



Asia-Pacific
Economic Cooperation

APEC Sub-Committee on Standards and Conformance (SCSC)
Education Guideline 5: Standards Professional Development

*Inspiring the Next Generation
of Standards Professionals:
Towards Job Profiling in Today's Global World*

10 March 2015



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PREFACE

On 10 Dec 2014, the author participated in a panel titled 'Standardization: an Excellent Career Path for Senior Engineers' at the 2014 IEEE Globecom Conference held in Austin, TX. USA. During the panel discussion, I asked one other panel member, Dr. Alexander Gelman, the IEEE ComSoc Director of Standardization Programs Development, "Can you roughly assume how many standards experts work in the U.S.?" His quick response was "I presume it would be over 200,000." It is presumed that tens of thousands are working in standards developing organizations, testing/inspection laboratories; and hundreds of thousands are working for standards in R&D divisions and on quality teams in manufacturing and non-manufacturing companies.

Although there are no comprehensive statistics about the number of standards professionals and the related job market size in the APEC region as yet, our small survey of 26 companies in this project indicates that around 11.4% of these employees have standards-related tasks. According to 'Worldwide Testing Laboratories Industry 2013' by Barners Reports, it is estimated that around 0.63 million employments (jobs) exist in 2013 in testing laboratories industry in the sixteen APEC economies. Given that the estimation is largely limited to the conformity assessment, there are likely around one million jobs in the APEC region that are related to standards, conformity assessment, and metrology.

Under the umbrella of the APEC Sub-Committee on Standards and Conformance (SCSC), Member economies have collaborated in the areas of standards and conformance education, noting the views expressed by the 2006 APEC Ministerial Joint Statement on the importance of education on standardization and 2014 APEC Ministerial Joint Statement on Human Resource Development and Skills Training. Even though standards education activities have increased since 2006 in the region, the concept of a '*Standards Professional*' has been hardly defined and the needs of stakeholders have not yet been clearly disclosed.

This project is designed to contribute to APEC members by defining and sharing good practices on how to develop the next human resources for standards and conformance, the most important technical infrastructure, and furthermore how to set up a strategic plan for cooperation throughout the region. The outcome will hopefully narrow the gap among member economies and further enhance common understanding for the standards and conformance area and facilitate free and open trade in the APEC region.

The main outcomes of this project will prepare and train different levels of interest groups. To implement project recommendations, follow-up projects will be further discussed and considered by APEC SCSC.

Given this opportunity, I would like to thank all the participating experts who made this study available as well as all the SCSC member delegates. The governments of the proposing economy is and the eight co-sponsoring economies of this project are – China, Indonesia, Japan, Peru, Singapore, Thailand, the U.S., and Viet Nam.

Special thanks should be given to the project overseer, Dr. Sanghern Seo in Korean Agency for Technology and Standards (KATS) for his support, and Dr. Sooyoung Kang in Korean Standards Association (KSA) for her assistance in implementing the project.

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1. INTRODUCTION

1.1 Background and Objective

(1) Background

This project titled, ‘Inspiring the Next Generation of Standards Professional Development - Phase I: Identifying Stakeholder Requirements’ is proposed and implemented under the APEC Committee on Trade and Investment (CTI) in its Sub-Committee on Standards and Conformance (SCSC) . Standards, a conformity assessment, and technology regulations have been increasingly important for strengthening the multilateral trading system in the APEC region, and its education and human resources development have become one of the key priorities of APEC CTI SCSC.

However, there has as yet been no common understanding or definition on the ‘expert or professional for standards and conformity assessment’ in the region, and this circumstance makes problematic the developing of human resources and further, the designing and operating of education programs effectively. This task is particularly important for those developing economies that have limited experience and financial resources for human resource development in the standards and conformity assessment field.

This report was proposed and approved in order to provide a venue for discussing and building a common understanding on what kind of standards professionals are needed for the current and future workforces in both the developing and developed economies of the region. The project will present a strategic opportunity for APEC in the field of standard and conformance.

(2) Objective

The objective of this project is to explore the skill-set required by standards professionals to meet the needs of businesses, government agencies, education institutes, and standards-related organization in the APEC region. The objectives of the project are the following:

- Define and categorize standards professionals
- Analyze current workforce requirements of standards professionals

- Identify gaps (if any) in workforce demand and education supply
- Analyze skill-sets, training programs, and materials and develop effective standards professionals
- Present actionable recommendations and a collaborative action plan in 2015-2020 within the region

This project is directly relevant to the following APEC project priorities from 2013 as derived from the instructions of the Leaders and Ministers:

- Standards, conformity assessment, technical regulations and regulatory cooperation (Rank 1)
- Next generation trade and investment issues (Rank 1)
- Education (Innovative Growth); Human resources development (Inclusive Growth) (Rank 2)

In the APEC CTI SCSC, the education on standards and conformance is set as one of the key priority activities. This education is included in all key priority documents, including SCSC's Terms of References (ToR) and the Collective Action Plan (CAP) and also set as one of the seven regular agenda items of the SCSC.

In principle, APEC SCSC has four main goals for advancing trade facilitation in the region — aligning national standards with international standards in priority areas; improving participation in the international standardization process through capacity building activities; promoting cooperation for technical infrastructure development; and enhancing both information exchange and knowledge on matters related to standards and conformance.

This project is designed to contribute to APEC members by defining and sharing good practices on how to develop the next general human resources for standards and conformance, the most important technical infrastructure, and further still, by setting up a strategic plan for cooperation among the region. The outcome will narrow the gap among member economies, enhance common understanding in the standards and conformance area, and help facilitate free and open trade in the APEC region.

1.2 Previous Efforts for Human Resources Development in APEC SCSC

(1) Capacity Building Activities (since 1994)

Since its inception in 1994, improvement of the capacity building of Member economies has been the major priority of the APEC SCSC. These capacity building activities have been mainly, but not limited to, seminars, training programs, or conferences on common interest areas of the Member economies. A few examples of these capacity building activities are:

- 8th Good Regulatory Practices (GRP) Conference (2015)
- Medical External Quality Assurance Capacity Building Program (2014)
- Improved Food Inspection Capacity Building using Risk analysis: Risk-based Food Inspection (2012)
- Seminar and Training Courses in Legal Metrology (2005)
- APEC/WTO Capacity Building: SPS Implementation Program (2002)

Also, it should be acknowledged that the APEC SCSC has been instrumental in bringing together the five APEC Specialist Regional Bodies (SRBs) to provide a coordinated approach to standards and conformance infrastructure development and capacity building in the region. The five SRBs are Asia Pacific Laboratory Accreditation Cooperation (APLAC), Asia Pacific Legal Metrology Forum (APLMF), Asia-Pacific Metrology Programme (APMP), Pacific Accreditation Cooperation (PAC), and Pacific Area Standards Congress (PASC). These organizations have contributed significantly in developing capability of professionals across the standardization, conformity assessment, and metrology in the Asia-Pacific region.

(2) Standards Education Activities (since 2006)

In 2006, the APEC Ministers expressed the importance of standards education and encouraged Member cooperation with the 2006 APEC Ministerial Statement. “Ministers recognized the importance of standards education and encouraged members to develop reference curricula and materials to address the significance of standards and conformance to trade facilitation in the region.”- 2006 APEC Ministerial Statement (Hanoi, Viet Nam, 15 – 16 November 2006) -


To implement the Ministerial statement, APEC SCSC started the ***APEC SCSC Education Initiative*** with three phase projects conducted by the SCSC during 2007-2011.

- [Phase I] Case Studies and Curriculum Development (CTI 21/2007T, completed in March 2008)
- [Phase II] Textbooks and Teaching Manual Development (CTI-SCSC 20/2008T, completed in June 2010)
- [Phase III] Exchange Program for Higher Education (CTI-SCSC 37/2010T, completed in October 2011)

The lead economy of the projects was Republic of Korea and co-sponsoring economies were China, Indonesia, Japan, Peru, Singapore, Thailand, USA and Viet Nam.

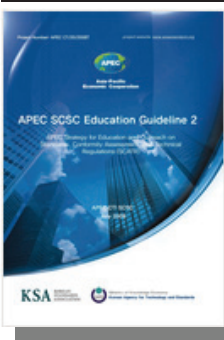


The outcomes of these three APEC SCSC education projects include seven APEC workshops, four publications (guidelines) as well as active discussion in APEC SCSC plenary meetings. So far, the four education guidelines have been accessed more than 230,000 times on the APEC publication website, while the Guideline 3 “Textbook for Higher Education - Standardization: Fundamentals, Impact, and Business Strategy” is recognized as one of the most accessed APEC publications as of January 2015. A summary overview and access information for prior APEC SCSC Education Guidelines are listed in Table1.

<Table 1> List of Prior APEC SCSC Education Guidelines

Education Guidelines	Access
<div>  </div> <div> <p>(APEC SCSC Education Guideline 1) Case Studies on How to Plan and Implement Standards Education Programs and a Strategic Curriculum Model</p> <p>Published in March 2008 Pages: 298 Contents: 7 Chapters Author/Editor: Dong Geun CHOI APEC Publication Code: APEC#208-CT-03.2</p> </div>	<p>11,133</p>

► link: http://publications.apec.org/publication-detail.php?pub_id=69

1. Introduction

	<p>(APEC SCSC Education Guideline 2) APEC Strategy for Education and Outreach on Standards, Conformity Assessment, and Technical Regulations</p> <p>Published in July 2009 Pages: 47 Contents: 8 Chapters Author/Editor: ANSI APEC Publication Code: APEC#209-CT-03.3</p>	14,925
<p>► link: http://publications.apec.org/publication-detail.php?pub_id=807</p>		
	<p>(APEC SCSC Education Guideline 3) Textbook on Higher Education - Standardization: Fundamentals, Impacts, and Business Strategy</p> <p>Published in June 2010 Pages: 288 Contents: 10 Chapters Editors(3): Dong Geun CHOI et al Chapter Authors(7): Manabu ETO et al APEC Publication Code: APEC#210-CT-03.4</p>	152,886
<p>► link: http://publications.apec.org/publication-detail.php?pub_id=1032</p>		
	<p>(APEC SCSC Education Guideline 4) Teaching Standardization in Universities: Lessons Learned From the Trial Program</p> <p>Published in October 2011 Pages: 210 Contents: 15 Chapters Editor: Dong Geun CHOI Chapter Authors (15): Mingshun SONG et al. APEC publication code: APEC#211-CT-03.3</p>	53,449
<p>► link: http://publications.apec.org/publication-detail.php?pub_id=1196</p>		
<p>Total Access in the APEC Website (as of 12 Jan 2015)</p>		232,393

(3) *Human Resources Development Activities (since 2013)*

This project titled “Inspiring the Next Generation of Standards Professional Development - Phase I: Identifying Stakeholder Requirements (CTI 07 2013T)” is based on a follow-up to the APEC SCSC Education Initiative and its projects.

After the completion of the education projects in 2007-2011, a number of Member Economies commented on the further need for education activities, in particular, to connect the education programs and actual stakeholder requirements in the workforce. These connections include identifying workforce requirements, developing more specialized education materials, and training needed trainers.

This report is, therefore, designed to contribute to identifying the workforce requirements and better connecting the demand side (i.e. industry and businesses) and the supply side (national standards bodies and education institutions) in order to develop the next generation of standards professionals.

The expected readers or beneficiaries of this report are APEC Member economies and their stakeholders who are interested in developing their human resources for standards and conformity. This project will offer the opportunity to APEC economies to share and benchmark experiences in different sectors and economies for the whole life cycle of standards and conformity – private business standards organizations, testing and inspection laboratories, certification or accreditation bodies, and metrology institutes.

The chapter, which is *1. Introduction* is followed by *2. Project Design*, *3. Towards Definition and Classification of Standards Professionals*, *4. Standards Professionals in Companies*, *5. Standards for Professionals in Standards-Specialty Organizations*. The final two chapters of this report are *6. Discussion* and *7. Recommendations*. The Two chapters offer a summary of key issues and submit recommendations to APEC SCSC Members. Follow-up projects can be discussed and implemented using this report depending on the discussion at upcoming APEC SCSC meetings.