

# Contents

## Collaboration in Industry 4.0

Collaborative Networks as a Core Enabler of Industry 4.0 . . . . .	3
<i>Luis M. Camarinha-Matos, Rosanna Fornasiero, and Hamideh Afsarmanesh</i>	
Digital Marketplaces for Industry 4.0: A Survey and Gap Analysis . . . . .	18
<i>Sonia Cisneros-Cabrera, Asia Ramzan, Pedro Sampaio, and Nikolay Mehandjiev</i>	
Relevant Capabilities for Information Management to Achieve Industrie 4.0 Maturity . . . . .	28
<i>Volker Stich, Sebastian Schmitz, and Violet Zeller</i>	

## Production Information Systems

A Holistic Algorithm for Materials Requirement Planning in Collaborative Networks . . . . .	41
<i>Beatriz Andres, Raul Poler, and Raquel Sanchis</i>	
BIM Based Value for Money Assessment in Public-Private Partnership . . . . .	51
<i>Guoqian Ren and Haijiang Li</i>	
A Collaborative Unified Computing Platform for Building Information Modelling (BIM). . . . .	63
<i>Steven Arthur, Haijiang Li, and Robert Lark</i>	

## Production Networks

A Proposal of Standardised Data Model for Cloud Manufacturing Collaborative Networks . . . . .	77
<i>Beatriz Andres, Raquel Sanchis, Raul Poler, and Leila Saari</i>	
The Implementation of Traceability in Fashion Networks . . . . .	86
<i>Laura Macchion, Andrea Furlan, and Andrea Vinelli</i>	
Digitization in the Oil and Gas Industry: Challenges and Opportunities for Supply Chain Partners . . . . .	97
<i>Arda Gezdur and Jyotirmoyee Bhattacharjya</i>	

**Manufacturing Ecosystem Collaboration**

The AUTOWARE Framework and Requirements for the Cognitive Digital Automation . . . . .	107
<i>Elias Molina, Oscar Lazaro, Miguel Sepulcre, Javier Gozalvez, Andrea Passarella, Theofanis P. Raptis, Aleš Ude, Bojan Nemec, Martijn Rooker, Franziska Kirstein, and Eelke Mooij</i>	
An Approach for Cloud-Based Situational Analysis for Factories Providing Real-Time Reconfiguration Services . . . . .	118
<i>Sebastian Scholze, Kevin Nagorny, Rebecca Siafaka, and Karl Krone</i>	
A Proposal of Decentralised Architecture for Optimised Operations in Manufacturing Ecosystem Collaboration. . . . .	128
<i>Pavlos Eirinakis, Jorge Buenabad-Chavez, Rosanna Fornasiero, Haluk Gokmen, Julien-Etienne Mascolo, Ioannis Mourtos, Sven Spieckermann, Vasilis Tountopoulos, Frank Werner, and Robert Woitsch</i>	
Supporting Product-Service Development Through Customer Feedback . . . . .	138
<i>Tapani Ryyänen, Iris Karvonen, Heidi Korhonen, and Kim Jansson</i>	

**Knowledge Sharing for Production CPS**

New Requirement Analysis Approach for Cyber-Physical Systems in an Intralogistics Use Case . . . . .	149
<i>Günther Schuh, Anne Bernardy, Violetta Zeller, and Volker Stich</i>	
Self-similar Computing Structures for CPSs: A Case Study on POTS Service Process. . . . .	157
<i>Dorota Stadnicka, Massimiliano Pirani, Andrea Bonci, R.M. Chandima Ratnayake, and Sauro Longhi</i>	
Ontology-Based Framework to Design a Collaborative Human-Robotic Workcell. . . . .	167
<i>Dario Antonelli and Giulia Bruno</i>	
Multi-agent Systems for Production Management in Collaborative Manufacturing. . . . .	175
<i>Teresa Taurino and Agostino Villa</i>	

**Data-Rich Networked Organizations**

Organizational Design and Collaborative Networked Organizations in a Data-Rich World: A Cybernetics Perspective . . . . .	185
<i>Paul Jackson and Andrea Cardoni</i>	

The Opportunities of Big Data Analytics in Supply Market Intelligence . . . . .	194
<i>Salla Paajanen, Katri Valkokari, and Anna Aminoff</i>	

Data Rich – But Information Poor. . . . .	206
<i>Peter Bernus and Ovidiu Noran</i>	

## **Big Data Analytics**

From Periphery to Core: A Temporal Analysis of GitHub Contributors’ Collaboration Network. . . . .	217
<i>Ikram El Asri, Noureddine Kerzazi, Lamia Benhiba, and Mohammed Janati</i>	

Big Valuable Data in Supply Chain: Deep Analysis of Current Trends and Coming Potential . . . . .	230
<i>Samia Chehbi-Gamoura and Ridha Derrouiche</i>	

Simplifying Big Data Analytics Systems with a Reference Architecture . . . . .	242
<i>Go Muan Sang, Lai Xu, and Paul de Vrieze</i>	

## **Data Mining and Data Services**

Mining Governmental Collaboration Through Semantic Profiling of Open Data Catalogues and Publishers . . . . .	253
<i>Mohamed Adel Rezk, Adegboyega Ojo, and Islam A. Hassan</i>	

A Model-Based Environment for Data Services: Energy-Aware Behavioral Triggering Using ADOxx. . . . .	265
<i>Wilfrid Utz and Robert Woitsch</i>	

The Network Structure of Visited Locations According to Geotagged Social Media Photos . . . . .	276
<i>Christian Junker, Zaenal Akbar, and Martí Cuquet</i>	

## **Data Acquisition and Analysis**

Customer Experience: A Design Approach and Supporting Platform . . . . .	287
<i>Maura Mengoni, Emanuele Frontoni, Luca Giraldi, Silvia Ceccacci, Roberto Pierdicca, and Marina Paolanti</i>	

Self-learning Production Control Using Algorithms of Artificial Intelligence. . . . .	299
<i>Ben Luetkehoff, Matthias Blum, and Moritz Schroeter</i>	

Business Modelling for Smart Continual Commissioning in ESCO Set-Ups . . .	307
<i>Karsten Menzel and Andriy Hryshchenko</i>	

## Big Data and CNs in Health

How MyData is Transforming the Business Models for Health Insurance Companies. . . . .	323
<i>Marika Iivari, Minna Pikkarainen, and Timo Koivumäki</i>	
Managing Business Process Variability Through Process Mining and Semantic Reasoning: An Application in Healthcare . . . . .	333
<i>Silvana Pereira Detro, Eduardo Alves Portela Santos, Hervé Panetto, Eduardo de Freitas Rocha Loures, and Mario Lezoche</i>	
Ontology-Based Decision Support Systems for Health Data Management to Support Collaboration in Ambient Assisted Living and Work Reintegration. . . . .	341
<i>Daniele Spoladore</i>	

## Service-Oriented Collaborative Networks

A Comparative Assessment of Collaborative Business Process Verification Approaches. . . . .	355
<i>John Paul Kasse, Lai Xu, and Paul de Vrieze</i>	
The User Perspective on Service Ecosystems: Key Concepts and Models. . . .	368
<i>Garyfallos Frigidis</i>	
Service Oriented Collaborative Network Architecture. . . . .	381
<i>Mahdi Sargolzaei and Hamideh Afsarmanesh</i>	
Service Selection and Ranking: A Framework Proposal and Prototype Implementation. . . . .	395
<i>Firmino Oliveira da Silva, Claudia-Melania Chituc, and Paul Grefen</i>	

## Service Specification and Composition

Agnostic Informatics System of Systems: The Open ISO Services Framework . . . . .	407
<i>A. Luis Osório, Adam Belloum, Hamideh Afsarmanesh, and Luis M. Camarinha-Matos</i>	
Enhancing Network Collaboration in SOA Services Composition via Standard Business Processes Catalogues . . . . .	421
<i>Roque O. Bezerra, Maiara H. Cancian, and Ricardo J. Rabelo</i>	
C3Q: A Specification Model for Web Services Within Virtual Organizations. . . . .	432
<i>Mahdi Sargolzaei and Hamideh Afsarmanesh</i>	

E-Service Culturalization: New Trend in E-Service Design . . . . .	444
<i>Rasha Tolba, Kyrill Meyer, and Christian Zinke</i>	

## Digital Platforms

Toward CNO Characteristics to Support Business/IT-Alignment . . . . .	455
<i>Ronald van den Heuvel, Jos Trienekens, Rogier van de Wetering, and Rik Bos</i>	

Standardising Public Policy Documentation to Foster Collaboration Across Government Agencies . . . . .	466
<i>Mohamed Adel Rezk, Mahmoud H. Aliyu, Hatem Bensta, and Adegboyega Ojo</i>	

From Data Sources to Information Sharing in SME Collaborative Networks Supporting Internationalization: A Socio-Semantic Approach . . . . .	478
<i>Eric Costa, António Lucas Soares, and Jorge Pinho de Sousa</i>	

## Risk and Trust Analysis in CNs

Influence of Information Sharing Behavior on Trust in Collaborative Logistics. . . . .	493
<i>Morice Daudi, Jannicke Baalsrud Hauge, and Klaus-Dieter Thoben</i>	

A Supply Chain Risk Index Estimation Methodological Framework Using Exposure Assessment . . . . .	507
<i>Arij Lahmar, François Galasso, Habib Chabchoub, and Jacques Lamothe</i>	

A Classification Taxonomy for Reputation and Trust Systems Applied to Virtual Organizations . . . . .	515
<i>Luís Felipe Bilecki and Adriano Fiorese</i>	

Exploratory Study on Risk Management in Open Innovation . . . . .	527
<i>João Rosas, Paula Urze, Alexandra Tenera, António Abreu, and Luis M. Camarinha-Matos</i>	

## Sustainability Improvements Through CNs

The CPS and LCA Modelling: An Integrated Approach in the Environmental Sustainability Perspective. . . . .	543
<i>Andrea Ballarino, Carlo Brondi, Alessandro Brusaferrì, and Guido Chizzoli</i>	

Collaborative Perspective in Bio-Economy Development: A Mixed Method Approach . . . . .	553
<i>Manfredi Vale, Marta Pantalone, and Morena Bragagnolo</i>	

Sustainable Development for Rural Areas: A Survey  
on the Agritourism Rural Networks . . . . . 564  
*Salvatore Ammirato, Alberto Michele Felicetti, Marco Della Gala,  
Nicola Frega, and Antonio Palmiro Volpentesta*

Achieving the Sensing, Smart and Sustainable “Everything” . . . . . 575  
*Dante Chavarría-Barrientos, Luis M. Camarinha-Matos,  
and Arturo Molina*

**Circular Economy**

A PLM Vision for Circular Economy . . . . . 591  
*Sofia Freitas de Oliveira and António Lucas Soares*

Green Virtual Enterprise Breeding Environments Enabling  
the RESOLVE Framework . . . . . 603  
*David Romero, Ovidiu Noran, and Peter Bernus*

How to Make Industrial Symbiosis Profitable . . . . . 614  
*Mohammadtaghi Falsafi, Rosanna Fornasiero, and Umberto Dellepiane*

**Advanced CN Design and Evolution**

Evolution of a Collaborative Business Ecosystem in Response  
to Performance Indicators . . . . . 629  
*Paula Graça and Luis M. Camarinha-Matos*

Establishment of Collaborative Networks – A Model-Driven Engineering  
Approach Based on Thermodynamics . . . . . 641  
*Frederick Benaben, Vincent Gerbaud, Anne-Marie Barthe-Delanoë,  
and Anastasia Roth*

Dynamic Integration of Mould Industry Analytics and Design Forecasting . . . 649  
*João M.F. Calado and A. Luís Osório*

Automated Emergence of a Crisis Situation Model in Crisis Response  
Based on Tweets. . . . . 658  
*Aurélié Montarnal, Shane Halse, Andrea Tapia, Sébastien Truptil,  
and Frederick Benaben*

**Design Science Research in CNs**

Digital Social Learning – How to Enhance Serious Gaming  
for Collaborative Networks. . . . . 669  
*Christian Zinke and Julia Friedrich*

A Semantics-Based Approach for Business Categorization on Social Networking Sites. . . . .	678
<i>Atia Bano Memon, Christian Zinke, and Kyrill Meyer</i>	
Holistic Design of Visual Collaboration Arenas and Intelligent Workspaces . . .	688
<i>Frank Lillehagen, Sobah Abbas Petersen, and Sven-Volker Rehm</i>	
Designing an Open Architecture for the Creative Industry . . . . .	696
<i>Christian Zinke, Michael Becker, and Stephan Klingner</i>	

## **Collaboration in Food and Agribusiness**

The Role of ICTs in Supporting Collaborative Networks in the Agro-Food Sector: Two Case Studies from South West England . . . . .	707
<i>Marco Della Gala and Matthew Reed</i>	
Conceptual Framework for Managing Uncertainty in a Collaborative Agri-Food Supply Chain Context . . . . .	715
<i>Ana Estesó, M.M.E. Alemany, and Angel Ortiz</i>	
Intelligent Food Information Provision to Consumers in an Internet of Food Era . . . . .	725
<i>Antonio Palmiro Volpentesta, Alberto Michele Felicetti, and Salvatore Ammirato</i>	

## **Risk and Uncertainty in Agriculture**

A Literature Review on Risk Sources and Resilience Factors in Agri-Food Supply Chains. . . . .	739
<i>Guoqing Zhao, Shaofeng Liu, and Carmen Lopez</i>	
The Semantic Web as a Platform Against Risk and Uncertainty in Agriculture . . . . .	753
<i>Wilmer Henry Illescas Espinoza, Alejandro Fernandez, and Diego Torres</i>	
Challenges and Solutions for Enhancing Agriculture Value Chain Decision-Making. A Short Review . . . . .	761
<i>Jorge E. Hernandez, Janusz Kacprzyk, Hervé Panetto, Alejandro Fernandez, Shaofeng Liu, Angel Ortiz, and Marco De-Angelis</i>	

<b>Author Index . . . . .</b>	<b>775</b>
-------------------------------	------------

Collaboration in a Data-Rich World

18th IFIP WG 5.5 Working Conference on Virtual  
Enterprises, PRO-VE 2017, Vicenza, Italy, September  
18-20, 2017, Proceedings

Camarinha-Matos, L.M.; Afsarmanesh, H.; Fornasiero, R.  
(Eds.)

2017, XVII, 777 p. 211 illus., Hardcover

ISBN: 978-3-319-65150-7