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Three Decades
of Successful CCF Conferences

Conferința Internațională
"Calitate și Fiabilitate"

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CUPRINS – CONTENTS

ASIGURAREA CALITĂȚII – QUALITY ASSURANCE
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Three Decades of Successful Conferences in Quality and Dependability – CCF

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Abstract

*The coordinators of the International Conferences in Quality and Dependability – **CCF** present the evolution of the **CCF** conferences, which became an important international forum for the dissemination of recent information and scientific results in quality and dependability (reliability, maintainability, safety/security). They conclude that **CCF** is now a well-established **brand of excellence** among the international scientific meetings in the interdisciplinary field of **quality** and **dependability**.*

Keywords: *Quality, Dependability, Reliability, Maintainability, Security, Conference, International Conference, CCF, Quality Policy, Quality Management, history.*

The year 2017 marks an important anniversary for the community of Romanian specialists in the field of quality and dependability: 30 years since the first important conference on quality and reliability – CCF[1] – was organized in Romania.

As already mentioned, the *Conferences in Quality and Reliability/Dependability* have a long and good tradition among the specialists of the field. That's why, we consider useful to remember – at this anniversary moment – the main moments that marked the evolution of **CCF** – from a national scientific meeting to an important international conference in the field.

The first *National Conference on Quality and Reliability* – **CCF'87**, organised by the Central Reliability Group of MIEt, took place at Poiana Brasov, in September 1987. It was then decided that this conference should become a traditional national scientific event in the field. Therefore, the second edition of the Conference, **CCF'88** took place at the premises of 'Minerva', 'Diana' and 'Afrodita' hotels from Baile Herculane, in 1988.

After the political changes of 1989, **SRAC** took over this tradition, by organising the third edition of the Conference – **CCF'96** at the Hotel 'Roman' from Baile Herculane, in September 1996.

The fourth edition of the conference – **CCF'97** was organised in Sinaia, while the fifth edition – **CCF'98** was organised in Sinaia too, at the 'Holiday Inn' hotel. **CCF'99**, the sixth edition of the conference took place at the Hotel 'Sport' from Poiana Brasov.

The seventh edition of the conference – **CCF2000** was organised at the Hotel 'Palace' from Sinaia in the year 2000; it was a scientific meeting with a wide international participation and, as a consequence, it was decided that the further editions of **CCF** should be included in the circuit of the international conferences

[1] **CCF** – is the abbreviation of *Conferinta de Calitate si Fiabilitate* (*Conference on Quality and Reliability* – in Romanian)

in quality and dependability and organised every two years. The national journal "**Calitatea – acces la succes**" and the international journal "**Qualite-Forum Scientifique**" were launched during **CCF2000**, in the presence of the Editors-in-Chief of the two publications.

The next **CCF** scientific meetings, namely the eighth edition of the Conference – **CCF2002**, organized at the Cazino of Sinaia, as well as the ninth edition – **CCF2004** – organized at Hotel Mara in Sinaia were unanimously considered as important international scientific events in the field of quality and dependability.

The 10th edition of the conference **CCF2006** – organized at the Casino Conference Hall from Sinaia – was an anniversary one. More than 70 papers were presented by specialists in the field from 10 countries: Argentina, Australia, Belgium, France, Great Britain, Greece, Moldavia, the Netherlands, Switzerland and Romania, too. A special session of **CCF2006** marked

the centenary of the *International Electrotechnical Commission* (*IEC*).

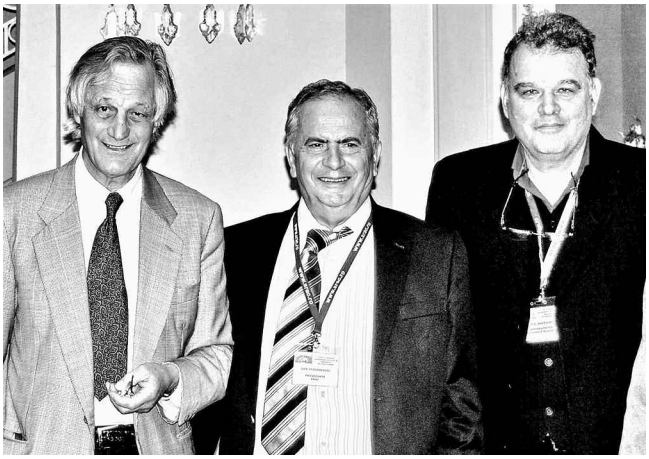
During the 11th International Conference on Quality and Dependability – **CCF2008** specialists from 13 countries, including Australia, Belgium, France, Great Britain, Italy, India, Maroc, Moldavia, the Netherlands, Portugal, Switzerland, Tunisia and Romania presented at Sinaia their points of view in more than 60 papers.

The special session *"A homage to Joseph M. Juran (1904-2008)"* organized at the beginning of the conference represented a tribute to the great "Guru" of quality of Romanian origin **Joseph M. Juran**, the "father" of the modern quality management who passed away at the beginning of 2008.

A special session marked the 15th anniversary of the **Romanian Society for Quality Assurance** (**SRAC**) – the main organiser of **CCF** conferences, too.

More than 50 papers authored by specialists from Australia, Belgium, Czech Republic, France, Great Britain, India, Maroc, the Netherlands, Switzerland, Tunisia and Romania were presented during the 12th International Conference on Quality and Dependability – **CCF2010** organized at the Casino Conference Center from Sinaia.

The participants at **CCF2010** had the special



opportunity to meet Professor Emeritus **Alessandro Birolini**, a remarkable specialist in the field – considered as a Reliability Guru – who presented an invited conference. During **CCF2010** was launched – *in world premiere* – the 6th edition in English of the monumental book of Prof. Birolini ***Reliability Engineering: Theory and Practice*** – published by Springer Publishing House and considered by the specialists in the field as a veritable "Bible of Reliability".

During the 13th International Conference on Quality and Dependability **CCF2012** – organised for the first time in a beautiful area of the *Black Sea*, at *Neptun International Conference Center*, specialists from 13 countries, including Australia, Belgium, France, Great Britain, Italy, India, Maroc, Moldavia, the Netherlands, Portugal, Switzerland, Tunisia and Romania presented their points of view in more than 50 papers.

The special guest of the 13th International Conference on Quality and Dependability – **CCF2012** was Mr. **Gianluca Mule**, Senior Manager of the well-known ***European Foundation for Quality Management – EFQM*** who presented the *EFQM Excellence Model*. The EFQM Excellence Model is the most popular quality tool in Europe, used by more than 30,000 organizations to improve their performances.

During the last day of the conference the evolutions and the perspectives regarding the management, engineering and certification of quality and dependability in Romania and abroad were analysed as a part of the special session **ISO 9000 Forum** – a session that marked the 25th anniversary of this famous international standard. This session celebrated the 20th anniversary of the **Romanian Society for Quality Assurance** (**SRAC**), the main organiser of **CCF** conferences, too.

During the 14th International Conference on Quality and Dependability **CCF2014** – organised at the Palace hotel from Sinaia, specialists from Belgium, France, Great Britain, India, Israel, the Netherlands, Serbia, Switzerland, Turkey and Romania, too presented about 60 papers.

The first day of the conference brought to the attention of the participants an event with an important international impact: ***The EFQM Open Doors Day in Romania***, organized by **SRAC** and **EFQM** and with the participation of *Grundfos Romania* and the *Hungarian Association for Excellence*.

The **CCF2014** conference was organized in a special year for quality: the anniversary of nine decades from the first *control chart* introduced by the quality

guru **Walter Shewhart** in 1924, which launched the statistical process control and the quality improvement. This moment, considered as the *birthday of the modern quality*, was the point of departure of an interesting **CCF** debate concerning the evolutions and the future of quality.

The 15th International Conference on Quality and Dependability **CCF2016** was organised at the Palace hotel from Sinaia, too; well-known specialists in the field – academics, managers, practitioners and researchers from France, Israel, Serbia, Switzerland, U.S.A., and Romania, presented their points of view, in about 50 papers.

The special guests of the ***15th International Conference in Quality and Dependability*** **CCF2016** were important international experts in the field, namely:

- Prof. Emeritus Dr. **Alessandro Birolini** from Polytechnic Institute (ETH) Zurich, Switzerland, the famous European "Guru" in Reliability, author of the best-seller *Reliability Engineering*, a true "Reliability bible" – printed in 10 editions;
- Dr. **Isaac Sheps** – Convener of ISO/TC 176/SC2/WG25 (working group for revision of the ISO 9004);
- Prof. Dr. **Vidosav D. Majstorovic** from University of Belgrad, well-known Serbian expert in quality management;
- Dr. **Steli Loznen**, Israel – Convener of IEC/TC 62/SC 62A/MT29 & WG14.

Special emphasis was given during **CCF2016** to the problems of *Quality, Security and Risk Management and Analysis, Dependability Modelling and Evaluation, Environmental Management and Quality Assurance in Education*. A special attention was given to the requirements and implementation of the revised standard ***ISO 9001:2015***.

Quality and dependability have become today undeniable strengths contributing to the development of companies, small businesses or large multinational groups. Their application in different organisations must be the result of research and partnership among industry, academia and business. During the last three decades the CCF conferences contributed to the dialogue between the main actors of the quality and dependability world.

The points of view of well-known specialists in the field from Romania and several other countries presented during the **CCF** conferences, allowed to establish a realistic image of the national and international evolutions and of the perspectives of these modern fields.

The dynamic political and economic evolutions in Europe during the last decades increased the importance of ***quality***, now considered as a strategic tool and a determining factor for the development and enhancement of Europe's global competitiveness.

The international scientific meetings, such as **CCF** is, could be a contribution to this objective, by reviewing the state of the art, experiences, and new trends in the relevant scientific areas.

Several presentations of the **CCF** conferences were dedicated to the evolutions in the European quality on the European scene during these last years, as well as to the national evolutions in this field. The **real** integration of Romanian economy in the unified European structures is an impossible endeavour unless the severe

requirements on quality based on the EU's standards are meet.

Several *organisational*, *research* and *educational programs* and initiatives in the **quality** and **dependability** (esp. safety/security) field were developed in Romania during the last years, and they were analysed in the framework of the **CCF** conferences.

Under the conditions of the actual *world economic crisis*, the debates of the last **CCF** conferences tried to give an answer to the following question: could be the optimal managerial and technical strategies based on quality and dependability an *advantage* for companies in their effort to overcome this economic crisis?

A wide selection of papers presented in the frame of each **CCF conference** was included in the ***Proceedings*** of the conference, entitled ***"Quality and Dependability"***. The collection of these Proceedings is a valuable proof of the scientific and managerial developments in the areas of quality and dependability, at both national and international level.

At this anniversary moment, we would like to thank all the authors who submitted their work, the members of the organising committee, and all those who contributed to the **CCF** conferences with their efforts and support. Special thanks to the members of the ***International Scientific Committee of CCF*** prestigious personalities in the field, who made up an equilibrated and high-level scientific program for all the **CCF** conferences and reviewed the submitted papers under severe time constraints.

The primary objective of the ***International Conferences on Quality and Dependability*** – **CCF** was to provide an international forum for the dissemination of recent information and scientific results in these modern domains.

The **CCF** conferences were organised by the **Romanian Society for Quality Assurance (SRAC)**, under the aegis of several important international organisations in the field, including **EFQM** or **OECD**.

We are proud to mention that several editions of the **CCF** conferences had the scientific endorsement of the *Institute of Electrical and Electronics Engineers – IEEE* (Romanian section), the world's leading professional association for the advancement of technology, too.

It is interesting to mention that the **CCF** conference was listed as the 3rd longest running conference in the quality and dependability field in the international specialized assessments.

The International Conference in Quality and Dependability – **CCF** is now a well established ***brand*** of ***excellence*** among the international scientific meetings in the inter-disciplinary field of ***quality*** and ***dependability*** (*reliability, maintainability, safety & security*).

We hope that the **CCF conferences** organised in Romania during the last three decades have contributed to the promotion in our country of new ideas and methods in quality and dependability.

Note

We have included in this issue of the journal ***"Asigurarea calitatii – Quality Assurance"*** extensive versions of papers presented at the **CCF** conferences by three of the most important European specialists in the field of quality, namely: Prof. dr. **Ton van der Wiele (Erasmus University Rotterdam, the Netherlands)**, Prof. dr. **Maurice Pillet (Savoie University, Annecy, France)** and Dr. **Michele Cano (University of West of Scotland, United Kingdom)** – **I.C.B.**

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Challenges in Quality Management

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Abstract
The two kinds of quality management – 'old' or classical quality management and 'new' quality management are analysed. The aim of classical quality management was to analyse errors and eliminate their causes and associated variation by improved product and process design. In recent times a number of major changes have taken place resulting in increased volatility in key areas of a business, which 'old' quality management has difficulty in addressing. These changes are being driven by competitive pressure, the need for improved results from the financial market and increasing shrinkage of buying points. This has lead to pressure on prices, performance and innovation and the need for increased flexibility, agility and economics of scale, with a concentration on core competencies within the business. This situation demands a 'new' form of quality management. The paper examines the main problems caused by these changes in terms of improved longer term relationships, softer influences on customer satisfaction, growing importance of software, and closer cooperation between internal functions and externally between supply chain partners.

Keywords: Quality, Management, Classical quality management, New quality management, Relationships, Customer satisfaction

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Asigurarea Calitatii - Quality Assurance, ISSN 1224-5410
Vol. XXIII, Issue 91, July-September 2017
Pages 13-23

A Contextualized Quality Problem-Solving Method

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Abstract
The industrial products developed today are more complex and the times given to design them, shorter. In this situation, companies have to use effective problem-solving methods which have to be adapted to all types of problems. This article proposes to adapt the problem-solving method to the context of each problem. The idea is to have a methodological base and to choose the right tools and stage sequences related to each specific problem. To characterize the context of the problem, we propose to introduce two evaluations: the problem profile and the problem solving state. This article gives techniques to materialize these two concepts and then to build a customized method from these two evaluations each time. An industrial application in a new high technology company illustrates our proposition and presents how it can be implemented.

Keywords: Quality, Contextualized Method, Meta method, Problem Profile, Problem-solving, Quality Tools, Solving State

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Asigurarea Calitatii - Quality Assurance, ISSN 1224-5410
Vol. XXIII, Issue 91, July-September 2017
Pages 24-29

Applying Lean Manufacturing Principles in the Higher Education Sector

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Abstract
The purpose of this paper is to present the findings of a research project which aims to determine if and how lean manufacturing principles can be applied to the Higher Education sector. The research is based on a comparative qualitative analysis of literature and semi-structured interviews with those involved in lean implementation across a number of sectors including Higher Education. It is shown that while lean projects can be successful at a local level, a more strategic approach is required to ensure a culture for continuous improvement and full implementation of lean principles is achieved. Furthermore, critical success factors are identified at all levels of implementation. The practical implication of this work is to provide a framework which will help in the planning and implementation stages of applying lean manufacturing to the Higher Education Sector. The value of the work which this paper conveys is the presentation of a framework, informed by best practice and lessons learned in implementing lean manufacturing and which can be applied to the higher education sector.

Keywords: Lean practices, best practice, higher education

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Asigurarea Calitatii - Quality Assurance, ISSN 1224-5410
Vol. XXIII, Issue 91, July-September 2017
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Status and Trends of Power Devices

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Abstract
Advances in power semiconductor technology have improved the efficiency, size, weight and cost of power electronic systems. Power integrated circuits have been developed for the use of power converters for portable, automotive and aerospace applications. New materials (SiC and GaN) have been introduced for advanced applications. They increase the output power density per area or per volume, reduce the consumption of natural resources, and increase the efficiency of electric systems. Especially the effects of SiC devices are dramatic. The paper reviews the state of these devices in terms of higher voltages, higher power density, and better switching performance.

Keywords: Electronics, power technology, power device, classification, methodology, SiC, GaN, reliability

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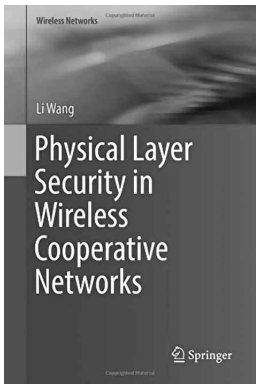
Forthcoming SPRINGER Books in IT Security

We present here some of the forthcoming books in the important **IT security & cybersecurity** fields, which will be published by the well-known international publishing house **SPRINGER** in 2018.

These valuable books will be reviewed in the future issues of the journal ***„Asigurarea calitatii – Quality Assurance”***.

Li Wang:
Physical Layer Security in Wireless Cooperative Networks

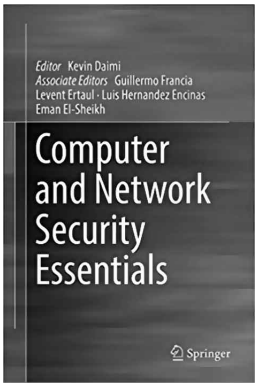


This book provides a comprehensive overview for physical layer security in wireless cooperative networks, including fundamental concepts, typical solutions, and some recent achievements. It investigates the secrecy performance with respect to time reversal transmission and multi-antenna spatial modulation techniques. Both of which are proposed as effective physical layer processing schemes in wireless multipath channel environment.

Resource allocation strategies to enhance secrecy performance in D2D communications are also discussed in this book. It contributes to formulating user social behaviors and utilizing social characteristics to improve the secrecy performance in wireless cooperative networks. This book not only analyzes the secrecy enhancement with certain techniques, but also pursues to find the relationships or tradeoffs among the secrecy performance, energy consumption, channel conditions, and other essential factors in wireless communications.

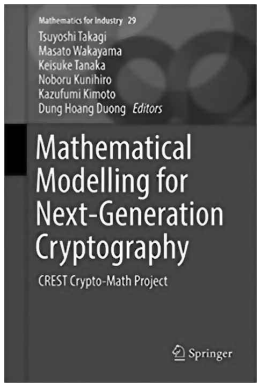
This book targets researchers and professionals specializing in electronic engineering, computer science, wireless communications and networks. Advanced level students in electrical engineering and computer science will also find this book useful as a secondary text.

Kevin Daimi (Ed.):
Computer and Network SecurityEssentials



This book introduces readers to the tools needed to protect IT resources and communicate with security specialists when there is a security problem. The book covers a wide range of security topics including Cryptographic Technologies, Network Security, Security Management, Information Assurance, Security Applications, Computer Security, Hardware Security, and Biometrics and Forensics. It introduces the concepts, techniques, methods, approaches, and trends needed by security specialists to improve their security skills and capabilities. Further, it provides a glimpse into future directions where security techniques, policies, applications, and theories are headed. The book represents a collection of carefully selected and reviewed chapters written by diverse security experts in the listed fields and edited by prominent security researchers.

Takagi, T., Wakayama, M., Tanaka, K., Kunihiro, N., Kimoto, K., Duong, D.H. (Eds.):
Mathematical Modelling for Next-Generation Cryptography. CREST Crypto-Math Project



This book presents the mathematical background underlying security modeling in the context of next-generation cryptography. By introducing new mathematical results in order to strengthen information security, while simultaneously presenting fresh insights and developing the respective areas of mathematics, it is the first-ever book to focus on areas that have not yet been fully exploited for cryptographic applications such as representation theory and mathematical physics, among others. Recent advances in cryptanalysis, brought about in particular by quantum computation and physical attacks on cryptographic devices, such as side-channel analysis or power analysis, have revealed the growing security risks for state-of-the-art cryptographic schemes. To address these risks, high-performance, next-generation cryptosystems must be studied, which requires the further development of the mathematical background of modern cryptography. More specifically, in order to avoid the security risks posed by adversaries with advanced attack capabilities, cryptosystems must be upgraded, which in turn relies on a wide range of mathematical theories. This book is suitable for use in an advanced graduate course in mathematical cryptography, while also offering a valuable reference guide for experts.

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President of the:
Romanian Association for Information Security (RAISA)
Editor-in-Chief:
„Asigurarea calitatii – Quality Assurance”

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