A ROI Model for the Implementation of CAFM (Computer Aided Facility Management) Systems

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1. FM and CAFM

1.1 Definitions

CAFM (Computer Aided Facility Management) is IT support for FM (Facility Management) and CRE (Corporate Real Estate) processes. The CAFM methodologies are basically similar to ERP (Enterprise Resource Planning), which represents IT support for core business processes.

CAFM Software is typically (but not necessarily) a set of standard off the shelf programs, which are customizable according to the specific needs of a customer’s FM and CRE processes. CAFM systems consist of a combination of CAFM programs and a related database with building oriented data.

1.2 Typical CAFM Business Cases

Since the productive implementation of CAFM systems could not easily be related to simple key figures one has to find a more strategic approach to decide whether or not a CAFM implementation makes sense. Typical business cases in this regard could be:

- building operation costs exceed a certain percentage of construction costs (e.g. airports, shopping malls, . . .)
- large number of buildings, properties to operate and administer (e.g. federal agencies, retail, financial institutes, . . .)
- specific safety requirements exist (e.g. military, nuclear power plants, . . .)
1.3 CAFM as a Powerful Tool for FM

In some cases, CAFM is viewed as a toy for IT and/or CAD specialists which produces colorful drawings for management presentations.

But the real purpose of CAFM is to be a powerful tool (or set of tools) for facility management professionals.

2. Prerequisites for the Implementation and Operation of CAFM Systems

2.1 Costs

The costs for implementation and operation of a CAFM system depend on overall strategy, specific requirements and usage. In some cases, the expenditures during the selection process exceed the implementation costs due to the involvement of external consultancy. The costs for data collection and maintenance are as often underestimated as they are overestimated. The overall question to be answered is: What level of detail of data do I really need and how will I be able to maintain it long term?

In many cases the following rule applies: less is more. Another aspect of cost estimation of a CAFM project is the breakdown of the different cost categories. For an average CAFM implementation this breakdown is

1/3 CAFM standard software  
1/3 Customization, consultancy  
1/3 data collection, integration, quality assurance

2.2 Operational Aspects

In most cases, FM departments run their own CAFM systems, but IT outsourcing or application hosting and full service ASP (application software providing) including data maintenance are alternatives.

2.3 Implementation Models

Most of the successful CAFM implementations started with a rapid prototyping implementation scheme for 1-2 application areas (e.g. area management, risk management) within 2-3 months and overall prototyping costs of less than $ 50 K. After the prototype has reached certain milestones and with minor additional adjustments the CAFM system could be rolled out in several stages.

But „Big Bang“ implementations with the replacement of legacy systems and older CAD based FM systems at the same point in time turned out to be successful as well on a much higher risk level.

2.4 System Integration Standards

In many cases, CAFM systems have to be integrated into an existing IT environment and into already installed building automation systems. Therefore, it is essential that a standard off the shelf CAFM software is based on widely used industry standards such as an ORACLE or MS SQL database, a Windows operating system, an ERP system like SAP R/3, AutoCAD as a source for digital drawings and a www browser for easy access and low operation costs.

CAFM literature only offers academic models to determine the business contribution of CAFM systems. They are not very practical for a facility manager. Simpler models, which are often advertised by CAFM vendors are not accepted by senior / financial management. In any case, some rules apply:

- Differentiation between internal and external costs
- Only costs, earnings and capital employed which are building / property related have to be estimated
- Do not just focus on savings, but also on quality improvement, time to deliver, risk minimization, tenant (customer) satisfaction, overall business contribution.

Little or no empiric data are available at this point in time. Some studies and surveys are underway.

4. A Model to Determine the ROI of CAFM

4.1 ROI Definition

\[
\text{ROI} = \frac{\text{Return}}{\text{Investment}} = \frac{(\text{Earnings} - \text{Cost})}{(\text{Capital Employed})}
\]

- Only earnings, costs, and capital employed associated with real estate are considered
- ROI model to be applied for tenants, owners, operators
4.2 ROI Drivers for FM

1. Preventive Maintenance
2. Cleaning
3. Exploitation Level
4. Vacant Space
5. CI (Corporate Identity) contribution
6. Standardization
7. Transparency
8. Move Management
9. Integration (IT, Organizational Units, . . .)
10. Service / Help Desk
11. Security Management (Keys)
12. Contract / Warranty Management
13. Procurement and Outsourcing
14. Operating Costs Allocation
15. Sales / Rental Support
16. Energy and Environmental Management
4.3 The ROI Driver Diagram

Definition:
Impact of ROI driver on:
A: real estate earnings
B: real estate costs
C: real estate assets

Increase in ROI
Factor 3 of EVA

EVA: Economic value added
average: Factor 1
EVA = 0

3-5 years
Decrease in ROI
slow

12 months
speed / pace

1 month
fast

Potential:
low
medium
high
ROI Drivers

Legend:
1. Preventive Maintenance
2. Cleaning
3. Exploitation Degree
4. Vacant Space
5. CI (Corporate Identity) Contribution
6. Standardization
7. Transparency
8. Move Management
9. Integration
10. Service / Help Desk
11. Security Management (Keys)
12. Contract / Warranty Management
13. Procurement and Outsourcing
14. Operating Costs Allocation
15. Sales / Rental Support
16. Energy and Environmental Management

Definition:
Impact of ROI driver on:
A: real estate earnings
B: real estate costs
C: real estate assets
ROI Drivers
classified by fast / high ROI

Definition:
Impact of ROI driver on:
A: real estate earnings
B: real estate costs
C: real estate assets

Legend:
4. Vacant Space
7. Transparency
15. Sales / Rental Support
10. Service / Help Desk
2. Cleaning
3. Exploitation Degree
12. Contract / Warranty Management
1. Preventive Maintenance
8. Move Management
11. Security Management (Keys)
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13. Procurement and Outsourcing
16. Energy and Environmental Management
9. Integration
14. Operating Costs Allocation
5. CI (Corporate Identity) Contribution

Increase in ROI

Decrease in ROI
4.4 Some Practical Examples

Driver 7: Cost Transparency

Roche Diagnostics of Switzerland justified more than 100% of the CAFM implementation costs during the prototyping phase by avoiding the installation of additional office cubicles.

Driver 8: Move Management

The European Central Bank decreased the average number of idle days for internal moves by 1 within 6 months which saved 600 mandays or an equivalent of $300K.

Driver 3: Exploitation Level

The German City of Luenen managed the exploitation of public elementary schools within 1 year in such a way that they sold one downtown school building property, which generated earnings of $3M.

Driver 12: Warranty Management

METRO, Europe's largest retailer, drove down the maintenance costs of their headquarters' property by 12% within one year. Cost savings exceeded $1M.

Driver 15: Sales Support

The property manager of the Neue Kranzler Eck Berlin (upscale offices and shops) rented all of his space 1 year earlier than any neighbourhoud buildings, which lead to significant cost savings.