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IFIP's mission is to be the leading, truly international, apolitical organization which encourages and assists in the development, exploitation and application of information technology for the benefit of all people.

IFIP is a non-profitmaking organization, run almost solely by 2500 volunteers. It operates through a number of technical committees, which organize events and publications. IFIP's events range from an international congress to local seminars, but the most important are:

- The IFIP World Computer Congress, held every second year;
- Open conferences;
- Working conferences.

The flagship event is the IFIP World Computer Congress, at which both invited and contributed papers are presented. Contributed papers are rigorously refereed and the rejection rate is high.

As with the Congress, participation in the open conferences is open to all and papers may be invited or submitted. Again, submitted papers are stringently refereed.

The working conferences are structured differently. They are usually run by a working group and attendance is small and by invitation only. Their purpose is to create an atmosphere conducive to innovation and development. Refereeing is also rigorous and papers are subjected to extensive group discussion.

Publications arising from IFIP events vary. The papers presented at the IFIP World Computer Congress and at open conferences are published as conference proceedings, while the results of the working conferences are often published as collections of selected and edited papers.

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Luis M. Camarinha-Matos
Hamideh Afsarmanesh (Eds.)

Collaborative Systems for Smart Networked Environments

15th IFIP WG 5.5 Working Conference
on Virtual Enterprises, PRO-VE 2014
Amsterdam, The Netherlands, October 6-8, 2014
Proceedings



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Preface

The world of the future would comprise many smart environments, transparently enriched with sensors, actuators, and computational elements, where they together provide a complex collaborative context sensitive system. The area of collaborative systems provides an important foundation for emerging smart networked environments, wherein humans, organizations, intelligent agents, and devices can co-exist and collaborate. The main target is enhancing and facilitating the emerging collaborative applications, including security, transportation, construction, sustainability and energy management, education, government, and manufacturing. It is therefore fundamental to understand and model the structure and inter-relationships among entities within the smart environments, as well as to design and develop collaborative systems of systems addressing the functional/non-functional requirements of the targeted applications.

Advanced pervasive computing and interaction possibilities that can be offered by smart environments will enhance the abilities of their occupants and will raise the level of possibilities for their collaboration. Notions such as sensing enterprise, collective awareness, smart cities, and ambient intelligence are just some of the current expressions of these possibilities. Incorporating context awareness in the supporting infrastructures enables more effective forms of collaborative ecosystems. Furthermore, models and mechanisms that are being addressed by research and development in collaborative networks can provide more efficient ways for organizing and dealing with large collections of objects that are interconnected through the Internet.

Among the main research and development challenges in this area, governance, interoperability, emergence, and value creation can be mentioned. Furthermore, any effective solution for smart environments imposes collaboration of multiple stakeholders organized in a mix of dynamic value chain networks. Therefore, new collaborative systems need to be developed under a well-integrated socio-technical perspective. The extensive body of empiric knowledge and the size of the involved research community in collaborative networks provide a basis for leveraging the potential of new concepts and mechanisms in addressing big societal challenges and consolidating the scientific discipline on “collaborative networks.” As such, this discipline is strongly multidisciplinary and thus the PRO-VE Working Conference is designed to offer a major opportunity to mix contributions from computer science, manufacturing, engineering, economics, management, and socio-human communities. The selected theme for PRO-VE 2014 focused on the main identified and crucial aspects that empower collaborative networks in support of smart networked environments, and thus contributed to a new generation of systems.

PRO-VE 2014 held in Amsterdam, The Netherlands, was the 15th event in a series of successful conferences, including PRO-VE 1999 (Porto, Portu-

gal), PRO-VE 2000 (Florianopolis, Brazil), PRO-VE 2002 (Sesimbra, Portugal), PRO-VE 2003 (Lugano, Switzerland), PRO-VE 2004 (Toulouse, France), PRO-VE 2005 (Valencia, Spain), PRO-VE 2006 (Helsinki, Finland), PRO-VE2007 (Guimarães, Portugal), PRO-VE 2008 (Poznan, Poland), PRO-VE 2009 (Thessaloniki, Greece), PRO-VE 2010 (St. Etienne, France), PRO-VE 2011 (São Paulo, Brazil), PRO-VE 2012 (Bournemouth, UK), and PRO-VE 2013 (Dresden, Germany).

This book includes selected papers from the PRO-VE 2014 Conference, providing a comprehensive overview of identified challenges and recent advances in various CN domains and their applications, with a particular focus on the following areas in support of smart networked environments.

- Behavior and Coordination
- Product-Service Systems
- Service Orientation in Collaborative Networks
- Engineering and Implementation of Collaborative Networks
- Cyber-Physical Systems
- Business Strategies Alignment
- Innovation Networks
- Sustainability and Trust
- Reference and Conceptual Models
- Collaboration Platforms
- Virtual Reality and Simulation
- Interoperability and Integration
- Performance Management Frameworks
- Performance Management Systems
- Risk Analysis
- Optimization in Collaborative Networks
- Knowledge Management in Networks
- Health and Care networks
- Mobility and Logistics

We would like to thank all the authors, both from academia/research as well as industry, for their contributions. We hope this collection of papers represents a valuable tool for those interested in research advances, emerging applications, and future challenges for R&D in collaborative networks. We also appreciate the dedication of the PRO-VE Program Committee members who helped with the selection of articles and provided valuable and constructive comments to help authors improve the quality of their papers.

July 2014

Luis M. Camarinha-Matos
Hamideh Afsarmanesh

Organization



PRO-VE 2014 15th IFIP WG 5.5 Working Conference on
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Table of Contents

Introduction

Collaborative Systems for Smart Environments: Trends and Challenges	3
<i>Luis M. Camarinha-Matos and Hamideh Afsarmanesh</i>	
Collaborative Systems of Systems Need Collaborative Design	16
<i>John Fitzgerald, Jeremy Bryans, Peter Gorm Larsen, and Hansen Salim</i>	
Adding Value to Manufacturing: Thirty Years of European Framework Program Activity	24
<i>Erastos Filos</i>	

Behaviour and Coordination

Methodological and Technological Support for the Coordination of Smart Networks of SMEs	39
<i>Armin Lau, Heiko Matheis, and Meike Tilebein</i>	
Behavioral Norms in Virtual Organizations	48
<i>Mahdieh Shadi and Hamideh Afsarmanesh</i>	
A Governance Reference Model for Virtual Enterprises	60
<i>Ricardo J. Rabelo, Scheila N. Costa, and David Romero</i>	
Virtual Enterprise Process Management: An Application to Industrial Maintenance	71
<i>Filipe Ferreira, Américo Azevedo, José Faria, and Evelyn Rojas</i>	

Product-Service Systems

A Coopetition Space for Complex Product Specification	83
<i>Mohammad Shafahi, Hamideh Afsarmanesh, and Mahdi Sargolzaei</i>	
Negotiation Support for Co-design of Business Services	98
<i>Ana Inês Oliveira and Luis M. Camarinha-Matos</i>	
Applying Platform Design to Improve Product-Service Systems Collaborative Development	107
<i>Dongping Chen, Xuening Chu, and Yupeng Li</i>	

Transition Towards Product-Service Systems

Building an Ontology of Product/Service-Systems: Using a Maritime Case Study to Elicit Classifications and Characteristics	119
<i>Aris Pagoropoulos, Jakob Axel Bejbro Andersen, Louise Laumann Kjær, Anja Maier, and Tim C. McAloone</i>	
Challenges and Opportunities in Transforming Laser System Industry to Deliver Integrated Product and Service Offers	127
<i>Gokula Vasantha, Rajkumar Roy, and Jonathan Corney</i>	
Towards a Framework for Analyzing and Evaluating Servitization Potential: Case Study of ENVIE Loire	135
<i>Ridha Derrouiche and Nadine Dubruc</i>	
Transition to Product Service Systems: A Methodology Based on Scenarios Identification, Modelling and Evaluation	143
<i>Khaled Medini, Valentine Moreau, Sophie Peillon, and Xavier Boucher</i>	

Service Orientation in Collaborative Networks

Enterprise Collaboration Framework for Managing, Advancing and Unifying the Functionality of Multiple Cloud-Based Services with the Help of a Graph API	153
<i>Michael Petychakis, Iosif Alvertis, Evmorfia Biliri, Romanos Tsouropolis, Fenareti Lampathaki, and Dimitris Askounis</i>	
Orchestrating New Markets Using Cloud Services	161
<i>Jay Bal, Ahmad Issa, and Xiao Ma</i>	
An Innovation Model for Collaborative Networks of SOA-Based Software Providers	169
<i>João F. Santanna-Filho, Ricardo J. Rabelo, and Alexandra A. Pereira-Klen</i>	
Service Orientation in Demand-Supply Chains: Towards an Integrated Framework	182
<i>Mohammad R. Rasouli, Rob J. Kusters, Jos Trienekens, and Paul W.P.J. Grefen</i>	

Engineering and Implementation of Collaborative Networks

Implementation and Operation of Collaborative Manufacturing Networks	197
<i>Jens Ziegler, Robert Buchmann, Markus Graube, Jan Hladik, Tobias Münch, Patricia Ortiz, Johannes Pfeffer, Florian Schneider, Mikel Uriarte, Dimitris Karagiannis, and Leon Urbas</i>	
The Sensing Enterprise: Towards the Next Generation Dynamic Virtual Organisations	209
<i>Ovidiu Noran, David Romero, and Milan Zdravkovic</i>	
Tourism Destination Management: A Collaborative Approach	217
<i>Salvatore Ammirato, Alberto Michele Felicetti, and Marco Della Gala</i>	
Collaborative Networked Organizations as System of Systems: A Model-Based Engineering Approach	227
<i>Mustapha Bilal, Nicolas Daclin, and Vincent Chapurlat</i>	

Cyber-Physical Systems

A Framework for Energy-Efficiency in Smart Home Environments	237
<i>Raffaele De Rose, Carmelo Felicetti, Cinzia Raso, Alberto Michele Felicetti, and Salvatore Ammirato</i>	
Towards a Generic Enterprise Systems Architecture Based on Cyber-Physical Systems Principles	245
<i>Aurelian Mihai Stanescu, Dragos Repta, Mihnea Alexandru Moisescu, Ioan Stefan Sacala, and Monika Benea</i>	
Usability Requirements for Complex Cyber-Physical Systems in a Totally Networked World	253
<i>Bernhard Kölmel, Rebecca Bulander, Uwe Dittmann, Alfred Schätter, and Günther Würtz</i>	

Business Strategies Alignment

Achieving Coherence between Strategies and Value Systems in Collaborative Networks	261
<i>Beatriz Andres, Patricia Macedo, Luis M. Camarinha-Matos, and Raul Poler</i>	
Business-IT Alignment in PSS Value Networks: A Capability-Based Framework	273
<i>Samaneh Bagheri, Rob J. Kusters, and Jos Trienekens</i>	

A Phylogenetic Classification of the Video-Game Industry’s Business Model Ecosystem 285
Nikolaos Goumagias, Ignazio Cabras, Kiran Jude Fernandes, Feng Li, Alberto Nucciarelli, Peter Cowling, Sam Devlin, and Daniel Kudenko

Financial Statement Analysis for Enterprise Network Design..... 295
Luca Cagnazzo, Lorenzo Tiacchi, Andrea Cardoni, and Massimiliano Brillì

Innovation Networks

An Agile Innovation Framework Supported through Business Incubators 307
Ozgul Unal, Hamideh Afsarmanesh, and Samuil Angelov

Pillars and Elements to Develop an Open Business Model for Innovation Networks 317
Evelyn Rojas and Américo Azevedo

System Thinking to Understand Networked Innovation 327
Paula Urze and António Abreu

Forward - Green Virtual Enterprises and Their Breeding Environments: Sustainable Manufacturing, Logistics and Consumption 336
David Romero and Arturo Molina

Sustainability and Trust

Organizational Sustainability and Value Creation in Collaborative Networks 349
Pierluca Di Cagno, Bianca D’Agostinis, and Barbara Livieri

Experimentation of Rational Trust Evolution and Sustainability in Dynamic VOs 357
Morice Daudi and Simon Samwel Msanjila

Additive Manufacturing: Current Status and Future Prospects..... 365
Jyotirmoyee Bhattacharjya, Sonali Tripathi, Andrew Taylor, Margaret Taylor, and David Walters

Reference and Conceptual Models

A Metamodel for Collaboration Formalization 375
Loïc Bidoux, Frédéric Bénaben, and Jean-Paul Pignon

Designing a S ² -Enterprise (Smart x Sensing) Reference Model	384
<i>Arturo Molina, Pedro Ponce, Miguel Ramirez, and Gildardo Sanchez-Ante</i>	
Collaborative Systems in Crisis Management: A Proposal for a Conceptual Framework	396
<i>Frédéric Bénaben, Anne-Marie Barthe-Delanoë, Matthieu Laurus, and Sébastien Truptil</i>	
Conceptual Reference Model for Virtual Factory: Potentials for Collaborative Business	406
<i>Ahm Shamsuzzoha, Ana Barros, David Costa, Américo Azevedo, and Petri Helo</i>	

Collaboration Platforms

Methodology for Conceptualization of Customizable Virtual Workspaces	417
<i>Dario Rodriguez and Ramón Garcia-Martínez</i>	
Collaboration in Virtual Enterprises through the Smart Vortex Suite . . .	426
<i>M. Biancucci, J. Janeiro, M. Leva, S. Lukosch, and M. Mecella</i>	
A Novel Framework for Virtual Organization Creation on Cloud	435
<i>Mona Zamanian, Mehran Mohsenzadeh, and Ramin Nassiri</i>	
Towards Automated Business Process Deduction through a Social and Collaborative Platform	443
<i>Aurélié Montarnal, Anne-Marie Barthe-Delanoë, Frédéric Bénaben, Matthieu Laurus, and Jacques Lamothe</i>	

Virtual Reality and Simulation

Virtual Learning Factory on VR-Supported Factory Planning	455
<i>Christian Weidig, Nicole Menck, Pascal A. Winkes, and Jan C. Aurich</i>	
Augmented-Reality Application for a Seru-type Manufacturing as Lean as Possible	463
<i>Igor Giuliano and Teresa Taurino</i>	
Collaborative Web-Based Simulation Platform for Construction Project Planning	471
<i>Ali Ismail, Yaseen Srewil, and Raimar J. Scherer</i>	

Interoperability and Integration

Sharing through Collaborative Spaces: Enhancing Collaborative Networks Interoperability	481
<i>Cristóvão Sousa and Carla Pereira</i>	
Towards a Workflow Management Approach for Health Monitoring of Bridges	489
<i>Cesar Garita and Giannina Ortiz</i>	
Capability Matrix for Open Data	498
<i>Fatemeh Ahmadi Zeleti and Adegboyega Ojo</i>	
Supporting Interoperability of Virtual Factories	510
<i>Lai Xu, Paul de Vrieze, and Lingling Wei</i>	

Performance Management Frameworks

Fundamentals for the Development of a Performance Analysis Approach in Collaborative Networks	521
<i>Hendrik Jähn</i>	
Strategic Context, Organizational Features and Network Performances: A Survey on Collaborative Networked Organizations of Italian SMEs . . .	534
<i>Antonio Ricciardi, Andrea Cardoni, and Lorenzo Tiacci</i>	
A Performance Management Framework for Managing Sustainable Collaborative Enterprise Networks	546
<i>Maria-Jose Verdecho, Juan-Jose Alfaro-Saiz, and Raul Rodriguez-Rodriguez</i>	

Performance Measurement Systems

PI Toolset Methodology for Virtual Enterprise Performance Assessment and Governance	557
<i>Mohammadreza Heydari, Christian Zanetti, Marco Taisch, and Margherita Peruzzini</i>	
A Performance Measurement System to Manage CEN Operations, Evolution and Innovation	569
<i>Raul Rodriguez-Rodriguez, Juan-Jose Alfaro-Saiz, and Maria-Jose Verdecho</i>	
Measurement of Entrepreneurial Dynamism Capabilities and Performance in Collaborative Networks	577
<i>Diego Jacob Kurtz, Rolando Vargas Vallejos, Marcos Da-Ré, and Gregório Varvakis</i>	

Risk Analysis

Reasoning on the Risks of Dynamic Manufacturing Networks through Cognitive Mapping	589
<i>Ourania Markaki, Sotirios Koussouris, Panagiotis Kokkinakos, Dimitris Panopoulos, and Dimitris Askounis</i>	
A Risk Analysis Method to Support Virtual Organization Partners' Selection	597
<i>Rafael G. Vieira, Omir C. Alves-Junior, Ricardo J. Rabelo, and Adriano Fiorese</i>	
Early Warning System Potential for Single Sourcing Risk Mitigation	610
<i>Patricia Franconetti and Angel Ortiz</i>	

Optimization in Collaborative Networks

Continuous Quality Assurance and Optimisation in Cloud-Based Virtual Enterprises	621
<i>Simeon Veloudis, Iraklis Paraskakis, Andreas Friesen, Yiannis Verginadis, Ioannis Patiniotakis, and Alessandro Rossini</i>	
Carrier Selection for Multi-commodity Flow Optimization in Cooperative Environments	633
<i>Giacomo Liotta, Giuseppe Stecca, and Toshiya Kaihara</i>	
Equilibrium Assignments in Competitive and Cooperative Traffic Flow Routing	641
<i>Victor Zakharov and Alexander Krylatov</i>	

Knowledge Management in Networks

A Retrospective Socio-Semantic Analysis of the PRO-VE Conferences	651
<i>António Lucas Soares, Maria Almeida, and Filipa Ramalho</i>	
Combining Collaborative Networks and Knowledge Management: The SENAI Case	664
<i>Rolando Vargas Vallejos, Jefferson de Oliveira Gomes, Celson Lima, and Priscila Nesello</i>	
Forms of Collaboration in Collaborative Enterprises: An Ontological Model	673
<i>Barbara Livieri, Marco Zappatore, and Mario Bochicchio</i>	

Health and Care Networks

Ontology-Based Workflow Design for the Coordination of Homecare Interventions	683
<i>Elyes Lamine, Abdel-Rahman H. Tawil, Rémi Bastide, and Hervé Pingaud</i>	
Healthcare Network Modeling and Analysis	691
<i>Dario Antonelli and Giulia Bruno</i>	
An AAL Collaborative System: The AAL4ALL and a Mobile Assistant Case Study	699
<i>Angelo Costa, Paulo Novais, and Ricardo Simoes</i>	

Mobility and Logistics

Collaborative Management of Intermodal Mobility	713
<i>Esmahan Eryilmaz, Martin Kagerbauer, Thomas Schuster, and Oliver Wolf</i>	
A Collaborative IT Network for Three Adriatic Maritime Ports	722
<i>Stefanos Petsios and Chrysostomos Stylios</i>	
Integration of Social Concerns in Collaborative Logistics and Transportation Networks	730
<i>Ridha Derrouiche, Abdelhamid Moutaoukil, and Gilles Neubert</i>	
Infomobility for “Car-Driver” Systems: Reference Model and Case Study	739
<i>Alexander Smirnov, Alexey Kashevnik, and Nikolay Shilov</i>	

Erratum

Applying Platform Design to Improve Product-Service Systems Collaborative Development	E1
<i>Dongping Chen, Xuening Chu, and Yupeng Li</i>	
Author Index	749