

IFAC TC 5.2

Manufacturing Modelling for Management and Control

Working group 2: Advanced multi-criteria applications in manufacturing and logistics

Report period: April 2012-May 2013

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Short presentation: Multi-criteria approaches have been put to use in multiple segments of manufacturing and logistics. They have taken a prominent role to integrate people, information and products across integrated supply chain boundaries including management of various manufacturing, logistics and retailing operations such as in manufacturing, warehousing and distribution of goods and services. Decisions involving customer profiling, new product development, retail marketing, and sales patterns are immensely refined using innovative multi-criteria approaches. Also, as such decisions have an impact on the overall integrated logistic network processes, it is important that innovative multi-criteria-based tools also be linked to integrated supply chain management applications. The working group aims to focus on the following topics including:

1. Manufacturing and logistics systems scheduling and planning;
2. Adaptive manufacturing and logistics systems trading, coordination and negotiation;
3. Green and eco-manufacturing and logistics systems management;
4. Risk management in manufacturing and logistics systems;
5. Secure manufacturing and logistics systems collaboration;
6. Impacts of cultural difference for manufacturing and logistics systems management,...

Keywords: Multi-criteria, supply chain, logistics, manufacturing, inventory control, risk

During the period of April 2012-May 2013, working group members were very active to promote the IFAC, TC 5.2 and working group activities. Following are highlighted the main results:

Publication of books

1. Applications of multi-criteria and game theory approaches: manufacturing and logistics. [Springer Series in Advanced Manufacturing](#) 445 pages, (Springer), L. Benyoucef, J.C. Hennet and M.K. Tiwari (Eds) – ISBN: 978-1-4471-5294-1 (in press), 2013.
2. Optimization of logistics. [HP-ISTE Ltd/John Wiley](#), 304 pages, A. Yalaoui, H. Chehade, F. Yalaoui and L. Amodeo – ISBN: 9781848214248, 2012.

Editors of special issues of international journals

1. Advanced metaheuristics for integrated supply chain management in [Journal of Intelligent Manufacturing](#) (Springer publisher), L. Benyoucef and M.K. Tiwari (Eds.) –Vol. 23, Issue 4 (2012).
2. Recent advances in industrial engineering and systems management in [International Journal of Services Operations and Informatics](#) (Inderscience publisher), L. Benyoucef and M. Dahane (Eds.)– Vol. 7, Issue 4 (2012).

Organization of tracks and special sessions in international conferences

1. **MIM 2013**, Special Session: Advanced multi-criteria applications in manufacturing and logistics. IFAC 2013 Conference on Manufacturing Modelling, Management and Control (IFAC-MIM), June 19-21, Saint Petersburg, (Russia). Proposed by L. Benyoucef and F. Yalaoui.
2. **MIM 2013**, Special Session: Recent fuzzy logic applications in manufacturing. IFAC 2013 Conference on Manufacturing Modelling, Management and Control (IFAC-MIM), June 19-21, Saint Petersburg, (Russia). Proposed by L. Benyoucef and M.K. Tiwari.
3. **MIM 2013**, Special Session: Optimal design of production and assembly lines. IFAC 2013 Conference on Manufacturing Modelling, Management and Control (IFAC-MIM), June 19-21, Saint Petersburg, (Russia). Proposed by H. Chehad, F. Yalaoui and L. Amodeo.
4. **INCOM2012**, Special Session: Game theory and multi-criteria approaches for supply chains. Proposed by L. Benyoucef and J.C. Hennet.
5. **INCOM2012**, Track M: Metaheuristics and soft computing in production management (3 sessions). 14th IFAC Symposium on Information Control Problems in Manufacturing May 23 - 25, 2012, Bucharest, Romania <http://www.incom12.ro/committees.html>. Proposed by: F. Yalaoui and L. Amodeo.
6. **INCOM2012**, Track B: Discrete event systems and hybrid systems: modelling and supervisory control (3 sessions). 14th IFAC Symposium on Information Control Problems in Manufacturing May 23 - 25, 2012, Bucharest, Romania <http://www.incom12.ro/committees.html>. Proposed by: F. Yalaoui, L. Amodeo, H. Alla and S. Caramihai.

Moreover, other tracks and special sessions were organized in prestigious international conferences such as CoDIT2013, IESM2013, EURO-INFORMS 2013 and EURO 2012, META2012, ILS2012, ROADEF2013 and 2012, ICIEM 2012.