

2023 International Conference on Quality Management, Transport and Information Security, Information Technologies (IT&QM&TIS 2023)

**Petrozavodsk, Russia
25-29 September 2023**



**IEEE Catalog Number: CFP23J17-POD
ISBN: 979-8-3503-4054-9**

**Copyright © 2023 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:	CFP23J17-POD
ISBN (Print-On-Demand):	979-8-3503-4054-9
ISBN (Online):	979-8-3503-4053-2

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
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Contents

Preface.....	2
Information Technologies in the Organization of Production and Quality Management	3
<i>Vasiliev Victor A.</i>	

Section 1. Quality Management.

1.1. Integrated Management Systems for Digital Technology Enterprises	
1.2. Quality of Information Technologies and Systems	
1.3. Methods and Software/Hardware Tools for Quality Management and Control	
Automation of the Selection of Components Placement Surfaces Using 3D Drawings	9
<i>Agaev Emil T., Karlova Tatyana V., Bekmeshov Alexander Y., Batirov Muhamed U., Konstantyan Vladislav N., Girs Roman A.</i>	
Development of Online Services System for Banking Organizations	14
<i>Guskova Marina F., Shkolnik Ilya S., Salpagarov Soltan I., Rogov Andrey A.</i>	
Coding Standards and Quality Checks: Key Factors for Successful Software Development	19
<i>Nekrasov Hlib A.</i>	
Application of Reinforcement Learning Algorithms and Game Theory to Optimize the Offloading of a Mobile Edge Computing System	23
<i>Konvalov Mikhail D., Uvarova Liudmila A.</i>	
Assessment of the Electronic Document Management System Availability based on In-house IT-Infrastructure	27
<i>Livshits Ilya I., Golovina Elena Yu., Lontsikh Nataly P., Lontsikh Pavel A., Karaseva Victoria A.</i>	
Description of the Multistable States of an Optical Computer Using Nonlinear Fokker-Planck Equations	31
<i>Sokolov Andrey V., Uvarova Liudmila A., Sheptunov Andrey S.</i>	
Firmware Intellectual System Application in Quality Management	34
<i>Sukhanova Natalia V., Sheptunov Sergey A.</i>	
The Prediction of Contact Radio Interference in the Tasks of Ensuring Electromagnetic Compatibility of Radioelectronic Means on Mobile Objects	40
<i>Utkin Boris V., Grachev Nikolay N., Artamonov Dmitriy O., Utkin Mikhail V.</i>	

Section 2 - Transport and Information Security and Safety

2.1. Technological, Technogenic, Information and Communication, and Transport Security and Safety	
2.2. Smart Transport and Transport Systems	
Cross-Coupling Analysis of Accelerations of the Axle Boxes of the Car Bogie	46
<i>Bolshakova Alexandra V., Boronakhin Alexander M., Larionov Daniil Yu., Tkachenko Anna N., Shalymov Roman V., Churyaev Eduard D.</i>	
Peculiarities of Vibration Signal Processing Techniques Application to Inertial Way Diagnostics	51
<i>Bolshakova Alexandra V., Boronakhin Alexander M., Klionsky Dmitriy M., Larionov Daniil Yu., Tkachenko Anna N., Shalymov Roman V.</i>	
Development of the Model for Automating the Process of Information Transfer in Order to Increase Its Reliability	56
<i>Kuznetsova Nataliya M., Karlova Tatyana V., Bekmeshov Alexander Y., Tsygankova Olga A., Atabaeva Daniza M., Sabanchiev Aslan M.</i>	
Development of Hardware and Software to Ensure Process Safety and Reliability in Railway Transport	59
<i>Narusova Elena Yu., Struchalin Vladimir G., Paruleva Irina V.</i>	
Improving the Reliability of Railway Automatic Couplers Under Track Geometry Deviations	64
<i>Popova Tatiana A., Popov Alexander P., Zapolskaya Anna N., Kulikov Mikhail Yu.</i>	
Development of Labor Safety Information Systems for Railway Transport	69
<i>Struchalin Vladimir G., Narusova Elena Yu., Paruleva Irina V.</i>	

The Neural Networks Application in Information Security	74
<i>Sukhanova Natalia V., Sheptunov Sergey A.</i>	
Automatic Traffic Control of Autonomous Vessels in Coastal Waters	79
<i>Sedova Nelly A., Sedov Viktor A., Bazhenov Ruslan I., Alutina Elena F., Gorbunova Tatiana N., Ledovskikh Irina A.</i>	
Fiber-Optical Measuring Networks for Hydro-Engineering Facilities Security Monitoring	83
<i>Sedova Nelly A., Sedov Viktor A., Bazhenov Ruslan I., Belozеров Oleg I., Belozерova Svetlana I., Lavrushina Elena G.</i>	

Section 3 - Information Technologies

- 3.1. IT Strategies and Digital Transformation of Business and Industry**
- 3.2. IT Services Management**
- 3.3. Information Technologies in Industry, Medicine, Education.**

The Impact of the Development of Mobile Communication Technologies on the Transformation of a Digital Product	87
<i>Kuzovkova Tatiana A., Saliutina Tatiana Yu., Sharavova Olga I.</i>	
Two-stage Text Messages Classifier for Chatbots	93
<i>Potapova Ekaterina M., Smirnov Nikolai V., Voronin Veniamin Y., Semenov Nikita D., Menshikov Mikhail A.</i>	
Chatbot Technology as an Artificial Intelligence Tool in Foreign Language Education	97
<i>Shimichev Alexey S., Rotanova Mira B.</i>	
Comparative Analysis of Computational Complexity of Fast Matrix Multiplication Algorithms	101
<i>Abdulsalyamova Albina S., Kalita Diana I., Lyakhov Pavel A., Nagornov Nikolay N., Bergerman Maxim V.</i>	
Implementation of Digital Technologies in Production Processes	104
<i>Aleksandrova Svetlana V.</i>	
<i>Communication Skills in Engineering Curriculum</i>	N/A
<i>Baskakova Darja Yu., Belash Olga Yu., Shaposhnikov Sergey O., Sharakhina Larisa V.</i>	
Application of Empirical Mode Decomposition to Reduce Signal Noise	115
<i>Dosko Sergey I., Sheptunov Sergey A., Ryad Ajamieh, Rudnev Sergey K.</i>	
Intelligent Building Emergencies Control System Requirements	119
<i>Karnauhova Ekaterina A., Markvirer Vladlena D.</i>	
Expressive Audio Data Augmentation Based on Speech Synthesis and Deep Neural Networks	123
<i>Kazakova Sofia A., Zorkina Anastasia A., Kocharyan Armen M., Svischev Alexei N., Rybin Sergey V.</i>	
Development of an Intelligent Robotic System for Recognizing and Transporting Postal Objects	127
<i>Khokhlova Mariya, Voronova Liliya, Barsuk Igor, Belov Nikita</i>	
About the Choice of Data Balance Method for Neural Network Classification of Electrocardiogram Signals	133
<i>Kiladze Mariya R., Kalita Diana I., Lyakhova Ulyana A., Orazhev Anzor R.</i>	
Simulation of Three-Phase Circuits with Nonlinear Load	137
<i>Kupova Anastasia V., Lanovenko Elena V., Solovyeva Elena B.</i>	
Evaluation of Information Technology Equivalence in Telemedicine	141
<i>Lampezhhev Abas H., Polezhaev Dmitry V., Mikhailov Maxim S.</i>	
Application of Artificial Intelligence Technology in Teaching English Language to Engineering Bachelors	147
<i>Markus Anna M., Ovinova Lada N., Dmitrusenko Inna N., Shraiber Elena G.</i>	
University Teaching Load Distribution Algorithm	152
<i>Markvirer Vladlena D., Karnauhova Ekaterina A.</i>	
Using Neural Networks for EFL Learning and Teaching	156
<i>Matveeva Natalya V.</i>	
Real-Time System for Detection Hidden and Visible Keypoints of Rainbow Trout	161
<i>Pavlov Maksim P., Perminov Valentin V., Marakhtanov Aleksey G.</i>	
Classification of IT Tools Based on Bloom's Taxonomy	166
<i>Platonova Lyubov D., Kotlyarova Irina O., Volchenkova Ksenia N., Vaulin Sergey D.</i>	

Prospects for Including a DATA Decision Support System in a Civil Servant's Automated Workplace	170
<i>Sheptunov Sergey A., Averchenkova Elena E., Averchenkov Andrey V., Averchenkov Dmitriy A.</i>	
Simulation of a Differential Robot Drive in Gazebo	175
<i>Tseeva Fatimat M., Shogenova Mariyana M., Senov Khamisha M., Nogerov Ibragim A., Bozieva Asiyat M.</i>	
Author Index	