



# EVALUATION OF POTENTIAL OF META-INSTITUTIONS AS DEVELOPMENT SUPPORT FOR VIRTUAL AND UBIQUITOUS ENTERPRISES MODELS – APPLICATION TO REGIONAL CLUSTERS

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## KEYWORDS

Meta-Institutions, Virtual and Ubiquitous Enterprises, Empirical Study.

## ABSTRACT

Innovativeness, competitiveness and sustainability are now key aspects for businesses to survive in the current economic context. The definition of new concepts of organizational business is, clearly, a critical factor for success and differentiation.

The networked organizational structures reflect an important prerequisite for achieving the flexibility and rapid response capability in order to keep the organization aligned with a market increasingly demanding, global and interconnected, and are the model advocated by the recent literature on business, competition and organizational models.

Virtual Enterprises (VE) and Ubiquitous Enterprises (UE) are considered to be two advanced models of networked organizational structures.

(Putnik 2005) refers that there are three fundamental features of the VE concept:

1. Network dynamic reconfiguration,
2. Virtuality, and
3. External entities (meta- (virtual) enterprise structures).

The external entities are considered meta-institutions and environments for enabling, or supporting, the VE integration itself as well as a reconfiguration dynamics. In other words, meta-institution is an instrument reckoned as the enabling environment to support the networked organizational structures and activities.

Meta-institutions exist in different forms, as an (private and/or public) institution or business/industry association. Probably, one of the reasons why the existing meta-institutions still did not implement Virtual Enterprise concept is because they did not have an explicit proof of companies' preparedness to adopt the concept of VE as well

as the existing meta-institutions are not oriented towards support of inter-enterprise dynamic reconfigurations – as one of the fundamental features of VE and UE.

Research have been made by many VE researchers (Cardoso and Oliveira, 2005); (Afsarmanesh and Camarinha-Matos 2005). In (Cunha et al. 2000, 2005) is possible to percept an advanced meta-institution model capable to support inter-enterprise dynamic reconfigurations of VE and UE, among other relevant activities.

This research aims to take one more step forward in the future implementation of advanced organizational models in regional enterprises. The author considers that meta-institution and VE are strategic solutions for regional business/industry communities' competitiveness and sustainability. To go ahead with the implementation of a meta-organization model, an assessment and prove of its adequacy to a real case as well as assessment of other determinant factors are vital.

The main objectives of this research are to prove the followings theses:

1. Regional enterprises are aware of the urgency to adopt Virtual and Ubiquitous Enterprises as a factor of competitiveness and sustainability;
2. Regional enterprises are prepared to use Meta-Organizations as a support environment for Virtual and Ubiquitous Enterprises model.

The above theses imply the following activities:

1. Assess the perception, technological capacity and levels of awareness and preparedness of the enterprises in the region for Meta-institutions in order to implementation and use them as a support in the emerging models of VE and UE implementations.
2. Assessing the potential of environments such as Meta-institutions, to support adoption of Virtual Enterprises and Ubiquitous Enterprises models;

Concerning the theses validation methodology, empirical studies are going to be set to collect data and information



within the enterprises in the region in the selected industrial sector, in order to prove statistically the previous theses.

Additionally, to support the perception of regional companies of these new organizational models (principal advantages, way they work, and so on) two demonstrators were developed with the following titles:

- a) “Impact of Virtual Enterprise Dynamic Reconfiguration on Product Time-To-Market”;
- b) “Planning vs. Dynamic Reconfiguration”

In short, the demonstrator **a)** aims to simulate the impact of the VE dynamic reconfiguration on the product time-to-market, and the demonstrator **b)** is to validate the phenomena of the effects of implementing the principle of inter-enterprise network dynamic reconfiguration comparing with "traditional" production planning strategies.

The demonstrators are developed over Internet technology, in order to be available an easy access and use.

Figures 1 and 2 present starting web pages / interfaces for the developed demonstrators.



Figure 1: Starting page of the demonstrator **a)**  
(<http://labve.dps.uminho.pt/demonstrators/demo1/>).



Figure 2: Starting page of the demonstrator **b)**  
(<http://labve.dps.uminho.pt/0902/>).

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