

ASIGURAREA CALITĂȚII – QUALITY ASSURANCE

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„Matterhorn - an iconic emblem of the Swiss Alps” by Ioan Bacivarov
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Quality in Higher Education - A Competitive Intelligence Based Approach

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Abstract

Competitive Intelligence (CI) is a systematic and ethical program for gathering, analyzing, and managing external information that can affect the company's plans, decisions and operations. It is a crucial part of the emerging knowledge economy. By analyzing rival's moves, CI allows companies to anticipate market developments rather than merely react to them. Within this framework, benchmarking can involve ten steps: identify what's to be compared; identify comparative companies; determine data collection method and collect data; determine performance "gaps"; define future performance levels; communicate benchmark findings to the organization; establish goals to be attained; develop plan; implement and monitor progress; and recalibrate benchmarks. We propose to discuss several models of benchmarking in the aim of using competitive intelligence in higher education quality assurance and improvement.

Keywords: Quality, Competitive Intelligence, Benchmarking Models, Higher Education.

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A Contingency Approach in Quality Management

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Abstract

Many organisations now have to operate in highly uncertain environments. Global competition drives organizations to reduce their capital employed and cut costs through lean manufacturing, outsourcing and extended supply or to grow by entering new markets, introducing new technologies, building unique alliances. And all this is happening at a much faster speed than even ten years ago. On a journey towards excellence, learning from past performance is always beneficial. However the applicability of the learning rapidly diminishes in a continuously structurally changing environment. One key (implicit) assumption of the theories and practices of TQM and Business Excellence is that the business environment is relatively stable and predictable. However, this is no longer the case and therefore we must also accept that much of our current theory and practice is no longer as effective as in the past. In particular, we need to develop a strategic and practical approach to sustaining Business Excellence to support executives and their organisations that face uncertainty and instability in their particular market environments. Our approach is an application of well-tested theories of complexity analysis using Simons' Four Levers of Control model. It analyses all the organization's systems and structures which might be driving the behaviour of the people involved and examines the degree to which these systems and structures support or undermine efforts to maintain business excellence. It then considers how this situation can best be managed now; what needs to be changed in which direction in the future; and how and when this can best be achieved, given the operating environment of the company. We have found that crucial processes in an uncertain environment have to be managed through the use of all four levers of control according to Simon's model, however, the interactive control mechanisms are becoming more important. Quality Management approaches should therefore cover not only the tools and instruments to measure and control performances in order to find deviations from the goals, but should also include methods to stimulate and improve the more interactive management activities in order to be able to cope with the uncertain environments.

Keywords: Management Control; Uncertainty; Simon's Levers of Control, Quality Management

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Package-on-Package (PoP), warpage, and Reliability

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Abstract

After a short overview of microelectronic packaging, the PoP – which allows vertically combining discrete logic and memory BGA packages – is presented. It allows multi-chip packages to be integrated for greater space savings on the printed circuit board (PCB). Instead of occupying multiple flat surface areas on the PCB, this allows the components to stack up much like a high-rise building. The paper is intended to inform the non-PoP technologists, researchers and decision makers about PoP reliability and some PoP actual problems.

Keywords: Microelectronic packaging, warpage, PoP reliability, PoP trends, 3D, SoC.

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Influence of the semiconductor material quality on the reliability of active electronic components

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Abstract

The quality of semiconductor wafers is defined by some parameters (planeity, roughness, resistivity, etc.), but the crystallographic defects have the higher influence on the reliability of the future product, fabricated on the wafer. In this paper, the main types of crystallographic defects are presented, together with the possible failure risks.

Keywords: semiconductor, crystallographic defect, failure mechanism

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Actualities and Perspectives in Mobile Communications. 2012 GSMA Mobile World Congress – An Outstanding Event in the Field

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Mobile communications are transforming our world in unprecedented ways, changing the way we work, live and interact.

The most important and representative event for this dynamic field is undoubtedly the **Mobile World Congress (MWC)** which takes place in Barcelona, Spain, at the beginning of each year. The annual attendance is generally between 50-60,000 people.

It is important to mention that Barcelona was chosen as *Mobile World Capital* for the 2012-2018 period of the **MWC**. Barcelona will not only host the Mobile World Congress but will also become a permanent technological and cultural centre that will boost the existing industrial fabric, and create new business opportunities and global awareness of the potential of mobile communications.

The *GSMA Association Mobile World Congress* is the combination of the world's largest exhibition for the

mobile industry and a congress featuring prominent Chief Executives representing mobile operators, vendors and content owners from across the world.

The 2012 **Mobile World Congress**, which will be held during the period 27th February – 1st March 2012 at the Fira de Barcelona Montjuic, will include:

- ❑ A world-class conference featuring prominent keynote speakers and panel discussions;
- ❑ More than 1,400 exhibiting companies;
- ❑ App Planet – the Centre of the Mobile Apps Universe;
- ❑ MSW Congress Party & Awards Celebration highlighting innovative mobile solutions around the world.

The conference programme is a central element for the future edition of **MWC**. In 2012, this unparalleled programme will celebrate the way that the mobile industry is redefining communication. An enhanced keynote programme and more than 30 focused conference track sessions will cover the latest technological trends and growth strategies for the global mobile industry. Each session will feature executives from leading companies in the mobile space, as well as experts from a growing number of adjacent industries that are redefining the mobile value chain. At **MWC 2012**, will be highlighted the cutting-edge technologies, solutions and services that are redefining mobile today and into the future, said the officials of GSMA.

The CEOs of many of the world's leading companies will be speaking at Mobile World Congress. Topic areas addressed in the keynote programme will include mobile operator strategies in developed and de-

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veloping markets, cloud computing, connected consumers, mobile money, mobile OS and applications and next-generation networks and technologies.

The list of recently confirmed **keynote speakers** for the **2012 Mobile World Congress** contains important names in the field on mobile communications, including:

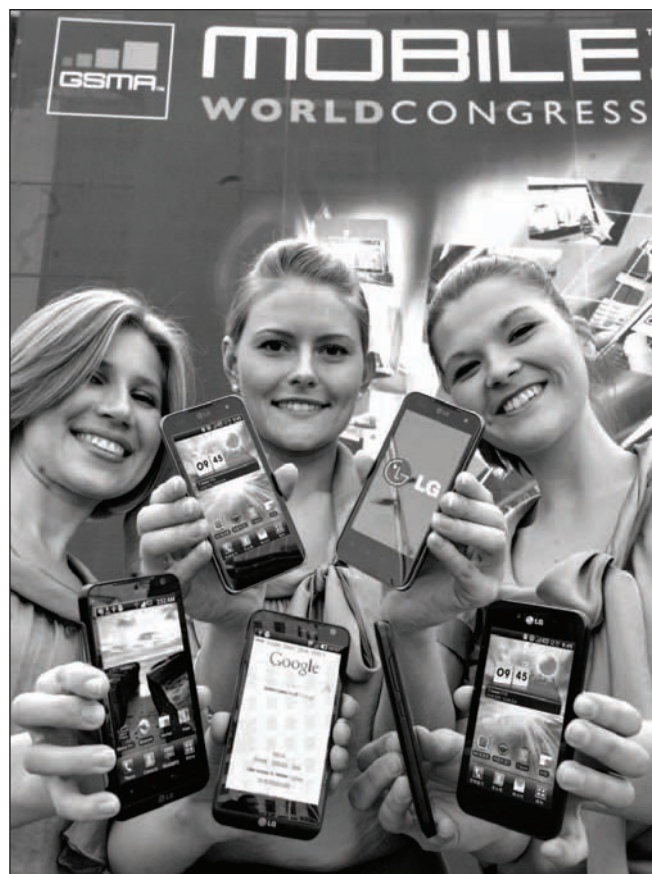
- ❑ Ralph de la Vega, President and CEO – AT&T Mobility and Consumer Markets, AT&T
- ❑ Ben Verwaayen, CEO, Alcatel-Lucent
- ❑ René Obermann, CEO, Deutsche Telekom
- ❑ Hans Vestberg, President and CEO, Ericsson
- ❑ Peter Chou, CEO, HTC
- ❑ Ryuji Yamada, President and CEO, NTT DOCOMO
- ❑ Franco Bernabé, Chairman and CEO, Telecom Italia Group
- ❑ Jon Fredrik Baksaas, President and CEO, Telenor Group
- ❑ John Donahoe, President and CEO, eBay
- ❑ John Riccitiello, CEO, Electronic Arts
- ❑ Eric Schmidt, Executive Chairman, Google
- ❑ Michael Roth, Chairman and CEO, Interpublic Group
- ❑ Stephen Elop, President and CEO, Nokia
- ❑ Vittorio Colao, Chief Executive, Vodafone

In addition to the keynote programme, the 2012 conference will also feature dedicated tracks on applications, cloud computing, embedded mobile, mobile advertising, mobile health, mobile money, next-generation technologies and OSS/BSS, as well as sessions exploring business strategy, developing markets, devices, network capacity, regional issues and social media, among other topics.

At the 2012 Mobile World Congress, the GSMA is introducing **mPowered Brands**, a new, multi-faceted programme which focuses on building marketers' knowledge and accelerating their use of mobile as a marketing medium. The mPowered Brands programme provides an indispensable opportunity for professionals across the mobile marketing ecosystem to gain important and timely insights, practical knowledge and innovative solutions from the companies at the forefront of mobile marketing today.

Honouring excellence and innovation in mobile communications, the **GSMA's Global Mobile Awards** – included in the programme of the **MWC 2012** are the premier international showcase of excellence for the mobile industry.

An integral part of Mobile World Congress is the **GSMA Ministerial Programme**, which is designed to



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bring together governments, regulators and industry leaders to discuss the specific regulatory issues shaping the development of mobile around the world. The 2012 programme has been expanded to include greater emphasis on regional issues and hands-on workshops to provide the opportunity for in-depth policy discussions between nations. The 2012 Ministerial Programme is expected to attract delegations from more than 140 countries and international organisations.

Far more than a mere communication device, mobiles now serve as our books, health monitors, payment transfer devices, social connectors and tour

guides. Mobile technology is embedded in our cars, homes, appliances, governments and utilities. Mobile is enhancing and expanding education and thus, transforming the world. Mobile World Congress MWC 2012 will celebrate the current state of mobile and offer a glimpse into where mobile has the potential to go next.

The journal “**Asigurarea Calității – Quality Assurance**” will be, as usually, in Barcelona for this important events and will analyze in the future issues the **MWC2012**’s developments and trends; a peculiar attention will be given to the *quality, dependability* and *security* issues related to mobile communications.

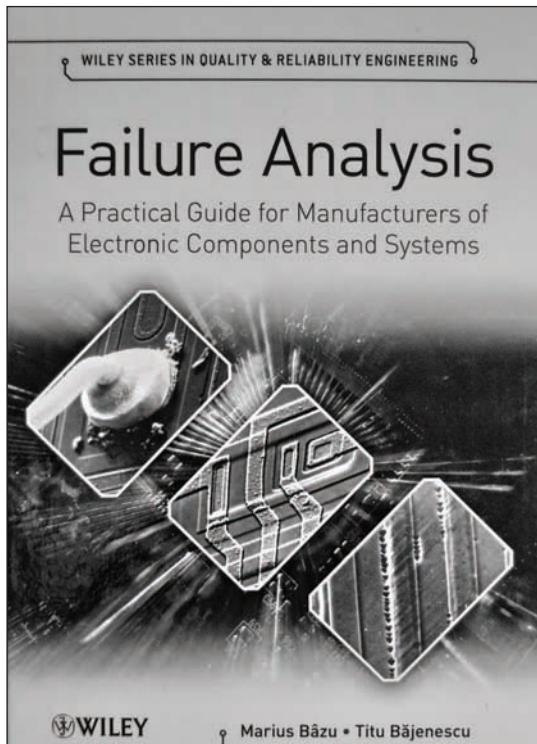


Asigurarea calității – Quality Assurance

În atenția cititorilor și potențialilor autori

- ❑ Revista **Asigurarea calității – Quality Assurance** va continua să publice și în anul 2012 – cel de-al 18-lea an de apariție neîntreruptă – articole specializate de înalt nivel științific și deosebit interes practic, privind problematica largă a **calității** și **siguranței în funcționare** (*fiabilitate, disponibilitate, mentenabilitate, securitate* etc.), atât în limba engleză cât și în limba română.
- ❑ Specialiștii vor fi astfel informați prin intermediul singurei reviste științifice românești care abordează exhaustiv această importantă problemă asupra unor cercetări de ultimă oră privind **aspectele tehnice, economice, manageriale, socioumane** ș.a. ale **calității** și **siguranței în funcționare**. Încurajăm specialiștii în domeniu din companiile românești sau multinaționale, universități și institute de cercetare să publice în revistă articole de înalt nivel științific – în special în limba engleză – pentru a favoriza diseminarea la nivel internațional a contribuțiilor deosebite (cercetări recente, studii de caz etc.) în domeniu. Menționăm că – prin intermediul schimburilor internaționale ale SRAC – revista **Asigurarea calității – Quality Assurance** va ajunge la importante companii europene și organizații internaționale în domeniu și este inclusă în baze de date internaționale.
- ❑ Articolele (inclusiv cele elaborate în limba română) vor fi obligatoriu precedate de un **Abstract** și de o listă de **Keywords** (ambele redactate în limba engleză) și vor fi structurate în conformitate cu regulile impuse revistelor științifice publicate de către Academia Română. Se recomandă ca articolele trimise spre publicare să nu depășească 8 pagini de revistă.
- ❑ Este recomandată trimiterea lucrărilor propuse spre recenzare și publicare în **format electronic** (Word for Windows) – cu figurile și tabelele incluse în text – pe adresa **Redactorului Șef** al revistei **Asigurarea calității – Quality Assurance**, **prof. univ. dr. ing. Ioan C. Bacivarov**, e-mail: bacivaro@euroqual.pub.ro.

BOOKS REVIEWS



Marius Băzu and Titu Băjenescu

Failure Analysis. A Practical Guide for Manufacturers of Electronic Components and Systems, John Wiley & Sons, Ltd 2011, ISBN 978-0-470-74824-4, 317 pages, \$104.98.

This book re-launches the *Wiley Series in Quality and Reliability Engineering*; the main objective of these series is to provide a solid educational foundation for both practitioners and researchers in quality and reliability and to expand the readers' knowledge base to include the latest developments in this field.

The first goal of the book *Failure Analysis. A Practical Guide for Manufacturers of Electronic Components and Systems* is to present the basics of *failure analysis* (FA), considered the key action for solving reliability issues. But there is a second purpose, equally important: to promote the idea of reliability, to show the importance of this discipline in our days and the necessity to support the goals of reliability, as a discipline, in achieving a given level of reliability, as a key characteristic of any product. Even more important, this book is aimed to show to industry managers the reasons for taking into account the reliability issues even from the design phase and then during the whole cycle of development of any product. It was proved that the only way to promote reliability requirements is top-down, starting from the manager and going down to every worker. The third goal starts from the authors' subjective approach about reliability. They think reliability is a beautiful domain, offering immense satisfaction to any specialist, and involving a large

range of knowledge, starting from physics, chemistry and mathematics and continuing with all engineering disciplines. That is why strong interdisciplinary teams are needed for solving reliability issues, which are difficult challenges for the human mind. The authors want to show to the young readers the beauty of the reliability analysis, which could be compared with a nice mathematical demonstration. Another approach is to consider a reliability analysis very similar to the activity of a detective: we have a 'dead component' and, based on the information gathered from those involved, we have to find out why this happened and 'who did it'. This is possible, because failures follow the law of cause and effect.

This book is divided into six main parts. The first section (10% of the text) offers an introduction to the subject of FA, describing the history as well as the new challenges in reliability testing, such as its use in microsystems and nanostructures.

The second part discusses why failure analysis should be used with electronic components. Eight main reasons why FA is an important tool for improving yield and reliability by corrective actions are presented. It explains a synergetic approach, emphasizing the cooperation needed between a whole team involved in developing a new product.

The third section explains the appropriate moments for implementing FA. It starts at design stage, highlighting the 'concurrent engineering' approach and DfR (Design for Reliability).

Methods on how to use FA can be found in the fourth part of the book. The importance of this section can be seen in the large variety of methods described. Among others, the following are covered: electrical methods, thermal methods, optical methods, electron microscopy, mechanical methods, X-Ray methods, spectroscopic, acoustical, and laser methods. The results obtained by using such methods are also presented.

The largest part of the book is the fifth one, where failure modes and mechanisms are looked at in detail for the main technologies used for fabricating electronic components, along with reliability physics and the FA of materials.

Twelve complex case studies covering the main technologies and various FA methods are given an entire chapter in part six of the book, which concludes with a round-up of the benefits of FA.

A strong point which recommends this book are the authors: Dr. *Marius Bazu* and Prof. *Titu Băjenescu*, two well known specialists in the field, with a long experience in the domain of electronic components reliability and failure analysis, are indeed the right people to write this book.

Failure Analysis. A Practical Guide for Manufacturers of Electronic Components and Systems is an essential reference book that will prove of great importance for manufacturers and engineers involved in the design, fabrication and testing of electronic components, devices, and electronic systems, as well as for users of components in complex systems wanting to discover the roots of the reliability flaws for their products.

Consequently, I highly recommend this book, which is among the best ones in its category.

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ASIGURAREA CALITĂȚII – QUALITY ASSURANCE

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A 12-a Conferință Internațională “Calitate și Siguranță în Funcționare” – CCF 2012 Neptun, Septembrie 2012

- Cea de-a 12-a ediție a celei mai importante reuniuni științifice în domeniu ce se desfășoară în România, **Conferința Internațională “Calitate și Siguranță în Funcționare” – CCF 2012**, va fi organizată – conform periodicității deja stabilite – la începutul lunii **septembrie 2012** în pitorescul cadru oferit de perla litoralului românesc, stațiunea Neptun.
- Conferința Internațională **“Calitate și Siguranță în Funcționare” – CCF 2012** este organizată de către **Asociația Societatea Română pentru Asigurarea Calității** în cooperare cu mai multe organizații naționale și internaționale în domeniu și se va desfășura sub egida științifică a prestigiosului **Institute of Electrical and Electronics Engineers – IEEE**, ceea ce este în măsură să crească importanța evenimentului și să-i accentueze deschiderea internațională.
- Potențialii autori trebuie să aibă în vedere la elaborarea lucrărilor că în cadrul **CCF 2012** pot fi abordate toate laturile: *inginerescă, sociotehnică, managerială, economică, juridică* ș.a. și implicațiile **calității și siguranței în funcționare** (fiabilitate, mentenabilitate, disponibilitate, securitate ș.a.). În consecință, diferitele puncte de vedere, inclusiv cele polemice, privind *ingineria, managementul și certificarea calității și a siguranței în funcționare* sunt binevenite în cadrul **CCF 2012**, organizatorii având în vedere organizarea mai multor dezbateri și “mese rotunde” asupra unor aspecte controversate ale acestui domeniu interdisciplinar de mare actualitate.
- **Tematica orientativă a conferinței** – prezentată alăturat – dorește să reflecte progresele, oportunitățile, dar și problemele și provocările în domeniul calității pentru societatea și economia românească la acest debut de mileniu, în condițiile particulare ale crizei economice mondiale: cum poate contribui calitatea – ca principal factor al competitivității – la ieșirea din criză, salvagardarea și rolul sistemelor de management dintr-o companie în condiții de criză etc. Prin caracterul ei internațional și, în consecință, prin participarea unor specialiști cunoscuți în domeniu (în principal din țări ale Uniunii Europene), **CCF 2012** poate constitui un veritabil *benchmarking* și “*moment al adevărului*” pentru organizațiile și specialiștii români: unde ne situăm – în raport cu celelalte țări ale Uniunii Europene – din punct de vedere al cercetărilor, educației, managementului și legislației în domeniul calității și a siguranței în funcționare și ce avem de făcut în această direcție.
- Se recomandă transmiterea rezumatelor și a lucrărilor propuse pentru **CCF 2012** (preferabil în limba engleză) *pe cale electronică* la adresele **CCF2012@srac.ro** (**General Chairman CCF2012** – dr. ing. **Dan G. Stoichițoiu**) și **bacivaro@euroqual.pub.ro** (**Chairman International Scientific Committee CCF2012** – prof. univ. dr. ing. **Ioan C. Bacivarov**).

TEMATICA ORIENTATIVĂ a CCF 2012

- Managementul calității: ISO 9000 după două decenii și jumătate
- Managementul mediului: ISO 14000
- Managementul sănătății și securității ocupaționale: OHSAS 18001
- Managementul siguranței alimentare: HACCP, ISO 22000
- Managementul securității informației: ISO 27000
- Noi abordări: managementul responsabilității sociale (ISO 26000, SA 8000)
- Managementul riscului
- Sisteme integrate de management
- Managementul calității serviciilor (învățământ, sănătate, turism, sistemul bancar etc.) și evaluarea satisfacției clienților
- Business Continuity Management (BCM)
- TQM, Six Sigma, Instrumente ale managementului calității
- Acreditare (organisme de certificare, laboratoare, personal), certificare (sisteme de management, produse și servicii) și audit
- Tehnici moderne de control și evaluare a conformității
- Evaluarea conformității produselor în domenii reglementate
- Costurile calității (gestiunea calității)
- Abordări moderne în dependabilitate, reziliență și evolvabilitate
- Fiabilitate (metode matematice, proiectare, fiabilitatea previzională, experimentală și operațională, fiabilitatea factorului uman)
- Mentenabilitate (managementul mentenanței, tehnici de mentenanță preventivă și corectivă, RCM)
- Studiul asistat de calculator al calității și siguranței în funcționare
- Calitate, fiabilitate și securitate în sectorul tehnologiei informațiilor și comunicațiilor (IT&C)
- Legislație și standardizare în calitate și siguranță în funcționare