

# Virtuality Among Construction Management Service Companies



**Wafa Alsakini**

*TKK Helsinki University of Technology, Finland*

**Juhani Kiiras**

*TKK Helsinki University of Technology, Finland*

**Pekka Huovinen**

*TKK Helsinki University of Technology, Finland*

## VIRTUAL ENTITIES AND VIRTUALIZATION IN GENERAL

Changing market conditions and the fast development of information and communications technologies (ICT) have been the driving forces towards the virtualization of organizations (Franke, 2001). Today's business environments are characterized as complex, uncertain, and interdependent. A *virtual organization (VO)* may be defined as "an entity that is capable of dealing with complexity and uncertainty through cooperation among members in a network that is managed like a single organization" (Saabeel et al., 2002). The goal is to create and nurture flexibility for meeting changing market conditions. In turn, this goal is attained by employing a core competence strategy (i.e., companies concentrate on what they do best), extending their value chains, and integrating many core competencies of other stakeholders. The acquisitions and the development of all resources and capabilities needed for the exploitation of windows of future opportunities have become more time consuming and costly for many organizations that act on their own. Thus, VOs are being formed to exploit those opportunities where each member possesses different, but compatible knowledge, skills, and resources (Franke, 2001; Coulson & Kantamnen, 2003).

A *virtual company (VC)* may be defined as an evolving model rooted in the paradigm of networked stakeholders (see for example Fleisch & Österle, 2000). It resembles a dynamic network that facilitates the discovery and configuration of core competencies in a value chain that, in theory, result in an optimal value creation process. In turn, Bauer and Köszegi (2003) define a VC as "a temporary, loosely coupled network of legally independent companies, who combine their individual core competencies to exploit a specific

business opportunity by optimizing the value adding business process." Mutual trust between the partners and the extensive use of collaborative ICT guarantee the coordination of modularized production. Many dynamic industries, like the IT industry, provide pioneering examples of VCs. The emergence of many VCs has been coupled with *extensive outsourcing*. In turn, the latter has been triggered by strategic choices such as focusing on core business processes, acquiring new competencies including managers, enhancing flexibility, controlling growth, reducing costs, and engineering fixed costs into variable costs (Baden-Fuller et al., 2000).

However, traditional organizational forms exhibit many of the characteristics of VCs. Virtuality seems to be a strategic characteristic applicable to every organization. Therefore, a binary classification of companies—virtual versus non-virtual—should be replaced by a *concept of gradual virtualization*. The measurement of current degree of virtuality can be based on instruments that integrate the characteristics of collaborating companies and those of their relationships. Venkatraman and Henderson (1998) propose a concept of virtualization along three core vectors: customer encounter, asset configuration, and knowledge leverage. The organizational transformation arises when ICT-induced strategic moves are proposed along the three interdependent dimensions and a dynamic interaction between the identified vectors takes place along an evolutionary path. Clients' needs initiate such virtualization processes. The design of a virtual network configuration begins once the specific needs (market opportunities) are being identified and clients become strategic partners within the network. New instruments are needed to enable the analysis of (a) the development of virtual structures over time and (b) the mapping of the degree of virtualization against alterna-

tive organizational designs in dynamic environments (Bauer & Köszegi, 2003).

The *management of virtualization processes* is being modeled as well. A predetermined ICT-driven path can be planned through the consecutive stages of evolution from a traditional company to the virtual one. An ideal virtual company can be defined to exhibit the preferred characteristics (conceptualized independently from a specific evolutionary path) as a frame of reference for managing and measuring the degrees of a particular company's virtuality (Bauer & Köszegi, 2003). Scholz's (2000) model consists of core differentiation (strategic orientation towards core competencies), soft integration (the task of integration of modularized production throughout a value-adding process by "soft" mechanisms, i.e., co-destiny, shared vision and goals, fairness, and trust), and virtual realization (the extent to which ICT is used to coordinate modularized production). His model depicts various degrees and types of virtualization by moving companies in a three-dimensional space. None of solutions along one dimension is alone ideal for restructuring companies and adapting them to new situations. Indeed, a leap towards a VC implies the integrated movements along all of three dimensions.

## CONSTRUCTION MANAGEMENT (CM) CONTRACTING IN BUILDING

In all kinds of economies, *building sectors* deal with the design, financing, implementation, services, and life-cycle aspects of investments in both new buildings and the renovation of the existing building stock. Buildings serve public and private sectors. There are residential and non-residential buildings. Further, the latter include commercial, industrial, office, and public buildings.

The *general construction management (CM) context* involves individual practitioners who are needed to perform various CM services for clients such as building owners. A vast range of expertise and the demand for timely performance on projects preclude complete CM services by an individual firm, except on the simplest projects (Haltenhoff, 1999). The organizational make-up of a CM company is unique in building construction. Neither a general contractor nor an architect/engineer (A/E) company can match its functions or personnel. CM practice has substantiated

the fact that CM companies must be multi-discipline organizations. Building owners agree with qualified CM companies to provide construction leadership as well as to perform administration and management within a defined scope of services. A construction manager works throughout all phases of a project: programming (briefing), building design, procurement, and construction works. He cooperates closely with a building owner and designers in furthering the interests of the owner in question.

The exemplary context of the Finnish building sector witnessed a deep recession during the early 1990s which led to the establishment of both new CM-for-fee consultants and CM-at-risk contractors with their streamlined organizations. Large buildings were increasingly implemented under many forms of CM contracts (Kiiras et al., 2002). Major building owners have become highly satisfied clients as the reliance of CM contracts allows them to make decisions in more flexible ways and to avoid change orders as part of the phasing and progress of projects. As a result of these CM-based competitive pressures, the top management of many traditional Finnish building contractors have also been tempted to consider changing their strategies and principles of organizing themselves, mainly they consider new ways of streamlining their organizations by adopting a vision that can be characterized as a virtual contractor. In the early 2000s, the realization of this vision is being enabled and supported via a strong IT infrastructure and fast developments in ICT.

## COMPETITIVE VIRTUALITY OF A CM SERVICES COMPANY

### Definition of a Virtual CM Services Company

A *virtual construction management services company (VCMSC)* is defined as a dynamic network of collaborating entities that reconfigure around an organizational core or a leading member whenever a CM servicing opportunity arises. This leading CM member guides a virtual network both on a short and long-term basis, members can be geographically dispersed, and each member specializes in those parts of the value chain with which it achieves the maximum added value. A VCMSC is a *purposeful system* composed of a set of interrelated elements, that is, members, resources, and activities.

6 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: [www.igi-global.com/chapter/virtuality-among-construction-management-services/17830](http://www.igi-global.com/chapter/virtuality-among-construction-management-services/17830)

## Related Content

---

### Augmented Reality in Research and Practice: A Content Analysis of Claims in Education

Mark Eugene Petrovich Jr. and Aroutis N. Foster (2021). *Designing, Deploying, and Evaluating Virtual and Augmented Reality in Education* (pp. 48-75).

[www.irma-international.org/chapter/augmented-reality-in-research-and-practice/264800](http://www.irma-international.org/chapter/augmented-reality-in-research-and-practice/264800)

### Virtual Worlds and Well-Being: Meditating with Sanctuarium

Laura L. Downey and Maxine S. Cohen (2018). *International Journal of Virtual and Augmented Reality* (pp. 14-31).

[www.irma-international.org/article/virtual-worlds-and-well-being/203065](http://www.irma-international.org/article/virtual-worlds-and-well-being/203065)

### Researching Community in Distributed Environments: Approaches for Studying Cross-Blog Interactions

Vanessa Paz Dennen, Jennifer B. Myers and Christie L. Suggs (2011). *Handbook of Research on Methods and Techniques for Studying Virtual Communities: Paradigms and Phenomena* (pp. 509-529).

[www.irma-international.org/chapter/researching-community-distributed-environments/50360](http://www.irma-international.org/chapter/researching-community-distributed-environments/50360)

### The Evolution of Virtual Universities

Marion Cottingham (2011). *Virtual Communities: Concepts, Methodologies, Tools and Applications* (pp. 182-187).

[www.irma-international.org/chapter/evolution-virtual-universities/48666](http://www.irma-international.org/chapter/evolution-virtual-universities/48666)

### Preparing for the Forthcoming Industrial Revolution: Beyond Virtual Worlds Technologies for Competence Development and Learning

Albena Antonova (2017). *International Journal of Virtual and Augmented Reality* (pp. 16-28).

[www.irma-international.org/article/preparing-for-the-forthcoming-industrial-revolution/169932](http://www.irma-international.org/article/preparing-for-the-forthcoming-industrial-revolution/169932)