



UvA-DARE (Digital Academic Repository)

Enhancing performance in industrial collaborative networks

Camarinha-Matos, L.M.; Afsarmanesh, H.

DOI

[10.1080/00207540701224178](https://doi.org/10.1080/00207540701224178)

Publication date

2008

Published in

International Journal of Production Research

[Link to publication](#)

Citation for published version (APA):

Camarinha-Matos, L. M., & Afsarmanesh, H. (2008). Enhancing performance in industrial collaborative networks. *International Journal of Production Research*, 46(5), 1203-1205. <https://doi.org/10.1080/00207540701224178>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

This article was downloaded by: [Universiteit van Amsterdam]

On: 21 October 2008

Access details: Access Details: [subscription number 772723297]

Publisher Taylor & Francis

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



International Journal of Production Research

Publication details, including instructions for authors and subscription information:

<http://www.informaworld.com/smpp/title-content=t713696255>

Enhancing performance in industrial collaborative networks

Online Publication Date: 01 March 2008

To cite this Article (2008)'Enhancing performance in industrial collaborative networks',International Journal of Production Research,46:5,1203 — 1205

To link to this Article: DOI: 10.1080/00207540701224178

URL: <http://dx.doi.org/10.1080/00207540701224178>

PLEASE SCROLL DOWN FOR ARTICLE

Full terms and conditions of use: <http://www.informaworld.com/terms-and-conditions-of-access.pdf>

This article may be used for research, teaching and private study purposes. Any substantial or systematic reproduction, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The accuracy of any instructions, formulae and drug doses should be independently verified with primary sources. The publisher shall not be liable for any loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

Editorial

Enhancing performance in industrial collaborative networks

Collaborative networks, although still an open area of research and development, represent a promising paradigm in a knowledge-driven society. This paradigm is already established as a main trend in industrial production systems. A wide variety of early forms of collaborative networks have emerged during the last few years as a response to rapidly evolving challenges faced by business entities and the society in general. As such, highly integrated and dynamic supply chains, the extended and virtual enterprises, virtual organizations, and professional virtual communities, as well as the long term networks, clusters, and breeding environments for virtual organizations are examples of this trend that are indeed enabled by the advances in information and communication technologies.

In this context it is commonly assumed that participation in a collaborative network has the potential of bringing benefits to the involved companies. Among these benefits is an increase in ‘survivability’ of organizations in a context of market turbulence, as well as the possibility of better achieving common goals by excelling the individual capabilities. On the basis of these expectations we can find the following main factors: acquisition of a larger dimension, access to new/wider markets and new knowledge, sharing of risks and resources, and joining of complementary skills and capacities which in turn allow each entity to focus on its core competencies while keeping a high level of agility and gaining better share in the market/society. In addition to agility, the new organizational forms also induce innovation, and thus creation of new value, by exchange and confrontation of ideas and practices, combination of resources and technologies, and creation of synergies.

It is, however, timely to devise methods and approaches that allow not only the measurement of performance through explicit indicators, but also to induce better performance in such collaborative organizations. As illustrative examples, the following are relevant challenges:

- Identification and characterization of network-centric metrics and performance indicators.
- Combination of quantitative and qualitative reasoning methods in order to properly model and forecast the behaviour of networks composed of heterogeneous and autonomous entities, which frequently requires dealing with imprecise and incomplete knowledge.

- Better understanding of base concepts such as the value system, trust, reciprocity, negotiation, etc, which drive the behaviour and thus the performance of collaborative networks.
- Development of measuring and forecasting approaches and tools to improve the performance of collaborative networks.

Progress in this area requires a multi-disciplinary perspective and combination of theoretical developments accompanied by progressive empirical evidence. Simulation also appears as a fundamental instrument in this context, where there is not yet much historic data available.

This special issue comprises the extended version of a selection of papers from the PRO-VE'06 conference. The issue is focused on advanced research related to enhancement of performance in industrial collaborative networks. The papers are updated to present the latest status of the research and have been subject to rigorous peer review for journal publication.

The PRO-VE conference series, sponsored by IFIP (International Federation for Information Processing) and SOCOLNET (International Society of Collaborative Networks), is recognized as the most focused scientific/technical conference in the area, offering a platform for presentation and discussion of both the latest research developments and the industrial practice case studies. The 2006 edition, held in Helsinki, Finland, continued a series of successful conferences that started with PRO-VE'99 (held in Porto, Portugal), and has since continued with PRO-VE 2000 (Florianópolis, Brazil), PRO-VE'02 (Sesimbra, Portugal), PRO-VE'03 (Lugano, Switzerland), and PRO-VE'04 (Toulouse, France), PRO-VE'05 (Valencia, Spain), and finally PRO-VE'06 (Helsinki, Finland).

The papers included in this issue cover some important performance enhancements, namely:

- Abreu and Camarinha-Matos discuss the importance of a common value system in the sustainability of collaborative networks. They introduce some mechanisms to promote transparency and induce alignment of value systems, based on the reciprocity mechanism. The concepts of contributed and received benefits are modelled and extensively discussed as the basis for the promotion of collaboration. Data from existing networks is used to support the discussion of the proposed approach.
- Confessore *et al.* introduce a computational fast method for pricing of the delivery service in a logistics network. An analytical function which is able to predict transportation costs and an interaction protocol for customers and logistics operator to decrease total distribution costs are developed. Simulation is used to validate the approach.
- Beckett introduces an adaptation of the notion of absorptive capacity where both a company's resource base and its knowledge base are considered as a framework to better understand requirements for participation in industrial virtual enterprises. In particular, capital and time are introduced as key resources in the assimilation of new technology. Empirical evidence from a large scale SME network is used to support the discussion and conclusions.
- Msanjila and Afsarmanesh discuss the importance of trust establishment in collaborative networks, introducing an objective (fact-based) trust analysis approach for large virtual organization breeding environments. They identify

a set of elements/metrics as necessary for measuring/assessing the trustworthiness of different organizations, and a quantitative approach to trust level assessment to compare the trustworthiness of different organizations. A simulation approach is also suggested to estimate the evolution of organizations' trustworthiness based on their past data.

- Kaihara and Fujii address the issue of negotiation in consortia formation, following a game theoretic approach and combining other elements from marketing science. A multi-agent based negotiation experiment is also introduced.
- Krawczyk-Brylka and Piotrowski also focus on the negotiation problem by introducing a quantitative model of negotiations and metrics to evaluate the quality (performance and satisfaction) of negotiations in different environments. For this purpose four quality attributes are defined and analysed.
- Liston *et al.* propose the use of discrete event simulation as a means of evaluating proposed virtual organization configurations within the request for quotation (RFQ) process. The work presented is targeted at manufacturing based VOs that are created to carry out specific manufacturing tasks, as outlined in an RFQ. Data from an existing virtual organization's breeding environment is used to illustrate the use of DES to support VO creation.
- Gloor *et al.* provide a contribution correlating social network structures with individual and organizational performance. Using an experiment with online learning communities, they compare the structure of social network and the performance of their individual and team participants in a multi-user online computer game with the social network structure and performance among the student teams.

Collaborative networks represent a young discipline and there are certainly many more challenges ahead related to this particular topic. Nevertheless, we expect this issue to contribute to a better understanding of the area and provide a basis for further developments.

Finally, we would like to acknowledge the very valuable comments/contributions from the reviewers and the authors who contributed to this special issue.

L. M. Camarinha-Matos
Faculty of Sciences and Technology
New University of Lisbon
Portugal
Email: cam@uniova.pt

H. Afsarmanesh
Computer Science Department
University of Amsterdam
The Netherlands
Email: hamideh@science.uva.nl