

# Chapter 16

## Aided System of Competence Management for Virtual Team Building Adapted to Specific Needs of Design Projects

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### ABSTRACT

*Virtual instruments and tools are future trends in Engineering which are due to the growing complexity of engineering tasks. Individuals who are working in Virtual Teams must be equipped with spanning competencies that provide a basis for Virtual Team building. In the first step this chapter gives a broad insight to the field of Competence Management and Virtual Teams. The second step responds to the need of a method of Competence Management to build Virtual Teams that are active in virtual design projects in the area of New Product Development (NPD). Due to the systemic approach of the functional analysis, we present an Aided Competence Management for Virtual Team Building System (Aided CMVTB System) that permits to be adapted not only to organizations but also to design projects without a real organizational structure. The focus of this work is set on the generic aspect to highlight the adaptability and flexibility of the system.*

### INTRODUCTION

Today's economic prosperity depends on generating new knowledge, innovation and technological

progress. As prospective partners and customers are spread out across the globe, organizations need access to worldwide communication to aspire worldwide competitiveness. In light of the increasing de-centralization and globalization of work processes, many organizations have responded

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to their dynamic environments by introducing Virtual Teams, in which members are geographically dispersed and coordinate their work mainly through electronic information and communication technologies (Grenier & Metes, 1995). The focus of this work is set in providing an Aided Competence Management for Virtual Team Building System (Aided CMVTB System). Those Virtual Teams are active in virtual design projects in the area of New Product Development (NPD). The Aided CMVTB System should improve the NPD process by providing Virtual Teams whose competencies assign the best to the requirements of design projects.

According to the systemic approach, our method is considered as a system that is described by functions. The importance of them depends on the specific needs of an organization or particular design projects. It is measured in a qualitative way with a tool called “hierarchical tree” that represents the system in a hierarchical form. By preparing the hierarchical tree and identifying the most important functions, we aim to represent the Aided CMVTB System to be better understood, to provide substantiated recommendations and to be realized in a further step. We like to ensure that the functions are partitioned in an appropriate manner and to show interfaces between them. The hierarchical functional decomposition of the system shall ensure traceability between functional requirements throughout all the levels. By using the tool of the hierarchical tree we aim to find a formulation of a framework that fits for each context.

The chapter is organized as follows:

- Firstly, we give an overview of our topic and a conceptualization for Virtual Teams and Competence Management is proposed. Furthermore, we give a brief overview of the positioning of our Aided CMVTB System.
- Secondly, we present briefly the systemic approach to provide the Aided CMVTB

System based on the functional analysis that helps us to get a holistic picture of our topic from a systemic point of view.

- In a third step we present the tool of the hierarchical tree. Based on our key findings, in this contribution we aim to measure the importance of the key functions as a final step of the functional analysis. We are concentrating on the hierarchical structure of the functions that we have identified to describe our system in a qualitative way.

To provide a first basic hierarchical structure we refer in a fourth step to a model of CEISAR called “Enterprise Architecture Cube”. We adapted its principle to our system that helps us to bring a first structure in our functions and to prepare the hierarchical tree.

Next we aspire to provide clear visibility of the large number of functions making up our system by the hierarchical tree. The importance of the key functions will be represented.

We finish in a last step with our concluding remarks and some perspectives for future work. Building on this systemic analysis makes it possible for us to give guidelines, best practices and recommendations to implement a system like ours in industry.

## **BACKGROUND**

Global competition, mass customization, and strong international collaborations on the international market are some of the trends that currently drive organizational changes and a rising value of Virtual Teams (Grenier & Metes, 1995). But what do we understand exactly by a Virtual Team? Earlier research on Virtual Teams gravitated around comparing Virtual Teams to conventional teams (Archer, 1990; Hollingshead et al. 1993; Warkentin et al. 1997). However, recent arguments have stressed that the line between calling a team conventional or traditional and one that is virtual

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