

# Round Table ISO25000



Wednesday, October 30, 2019  
14.00 – 19.30

Pontifical Salesian University  
Sciences of Social Communication  
Piazza Ateneo Salesiano 1  
00139 Rome - Italy

*The evolution of product / service quality models*

*"Interim meeting 2019 ISO/IEC SC7 WG6"*

*Promoter of the "Round Table" Domenico Natale*

*UNINFO honorary member*

## Summary of Sessions

### A. Students and web developers

1. Opening
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4. University, Institute & Enterprise
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A thanks for digital revision to A. Simonetta and M. C. Paoletti  
INAIL - UNINFO Member

# Summary of presentations

## A. STUDENTS AND WEB DEVELOPERS

### A.1 Accessibility of websites

**Fabrizio Caccavello** [fabrizio.caccavello@gmail.com](mailto:fabrizio.caccavello@gmail.com)

Board member International Web Association (IWA) Italy, UNI CT 531  
member and Adoptions and Translations WG Coordinator

Accessibility is one of the most important qualities of applications and web content, because it allows the greatest possible number of people, even those with disabilities, to access online digital content and services.

Creating accessible content is therefore an absolute priority that designers, developers, content editors and project managers must pursue vigorously. For Public Administrations, compliance with accessibility requirements is also a legal obligation.

This seminar will highlight the main accessibility problems encountered on websites and in applications, real use cases will be presented whose problems and peculiarities will be analyzed.

Inaccessibility demonstrations will also be carried out and a demonstration of the use of a screen reader for the consultation of some websites will be performed.

## 1. OPENING

### 1.1 Orientations and goals

**Fabio Pasqualetti** [pasqualetti@unisal.it](mailto:pasqualetti@unisal.it)

Dean of the Faculty of Social Science (FSC), Pontifical Salesian University

FSC was founded in 1988, the centenary of the death of Don Bosco, as Institute of Social Communication (ISCOS), it became a faculty in 1998. Since its foundation the FSC has been committed to a communication at the service of the human community and of the Church. The FSC believes in a Knowledge that is also a Knowing how to do and both prepare for a Knowing how to Be able to act in a Social and Community

Context. The FSC's motto is Communicating Educating and Educating Communicating, it is its educational identity with a privileged gaze towards the world of youth.

The rapid and profound technological changes that have given rise to the current digital society have forced the Faculty to rethinking the training proposal, courses and teaching methods. Thus was born the curriculum in Social Media Digital Media and Culture with a specialization in Pastoral Communication inaugurated with the academic year 2019-2020.

The curriculum in Social Communication, Digital Media and Culture offers a vocational training course that through the theoretical and practical study of the disciplinary fields of communication leads to the acquisition of knowledge and skills in the world of digital media and contemporary culture. The three-year degree prepares experts capable of producing and managing digital media languages. The specialist, information management professionals within various institutional types.

The address of Pastoral Communication prepares experts who work in the various areas of pastoral care, with knowledge and critical awareness of the problems of communication and communicative mediations present in contemporary culture.

Why study at FSC? To learn a communication at the service of human being; committed against social injustices; attentive to the territory and aware of the global scenario; promoter of ethical behavior; ready to unmask the relations between media and power; open to the transcendent dimension and embodied in people's everyday stories. Studying communication is an opportunity to understand who we are and where we are going.

Last year we held a conference on Artificial Intelligence (AI) that was fairly successful, and we are preparing for the next one in September. The first wanted to present what AI was and in which fields it operates. In the next conference, we want to problematize the concept of AI and its uses by comparing the area of humanistic studies with that of scientific and specific studies. The belief is that we need to have ethical institutions that manage the development of artificial intelligence. In particular, there will also be a section dedicated to bias data because it is one of the sensitive points in the processes of instruction of AI since the data itself is already an interpretation of reality.

## 1.2 UNINFO

**Domenico Squillace** mimmo.squillace@it.ibm.com presidenza@uninfo.it

Technical Relation Executive IBM Italia and President of UNINFO

UNINFO is the Federated Body of UNI (Italian National Standard Body) with proxy on IT Technologies.

Standardization can give a significant boost to innovation and to dissemination of knowledge. International (or European or, why not, national) Standards address almost every thing of our life: they born to describe how to "do things well" (eg screws and bolts) but, in the third millennium, they have been transformed expanding also to services, processes, products and professional skills, contributing to the improvement of efficiency and effectiveness of the socio-economic system.

Data are the new Eldorado and their quality is fundamental. As Italian, as UNINFO President, I'm proud to say that the International Standard that is the reference for data quality "born" in Italy and has an Italian parent: Domenico Natale.

## 1.3 The Round Table

**Domenico Natale** dnatale51@gmail.com

UNI CT 504 Commission President, ISO 25012 and 25024 Editor, ISO 25010, ISO TS 25011 and 25025, UNI TS 11725 co-Editor, Head Italian Delegation appointed by UNI/UNINFO

The Round Table aims to compose an organic picture of the quality of the digital product in its software components, data, IT services, paying attention to the final result in the quality in use. At the center of attention is the real context of the user and the impact of product quality on the processes adopted with a view to continuous improvement.

The non-profit event is framed in a standardization activity of ISO experts - International Standardization Organization, Software Engineering Commission, inspired by user-centered criteria concerning: ergonomics, usability, comprehensibility and simplification.

The foreseen experiential contributions provide the basic elements of the ISO 25000 series of standards based on conceptual elements of quality models and their measurement, on which conformity assessments can also be applied by accredited bodies.

Considerations are given that combine the value of the final evaluation of the product with the importance of the initial design, bearing in mind the requirements of the overall quality characteristics that we want to pursue a priori.

In the considered approach, the software components, including websites and apps, are not separated from databases, IT services and information contained in documents, in a Cybersecurity framework.

The IT services, at the desk, online or internal, in their evolution towards Digital first, are examined together with the human aspects of support to digital technologies, according to criteria of orientation to usability and accessibility.

The ISO 25000 Framework, consisting of 36 quality features and over 200 measurements, covers the entire product life cycle and is intended as an orientation compass for emerging approaches and technologies: Artificial Intelligence, Big data, Blockchain, Cloud, DevOps, Smart Cities and IoT. This framework wants to contribute to the construction of a Decision Support System with accurate, complete, consistent, current and credible high quality indicators.

## **2. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)**

### **2.1 Evolution of ISO/IEC 25000 SQuaRE Series**

#### **Motoei Azuma**

Emeritus Professor, Waseda University, Tokyo, Japan, First Convener of JTC1/SC7/WG6, ISO/IEC 25000 SQuaRE Series Prime Project Editor.

Owing to very rapid advance and spread of ICT applied ICT systems and software, their influence is getting larger and larger.

Current "Quality in Use" in ISO/IEC 25010 SQuaRE Quality model mainly focuses on "Usability" for people who actually operate the target system (direct user).

However, there are many kinds of systems; for example, who needs only outcomes of a target system without operating the system, such as people who want buy theater ticket to a person at the counter. Another example is a top management of the target system user company, who expects more profit by using the target system. Those systems that influence on public people, such as railway or airplane control system are another example. "Quality" of this type of systems is the most important. SQuaRE series must pay attention on "Quality of such systems. These are reason why ISO/IEC 25010 "Quality in Use Model" should be updated. "Quality Influence Model" (tentative Name).

## **2.2 Overview of ISO/IEC 25000 SQuaRE Series**

### **Toshihiro Komiyama**

Chief Manager, Software Engineering Division, NEC Corporation, Convener, ISO/IEC JTC 1 SC 7/WG 6, Researcher, Global Software Engineering Lab., Waseda University, CMMI Lead Appraiser and Instructor, Automotive SPICE Principal Assessor

ISO/IEC 25000 SQuaRE series is currently composed of 20 international standards and 2 technical specifications. It is accepted internationally and utilized by variety of persons and organizations, such as users, developers, acquires and independent evaluators of systems and software products. In this presentation, ISO/IEC 25000 SQuaRE series are outlined. Firstly, importance of international standardization of systems and software quality are explained. Secondly structure of SQuaRE and contents of each documents are introduced. Finally how SQuaRE can be used is explained.

## **2.3 Survey Report and ISO 25000 Future Direction**

### **Tsuyoshi Nakajima** [tsnaka@shibaura-it.ac.jp](mailto:tsnaka@shibaura-it.ac.jp)

Professor of Computer Science and Engineering, Shibaura Institute of Technology and SC7 WG6 Expert ISO/IEC 25030, Project Editor and Future Direction Study Group Chair

The first cycle of work for ISO/IEC 25000 (SQuaRE) series has been almost done. Now we are coming in the second cycle for its enhancement. In order for readers of the series to use it more effectively and efficiently, a WG6 study group "Future

Direction of SQuaRE series” launched last year. This study group conducted a survey to obtain its users’ feedback internationally (11 organizations from 4 countries), and created a future plan of the SQuaRE series. The following two talks will be present from the study group:

- SQuaRE users’ survey report
- Future plan of the SQuaRE series, including:
  - Enhancement of the existing divisions, and
  - Application of SQuaRE to various systems and services (AI, Cloud service,...) and to various processes (Agile, DevOps,...)

## **2.4 ISO 25000 from standardization to adoption**

### **Andrea Trenta**

UNI CT 504 Commission Vice President and SC7 WG6 Expert

ISO 25000 is recognized by the international community as the reference standard for IT product quality. It is at the moment:

1. not compulsory
2. agnostic for the specific context

This paper shows how both points have been addressed to get the adoption easier: in particular, for the first point, the national and european endorsement actions undertaken; for the second point, it is exploited a possibility, offered by the standard itself, for defining additional measures for specific contexts, including new technologies ones.

## **2.5 Health & Wellness Apps: what do we really know about them?**

### **Pier Angelo Sottile** [pierangelo.sottile@cspnet.it](mailto:pierangelo.sottile@cspnet.it)

UNI CT 527 Commission President, Management Team CEN 251, Advisory Group ISO TC 215, Head Italian Delegation appointed by UNI/UNINFO

There are many challenges to be met by the Health Services of all countries to provide cost-effective and quality services to all assisted-citizens, without ever neglecting the particular social and ethical mission of the Health Service itself. Such challenges, which have been outlined also at the EU policy level, include:

- ageing population and chronic diseases, cause of pressure on available health budgets
- unequal quality and access to healthcare services
- shortage of health professionals.

Apart from the availability of effective and sustainable Health Services, all European citizens also expect to be empowered through Apps to access their own (interoperable and quality) health data, to provide feedback on the quality of treatments, and finally to share their health data within social environments/systems where privacy and security are effectively ensured.

There is a lot of work going on in the Standards Development arena in such area, we will focus here on the activities related to Apps. An Italian Technical Report 11708 "Health Informatics - Criteria to identify/characterize APPs in the wellness, social and health context" has been issued by UNI/CT 527 "Health Informatics – UNINFO". The report's scope is to provide App developers, distributors, and users with a guide outlining the quality characteristics of the Apps in the health and wellness sectors. It wants to stimulate all parties involved to have a responsible attitude in compliance with the relevant technical standards of the sector, in particular in all cases where Apps can have consequences on health. The highlights of the approach include:

- explain advantages and/or risks in App usage;
- reduce difficulties in understanding the functions made available to the user;
- reduce concerns related to the misuse of personal information, often carried out without the direct knowledge of the users.

Stemming from this activity, the work of many other national initiatives, and building upon the existing specifications for Health Software in ISO and IEC, the European Commission is supporting a project to develop a Technical Specification for Quality and Reliability Requirements for Health and Wellness Apps. The work is being led by the European Committee for Standardization (CEN), working with the International Standards Organization (ISO), the International Electrotechnical Commission (IEC), and the European Committee for Electrotechnical Standardization (CENELEC).

The specification is intended to apply to any app that is being promoted explicitly to improve health and wellness, building on the definition of health from the World Health Organization (WHO) "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity".

Finally, it is worth mentioning that the CDTI organization ("Club dei Dirigenti delle Tecnologie dell'Informazione", [www.cdti.org](http://www.cdti.org)) is publishing a book, "Sanità Digitale: Dal fare al curare" ("Digital Health: from doing to treating"), which discusses, among others, the above issues. It moves the target and also the interest towards the evolution of the system. It's not just not "telemedicine": today we are talking about Digital Health, eHealth, Digital Health and Care! Thus, the next decisive step is to actually move from doing to treating, modifying the health service's processes, according to a model that has established itself as "Business 4.0" and, by analogy, "Health 4.0". For information about the book, contact: [m.pantaloni@cdti.org](mailto:m.pantaloni@cdti.org)

## **2.6 AI and Big Data at ISO SC 42**

**Luigi Troiano** [troiano@unisannio.it](mailto:troiano@unisannio.it)

UNI CT 533 Commission President, Assistant Professor at the Department of Engineering (DING) of the University of Sannio, Benevento

ISO/IEC JTC 1/SC 42 is the committee started in 2017 that is working on AI and Big Data standardisation. The engineering of AI systems has been recognised as of interest to be investigated and developed. A study group on this topic has been just created and a list of items has been approved. The liaison with SC 7 is fundamental for the success of this working group. The presentation aims at briefly outlining the directions of study assigned to this group.

## **3. AGENCY FOR DIGITAL ITALY (AgID)**

### **3.1 Websites and mobile apps accessibility in the Public Administration**

**Diana Bonofiglio** [bonofiglio@agid.gov.it](mailto:bonofiglio@agid.gov.it)

Digital accessibility expert

This presentation aims to outline the regulatory evolution in Italy in terms of accessibility by describing the role of AgID (Agency for Digital Italy) and the obligations of public administrations in line with to the last important updates requested by the European Commission through the EU Directive 2016/2102.

Italy, with law 4/2004, often also called with the name of the proponent Stanca, was one of the first countries in Europe to regulate this issue, in order to facilitate the access

of all users to ICT, even to those who, due to of disability, uses assistive technologies. The Italian law 4/2004 has obliged the public administrations to realize accessible websites, under penalty of nullity of the related contracts. AgID had the task of monitoring the accessibility of public websites, issuing technical rules and guidelines, providing training and assisting administrations in applying the law.

The entire Italian regulatory framework on accessibility is based on the principles of equality of the Italian Constitution, taken from the UN Convention on the Rights of Persons with Disabilities.

Directive (EU) 2016/2102 has set itself the objective of improving accessibility in member states by harmonizing regulations and extending accessibility obligations to mobile apps. Italian Legislative Decree 106/2018, in addition to transposing the EU Directive, has made changes and updates to Italian Law 4/2004, which provide for new obligations on public administrations and additional tasks for AgID. The administrations will have to assess the compliance of the sites, publish on their sites a Declaration of accessibility, allow citizens to send reports, set up workstations accessible for employees with disabilities, train their employees on assistive technologies. AgID will monitor a sample of websites and mobile apps, promote the dissemination of the new provisions and report periodically to the European Commission.

### **3.2 Data quality – Public Administration Catalogs and Open Data**

**Gabriele Ciasullo** [ciasullo@agid.gov.it](mailto:ciasullo@agid.gov.it)

Expert in Data Quality and Open Data

In the context of Public Administration, talking about data quality it can be considered that it cannot only be a general characteristic of the data, to be assured upstream, however, regardless of any policies applicable on the data itself.

Considering the institutional goals that the Public Administrations must pursue, the quality of the data must therefore necessarily be considered as a fundamental element in support of a hypothetical cycle that through the production of data and the provision of services allows the administration to effectively reach its goals institutional.

In this sense it is believed that the reference for the quality of the data can only be ISO 25000 which, abstracting from the possible uses of the data, defines clear and

measurable significant characteristics. AgID used some of the features defined with the 25012 standard.

A separate quality element, external to the data, is instead connected to the application of the Once-Only principle aimed, among other things, at avoiding duplication of data. AgID has also used this principle in the context of interaction between the catalog of geographical data and the catalog of open data, through the application of the GeoDCAT-AP standard.

### **3.3 Design of public administration web services**

**Claudio Celeghin**    [celeghin@agid.gov.it](mailto:celeghin@agid.gov.it)

Expert in Usability and IT Services of the PA

In 2015, AGID published the first design guidelines for the websites of the Italian public administration, in order to make the PA websites more coherent with each other.

Much work has also been done to provide guidance on how to properly design digital services that are more useful to citizens.

On the [designers.italia.it](http://designers.italia.it) portal, the Italian Government has published all the design and technical tools that can allow suppliers and PAs to adapt to the indications described.

But it is not always so easy to adopt the methodological indications, for many reasons related to complex administrative and cultural contexts.

This is how the formal guidelines for the creation of websites were created, as indicated in Article 53 of the Digital Administration Code, with the aim of providing minimum and easily verifiable prescriptive elements.

## **4. UNIVERSITY, INSTITUTE & ENTERPRISE**

### **4.1 Measuring Software & Data bias with SQuARE**

**Antonio Vetrò**    [antonio.vetro@polito.it](mailto:antonio.vetro@polito.it)

Assistant Professor at the Departement of Control and Computer Engineering (DAUIN), Politecnico di Torino

Software systems are increasingly used for generating decisions or recommendations, replacing or supporting human judgement in fields of society that highly impact our daily life: finance, health, justice, search engines, just to mention a few of them. Recent researches and journalistic investigations have shown that bias in the data used by such software systems and in the algorithms may cause serious discriminations to specific population groups (e.g., minorities, low-income persons, etc.)

For this reason, we deem as relevant future direction to incorporate in SQuaRE these aspects and providing guidance for a number of ethical concerns connected to quality requirements, such as bias in the data (data quality), measurements for algorithmic fairness (quality in use), accountability (quality in use).

In this presentation, will be introduced the concepts of bias in software systems and data and he will give a few real examples of implications for society. Then, will be summarized a preliminary work conducted at the Nexa Centre for Internet and Society concerning the use of information labels (based on ISO/IEC 25024 measures) to understand and reduce the risk of using a dataset for automated decision making. Finally, it will be given a general overview of how the SQuaRE framework could be leveraged to provide stakeholders with quantitative evidence on the ethical and social impact of software systems.

## **4.2 Data quality and Big data**

**Liliana Saracino**      [l.saracino@sogei.it](mailto:l.saracino@sogei.it)

Data Analytics, Information Governance & DaaS Manager

For its mission, and for the breadth and complexity of the databases managed, Sogei has always paid particular attention to data quality and information.

She was editor of the ISO / IEC 25012 standard in 2008, and since then she has been involved in defining and consolidating an Information Governance program and a data quality model application process.

Sogei is therefore committed to defining an Information Governance program, in order to identify the interventions necessary for the management of processes, technologies and roles to guarantee the quality and interoperability of the databases.

The new requirements created in order to be able to use data in the sense of solutions aimed at analyzing and discovering information according to an "anyone-anywhere" approach led to the definition of a roadmap on the subject of Big Data.

From 2013 he began to address the issue of Big Data, and more generally to the establishment of Data Lake environments.

The big data, by their nature, poses important challenges for IT, programmers, data architects, data modelers and data governance professionals.

It is therefore necessary to define a governance and quality model inside the data lake. The method of application of the governance and of the quality model depend on the phase of the life cycle in which it is grafted.

The evolution of the Information Governance and Data quality model towards the Big Data ecosystem makes the balance between operational needs and regulatory compliance even more delicate.

### **4.3 Data quality and GDPR**

**Maria Cristina Paoletti**      [m.paoletti@inail.it](mailto:m.paoletti@inail.it)

INAIL - Actuarial Statistical Consultancy (CSA), Central Sector Coordinator  
UNI CT 504 Commission member and SC7 WG6 Expert

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INAIL - Technological Innovation Consultancy (CIT), Central Sector Coordinator  
UNI CT 504 Commission Vice President and SC7 WG6 Expert,  
Professor with time contract at the Universities of Rome Sapienza, Tor Vergata and Marconi

The National Institute for Insurance against Accidents at Work (INAIL), is a public non-profit entity safeguarding workers against physical injuries and occupational diseases. Inail's objectives are: to reduce the phenomenon of accidents, to insure workers who carry out activities at risk, to guarantee the reintegration of injured workers into the workplace, to carry out research activities and to develop methods of control and verification in the field of prevention and safety.

With this presentation, we want to show you how the SQuaRE Standard can help us comply with the general European Data Protection Regulation (EU GDPR). First of all,

we will provide a general idea of the Italian regulatory framework. In particular, the Digital Agency for Italy (AgID) since 2013 has identified in the ISO / IEC 25012 standard the foundation to guarantee the quality of data in the IT resources of the Public Administration. Also, in the Italian insurance context, some quality characteristics have been identified, unfortunately no law explains how to measure them. An important concept within the GDPR is that data confidentiality cannot exist without the quality of the data: articles 5 and 32. In those articles we find the characteristics of quality but, even in this case, we do not find information on how to calculate them. So the question is, «how to guarantee the quality of data?»

The answers are all in the SQuaRE series of standards.

Secondly, we will provide the experience gained in the field during the application of the standards: at the beginning we will show you a method to synthesize QME, at different levels of abstraction, in order to have an abstract view of data quality. Then, we will check the distance between measured QME and expected values using a diagram with four different quadrants of coherence. Finally, we will investigate the «robustness» of the measurement system by calculating, for example, the number of QMs and their distribution, the quantity and type of algorithms used, the quantity and type of physical objects analyzed by the algorithms, the distribution of measurements in the various phases of the data life cycle. In this way we could define a real meta-quality system.

#### **4.4 IT services and ISO 25000**

**Agostino Peloso** [agostino.peloso@claritergroup.com](mailto:agostino.peloso@claritergroup.com)

In the era of the experience economy (Gartner) the idea of prevalence of the user experience on usability and quality in use is increasingly insistent. There is also often an inappropriate terminological use in which the definitions of usability and user experience (and sometimes also that of quality in use), are adopted interchangeably, considering them equivalent. Usability in reality can effectively address the construction of an adequate user experience.

The market, however, requires the adoption of high-speed and high-frequency delivery processes of "agile" releases that are difficult to reconcile with the possibility of predetermining structural interventions of usability. For this reason, starting from the

ISO 25000 model, we have introduced the "expected usability" detection, an approach that responds to the need for speed and the construction of an excellent experience. The expected usability is based on a model of social interaction aimed at understanding the qualitative aspects of the software directly connected to the expected usability, ie the usability levels that the end user expects to experience in the use of the software.

## **5. ASSOCIATIONS**

### **5.1 Quality and development**

**Massimo di Virgilio** [m.divirgilio@cdti.org](mailto:m.divirgilio@cdti.org)

IT Management Technology Club (CDTI) President

In debut I allow myself to return very briefly to two points that the conference promoter had the advantage of highlighting very clearly. The first concerns the metaphorical use of the round table which, to say the least, is very wise. In a society that thrives on contrasts and continuous personal attacks, an event whose paradigm is to encourage dialogue and socialization is a sign of great importance that has the merit of changing the grammar of relationships, creating the best possible conditions for a peaceful and constructive comparison. The second concerns the use of the word quality which, besides constituting the center of gravity of the reflection on the agenda, celebrates with its meaning, which can take many forms, from intrinsic property, to type of process, from primary essence to derivative , the true essence of the change of this century. A concrete goal and not a rhetorical evocation. A distinctive value capable of making the difference, radically shifting the competitive axis.

As a representative of the Club of Information Technology Executives (CDTI), I feel the need, after my brief introduction, to highlight the role that our Association plays in fostering the development of these concepts. With great satisfaction I can proudly maintain with great clarity that the CDTI is not only statutorily stretched out in the directions evoked in this conference, but also concretely committed, thanks to horizontal exchanges between the Members, in putting together the great variety of experiences and existing competences within it, to convey them in the construction of initiatives aimed at the growth of people, companies and the country. It was this culture broth that favored both the incubation of the idea of quality in the Club and its

dissemination to many target subjects who acquired it and transported it to their working organizations.

## 5.2 The importance of measurements

**Luigi Buglione** luigi.buglione@gufpi-isma.org

User Group Function Point Italy (GUFPI) - Italian Software Metrics Association (ISMA)  
President

GUFPI-ISMA ([www.gufpi-isma.org](http://www.gufpi-isma.org)) was born in 1990 with the initial aim to spread the culture of the software functional sizing with the FPA technique, as requested from the ICT market in order to improve software productivity analysis and start sizing the so-called 'functional baselines' for asset management purposes.

From the beginning of Y2K, GUFPI added a second part of its name (and scope, ISMA), measuring and monitoring not only by FPA and its variants but measuring at all a measurable entity (project, product, service, etc.) by several viewpoints.

Our Association collaborates at the National and International level with other similar entities for stimulating a wider knowledge and comprehension about the role and relevance of a good measurement in any (business or not) activity ("you cannot control what you cannot measure").

GUFPI-ISMA has recently created a Guideline for a proper application of measures in ICT Contracts and is contributing also to some initiatives with the Italian Public Administrations for the application of dynamic balanced scorecards and UNINFO for the introduction of a new competence about "Measurement Specialists", integrating the eCF v3.0 schema.

## 5.3 The importance of innovation

**Fulvio Ananasso** fulvio.ananasso@statigeneraliinnovazione.it

General States of Innovation (SGI) President

**Sandro Fontana** sandro.fontana@statigeneraliinnovazione.it

General States of Innovation (SGI) Member

General States of Innovation (SGI) is a non-profit association established in 2011 to develop and organize policies, programs and projects for Responsible Social Innovation. For this purpose it possesses significant senior multidisciplinary skills, both STEM (Science, Technology, Engineering & Mathematics) and philosophical, sociological, juridical, ..., and covers areas such as Data Ethics / Platforms, ASviS / Sustainable Development, Geographic Information Systems (GIS ) / Geometry, Internet of things (IoT) / Enterprise 4.0, Ultra Wide / 5G Band, Artificial Intelligence, Blockchain applications, etc. For its commitment in the standardization of its emerging professional profiles, SGI has been appointed honorary member of the UNINFO.

SGI is increasingly collaborating in ICT-driven EU projects - Agri-food / Digital Farming, Cultural Heritage enhancement, Vocational & Educational Training (VET), infrastructure monitoring, ... - with a significant focus on the large amount of data collected / generated in the development of forecasting and decision support models (Decision Support Systems, DSS). For example, blockchain technology ensures a transparent, secure and shared environment for traceability of components and transformation processes.

Blockchains are distributed ledgers, in which it is possible to add data blocks confirmed and organized in a sequential chain, logically connected by cryptographic links. Specific consensus mechanisms guarantee that every operation is validated and that the distributed / replicated ledger contains the same coherent and ordered set of operations validated in all nodes of the network. The blockchains are designed to be tamper-proof and create final, definitive and immutable records. In this context, a "smart contract" is a software stored and executed within the blockchain protocol; every result of any smart contract execution is recorded on the blockchain itself, and all events are therefore traceable. A smart contract could represent the terms of a legal contract and create a legally applicable obligation.

We therefore understand the extreme delicacy of the selection and truthfulness of the data - once "published" on the blockchain, even a smart contract is intrinsically final, definitive and immutable, and consequently the crucial importance of data quality in such contexts, topic subject of the speech by Fulvio Ananasso and Sandro Fontana.

## 6. CLOSING

### 6.1 The evolution of quality models

**Giancarlo Gaudino** giancarlo.gaudino@mise.gov.it

ISCOM research activity: the QoS laboratory - accessibility / usability

The presentation aims to show the results of the 2018-19 "eGLU-box PA" project, coordinated by MiSE-ISCOM and involving the Department of Public Administration and the Universities of Perugia and Bari. The meeting aims, above all, to inform central Pas about the opportunity to use a tool for the implementation of usability tests foreseen by the Plan, ie the "eGLU-box" software, developed within the context of the project, is the most important result. It is an open source software (recently certified ISO / IEC 25010) that automates, simplifies and speeds up usability test activities for as foreseen by the three-year IT plan in PA 2019-21. The conductor is guided in the preparation, execution and analysis phases of the collected data; the participants, at the same time, are accompanied during the execution of the test sessions, even remotely. eGLU-box will be released to Italian PAs after a brief trial period with some "pilot" administrations. During this conference it will be highlighted also the importance that psychophysical evaluation measures of User eXperience (UX) have had in the development of the software, through the application of the UX evaluation methodology as facial recognition of expressions and electroencephalographic activity.

### 6.2 AI & Physical Sciences Techniques

**Mauro Grigioni** mauro.grigioni@iss.it

Director of National Center for Innovative Technologies in Public Health, ISS, Rome

Project: "Artificial intelligence and techniques borrowed from the physical sciences for an efficient optimization of the CT exams" funded by UO Careggi (FI, Italy)

Big Data and AI are technological challenges capable to disrupt the actual health organization and promote better clinical results. To promote the future of digital medicine, however, we need to overcome several critical issues: dataset quality, semantic interoperability, error reduction in clinical data, robustness and explainability of AI algorithms, reliability of the information associated to clinical process (irreproducibility).

The Careggi hospital project is within this field of interest for ISS. The project proposes a new approach to image processing, in order to improve the diagnostic capability of actual TC apparatuses, and also to lower the radiation dose.

Aim: 3D segmentation and reconstruction, low contrast source detection, on images where Noise, complex 3D reconstruction and feature extraction (shape, flatness, skewness, dishomogeneity etc) are intended to identify accurately the lesion and to lower the radiation dose.

To build a virtual observer (VO) capable to investigate on different protocols the same radiated phantom; the VO is trained on radiologist's diagnostic advice, subsequently the VO is used on higher data volume relative to the phantom for different protocols, varying the radiation dose.

Finally quality assurance of the radiological process making use of AI will be provided, in view of the continuous quality improvement.

### **6.3 The Uffizi project under ISO 25000 lens**

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Associate Professor in Software Engineering, Department of Information Engineering, Computer Science and Mathematics – DISIM, University of L'Aquila

The Uffizi Gallery in Florence is one of the most visited museums in Italy. In 2018, it counted more than 2 million of visitors. Other than for its priceless masterpieces from Botticelli, Michelangelo, Raffaello, Leonardo and many more, Uffizi is also known for potentially long waiting queues. This is not anymore a problem in those days when our algorithms and models calculate the entry time of more than 7.000 visitors, permitting visitors to go around the city and come back to a given time with almost no waiting time.

Such a system already experimented in more than 30 days, among others, has very stringent ISO/IEC 25010 and ISO/IEC 25012 requirements.

Performance Efficiency is mandatory to allow (in pick hours) about 600 visitors (arriving in a 15-minutes slot) to take a voucher from kiosks without creating queues.

Usability analysis has permitted the realization of a frontend software, installed into our kiosks, that is informative and of rapid use for both younger and seniors.

Reliability is a must since a malfunction would cause hanger from thousands of visitors. Our system is data-driven and uses data as the main artifact to make predictions, optimizations, and adaptation. Therefore, ISO/IEC 25012 is a reference to guarantee data accuracy, completeness, and consistency.

Careful data collection in a context like the Uffizi Museum is a challenging task because requires facing several practical issues like the absence of reliable and flexible network infrastructure, the difficulty to install physical devices in the rooms and also legal issues like the data management under the Directive 95/46/EC (General Data Protection Regulation).

## **6.4 Disability manager for the quality of people**

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AlmavivA digital software and accessibility expert, Disability Manager for human resources management with disabilities, ADV Onlus Responsible for Usability and accessibility Information Technology, federated FISH

Among the examples of "best practice" for company quality, the introduction of the new professional figure of the Disability Manager (DM) that is also foreseen by the regional framework of professional standards of the Lombardy Region for the work and social inclusion of people with disabilities. The DM, alongside the management of human resources, has the task of finding ways to transform the inclusion from "obligation to resource" and thus favoring the integration of people with disabilities (required by Italian law 68/1999). This lends itself to the enhancement of the ability to work and the qualities of the person, so that it becomes an active part as a worker, constituting a point of productive strength.

The novelty of this professional figure is to monitor over time the changes in the health of all company personnel, considering the possibility that problems may arise due to chronic diseases, not necessarily related to disability, which cause repeated absence from work for therapeutic and practical reasons. organizational.

The DM, proposing facilities in working hours and locations, policies for improving the quality of corporate life, also by inventing spaces and times for social activities in collaboration with local realities that can interact in support of services to workers, will

favor a reduction in absenteeism phenomenon, expensive both for the company and for the entire social community.

The Disability Manager must pay particular attention to the internal implementation of international and national regulations in the field of accessibility of software for work and work stations, as well as possibly to products related to IT services and applications for public institutions.

In this regard, the recent change of direction on the part of the Public Administrations must be positively reported, inserting digital accessibility as a quality aspect in public tenders, thus aiming to contain the economic decline.

The speaker has been dealing with these issues for some time, even at the level of institutional technical boards, as a representative of the Association for Visually Impaired-ADV Onlus and the Italian Federation for the Overcoming of Handicap-Fish Onlus.

## **6.5 Utilizzo degli standard ISO**

**Alessandro Musumeci**                      [alessandro.musumeci@unint.it](mailto:alessandro.musumeci@unint.it)

Professor of Business Information Systems

Alessandro Musumeci's speech at the ISO 25000 Round Table aims to present some cases of implementation of large information systems, in which the use of standards has made it possible to facilitate and simplify the development process, while ensuring at the same time maximum reliability to these systems. For example, for the new information system of the Ministry of Education, which was developed from 2002 to 2006 in a Web environment, rigorous quality standards were applied to implement the functional specifications, which put the student at the center, and have favored the interconnection with the various databases, in order to limit the phenomenon of early school leaving. In the new information system of the Municipality of Milan (2002-2008), on the other hand, the citizen is the real fulcrum of innovation and also in this case a rigorous certification chain, allowing to reach the goal of maximum reliability and respect for the realization times. Among other things, this system was the launching pad for the Milan Expo 2015 information system, which was conceived during 2008. In the remaking of the information system of the Ferrovie dello Stato Italiane Group (2008-2014), it was instead, an outsourcing process was chosen, based on the levels

of service perceived by the end user, and also in this case the adoption of the ISO 25000 standard made it possible to significantly improve the service offered to the railway customer, making the company more competitive. . The explosion and consolidation of the Frecciarossa service stems from the innovative use of IT services, favored by the adoption of quality standards. In summary, the use of the ISO standards and in particular the ISO 25000 standard constitutes a common framework for integrating the various parts into complex and large systems, helping to implement the Information Systems Governance ".

## **6.6 Big Data Analytics - Organization, data and processes**

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ICT & Digital Transformation Manager in Solutions for the Economic System (SOSE)

In 2014, SOSE decided to create a Big Data pilot project with the aim of organizing, analyzing and accessing tax, economic and regulatory data, both structured and unstructured, more efficiently and quickly.

Until that date, the technologies and methodologies adopted were insufficient and the analysis capacity was mainly based on structured and unrelated data, consequently the importance of generating new analyzes based on unstructured data was also assessed, which could improve the methodological, economic and statistical approach, as well as improving the processes of data acquisition, organization and conservation, achieving significantly higher levels of performance and quality compared to previous operations. In this way a system has been created that is able to respond effectively and efficiently to increasingly frequent analysis requests, allowing an immediate comparison between the various results, even with "visual" approaches.

Today all this represents the technology supporting the company's core business.

## **6.7 Update on CISQ: The role of automation in measurement**

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CISQ, Quality Director of Outreach for Italy, Solution Design Director CAST

CISQ was formed in 2010 when both the Software Engineering Institute at Carnegie Mellon University and OMG were approached by system integrators and asked to develop standards for measuring software attributes such as reliability and security.

These attributes were appearing in development and outsourcing contracts as the equivalent of service level agreements, and every customer had a different definition of how they were to be measured.

SEI and OMG co-founded CISQ and asked Dr. Curtis who had led development of the original Capability Maturity Model or CMM to head the consortium.

CISQ has evolved to OMG's traditional model of a special interest group with Twenty-four companies including both customers and vendors joined to create the first round of measurement standards.

At its launch, CISQ held executive workshops in the US, Europe and India. During these workshops we asked IT executives what measures they wanted CISQ to develop. They selected five measures.

First, they requested a standard for automating Function Points that mirrors the IFPUG counting guidelines.

Second, they selected four measures of structural quality—Reliability, Performance Efficiency, Security, and Maintainability.

CISQ was chartered since inception to define automatable measures of software size and quality that can be measured in the source code, and promote them to become Approved Specifications of the OMG®

Experts from the 24 original member companies worked for two years to create automatable specifications, which were then submitted to OMG's standards approval process.

CISQ's four structural quality characteristic measures are based on quantifying violations of good architectural and coding practice within a software system that can be detected through static analysis. Violations were included in each measure only if they were considered severe enough that they should be eliminated.

The CISQ measures assess actual flaws in the software that can cause operational problems. Thus, the CISQ measures provide pre-release indicators operational or cost of ownership risks.

CISQ aligns its measures with other international standards. For instance, the four CISQ quality measures are aligned with definitions provided in ISO/IEC 25010. Each quality characteristic in 25010 is divided into subcharacteristics that indicate its scope of coverage. These subcharacteristics guided the selection of violations for each CISQ measure. Thus, CISQ ensured its measures covered the related domain described in 25010. The standard that defines the actual measures of each quality characteristic is ISO/IEC 25023.

ISO 25023 primarily defines measures at the behavioral and design levels. It does not define measures based on specified weaknesses detectable through static analysis of the source code, other than excessive cyclomatic complexity under Maintainability. CISQ Automated Source Code Quality Measures supplement ISO 25023 by defining measures for four 25010 quality characteristics (Reliability, Security, Performance Efficiency, and Maintainability) based on detecting and measuring severe weaknesses in the source code, thus extending the reach of ISO/IEC 25010 and 25023 into source code analysis.

## **6.8 Improvement of software and data products**

**Mario Piattini** [mario.piattini@uclm.es](mailto:mario.piattini@uclm.es)

Full professor at Escuela Superior de Informatica. Department of Technologies and Information Systems. UCLM - Universidad de Castilla - La Mancha, Ciudad Real, Spain.

We have 30 years of experience in software and data quality, and we have used this knowledge in maintenance projects (2000 year and Euro), and in consulting in software factories. Also, we are auditors in software maturity models such as ISO/IEC 15504/33000 and ISO/IEC 29110.

ISO/IEC 25000 is an important part for IT governance & management based on ISO international standards. In fact, there are governance standards such as ISO/IEC 38500 or business continuity (ISO 22301), operation-related standards (for service ISO/IEC 20000-1 or security ISO/IEC 27001). Related to software development there are

standards such as ISO/IEC 15504/33000 and ISO/IEC 12207 which describes life-cycle software processes.

We created a spinoff (AQCLab) for helping software factories to improve their software products and organizations that acquire software product to control the quality of this software. AQCLab is the first and only laboratory accredited for software and data assessment based on ISO/IEC 25000.

Since 2012 we have collaborated with AENOR (Spanish certification organisation) as their lab for software functional adequacy and maintainability certification using 25010, and data certification using 25012.

We have applied ISO/IEC 25010 in several companies with very important results: reductions of 75% of corrective maintenance requests, 45% of complexity, 30% in maintenance effort time, 40% in less code lines, 70% in software errors. Also, software process and product traceability has increased considerably and software processes and SLAs (service level agreements) have improved.

Regarding ISO/IEC 25012 several companies and organizations have achieved a better data management, a reduction in data server charges, improvement in services, increasing in client trust, a very important contribution to compliance (GDPR, etc.), and it is a very important part of a data governance programme.

## **6.9 DNV GL, a broader view**

**Roberto Davico**      [roberto.davico@dnvgl.com](mailto:roberto.davico@dnvgl.com)

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The work of standardizing procedures and processes is one of the most meritorious in terms of optimizing the performance of organizations. Some institutions, such as the ISO, stand out on the world scene for the credibility and rigor that characterize their work.

However, this immense value is not always recognized. Often, in fact, following a standard or a norm is experienced in the company as something scarcely relevant, slavish, repetitive. We are not talking about the possibility of obtaining a certification, seen as the sum of most of the waste of resources, of wild bureaucratisation and of

distancing oneself from those performances and freshness of initiative that characterized the company in the past.

Fortunately, things are changing, companies realize that the fundamental value of the standards lies in the fact that they are the distillation of a multiplicity of failures and brilliant successes in recent history, neatly purified, screened, shared and put in the form of steps to follow or to inspire.

The standards are helping to introduce the paradigm of process thinking, and therefore of their optimization, into the world of companies, especially SMEs, introducing the tools to push them, inevitably, to increase their performance, removing them from the spectrum of self-referentiality.

In a hypothetical evolutionary scale in the wise use of standards, after the adoption of process standards, we are witnessing the adoption of product standards: the former govern the excellent characteristics of behavior, the latter sanction the necessary, intrinsic characteristics of the products. The further step lies in the combination of the approaches, in the expert use of the know-how and the validation of the already done, using in a sophisticated and active way the experiences available worldwide.

The history of the ISO 250XX family, combined with process standards, from the simple ISO 9001 to the specialist standards for SW processes, also based on their maturity, is a moment of happy combination of the most advanced tools available to companies that want to do more and better.

They appear to be close to the needs of the user, not very bureaucratic, like a quality framework open to real contexts of use.

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