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van der Voordt, Theo

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## **Facilities Management and Corporate Real Estate Management: FM/CREM or FREM?**

*Theo van der Voordt*

*Delft University of Technology, Faculty of Architecture and the Built Environment, the Netherlands / <https://doi.org/10.1108/JFM-05-2016-0018>*

**Purpose** – The aim of this paper is to explore similarities and dissimilarities between Facilities Management (FM) and Corporate Real Estate Management (CREM) regarding its history and key issues and whether the similarities may result in a further integration of FM and CREM.

**Design/methodology/approach** – The paper is based on a review of FM and CREM literature, seven interviews with experienced academics and consultants, and the long experience of the author as a researcher and teacher in accommodating people and activities.

**Findings** – Both FM and CREM aim to supporting primary business processes by aligning the physical resources of organisations to the organisational strategies, in order to contribute to organisational performance and as such to add value to the organisation. Efficiently and effectively supporting the primary activities and business purposes are key issues. Dissimilarities regard the focus on facilities and services (FM) versus a focus on buildings and real estate portfolios (CREM), and a shorter time frame and high flexibility of facilities (FM) versus a long life cycle and rather static buildings (CREM). In spite of the differences it is expected that both disciplines will be more integrated in the future.

**Practical implications** – The common body of knowledge of FM and CREM may be used to improve both professions and disciplines and may result in a more integrated approach of Facilities and Real Estate Management (FREEM).

**Originality/value** – This paper combines insights from two related disciplines with different histories and focus points and explores what they have in common and can learn from each other.

**Research limitations** – The selection of key topics and key publications may be biased by the personal knowledge and European perspective of the author and the input from seven expert interviews.

**Keywords** Facilities Management, Corporate Real estate Management, alignment, strategy, performance, added value

**Paper type** Literature review / Conceptual paper

### **1. Introduction**

The editor of this Special Issue asked the contributors for “a personal and thought provoking and inspirational essay.” The observation of the author is that the fields of Facilities Management (FM) and Corporate Real Estate Management (CREM) are still rather separated, Both fields have a different history and both have their own key objectives, concepts, theories, data and tools. FM originates from professionalising IT services and is traditionally linked to facilitating people and business processes in buildings-in-use. CREM regards accommodating

people and is usually linked to the whole life cycle of buildings and real estate portfolios, from the first initiative and the briefing and design phase till managing of buildings-in use, renovation, adaptive reuse, or demolition and new building. FM and CREM have their own journals, too, such as *Facilities* and the *Journal of Facilities Management*, versus the *Journal of Corporate Real Estate* and *Corporate Real Estate Journal*. At the same time at conferences such as the European Facility Management Conferences and the CIB World Building Congresses many presentations discuss topics that are related to both FM and CREM, such as workplace management, performance measurement, benchmarking, added value, maintenance, and sustainability. Conferences under the auspices of the International Real Estate Society's sister societies - European RES, American RES, Asian RES, etc. - discuss CREM and FM related topics as well. Both FM and CREM are pretty young academic disciplines that are strongly based in practice. And both FM and CREM focus on aligning physical resources and facility services to corporate strategies in order to contribute to organisational performance and as such to add value to the organisation. These observations were the driver to search for similarities and dissimilarities between FM and CREM regarding its background, history, key concepts, events and publications, and to explore whether the body of knowledge of both fields may support each other and may result in a closer relationship or further integration.

### *Search strategy*

The paper is based on a review of FM and CREM literature, seven semi-structured expert interviews of 1-2 hours that were held in January - March 2016, and the long experience of the author as a researcher and teacher in how to accommodate organisations effectively and efficiently. The seven experts have been selected from the personal network of the author, based on their long experience and active role in FM and/or CREM as an academic, a practitioner, or both. All interviewees were asked about their experience and knowledge on the history of FM and/or CREM, key events and publications, leading theories and tools, current trends and future expectations, what they see as the main similarities and dissimilarities between FM and CREM, and if they expect FM and CREM to be integrated in the near future. All publications that were mentioned have been (re)read. All other information was checked by the literature and elaborated upon furthermore. It appeared that only a limited number of key publications, events, concepts and tools were mentioned by more than two or three interviewees. This shows that experts have different views on what are the key issues in both fields. For this reason the interviews were mainly used as input to and support of the literature review and the discussion and conclusions section.

## **2. FM - history and key issues**

The European Standard CEN EN 15221-4 defines FM as “the integration of processes within an organisation to maintain and develop the agreed services which support and improve the effectiveness of its primary activities” (CEN, 2006). According to this definition, integration of processes and effectiveness of the primary activities are vital. When asked for their favourite definition of FM out of a list of pre-described definitions, professionals and academics most frequently selected the definition of FM being the *total* management of property, plant and human resources to improve service quality, reduce operating costs, and

increase business value to provide competitive advantage (Price, 2003). This definition connects FM with input (property, plants, human resources, money), throughput (management) and output/outcome (business value, competitive advantage). Figure 1 visualises facility services as support processes aiming to support the primary processes by the supply of facilities and services that fit with the demand from clients, customers and end users, including three levels of decision-making: strategic, tactical and operational.

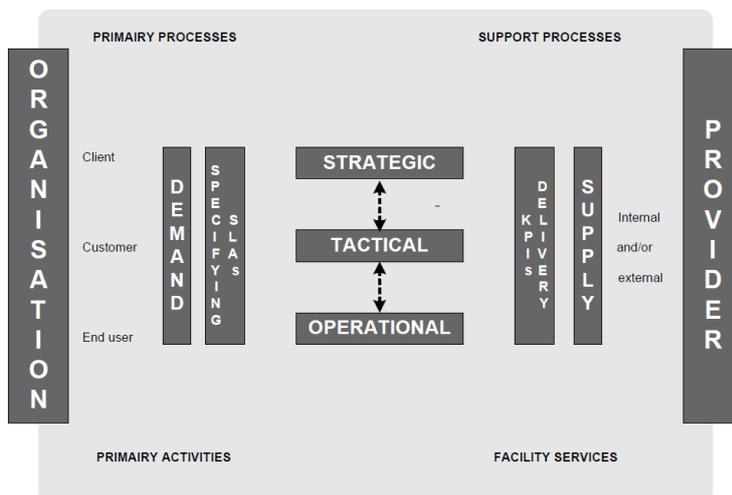


Figure 1: FM model adopted from CEN (2006)

The activities that today are regarded as part of FM have existed in organizations for a long time, even before the term FM was used (Jensen et al., 2012a). Ilfryn Price, professor in Facilities Management at the Business Research Institute of the Sheffield Hallam University in the UK, connects the first use of the term Facilities Management to a paper by Scott (1971) who described FM as the practice of banks outsourcing their data-processing (Price, 2003). Due to the growing availability of sophisticated systems furniture and computers, the office scene became more complex to manage. This stimulated FM professionals to organise themselves in the early eighties. The National Facility Management Association (NFMA) was founded in 1980. Two years later it evolved into the International Facilities Management Association (IFMA), with Canada as one of its first chapters. The first B.Sc. and M.Sc. programs in strategic FM started in 1983, at the Cornell University in Ithaca, New York, and at the Grand Valley State College in Allendale, Michigan. Frank Duffy and John Worthington of the architectural firm DEGWA showed to be strong promoters of FM. They established *Facilities* as a professional journal in 1983 and made a number of studies and publications with a strong focus on office facilities. The books by Franklin Becker from Cornell University, USA also had a strong influence in the early 1990's with a similar focus on office environments. The British Institute of Facilities Management (BIFM) in the UK was born in 1994 out of a merger of The Association of Facility Managers (AFM, founded in 1986) and the Institute of Facilities Managers (IFM, founded in 1990). The EuroFM Network was launched in 1991 at a conference in Glasgow, which was facilitated by the Centre for Facilities Management (CFM) from the University of Strathclyde in collaboration with the Danish Facilities Management Association (DFM) and the former Dutch association NEFMA (founded in 1989). Keith Alexander established CFM in Strathclyde as the first research

institute for FM around 1990. He moved with his Centre to the University of Salford around 2000 and became a leading figure in Europe as one of the founders and chairman of EuroFM and EFMC research symposia. Later on centres for FM research has established in the Netherlands and in Scandinavian countries. EuroFM was founded in 1994. Facility Management Netherlands (FMN) started in 1995, after a merger of separated FM organisations (Ytsma and Ytsma, 2005), in order to integrate various pieces of FM and to bring FM on a higher level. At a conference in Brisbane in 2000, the international Council for Research and Innovation in Buildings and Construction (CIB) announced the renaming of its W70 working commission as Facilities Management and Maintenance.

Since its recognition as a profession, many books have been published that define FM and explore its key concepts. Table 1 presents a chronological selection of important FM books that shows the huge variety of FM topics in the last decades. Key books on FM in Dutch are inter alia Regterschot (1989), Lemmens (2003), Maas and Pleunis (2003, 2006), Van Wagenberg (2010), De Jong et al. (2010) and Drion and Van Sprang (2012).

Table 1: Key books in the development of FM

Author(s)/year	Topics
Tompkins, 1984 (followed by later editions)	Handbook on facilities planning, including defining requirements; developing alternatives: concepts, techniques, functions, and quantitative approaches; evaluating and selecting the facilities plan.
Becker, 1990	Changing role of FM; organising FM; workspace planning and management; total workplace concept; assessing building performance.
Cotts & Lee, 1992 (now in its 3d edition)	Background and organisation of FM; planning, programming, and budgeting; real estate; Design-Build Cycle; operations and maintenance; FM practice.
Wrennal & Lee, 1994	Commercial and industrial FM; facilities design; site planning; factory layout; material handling; storage planning; office planning; laboratory space planning; production and capacity planning; evaluating and selecting alternative facility plans; computer modelling; FM systems.
Rondeau et al., 1995 (2nd edition 2006)	Strategic planning; financial forecasting; real estate acquisition and disposition; architectural and engineering design; interior programming and space planning; project management; renovation projects; maintenance and operations; administrative services.
Barret, 1995 / Barrett & Baldry, 2003	Best practices in FM; FM models; FM systems; FM performance; user needs evaluation; contracting-out; computer based information systems; change management.
Alexander, 1996	Content of FM, FM skills, professional practice, quality management, value management, risk management, environmental management, information management, project management, building performance, support services.
Alexander (ed.), 1996	Managing the workplace, assets, facilities performance, and facilities information; state-of-the-art of FM; FM benchmarking; FM networking.
Nutt & McLennan, 2000	Exploration of four trails: business, people, property, and knowledge, including workplace management, corporate real estate management, impact of FM on briefing and design, and speculations for the future.
Best et al., 2003	History of FM; trends; strategic management; space management; information management; risk management; human resource management; financial management; operations and maintenance management; portfolio management; project management; asset management; quality management; change management; user involvement; productivity improvement; integrated building models; sustainability; outsourcing.

Gustin, 2003	Real estate; space management; change management; indoor air quality; safety; emergency; evacuation; communications systems.
Cotts & Rondeau, 2004	FM guide to finance and budgeting, including the organisation of FM, trends in FM, financial aspects, budgeting and costs.
Alexander et al., 2004	FM innovations and performance; organisational change; space, place and people; supply chain management; knowledge workplaces.
Shah, 2007	Sustainable FM; sustainable business management; facility life cycle; operation of facilities.
Jensen, 2008	Introduction of FM to students and practitioners, discussing FM in Denmark and internationally, strategic planning, financial management, space management, property operation, ICT, services, health and safety.
Finch, 2012	Facilities change management, including drivers to change, characteristics of change, change process, place attachment, cultural heritage, Pre-Design and Post-Occupancy Evaluation.
Appleby, 2013	Sustainable FM; sustainable refurbishment and management of existing buildings.
Then & Tan, 2013	Facilities asset management; strategic facilities review; strategic facilities planning; strategic facilities alignment; facilities utilisation and asset maintenance; FM organisation.
Melissen et al., 2014	Hospitality management; hospitality industry; adding value; designing hospitality experiences; quality management; competencies; leadership; future of hospitality.
Kok, 2015	PhD thesis on FM in Dutch Higher Education: measuring the added value of FM, alignment between decision makers and users, quality perceptions, and predictors of study success.

One of the important drivers to a further professionalization of FM in Europe has been the development of FM standards by the European Committee for Standardization. In 2002, two work groups were established with the purpose to develop standards on FM terms and definitions and FM agreements. The resulting two standards were adopted as European standards in 2006 (CEN, 2006a-b). Another four workgroups were established with the purpose to develop standards on quality in FM, a taxonomy of FM, processes in FM, and space measurement. The resulting standards (CEN, 2011a-d) were accepted in 2011. In 2009 a new work group was started to develop a European standard with guidelines for FM benchmarking. This has been resulted in the European Standard EN 15221-7 (CEN, 2012). The international FM standardisation from 2012 is expected to result in 2 ISO standards in 2017 replacing the first 2 European standards.

The available body of knowledge and the standardisation of terms and definitions, processes and measurement systems are indicators of a growing maturity of FM as a profession. Junghans and Olsson (2014) argued that according to six criteria for academic disciplines found in the literature, FM can also be recognised as an academic discipline: 1) FM has a particular object of research; 2) FM has an accumulated specialist body of knowledge; 3) FM has theories and concepts that can organise the accumulated specialist knowledge effectively; 4) FM has its own language i.e. it uses specific terminologies; 5) FM applies a number of research methods that fit with its research requirements; and 6) FM has some institutional manifestation in the form of subjects taught at universities or colleges and professional associations connected to it.

Researchers from the UK (Pathirage et al., 2008) deduced four generations in the development of FM:

1. FM being considered as an overhead to be managed for minimum cost rather than optimum value.
2. Integration of FM within the organisation being a continuous process.
3. FM being concerned as resource management, with an emphasis on managing supply chain issues associated with the FM functions.
4. FM as a strategic management discipline that aims to align the organisational structure, work processes and the physical environment in order to improve organisational performance. This requires that the organisation reflects the facilities dimensions in its strategic business plans..

This development shows a change from the initial dominating focus on cost reduction in FM towards a stronger strategic focus on supporting the core business and to add value to the organisation. The added value of FM may be defined as the trade-off between the benefits of FM and the costs and risks to achieve these benefits (Jensen et al., 2012a). One of the leading academics in the field of adding value by FM is Per Anker Jensen, professor in Facilities Management at the Technical University of Denmark. Table 2 shows a number of key publications regarding adding value (AV) by FM, from the development of his FM Value Map till a current anthology that connects 12 value parameters to typical FM and CREM interventions, value adding management processes, and measurement of the outcomes.

Table 2: Key publications on adding value by FM by Jensen et al.

Author(s)/year	Topics
Jensen et al., 2008	Analysis of 36 FM cases as input to the development of the FM Value Map
Jensen, 2009, 2010	Development of FM Value Map with input, throughput, output and outcomes.
Jensen, Van der Voordt & Coenen, 2012a	Anthology on the added value of FM: value adding management; 50 definitions of added value, classified into use/user/customer value, economic/financial/ exchange value, social value, relationship value, and environmental value.
Jensen et al., 2012b	Exploration of what we know about AV of FM and still need to learn, resulting in an update of the research agenda.
Jensen et al., 2013	Exploration of how FM can add value to organisations as well as to society, by a comparison of four conceptual frameworks on the AV of FM and CREM and a stakeholder analysis
Van der Voordt & Jensen, 2014	Exploration if/how practitioners the Netherlands and Denmark apply the added value concept in practice, what values are prioritised, what interventions are implemented, and how the outcomes are measured.
Jensen & Van der Voordt, 2015a,b	Critical review of 21 papers from EFMC 2013, EFMC 2014 and CIB 2014 on the added value of FM and CREM and empirical evidence on benefits of interventions for particular stakeholders.
Jensen & Van der Voordt, 2017	State of the art how to manage and measure adding value; opening the black box of input -> throughput -> output -> outcome -> impact/added value, with a taxonomy of interventions, a new value adding management model, and state-of-the-art of concepts, research findings and measurement methods regarding 12 value parameters

Source: Adapted from Van der Voordt et al. (2016) .

## CREM - history and key issues

Contrary to the transaction-oriented focus of real estate management from an investors' point of view, aiming to get the best possible return on investment in the short and long run, CREM focuses on alignment of real estate to corporate needs and objectives, incorporating the needs and wishes of shareholders and different stakeholders on strategic, tactical and operational levels. In *Successful Corporate Real Estate Strategies* the editors define CREM as "the management of a corporations' real estate portfolio by aligning the portfolio and services to the needs of the core business (processes), in order to obtain maximum added value for the business and to contribute optimally to the overall performance of the corporation (Dewulf et al., 2000). In *The essential guide to corporate real estate* a useful and important distinction is made between REM referring to acquisition, operation and disposal of real estate as a core business, and CREM when the core business is not real estate and real estate is incidental to core business operations (CoreNet Global, 2015).

Figure 2 shows a visualisation of the alignment process by the Delft CREM-section of the Faculty of Architecture at the Delft University of Technology. It connects alignment to all phases in the life cycles of buildings and different scale levels.

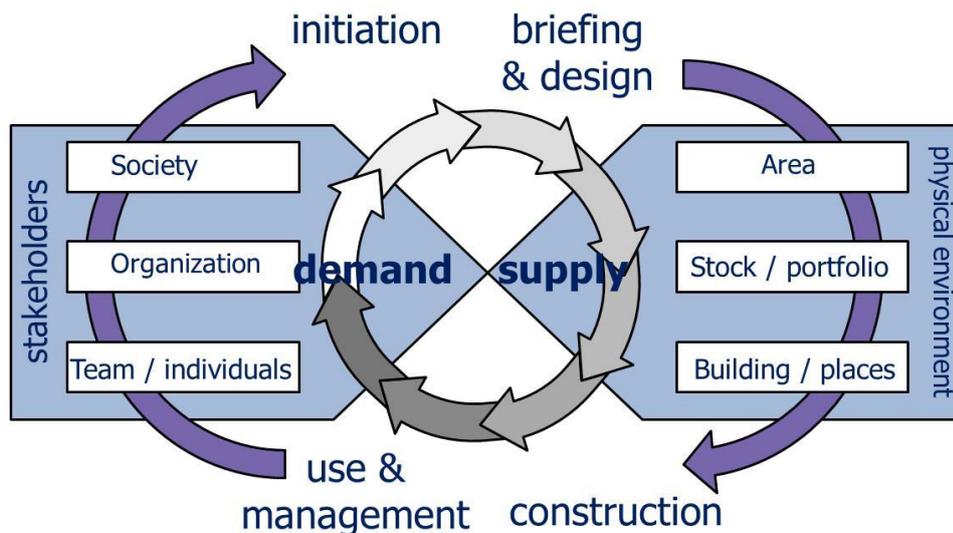


Figure 2: Visualisation of CREM as a discipline that aims to create the best possible fit between demand and supply during the whole life cycle of buildings, portfolios and areas, taking into account the needs, interests and conditions from different stakeholders (adapted from De Jonge et al., 2009)

According to De Jonge, professor in real estate management and development at the Delft University of Technology since 1991, fully equipped real estate departments started to be established within corporations in the 1930s. When he started his professorship, De Jonge and his colleagues launched a new MSc track at the Faculty of Architecture called Real Estate and Project Management, currently Management in the Built Environment. Nowadays, in Europe about 50 FM or real estate programmes are provided in 15 countries (Verwijmeren, 2015). Dirk Brounen, professor in real estate economics at the TIAS Business School of the

Tilburg University, positions the recognition of CREM as a discipline in the mid-eighties, when it was explicitly mentioned in *Harvard Business Review* by Zeckhauser and Silverman (1983). These authors worked at Harvard Real Estate and were responsible for the management of Harvard University's commercial and residential properties. Based on a survey of 300 US companies, Zeckhauser and Silverman concluded that at that time only 40% of American companies clearly and consistently evaluated the performance of their real estate, which was mostly treated as an overhead cost. In 1993, the Corporate Real Estate Management Research Unit (CREMRU) at the University of Reading started an annual survey of corporate real estate management in Europe and North America, that lasted until 2002 (Bon et al., 2003; Gibson and Luck, 2006). As in the FM sector, too, CREM professionals organised themselves as well. After the early foundation of the International Real Estate Federation in 1945, the Industrial Development Research Foundation IDRC and the National Association of Corporate Real Estate Executives (NACORE) came to the fore. Both organisations merged into CoreNet Global in 2001, with various national chapters.

In the last three decades, many developments triggered companies to look more carefully to their real estate (Dewulf et al., 2000). Most Western countries have been progressing from an industrial to a post-industrial information society, with a strong service sector. Globalisation, changing political systems, and economic and demographic developments have led to growth, shrinkage and mergers of organisations. Fast, mobile, and affordable Information and Communication Technology (ICT) stimulated to new ways of working with increasing flexibility regarding when, how and where to work, resulting in new office concepts. Similar developments evolved in other sectors, such as education, retail and leisure, and health care. Incorporating flexibility and adaptability in new and existing buildings and scenario analysis are nowadays widely used strategies to cope with an uncertain future. Within this dynamic context, corporate real estate managers have to steer on usability, effectiveness, efficiency and ways to express corporate identity in a well-balanced way.

While real estate resources and capabilities were initially controlled and managed by the individual corporations, activities and responsibilities are nowadays delegated more and more unto professional parties outside the corporation. According to Joroff et al. (1993), the traditional role of a 'taskmaker' with a focus on providing physical space and technical maintenance started to shift towards a more strategic role with a cumulative integration of understanding and minimising real estate costs ('controller'), standardisation in order to create financial value and flexibility ('dealmaker'), matching real estate with business plans of the units and market options ('intrapreneur') and contributing to the company as a whole by focusing on the company's mission ('business strategist').

In the field of public real estate i.e. real estate owned or rented by ministries, municipalities and other governmental agencies, a shift is going on from decentralised real estate management with a focus on facilitating primary processes towards integration of FM and CREM in centralised shared services (Van der Schaaf, 2002). Introducing a user-pay system is expected to lead to a more efficient use of accommodation, whereas privatisation is expected to increase the efficiency of the public real estate organisation. Decentralising the

responsibilities for accommodation to the various departments and agencies is expected to increase speed and flexibility. A growing attention is paid to the political, financial and functional performance of the public real estate portfolio (Evers et al., 2002).

Table 3 presents a selection of key publications regarding alignment of CRE strategies to corporate strategies.

Table 3: Key publications regarding aligning corporate real estate to organisational strategies

Author(s)/year	Topics
Nourse and Roulac, 1993	How alternative real estate strategies can contribute to business objectives; conceptual framework that connects eight real estate strategies to a number of possible aims of a firm.
Joroff et al., 1993	Corporate real estate as a fifth resource, in addition to human resources, technology, information and capital; different levels of CREM-maturity.
O'Mara, 1999	Enabling competitive advantage through place; decision-making strategies; frameworks for competitive advantage.
Krumm, 1999	PhD thesis on corporate real estate management in multinational organisations, that discusses the history of CREM, changing settings, alignment, and added value.
Dewulf et al., 2000	Trends; strategies; value creation; asset management; portfolio management; impact of CRE on corporate economics; organising CREM; future of CREM.
Englert, 2001	Handbook on strategic alignment and corporate infrastructure resource management.
Roulac, 2001	Further exploration and definition of strategic alignment of real estate strategies to corporate strategies.
Haynes et al., 2001	Review of 300 references regarding the impact of property on occupiers.
Schütte et al., 2002	Real estate market; real estate cycle; investment and running costs; the user; new office concepts; legislation; financial valuation; financing; taxability.
Van der Schaaf, 2002	PhD thesis on public real estate; analytical framework; historical analysis; context; international comparison of public real estate strategies; scenario analyses.
Evers et al., 2002	Public real estate; real estate strategy; stakeholders; political point of view; financial point of view; user focus; organisation of public real estate; future perspectives
Osgood (2004)	Strategic alignment of real estate strategies to corporate strategies.
Fritzsche et al., 2004	Real estate as a strategic asset; CREM of hospitals in a changing context.
Scheffer et al., 2006	Enhancing the contribution of corporate real estate to corporate strategy
Appel-Meulenbroek & Feijts, 2007	CRE effects on organizational performance; measurement tools.
Heywood & Kenley, 2008	Development and evaluation of a sustainable competitive advantage model for corporate real estate.
De Jonge et al., 2009	Designing an Accommodation Strategy (DAS) in four steps
Van Griensven & Schoonhoven, 2008	Actors; strategies; demand and supply; types of alignment; development of CREM; planning process; briefing.
Mobach, 2009	Contingency theory; architecture of organisations; sensory perceptions; meaning; functionality; performance.
Haynes & Nunnington, 2010	strategic alignment; procurement options; performance measurement and benchmarking; workplace transformation; relocation; sustainability; Corporate Social Responsibility.
Heywood, 2011	Approaches to Aligning Corporate Real Estate and Organisational Strategy
Hoendervanger et al., 2012	Real estate as a strategic resource; players; integral approach; analysis of demand, supply and (mis)match; models and tools; briefing; mutate and operate; CREM organisation.

Veuger, 2013, 2014, 2015	State of the art of public real estate management in different sectors (municipalities, health care, education, housing); valuation; financing; asset management; sustainability; corporate social responsibility
Kastelein, 2015	PhD thesis on the impact of space on knowledge workers' performance.
Beckers, 2016	PhD thesis on alignment of higher education buildings to new ways of learning.

In the field of CREM, the concept of adding value by physical resources has attracted much attention as well. Table 4 presents a selection of key publications on adding value by CRE.

Table 4. Key publications on adding value by CREM

Author(s)/year	Topics
Nourse and Roulac, 1993	Conceptual framework that connects eight real estate strategies to a number of possible aims of a firm.
De Jonge, 1996	Introduction of adding value by CREM at the Faculty of Architecture in Delft, with 7 value parameters.
Krumm et al., 1998	Managing key resources and capabilities: pinpointing the added value of corporate real estate management.
Krumm & De Vries, 2003	Value Creation through management of real estate.
De Vries, 2007	PhD thesis to explore the impact of real estate interventions on organisational performance and adding value. See also De Vries et al., 2008
Lindholm, 2008	PhD thesis on how real estate strategies can lead to profitability growth and/or revenue growth and maximize the wealth of shareholders. See also Lindholm et al., 2006.
Den Heijer, 2011	PhD thesis on managing university campuses, including conceptual frameworks of adding value and related stakeholders.
Niemeijer, 2012	PhD thesis on the added value of hospital architecture
Riratanaphong, 2014	PhD thesis on measuring the added value of workplace change in two different contexts
Van der Zwart, 2014	PhD thesis on adding value by hospital real estate, with a toolbox for value-adding management.
Appel-Meulenbroek, 2014	PhD thesis on the impact of space on knowledge sharing in research buildings.
Jylhä, 2013	PhD thesis on value creation by the production of real estate services with lean thinking.
Jylhä & Junnila 2014	Value creation in the real-estate sector; lessons from lean thinking.
Beckers et al., 2015	Aligning corporate real estate with the corporate strategies of higher education institutions,

### 3. Towards a convergence of FM and CREM?

While FM is characterised by its focus on non-core business services, workplaces and their management (Chotipanich, 2004; Junghans and Olsson, 2014), CREM has its foundation in the integration of asset management, general management, facility management and cost control (Krumm, 2001). Another difference is that CREM has its focus on real estate as a physical and economical asset utilized by an organization, while FM has a wider service focus including demands related to space and infrastructure as well as people and organisations (CEN, 2006a). The majority of large organisations who own or use extensive portfolios of facilities have different departments for real estate property, constructional and redevelopment

matters on the one hand, and maintenance, operations and primary hands-on support for the assets on the other. An earlier attempt to integrate both disciplines in Integrated Corporate Resources Management (CIRM) was not very successful.

Although the interviewees expect that FM and CREM will continue to have a different focus, different concepts and theories, different bodies to exchange information, and be practised by different professionals, they also expect a further integration of FM and CREM. Looking back at the developments and key issues in FM and CREM, it may be concluded that both disciplines have indeed much in common. Both FM and CREM became recognized as a discipline and profession due to the growing complexity and high costs of physical resources and the role of ICT. The foundation of national and international organisations, conferences, key publications and professional and academic journals stimulated to professionalization and the development of theoretical frameworks, concepts and decision-support tools. Both FM and CREM are regarded to be a management discipline. From the content of FM and CREM publications and the interviews, many similarities came to the fore regarding shared key issues, the need for appropriate theories and measurement tools, and FM and CREM both being a management discipline with a wide scope:

#### *Shared key issues*

- Connecting people, processes, physical resources and technology;
- Supporting the effectiveness and efficiency of primary processes by well-thought and well- designed buildings, facilities and services;
- Gradually change towards being more strategic and more focused on contributing to organisational performance and adding value to the organisation rather than the earlier narrow focus on controlling and reducing cost;
- Shared interest in new ways of working and innovations in workplace design with activity based workplaces;
- Ongoing discussion about how to organise the ownership and management of physical resources and services, in- and outsourcing, centralisation or decentralisation, and shared service centres;
- A growing attention to life cycle thinking and a raised awareness that decisions in the construction phase have a huge impact on the running costs and building performance in the subsequent phases; in Public-Private-Partnership (PPS) constructions attempts are made to connect CREM and FM, and although this is not without obstacles and challenges, the need to involve FM in an early stage seems to be accepted more and more;
- A growing interest in sustainability and renovation and retrofitting activities.
- Extension of people, process, place by planet, profit and technology.
- Initial developments mostly took place in private companies and related to office environments but later extended to public and third sector organisations and a broader range of facilities like healthcare, learning environments, transport facilities, shopping malls and residential facilities;

### *Need for appropriate theories and measurement methods*

- No leading theory available but a mix of various theories and models, including standard business models such as the 7-S model and Balanced Score Card, and standard tools such as business cases, SWOT analysis and management information systems.
- Search for evidence based decision-making by exploring how to measure and manage the added value of real estate, facilities and services; the FM Value Map developed by Jensen (2010) is inspired by the CREM-related framework of Lindholm (2008), Lindholm and Levainen (2006) and Lindholm et al. (2006), and FM and CREM are also both included in the books on added value by Jensen et al. (2012b) and Jensen and Van der Voordt (2017);
- Difficulties in measuring the impact of FM and CREM on organisational performance and how to prove cause-effect relationships between the sole contribution of either FM or CREM (or HR) and organisational performance, because a change in performance is usually the result of many actions by different parties involved

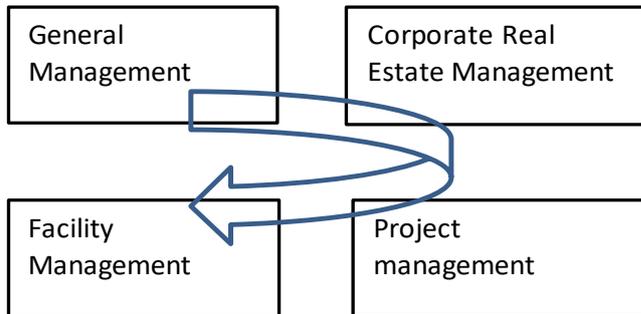
### *Management discipline with a wide scope*

- Integration of various dimensions of management, including general management, strategic management, supply chain management, purchase management, space management, workplace management, information management, service management, hospitality management, risk management, human resource management, relationship management, financial management, operations and maintenance management, portfolio management, project management, contract management, asset management, quality management, environmental management, performance management and change management;
- Inclusion of a huge variety of topics such as cost-effectiveness, (main) contracting, purchasing, stakeholder analysis (including clients, customers and end users or consumers), sustainability, Corporate Social Responsibility, the role of modern technology (smart buildings, smart facilities, big data), and the impact of physical resources on end user satisfaction, productivity, costs, health and wellbeing and many other values.

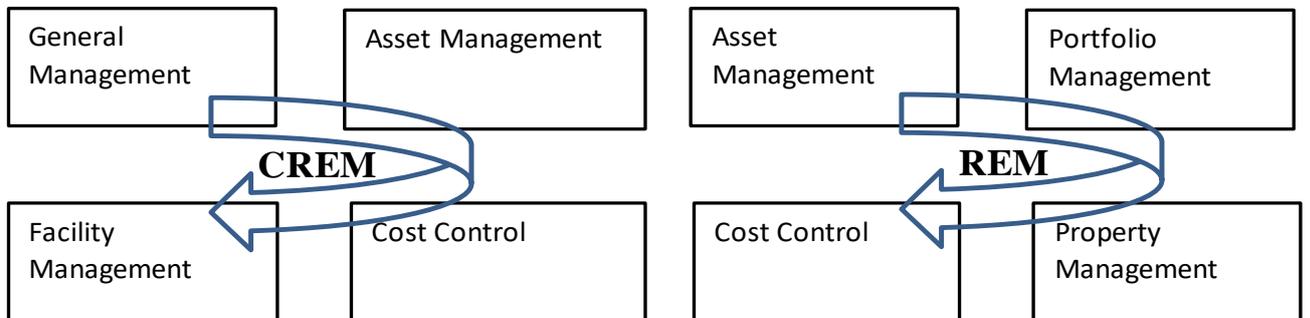
Although both FM and CREM claim to be acting on a strategic level, some interviewees mentioned that physical resources do not often come on the CEO or CFO table, and if so, only when decisions about costly real estate interventions have to be made that will have an impact on business in the long run. Whereas CREM traditionally has a stronger strategical position, added value thinking may help FM to develop its strategical potential. Added value models and theories could be an enabler to develop a shared language in the CREM/FM domain.

Due to the many similarities in FM and CREM it may be expected that the distinction between FM and CREM may fade in the future and FM/CREM may converge into a united discipline that will increasingly be integrated with IT, HR and finance in shared service centres to support flexible working and attract the most qualified among an increasing cultural mixed workforce. Alignment with the corporate strategy and an integrated approach is vital to achieve optimal results.

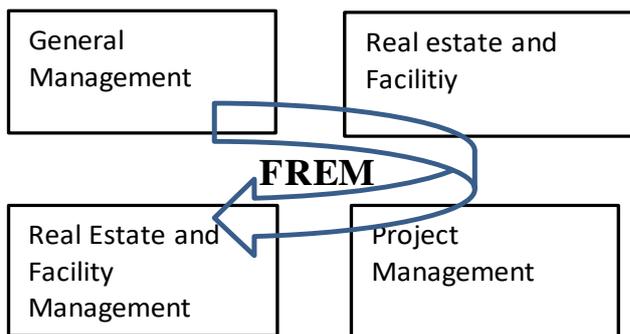
Figure 3 visualises the changing view of the relationship between FM and CREM in three periods.



a. CREM with a focus on real estate management vs FM with a focus on facilitating processes in buildings-in-use (Suyker, 1986)



b. CREM with a focus on the demand side (end users) vs. REM with a focus on the supply side i.e. investors and developers) ( Dewulf et al., 2000)



c. Integration of FM and CREM into FREM?

Figure 3: Different views on the relationship between FM and CREM and levels of alignment

In Figure 3a, CREM is perceived as strategic management of buildings and portfolios, whereas FM is perceived as operational management of buildings-in-use (Suyker, 1996). In Figure 3b CREM is perceived as managing of accommodating people by aligning asset management, cost control and FM to general management, . FM is perceived as management of buildings-in-use. Both have a strong focus on the end user, whereas REM is linked to

investors and integration of asset management, portfolio management, property management and cost control from a supply side point of view (Krumm et al., 2000). Figure 3c visualises an integration of FM and CREM into FREM, being the management of buildings, facilities and services during the whole life cycle, from planning and design till management of physical resources-in-use, in alignment to the vision, mission and objectives of the organisation. FREM is the name of a current course in Facility and Real Estate Management at the Hospitality Business School of the Saxion University of Applied Sciences in Deventer, the Netherlands. Their study guide discusses the realm of FM and CREM, based on an extensive literature study and interviews with professionals and academics from the FREM field (Verwijmeren, 2015). The authors observe a clear convergence between FM and CREM since IFMA has adopted ‘real estate’ as one of the core competences for universities to become an IFMA-accredited FM programme. An earlier version of the Master FREM realm can be found in the Dutch professional journal *Real Estate Magazine* (Groen and Ruepert, 2010).

A trend research into the Dutch FM market showed an increasing integration and alignment of real estate and facility management as well, inter alia because clients are demanding integral workplace solutions. Furthermore, integrated outsourcing of design, building, maintenance and operating of buildings requires lifecycle costing, and new concepts for accommodation and service delivery are being developed in which real estate is seen as a concept that supports the optimal performance of workers and customers. In various sectors such as hospitals and universities FREM departments already exist. The current international definitions of facility management and real estate underline the importance of this integration.

#### **4. Concluding remarks**

This paper showed that FM and CREM are not interchangeable but have much in common. Looking at the many similarities, a further exchange of knowledge, more interaction between FM and CREM people, and joint research should be welcomed. This may help to increase our understanding of how buildings, facilities and services can optimally support clients, customers and end users and their primary processes, contribute to organisational performance, and add value to the organisation.

#### *Limitations and further research*

This paper may be biased by the subjective selection of key issues in FM and CREM by the author of this paper and the seven experts, all working in Western-European countries. A next step could be to include more FM and CREM experts in the literature search and to discuss the findings individually or in workshops. The literature review could be extended with key journal papers, conference papers, and position papers or research documents from IFMA, EuroFM, IDRC, CoreNet Global and RICS. To validate which publications are vital, the number of citations might be used as a Key Performance Indicator. Another topic for further research could be to further explore what underlying theories are leading in both disciplines, its similarities and dissimilarities, and if/how different theories can contribute to a better understanding of “the working of” FM and CREM. A third suggestion for further research is

to do the same regarding tools, guidelines and decision-support models. It would be interesting as well to explore how other related terms and definitions like Corporate Facility Manager (Cotts and Rondeau, 2004), Property Management, Asset Management and Portfolio Management (Varcoe, 2000) and Facility Project Management (Chotipanich, 2004), or the competence fields mentioned by IFMA, CorenetGlobal, Universities and Universities of Applied Sciences can contribute to a further development and/or integration of FM and CREM, as professions and disciplines. Finally, further research into the relationship between FM and CREM in different sectors would be interesting, for instance to explore whether sectors with more “votile” end users that are also the customers (like students at universities and patients in hospitals) cope with FREM in a different way than offices and the industry.

## References

- Alexander, K. (1996) *Facilities Management. Theory and practice*. New York: E&F Spon.
- Alexander, K. (ed.) (1996) *Facilities Management European Practice 1996*. Nieuwegein: Arko Uitgeverij.
- Alexander, K. Atkin, B., Bröchner, J. and Haugen, T.I. (2004) *Facilities Management. Innovation and Performance*. London: Spon Press.
- Appel-Meulenbroek, R. (2014) *How to measure added value of CRE and building design: knowledge sharing in research buildings*. (PhD), Technische Universiteit Eindhoven, Eindhoven.
- Appel-Meulenbroek, R. and Feijts, B. (2007) “CRE effects on organizational performance: measurement tools for management”. *Journal of Corporate Real Estate*, 9 no. 4, 218-238.
- Appleby, P. (2013) *Sustainable Retrofit and Facilities Management*. Oxon: Routledge.
- Barrett, P. (1995) *Facilities Management. Towards Best Practice*. Oxford: Blackwell Science.
- Barrett, P., and Baldry, D. (2003) *Facilities Management: Towards Best Practice*. Oxford: Blackwell Science, 2<sup>nd</sup> edition.
- Becker, F. (1990) *The total workplace: Facilities Management and Elastic Organisations*. New York: Praeger Press.
- Beckers, R. (2016) *A Learning Space Odyssey. Exploring the alignment of learning space in universities of applied sciences with the developments in higher education learning and teaching*. PhD Thesis. Enschede: TU Twente.
- Beckers, R., Van der Voordt, T. and Dewulf, G. (2015) “Aligning corporate real estate with the corporate strategies of higher education institutions”. *Facilities* 33, 13/14, 775-793.
- Best, R., Langston, C. and De Valence, G. (2003) *Workplace Strategies and Facilities Management*. Oxford: Butterworth Heinemann.
- Bon, R., Gibson, V. and Luck, R. (2003) “Annual CREMRU-JCI survey of corporate real estate practices in Europe and North America: 1993-2002”. *Facilities*, 21, 7/8, 151 – 167.
- CEN (2006a) *Facility Management. Part 1: Terms and definitions*. EN 15221-1.
- CEN (2006b) *Facility Management. Part 2: Guidance on how to prepare Facility Management agreements*. EN 15221-2.
- CEN (2011a) *Facility Management. Part 3: Guidance how to achieve/ensure quality in Facility Management*. EN 15221-3.
- CEN (2011b): *Facility Management .Part 4: Taxonomy of Facility Management – Classification and Structures*. EN 15221-4.
- CEN (2011c): *Facility Management. Part 5: Guidance on the Development and Improvement of Processes*. EN 15221-5.
- CEN (2011d) *Facility Management. Part 6; Area and Space Measurement*. EN 15221-6.
- CEN (2012) *Facility Management. Part 7: Guidelines for Performance Benchmarking*. EN 15221-7.

- Van der Voordt, T. (2017) Facilities Management and Corporate Real Estate Management: FM/CREM or FREM? *Journal of Facilities Management* 15(3). Special Issue, edited by Per Anker Jensen.
- Chotipanich, S. (2004) "Positioning facility management. *Facilities* 22,13/14, 364-372.
- CoreNet Global (2015) *The Essential Guide to Corporate Real Estate*. Atlanta, GA.
- Cotts, D.G. and Rondeau, E.P. (2004) *The Facility Managers' Guide to Finance and Budgeting*. New York: AMACOM.
- Cotts, D.J. and Lee, M. (1992) *The Facility Management Handbook*. New York: AMACOM.
- De Jong, B., Van Diepen, C., Kok, H., Jansen, P., Van Schaik, B. and Van der Spil (2010) *De facilitaire regieorganisatie in bedrijf*. Alphen a/d Rijn: Kluwer.
- Drion, B. and Van Sprang, H. (2012), *Basisboek Facility Management*. Groningen: Noordhoff Uitgevers.
- De Jonge, H. (1996) "Toegevoegde waarde van concernhuisvesting". Paper presented at the NSC Conference.
- De Jonge, H., Arkesteijn, M.H., Den Heijer, A.C., Vande Putte, H.J.M., De Vries, J.C., and Van der Zwart, J. (2009) *Designing an Accommodation Strategy (DAS Frame)*. Delft University of Technology, Delft, 2nd edition.
- De Vries, J. C. (2007) *Presteren door vastgoed*. PhD Thesis. Delft: Eburon.
- De Vries, J. C., De Jonge, H., and Van der Voordt, T. (2008) "Impact of real estate interventions on organisational performance." *Journal of Corporate Real Estate*, 10, 4, 208-223.
- Den Heijer, A. (2011) *Managing the university campus - Information to support real estate decisions*. PhD thesis. Eburon Academic Publishers, Delft.
- Dewulf, G., Krumm, P, and De Jonge, H. (2000) *Successful Corporate Real Estate Strategies*. Nieuwegein: Arko Publishers.
- Drion, B. and Van Sprang, H. (2012) *Basisboek Facility Management*. Groningen: Noordhoff Uitgevers.
- Englert, J. (2001) *The Strategic Alignment Handbook: A Corporate Infrastructure Resource Management Application Guide*. IDRC Foundation.
- Evers, F., C., Van der Schaaf, P. and Dewulf, G. (2002) *Public real Estate. Successful Management Strategies*. Delft: DUP Science.
- Finch, E. (Ed.) (2012) *Facilities Change Management*. Chichester: Wiley-Blackwell.
- Fritzsche, C., Hoepel, H., Kaper, L. and Van Ommeren, A. (2004) *Huisvesting is strategisch goed. Wegwijzer voor vastgoedmanagement in ziekenhuizen*. Amersfoort: Twynstra Gudde.
- Gibson, V. and Luck, R. (2006) Longitudinal analysis of corporate real estate practice: Changes in CRE strategy policies, functions and activities. *Facilities*: 24,3/4, 74-89.
- Groen, B.H. and Ruepert, P.W.G. (2010) "Synergie van Facility Management en Corporate Real Estate Management". *Real Estate Magazine* 68, 23-25
- Gustin, F. (2003) *The facility manager's handbook*. Lilburn: The Fairmont Press.
- Haynes, B.P. and Nunnington, N. (2010) *Corporate Real Estate Asset Management: Strategy and Implementation*. Oxford: Elsevier.
- Haynes, B., Matzdorf, F., Nunnington, N., Ogunmakin, C., Pinder, J. and Price, I. (2001) *Does property benefit occupiers? An Evaluation of the literature*. [www.occupier.org/reports.htm](http://www.occupier.org/reports.htm).
- Heywood, C. and Kenley, R. (2008a) "The sustainable competitive advantage model for corporate real estate". *Journal of Corporate Real Estate* 10, 2, 85-109.
- Heywood, C. and Kenley, R. (2008b) "Evaluating the sustainable competitive advantage model for corporate real estate". *Journal of Corporate Real Estate* 10, 3, 160-182.
- Heywood, C. (2011) "Approaches to Aligning Corporate Real Estate and Organisational Strategy". 18th Annual European Real Estate Society Conference. ERES: Conference. Eindhoven, the Netherlands.
- Hoendervanger, J.G., Van der Voordt, T. and Wijnja, J. (2012) *Huisvestingsmanagement. Van strategie tot exploitatie*. Groningen: Noordhoff Uitgevers.

- Van der Voordt, T. (2017) Facilities Management and Corporate Real Estate Management: FM/CREM or FREM? *Journal of Facilities Management* 15(3). Special Issue, edited by Per Anker Jensen.
- Jensen, P. A., Van der Voordt, T. and Coenen, C. (2012a) *The Added Value of Facilities Management; concepts, findings and perspectives*. Lyngby: Polyteknisk Forlag.
- Jensen, P. A., Van der Voordt, T., Coenen, C., Von Felten, D., Lindholm, A.-L., Nielsen, S. B., Riratanaphong, C. and Schmid, M. (2012b). "In search for the added value of FM: what we know and what we need to learn". *Facilities*, 30(5/6), 199-217.
- Jensen, P.A. and Van der Voordt, T. (2015a) *How can FM create value to organisations. A critical review of papers from EuroFM Research Symposia 2013-2015 papers*. Baarn: EuroFM publication.
- Jensen, P.A. (2008) *Facilities Management for students and practitioners*. Copenhagen: Centre for Facilities management – Realdania Research.
- Jensen, P.A. (2010), "The Facilities Management Value Map: a conceptual framework". *Facilities*, 28, 3/4, 175-188.
- Jensen, P.A. and Van der Voordt, T. (2015b), Added Value of FM – A critical review. In: Alexander, K. and Price, I., *People make facilities management*. Proceedings of the European Facility Management Conference EFMC 2015, Glasgow, 1-3 June 2015.
- Jensen, P.A. and Van der Voordt, T. (eds.) (2017), *Facilities Management and Corporate Real Estate Management as Value Drivers: How to Manage and Measure Adding Value*. Oxfordshire: Routledge.
- Jensen, P.A., Nielsen, K. and Nielsen, S.B. (2008) *Facilities Management Best Practice in the Nordic Countries – 36 cases*. Centre for Facilities Management – Realdania Research, DTU Management Engineering. Technical University of Denmark.
- Jensen, P.A., Sarasoja, A.L., Van der Voordt, T. and Coenen, C. (2013) "How can Facilities Management add value to organisations as well as to society?" Brisbane, Australia: *CIB World Building Congress*, 5-9 May 2013.
- Joroff, M.L., Louargand, M., Lambert, S. and Becker, F. (1993), *Strategic Management of the Fifth Resource*. Report no. 49. Industrial Development Research Foundation.
- Junghans, A. and Olsson, N.O.E. (2014) "Discussion of facilities management as an academic discipline". *Facilities*, 32, 1/2, 67-79.
- Jylhä, T. and Junnila, S. (2014) "The state of value creation in the real-estate sector – lessons from lean thinking", *Property Management*, 3, 1, 28-47.
- Jylhä, T. (2013) *Creating Value or Waste? Evaluating the Production of Real Estate Services with Lean Thinking*. PhD Thesis Aalto University, Helsinki
- Kastelein, J.P. (2015) *Space Meets Knowledge*. Breukelen: Nyenrode Business Universiteit.
- Kok, H.B. (2015) *Facility Management in Dutch Higher Education*. PhD Thesis. Wageningen: Wageningen University.
- Krumm, P.J.M.M. (1999) *Corporate real estate management in multinational organisations. A comparative analysis of Dutch corporations*. PhD Thesis. Nieuwegein: ARKO publishers.
- Krumm, P.J.M.M. (2001) "History of real estate management from a corporate perspective". *Facilities* 19, 7/8, 276-286.
- Krumm, P. J. & De Vries, J.C. (2003)"Value Creation through management of real estate". *Journal of Property Investment and Finance*, 21, 61-72.
- Krumm, P., Dewulf, G. and De Jonge, H. (1998) "Managing key resources and capabilities: pinpointing the added value of corporate real estate management", *Facilities*, 16, 12/13, 372-379.
- Krumm, P., Dewulf, G. and De Jonge, H. (2000) "What is Corporate real Estate?" In Dewulf et al. (eds.) *Successful Corporate Real Estate Strategies*. Nieuwegein: Arko Publishers.
- Lee, Q., Amundsen, A.E., Nelson, W. and Tuttle, H. (1997) *Facilities and Workplace Design: An Illustrated Guide*. Engineering & Management Press
- Lemmens, N. (2003) *Facility services in Nederland. Kwaliteit van professionele dienstverlening*. Utrecht: Lemma BV.

- Van der Voordt, T. (2017) Facilities Management and Corporate Real Estate Management: FM/CREM or FREM? *Journal of Facilities Management* 15(3). Special Issue, edited by Per Anker Jensen.
- Lindholm, A. (2008) *Identifying and measuring the success of corporate real estate management*. PhD thesis. Helsinki University of Technology.
- Lindholm, A.L. and Levainen, K.I. (2006) "A framework for identifying and measuring value added by corporate real estate", *Journal of Corporate Real Estate*, 8, 1, 38-46.
- Lindholm, A.-L., Gibler, K.M. and Leväinen, K.I. (2006) "Modelling the value adding attributes of real estate to the wealth maximization of the firm. *Journal of Real Estate Research*, 28, 4, 443-475.
- Maas, G.W.A, and Pleunis, J.W. (2003, 2006) *Facility management: strategie en bedrijfsvoering van de facilitaire organisatie*. Alphen a/d Rijn: Kluwer.
- Melissen, F., Van der Rest, J.P., Josephi, S. and Blomme, R. (eds.) (2014) *Hospitality Experience. An introduction to Hospitality Management*. Groningen: Noordhoff Uitgevers.
- Mobach, M. (2009) *Een organisatie van vlees en steen*. Assen: Van Gorcum.
- Niemeijer, C. (2012), *De toegevoegde waarde van architectuur voor de zorg in ziekenhuizen*. PhD Thesis, Delft University of Technology. Delft: Eburon.
- Nourse, H.O. and Roulac, S.E. (1993) "Linking real estate decisions to corporate strategy". *Journal of Real Estate Research*, 8, 4, 475-494.
- Nutt, B. and McLennan, P. (2000) *Facility Management: risks and opportunities*. Massachusetts: Blackwell Science.
- O'Mara, M. (1999), *Strategy and Place - Managing Corporate Real Estate and Facilities for Competitive Advantage*. New York: The Free Press.
- Osgood, R.T. (2004) "Translating organisational strategy into real estate action: the strategy alignment model, *Journal of Corporate Real Estate* 6, 2, 106-117.
- Pathirage, C., Haigh, R., Amaratunga, D. and Baldry, D. (2008) "Knowledge management practices in facility organisations: a case study. *Journal of Facilities Management* 6, 1, 5-22.
- Price, I. (2003) Facility management as an emerging discipline. In Best, R., Langston, C. and De Valence, G. (eds) *Workplace strategies and Facilities Management. Building in value*. Sydney: Butterworth Heinemann.
- Regterschot, J. (1989) *Facility Management. Het professioneel besturen van de kantoorhuisvesting*. Deventer: Kluwer Bedrijfswetenschappen.
- Riratanaphong, C., (2014) *Performance measurement of workplace change in two different cultural contexts*. PhD-Dissertation. Delft: Delft University of Technology.
- Rondeau, E.P., Brown, R., and Lapides, P. (1995) *Facility Management*. New York: Wiley.
- Roulac, S. E. (2001) "Corporate property strategy is integral to corporate business strategy". *Journal of Real Estate Research*, 22, 1/2, 129-152.
- Scheffer, J.J.L., Singer, P. and Van Meerwijk, M.C.C. (2006), Enhancing the contribution of corporate real estate to corporate strategy. *Journal of Corporate Real Estate* 8, 4, 188-197.
- Schütte, A., Schoonhoven, P. & Dolmans-Budé, I. (2002) *Commercieel Vastgoed*. Doetinchem: Elsevier bedrijfsinformatie / Baarn: Berenschot AT Osborne.
- Scott, W.R. (1971) "Why Facilities management?" *Bankers Monthly* 88, 10, 38.
- Shah, S. (2007) *Sustainable Practice for the Facilities Manager*. Oxford: Blackwell Publishing.
- Suyker, J. (1996) "Bedrijfshuisvesting in de praktijk: benchmarking en verbeterprogramma's". In: *Het Facility Management Handboek*, Aflevering 6, Hoofdstuk 3.1.2. Nieuwegein: Arko Uitgeverij.
- Then, D.S.-S., and Tan, T-h (2013) *Facilities Management and the business of managing assets*. Oxon: Routledge.
- Tompkins, J.A. (1984) *Facilities Planning*. New York: McGraw-Hill.
- Tompkins, J.A., White, J.A., Bozer, Y.A. and Tanchoco, J.M.A. (2003) *Facilities Planning*. 3d edition. John Wiley & Sons.
- Van der Schaaf, P. (2002), *Public real Estate Management. Challenges for Governments*. PhD Thesis. Delft: DUP Science, Delft.

- Van der Voordt, T. (2017) Facilities Management and Corporate Real Estate Management: FM/CREM or FREM? *Journal of Facilities Management* 15(3). Special Issue, edited by Per Anker Jensen.
- Van der Voordt, T. and Jensen, P.A. (2014) "Adding Value by FM: exploration of management practice in the Netherlands and Denmark". In Alexander, K. (ed.) *Promoting Innovation in FM*. Naarden: EuroFM Publications.
- Van der Voordt, T., Jensen, P.A., Hoendervanger, J.G. and Bergsma, F. (2016), "Value Adding Management of buildings and facility services in four steps". *Corporate Real Estate Journal*, Vol. 6 No. 1, pp. 42-56.
- Van der Zwart, J. (2014) *Building for a better hospital. Value adding management & design of healthcare real estate*. PhD Thesis. Delft: Delft University of Technology.
- Van Griensven, L.J.A.M. and Schoonhoven, P.R. (2008) *Huisvesting & Vastgoed. Bouwstenen voor het bedrijfsproces van morgen*. Utrecht: Reed Business & AT Osborne.
- Van Wagenberg, A.F. (2009) *De toekomst van Facility Management in Nederland*. Naarden: FMN.
- Varcoe, B. (2000), "Implications for facility management of the changing business climate", *Facilities*, Vol. 18 No. 10/11/12, pp. 383 - 391.
- Verwijmeren, J. (2015) *Study guide master Facility and Real Estate Management 2015-2016*. Deventer: Hospitality Business School, Saxion University of Applied Sciences.
- Veuger, J. (ed.) (2013) *Barometer Maatschappelijk Vastgoed. Onderzoeken en perspectieven op maatschappelijk en financieel rendement*. Assen: Van Gorcum.
- Veuger, J. (ed.) (2014) *Barometer Maatschappelijk Vastgoed. Maatschappelijk verantwoord ondernemen*. Assen: Van Gorcum.
- Veuger, J. (ed.) (2015) *Barometer Maatschappelijk Vastgoed 2015 / Barometer Zorgvastgoed 2015*. Assen: Van Gorcum.
- Wrennal, W. and Lee, Q. (1994) *Handbook of Commercial and Industrial Facilities Management*. New York: McGraw Hill.
- Ytsma, W. and Ytsma, M. (2005) *Geschiedenis van Facility Management*. Naarden: Facility Management Nederland.
- Zeckhauser, S. and Silverman, R. (1983) Rediscover your company's real estate. *Harvard Business Review*, January-February, 111-117.

### **Further reading**

- Lee, Q., Amundsen, A.E., Nelson, W. and Tuttle, H. (1997), *Facilities and Workplace Design: An Illustrated Guide*, Engineering & Management Press.
- Tompkins, J.A., White, J.A., Bozer, Y.A. and Tanchoco, J.M.A. (2003), *Facilities Planning*, 3d ed., John Wiley & Sons.

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### **About the author**

Theo J.M. van der Voordt is emeritus associate professor in corporate and public real estate management at the Department of Management in the Built Environment, Faculty of Architecture, Delft University of Technology. His research topics include workplace management, performance measurement, adaptive re-use of vacant office buildings, successful health care real estate strategies, and adding value by facilities and corporate/ public real estate. The work on offices is conducted in close co-operation with the Center for People and Buildings in Delft. E: [D.J.M.vanderVoordt@tudelft.nl](mailto:D.J.M.vanderVoordt@tudelft.nl).

W: [www.mbe.bk.tudelft.nl](http://www.mbe.bk.tudelft.nl) and [www.cfpb.nl](http://www.cfpb.nl)