



Inspiring the Next Generation  
of Standards Professionals

**Annex A.**  
**25 Interviews with**  
**Thought Leaders and**  
**Young Professionals**  
**(Full Original Text)**

Korean Standards Association

Korean Agency for Technology and Standards

For APEC Sub Committee on Standards and Conformance (SCSC)



## **CONTRIBUTORS OF WRITTEN INTERVIEWS**

### **APEC MEMBERS**

- A.1 Bonnie Rose, President, CSA Group - Standards, Canada (*female*)
- A.2 Ping Wang, Former Deputy Engineer, CNIS, China
- A.3 Arifin Lambaga, President, Pt Mutuagung Lestari, Indonesia
- A.4 Suprpto, Deputy Director General, BSN, Indonesia
- A.5 Tar. Hanafiah, The Former General Manager, BSN, Indonesia
- A.6 Sunarya, Spring Institute, Indonesia
- A.7 Tadashi Ezaki, The Chief Director of Standard, SONY, Japan
- A.8 Yoshikaki Ichikawa, Senior Chief Engineer, Hitachi, Japan
- A.9 Haksun Kim, Vice President, Samsung Display, Korea
- A.10 Yongjin Kim, Vice-President, Modacom, Korea
- A.11 Lawrence Lee, Chief Director, Layang Layang, Malaysia
- A.12 Ng Kim Keat, Chairman, Food Manufacturing Group, Malaysia
- A.13 Rosario Uria, Chief, INDECOPI, Peru (*female*)
- A.14 Renato V. Navarrete, Managing Director, CIP Inc., Philippines
- A.15 George Arnold, CEO At Tercio Solutions LLC, USA
- A.16 Nguyen Minh Bang, Director–Standards Department, STAMEQ, Viet Nam

### **INTERNATIONAL FEATURES**

- A.17 Robert Steele, Secretary-General, ISO
- A.18 Hitomichi Fujisawa, Vice-President, IEC
- A.19 Teresa J. Cendrowska, Vice President, ASTM International (*female*)
- A.20 Erik Puskar, ICES Chair 2014
- A.21 Henk De Viries, ICES Chair 2013
- A.22 Mingshun Song, ICES Chair 2012

### **YOUNG PROFESSIONALS IN KOREA**

- A.23 Jinjae Park, Researcher, KTR, Korea
- A.24 Kyongho Park, Researcher, LSIS Co., Ltd, Korea
- A.25 Woojung Yoo, Researcher, KTL, Korea

**ANNEX A.1 (APEC MEMBERS)**

**BONNIE ROSE, PRESIDENT, CSA GROUP, CANADA**

The core competency of developing standards is the ability to achieve consensus while managing a wide range of agendas, expectations, and personalities; the very same competencies one would look for in a good leader or see in a person of influence

---

***1. A Starting Point of Career Path to be a Standards Professional***

I was first exposed to the application and development of standards as an electrical engineer responsible for new product development at Amphenol. The organization supported me in participating as a technical committee member in the development of the IEEE 802.3 standard, and that experience was life-changing. Throughout my career I participated in the application of standards, but I fully dedicated my career to standards when I joined CSA as Vice President, Certification and Testing. Standards are more about what people do not see. Numerous committees develop safety and performance standards, products are tested to those standards, and the society benefits from their implementation. For the last 4 years, I have been President of CSA Standards. We work with subject matter experts to develop standards for Canada and US in 54 technology areas. We represent Standards Council of Canada as International Secretaries to ISO and IEC committees. Our work has taken us to the global arena.

***2. Important Event as Standards Professionals and Major Success Factors***

I believe that knowing that the standards we develop protect lives and the environment, reduce human injuries, and promote trade is what keeps me motivated every day. I see evidence of the social good that standards bring to the society on a regular basis. My staff is very proud to be working with our subject matter experts and stakeholders to develop these standards, and we receive positive feedback on our work on a regular basis.

***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

The ability to understand and relate to the technology areas they will be working on is a given; however, the more important skills delve into emotional, social and customer focused behaviours. Is the candidate good at relationship building, can they manage conflict, negotiate, easily adapt to change and influence? We look for people with great listening and customer service skills as we need to be responsive to the needs of our stakeholders. Having strong project management skills or having the capability to develop them quickly is crucial as well, because stakeholders are asking for standards to be developed in a shorter period of time. In addition, we look for candidates that share our values of integrity, mutual respect, continuous learning, safety, and sustainability.

#### ***4. Job Market and Future Prediction on Standards Professional***

The core competency of developing standards is the ability to achieve consensus while managing a wide range of agendas, expectations, and personalities; the very same competencies one would look for in a good leader or see in a person of influence. I see the development of standards professionals having much more focus on emotional and social competencies than on technical expertise. I see an increasing demand for these skills in many sectors and think it provides a great opportunity for individuals to grow either in standards or their associated sector.

My vision for the next generation of standards professionals is the ability to use these competencies on a global scale; breaking cultural, political, and geographic boundaries to develop globally informed standards products.

#### ***5. Recommendations to Inspire Standards Professional Development***

International cooperation is key to the success of our global society. We will all benefit from learning from each other and collaborating on an international scale. There is a need to serve our stakeholders faster, and we can do that by identifying and implementing best practices. There is also a need to promote trade by developing more regional and international standards.

## **ANNEX A.2 (APEC MEMBERS)**

**PING WANG, FORMER DEPUTY ENGINEER,  
CNIS, CHINA**

*I recommend promoting the certification of standardization engineers, Starting training programs, conducting evaluation and certification of qualifications, and promoting third party certification organizations for standardization professional with the help of the government, etc.*

---

### ***1. A Starting Point of Career Path to be a Standards Professional***

In my opinion, in order to have a deep understanding about standardization, one should have experience in working in industry.

From 1979 to 1989, I worked in a subsidiary enterprise of the Ministry of Railways -- Beijing Railway Equipment Factory -- for 10 years. During this period, I worked as a chief of Equipment and Facility Department and the vice director of the research institute and studied the TQC of Japan. This all proved beneficial to my later career in the area of standardization.

In 1989, I began to work in China National Institute of standardization and information classification and coding (now, it's named China National Institute of Standardization(CNIS), until I retired in 2011. During this period, I presided over the research project of the Ministry of Science and Technology on standardization, served as Secretary General of SAC/TC159/SC4 (China National Technical Committee for Automation Systems and Integration Standardization, Industry data sub-committee), and participated in the standardization work of ISO/TC184/SC4(ISO Technical Committee for Technical Industrial automation systems and integration, Industrial data sub-committee ). From 1993 to 2001, I was the official representative of China at SC4, and formulated an ISO standard ISO 13584-511 Industrial Automation Systems and Integration - Parts library, as the leader of the project. From 2000 to 2001, I worked as the Director of Research Projects Management, Director of International Cooperation Department, and Deputy Chief Engineer of CNIS.

### ***2. Important Event as Standards Professionals and Major Success Factors***

Experiences in the enterprise make me understand what standardization means to industry. Participating in the formulation of international standards makes me understand the basic principle and rules of standardization. Undertaking national research projects about standardization makes me think deeper about industrial innovation and standardization. Working as the Director of Research Projects Management, Director of International Cooperation Department, ,and deputy chief engineer of CNIS gives me the opportunity to deal with standardization organizations from European, Asian, and American economies. So I can compare the standardization systems, governance and institutions of different economies and conduct researches on their strategies, and governmental, industrial, and innovative strategies. This will influence my further researches after retirement.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

When a company recruits standardization staff, it should require all-round technology. Aside from the knowledge background(education), the candidate should have rich experience in his/her working area, together with good communication skills.

If a standardization organization recruits someone, the candidate should have experience working in industry. On the other hand, they should have good coordination abilities, nice personality, and strong ability to organize meetings.

### ***4. Job Market and Future Prediction on Standards Professional***

Since standardization is not yet a mature discipline, schools do not offer this major. Moreover, I don't think a period of learning in school equates to experience in work. Therefore, it is very difficult to recruit qualified employees on the market. It all depends on the further education in enterprises and standardization organizations. As the international community pays more attention to standardization, researches on standardization from colleges and universities have multiplies. We also see more and more theses in the academic circle, covering different areas including business administration, economics, industrial innovation, public management, sociology, organizational behavior, etc. I think it might take a decade or two or even longer for standardization to become a major discipline. By that time, colleges will produce graduates with enough professional knowledge for the society. But even if the day comes, fresh graduates still need real practice in industry.

### ***5. Recommendations to Inspire Standards Professional Development***

I believe to cultivate standardization talents, the government, standardization organizations, colleges, and some big enterprises should cooperate. They can make a contribution in various areas:

- conducting related researches,
- opening seminars,
- launching publicity activities;
- Writing textbooks at different levels, pushing some college majors to include standardization contents, setting qualifications for standardization persons(standardization engineers);
- Promoting the certification of standardization engineers (Microsoft has begun to do this in their own company, as I known);
- Starting training programs, conducting evaluation and certification of qualifications, and promoting third party certification organizations for standardization professional with the help of the government, etc.

**ANNEX A.3 (APEC MEMBERS)**

**ARIFIN LAMBAGA, PRESIDENT,  
PT MUTUAGUNG LESTARI, INDONESIA**

*From my point of view, the role of standard will increase substantially as part of increasing global market and global trade. The use of standard also increase as many organisations, as well as governments organisation, perceive the standard is a way to improve performance of organisation. Therefore, I predict that the standard professional demand increase every year and in the future. My company (CAB) has been double in recruiting the new employee (related to standard task) during 3 years.*

---

**1. *A Starting Point of Career Path to be a Standards Professional***

In 1981 – 1984, I started my career in Tanjung Pandan (Belitung) Sumatera, PT Kaolin Indonesia as Shift Head Production. PT Kaolin Indonesia is the company which produce Kaolin/Clay. Kaolin is widely used in Ceramic industry, Tire Industry, paint industry and also is used as a coating in paper industry. My role was to control the Kaolin production in one shift ( 8 hours working period ), in term of quality and quantity.

After that, from 1995 to present, I have been worked in PT Mutuagung Lestari as President and Director. PT. Mutuagung Lestari is a Certification company which established in 1990. The company provide certification services in: ISO 9001, ISO 14001, ISO 22000, JAS Certification for wood panel products, CARB Certification (Certification for Formaldehyde Emission based on California Air Resource Board Standard), CE Marking for wood product (Cooperate with WKI Braunschweig), SVLK (Timber Legality Certification System, an Indonesian mandatory certification system for legality) for all woodbased product and the forest, SFM (Sustainable Forest Management) for Natural and Plantation Forest.

The company also has the laboratory facilities to carry out the Formaldehyde. Emission testing from wood products, physical and mechanical testing on wood products, food laboratory testing, environmental testing facilities, and agriculture products testing.

The company has been accredited to ISO Guide 65; ISO 17025; ISO19021. The role is to coordinate all of organization operation and activities, included set up the goal, target and strategy. Responsible for the whole aspects of organisation.

**2. *Important Event as Standards Professionals and Major Success Factors***

The most important event in my standard professional when I assigned as a Laboratory and R&D Supervisor. At that assignment, I must learn alot of standard, CRM and other

relevant procedure that must be implemented without no tolerance. I had to find the reference and develop the new standard when the certain standard was not available. During the period, I contacted many people to discuss the problem were facing in implementing the standar. That time I realized that standard is really important to ensure the work was carried out properly.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

In recruiting the new employee, the important aspects to be considered are the knowledge and skills. The skills might be reviewed thru the certificate and training he/she has attended. But the most important aspects is attitude. I really concern about this aspects, since the role of employee, especially auditors, are as reflection of the professionalism of the CA Company. It is beneficial for new employee when he/she has attended the ISO 9001 Auditor Course.

### ***4. Job Market and Future Prediction on Standards Professional***

From my point of view, the role of standard will increase substantially as part of increasing globall market and globall trade. The use of standard also increase as many organisations, as well as governments organisation, perceive the standard is a way to improve performance of organisation. Therefore, I predict that the standard professional demand increase every year and in the future. My company (CAB) has been double in recruiting the new employee (related to standard task) during 3 years.

### ***5. Recommendations to Inspire Standards Professional Development***

I suggest to take part or participate in Standard Related Meeting and Seminar to absorb the information. It is really advantage to participate in ISO Meeting as we can use the information to develop our programe to anticipate the upcoming standard

**ANNEX A.4 (APEC MEMBERS)**

**SUPRAPTO, DEPUTY DIRECTOR GENERAL,  
NATIONAL STANDARDIZATION AGENCY (BSN), INDONESIA**

*I recommend to develop competency requirements for standards professionals to be harmonized with international standards, such as: ISO /IEC 17021-1 to 5 and develop Personnel Certification Body (PCB) based on ISO/IEC 17024. Certified personnel from accredited PCB should be recognized and accepted at regional and international levels.*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I started my career in 1978 as a management staff of Indonesian Institute of Sciences (LIPI). My primary tasks were to draft the development of national system for standardization in Indonesia and to prepare the establishment of the National Standardization Council of Indonesia (DSN). During 1986 – 1998, my responsibility as the Secretary of the Commission for Standard Implementation – DSN was to develop the system for standard implementation, testing, and certification. As the Head of Sub-Division of Development Accreditation System – Centre for Standardization, LIPI, during 1987 – 1991, I was responsible for development, monitoring & management of system for calibration & testing laboratories network. During 1990-1998 as the Head of Division of Standard Development and implementation System, Centre for Standardization, LIPI, my task was to develop the national standardization and standard implementation system.

In 1992, Indonesia established the National Accreditation Body of Indonesia (KAN). . During 1994-1998, as the Executive Secretary of KAN, I was responsible for accreditation of certification bodies and laboratories. During 1998-1999, as the First Secretary of KAN, I was in charged for accreditation of certification bodies.

In 1997, the Standardization Body of Indonesia (BSN) was established. During 1998-2001, as the Director of Standard Implementation and Accreditation of Certification Bodies – BSN my responsibility was to develop accreditation and certification system. During 1998 -2001, as a researcher at BSN, I was in charged to conduct research in standardization & conformity assessment. As an Accreditation Lead assessor at KAN, during 1999 – 2006, I was responsible to lead KAN assessment team. During 1999 – 2001, as an Executive Senior of KAN, I was in charged of accreditation of certification bodies.

During 2001-2006, as the Head of Accreditation Centre for Certification Body, BSN, I developed the national accreditation and certification system. During 2003-2006, as the member of Pacific Accreditation Cooperation (PAC) Executive Committee, I was responsible to support operational activity of PAC. As the Head of the Centre for Standard Implementation System, BSN, during 2006-2011, I developed the national standard implementation system. Since 2011 up to present, I have been appointed as the Deputy of Director General of BSN for Standard Implementation & Accreditation. My primary task was to develop the national standard implementation and accreditation system. At the same time , I also served as the Secretary-General of KAN.

## **2. Important Event as Standards Professionals and Major Success Factors**

The most important event(s) or experiences(s) are:

- To participate in formulation of national standardization system of Indonesia;
- To participate in the establishment of the National Standardization Council of Indonesia (DSN);
- To participate in the establishment of the National Standardization Agency of Indonesia (BSN);
- To participate in obtaining MRA with ILAC, APLAC and MLA with IAF, PAC;
- To participate in drafting standardization & conformity assessment law.

Impact on my career: I was promoted from Echelon IV up to Echelon I in the government position. The most important success factors: discipline, honesty, hard work, consistency, and professionalism.

## **3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes**

Kinds of standards professionals: Quality infrastructure (metrology, standardization and conformity assessment).

Kind of knowledge: technical education.

Kinds of Skills: standard formulation, auditing, sampling, inspection, testing, calibration.

Kinds of Experiences: accreditation, certification, laboratory, inspection, and industrial process.

## **4. Job Market and Future Prediction on Standards Professional**

In international trade, standard will be considered as secondly important factor after price. This makes standards and conformity assessment become critical in improving the competitiveness of a nation's economy. All industries (goods or services) in the world will use standards and conformity assessment as the tools to achieve good quality and improve product competitiveness. Therefore, standards professionals will be in high demand both in domestic and international job markets.

## **5. Recommendations to Inspire Standards Professional Development**

I recommend to develop competency requirements for standards professionals to be harmonized with international standards, such as: ISO /IEC 17021-1 to 5 and develop Personnel Certification Body (PCB) based on ISO/IEC 17024. Certified personnel from accredited PCB should be recognized and accepted at regional and international levels.

**ANNEX A.5 (APEC MEMBERS)**

**TAR. HANAFIAH, THE FORMER GENERAL MANAGER, NATIONAL  
STANDARDIZATION AGENCY (BSN), INDONESIA**

*By knowing the detail of standardization professionals needed in a standardization organization, there will be appropriate management for recruitment, training, education and refresher program for next generation standardization professionals development especially in APEC member economies*

---

***1. A Starting Point of Career Path to be a Standards Professional***

As my educational background is Agricultural Product Technologies, I started my career in 1979 as a researcher at Research Institute for Marine Fishery. Much of my work was in doing researches dealing with post harvest technology of fish in general. The research institute I was working with regularly had coordination work with the DG of Fisheries which was working as the host of some TCs related to Fisheries. Some of my work were used as the basis for developing our national standards, among others were flying fish roes, dried sea cucumber, salted-boiled fish and dried-smoked skipjack (katsuwobushi).

My educational background also led me joining the new established institute at the Ministry of Agriculture at that time (1994), the Agency for Agribusiness. I was assigned as the head of division for Accreditation at the Center for Standardization and Accreditation. Here in this center I learnt for the first time about ISO 17025 and we manage to accredit some laboratories within the Ministry. After some years, I moved to another divisions which was Division for Standardization. Here in this division, my work mainly dealt with national standards (SNI) development, establishing our National Standardization System, standards implementation and dissemination of our SNIs to the related stakeholders throughout the economy. In late 1990s I was moved to another division which was Standards Cooperation. In this new division, I broadened my experiences working with other standard institutions in harmonizing standards to facilitate the trade. I joined the national committee for Codex Alimentarius Commission, working with Victorian government of Australia in SQF 2000, HACCP as well as working with ASEAN Consultative Committee for Standards and Quality (ACCSQ).

In 2002 I was promoted as the Head of the Center for Standardization Cooperation in the National Standardization Agency of Indonesia (the BSN). Later, in 2006 I moved to the Center for Standards Development BSN, four years after which I was finally promoted as the Deputy DG for Research and Standardization Cooperation and retired in 2013. Capacities I developed through out my career enable me to continue working in standardization field as an auditor in a certification body for ISO 9001 (QMS), ISO 22000 (FSMS) and now I am in the process of training to get certificate for ISO 50001 (Energy Management System). With these capacities, some consultant companies offered me a job as trainer in developing management system for certification.

## ***2. Important Event as Standards Professionals and Major Success Factors***

Developing capacities related to standardization activities formally are very important. In my case, I took formal trainings for ISO 9001, ISO 22000 including HACCP, ISO 50001 and some other training still related to standardization like ISO 17025, International Standards Development (ISO/IEC), TBT/SPS Training courses etc. Attending event related to capacity building in standardization is also important to build a self confidence to move forward in this area as we are able to know other people from different part of the world with different opinion or system possibly and are able to exchange view on standards related activities. At the same time I also improves my english alot to be able to communicate with other experts further.

To me the most important success factors is in ourselves; it is the willingness to understand standardization not only in the surface but also in depth, as a system and focus ourselves in one area at a time. Likewise, the wilingness to use any opportunity for capacity building seriously is also important. Since these kind of opportunities are limited, conducting a kind of dissemination training in the same area will more improve our capacities.

## ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

It would be much easier probably to recruit technical people for professional in standardization since they will work in a more technical aspect of standardization, either professionals in standards development, standards implementation, coformity assessment (accreditation and certification) as well as metrology. In my case, for standards development we recruited technical staffs according to their educational background. For electro-technical standards we recruited staff with electrical engineering back ground. For food and agricultural standards we recruited staff with agricultural or food processing back ground. For chemical and mines standards we recruited staff with chemical engineering or geological science back ground. But for system standards we can recruit staffs from different diciplines. But generally industrial engineering usually acceptable for certification professional as well as professional in standards cooperation and TBT matters.

Since we do not have university graduated staffs majoring in standardization, therefore we continually conduct trainings or capacity buildings related to a specific area of standardization. For example, national/international standards development, editor/drafter for national standards, TBT, etc. In the other deputy in BSN, they conduct training in ISO 17011, ISO 17021, ISO 17024, ISO 17025, ISO 17065 etc. We mainly expect the the technical knowledge from the new recruited staffs.

## ***4. Job Market and Future Prediction on Standards Professional***

My perspective is in the growing demand of standardization activities related to assuring quality and safety of products throughout supply chains. This is especially true in certification area. There will be more and more requirement in certification area especially as auditors for ISO 9001, 22000, 27000, 50001 and the newly come 55001. On the other side, the same amount of knowledgable staffs will be needed to support the implementation of the standards at the industries, not mentioning the demand for

consultancy business. In the mean time, standards development organization will also need standardization professionals in the area of standard writers/drafters, editors, TBT/SPS handling staffs etc.

### ***5. Recommendations to Inspire Standards Professional Development***

Standardization is an instrument for trade and is implementated to facilitate the trade. To enable the implementation of standardization as an instrument of trade, there should be a harmonized code of conduct to be implemented by the joining economies. Therefore, every single element of standardization should be understood and implemented in a harmonized way including in preparing the professionals in standardization so that the qualification will be more or less the same. By knowing the detail of standardization professionals needed in a standardization organization, there will be appropriate management for recruitment, training, education and refresment program for next generation standardization professionals development especially in APEC member economies.

**ANNEX A.6 (APEC MEMBERS)**

**DR. SUNARYA, SPRING INSTITUTE, INDONESIA**

*After I retired I have been working as a Trainer and Consultant for standard and conformity assessment. The need to provide trainings and consultancy on standardization is in great demand. This proves that standards professionals are in high demand in the job market, both for government organizations and private sectors.*

---

***1. A Starting Point of Career Path to be a Standards Professional***

My knowledge on chemical test and quality control that I learned at the university plus my two years of experience as a staff at the Ministry of Agriculture (MOA), have contributed significantly in my work as the chief of Standardization at MOA in 1982.

In my early work as the coordinator in the development of standard on fisheries and agriculture, there was a great deal interaction with my seniors who were experts in developing standard. The learning process through discussion as well as hands on experience were very helpful in thoroughly understanding the principles of standardization.

After completing my PhD in 1987, I worked at National Center for Fish Quality Testing and Quality Control. I was in charge in drafting standards, inspection and testing.

In 2001, I was appointed as the Deputy Chairman at the National Standardization Agency of Indonesia (BSN). In this capacity, I had ample opportunities to improve my knowledge on standardization, through intensive interactions and discussions with many experts from national, regional and international.

At the end of 2009, after I retired from BSN, I continued to work as the owner and leader of the Spring Institute (Training and Consultation on Standard and Conformity assessment). It is my responsibility to provide training and consulting on standardization. My knowledge and experiences working in standardization, enabled me to write a book entitled: "Standardization in Industrial and Trade", published in 2012. The central theme of the book is the concept of standardization and its application in the globalization. The book is intended for executives and lecturers/teachers and presently is being translated into English.

## ***2. Important Event as Standards Professionals and Major Success Factors***

My knowledge and experiences on Quality Control have been very helpful for me to enhance the philosophy of standardization and its application. In standard application, conformity assessment is the most important concept. These have contributed in my career as the food scientist to expand my capability to other fields, such as: railway safety aspects, forestry, general agriculture, fisheries, industry and trade, as well as in ministry of sports.

According to my opinion and observations, the understanding of standardization can be divided into three levels:

1. Level one, those who understand a standard as it is written in the standard document including the technical requirements (what it is);
2. Level two, those who understand a standard as it is written in the standard document and also understand the consequences of non compliance with the requirements (what it is and how it should be);
3. Level three, those who understand a standard as written in the standard document, understand the consequences of non compliance, and the compelling reason of requirements (what, how and why).

## ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

Based on my observations and experience, someone who has the basic knowledge in quality control and experience in conformity assessment, can understand easily the substance of standardization. Standardization activities are closely related with technical aspects. Therefore in the job market, standards professional sometimes is also named as a Standardization Engineer.

## ***4. Job Market and Future Prediction on Standards Professional***

After I retired I have been working as a Trainer and Consultant for standard and conformity assessment. The need to provide trainings and consultancy on standardization is in great demand. This proves that standards professionals are in high demand in the job market, both for government organizations and private sectors.

## ***5. Recommendations to Inspire Standards Professional Development***

The concept of Standardization is very important in all kinds of jobs and even in our lives. Therefore, standardization mindset needs to be disseminated extensively to all stakeholders who deal with standardization activities. APEC SCSC can play an important role in reaching the standardization mindset to the concerned stakeholders in the APEC members economies.

**ANNEX A.7 (APEC MEMBERS)**

**TADASHI EZAKI, THE CHIEF DIRECTOR OF STANDARD,  
SONY, JAPAN**

*“I was an electronics engineer and involved in video processing development and circuit design for consumer video cassette recorders, such as VHS, Betamax and 8mm video. At that time, measuring methods of consumer video cassette recorder was discussed in an industry association in Japan and I participated in the WG. It was my start of my standardization career.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I was an electronics engineer and involved in video processing development and circuit design for consumer video cassette recorders, such as VHS, Betamax and 8mm video. At that time, measuring methods of consumer video cassette recorder was discussed in an industry association in Japan and I participated in the WG. It was my start of my standardization career. Although I have been involved in the other works, such as content protection, content distribution, personal identification, etc., I continued involvement to the association’s standardization committee. When I was in mid 40s, I decided to move to standards department in my company to concentrate in standardization activity. I’m involved in education, promotion, coordination for standards in my company and finally I became a secretary of IEC TC 100.

It will be a typical career that an engineer starts his standardization activity as an expert of a specific technology and takes key position of the relevant committee or WG along with his promotion from an expert to PL and Convener. It will be preferable to have engineering knowledge related to the committee. However, the management skill will be more important than engineering knowledge for the key positions such as chairperson and secretary and the engineering background will not be mandatory.

***2. Important Event as Standards Professionals and Major Success Factors***

I think that actual participation in the face to face meeting of national mirror committee and international meeting was most impressive in my career. To develop and write a specification also gave me a kind of self confident for standardization. It will be very helpful to know all the standardization processes for standards career.

***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

I look at the experience and possibility for the following items to hire new team member:

- Self-directed personality to be able to coordinate and decide our company's standardization policy and to act as a company representative
- Having cooperative mind to be able to have good communication with other companies in a standards community
- Standards development experience, contribution to standards development, editing work of standards and convener ship in a WG or committee especially de-jure standardization
- Patient person to be able to negotiate standardization issue in the community and contribute to the community for a long time

#### ***4. Job Market and Future Prediction on Standards Professional***

There will be several types of standards professionals.

- A kind of company business professional who can develop business planning utilizing standards as a tool
- A kind of standards professional who has entire knowledge on standardization and can help any engineer and department in his company for standardization
- A kind of expert who has deep technical knowledge and can develop standards efficiently
- A kind of corporate standards professional who is involved in promotion and education of standardization in their company and provides center functionality of the company. Of course, a standards professional may have ability for all or some of above standards professional roles.

It will be very important for all the standards professional to understand the purpose of standardization at first. That is, standardization is a business tool.

For each type of standards professional, relevant education or experience should be given.

#### ***5. Recommendations to Inspire Standards Professional Development***

It will be important to persuade company executives to understand the importance of international standardization at first. But even if the top managements understand the importance of standards and encourage business groups to develop professionals, heads of business division or managers of section often degrade the priority of standards activity because of their daily operation. Therefore it will be very important for company executives to create and promote a kind of attitude or policy of the company to develop standards professionals in their companies.

**ANNEX A.8 (APEC MEMBERS)**

**YOSHIKAKI ICHIKAWA, SENIOR CHIEF ENGINEER,  
HITACHI, JAPAN**

*Standardization activities are more related with businesses than philanthropy. Standard professionals having competence in combining business plans with standardization strategy will be urgently needed particularly in Japan.*

---

***1. A Starting Point of Career Path to be a Standards Professional***

As a senior manager of environmental affairs division, I have to be involved in the standards in the field of environmental issues. I became a chairman of IEC TC 111 in 2009 as a chairman which creates so called "harmonized standard" for regulations in EU as well as reference standards (based on WTO TBT) worldwide. My work significantly reduce compliance risks of our company's products as well as contributing to shaping regulations workable for our industry.

***2. Important Event as Standards Professionals and Major Success Factors***

Since 2000 I have been attending inter-governmental meetings representing my economy, where I learned lessons with respect to international negotiations. I learned skills for leading discussion and achieving consensus by finding the possibilities of compromise for all the stakeholders. After that I did a convinor for an international standard in IEC which provided real opportunities to lead the real standard development from scratch to final publication. This experience as a convenor seems to have build a basis for the competency needed to be a chairman of TC.

***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

- Standard Professional: communication capability, good to achieve and extend human connection, skilful for dealing with rules and regulations. Good for boiling a goal down to workable action plans
- Standard writers: good to quickly understand technical subjects, good to transform ideas into crisp languages.
- Strategic planner: a person in charge of real businesses but understands how to utilize standards to promote his/her own businesses.

***4. Job Market and Future Prediction on Standards Professional***

Standardization activities are more related with businesses than philanthropy. Standard professionals having competence in combining business plans with standardization strategy will be urgently needed particularly in Japan.

***5. Recommendations to Inspire Standards Professional Development***

Provide them appropriate training, real opportunities to participating in standardization activities, goals of contributing to businesses, and reasonable appraisals.

**ANNEX A.9 (APEC MEMBERS)**

**HAKSUN KIM, VICE PRESIDENT,  
SAMSUNG DISPLAY, KOREA**

*“I think that fairness and suggestions concerning the correct future technical direction are required to strengthen a business’s competitive power through standards. To that end, in recognizing the importance of standards, the APEC should carry out diverse activities to positively improve the status of standards professionals.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I majored in electric circuit and system field at the department of electronic engineering of the university, obtained a doctor’s degree in the design of operational amplifiers in 1993, and worked as a professor at the department of electronic engineering at the university for 15 years and 6 months. During my years of teaching at the university, I took part in the establishment of standards and standardization activities at the IEEE 802 International Standard division, which is the communication area of the IEEE. Then, from 2008, while working as an executive for a company, I established the standardization department with an interest in international standards so as to lay the groundwork for systematic standardization activities. As a result, I led tasks to establish international standards at the international standardization departments for IEC TC110, SEMI FPD Metrology, ICDM, and so on.

***2. Important Event as Standards Professionals and Major Success Factors***

As I realized that leading industry with standards rather than technologies is much more important for industrial development, I became interested in standards. By this I mean that a standard should be established before the development of technologies, and I was able to confirm this while carrying out standardization activities for IMT2000. In the course of those activities, I gained an opportunity to broaden my appreciation of the direction of future technologies and developed the strong conviction that whoever rules standards controls the world. I am sure that much growth and many developments have been achieved on the basis of standards, as it is possible to predict future technology developments through standards as well as the technical skills achieved by recommending abundance of and systematic standardization activities.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

We require the recruitment of standards professionals in two main areas: The first type of position concerns standards technical staff who will plan international standards based on future technologies and establish the standard strategy. The other type of position is the standard technical expert who will deal directly with the standard document for each technical field. Engineers in vast technical areas who have experience of projects related to technical strategies or who have earned a Techno MBA would be preferred as standard technical staff, while experts in standardization who are capable of writing standard documents professionally would be preferred as standard technical experts. In addition, I think that it would be a good idea to foster experts through a standardization training program aimed at the company's experts in a given technical area, which would be selected by a company as and when a technology needs to be standardized in that company.

### ***4. Job Market and Future Prediction on Standards Professional***

I think that as technologies continue to develop rapidly, more and more standards professionals will be required in the future. A company might reach a limit in its competitive power if it relies solely on the development of a technology. In my opinion, a company might not survive if it can't lead both the technology and the standard at the same time. Because technology can be secured through various methods such as self-development or outsourcing, however, the relevant standard cannot be easily replaced if it is not included in the company's strategy. Also, I expect that both the profession of standards professional itself, and the number of personnel required, will be greatly expanded as technology develops.

### ***5. Recommendations to Inspire Standards Professional Development***

I think that fairness and suggestions concerning the correct future technical direction are required to strengthen a business's competitive power through standards. To that end, in recognizing the importance of standards, the APEC should carry out diverse activities to positively improve the status of standards professionals. I hope that the APEC will promote the achievements in various activities of the chairmen and members of the IEC, ISO, ITU, and other organizations, and implement other promotional activities so as to raise awareness that standards have an essential role to play in the growth of enterprises. Furthermore, I believe that providing support for training programs related to the economic value of standardization activities and the importance of standards, and fostering experts are necessary to stimulate companies' interest in standardization and help them to establish standards.

**ANNEX A.10 (APEC MEMBERS)**

**YONGJIN KIM, VICE-PRESIDENT,  
MODACOM, KOREA**

*The role of standard will increase substantially as part of increasing global market and global trade. The use of standard also increase as many organisations, as well as governments organisation, Therefore, I predict that the standard professional demand increase every year and in the future.*

---

***1. A Starting Point of Career Path to be a Standards Professional***

Dr. Yongjin Kim has received the B.S. degree in Electronics Engineering from Yonsei University in 1983. He received the M.S. and the Ph.D. degrees in Electric and Electronics Engineering from KAIST(Korea Advanced Institute of Science and Technology) in 1989 and 1997, respectively. From 1983 to 2002, he has worked for ETRI(Electronics and Telecommunications Research Institute) for the development of a distributed operating system for Mini-computer, traffic management systems for ATM networks, and IPv4/IPv6 translators and many others as a team/project leader..

Since 2003, he has worked for Modacom as the CTO and executive Vice President. In Modacom he has developed several kinds of mobile Wimax/LTE terminal devices and M2M terminal device platforms including SDK, RDK and M2M communication modules. He has been a Rapporteur in ITU-T SG 13 for standardization on IP over ATM during 1997 ~ 2000 and he has been the Convenor of SGSN(Study Group on Sensor Networks) in ISO/IEC JTC 1 during 2008 ~ 2009. Also, he was an invited Professor at KAIST in 2002 and taught at Yonsei University during 2006 ~ 2008 as an invited professor. As the result of his research he has published more than 150 papers and 40 patents for communications, computers, Internet, and sensor networks. He has been awarded a medal of honor of industry in 2011 from Korea government for his excellence in the field of standardization. Now, he is the Convenor of ISO/IEC JTC1/WG 7 for the standardization of sensor networks/M2M/IoT since 2010.

***2. Important Event as Standards Professionals and Major Success Factors***

The most important event in my standard professional was an appointment to the Rapporteur in ITU-T for leading international standards for 4 years since 1997. During the period, I contacted many people to discuss and learned how to manage standardization meetings.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

In recruiting the new employee, the important aspects to be considered are the knowledge and skills and experiences. English and conversation skills are important too. But the most important aspects is positive and active attitude.

### ***4. Job Market and Future Prediction on Standards Professional***

The role of standard will increase substantially as part of increasing global market and global trade. The use of standard also increase as many organisations, as well as governments organisation, Therefore, I predict that the standard professional demand increase every year and in the future.

### ***5. Recommendations to Inspire Standards Professional Development***

I recommend to participate in Standard Related Meeting and Seminar to get the information. If you have a chance to get a leadership in standardization bodies like ISO, IEC or ITU, it will make you a real standards professional.

**ANNEX A.11 (APEC MEMBERS)**

**LAWRENCE LEE, CHIEF DIRECTOR,  
LAYANG LAYANG, MALAYSIA**

*“To propose to the government to sponsor individuals for further training to enable them to be a better standards professional so we become more define and strategic in our roles as professional standards.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

- Started working in 1982
- Got involve in scuba diving in 1985
- Took up leadership/traning programs in 1991
- Became an Instructor since then and thereafter a Course Director in 1996
- Have trained more then 600 divers.
- Decided to specialize in marine tourism in 1992
- Worked for Layang Layang Island Resort a dive resort as a Sales & Marketing Manager in 1997
- Got involved with National Occupational Skills Standards(NOSS) in 1998
- Then went on to facilitating ISO for scuba standards and develop/adopted Malaysian Standards
- Currently General Manager of Layang Layang focusing on business development, strategic matters and overseeing the resort operation.

***2. Important Event as Standards Professionals and Major Success Factors***

Participating with other dive professionals and sharing experiences

It has made me to be more detailed in my thinking and analyzing process

Enable me to guide and teach staffs in my company to adopt a systematic approach to addressing and solving problems.

To address and resolved management crisis.

To be able to anticipate issues and pro-act to prevent further problems.

***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

I will hire sufficient/relevant work knowledge and possess the right qualification

With very strong and positive attitude

A person who is passionate about the job/ work.

***4. Job Market and Future Prediction on Standards Professional***

Yes there is a need and potential to develop human assets in standards professional

To hire professional with lots of experience to be involved with standards thus able to guide and lead new professionals to perform effectively.

***5. Recommendations to Inspire Standards Professional Development***

Conduct special programs for standards professional to enable them enhance their skills/ knowledge

To propose to the government to sponsor individuals for further training to enable them to be a better standards professional so we become more define and strategic in our roles as professional standards.

**ANNEX A.12 (APEC MEMBERS)**

**NG KIM KEAT, CHAIRMAN,  
FOOD MANUFACTURING GROUP, MALAYSIA**

*“It is important that a standards professional to continuously update own self the latest scientific information, public interests, global standards trend, and global trade & health policies. As such I have read (lots!), learn from others' experience, and always keep an open mind.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I am now the Chairman of Technical Committee of the Food Industry Group of Federation of Malaysia Manufacturer and Head of Regulatory Affairs of a multinational company. One of my roles is to lead the industry to work with regulators and standard setting bodies to set food standards. I started to involve in standard setting end of 90s, and have since developed my career interest in regulatory & scientific affairs.

***2. Important Event as Standards Professionals and Major Success Factors***

It is important that a standards professional to continuously update own self the latest scientific information, public interests, global standards trend, and global trade & health policies. As such I have read (lots!), learn from others' experience, and always keep an open mind. The abilities to connect all the knots, and come up with a solution to benefits most are key success factor. I have seen some standard professionals are taking very extreme views with an aim to win all. I think to be a successful standard professional, one must always base on data and facts for the benefit of all. I feel satisfy and take pride when I have contributed to a good standard which will benefit all parties.

***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

I will look for open minded, technical people who are able to connect data/facts.

***4. Job Market and Future Prediction on Standards Professional***

Standard setting will become more regional and global. It will go beyond local, and be a specialist in its own field globally.

***5. Recommendations to Inspire Standards Professional Development***

A good standard can benefit mankind. A bad standard can destroy what we have achieved for years. We need ethical standard professionals as their works will help us to live in a better world, globally. Standard professional is a specialist who should be rewarded and recognized as par with the contribution.

**ANNEX A.13 (APEC MEMBERS)**

**ROSARIO URIA, CHIEF,  
INCEOPI, PERU**

*“An important aspect is also the demand for these professionals is increased to the extent that the company become more competitive and need to apply standards in its processes and introduce innovation.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

My experience in standardization is of about 24 years, I started in microbiology laboratory using technical standard in microbiological methods, and then I continued working in quality management system in the industry, principally ISO 9001. Then I introduce my professional activities in environmental standards like ISO 14001 and food safety with HACCP system. In 2005 I started to work in Peruvian Standard Body, in regards our activities in the NSB, I should mention that in the beginning we did not have a significant participation in the regional nor non-regional standardization. Currently, we have strengthened our international work, which is shown in the increasing number of ISO mirror committee, as well as our participation in the international balloting.

***2. Important Event as Standards Professionals and Major Success Factors***

I had the opportunity to advice the Head of INDECOPI in to change its status as a P member in ISO, so since 2007 Peru started to work in ISO as a P member; another event was our participation in APEC 2008. In this opportunity, Peru was host of this important international forum. The participation in the forums, in projects and technical meetings with the different economies and NSB of the region has amplified our vision of the international participation, being Peru a economy with a small international presence, we find in APEC an opportunity to interchange experiences

***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

- Planning: International cooperation and relation with stakeholders:2 Economists, with experience in international and national partnerships.
- Projects Management: Engineer, Economists, with experience in project management
- Development standards: Professional in standardization: Engineer in Food, Industrial, Civil, System, Electric related, Chemistry, Science professional (Biologist, Chemistry). Experience in quality management system, Knowledge

in WTO TBT agreement and international standards process. Good skills in negotiation, and attitude proactive and researcher.

- Dissemination: Marketing and sales promotion: Marketing Professionals, Graphic Design, Communication Science professionals.
- Education: Professional to develop education programs

All the professionals should have an advanced knowledge of English, good writing skills, negotiation attitudes, skills to work in group and emotional management.

#### ***4. Job Market and Future Prediction on Standards Professional***

At the time is still limited, yet it is not very competitive, because there is no proper training for this kind of professional, usually the experience in gained in the work, so it is important training programs for professionals in standardization. An important aspect is also the demand for these professionals is increased to the extent that the company become more competitive and need to apply standards in its processes and introduce innovation.

#### ***5. Recommendations to Inspire Standards Professional Development***

- Share experience of economies to have a formal program for education young professional.
- At regional level created a virtual course for a formal program ( Training to trainers )
- Diffusion of educational workshops.
- Networking of professors to share materials
- Technical assistance in education programs

**ANNEX A.14 (APEC MEMBERS)**

**RENATO V. NAVARRETE, MANAGING DIRECTOR,  
CERTIFICATION INTERNATIONAL PHILIPPINES(CIP), INC., PHILIPPINES**

*“Given the trend in globalization and regional market integration, as well as continued economic expansion in the Philippines, there is a growing market for standards professionals. This market is not confined to jobs in the government. Business and investment opportunities are multiplying.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

My career started in materials management with a major food and beverage company in the Philippines. Subsequently I entered government service, where for nearly 21 years, various assignments had involved me in industrial development planning and then national standardization.

I started work in the standards community when I was appointed Deputy Director and later Director of the Philippine national standards body, the Bureau of Product Standards. My prime responsibilities centered on policy and program formulation on national standardization, encompassing standards development, conformity assessment and standards promotion, as well as overall administration of the Bureau. As Director, my functions included international involvement in ISO’s technical cooperation programs for developing country-members in my capacity as Chairman of the ISO Development Committee and in ISO council affairs. I had participated too in establishing mutual recognition arrangements in conformity assessment schemes within ASEAN and APEC. After leaving BPS, I was engaged in a UN standardization project for LDCs in Southeast and South Asia. In 1996, I joined Certification International Philippines, a Philippine-accredited certification body with international affiliation, as Managing Director. My main responsibilities span corporate strategic planning, technical and financial administration. Work activities included management system audits of major clients.

I pursued my career with hard work, determination, diligence and integrity. I developed my professional capabilities through academic and practical studies in varied areas such as: standardization, business, international trade, communications, negotiations, organizational management. My successful experiences through the years had been seen in how stakeholders of national standardization work had appreciated its beneficial impacts on their industrial competitiveness and productivity and how consumers had begun to improve their ability to exercise their rights to protection. I am personally satisfied that this has developed the beginnings of an increasingly balanced market environment in the Philippines.

I believe that a key strategy in fulfilling my professional aspirations was, and will continue to be, keeping national standardization stakeholders, particularly their needs and expectations, in constant focus – how to meet these in the most effective way within existing resources. It is consistent with my service orientation as an individual. Self-fulfillment arises from being able to serve others, fellow nationals and foreigners alike.

## ***2. Important Event as Standards Professionals and Major Success Factors***

Obtaining national recognition of the impacts of standardization work, particularly on industrial competitiveness and consumer protection. This was my experience in the national standards body of the Philippines. Subsequently, in the private sector, seeing our company become the leading and major certification body in the Philippines is another significant highlight in my career. Serving customers faithfully and diligently indeed brings an organization forward.

A high degree of participation of business and consumer sectors in national standardization work confirmed the validity of my contributions to influence the direction of national standardization towards meeting stakeholders' expectations. This required translation of highly technical aspects of standardization into more easily understandable messages and readily recognizable benefits to consumer welfare and trade and industrial competitiveness. These have helped draw out stakeholders' interests in national standardization in their voicing out their needs and expectations and in initiating market-driven quality improvement programs.

My personal success factors include undertaking continuing business and economic studies, development of my management and communication skills to be able to function within social and economic groups with divergent views, keeping an open mind and also being results-oriented. In addition, reaching out to stakeholders to identify and then to work to satisfy their needs and expectations, working jointly with them through committees, workshops, public discussions was often done. This is why, time permitting, I still do audits at our client sites. This is one way I keep in touch with our clients. Developing and strengthening team work among my staff, previously in a public agency and currently in the private sector, has helped to keep them always motivated and dedicated; staff relationship is of prime importance at all times - this is also a significant element in our organizational effectiveness.

## ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

Important personal attributes of our staff, and those required of future recruits, are honesty, diligence, open-mindedness, initiative and willingness to learn. Competencies in team work, public communication, customer relations and systems thinking are basic job requirements. Technical competencies, breadth of technical knowledge and experience in conformity assessment are expected but these competencies alone are not enough. The foregoing personal attributes and competencies are prerequisites.

#### ***4. Job Market and Future Prediction on Standards Professional***

Given the trend in globalization and regional market integration, as well as continued economic expansion in the Philippines, there is a growing market for standards professionals. This market is not confined to jobs in the government. Business and investment opportunities are multiplying.

Professionals should be educated and prepared for standards development in a manner that balances their technical expertise in various fields of standardization (standards development, inspection, testing, certification, metrology) with the expectations of their stakeholders. Therefore, communication and managerial abilities are important. Customer focus is imperative among standards professionals. This should be one aim of their career development process.

As for the young people in the job market, they should be attracted to the standardization field by standardization organizations, public and private, by portraying this as an equally exciting and rewarding area that can challenge their abilities. As a technical or scientific pursuit or as an entrepreneurial business venture, there is plenty of room for standards professionals of the future. They can engage in research. Some may decide to invest in training, inspection, testing or certification as a commercial enterprise. But wherever their interests bring them, they should not lose their customer-sense. It is the job of current standards professionals to bring this message to an emerging crop of professionals, in order that a good number of them can be attracted to the standardization sector where these young people can decide to build their careers

If standards professionals are too cooped up in their technical specialization, there is a possibility they might lose a sense of purpose as to who they should be serving. They have real customers outside their institutions. Standards professionals should exert the initiative to create this match between themselves and their resources on the one hand, and, on the other, an expanding world of customers pursuing their objectives whether in trade globalization, technology exchanges or consumer protection. In these fields, standardization is an essential element.

Standardization is a critical and vital infrastructure in any economy. A new generation of professionals should be attracted to man and expand this infrastructure. 4

#### ***5. Recommendations to Inspire Standards Professional Development***

For regional and international cooperation to flourish in the field of standardization, standards professionals should be exposed to the realities of globalization. Along with this development arises trade and investments expansion, cross-national transfers of technology and of human resources.

It is vital to sharpen the technical expertise of standards professionals and also their abilities to function in a multicultural environment. Interdisciplinary studies are necessary. These can mold them to be more understanding of globalization being an unstoppable wave that can widen the borders of any economy for more trade and social exchanges, and hopefully better standards of living and inclusiveness in more economies. Hence, the importance of broad and open mindedness on the part of standards and many other professionals. They will be functioning in a more demanding and much wider field where

their expertise and abilities will be challenged. It will no longer be enough to be competent against national expectations. International levels of performance will be expected; this requires a new mindset among the rising professionals of today, not only in standardization but also in many other professional pursuits.

It is important to train young professionals under a new paradigm that prepares them for a wider range of career and achievement opportunities beyond their national borders. Both in the classroom and in day-to-day life, through examples of standards professionals in the way they live and conduct themselves, this should be inculcated among the youth of today to counteract a generally observed tendency on their part towards greater materialism, more comforts and short-term vision. Education is indispensable.

**ANNEX A. 15 (APEC MEMBERS)**

**GEORGE ARNOLD, CEO AT TERCIO SOLUTIONS LLC, USA  
(FORMER DIRECTOR, STANDARDS COORDINATION OFFICE, NIST, USA)**

*“So my advice to people early in their career is to think of standards as an important part of an engineering professional’s job. The main job is to do the research or development or engineering or management of a new product or process or innovation, and dealing with the standards aspects is as important as dealing with the financial, legal, or other aspects needed to be successful in the marketplace.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I started working on standards early in my career, in the early 1980s, when I was leading the development of protocols for computer networking for automated operations in the nationwide AT&T telephone network. We had some requirements that the existing standards didn’t quite meet, so my group became involved in the development of standards at CCITT (now ITU-T) so that we could use them. About 15 years later, when Lucent Technologies became independent of AT&T, I was asked to lead the company’s global standards function. I became involved in governance of the standards system through ANSI (I had volunteer leadership positions of increasing responsibility, eventually becoming Chairman of the Board), IEEE (I was elected to the IEEE Standards Association Board of Governors and later President) and ISO (where I was elected Vice President – Policy, responsible for ISO’s strategic plan). Most recently, I joined the National Institute of Standards and Technology, a government agency, and have responsibility for coordinating standards activities across the entire U.S. federal government. During my tenure at NIST I was also responsible for leading a national program to develop a standards framework for the smart grid.

***2. Important Event as Standards Professionals and Major Success Factors***

Early in my career, I gained experience making technical contributions to the development of standards. I later learned that many other skills are required to become an effective leader in the standards community. Learning how to lead an organization of volunteers and reconcile differing perspectives to forge a consensus was the most important experience in my career. You have to sell others on a proposed solution and show how supporting it is in their organization’s self-interest. Ironically, I initially developed these skills during a period in which I was not involved in standardization – I had a number of assignments at Bell Labs where I was responsible for matrix-management of cross-organization teams of people involved in process engineering. I later discovered that the leadership skills I developed in these assignments were transferrable to standardization work. (And I believe the converse is true, that leadership skills developed in standardization prepare one for other cross-functional or cross-organization leadership assignments in large organizations and hence are beneficial for career development.)

Another important skill I learned is how to ensure that standards work is effectively communicated to the senior leadership of an organization. You have to communicate the essence rather than the details in a way that makes the connection to their strategy or vision easy to comprehend. You have to learn how to converse in a different language. The language of standardization is too far “in the weeds” to be of concern to most senior leaders of organizations or agencies. You have to translate it into higher-level concepts and terms used in their frame of reference.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

It takes a special combinations of skills to succeed as a standards professional. One has to be technically knowledgeable, of course, but that is far from sufficient. Excellent interpersonal and negotiation skills, ability to work with others across internal organization boundaries, with other companies, and with people from different cultures is very important. You need the ability to communicate persuasively both orally and in writing, be regarded as objective and trustworthy, have good project management skills, and the fortitude to endure extensive travel.

### ***4. Job Market and Future Prediction on Standards Professional***

I would encourage young professionals who are interested in standards to start out in another business function as a first step in their career, and then move into standardization next. There are relatively few people engaged in standards who do that as their full-time job, so if that is your focus the career opportunities are exciting and interesting but somewhat limited in number. The large majority of people from industry who participate in the standards process also have responsibilities in product or service development or product management, and participate in standards to help align standards under development with their company’s needs. So my advice to people early in their career is to think of standards as an important part of an engineering professional’s job. The main job is to do the research or development or engineering or management of a new product or process or innovation, and dealing with the standards aspects is as important as dealing with the financial, legal, or other aspects needed to be successful in the marketplace. Influencing and participating in the standards work as part of that job requires that you develop special skills, such as those mentioned previously, and these skills are very valuable in your career development towards higher levels of management where you are primarily influencing people rather than writing code or designing hardware.

### ***5. Recommendations to Inspire Standards Professional Development***

Standardization is one of the most rewarding occupations I can imagine. It interweaves technical, political, cultural and social aspects in a way that no other profession does. You have to deal with all of these dimensions. It gives you the satisfaction of working on things that have big impact. Standards are a powerful means of technology transfer, and so you can see your efforts in developing a standard have big impact – across a whole industry or even society.

**ANNEX A.16 (APEC MEMBERS)**

**NGUYEN MINH BANG, DIRECTOR – STANDARDS DEPARTMENT,  
STAMEQ, VIET NAM**

*Standardization including conformity assessment should be considered as an official profession. So, it should be included in education programmed as a permanent subject (from schools to universities and academics of higher education).*

---

***1. A Starting Point of Career Path to be a Standards Professional***

Personally, I have worked in the structure of Director of the Standards Department under the Directorate for Standards, Metrology and Quality (STAMEQ - National Standards Body of Viet Nam) for more than 30 years. Before being appointed as Director of the Standards Department under STAMEQ in 2011, I used to hold the positions of Deputy Director of SMQ Information Centre of STAMEQ, Deputy Head of General affairs, Legislation and Planning Division, and Head-in-charge of the Methodological affairs Division of the Viet Nam Standards and Quality Institute (VSQI).

My colleagues and I (Director) in Standards Department of the Directorate for Standards, Metrology and Quality (STAMEQ – National Standards Body of Viet Nam) are responsible for implementing the following tasks:

- To develop, issue or submit to the competent State agency, person authorized to issue, and organize the implementation of policies, strategies related to standardization and technical regulating; organize the setting up and approval of master plans, work programs for national standards and technical regulations preparation in the fields assigned for management;
- To develop, issue or submit to the competent State agency, person authorized to issue the legal documents on standardization and technical regulating and organize the implementation of those documents;
- To carry out the appraisal and publicize the national standards; organize the preparation and adoption of national standards in the fields assigned for management; issue the organizational and operational rules/regulations for technical committees of national standards; provide guidelines for preparation and adoption of national standards, provide guidelines for preparation, publication of organization's standards; provide guidelines for application of international, regional and foreign standards;
- To carry out the appraisal of national technical regulations; provide guidelines for preparation of technical regulations; organize the preparation and approval of national technical regulations in the fields assigned for management;

- To build up and develop human resource for standardization and technical regulating activities; to organize scientific research and technology preparation on standards and technical regulations;

And some others. For implementing the above-mentioned tasks, we should cooperate closely with other relevant departments/units of STAMEQ like: Conformity Assessment Department, Metrology Department, Viet Nam Standards and Quality Institute (VSQI), etc. as well as focus on the following things/matters:

- To promote and develop national standardization activities on the basis of harmonizing with or aligning to regional and international ones in various aspects of rules/principles, approaches and practices, etc.;
- To catch up with development strategies and trends of national economy and specific industries in order to ensure the “relevance” of standards developed and implemented;
- To be educated and self-educated continuously for having appropriate knowledges and information;
- To cooperate with SDOs as well as other organizations in standardization issues (e.g. promulgation, dissemination, guidance...)

## ***2. Important Event as Standards Professionals and Major Success Factors***

For my colleagues and I, the most important events that impact on our career and professional activities are as follows:

- The deeper integration of Viet Nam economic activities into global, regional ones as well as bilateral and multilateral economic cooperation with other economies;
- The participation of Viet Nam in international/regional standards organizations (ISO, IEC, CAC, APEC/SCSC, PASC,... as a member (This open and ensure our possibility of participating in policy-making and technical activities of these organizations);

So, for us, the most important success factors are:

- People (Staff);
- (Clear) function;
- Process;
- Resources;
- Cooperation.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

Among our main tasks (mentioned in Answer 1 above) there is the task of doing appraisal of draft national standards (TCVNs) prepared by ministerial SDOs and draft national technical regulations (QCVNs) prepared by ministerial regulatory agencies. So, I used to and will recruit new technical persons for doing this.

This kind of staffs shall have appropriate competence meeting the following requirements:

Having upgraded knowledge and skills on standardization and technical regulation;

Having deep knowledge on specialised industrial subjects aiming to which standards and technical regulations being developed;

Having required degrees on foreign languages (English is preferable); And some other professional competence requirements/criteria.

### ***4. Job Market and Future Prediction on Standards Professional***

Today and in the future, in Viet Nam, more relevant organizations (stakeholders) are required/promoted to participate in national standardization (in wider and deeper manner) and international standardization (in the extend determined). So, standards professionals are needed to be hired/recruited not only for STAMEQ but also for ministerial SDOs, and business organizations. For some young people or experts involving or working in standards-related tasks, standardization is regarded as a practical job, and for some others it is regarded as a priority (main) profession. Based on this, we should identify/determine an appropriate approach on professional development to have enough human resources for the economy's standardization.

### ***5. Recommendations to Inspire Standards Professional Development***

Our suggestions and recommendations:

- Standardization including conformity assessment should be considered as an official profession. So, it should be included in education programme as a permanent subject (from schools to universities and academics of higher education).
- International standards organizations like ISO, IEC in cooperation with other international and regional organizations, should focus more on standards education by setting up and implementing pilot programmes in some selected economies and duplicate them in other economies later on.
- To promote “twinning” approach on standards education.

**ANNEX A.17 (INTERNATIONAL FEATURES)**

**ROBERT STEELE, SECRETARY-GENERAL, ISO**

*So my perhaps simplistic message here is that standardization needs to be seen as an essential part of an organizations strategic direction and plan. It is not something esoteric to be debated in academia.*

---

***1. A Starting Point of Career Path to be a Standards Professional***

ISO Secretary-General since 1 January 2009, Rob Steele has been reappointed for a second term of office (2014-2018). He was previously the Chief Executive Officer of Standards New Zealand (SNZ) and is a Chartered Accountant, a member of the New Zealand Institute of Directors, and a Fellow of the New Zealand Institute of Management. During his tenure as CEO of the New Zealand standards body, he represented SNZ on the ISO Council and Council Standing Committee on Strategy, and the ISO Technical Management Board. He was also Secretary of the Pacific Area Standards Congress (PASC) from 2002 to April 2007.

In his career Rob has worked in the private sector in New Zealand and Canada in many roles. He was Chief Executive of an electricity distribution company and prior to that in providing senior management advice to clients of Deloitte on financial audit and organizational finance. He has served on several Boards as a director of companies in the manufacturing and service sectors. Rob holds New Zealand and Canadian citizenship.

***2. Important Event as Standards Professionals and Major Success Factors***

Experience working for many years for industry and exposure to many different businesses in three economies really helped me understand what industry wants. I worked as a financial advisor and auditor which gave me access to senior management and the board of directors. These insights have helped me run standards organizations at national, regional and international levels.

Working in this way also made me appreciate that trade depends on common standards between buyer and seller. If these standards are also developed by industry it gives those at the table a competitive advantage over those that are not. But this is not widely appreciated and it is interesting to see a correlation between business that actively participates in standardization and higher financial returns.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

It is very important to have the following skills / experience

- A broad understanding of people management and leadership skills
- Experience in working where people are actually using standards. An understanding of what the customer really wants is critical
- A high level of curiosity
- Experience to see the “big picture”. There is a real need to look outwards, not inwards

### ***4. Job Market and Future Prediction on Standards Professional***

I think the idea of a standards professional, as a standalone skill, is completely the wrong way to go. It suggests that people with this skill will stand apart from those who use the standards developed and this would be disastrous in that it would imply that standardization is a separate and possibly mysterious “art” practiced by a few acolytes in a theoretical world. Standardization isn’t like that. It is an open, transparent inclusive process where all with an interest can and should be encouraged to participate.

Instead I think standardization should be a strategic subject within other degrees or skills learned, not just at a technical level, but an organizational and strategic level.

### ***5. Recommendations to Inspire Standards Professional Development***

So my perhaps simplistic message here is that standardization needs to be seen as an essential part of an organization’s strategic direction and plan. It is not something esoteric to be debated in academia.

Stakeholders in the APEC region, especially industry in both manufacturing and services, need to understand this and demand that standardization be included in all undergraduate courses associated with business leadership. At a post-graduate level the subject needs to be included in strategic thinking and leadership.

Finally, standardization needs to be taught in ways that are interesting. It’s not a boring subject that needs 2000 slides to explain. It’s a vibrant story of organization excellence and setting platforms for launching exciting innovation into technologies and thinking we have not yet even dreamed of.

**ANNEX A.18 (INTERNATIONAL FEATURES)**

**HITOMICHI FUJISAWA,  
VICE-PRESIDENT, IEC  
(CORPORATE CHIEF SCIENTIST, HITACHI, JAPAN)**

*It is simply to say “participate.” Then the new world comes into their sights and it would become clear what are necessary for their next steps.*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I spent over 30 years in R&D in a private corporation, and after that career, I became and have been responsible for the corporation’s international standardization activities for these 10 years. The previous career in R&D gave me a lot of opportunities to work in an international environment, which included international academic and technical/engineering societies such as IEEE and IAPR, by publishing/presenting technical papers, organizing international conferences, chairing technical sessions in such conferences, and so on. In 2002, I received IEEE Fellowship, and in 2003, I became responsible for technology development in R&D as a Corporate Chief Scientist. This kind of career is the basis of my current position at the IEC – I have been a Vice President of the IEC since 2009.

***2. Important Event as Standards Professionals and Major Success Factors***

This was not intended but as mentioned above, every experience in the international academic societies is the basis of my current skill and capability, which includes capability for communicating with international colleagues, presiding meetings, preparing documents for meetings, and so on.

***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

I do not have any experience in recruiting. But I like to have a kind of “well balanced” engineer. I want them to have language skill in English, communication skill, sufficient engineering/technological knowledge in the relevant domains, etc. Actually before talking about “skill,” he/she needs to be attractive (or friendly) as a person. Preferably it is nice if he/she is recognized by peers.

***4. Job Market and Future Prediction on Standards Professional***

I am not sure if we want “standards professionals.” I personally think that they could start with engineers or managers in the field of engineering who can learn to become a “professional” for the work of standardization.

***5. Recommendations to Inspire Standards Professional Development***

It is simply to say “participate.” Then the new world comes into their sights and it would become clear what are necessary for their next steps.

**ANNEX A.19 (INTERNATIONAL FEATURES)**

**TERESA J. CENDROWSKA,  
VICE PRESIDENT – GLOBAL COOPERATION, ASTM INTERNATIONAL**

*Recognizing that standards development is increasingly only one aspect of many components of an individual's job responsibilities, or perhaps even an extracurricular activity, the efficiency and effectiveness of the professional's participation in standards development will grow in importance.*

---

***1. A Starting Point of Career Path to be a Standards Professional***

Prior to joining ASTM International I worked in two very different companies, a natural gas utility and the manufacturer of cable television converters. In addition to providing me an opportunity to apply my industrial engineering degree, I also gained a broad view of issues such as competition, market access, testing and certification, addressing consumer interests and the impact of regulation.

I engaged in the standards development community through my third job, beginning with ASTM International as a manager within the Technical Committee Operations Division. This work provided an excellent platform for learning about fundamental aspects of standards development, including: observing and understanding different approaches to consensus development, the value of engaging relevant stakeholders, negotiating consensus from divergent points of view, the benefits of cooperation between the public and private sectors, incorporating technological changes and market realities in standards as effectively and efficiently as possible, and communication.

I was pleased to have the opportunity to transition into a different aspect of standards development which focused on outreach to developing nations. My current role has afforded me the opportunity to see the global impact of standards. Even as I enter my 25<sup>th</sup> year of work in the standards development community, I continue to learn a great deal. The fundamental knowledge I gained in my earlier roles in ASTM continues to be unquestionably important. At the same time, I've gained a deeper appreciation and awareness of the different approaches to standardization and the challenges faced by developing nations.

## ***2. Important Event as Standards Professionals and Major Success Factors***

Generally speaking, key events or experiences in my professional career include:

- Receiving a sound foundation of information regarding procedures, company mission and objectives
- Direct engagement with a broad range of stakeholders which formed an awareness of key issues and a deep appreciation of the volunteer members' technical expertise, as well as their personal and professional commitment to standards development
- Being offered new assignments which provided opportunities to learn and collaborate with diverse interests, and being invited to contribute ideas to, as well as working on, new initiatives.
- Finally, my learned experiences and characteristics such as creativity, flexibility, and persistence are important to success.

## ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

From my perspective within a standards development organization, potential employees demonstrate the following experiences, capabilities and characteristics:

- Strong organizational skills and the ability to multitask, managing several priorities at one time.
- Proficiency in written and oral communication including public speaking and interpersonal communication skills reflected in an ability to motivate and collaborate.
- Cultural awareness
- An ability to use and apply technology tools
- An ability to operate in situations with high degrees of ambiguity
- Optimism and a positive outlook
- Demonstrated entrepreneurial mindset that includes adaptability, flexibility and creativity
- Curiosity
- Commitment to long-term objectives

Based on my observation of individuals who work as experts within standards development committees, I believe the following experiences, capabilities and characteristics are important:

- Technical background or strong technical knowledge of the interests and topics he or she represents

- Clear understanding of the desired objective or end result for the standard being developed or discussed
- Awareness of the market place, including the impacts of technology, regulation and trade factors.
- Strong oral and written communication skills, including an ability to describe abstract ideas and provide a rationale for a stated position
- Strong organizational skills, including time management
- Interpersonal skills that include the ability to collaborate, network and negotiate
- Ability to use and apply technology tools
- Commitment to the task at hand

#### ***4. Job Market and Future Prediction on Standards Professional***

I offer the following regarding future opportunities for standards-related tasks.

Standards will continue to serve as valuable tools that offer current technical information and facilitate market access. Companies that engage in the development of standards will benefit from a strengthened position to influence and understand the content of the standards. These capabilities will advantage the participating companies' positions in the marketplace.

Recognizing that standards development is increasingly only one aspect of many components of an individual's job responsibilities, or perhaps even an extracurricular activity, the efficiency and effectiveness of the professional's participation in standards development will grow in importance. The professional will be required to be knowledgeable about the use of the technology tools that are available for developing and implementing standards. Equally important will be a robust understanding of the development process. These two factors will enable the participant to be as effective as possible for the time invested in standards development.

Individuals participating in the standards development process will continue to benefit from the opportunity to network with colleagues from like-minded and competitor companies. Engaging in standards development will also offer an avenue for personal and professional development by cultivating leadership skills and a network.

***5. Recommendations to Inspire Standards Professional Development***

My recommendations for individuals engaging in standards development and the organizations or companies from APEC Member Economies in terms of regional or international cooperation include:

- Be prepared and participate actively and consistently to build knowledge and a reputation
- Engage with an open mind and appreciate the diversity of inputs; listen to the options and solutions others present,
- Strive to deliver the the best solution that is possible for the circumstances; then revisit that solution periodically to determine if there is any need for change
- Avoid duplication and the development of unique national or regional solution by embracing the rich resource of solutions available from multiple sources of standards

## **ANNEX A.20 (INTERNATIONAL FEATURES)**

**ERIK PUSKAR, ICES CHAIR IN 2014  
(PROGRAM MANAGER, NIST, USA)**

*“Most of the efforts on education that I am aware of both in the U.S. and internationally focus on the supply side of preparing students. What is now needed is more focus on the demand side to see what industry needs and to encourage them to be more vocal about standardization qualifications during recruiting.”*

---

### ***1. A Starting Point of Career Path to be a Standards Professional***

Although my career has spanned over thirty years, I have been a standards professional for only the past ten years. I changed my professional focus from public finances to technology and standardization in mid-career. Like many of my contemporaries, I did not start out with the objective of becoming a standards professional but happened to fall into it. My university education in the 1970s and 1980s which was in the field of economics and public administration and did not cover standardization. Working at the U.S. National Institute of Standards and Technology (NIST) obviously increased the possibility of this happening, and when I was offered the opportunity of joining the Standards Services Division of NIST I quickly accepted and took advantage of the possibility. This turned out to be a fortuitous decision as the strategic importance of standardization is becoming more apparent to governments and industry. Most of my knowledge has come from on-the-job training supplemented by professional education courses.

### ***2. Important Event as Standards Professionals and Major Success Factors***

As my career took me into the standards realm, there was no single event or experience that influenced me. Rather it was a steady progression of learning opportunities and challenges that built upon themselves to establish a strong foundation in standardization. These include training courses, writing research reports, serving on standards committees and helping design standards or conformity assessment programs. Each time I would take away some additional knowledge from the task. One event stands out is the standards simulation exercise offered by United Knowledge which I participated in for the first time during the ICES meeting in Tokyo. This was truly an experience that builds enthusiasm for standards development as you are reminded of all of the soft skills such as negotiation which are necessary to be effective in standards development. I enjoyed this so much that after NIST colleagues experienced it, we decided to make this training available to NIST staff several times a year. Another experience that stands out was my first ICES meeting which I was responsible for organizing at NIST in 2008. It was fascinating to meet individuals from around the world working on educating students on standardization and learning about the different approaches and methods used to meet the goal of increasing

knowledge and awareness of standardization in different economies and regions of the world. As for a most important success factor, I believe it was when I realized that the learning process never ends and to always be open to new ideas and suggestions. Also, network, network, and network!

Regarding my daily tasks, my workday can be very *diverse*

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

Today, the lack of knowledge related to standardization is the biggest hurdle I face when hiring new employees (please note that for the most part I do not hire engineers where you would expect at least a rudimentary understanding). The majority of recent college graduates have basic computer skills, good time management skills, and possess the willingness to learn. Their degrees, however, have not prepared them for a career in the world of standards, forcing me to take chances on their skills and trust my instincts during the hiring process. Recently, I was awarded the opportunity to hire interns, which enables me to test a future employee while he or she is still a student. I see this as a great advantage, both for me and for the student. In terms of hiring experienced staff we will look for previous standards or conformity assessment knowledge and experience either in the government or industry sectors. Conformity assessment (CA) experience is now very in high demand. But as stated in the answer above, regardless of how much direct standards or CA experience a job candidate has, we look for individuals who have a willingness to learn and an interest in growing their skillset.

### ***4. Job Market and Future Prediction on Standards Professional***

The lack of aspiration to become a standards professional is due to the lack of information. Students do not know that careers in the world of standards exist. The job market for standards professionals will remain fairly constant, as there will always be a need for standards professionals. But there is also a need for increased public awareness about the value of standardization. I hope that, overtime, the importance of standards becomes more apparent for all industry and business leaders, and is not limited solely to the individuals that work with standards on a daily basis. Most of the efforts on education that I am aware of both in the U.S. and internationally focus on the supply side of preparing students. What is now needed is more focus on the demand side to see what industry needs and to encourage them to be more vocal about standardization qualifications during recruiting.

### ***5. Recommendations to Inspire Standards Professional Development***

We need to improve our tactics at starting standards education early. Many young professionals come into the workplace without a solid foundation of knowledge regarding standards. The mission of ICES is to promote education, not only for students, but for researchers, professors, and other authorities. Over the years, it has come to my attention that people either know about standards, but fail to admit that it affects their lives, or that they do not know anything about standards.

To inspire standards professional development, conferences or lectures are great ideas, but they need to be with students, not other standards professionals. We need to visit schools, both private and public, large and small. This isn't a one-sided campaign. Schools need to want us to come into their institutions and educate their students about standards. I see it as a small grassroots movement which will be started by current standards professionals and gain momentum as college students become standards professionals themselves.

Overall, it's about informing and mentoring. Current standards professionals, like myself, need to guide the 20-somethings into standards careers. I'm confident that this can and will happen.

**ANNEX A.21 (INTERNATIONAL FEATURES)**

**HENK DE VIRIES, ICES CHAIR IN 2013  
(PRESIDENT, EURAS; ASSOCIATE PROFESSOR, RSM ERASMUS UNIVERSITY )**

*“Standardization knowledge is increasingly important for many reasons, in particular because products and services are more and more integrated into complex systems and then standards are needed for managing the interfaces.”*

---

**1. Describe your career path and its development.**

Current Position	Position: Associate Professor of Standardization Division/Department: Department of Technology and Operations Management Organization/Company: Rotterdam School of Management, Erasmus University
Major Experiences	*Position, Division, Organization, (Year-Year) 1) Uitermark Consultancy, Deventer, the Netherlands, 1982-1983 2) International Christian Study centre (ICS), Amsterdam, the Netherlands, 1983-1984 3) Netherlands Standardization Institute (NEN), Delft, the Netherlands, 1994-2003 4) Rotytedram School of Management, Erasmus University, Rotterdam, the Netherlands, 1994-now
Education	Bachelor : Technical University Delft, the Netherlands, Geodesy Master : Technical University Delft, the Netherlands, Geodesy Ph.D : Rotterdam School of management, Erasmus University, Rotterdam, the Netherlands

**2. Important Event as Standards Professionals and Major Success Factors**

I got involved because an uncle of mine, member of the Dutch standardization committee on banking (mirror committee of ISO TC 68) informed me on a vacancy at the Netherlands Standardization Institute, and I applied. Being educated at academic level, I was assumed to be able to do the job. In fact, this is strange. I learned from an inspiring colleague of mine, Wubbo Winter: “standardization should be seen as a discipline for which specialized knowledge is needed, underpinned by research. “

This triggered me to start thinking about research in this field and together with him we developed methods about systematic standardization as well as courses for

standardization professionals. He also made companies aware of the need for better education. This led to an advice by these companies to the Board of the standards body that education in the field is needed. This resulted in the decision to establish an endowed chair. I had and have the pleasure of being the one who supports the (part-time) professor (currently Knut Blind).

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

We recruit PhD students. They have to meet the regular high-level criteria of our university. Additionally, we have some PhD students who combine a job in industry with a PhD trajectory. Most of them are former students, already familiar with standardization.

### ***4. Job Market and Future Prediction on Standards Professional***

Standardization knowledge is increasingly important for many reasons, in particular because products and services are more and more integrated into complex systems and then standards are needed for managing the interfaces. Our courses are in the Masters programs Innovation Management and Supply Chain Management, and in both fields this is very relevant. They use our knowledge in their jobs. Only a few of them get a full-time position in standardization – so far one in industry and five in the national standardization organization.

### ***5. Recommendations to Inspire Standards Professional Development***

The challenge is to see standardization as a discipline for which research is needed to develop the field, and education to prepare people for their jobs. I hope many economies will follow the Dutch example of creating an endowed chair on standardization. The return on investment is enormous – NEN pays less than € 100,000 per year and its annual extra income thanks to my advice is structurally more than € 3,000,000. Impact on business and society is probably even more but here I have no quantitative figures. You may learn from my publications what to do in your economy to bring standardization at a higher level.

**ANNEX A.22 (INTERNATIONAL FEATURES)**

**MINGSHUN SONG, ICES CHAIR IN 2012  
(VICE PRESIDENT, CHINA JILIANG UNIVERSITY, CHINA)**

*I recommend that a specialized agency be established under APEC to set aside special funds and projects to promote the cultivation and exchanges of standardization talents among the APEC economies and regions..*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I'm a professor specialized in the teaching and research of standardization, quality management and metrology at China Jiliang University. My work in the field of metrology started in 1990. In 1994 I started my work in the field of standardization and quality management. I have participated in the formulation and revision of international standards and have been in charge of the formation and revision of China's national standards in all the above three fields. I was once a member of ISO/CASCO's WG 33 and WG 37 and is now a member of the joint work team of ISO/TC 207 and CASCO. I'm a member of TC 151, TC 261, TC 286 and TC 443 of the Standardization Administration of P.R. China. I'm also a member of the Zhejiang Quality Association and am now the chairman of the International Cooperation about Standardization (ICES). I was awarded the title as a distinguished individual in the field of China's standardization and once won ISO's inaugural Award for Higher Education in Standardization.

***2. Important Event as Standards Professionals and Major Success Factors***

In 1999 I took part in the formulation of the State Scientific Development Plan of Metrology, Standardization and Quality of China, which won me fame in this field. In 2001 I participated in the revision of the international uncertainty standards at BIPM in Paris and thus started my experience in the field of international standardization. In 2003 I participated in the EU-Asia Link project entitled "Standards in Companies and Markets", thus starting my internationalization journey of standardization teaching and research. In 2004 I took part in the work of TC261 and was in charge of the formulation of China's certification and accreditation standards, thus starting my work in the formulation and revision of China's national standards. In 2007 I won the inaugural ISO Award for Higher Education in Standardization, which marked a new level of my standardization work.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

Since China Jiliang University is specialized in the teaching and research of standardization, quality management and metrological management, we hire talents who hold PhD titles and who have experience in the fields of standardization, quality management and metrological management. We mainly hire faculty from the engineering and management disciplines.

### ***4. Job Market and Future Prediction on Standards Professional***

Standardization talents are needed in all sectors and its demand is increasing. Standardization talents are of two types:

- one with engineering background and standardization knowledge, and
- the other with economic management background and standardization knowledge.

### ***5. Recommendations to Inspire Standards Professional Development***

A specialized agency is established under APEC to set aside special funds and projects to promote the cultivation and exchanges of standardization talents among the APEC economies and regions.

**ANNEX A.23 (KOREAN YOUNG PROFESSIONALS)**

**JINJAE PARK, RESEARCHER, KTR, KOREA**

*“These days, those who understand standards can occupy the market, so standards professionals are in demand. This is also why many economies want to foster standards professionals. As such, I believe a training program for standards professionals should be developed, but such a program needs funds. However, a program of this kind will deliver benefits that greatly outweigh the costs.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I aim to develop a career in certification as I would like to contribute the safety of consumers and society.

Section	Contents
Major tasks in the organization	Product certification in a testing laboratory company
Positions	Assistant manager
Working Years (Career)	I have worked for four years in the field of certification, and for one in the quality area of heavy industry.
Tasks	Electrical Machinery Certification (CE-Machinery Directive) IEC 60204-1

**My Vision:** To become a standards expert and contribute to the safety of consumers and society.

I want to play a leading role in many fields of science and technology. Therefore, I need to acquire an integrated perspective in order to formulate and implement policy with industry, and technology expertise and experience

While working, I have had many opportunities to meet manufacturers. I want to contribute to spreading the trends of IEC to manufacturers as I believe manufacturers should be aware of them because standards are connected with products and are related to certification, sales, and quality. Whenever I get the chance to meet a manufacturer, I try to transmit everything I know

**2. Important Event as Standards Professionals and Major Success Factors**

The IEC Young Professionals workshop presented me with a good opportunity to develop myself

Before Participating in the IEC Young Professional Program	After Participating in the IEC Young Professional Program
Did not know about the Standardization process.	Have learned about the standardization process.
Did not know about many Sectors of Technical Committees	Have learned about many Sectors of Technical Committees. It can access standard more easily.
Did not have any connections worldwide.	I have connections worldwide. I have made many friends in other economies, from whom I can learn many things.

I tested dental CT according to the IEC 60601 Series. At that time I needed a lot of time to interpret the meaning of every clause. When standards are applied to products, this experience is highly important.

**3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes**

I think that ‘attitude’ is most important factor in developing a career: For example, having an open attitude towards people from other economies and an appreciative attitude towards standardization.

The following qualities are helpful:

Quality	Contents
Knowledge:	Technical knowledge.
Skills	English language proficiency + other linguistic skills
Experience	Ability to use and interpret standards

#### ***4. Job Market and Future Prediction on Standards Professional***

Manufacturers should know about the trends of IEC because standards are connected with products and are related to certification, sales, and quality. Thus, I believe that experts working in standards-related tasks should be able to get a job relatively easily, as manufacturers also need standards experts. It can affect both the quality of a product and market access.

#### ***5. Recommendations to Inspire Standards Professional Development***

These days, those who understand standards can occupy the market, so standards professionals are in demand. This is also why many economies want to foster standards professionals. As such, I believe a training program for standards professionals should be developed, but such a program needs funds. However, a program of this kind will deliver benefits that greatly outweigh the costs.

I did not know anything about the IEC systems or the standardization process, so I had difficulty working because of a lack of information about certification trends. After I participated in the IEC YP program, I was able to obtain information on IEC trends and knew about the standardization process. It was a good experience. Now, I am more efficient at work than I was before, and can inform manufacturers about new trends of standards.

**ANNEX A.24 (KOREAN YOUNG PROFESSIONALS)**

**KYONGHO PARK, LSIS CO., LTD, KOREA**

*“I reckon that this questionnaire conducted by APEC is intended to contribute to standardization and economic revitalization in the Asia-Pacific nations. I hope that a standard council will be established to help standards professionals understand the surrounding environment and the application of their products, and to share and exchange professionals’ abundant work experience and technologies among other professionals.”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

At present (as of 2014), I have been working for four years as a product manager for photovoltaic systems at the marketing department of the LS IS Convergence Business Headquarters for four years, which is responsible for international standards, overseas exhibitions, marketing strategy, and product planning.

Regarding international standards-related tasks, I worked for the company’s international standard and its relevant support works in 2012 when I performed the standard-related task first by carrying out the work, which was led by the Korean representative of the IEC’s ACTAD (Advisory Committee on Electricity Transmission and Distribution; President: Choi Joong-woong). During the same year, I volunteered and was selected as an IEC Young Professional, thereby becoming a member of the international standards field in earnest.

I think that, in my work as a standards professional, I have been able to acquire the relevant national and international professional knowledge and improve my personal capacities. Also, as the company recognizes and applies internal standards faster than other companies, we were able to take the lead in standardization.

Regarding my projects as a standards professional, I would like to become an expert in products and solutions, an area in which I am currently in charge, along with knowledge of standards. Although the IEC covers a broad spectrum of products in the electric and electronic areas, I would like to deepen my knowledge as a product planner and marketer, especially in the photovoltaic and smart grid areas, in order to be in a position to reflect international standards, which change quickly, in our products, and suggest a new standard related to future technologies.

***2. Important Event as Standards Professionals and Major Success Factors***

I think that the most important qualities are an individual’s determination, planning ability, and execution. Although it isn’t easy to carry out both regular tasks and standards-related tasks simultaneously while working for a private company, I’ve striven to find

connections between the projects I am in charge of and international standards. Since becoming an IEC Young Professional, I have attended the TC82 on photovoltaics at the IEC General Assembly while working on photovoltaic system projects, and continued to communicate with the relevant chairperson and standards professionals on a regular basis.

Additionally, I have established various networks from international standards workshops on photovoltaics, the Korean Agency for Technology and Standards, and the photovoltaic industry in Korea, and gathered the information required for standards-related tasks in floating photovoltaic and photovoltaic for special environments. I am sure that these two types of activities are helpful for both main tasks and standards-related tasks.

Many people in the industry say that the basic element for standards-related tasks is foreign language proficiency for smooth communication, something with which I agree, although I believe that the acquisition of professional knowledge in the applicable area is more important. To that end, I think that acquiring knowledge through continuous training and learning, communication with the relevant experts, the suggestion of ideas through new standards, and time and experience are also very important elements.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

My answer would be similar to the one I gave for question number 2. In my opinion, we should ponder the following question first of all: “Why is standardization necessary?” I think that the most effective way of operating various organizations and numerous products and systems is standardization.

The things one must develop in a career in a standards-related occupation might include knowledge of the basic theories and professional technologies, understanding of global trends in the relevant technologies, work experience, active participation in international standard meetings, and one’s determination to become an expert in standards. Besides these qualities, an understanding of multiple cultures would be desirable as certain tasks can only be achieved by exchanging and communicating with standards professionals around the world.

### ***4. Job Market and Future Prediction on Standards Professional***

Actually, there are limited opportunities to develop a career as a standards professional in Korea; however, standards professionals could develop their careers by participating in conferences of the academic community, working with the Korean Agency of Technology and Standards (KATS) and the Korean Standards Association and its related organizations, and getting involved with the projects of the R&D departments of their companies. In my case, as I am a marketer and planner rather than a developer, it will not be easy to develop a career as a standards professional unless I get involved with a relevant team such as one that deals with ‘standard patents.’

In my opinion, in order to broaden the horizon of standardization, it is essential to prepare venues in which to communicate the necessity of participation in standardization by both the government and companies, to foster exchanges between standards professionals with years of experience and young professionals like me, and to carry out learning and training programs on policies and regulations related to international standardization.

***5. Recommendations to Inspire Standards Professional Development***

I reckon that this questionnaire conducted by APEC is intended to contribute to standardization and economic revitalization in the Asia-Pacific nations. I hope that a standard council will be established to help standards professionals understand the surrounding environment and the application of their products, and to share and exchange professionals' abundant work experience and technologies among other professionals.

**ANNEX A.25 (KOREAN YOUNG PROFESSIONALS)**

**WOOJUNG YOO, KTL, RESEARCHER, KOREA**

*“Technical standards are made by industry for their needs. But small companies without the time or money to invest in standardization usually hesitate to participate because it neither brings them money nor increases their income in the short term,”*

---

***1. A Starting Point of Career Path to be a Standards Professional***

I am a testing engineer at the Korea Testing Laboratory (KTL), and have been testing electronic appliances for more than three years. I didn't know in detail what I would be doing when I started out on my career as a testing engineer. But, as time passed by, I realized that I could help manufacturers reduce their mistakes when designing and making products that comply with the prevailing standards. Moreover, sometimes I can encourage them to get involved in standardization by giving information and advice, although my main job consists largely in implementing existing standards and is not directly related to developing new standards.

At present, standardization is very active in Korea in certain fields but not in others. Standardization related to my job field is not that active compared to other fields, and there are not enough standard professionals in this field. As such, there are some opportunities for myself and other testing engineers to get involved in developing national regulations that are based on international standards. Personally, I think that this is a very good situation for me because I can both join meetings on the development of national standards and use them. This is how I experience standardization activities.

Ultimately, however, manufacturers need to get involved in standardization either at the national or international level for the good of industry, because testing engineers like me don't know exactly what is needed for industry. Thus, I think that what I should do in the long run is not just to be involved in standardization but to help manufacturers attend standardization meetings or activities. Recently, the question I have asked myself is how can I encourage them to take part in standardization when they don't have enough time or money to do so?

***2. Important Event as Standards Professionals and Major Success Factors***

I test various kinds of products using just a few types of standards, so I have many opportunities to think about various applications of the standards from different points of view. I think these opportunities have deepened my understanding about them. As I have accumulated experiences at my workplace, sometimes parts and errors in standards that require revision are discovered. Then, it feels like I am in the process of becoming qualified to be a 'standards professional'.

In my case, I cannot come up with ‘the most important event’ related to standards, because I always work using standards, and working as a testing engineer is itself the most valuable experience in becoming a standards professional. No matter what field a person is working in, I think that the accumulation of experience over a sufficient period of time is the most important and crucial factor to becoming a professional.

When I first attended the IEC TC meeting, I was surprised at the age of the members. Almost all of them were middle-aged, and they were leading the meeting. Once one of my colleagues told me the members from developed economies were experienced enough to know the entire history of standards and to have all the necessary background knowledge. At that time, I thought that they were the real professionals.

### ***3. Competency Requirements for Knowledge, Skills, Experiences, or Attitudes***

A standard is developed in order to be used universally, and shows the various needs and demands from various sectors of society, rather than simply reflecting the interests of just one side. For example, there are many safety standards which exist for consumers’ safety during use. However, they are usually developed by manufacturers. If a standard only reflects the manufacturers’ interest, then safety problems could arise. On the other hand, if it did not reflect the manufacturers’ situation, it would be very difficult for industry to function efficiently. Therefore, one should be very careful to maintain the proper balance of the interests between the various parts of society when developing and applying standards. This is not about just safety standards. Other kinds of standards must be also balanced between different regions, economies or companies. Therefore, I think an unbiased attitude is most important for the developers of standards.

In order to achieve the best output when developing standards, many representatives from different backgrounds cannot help cooperating together. A standard is not made by one person acting alone. So you must have the appropriate communication skills and a cooperative attitude. Even for conformity assessment professionals, it is necessary because sometimes they have to draw only one conclusion in a situation where opinions about interpreting and applying standards might be very different. Furthermore, you can deepen your professional ability while working with other professionals by sharing each other’s thoughts and experiences. During meetings on standards or regulations, I meet people from other companies and laboratories and talk casually with them about anything during breaks. And every time, I obtain useful information unexpectedly. It is very true that your human connection with other professionals can be a most valuable asset.

#### ***4. Job Market and Future Prediction on Standards Professional***

Recently, the development of standards has become a very important matter because it can directly affect companies' success. Whether a certain technology of a company is chosen as an official standard could affect the future of that company. Thus, it is not uncommon for companies to strategically train standards professionals in order to lead the standardization of the technologies they are interested in. Since these professionals' vision affects the future of the industry and the market, I personally believe that more and more competent people will be needed as standards professionals to ensure that companies do not fall behind their competitors. As such, I think opportunities for intelligent researchers and engineers to get involved into standard-related work will certainly increase.

The work of standards professionals is not just limited to the standardization of technology. Their abilities are also needed when drawing up regulations for markets. In many cases, regulations for markets are based on international or national standards, so standards can sometimes affect legislation. I also have experience of attending meetings for revising the national regulation of electronic appliances, and suggesting my opinion. Also, standards may sometimes be used as a trade barrier when regulations are based on technical standards. When these kinds of regulations are made, suggestions and opinions from many professionals are necessary to avoid the side effects that could arise if only a few opinions were heard. There are many tasks for standards professionals to do other than standardization, especially in the current era in which new technologies are developed every day.

#### ***5. Recommendations to Inspire Standards Professional Development***

Technical standards are made by industry for their needs. But small companies without the time or money to invest in standardization usually hesitate to participate because it neither brings them money nor increases their income in the short term, although some of them acknowledge that it is beneficial in the long run. When I attended the general meeting of the IEC last year and talked with people from other economies, I found that this situation was the same all over the world. Large companies have no difficulties, so it is likely that meetings for standardization are attended mainly by the executives of rich companies and developed economies. In order for a standard to become a "real" standard, I think that efforts to include various types of members are very necessary, regardless of their influence on industries or markets. So we need to support them systematically, be it with financial or other kinds of support.

As standardization at the national level is relatively burden-free to everyone, I think that boosting national mirror committees would be a good option for supporting small companies. If the results of national committee meetings were delivered to international committees efficiently, then small companies would not have to invest their time and energy. Moreover, it would be easier to support them with fewer resources.