

Increasing attractiveness by LCC facility management orientation

Temeljotov S.A.* Bjoerberg S.**
Boge K.*** Larssen A.K.****

*European Faculty of Law, Nova Gorica, Slovenia
(Tel: 386-40-153-354; e-mail: alenka.temeljotov-salaj@evro-pf.si).
**Norwegian University of Science and Technology, Trondheim,
Norway (e-mail: svein.bjoerberg@multiconsult.no)
***Oslo and Akershus University College of Applied Sciences,
Oslo, Norway (e-mail: knut.boge@hioa.no)
**** Multiconsult, Oslo, Norway,
(e-mail: anne.kathrine.larssen@multiconsult.no)

Abstract: Better understanding of the city dynamics leads to smart urban growth. The ambition of this paper is to expose the facility management role toward society needs and industry development. Hand in hand society (people and organization) and building (space and infrastructure) have to develop together in a way to create better value for users. With industry, we are addressing in the paper above all companies from the fields of real estate, facility management and ICT.

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1. INTRODUCTION

The real estate situation in several European countries globally exposes the need for changing the housing strategies in accordance with the housing market's volatility and peoples' needs. Better understanding of migration and logistics flows, related to city dynamics and associated risks to enable good facility management and forecasting of supply and demand for service and products in cities, have to be key element of housing strategies.

The inhabitants' need for housing, facility management, social services, health services, etc., changes during the lifetime. For inhabitant's independent living, housing and services are important prerequisites during their entire life. The demands for residential places differ on social and individual characteristics (Fig. 1), including the different age groups (Bjørberg and Temeljotov 2012).

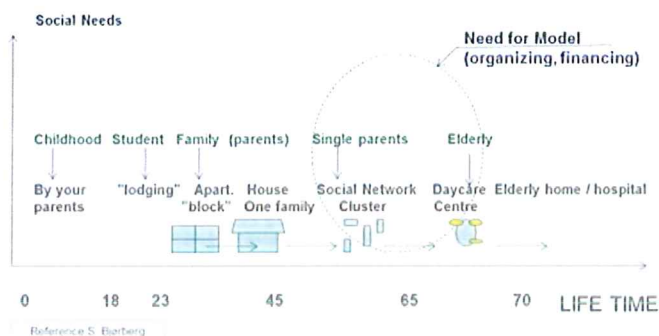


Fig. 1. Life Time Social needs.

The aging population; i.e. increasing numbers of ageing inhabitants within the community, may slow the process of estate renovation, or for a certain period even stop it what can initiate the process of estate degradation (Ursic, 2005). The continuous delaying of renovation can result in the estate losing not only economic capital but also social capital, embodied in population groups with higher education, their vitality and energetic town-like lifestyle (ibid). The backlog of maintenance and consequentially bad physical conditions of built environment can affect social and environmental condition for the core business both for real estate companies with properties as well for other companies located in areas that lose their vitality. Urban planning should be sustained also in the context of an ageing society, since it plays an important role in enabling for older people to remain active members of society (Kerbler 2011).

Ageing communities and empty residential places force us to understand the logistics flows related to city dynamics in a way to answer on it by enabling better facility management and forecasting of supply and demand for services and products in cities.

1.1 Value perspective

Spatial behaviour and real estate market changes are linked to the concepts of values from different perspectives, which are mutually tightly intertwined. According to Rokeach (1960) value is a sustainable belief, specific form of behaviour or finite state of existence, which is individually or socially more desired behavioural form from the opposite form of behaviour or finite existence. The value system is a relatively robust organization and structure of beliefs that pertain to the more desirable individual and social forms of behaviour and

finite states of existence in the continuum of relative significance (ibid). From psychological perspective we can stress the definition that ‘every environment surrounding ‘humanity’ has certain features, characteristics that need special attention, simply because they are very important for humans, their life, survival, living, leisure and work’ (Temeljotov 2005). All of these ‘directed’ attentions of the inhabitant can be evaluated, both in the sense of satisfying their personal needs, as well as economic indicators.

Environmental studies deal with interaction of the individual with the physical environment and particular features of it. The subject is the mutually dependent relationship or environmental effect of the environment on the individual and vice versa. Coming out from the classic theorists (Rivlin and Weinstein 1984, Rus 1997, Piaget 1965, Allport 1954) the interactive process could be described by the process of assimilation and accommodation, where the socialization is the social implication of interaction between the individual and the physical environment. The concept of identity in psychology has largely been related to social relationships, and can be represented as relationships that have three properties: cognitive, emotional or evaluative and readiness for action (Rus, 1997). The property market is a situation, which more than any other emphasizes the instrumental aspect of satisfying needs and action-based orientations to the property goal, which includes also motivation (Rus, 1997).

Value can be attributed to property at any given moment of its lifecycle: planning, initiation, growth, renewal, decay and demise. The geographical location and position of property in the urban or non-urban area defines the primary vision of use. From the moment when a property, with its traffic directions, infrastructural arrangements and setting, is positioned as the leading element in the mental process cycle within the civilizational map, begins the process of planning, which ends upon completion. Planning and development are important elements of this process, similarly as the past, present and future development of the entire micro- and macro-environment.

1.2 Facility Management

The common European definition of Facility Management is “Integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities” (EN15221-1: 2006 Facility Management – Part 1: Terms and definitions). An alternative perspective on Facility Management is IFMA’s so-called 3P’s; integration of places, people and processes. The European standard EN15221 includes IFMA’s 3P’s two headings, namely space and infrastructure and people and organization. The heading “space and infrastructure” includes among others accommodation, workplace, technical infrastructure and services that provide a comfortable climate, necessary lighting, etc., cleaning, and finally other necessary space and infrastructure. The heading “people and organization” includes among others health, safety and security; hospitality; ICT; logistics; and other support services.

By strategic level of FM it is possible to collect, organize, visualize and communicate data as means for strategic planning and budgeting (Bjørberg, Larssen and Listerud 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. 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 (Goetluk and Musterd 2005) ‘the situation of dynamic balance’.

In a lot of researches the changes of value perspectives in FM through the years were compared (Jensen et al. 2014). In the findings they state a number of different definitions and focus points on added value of FM, dependent on the academic field and the area of application. The different research perspectives provide, in combination, a holistic view by integration of an external market based view (aimed at output) and the internal resource based view (input from FM and RE). Jensen et al. (2014) put a list of emphasis for added value of FM, including at the beginning the focus on strategic aspect of FM towards the business impacts and effects.

However, one of the challenges in FM is to change the focus from ‘FM 1.0 (Cost Reductions) to FM 2.0 (Value Creation)’ (Boge 2012). A change from FM as a mean for cost reductions to FM as mean for value creation may necessitate increased outsourcing of FM, because outsourcing of FM may facility innovation and increased value creation. But organizations that outsource FM may also face serious obstacles to value creation, such as adverse selection and moral hazard problems (Boge 2012).

Coenen, Alexander and Kok (2013) listed different multiple dimensions of FM value, based on literature research findings: exchange value, use value, environmental value, relationship value and financial value. For them the key stakeholders are seen as an integrated economic system to co-create value in FM. Jensen et al. (2014) indicated that the success of a collaborative relationship leads to the success of value delivering to the stakeholders. From the concept of ‘Value Adding Management’, which focuses on the relationships between FM and the core business at strategic, tactical and operational levels they argued that the relationships with the stakeholders should be managed differently at each level.

As we wrote earlier, value system is a relatively robust organization and structure of beliefs that pertain to the more desirable individual and social forms of behaviour, which we can measure in both the sense of satisfying personal needs and economic indicators, and which could be changed in the future. Based on individual needs and quality of the built environment the state in the urbanisation area can be reported as attractor and/or sticker for an individual or groups.

2. RESEARCH

The supply of housing units on the market can be categorized on the way of categorization according to extended care dependency scale, facility management excellence and availability of logistic services. A tool for strategic urban portfolio analysis could facilitate visualization of various age cohorts in defined housing markets and attract the potential buyers of property and investors in the analysed housing area. Such information system can increase or decrease attractiveness and stickiness of these areas according to the age groups and/or functional capacity of potential residents.

This tool could facilitate mapping, planning and visualization of availability and needs of various age cohorts in an analysed geographical area. Facility management, facility services, health services, social services, etc. could be better managed and reported by analysis of particular geographical areas. Service innovation and service design are two approaches for further development of Facility Management and Facility Services to maintain the citizens’ wellbeing and independent living. The results could serve as a starting point for development of new tools and methods for development and visualisation of improved Facility Management and new facility services tailored to the inhabitants’ needs.

The research is divided in different phases to follow the long life perspective of keeping value, adaptable for future needs in social and individual way. With a good interactive decision tool, we also want to get long life cycle building/ neighbourhood oriented competent players.

2.1 Different tools

The Nordic SURE (Sustainable Refurbishment) project, Guideline on Sustainable Refurbishment of Buildings, (Almås et al 2013) investigated different methods and tools to assess buildings and building portfolio. According to the basic principles of the project to develop a method with an indication of building development potential, simply collecting data and user friendly: MultiMap, LCA, BREEAM In-Use, SURE, SIA (Sustainable Impact Assessment) and LCC where evaluated. All of these methods and tools have different advantages. But for the purpose assessing building portfolios MultiMap combined with LCC should be considered.

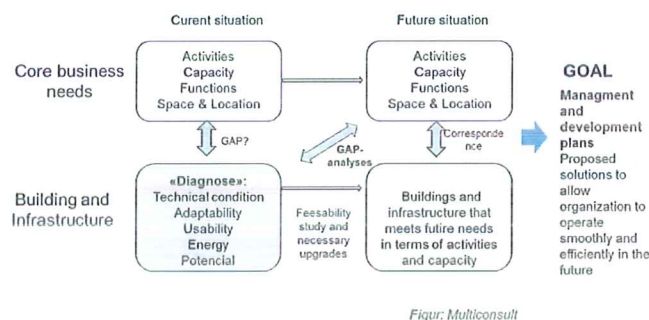


Fig. 2. Holistic Analysis Model for strategic development of building portfolios (Larssen, 2011 p.195).

MultiMap as a method is based on a holistic approach shown in Fig. 2 to assess the GAP between today status of performance and future needs or demands.

An adapted version for the purpose of smart urban growth shall be developed as shown in Fig. 3, where social and environmental aspects are implemented. These aspects, as two of the legs in Sustainability, are essential regarding wellbeing for individuals. By using multiMap as a tool all necessary information will be the base for spinoff to create analysis for future situation.

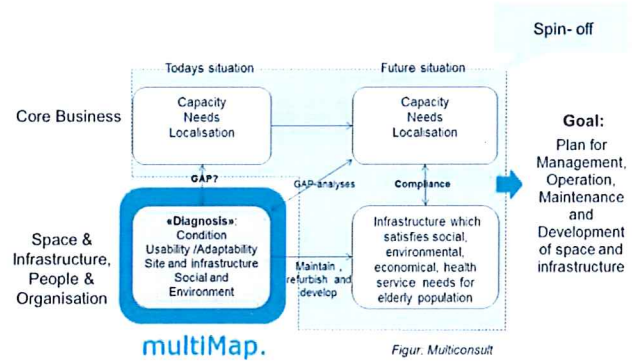


Fig. 3. Model for developing smart urban growth.

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 organisation), 2) assessments of interviews of users of the portfolio (social and environmental aspects including economy). Collecting information for building portfolio gives a lot of data. For communication purpose of all data Onuma Planning System can provides possibility for visualising in 3D pictures (Fig.4).



Fig 4. Presentation of data using Google Earth and Onuma Planning System (illustration by Multiconsult)

Basic costs are rent of space, which is a “cost covering rent” based on annuity of net present costs (NPC) seen in a defined period as shown in Fig. 5. Anticipated costs over this period, such as yearly operating costs like energy, household insurance, cleaning, and public dues, and periodic costs like

preventive maintenance, replacements and minor upgrading, should be taken down to NPC. NPC put back as an annuity will then be the calculated rent as a minimum to meet the anticipated costs.

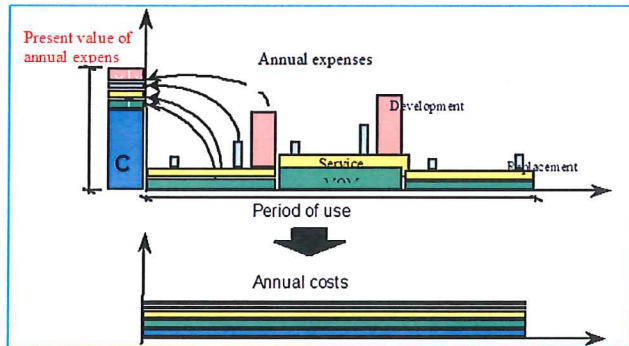


Fig. 5. Cost distribution over time (Listerud et al. 2012).

Needs are changing with ages and real estate and facilities management have to give answers or to find proper solutions, which should be based on new knowledge from the fields and environmental orientation. The economy model should also include increasing different service costs to develop healthy residential community, from physical and social perspective. An extended FM-model should be developed to cover all services from traditional FM and also to include other services for different groups of community population.

2.2 Research project

The newly started research project “OSCAR – Value for User and Owner of Buildings”, with a main intention ‘to develop competences, methods and analysis tools for optimizing building design in a way to contribute to value creation for owner and end-user throughout its life time’, will take smart urban growth as a case.

Through the literature (Jensen et al. 2012, Houvila and Hyarinen 2012, Sarasoja et al. 2012) we found the value elements which assure the increasing of value contribution of FM to attractiveness and stickiness of the built environment from user’s and business perspective. From the user perspective, they are connected with better living condition, like: sustainability, adaptability, reliability, perceived value for benefits, and for business the focus is in the harmonization of the resources and provisions.

Norwegian standard defines good property management as the one to give to users satisfactory and efficient buildings at the lowest possible costs and use of resources, what in fact implies creating the best possible conditions for the core business over time (NOU 22:2004). Accordingly with a white paper (STM 28:2012) this implies creating the best possible usability situation for the core business over time, in addition to meeting the demands of the owners, the property managers and the society. From Oscar project perspective it is added that costs means the integration between investment, MOME (management, operation, maintenance and enhancement) and core business cost. Value creation of RE/FM is understood, as: 1) processes to fulfill sustainability over time 2) processes

to maximize value for owner and user over time, and 3) to increase competences within LC model and the processes to achieve value.

The project takes into consideration a clear connection between the design and operation of the buildings and values for the owners and users. To achieve value creation processes, it is necessary to have competent actors who have good tools for decision and communication through projects and processes. Life Cycle Aspect is essential as an input in Early Design Phase, and the processes through the following phases have to assure its inclusion in a way that value creation is complied with the user phase. The research findings in Oscar project are a result of cooperation with 17 project partners from three countries from academic, private and public sector from all stakeholder groups.

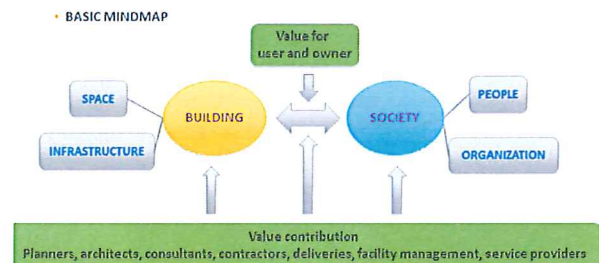


Fig. 6. Value contribution mind map

It is presented how it is possible to achieve more efficient buildings by collaboration of stakeholders from the early beginning with the same goal to maximize value for owner and user over building’s life time (Fig. 6).

In accordance with Oscar project purpose, the relevant stakeholder groups are: owners, users, planners/designers, consultants/contractors, FM providers and society.

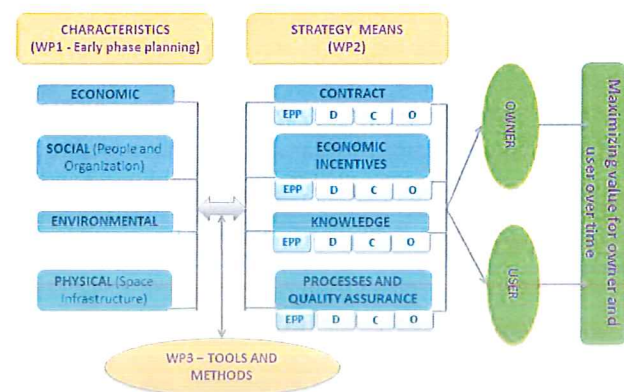


Fig. 7. Value contribution model

Project contains three project groups (Fig. 7) and phases, with a goal to: 1) to define the knowledge how to contribute to value creation in user phase as input in Early Design Phase (focus on characteristics which contribute on value creation); 2) to define execution models and processes which contribute to value creation, and 3) to design methods and tools (focus on cost benefit evaluation simulation model).

The first group is discussing several questions, as:

- Characteristics on buildings and solutions which contributes to value creation for different stakeholders during the Life Cycle
- Characteristics on buildings and solutions which do not contribute to value creation for different stakeholders during the Life Cycle
- Are contributions to value creation of different solutions context dependent?
- Circumstances where different solutions are advantageous or not.

The second one is interested in:

- Which means in different phases will motivate solutions for value creation in user-phase (contract, economic incentives and process)?
- Which means can work against value creation in the user-phase?
- How can means that motivate value creation be incorporated in execution models within different projects and what demands will be put on different stakeholders?
- How can execution process with regard to transmission of information («relay baton») between stakeholders and phases take place to ensure that premises from earlier phase live up to the next?
- What methods and tools are needed to ensure a good execution process and goal-achievement regarding value creation for owner and end-user.

The third one deals with methods and tools:

- How can Integrated Design (ID) and BIM be carrier («relay baton») of information about value creation for user-phase in phases before commissioning?
- How can excising tools, such as multiMap, Dynamic LCC etc., be integrated in BIM?
- How can excising tools, mention under b), be developed to a cost – benefit evaluation simulation model, which take into account core business total economy consequences regarding different investment measures, including adaptability?

Within the first phase of the project, we have prepared a list of characteristics and means, from literature review table, which are important for the value creation and are relevant for the first and second group (Table 1).

Table 1. List of value creation characteristics, which contribute to value creation during the whole LC

Group	Characteristics
Economic (MOME, core business cost, investment cost, economic value)	energy consumption, optimum FM organization, maintenance plan / cost (predictability), outsourcing /price of services, transparency of costs, cost of ownership, running / operational cost, cleaning cost, space efficiency cost, rental cost, interaction of costs (best solutions not lowest costs), project cost, cost reduction, green accounting, potential income, strong brand, market

	value, payback time, profitability for the core business, productivity in construction phase, environmental portfolio, long term commitment partnership, financial situation
Social (People and organization)	architectural value, satisfaction, indoor climate / comfort, individual control of conditions, aesthetic value, open view, layout (open /cell space), enough space, orientation, cleanliness, logistic service support, organizational value, social responsibility, location characteristics, historic value, usability (efficient workplace), accessibility, safety, security
Environmental	renewable energy, energy efficiency, recycling and reuse of materials, waste management, minimize contamination, environmental friendly products, life time materials, green roofs
Physical (Space and Infrastructure)	technical condition, space distribution / logistic for core business, quality materials, construction quality, architectural solutions, life cycle design, environmental solutions, flexibility possibilities, elasticity possibilities, generality possibilities, designed for disabled persons, sufficient infrastructure, innovative solutions

Table 2. List of means, which contribute to value creation solutions during the whole LC

Group	Characteristics
Economic incentives	environmental funds, financial support for testing new trends, branding, rewarding, cost productivity, orientation, investment loan for enhancement / replacement, changing energy consumption, combining different energy resources, emission reduction, support for maintenance and technical upgrading, support for refurbishment, tax reduction, competitiveness
Knowledge	Good planner, good management, changing regulations, new demands from society, social awareness, user satisfaction, communication ability, creating value with society, organizational development, best practice design, developing know-how training of employees, implementing new cooperation models, developing strategic KPI, knowledge on sustainable efficient building, open for new technical solutions supporting innovative ideas, establishing creative technical teams
Contract	Contract process with dialogue, contract division, contract type, contract procedure, selection and award criteria, contracting plan, PPP practice, clear tasks and definitions, contract duration, financial

	capacity of contractor, allocation of responsibility and risks, clear specification of deliverables, performance targets, measurement methods and standards, active partnership dialogue, organizational measures, developing strategic SLA, KPI
Processes and assurance quality	process management ability, communicating value, political support, user's participation, performance requirements for each phase, mechanisms and procedures for ex-ante evaluations, mechanisms for ex-post evaluations, monitoring, inspecting, evaluating, success / failure factors, key performance indicators

6. CONCLUSIONS

The main purpose is to get a usable model to gather analyse data from existing housing areas as a base for developing smart urban growth to meet changing social needs for aging people. Combination of multiMap and Value contribution mind map and a model should turn out to be effective tools for gathering a lot of information. The way of classify information gives opportunity to aggregate data and with new technology to visualize results to obtain effective way of communicate complex information. According with an international trend to strengthen integrated advice in the early stages as the basis for the project's value over time and in this context of the concept and function of "Value Management" to coordinate the various actors values before designing the project (Shen 2013), the project looks at the needs and content that is in the function to ensure the requirements for the owner's / user's added value in the use phase. With value principals, the attractiveness and stickiness of areas in competing European regions can increase.

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