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## **Introduction: Innovation across network of high-tech SMEs**

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**Biographical notes:** Dr Francis-Luc Perret is vice-president of the Ecole Polytechnique Fédérale de Lausanne (EPFL) and professor of logistics and supply chain management. He recently contributed to the creation of the College of Management of Technology at EPFL, which is offering master, doctoral, and continuing education courses. He is currently working for the French government (Predit) leading a strategic research dedicated to logistics and freight transportation. His Ph.D. at UC-Berkeley was centred on the comparative evaluation of high-level radioactive wastes disposal practices. He has devoted a major part of his research to project and change management as well as multi-criteria decision-making.

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### **Introduction**

Innovation is increasingly acknowledged as essential for value creation in modern business, and the role of innovation management may be seen as a strategically important catalyst affecting future growth. Today, small and medium-sized enterprises (SMEs) have become aware that to keep their level of effectiveness and competitiveness in business, they have to continually generate new products, process and services, which are resource intensive. Due to their limited resources and desire to distribute the risks associated with their product development processes, SMEs are forced to collaborate with each other to combine their efforts and resources to meet a common goal.

While much has been written about the theory and practices of innovation and new product development (NPD) in individual enterprises, little effort has been focused on innovation across networks of enterprises, and much less on high-tech SMEs. This special issue offers a key opportunity to study, develop and assess the new directions of innovation management and NPD in networks of High-tech SMEs required to shape and enhance the new economy in the current turbulent environment.

The objectives of this special issue were, as stated in the call for papers: to develop and promote the field of innovation management and NPD across networks of high-tech SMEs, to further the knowledge, research, theory and practice in this specific field, and to provide a platform for sharing and exchanging views, experience and ideas on the latest findings and best practices.

The topics we invited for this special issue included, but were not limited to the following: innovation and NPD process models and methods for networks of high-tech SMEs; innovation in distributed organisations; critical success factors in managing fast-paced networks of high-tech SMEs; technology partnership between SMEs; building trust within a network of potential competitors of high-tech SMEs; and managing intellectual property rights in networks of high-tech SMEs.

The peer review process does not allow us to hand pick authors or topics to cover the full range of issues. Rather, we cast a broad net to see what would come in and which papers would survive the review process. Nevertheless, what we have assembled is representative of the better quality research being conducted by both scholars and practitioners.

### Papers in the Special Issue

Thirteen submissions were received from authors located in ten countries: France; Germany; Israel; Japan; Pakistan; Switzerland; Thailand; Turkey; UK; and US, representing 16 universities, research centres and R&D departments in industrial firms. Following the general policy of IJEIM, all papers, including invited papers, were initially reviewed by at least two reviewers. Eight papers, by 17 authors and co-authors, have been accepted for publication in this special issue, representing an acceptance rate of 38%. The accepted papers were revised and endorsed by the initial reviewers and the editors. We provide below, a summary of each paper.

*'Observations on Collaborative Practices and Relative Success of Small Technology-Innovating Firms Supported by US SBIR Initiative'*, by Pretorius and Magee, investigates the nature of collaboration in eight small technology-innovating firms who participated in the US Government sponsored SBIR (Small Business Innovative Research) process in 1995/96. The research was performed in 2003 allowing sufficient time to assess the relative success of various practices by the firms following differentiated SBIR processes. *'Facilitating Innovation across SME Network'*, by Barclay and Porter, describes the results from a three-year programme of work to develop a five e-business based SME clusters based on 25 independent, diverse SME companies. It shows how the development of a rapid, practical self-assessment for SMEs was used to define cluster inhibitors and enablers. The article also describes how the self-assessment tool allowed each SME to measure its own capability in key business practices.

*'Israel, a Powerhouse for Networked Entrepreneurship'*, by Haour, argues that this country's innovation scene presents several unique characteristics. These include the role of the army in providing contacts and experience to the engineers while they do their 3-year military service. It is also a close-knit community, typical of a relatively small country. It enjoys a high level of education in science & technology. This article briefly reviews the intense venture capital industry in Israel, and then looks at the specific features of networked techno-entrepreneurship in that country.

*'The Evolution of R&D Networking in the Biotech Industries'*, by Pyka and Saviotti, deals with the evolution of R&D networks in the biopharmaceutical industries. It develops an agent-based-computational model towards evolutionary economics, which is able to generate results which closely correspond to the developments of the real world.

*'Innovation Management in Network of Entrepreneurial Firms'*, by Luggen, Birkenmeier, and Brodbeck, examines an innovation management process for participative networks of entrepreneurial firms, which covers the idea finding, project development and

*Introduction: Innovation across network of high-tech SMEs*

3

innovation project phases. The authors also describe, based on 13 case studies, the management practices and the key issues of innovation management in networks.

*'Innovation Networks in the Biopharmaceutical Sector: a Study of UK Small and Medium-Sized Enterprises'*, by Calin Gurau, investigates and analyses the structure and dynamics of innovation networks in the UK biopharmaceutical sector. The focus is primarily on small and medium-sized biopharmaceutical enterprises, which, because of their characteristics, objectives and strategies, are forced to participate in multiple innovation networks in order to successfully develop their products and activities. The results of the study are useful not only for academics, but also for practitioners, managers, and government specialists, helping them to identify the best procedures and factors that can increase the effectiveness of networking activities in the biopharmaceutical sector.

*'On the Explanation of Horizontal, Vertical and Cross-sector R&D Partnerships – Evidence for the German Industrial'*, By Backes-Gellner, Maass and Werner. R&D cooperations range from periodical interactions to sharing knowledge and exchanging R&D personnel for conjoint projects up to founding R&D joint ventures. In such partnerships all participants work freely and mutually together without losing their economic independence. The aim of this paper is to identify the determinants for companies to participate in such R&D cooperations. Particular emphasis puts on how pecuniary and non-pecuniary incentives promote R&D cooperation and whether government support for joint research activities is effective.

*'The Role of 'Network Lead Company' in Integrating the NPD Process across Strategic Partners'*, by Badir, Buechel, and Tucci, develops a conceptual model investigating the impact of network lead company's organisational design on the integration of NPD across network of strategic partners, and the subsequent effects on NPD project performance. The objective of this effort is to achieve integration between these strategic partners of specialised contributors so that they can make integrated effort toward total network goals and improve the NPD project performance.

## Conclusion

We believe that this set of eight papers makes a valuable contribution to our knowledge of innovation across networks of SMEs. We hope this effort helps facilitating future knowledge development. We certainly anticipate this field of study growing even more in the future as networking for innovation becomes more common and, no doubt, increasingly complex. These articles suggest many promising questions on which to focus new research.

## Acknowledgements

We would like to thank all authors for their interested participation in this special issue. This special issue would not see the light without major effort from an international team of reviewers. We would like to thank a group of 27 reviewers who have generously donated time, expertise, and assistance and for their thorough and constructive comments. Both guest editors and authors appreciate their hard work.