



## B2B e-hubs in emerging landscape of knowledge based economy

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### Abstract

Knowledge gradually becomes a driving force for the economic development. The progress of information and communication technology facilitates sharing of technologically and economically valuable knowledge and further integration of productive forces of humanity in emerging knowledge-based economy. This process has already revealed ‘dominant’ structural formations and major approaches to the organisation of industrial production. This paper considers the development of e-Hubs for business-to-business collaboration and links this development with the issues of organisation of industrial production in future economy.

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### 1. Introduction

With recent progress of information and communication technology (ICT), knowledge gradually becomes a driving force for the economic development. This fact is clearly illustrated by

the economic results achieved in high-tech industries, e.g. electronic, personal computers (PCs), software, telecommunication, mobile telephony, and so on, as well as by the comparison of the standards of life in the countries heavily investing in research and development, e.g. Sweden, Japan, USA and others and those, which have their assets mostly in the production of raw materials, e.g. Russia, Ukraine, and countries of Arab world and Latin America. Moreover, the advancements of ICT have facilitated global sharing of valuable

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knowledge, which in turn has stimulated ‘competitive collaboration’ of producers and ongoing structural changes in the world’s economy.

Remote trading of commodities with the use of e-mail services was among the first businesses benefited from the advantages of commercial application of web technology. Buying online and searching the web for something ‘suitable’ among the variety of proposed products, services and solutions becomes more and more popular nowadays. The availability of access to Internet for households has grown from 18% in 2000 to 43% in November 2003 [1]. About 84% of small and medium size enterprises (SMEs), i.e. those having 1–49 employees, have access to Internet, and approximately 70% of all European companies have their web sites. “At present only about 12% of enterprises are selling online with tourism, financial services, publishing and software being the leading sectors, but their purchasing has developed much faster”. According to recent European Institutions press release, about 54% of estimated 185 million European Internet users are expected to shop online by 2006. With e-commerce representing currently only 1–2% of retail sales in the EU, the prospects for growth are very promising. For example, “online Christmas shopping in 2002 saw an increase of 86% over the previous year and total business to consumer e-commerce is expected to increase from €10 billion in 2000 to €70 billion in 2003” [1]. However, as noted in the European Commissions expert group report on business-to-business (B2B) trading platforms, “E-markets have changed considerably since their invention. However, the public understanding of e-markets is still at the state of 1999. It is of crucial importance – especially for smaller companies – that they understand Internet trading platforms better, so that they can make optimal use of them” [2].

The goal of this paper is to outline important trend(s) in the advancement of this rapidly growing area of economy, i.e. the transformation of e-market, and to provide recommendations regarding feasible structure of emerging integrated industrial production/distribution chains, which could be useful for businesses.

The results presented in the paper are partially based on research carried out by the correspond-

ing co-author when he was working on European Commission funded “e-Engineering enabled by Holonomic and Universal Broker services” (e-HUBs) project in 2002–2004. The work assumed the investigation of principles of formation of and methods of management in web-based clusters of self-governed (predominantly small) engineering service providers. Few words about the project are given in Section 3 below. More details can be found in [3,4], as well as on the projects web site [www.e-hubs.org](http://www.e-hubs.org).

Another source of inspiration for writing this paper came from our joint work on the analysis and modelling of economic aspects of penetration of the paradigm of mass-customisation into processes of industrial production and product distribution stimulated by the advancements in ICT (major results of this work are presented in [5,6]).

The results obtained proclaim that substantial introduction of mass-customisation in industry is associated with formation of distributed (presumably web-based) production/distribution value added chains, which are considered by authors as specific type of engineering clusters (ECs) of small, medium sized and (potentially) large enterprises. This paper combines the results from these two complementary fields of research.

## **2. E-commerce, e-Hubs and the penetration of ICT into the depth of a supply chain**

Rapid booming of business-to-consumer oriented e-commerce (B2C) in late 1990s in USA was followed by the processes of consolidation of e-services and restructuring of e-market, which resulted with the development of new type business leaders, i.e. web-based entities resembling traditional supermarkets. Due to amazing flexibility of the customers in e-trade these leaders grew rapidly and in a short time have concentrated and monopolised significant part of initially chaotic and rapidly expanding market.

Investigating “quite revolution” in e-commerce Kaplan and Sawhney [7] have identified these leaders as e-Hubs. Their reasons for the name are like that: “First, they do for e-commerce what a network hub for bits – concentrating, routing, and

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