MULTIMAP AS A METHOD FOR STRATEGIC PLANNING – TOOL AND PRACTICAL RESULTS AND EXPERIENCE AS BASE FOR USE IN URBAN AREAS

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ABSTRACT

The objective of the paper is to present results and experience using multiMap method. This ia a tool for mapping performance of building portfolios, such as technical condition of buildings, adaptability, usability etc to as an input to strategic planning. MultiMap was developed in 1997 in cooperation with Oslo Municipality who at that time had a building portfolio of app 4 million m2. The model has so far been used for strategic portfolio analysis of approximately 30 million m2, mostly hospitals and buildings in the municipality sector. In addition, it has also been adapted to cover other types of infrastructure, such as roads and nautical installations along the total coastline of Norway. This paper presents findings real life projects, improvements and practical use of results and possible new areas to be developed.

The methodology used in the model are both qualitative and quantitative research methods. A substantial part of getting information to the model is based on structural collection of data and knowledge already present in the actual organization. This gives quick and cost efficient access to information at required level of accuracy.

The results and experience of the practical use show that the model is generic and can be implemented in other areas than buildings such as strategic development of urban areas. Practical outcome will be a better possibility to see buildings and space / areas between as an integrated facility management puzzle.

The research is important to increase the understanding of value creation for owner's and user's perspective and FM consideration in early design phase of projects.

KEYWORDS: Building portfolios, Property Management, Facilities Management, MultiMap, Strategic analysis

INTRODUCTION

Due to a huge backlog of maintenance in the public sector, a tool for mapping technical condition, MultiMap, was developed in 1997 in cooperation with Oslo Municipality who had a building portfolio of app 4 million m2. Based on results from this estimation on technical value and upgrading cost should be done.

During the past decades increasing focus on how buildings affect the core business effectiveness over time due to changes in organization and changing needs in the core business and then to new requirements of the building, has led to developing of new modules such as adaptability (structural performance), usability (functional performance), site and infrastructure, etc. The buildings, with their physical limitations, are a deciding factor for continuous efficient operation of the core business.

In addition to technical upgrading especially within public sector, there is also changing needs within housing strategies due to demographic development and people needs. This also affect the public sector. In Norway, the population has high speed of increase, in other countries almost opposite. But every country has the same challenge within cities; increasing population, more elderly people, knowledge on city dynamics and demands for FM (Facility Mangement) services and products (Temeljotov, S. A. et al, 2015).

Empty space in buildings in city areas occur more often than before. To change use is in most cases a long bureaucratic voyage due to strict regulations. Space out of use is seen as a problem but should be seen as a resource for new activities. Report "Levende lokaler" ("Living space"), Solberg, O. et al (2016), is a part of Norwegian project on how to create living spaces. Aim of the project is to create living social center areas by development of new tools and methods to activate empty spaces.

Living environment is the totality in our daily life described as the social and physical framework. During our life's social needs are changing. It is about safety, security, activity, rest etc Good indoor environment is not enough in itself, but outdoor in streets, parks, shops, cafes, schools, places for work, medical treatment and activities are all a part of the total environment. In the urban area there are three main interaction groups; people, activities and transportation in between. The groups can be divided further into subgroups as shown in figure 1.

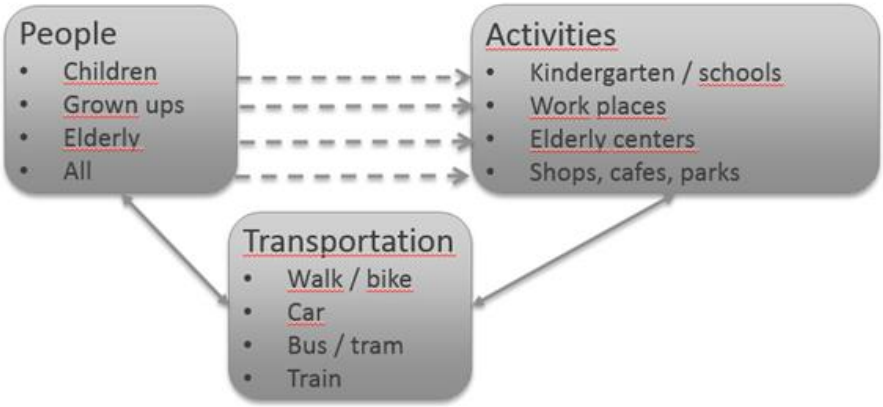

Figure 1: Interaction groups and sup-groups (Ref.: S. Bjørberg, Multiconsult)

By strategic level of FM it is possible to collect, organize, visualize and communicate data as means for strategic planning and budgeting (Bjørberg at all, 2012). Real estate and FM orientation should be more focused in user's needs and value creation perspective. User's value approach has to take into consideration the multi-directional character of urban environment, including socio-psychological characteristics of different group of population (Temeljotov, S. A. et al, 2016).

To achieve a good sustainability FM strategy for an urban area it could be comparable or similar with strategy development plan for a portfolio of buildings such as campuses for hospitals and universities. A starting point will be to analyse state of art in the area. Lot of data has to be collected and structured. The next step will be to communicate the results in an understandable way.

The state of art in itself is not enough to make strategy for development, it is also necessary to make scenarios for the future. Strategy is an interaction between todays situation and tomorrow needs. This is similar to research design, CIB W096 (2015).

Strategic FM must collect, organize, visualize and communicate data as means for strategic planning and budgeting (Bjørberg at al, 2012). User's approach has to take into consideration the multi-directional character of urban environment, including socio-psychological characteristics of different group of population. By sustainable oriented FM it is possible to establish a positive balance between immigration and migration of an individual, which allows gaining the social capital and estate capital, as called (Musterd, Goetluk, 2005) 'the situation of dynamic balance'.

APPROACH

There are a lot of different methods and tools for assessing performance in buildings. All of them have different advantages, but in this case we need a generic method such as MultiMap (Bjørberg et al, 2012) due to the purpose assessing building portfolios combined with other aspect. MultiMap as a method is based on a holistic approach shown in figure 2 to assess the GAP between today status of performance and future needs or demands.

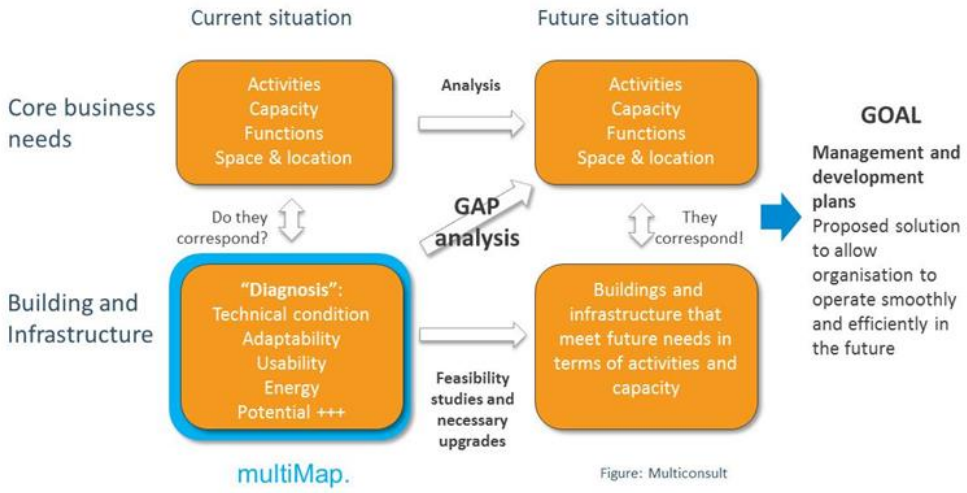

Figure 2: Holistic Analysis Model for strategic development of building portfolios (Larssen, K.A. (2011).

Basic modules for mapping different performance aspects has been tested, from the start in 1997 and up to 2015, resulting in an extensive amount of empirical data. Totally, approximately 35 million m2 gross areas of buildings are included. Since the method is generic it has also been applied mapping situations for all municipality and county owned roads in Norway and all the nautical installations along coastline of Norway.

Structure of data is based on the Norwegian Standards classification system (Norwegian Standards, NS, with elements such as NS 3424 "Condition Assessment of Construction Works" (1995), NS 3451 "Table of Building Elements" (2009), NS 3454 "Life Cycle Costs for Building and Civil Engineering Work" (2000) and NS 3457 "Table for Building categories" (1995). NS 3424, "Condition Assessment of Construction Works", is the most central. It uses condition grading between 0 and 3. Condition grade 0 is equivalent to the best grade (new building), and condition grade 3 corresponds to the lowest rating. Table 1 gives a general description of the condition grades in the standard.

Condition grade	Description
0	No symptoms
1	Slight symptoms
2	Medium-strong sympt.
3	Strong symptoms

Table 1: Condition grades due to Norwegian Standard NS 3424

Today MultiMap consists of several modules, which totally give information of a building or portfolio of buildings regarding the potential for future use, see figure 3.

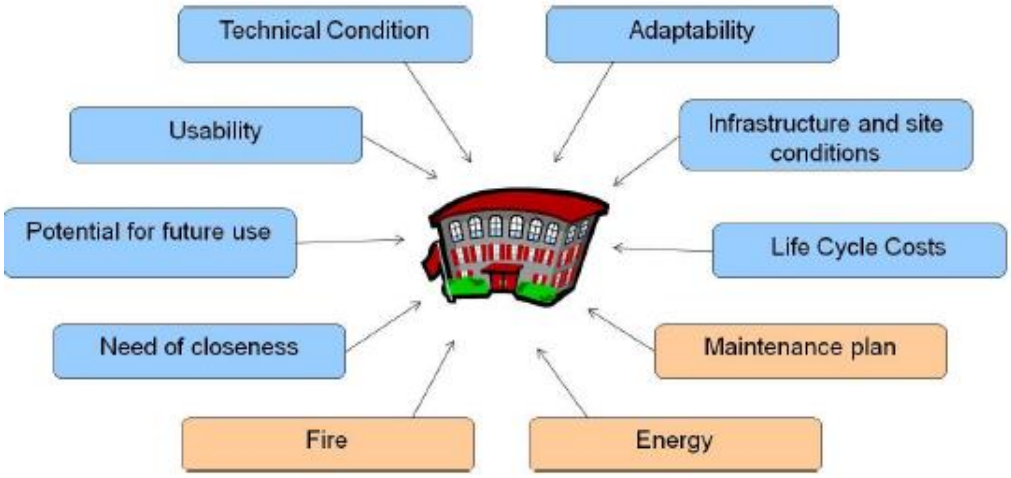

Figure 3: Different modules in MultiMap (Ref.: Multiconsult)

Information that is collected are based on "Constructive research" (Kasanen et. al, 1993, Lukka, 2003). This is a proto develop innovative "constructions" (in this context an abstract term describing what is going to be "constructed) solving a concrete problem. Central elements are:

- Focus on "real-life" problems which is relevant to solve

- Production of innovative construction which meant to solve the problem
- Includes attempt to implement the new construction to test the practical approach
- Close involvement and cooperation between researcher and practice as a team
- Explicit contact to theoretical knowledge

An adapted version for of use in urban areas shall be developed (figure 4).

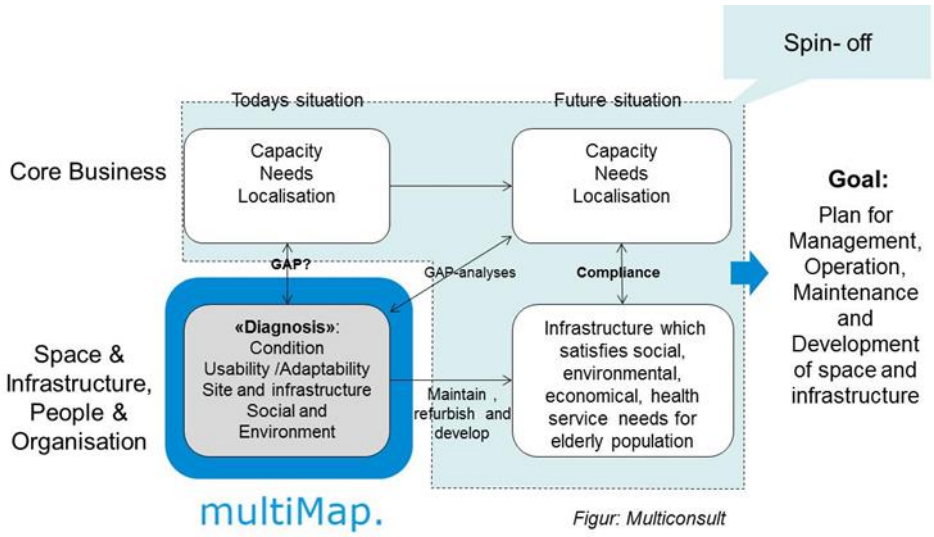

Figure 4: Model for developing city areas.

FINDINGS

The assessment method is based on two main approaches; 1) data input provided by FM-personnel with good knowledge of the actual building portfolio (space and infrastructure) with some assistance from persons with knowledge about core business of the portfolio (people and organization), 2) assessments of interviews of users of the portfolio (social and environmental aspects including economy), where social and environmental aspects are implemented.

These aspects, as two of the legs in Sustainability, are essential regarding well-being for individuals. By using multiMap as a tool all necessary information will be the base for spinoff to create analysis for future situation.

Collecting information for building portfolio gives a lot of data and for communication purpose of all data it is found that Onuma Planning System provides possibility for visualizing in 3D pictures (figure 5).

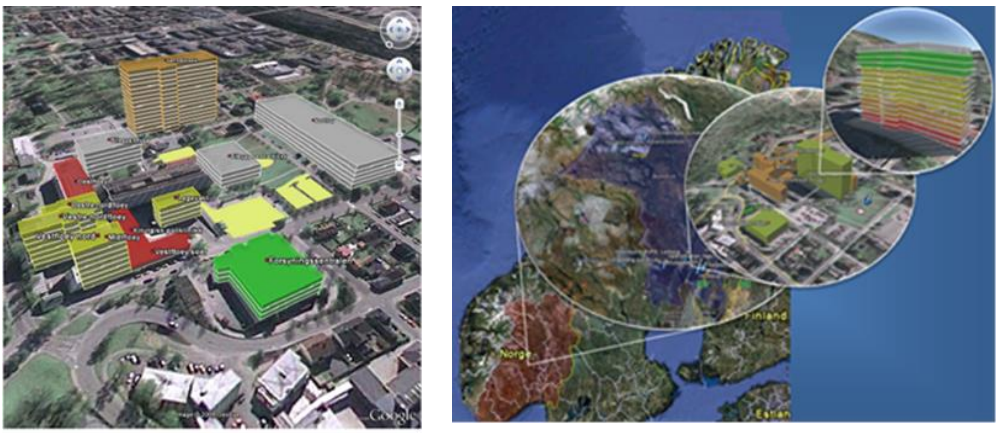

Figure 5: Presentation of data using Google Earth and Onuma Planning Stystem (illustrated by Multiconsult)

There is a need for extend amount of modules in MultiMap with two new modules; 1) Urban areas (space between the buildings) based on sustainability and 2) Knowledge maturity model to assess necessary knowledge in FM companies to organize and handle services needed for both buildings and urban areas.

In the same way as for building types, urban areas should be subdivided into "urban types", which can be parks, places and streets. For these types the sustainability elements (social, environmental, economy) supplied with technical assessment can be done. The assessment should be classified in four grades as all the other modules.

The FM maturity module should be divided into knowledge areas. Jozsef Czerny, who is a Hungarian FM expert, and the chairman of the FM Hungarian society (FM-world, 2010), use 7 elements with is subdivided into elements which are to be assessed. This kind of assessment can be utilized to Facility managers' improvement of knowledge, and Benchmarking processes in FM organizations (Larssen, 2011), but there is a need for to clarify the questions, Sallah, K. (2016). When doing the assessment grading, comparison with a competence demand profile, can visualize the gap of missing competence. Competence profiles for different FM organizations has to be developed. In same way as for the other modules, the assessment should be classified in four grades.

CONCLUSIONS

There is an increasing interest on urban upgradingto a higher level of integrated use, into sustainable urbanism. To obtain this, model and tool for assessing state of art is needed. MultiMap as a generic method and tool, is found to be useful supplied with new modules. Interaction between different users and owners of buildings and space between, new models for cooperation is needed. An cooperating FM organization model, shown as an example in figure 6, has to be developed. This will lead to a toatally better economy combining traditional silo economies together into an ontegrated one.

To run such a FM organization extended FM knowledge is also needed. The Hungarien Maturity Model has been tested and found good as a base for an new module in MultiMap, but some adjustments are needed.

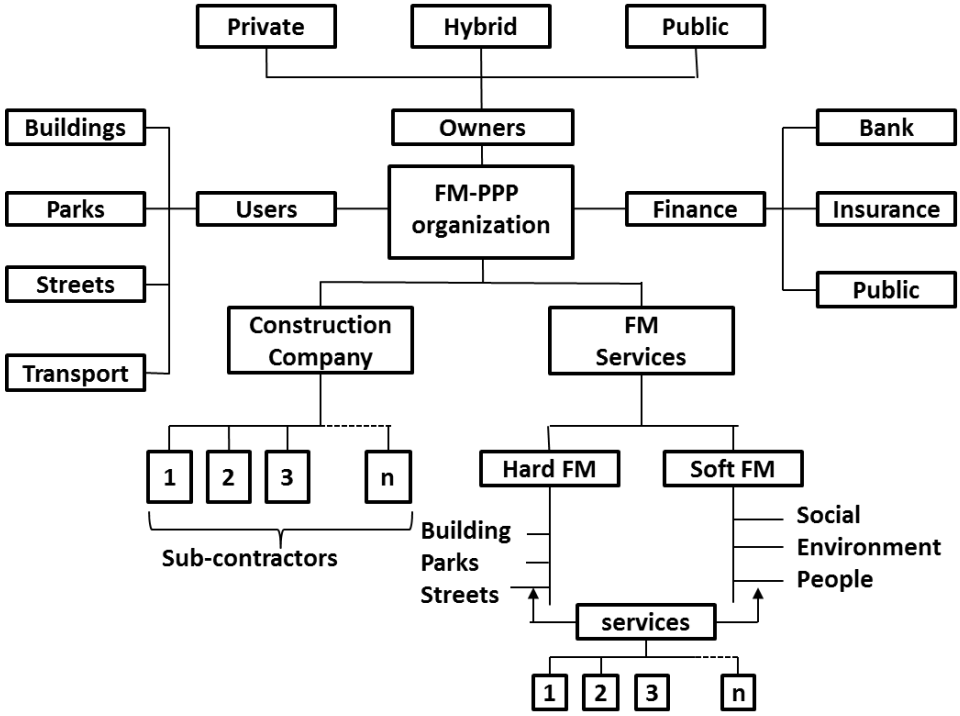

Figure 6: Example on urban FM-ppp-organization and complexity (Ref.; S. Bjørberg, Multiconsult)

Literature:

Bjørberg. S.,et al, C. (2012) *Multimap – a Tool for Strategic Analysis of Bulding Portfolios.* IALCCE Vienna.

Bjørberg, S. and Temeljotov S.A., (2012) *Backlog of maintenance in public sector a huge challenge for FM.* International Congress for facility management: November 29th - 30th, 2012, Vienna, Austria, (Journal für Facility Management, Heft 5 / 2012). Vienna: University of Technology, 2012, pp. 8-22.

Giddings, B. et al (2015) *Reseach Roadmap Design*. CIB Working Commission W096 Architectural Design and Management

Goetgeluk, R., Musterd, S. (2005). Residential mobility and urban change. Editorial. Open House International, 30 (3), 5-9.

Kasanen et. al, (1993), Lukka, (2003) *Constructive research* Designs, Described in "Methods and Practices for Research of Project management" p 98.(2015) Cower Applied Business Research

Larssen, K.A. (2011*). Bygg og eiendoms betydning for effektiv sykehusdrift*. Part of phd

Listerud et al, (2012). *MultiMap- a Tool for Strategic Analysis of Building Portfolios.* IALCC Wien 2012

Sallah, K. (2016). *Mapping of Facility Management maturity profiles in Norwegian Universities and University Colleges*. Bachelor thesis, Oslo and Akershus College University for Applied Science

Solberg, O. et al. (2016). *Levende lokaler (Living space – knowledge report on how to use of empty space can create life in center areas*), Norsk Design- og Arkitektursenter

Temeljotov, S. A. et al, (2015) *Increasing attractiveness by LCC Facility Management Orientation*. IFAC-papersOnLine 48-3 (2015) 149-154

Temeljotov, S.A., Rus, V.S. (2004) Odnos do nepremicnin kot dejavnik skupinske kulture in učinkovitosti. Anthropos, 2004, 36(1/4), pp. 159-166.

Temeljotov S.A. (2005). *The synergetic effect of the observer on the built environment.* Urbani izziv, 16(2), pp. 48-54, 163-167.