

# **Lecture Notes in Business Information Processing**

**247**

Series Editors

Wil van der Aalst

*Eindhoven Technical University, Eindhoven, The Netherlands*

John Mylopoulos

*University of Trento, Povo, Italy*

Michael Rosemann

*Queensland University of Technology, Brisbane, QLD, Australia*

Michael J. Shaw

*University of Illinois, Urbana-Champaign, IL, USA*

Clemens Szyperski

*Microsoft Research, Redmond, WA, USA*

More information about this series at <http://www.springer.com/series/7911>

Theodor Borangiu · Monica Drăgoicea  
Henriqueta Nóvoa (Eds.)

# Exploring Services Science

7th International Conference, IESS 2016  
Bucharest, Romania, May 25–27, 2016  
Proceedings

*Editors*

Theodor Borangiu  
Faculty of Automatic Control  
and Computers  
University Politehnica of Bucharest  
Bucharest  
Romania

Henriqueta Nóvoa  
Faculty of Engineering - FEUP  
University of Porto  
Porto  
Portugal

Monica Drăgoicea  
Faculty of Automatic Control  
and Computers  
University Politehnica of Bucharest  
Bucharest  
Romania

ISSN 1865-1348                      ISSN 1865-1356 (electronic)  
Lecture Notes in Business Information Processing  
ISBN 978-3-319-32688-7              ISBN 978-3-319-32689-4 (eBook)  
DOI 10.1007/978-3-319-32689-4

Library of Congress Control Number: 2016935960

© Springer International Publishing Switzerland 2016

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Printed on acid-free paper

This Springer imprint is published by Springer Nature  
The registered company is Springer International Publishing AG Switzerland

# Foreword

Service Science was launched by IBM as an open code initiative more than ten years ago in an attempt to integrate different knowledge domains contributing to the study and better understanding of service systems. Since the preliminary proposals, it was clear that the organization, functioning, and development of service systems had to be based on a new conceptualization of services, on relationship governance, and on a new qualification of value generation, as service research has pointed out all along the last decades of scientific production.

In order to address and cope with such demanding theoretical issues in the search for a better understanding of service systems, the service community was inspired by a multicultural approach capable of catalysing into Service Science the scientific contributions proposed by researchers coming not only from IBM, but also from academia and experts in IT, management, and consumer behaviour, sociology, computer science, engineering, and many other disciplines.

Service scientists have accordingly approached the Service Science research path with an open mind and aggregating attitude, inherently and strongly based on T-shaped programs on a global basis, in an attempt to capture intriguing suggestions from different research streams, all interested in advancing knowledge on service systems as well as their modelling and operative traits.

Since 2004 a relevant worldwide community has grown, a community still engaged in this long-lasting process of defining the research boundaries and scientific goals of this inclusive Service Science discipline; however, not all cultural domains have accomplished rewarding results and, moreover, further effort ought to be placed in the integration of various cultural domains.

Within this cross-cultural research setting comes the 7th International Conference on Exploring Service Science, IESS 1.6, an event gathering scholars and researchers from all over the world balancing different categories of scientists and different lines of research — from different perspectives:

- Business oriented vs. technology oriented
- Fundamental vs. applied
- System science foundation vs. computer science support

To approach Service Science, management, and engineering subjects from these multiple innovation perspectives, and to guarantee a cross-cultural approach to Service Science main issues and focus, a number of topics of interest were defined, including: service exploration processes; business transformation through service science; new service business models; modelling of the service consumer needs; service design methodologies and patterns; IT-based service engineering; service orientation in the digital enterprise; modelling and design of IT-enabled service systems; product-service systems; service innovation strategies and solutions; service sustainability; governance

of service systems; service system networks; education and skills for service design and management.

The numerous papers received and presented in this volume were grouped into 13 sessions, covering the aforementioned topics. The technological perspective adopted by many scholars balances the managerial point of view of others, once more demonstrating the strong interest of Service Science in an open-minded and interdisciplinary community.

The IESS 1.6 conference met its main goals: to gather scientists working in the Service Science domain, to find out about their most recent research work trying to orient R&D in Service Science toward fundamental contributions leading to this new science, and to encourage new types of service innovation based on this research.

Despite the encouraging results accomplished by the Service Science research context over the last decade, a long research path still has to be pursued in search of even more challenging advances. An overview of the scientific production of our community, in fact, shows that scholars ought to look for more integration among various cultural domains, in order to give rise to this new science and to demolish the cultural boundaries that still appear in the shades of this scientific production.

Service scientists in the future could aim for the production of more interdisciplinary papers, written by scholars coming from different research contexts, and increase the cross-cultural references within each scientific production.

This challenging advance calls for an open-minded attitude brought on by curious researchers willing to study and deepen models and theories according to their specific field of interest, and of course it needs a production systems (journals, book series, reviewers) in line with this approach. The Service Science community is ready for this; hence, let us play a key role in advancing Service Science research in this direction!

## Preface

This volume gathers the peer-reviewed papers that were presented at the 7th International Workshop on Exploring Service Science, IESS 1.6, organized during May 25–27, 2016, by the CIMR Research Centre of the Faculty of Automatic Control and Computer Science, University Politehnica of Bucharest, Romania.

The workshop gathered academic scientists and practitioners from the service industry and their worldwide partners in a collegial and stimulating environment. According to its tradition, IESS 1.6 covered major research and development areas related to Service Science foundations, service engineering and management, service innovation, service orientation of processes, applications in service sectors and ICT support for services.

Services comprise about 75 % of mature economies today, being also a fast-growing sector in emerging economies. This motivates an intense preoccupation to establish the philosophy of a new management and marketing, which highlights a paradigm shift away from the goods-dominant (G–D) logic. This paradigm is the theoretical concept of service-dominant (S–D) logic, fundamental for the service system developments reported in IESS1.6 papers; services are seen as the real protagonists of interactions and transactions.

A broader perspective shows that service systems evolve within dynamic environments and interact, in a network, with other service systems. Also, they may have other interconnected service sub-systems, and thus service systems may have to face external disturbances from the environment, but also internal disturbances generated by one of their sub-systems. Thus, a main challenge in the development of a service system is to design it in a way that ensures the flexibility and adaptability crucial for its survival, or, in other terms, for its viability. From this perspective, the Viable System Model (VSM) is an initial point of such a development strategy, as pointed out by some authors.

The IESS1.6 event includes papers that extend the view on different concepts related to the development of the Service Science domain of study, applying them to frameworks, advanced technologies, and tools for the design of ICT-based service systems.

The perspective introduced by this approach connects Service Science fundamental concepts to business-related concepts. In the Service Science approach, service organizations are studied as service systems evolving in their environment (service system ecology), in the pursuit of their business goal, according to a service business model. Service business models reflect the features of the service sector to which the organization belongs and describe activities for services as business processes. Successful service business models are crucial for the service system viability and they are related to service innovation.

As IESS 1.6 papers describe, specific items of service business models such as target markets and customers, product offerings or value propositions, distribution channels

(activities for services), and constraints and profits, together with the description of case studies and business solutions in various service sectors, are analysed and debated.

The book is structured in 13 parts, each one grouping a number of chapters describing research in current domains of service science, from fundamentals, theories, and concepts to models, frameworks, and implementing solutions for societal services (health care, education, administration) and the service industry.

From service theory to solutions, these book sections are: Part 1 – Service Exploration Theories and Processes; Part 2 – Modelling Service Requirements and Management of Business Processes; Part 3 – Value Co-creation Through Knowledge Management and User-Centric Services; Part 4 – Service Design Methodologies and Patterns; Part 5 – Service Innovation and Strategy; Part 6 – IT-Based Service Engineering; Part 7 – Servitization in Sustainable Manufacturing: Models and Information Technologies; Part 8 – Product-Service Systems; Part 9 – Business Software Services and Data-Driven Service Design; Part 10 – Web Service Design and Service-Oriented Agents; Part 11 – IoT and Mobile Apps for Public Transport Service Management; Part 12 – e-Health Services and Medical Data Interoperability; Part 13 – Service and IT-Oriented Learning and Education Systems.

The book offers a new vision on complexity, big data, and context-awareness in data-driven services for the contextual businesses, Service-oriented enterprise architectures, and service-oriented agents in Web and cloud services, by combining emergent ICT, control with distributed intelligence, and multi-agent frameworks for complex, networked service design and management.

The scientific work reported in the workshop technical sessions foster service innovation by allowing different stakeholders to arrive at a consensus in terms of service science fundamentals and build together the future knowledge base in the field of service science.

All these aspects are covered in the present book, which we hope you will find useful reading.

February 2016

Theodor Borangiu  
Monica Drăgoicea  
Henriqueta Nóvoa



# Organization

IESS 1.6 was organized by the CIMR Research Centre of the Faculty of Automatic Control and Computer Science, University Politehnica of Bucharest, Romania, during May 25–27, 2016.

## Steering Committee

|                     |   |
|---------------------|---|
| Michel Léonard      | University of Geneva, Switzerland                             |
| João Falcão e Cunha | University of Porto, Portugal                                 |
| Eric Dubois         | Luxembourg Institute of Science and Technology,<br>Luxembourg |
| Theodor Borangiu    | University Politehnica of Bucharest, Romania                  |
| Monica Drăgoicea    | University Politehnica of Bucharest, Romania                  |
| Marco de Marco      | Università Cattolica del Sacro Cuore, Italy                   |
| Henriqueta Nóvoa    | University of Porto, Portugal                                 |
| Gerhard Satzger     | Karlsruhe Service Research Institute, Germany                 |
| Mehdi Snene         | University of Geneva, Switzerland                             |

## Conference Chair

|                  |  |
|------------------|--|
| Theodor Borangiu | University Politehnica of Bucharest, Romania |
|------------------|--|

## Program Chairs

|                  |  |
|------------------|--|
| Monica Drăgoicea | University Politehnica of Bucharest, Romania |
| Henriqueta Nóvoa | University of Porto, Portugal                |

## Sponsoring Institutions

International Society of Service Innovation Professionals, ISSIP  
Luxembourg Institute of Science and Technology, Luxembourg  
Romanian Academy of Sciences  
IBM Romania

## International Program Committee

|                         |                                    |
|-------------------------|------------------------------------|
| Sabrina Bonomi          | University of Verona, Italy        |
| António Brito           | University of Porto, Portugal      |
| Bettina Campedelli      | University of Verona, Italy        |
| Jorge Cardoso           | University of Coimbra, Portugal    |
| María Valeria de Castro | Universidad Rey Juan Carlos, Spain |
| Sergio Cavalieri        | University of Bergamo, Italy       |

|                         |   |
|-------------------------|---|
| Valentin Cristea        | University Politehnica of Bucharest, Romania              |
| Monica Drăgoicea        | University Politehnica of Bucharest, Romania              |
| José Faria              | University of Porto, Portugal                             |
| Teresa Fernandes        | University of Porto, Portugal                             |
| Antoine Harfouche       | University Paris Ouest Nanterre La Défense, France        |
| Isabel Horta            | University of Porto, Portugal                             |
| Peter Hottum            | Karlsruhe Institute of Technology, Germany                |
| Manuele Kirsch-Pinheiro | Université Paris 1 Panthéon Sorbonne, France              |
| Natalia Kryvinska       | University of Vienna, Austria                             |
| Weiping Li              | Peking University, China                                  |
| Paul Lillrank           | Aalto University, Finland                                 |
| Paul Maglio             | UC Merced, USA  |
| Marco de Marco          | Università Cattolica del Sacro Cuore, Italy               |
| Vera Miguéis            | University of Porto, Portugal                             |
| Jean-Henry Morin        | University of Geneva, Switzerland                         |
| Henriqueta Nóvoa        | University of Porto, Portugal                             |
| Lia Patrício            | University of Porto, Portugal                             |
| Tomáš Pitner            | Masaryk University, Czech Republic                        |
| Geert Poels             | Ghent University, Belgium                                 |
| Anca Purcărea           | University Politehnica of Bucharest, Romania              |
| Jolita Ralyte           | University of Geneva, Switzerland                         |
| Shai Rozenes            | Afeka Tel Aviv Academic College of Engineering,<br>Israel |
| Ana Šaša Bastinos       | University of Ljubljana, Slovenia                         |
| Gerhard Satzger         | Karlsruhe Service Research Institute, Germany             |
| Miguel Mira da Silva    | Technical University of Lisbon, Portugal                  |
| Mehdi Snene             | University of Geneva, Switzerland                         |
| Maddalena Sorrentino    | Università degli Studi di Milano, Italy                   |
| Zhongjie Wang           | Harbin Institute of Technology, China                     |
| Adi Wolfson             | Sami Shamon College of Engineering, Israel                |
| Soe-Tsyr Yuan           | National Chengchi University, Taiwan                      |

# Contents

## Service Exploration Theories and Processes

|  |    |
|--|----|
| Decision-Making in Smart Service Systems: A Viable Systems Approach<br>Contribution to Service Science Advances . . . . .        | 3  |
| <i>Francesco Polese, Aurelio Tommasetti, Massimiliano Vesci,<br/>Luca Carrubbo, and Orlando Troisi</i>                           |    |
| On a Qualitative Game Theoretic Approach of Teacher-Student Interaction<br>in a Public Higher Education Service System . . . . . | 15 |
| <i>Virginia Ecaterina Oltean, Theodor Borangiu, and Monica Drăgoicea</i>   |    |
| Service-Dominant Strategic Sourcing: Value Creation Versus Cost Saving . . .   | 30 |
| <i>Laleh Rafati and Geert Poels</i>  |    |
| New Service's Expectation Positioning by Applying Cumulative Prospect<br>Theory. . . . .   | 45 |
| <i>Soe-Tsyrr Daphne Yuan and Hsi-Yun Wang</i>  |    |
| Enabling Service Business Models Through Service Processes . . . . .   | 60 |
| <i>Nikhil Zope, Anand Kumar, and Doji Lokku</i>  |    |

## Modelling Service Requirements and Management of Business Processes

|   |     |
|---|-----|
| Experience from a Modelling and Simulation Perspective in Smart<br>Transport Information Service Design . . . . .         | 75  |
| <i>Monica Drăgoicea, Denisa Constantinescu, and João Falcão e Cunha</i>   |     |
| Process Modeling as Key Technique for Embedding the Practices<br>of Business Process Management in Organization . . . . . | 89  |
| <i>Elena Fleacă, Bogdan Fleacă, and Sanda Maiduc</i>  |     |
| Towards a Flexible Solution in Knowledge-Based Service Organizations:<br>Capability as a Service . . . . .                | 100 |
| <i>Hasan Koç, Kurt Sandkuhl, and Michael Fellmann</i>   |     |
| A Three-Dimensional Approach for a Quality-Based Alignment Between<br>Requirements and Architecture . . . . .             | 112 |
| <i>Carlos E. Salgado, Ricardo J. Machado, and Rita S.P. Maciel</i>  |     |

**Value Co-creation Through Knowledge Management  
and User-Centric Services**

|   |     |
|---|-----|
| Framing Meaningful Experiences Toward a Service Science-Based Tourism<br>Experience Design . . . . .          | 129 |
| <i>Jesús Alcoba, Susan Mostajo, Rowell Paras, Grace Cella Mejia,<br/>and Romano Angelico Ebron</i>            |     |
| Personal Service Eco-Environment (PSE <sup>2</sup> ): A User-Centric Services<br>Computing Paradigm . . . . . | 141 |
| <i>Zhongjie Wang, Dianhui Chu, and Xiaofei Xu</i>   |     |
| Using User-Generated Content to Explore Hotel Service Quality<br>Dimensions . . . . .                         | 155 |
| <i>Vera L. Miguéis and Henriqueta Nóvoa</i>   |     |
| How Service Innovation Contributes to Co-Create Value in Service<br>Networks . . . . .                        | 170 |
| <i>Maria Vincenza Ciasullo, Francesco Polese, Orlando Troisi,<br/>and Luca Carrubbo</i>                       |     |

**Service Design Methodologies and Patterns**

|  |     |
|--|-----|
| Needmining: Towards Analytical Support for Service Design . . . . .  | 187 |
| <i>Niklas Kuehl</i>  |     |
| An Efficient Procedure to Determine the Initial Basic Feasible Solution<br>of Time Minimization Transportation Problem . . . . .                       | 201 |
| <i>Aminur Rahman Khan, Adrian Vilcu, Md. Sharif Uddin,<br/>and Cristiana Istrate</i>   |     |
| The Possible Evolution of the Co-operative Form in a Digitized World:<br>An Effective Contribution to the Shared Governance of Digitization? . . . . . | 213 |
| <i>Paolo Depaoli and Stefano Za</i>  |     |
| A Service-Value Approach to Mobile Application Valuation . . . . .   | 221 |
| <i>Maurizio Cavallari and Roberto Moro Visconti</i>  |     |

**Service Innovation and Strategy**

|  |     |
|--|-----|
| The Assessment of Municipal Services: Environmental Efficiency<br>of Buildings Construction. . . . .   | 237 |
| <i>Isabel M. Horta, Ana S. Camanho, Teresa G. Dias, and Samuel Niza</i>  |     |
| “Agile Adoption” in IT Companies - Building a Change Capability by<br>Qualitative Description of Agile Implementation in Different Companies . . . . | 251 |
| <i>Barbora Moravcová and Filip Legény</i>  |     |

|   |     |
|---|-----|
| Technology for Soccer Sport: The Human Side in the Technical Part . . . . .               | 263 |
| <i>Luisa Varriale and Domenico Tafuri</i>   |     |
| Service Operations Decisions in Hybrid Organizations: Towards a Research Agenda . . . . . | 277 |
| <i>Liliana Ávila and Marlene Amorim</i>   |     |
| Automated Business Process Management . . . . .   | 287 |
| <i>Carlos Mendes, Nuno Silva, Marcelo Silva, and Miguel Mira da Silva</i>                 |     |
| A Service-Oriented Living Lab for Continuous Performance Improvement in SMEs . . . . .    | 299 |
| <i>Thang Le Dinh, Manh Chien Vu, Thuong-Cang Phan, and Serge Théophile Nomo</i>           |     |

### **IT-Based Service Engineering**

|  |     |
|--|-----|
| Digital Service Platform for Networked Enterprises Collaboration: A Case Study of the NEMESYS Project . . . . .                    | 313 |
| <i>Francesco Bellini, Fabrizio D'Ascenzo, Iana Dulckaia, and Marco Savastano</i>   |     |
| How Can ITIL and Agile Project Management Coexist?: An Adaptation of the ITIL V.3 Life Cycle in Order to Integrate SCRUM . . . . . | 327 |
| <i>Bertrand Verlaine, Ivan Jureta, and Stéphane Faulkner</i>   |     |
| SStream: An Infrastructure for Streaming Multimedia Content Efficiently and Securely in a Heterogeneous Environment . . . . .      | 343 |
| <i>Claudiu Olteanu, Mihai Bucicoiu, and Marius Popa</i>  |     |
| Integration of Hazard Management Services . . . . .  | 355 |
| <i>Anca Daniela Ionita, Cristina-Teodora Eftimie, Grace Lewis, and Marin Litoiu</i>  |     |

### **Servitization in Sustainable Manufacturing: Models and Information Technologies**

|   |     |
|---|-----|
| Service Oriented Mechanisms for Smart Resource Allocation in Private Manufacturing Clouds . . . . . | 367 |
| <i>Octavian Morariu, Theodor Borangiu, Cristina Morariu, and Silviu Răileanu</i>                    |     |
| Modeling a Manager's Work as a Service Activity . . . . .   | 384 |
| <i>Yuval Cohen, Shai Rozenes, and Maurizio Faccio</i>   |     |

|  |     |
|--|-----|
| Servicizing as a Tool for Increasing the Sustainability of Product Life Cycles . . . . . | 392 |
| <i>Adi Wolfson and Dorith Tavor</i>  |     |

|   |     |
|---|-----|
| Service Architecture for CSP Based Planning for Holonic Manufacturing Execution Systems . . . . . | 403 |
| <i>Gabriela Varvara</i>   |     |

**Product-Service Systems**

|   |     |
|---|-----|
| Designing Product Service Systems in the Context of Social Internet of Things . . . . . | 419 |
| <i>Pazanee Carpanen, Lia Patricio, and Bernardo Ribeiro</i>                             |     |

|   |     |
|---|-----|
| An Event-Driven Service-Oriented Architecture for Performing Actions on Business Organization Items . . . . . | 432 |
| <i>Vasilica-Georgiana Puiu and Adrian Alexandrescu</i>  |     |

|   |     |
|---|-----|
| Improving After-Sales Services Using Mobile Agents in a Service-Oriented Architecture . . . . . | 444 |
| <i>Adrian Alexandrescu, Cristian Nicolae Buțincu, and Mitică Craus</i>                          |     |

|   |     |
|---|-----|
| Designing and Configuring the Value Creation Network for Servitization. . . . | 457 |
| <i>Barbara Resta, Paolo Gaiardelli, Sergio Cavalieri, and Stefano Dotti</i>   |     |

**Business Software Services and Data-Driven Service Design**

|   |     |
|---|-----|
| Generic Data Synchronization Algorithm in Distributed Systems . . . . . | 473 |
| <i>Dragoș Dumitrescu and Mihai Carabaș</i>                              |     |

|  |     |
|--|-----|
| Data-driven Approach to New Service Concept Design . . . . .                                       | 485 |
| <i>Min-Jun Kim, Chie-Hyeon Lim, Chang-Ho Lee, Kwang-Jae Kim, Seunghwan Choi, and Yongsung Park</i> |     |

|   |     |
|---|-----|
| Queuing-Based Processing Platform for Service Delivery in Big Data Environments . . . . . | 497 |
| <i>Florin Stancu, Dan Popa, Loredana-Marsilia Groza, and Florin Pop</i>                   |     |

|   |     |
|---|-----|
| A Service-Oriented Framework for Big Data-Driven Knowledge Management Systems . . . . . | 509 |
| <i>Thang Le Dinh, Thuong-Cang Phan, Trung Bui, and Manh Chien Vu</i>                    |     |

|   |     |
|---|-----|
| Towards a Platform for Prototyping IoT Health Monitoring Services . . . . .                                     | 522 |
| <i>Mădălina Zamfir, Vladimir Florian, Alexandru Stanciu, Gabriel Neagu, Ștefan Preda, and Gheorghe Militaru</i> |     |

## Web Service Design and Service-Oriented Agents

|   |     |
|---|-----|
| A Freight Brokering System Architecture Based on Web Services and Agents. . . . . | 537 |
| <i>Florin Leon and Costin Bădică</i>  |     |

|   |     |
|---|-----|
| Automated Identification and Prioritization of Business Risks in e-service Networks . . . . . | 547 |
| <i>Dan Ionita, Roel J. Wieringa, and Jaap Gordijn</i>   |     |

|   |     |
|---|-----|
| The Sharing Economy Revolution and Peer-to-peer Online Platforms. The Case of Airbnb. . . . . | 561 |
| <i>Linda Meleo, Alberto Romolini, and Marco De Marco</i>                                      |     |

## IoT and Mobile Apps. for Public Transport Service Management

|   |     |
|---|-----|
| Dynamic Service Capacity and Demand Matching in a Holonic Public Transport System . . . . . | 573 |
| <i>Theodor Borangiu, Silviu Răileanu, Iulia Voinescu, and Octavian Morariu</i>              |     |

|   |     |
|---|-----|
| Specifying Modernization into Service-Oriented SaaS System in a Case of Public Transport Document Generator . . . . . | 590 |
| <i>Muhammad Ghufon Mahfudhi and Teresa Galvão Dias</i>  |     |

|   |     |
|---|-----|
| Improving the Service Level of Bus Transportation Systems: Evaluation and Optimization of Bus Schedules' Robustness . . . . . | 604 |
| <i>Joana Hora, Teresa Galvão Dias, and Ana Camanho</i>  |     |

|   |     |
|---|-----|
| Mobile Communication Solutions for the Services in the Internet of Things . . . | 619 |
| <i>Sorin Zamfir, Titus Balan, Florin Sandu, and Cosmin Costache</i>             |     |

## E-Health Services and Medical Data Interoperability

|  |     |
|--|-----|
| Improving the Introduction of Electronic Health Record: Lessons from European and North American Countries . . . . . | 635 |
| <i>Sabrina Bonomi, Nabil Georges Badr, Alessandro Zardini, and Cecilia Rossignoli</i>                                |     |

|  |     |
|--|-----|
| Health Care Co-production: Co-creation of Value in Flexible Boundary Spheres . . . . . | 649 |
| <i>Maddalena Sorrentino, Marco De Marco, and Cecilia Rossignoli</i>                    |     |

|   |     |
|---|-----|
| Work-Related Stress in Health Care Services: A Quantitative Study in Italy. . . . | 660 |
| <i>Luisa Varriale, Paola Briganti, Gloria Guillot, and Maria Ferrara</i>          |     |

|  |     |
|--|-----|
| New Technologies for Sustainable Health Care . . . . .   | 674 |
| <i>Mauro Romanelli</i>   |     |
| Interoperability of Medical Data Through e-Health Service in Romania . . . . .   | 683 |
| <i>Elena Madalina Rac-Albu, Vlad Ciobanu, Marius Rac-Albu,<br/>and Nirvana Popescu</i>   |     |
| Implementing the Patient Clinical Observation Sheet as a Service<br>in Hospitals . . . . .   | 693 |
| <i>Florin Anton and Silvia Anton</i>   |     |
| <br><b>Service and IT-Oriented Learning and Education Systems</b>  |     |
| Innovation for Sustainable Development by Educating the Local<br>Community. The Case of an Italian Project of Food Waste Prevention. . . . . | 705 |
| <i>Sabrina Bonomi, Sara Moggi, and Francesca Ricciardi</i>   |     |
| The Assessment of Performance of Educational Services:<br>The Case of Portuguese Secondary Schools . . . . .                                 | 717 |
| <i>Maria C.A.S. Portela and Ana S. Camanho</i>   |     |
| Examining Cloud Computing Adoption Intention in Higher Education:<br>Exploratory Study . . . . .   | 732 |
| <i>Gheorghe Militaru, Anca Alexandra Purcărea, Olivia Doina Negoită,<br/>and Andrei Niculescu</i>  |     |
| Service Science Textbooks: Opportunities of an Interdisciplinary Approach. . . .   | 742 |
| <i>Johannes Kunze von Bischhoffshausen, Peter Hottum,<br/>and Ronny Schüritz</i>   |     |
| Research and Education in Service Science Management and Engineering:<br>The Case of the Italian Service Management Forum . . . . .          | 750 |
| <i>Sergio Cavalieri, Mario Rapaccini, Giuditta Pezzotta,<br/>and Nicola Saccani</i>  |     |
| <b>Author Index</b> . . . . .  | 761 |