

## Chapter 15

# Governance of Virtual Networks: Case of Living and Virtual Laboratories

**Brane Semolic**

*Project & Technology Management Institute Faculty of Logistics, University of Maribor, Slovenia*

**Jure Kovac**

*Faculty of Organizational Sciences University of Maribor, Slovenia*

### ABSTRACT

*Technological and organizational excellence is the key element for business success in a modern business environment. In contemporary business environments, companies will restore and keep their competition capability not only by optimizing their own potentials, but mainly by utilizing capability of foreign resources and their connection to complete business process in the so called network organizations. Virtual organizations are a special form of network organizations. Among virtual organizations the so called Living Laboratory takes place. This chapter presents the findings of the research regarding the state of development and application of laser living laboratory management and governance system in Toolmakers Cluster of Slovenia.*

### INTRODUCTION

Modern companies are permanently analyzing their business activities and the global market, and are searching for business opportunities to improve the competitive capacities of their own company. New forms of network organization of companies' business activities are coming to the fore, which organize individual business activities in the regions that from the business viewpoint seem favourable

with respect to the prices of manpower, special know-how, raw materials etc.

Trans-national research, development and production networks are being formed. Their formation and development is influenced by the scope of business environment development of the involved countries, regions, national and regional government rules and regulations, social and cultural conditions etc. The world is becoming a more and more intertwined network consisting of a series of different trans-national networks and specialized economic entities, working in different parts of the world.

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The urge for the concentration of resources resulted in the creation of network-structured integrations as one of the most appropriate solutions. One of the major features of creating network organizational structures is the integration based on rather loose and temporary association of particular resources in order to obtain the objective of competitive advantage. Virtual network organizations are a special form of network organizations based on the use of modern information and communication technologies and collaboration between different organizations that has similar research and development interests.

The mission and concern of the proposed chapter is to present the concepts of the living and virtual laboratories design. Within this framework the problems and theoretical solutions will be presented:

- How to design governance and management model for the specific needs of living and virtual laboratories clients;
- How to start architecture design of living and virtual laboratories.

Described theories are partly illustrated using the case studies from Toolmakers Cluster of Slovenia.

### **VIRTUAL ORGANIZATION, VIRTUAL LABORATORIES AND LIVING LAB?**

Most of the existing studies point out that virtual organizations are a temporary consortium of partners from different organizations establishes to fulfill a value-adding task, for example a product or service to a customer (Duin, 2008, p.26). According to Rabelo and Pereira-Klen (2004) virtual organizations are temporary alliances between organizations to share skills or core competencies and resources in order to better respond to new collaboration opportunities (Loss et al., 2008, p.77). This way, virtual organizations represent

cooperation between formally non-connected organizations or persons who establish vertical or horizontal links and present themselves to the customers of their products or services as a single association. Apart from the professional literature concerning virtual organizations emphasis is also given to the information and communication technology as well as to the absence of the central control functions. (Mohrman, Galbraith & Lawler III., 1998, p.77; Dessler, 2001, p. 230; Pettigrew et al., 2003, p. 8; Vahs, 2005, p. 507).

As indispensable precondition for the functioning of the above mentioned organizational connectedness the authors quote timely adjusted cooperative processes, organizational development, space dispersion and use of modern communication technology to master the processes of cooperation (Rohde, Rittenbuch, & Wulf, 2001. p. 2).

In the literature, the companies are often described as a network of companies (i.e. organizations – boundary-less firms or boundless organizations). These are dynamic, i.e. virtual companies, linked together at the base of the inter-organizational information systems, pursuing the aim to be successful in the area of given projects.

Virtual laboratories are a special form of network organizations. A virtual laboratory is an interactive online environment established so as to create and channel simulations and experiments in a certain science field. It is an environment designed for working in teams from different locations and creates opportunities for cooperation in research and development. One of its important tasks is also the remote access to expensive laboratory and other equipment. Virtual laboratories further include the so called living labs.

The basic concept of the living lab was developed at the American MIT Institute in Boston, USA. It was first used for designing and planning urban area architecture. A living lab is an R&D methodology for identifying, validating and finding solutions to complex problems by including

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