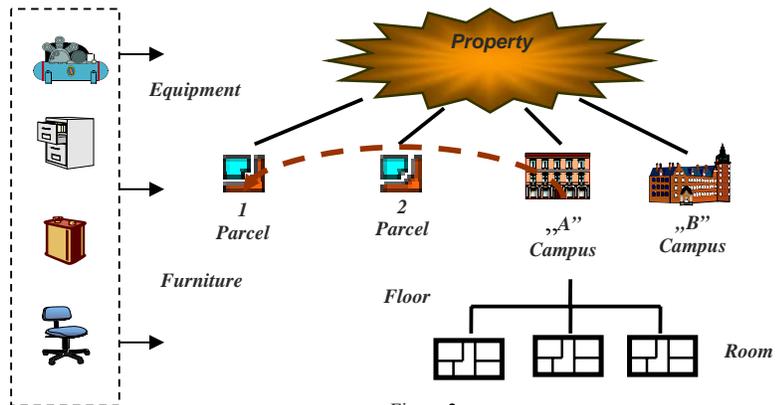


Figure 2  
Properties hierarchy

Typically, CAFM systems track and maintain the next basic dates:

- Property information
  - o Company seats, parcels, campuses
  - o Buildings, floors, rooms
  - o Space characteristics and usage
  - o Workplace assets (furniture and equipment)
- Public and private utilities
  - o Power, water, gas
  - o Heating and cooling system
  - o IT and telecom network
  - o Fireplugs and hydrant system
  - o Elevators
  - o Parking places, park and plants
- Business continuity and safety information
  - o Employee and occupancy data
  - o Access privacy
- Documentation
  - o Contracts
  - o Plans, technical documents

- Correspondence
- Work orders, bills and requests
- Warranty and insurance documents
- Regulations, workflows

CAFM deals with some or all of the following functionalities:

#### *Management Information System*

The main point of the Management Information System (MIS) is the building of long-range and annual strategy, budget, planning, and financial forecasting of property management. MIS can enforce adherence to redundancy requirements and design guidelines to ensure availability and business continuity and ensure compliance with standard or regulated processes.

CAFM can produce status reports and documents giving details or summaries of properties management activities. The knowledge extracted from CAFM can solve in MIS for the implementation of an intelligent Decision Support System (DSS). DSS is a knowledge-based, and interactive computer system that helps decision makers utilize data and models to solve unstructured problems [2].

MIS can contain a workflow module which enables administrators and analysts to define process and activities, analyze and simulate them, and assign them to people. Workflow system is defined as an event-based module of an information system that help organizations to specify, execute, monitor, and coordinate the flow of work cases within a distributed system environment. Workflows are realized on business process modeling. The workflow system contains two components, the first one is the modeling component, and the second one is the workflow execution component which assists or performs the coordination of processes and activities in each modules of the information system.

#### *Assessment*

Recording data about property, company seats, parcels, buildings, constructions, furniture and equipment including ownership dates, specifications, warranty information, service contracts, spare parts, purchase date, expected lifetime, and anything else that might be of help to management or maintenance workers.

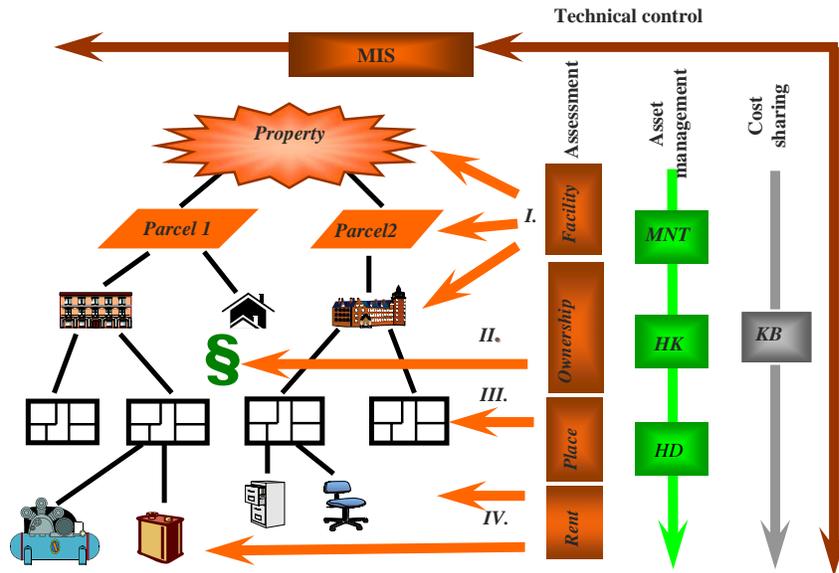


Figure 3  
Modules of CAFM

### *Asset Management*

CAFM can enable effective property management, infrastructure capacity planning, space management, and relocation planning.

Keeping track preventive maintenance (PM) of inspections and jobs, including step-by-step instructions or check-lists, purchasing, work orders, contracts, requests and other pertinent details. Typically, the CAFM schedules PM jobs automatically based on schedules and/or meter readings.

Management of spare parts, tools, and other materials including the reservation of materials for particular jobs, recording where materials are stored, determining when more materials should be purchased, tracking shipment receipts, and taking inventory.

Improve impact analysis, minimize errors and reduce staff requirements associated with changes. Provide alerts for key performance indicators (KPIs) and threshold conditions, reduce mean-time-to-repair (MTTR) for outages.

### *Cost Management*

Cost management (CM) is the process whereby companies use cost accounting to report or control the various costs of doing business with purpose of the

continuous reduction of costs. Variable costs are in the field of FM, for example, running costs as power, water, heating costs, regular and preventive maintenance costs as cleaning, servicing costs, unexpected costs according to repair.

The cost sharing function is an important approach in hierarchical or matrix organization models. The accurate measure of service's cost may include not only the direct costs, but also an appropriate share of indirect costs shared over many companies, such as space, utilities, maintenance, licenses, staff costs, and so on. CAFM can apply the invoices through ERP system.

#### 4 Special Demand of Higher Education

After the integration process in year 2000 the Hungarian Colleges and Universities executed considerable investments. The efficient decreasing of operating and maintenance costs can motivate the implementation of CAFM.

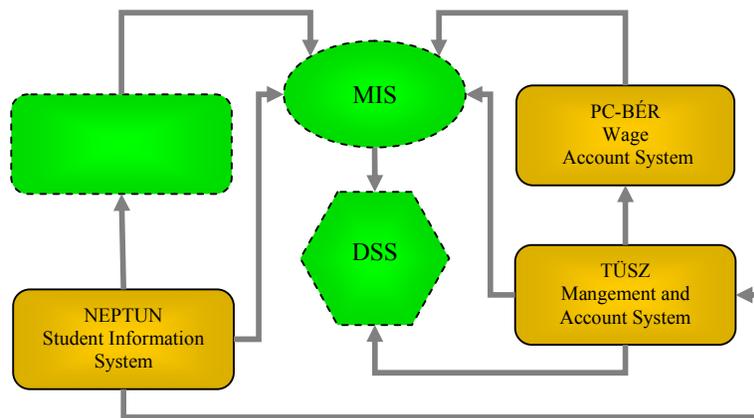


Figure 4  
Implementation of SeaFM program in the IT structure of Higher Education

The integrated Colleges and Universities have frequently a matrix structure, because several departments and faculties are working in distributed campuses.

The institutions of higher education already implemented a Student Information System, a Management and Account System, and a Wage Account System, but these organizations are interested on the efficiency space management, reduction of costs, and decreasing of MTTR. Integrated implementation of a Facility Management System can effectively cover the special demand of higher education.

Function.	Entities			
	Rector's Office	Faculty	Department	...
Campus/seat management	■	■	■	
Parcel and building management	■	■	■	
Space management	■	■	■	
Equipment management	■	■	■	
...				
Contract management	■	■	■	
Invoice management	■	■	■	
Cost's sharing	■	■	■	
Budget and planning	■	■	■	
...				

Figure 5  
Responsibility system for institutions of higher education

### Conclusions

Successful organisations in future will approach FM as an integral part of their strategic plan. Those organisations that deem FM trivial now will be at a significant strategic disadvantage in the future.

In the first phase of the SeaFM project the functionalities were created and the structure of Facility Management System was designed. The second phase will be focused on the development of the system, and a prototype model for the institutions of Higher Education.

### References

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- [2] Turban, E.: Decision support and expert systems: management support systems. Englewood Cliffs, N. J., Prentice Hall, 1995