

# **2020 IEEE European Technology and Engineering Management Summit (E-TEMS 2020)**

**Dortmund, Germany  
5 – 7 March 2020**



**IEEE Catalog Number: CFP20H96-POD  
ISBN: 978-1-7281-0904-6**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP20H96-POD
ISBN (Print-On-Demand):	978-1-7281-0904-6
ISBN (Online):	978-1-7281-0903-9

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

CURRAN ASSOCIATES INC.  
**proceedings**  
.com

# TABLE OF CONTENTS

<b>HYVALUE – A HYBRID REFERENCE MODEL FOR THE AUTOMOTIVE PRODUCT DEVELOPMENT PROCESS.....</b>	<b>1</b>
<i>Markus Schmidner ; Holger Timinger</i>	
<b>AN INTERNET OF THINGS PLATFORM: INFORMATION MODEL APPROACH FOR AGILE SERVICE DEVELOPMENT IN A MULTI-VENDOR ENVIRONMENT .....</b>	<b>6</b>
<i>Shinya Toyonaga ; Takahisa Suzuki ; Ryuichi Matsukura</i>	
<b>FRAMEWORK FOR BUSINESS ECOSYSTEM ROLES.....</b>	<b>12</b>
<i>Simon Wieninger ; Ruben Conrad ; Maik Bittner ; Amelie Wiesmann</i>	
<b>A LIGHTWEIGHT MESSAGE AUTHENTICATION CODE FOR VIRTUAL WORK IN FUTURE SMART CITIES .....</b>	<b>21</b>
<i>Zahraddeen A. Pindar ; Joshua O. Fayomi ; Nazir H. Waziri ; Bala M. Abdulhamid ; Sapiee Jamel</i>	
<b>SUSTAINABILITY ECOSYSTEMS: CONTROL OF THE ENERGY EFFICIENCY AS ONE OF THE ASPECTS OF THE DIGITAL ECOSYSTEMS (CASE STUDY FOR UKRAINE).....</b>	<b>26</b>
<i>Olena Verenysh ; Dmytro Hudoshnyk</i>	
<b>AMBIENT ASSISTED LIVING - AN INTEGRAL PART OF FUTURE SMART CITIES.....</b>	<b>32</b>
<i>Jelena Bleja ; Henrike Langer ; Uwe Grossmann ; Elisabetta Mörz</i>	
<b>OPTIMIZING BIKE SHARING SYSTEM FLOWS USING GRAPH MINING, CONVOLUTIONAL AND RECURRENT NEURAL NETWORKS.....</b>	<b>37</b>
<i>Davor Ljubenkovic ; Fábio Kon ; Carlo Ratti</i>	
<b>SMART CITY – SMART LOGISTICS AMALGAMATION .....</b>	<b>43</b>
<i>Himanshu Shee ; Shah Miah ; Ianire Taboada ; Tharaka De Vass</i>	
<b>PATTERNS FOR INTERNATIONAL COOPERATION BETWEEN INNOVATION CLUSTERS. CASES OF CFAA AND RUHRVALLEY .....</b>	<b>47</b>
<i>Leonardo Sastoque Pinilla ; Stefanie Bengfort ; Nargiza Mikhridinova ; Norberto López De Lacalle ; Carsten Wolff ; Nerea Toledo Gandarias</i>	
<b>EMOTIONAL INFECTION OF MANAGEMENT INNOVATION SMART GOVERNMENT PROJECTS .....</b>	<b>54</b>
<i>Sergey Bushuyev ; Jahid Babayev ; Denis Bushuiev ; Boris Kozyr</i>	
<b>CLUSTER MODEL OF IT EDUCATION IN UKRAINE.....</b>	<b>59</b>
<i>Tetiana Kovalyuk ; Nataliya Kobets</i>	
<b>ARE CITIES SMART TO BLEND LEARNING? A FRAMEWORK FOR LANGUAGE COURSE DEVELOPMENT AT MASTER LEVEL PROGRAMS IN DORTMUND .....</b>	<b>65</b>
<i>Yelena Dyan ; Nargiza Mikhridinova ; Andre Dechange</i>	
<b>PROACTIVE PROJECT MANAGEMENT AS A DISCRETE EVENT SYSTEM .....</b>	<b>72</b>
<i>Michael Dombrowski ; Anatoliy Sachenko ; Oleg Sachenko ; Zbyshek Dombrowski</i>	
<b>A RETROSPECTIVE ANALYSIS OF THE ROLE OF SOFT FACTORS IN DIGITALIZATION PROJECTS: BASED ON A CASE STUDY IN A PUBLIC HEALTH ORGANIZATION IN TRONDHEIM-NORWAY .....</b>	<b>76</b>
<i>Bertha Ngereja ; Bassam Hussein ; Kristin Helene Jørgensen Hafselid ; Carsten Wolff</i>	
<b>COST OPTIMIZATION SIMULATION FOR ELECTRIC VEHICLE CHARGING INFRASTRUCTURE .....</b>	<b>83</b>
<i>Peter Arras ; Galyna Tabunshchik ; Sergiy Korotunov ; Vyacheslav Okhmak</i>	
<b>IMPLEMENTING BUILDING INFORMATION MODELLING FOR THE RECONSTRUCTION PROCESS OF UNFINISHED BUILDING PROJECTS .....</b>	<b>87</b>
<i>Tetiana Lukianova ; Vasyl Donenko ; Ralf Klein</i>	
<b>INSIGHTS ON USING PROJECT-BASED LEARNING TO CREATE AN AUTHENTIC LEARNING EXPERIENCE OF DIGITALIZATION PROJECTS.....</b>	<b>93</b>
<i>Bassam Hussein ; Bertha Ngereja ; Kristin Helene Jørgensen Hafselid ; Nargiza Mikhridinova</i>	
<b>INVESTIGATION AND DEVELOPMENT OF DEMONSTRATION SYSTEM FOR TRAINING IN THE FIELD OF HOME AUTOMATION.....</b>	<b>99</b>
<i>Artem Tulenkov ; Anzhelika Parkhomenko ; Yevhenii Yaremchenko ; Aleksandr Sokolyanskii ; Yaroslav Zalyubovskiy ; Marina Kalinina ; Andriy Parkhomenko ; Aleksandr Stepanenko ; Maksym Andreiev</i>	
<b>A RETROSPECTIVE ON AGILE TRANSFORMATIONS: SURVEY RESULTS ON AGILITY OF GERMAN ORGANISATIONS .....</b>	<b>105</b>
<i>Olha Mikhieieva ; Klaus Stephan</i>	
<b>SUSTAINABLE CITY BASED ON STAKEHOLDERS CO-CREATION: THE ELISE CASE STUDY.....</b>	<b>110</b>
<i>Ruta Ciutiene ; Zaneta Stasiskiene ; Evelina Meiliene ; Lolita Jurksiene</i>	

<b>PREDICTING SUBCONTRACTOR PERFORMANCE FROM PAST AUDITS .....</b>	<b>115</b>
<i>Laurent Mertens ; Joost Vennekens</i>	
<b>DECISION SUPPORT SYSTEM WITH K-MEANS CLUSTERING ALGORITHM FOR DETECTING THE OPTIMAL STORE LOCATION BASED ON SOCIAL NETWORK EVENTS .....</b>	<b>121</b>
<i>Mohamed Ahmed Hamada ; Lyazat Naizabayeva</i>	
<b>A NOVEL EDUCATION PROGRAM USING AUTONOMOUS GROUND VEHICLES TO DEVELOP STEM SKILLS .....</b>	<b>125</b>
<i>Rolando Bautista-Montesano ; Carlos Rogel-Hurtado ; Gabriela Arzate-Bello ; Pedro Ponce-Cruz</i>	
<b>LIFE CYCLE ASSESSMENT ON THE MOBILITY SERVICE E-SCOOTER SHARING .....</b>	<b>130</b>
<i>Semih Severengiz ; Sebastian Finke ; Nora Schelte ; Norman Wendt</i>	
<b>AN SSI BASED SYSTEM FOR INCENTIVIZED AND SELFDETERMINED CUSTOMER-TO- BUSINESS DATA SHARING IN A LOCAL ECONOMY CONTEXT.....</b>	<b>136</b>
<i>Kevin Wittek ; Laura Lazzati ; David Bothe ; Ann-Julie Sinnaeve ; Norbert Pohlmann</i>	
<b>THE DIGITAL STADIUM – FROM FUTURE SCENARIOS TO TECHNOLOGY AND BUSINESS MODEL DEVELOPMENT .....</b>	<b>141</b>
<i>Christoph Jürgenhake ; Harald Anacker ; Roman Dumitrescu</i>	
<b>CRITICAL SUCCESS FACTORS FOR THE IMPLEMENTATION OF BUILDING INFORMATION MODELING (BIM) AMONG CONSTRUCTION INDUSTRY DEVELOPMENT BOARD (CIDB) G7 CONTRACTORS IN THE KLANG VALLEY, MALAYSIA .....</b>	<b>145</b>
<i>Kanesan Muthusamy ; Leopold Chew</i>	
<b>SMART CITIES FOR EVERYONE – AGE AND GENDER AS POTENTIAL EXCLUSION FACTORS .....</b>	<b>151</b>
<i>Jelena Bleja ; Henrike Langer ; Uwe Grossmann ; Elisabetta Mörz</i>	
<b>PARSIMTECH RESEARCH AND TRAINING CENTER .....</b>	<b>156</b>
<i>Oleksandr Miroszhkin ; Sergiy Kovalov ; Olga Dmitrieva ; Oleksandr Shcherbakov ; Serhii Tsololo ; Yuliia Dikova ; Sergiy Gogolenko ; Volodymyr Kushnarenko ; Volodymyr Svyatnyy</i>	
<b>CASE STUDY "AUTOMATION SYSTEM FOR MINE DRAINAGE UNIT" .....</b>	<b>160</b>
<i>Anna Voropayeva ; Viktoriya Voropayeva ; Hlib Stupak ; Valerii Potsepaiev</i>	
<b>THE INTERNET OF THINGS SOLUTIONS IN THE INVESTIGATION OF URBAN PASSENGER TRAFFIC AND PASSENGER SERVICE QUALITY .....</b>	<b>165</b>
<i>Oleg Sokulskyi ; Kateryna Hilevska ; Viktor Chumakevych ; Vadym Ptashnyk ; Anatoliy Tryhuba ; Anatoliy Sachenko</i>	
<b>DEVELOPING FUTURE TEACHERS' DIGITAL CULTURE: CHALLENGES AND PERSPECTIVES .....</b>	<b>170</b>
<i>Yerkinay Yelubay ; Lazzat Seri ; Dina Dzhussubaliyeva ; Ulzharkin Abdigapbarova</i>	
<b>MODERN APPROACH TO THE ROAD TRAFFIC MANAGEMENT IN CITIES OF UKRAINE: CASE STUDY OF KYIV MUNICIPAL COMPANY "ROAD TRAFFIC MANAGEMENT CENTER" .....</b>	<b>176</b>
<i>Victor Cherniy ; Sergiy Bezshapkin ; Olena Sharovara ; Ihor Vasyliev ; Olena Verenyh</i>	
<b>INVESTIGATION AND DEVELOPMENT OF TRAFFIC LIGHT CONTROL SYSTEM PROTOTYPE FOR SERIOUS GAME.....</b>	<b>182</b>
<i>Ernest Hunko ; Olga Gladkova ; Anzhelika Parkhomenko</i>	
<b>SMART URBANISM IN OLDER CITIES.....</b>	<b>188</b>
<i>Alexia Nalewaik</i>	
<b>Author Index</b>	