Report on the

IEC Young Professionals Workshop 2018

Busan, Republic of South Korea (22-24th October 2018)

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With special thanks to:

eea Electricity Engineers' Association

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
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Introduction

Ever wondered why the symbol for a power button is synonymous for all devices, all over the world? Initially, the English words ON and OFF were used; this created a language barrier for non English speaking countries. Creating a power button symbol lifted this language barrier, and now, anyone, regardless of the language can recognize and understand the power button.

This is one example that demonstrates the benefits of standardisation. The International Electrotechnical Commission (IEC) was founded in 1906 and is the world's leading organisation for the preparation and publication of International Standards for all electrical, electronic and related technologies.

In 2010, 104 years on from its conception, the IEC recognised the need to ensure continuity in its standards development and conformity assessment activities. The organisation started to reach out to up and coming young experts who were active in a variety of technological sectors through a Young Professionals Programme (YPP). The YPP now hosts an annual workshop that is held in conjunction with the IEC General Meeting.

The IEC Young Professionals (YP) Programme brings together upcoming expert engineers, technicians and managers from all over the world, who aspire to become more involved in the IEC and help shape the future of international standardization and conformity assessment in the field of electrotechnology.

In October 2018, I had the privilege of representing New Zealand at the ninth annual IEC Young Professionals (YP) workshop, held in Busan, South Korea. This workshop served as an opportunity to learn more about the IEC, as well as network with some of the 3,000 experts attending the 82nd IEC General Meeting.

I left this workshop with a much greater understanding of the involvement of the IEC, the difference between the Standardization Management Board (SMB) and Conformity Assessment Board (CAB), an inner knowledge of some of the challenges faced when creating a standard, and a much wider professional network. I also learnt a lot about myself, specifically around my leadership and communication style and how it fits in large group sessions and scenarios.

I would like to sincerely thank the EEA for awarding me this opportunity as the Young Engineer of the Year for 2018, the IEC, Standards New Zealand, the MBIE and Mitton ElectroNet for their sponsorship and support to represent New Zealand at the global forum.

Workshop Overview

The ninth IEC Young Professional's workshop was held in Busan, Republic of Korea, from the 22nd to the 24th of October in conjunction with the IEC 2018 General Meeting. The workshop was attended by 80 young professionals, representing 39 countries. It was a great opportunity for the next generation of leaders to learn more about the IEC and its work in standardization and conformity assessments.

Figure 1: Opening Session of the 2018 IEC Young Professionals Workshop

The schedule for the three day workshop was as follows:

Sunday 21st October	
19.30 – 21.00	Welcome reception and networking event
Day One - Monday 22nd October	
8.00 – 10.15	IEC President address, *J. Shannon* Welcome from IEC General Secretary & CEO, *F. Vreeswijk* IEC Strategy, *K. Fraga* Message from the 2017 YP Leaders, *J. Li* Q&A session on IEC operations, Moderated by *R. McLaren*, *panellists: M. Amos, J. Colby, K. Fraga, A. Murdoch, P. Wennblom, M. Wood*
10.45 – 12.30	Breakout session – Part 1, *R. McLaren, M. Wood* Morning wrap-up, *R. McLaren*
12.30 – 13.30	Lunch with the Conformity Assessment Board *(CAB) or the Standardization Management Board (SMB) members*
13.30 - 15.15	Observe the CAB or SMB meeting
15.45 - 17.30	Breakout session – Part 2, *G. Fournet, R. McLaren, M. Wood* A foundation for leadership, *J. Colby* Day one wrap-up, *A. Frederiksen, R. McLaren,*
18:00	IEC General Meeting Opening Ceremony
Day Two - Tuesday 23rd October	
7.30 - 8:30	Breakfast with your National Committee
9.00 - 10.15	IEC Conformity Assessment, *D. Hanlon, P. Selva* What to expect at a technical meeting, *D. Chew*
10.45 - 12.30	Observe a designated technical meeting
12.30 - 13.30	Lunch Break
13.30 - 18.00	Simulation of an IEC technical meeting exercise, *R. McLaren, M. Wood* YPs share their views from their breakouts, 2018 YPs, *R. McLaren* Closing address, IEC Officers Day two wrap-up, *R. McLaren*
19.30 - 22.00	Young Professional's dinner
Day Three - Wednesday 24th October	
9.00 - 10.30	Interactive sessions: • Artificial Intelligence – challenges, opportunities, standards, *W. Diab* • Getting your products on the global market – fast, *M. Cole, D. Hanlon,S. Paulsen* • IEC Standards development processes, *P. Sebellin* Systems approach: an advanced management of standards development, *R.Schomberg*
11.00 - 12.00	Open breakout session on digital transformation, *M. Siket, M. Wood*
12:30 - 17:30	Lunch and industry visit to LG Electronics

Workshop Day One

The workshop opened with a welcome from the IEC President, James Shannon, who started with quite a thought-provoking statement: "When you were young, and people asked what you wanted to be when you grew up? no one said a 'standards assessor' or 'conformity creator'". This statement really opened our eyes as to why we need to be educated about the necessity of standards and conformity, and how big of a part the next generation will play as technology continues to develop.

Miss Katharine Fraga, the Head of Governance and Global Strategy of IEC gave us an overview of the organisation's vision, mission, values and strategic objective. She asked the attendees to suggest values that may form part of the IEC's Master Plan. These key values were later revealed to be:

- Trustworthy
- Inclusive
- Independent (as the IEC is not owned by shareholders) and
- Progressive

Katharine mentioned that not many people outside of the Electrical sector know about the IEC. 'When you turn your computer on, you are seeing an IEC standard. That round symbol with the line through it is an IEC Standard. We've missed an opportunity to make the organisation more known."

Coming from a background of working with CIGRE (The International Council on Large Electric Systems) I understood the challenge that Katharine was describing - how an organisation can be so well known to its members, yet something that is completely foreign to others.

Before the Q&A session, we were greeted by the 2017 YPs, Annette Frederiksen, Juan (Apple) Li and Jorge Angulo, who were elected by their peers at the 2017 YP Workshop to be ambassadors of the YP Programme. They had helped to develop a "busy and challenging schedule" for us and reminded everyone that even "if you are new to IEC, don't worry as that is why you are here, to have fresh eyes and fresh ideas".

The Q&A session addressed some of the challenges the IEC faced with creating standards and achieving conformity. Mike Wood, Distinguished Professional - GM EME Strategy, Governance & Risk Management at Telstra, explained that standards can take between one to three years to develop. They could be sped up by the following:

- Engaged young professionals and the right research and developers
- New ideas, which equal new ways of thinking
- Looking at market relevance

Mark Emus, Business Manager for the IEC's System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres (IECEx), explained that the IEC only creates standards that the market asks for. He also advised that there is a definite link between standards and conformity assessment. This was later backed up by an example from Adam Murdoch, Head of Electrical Equipment Safety & Efficiency at Energy Safe Victoria, of what happens when a consensus is not reached. "Take the electrical plug. This is an example of a standard that has not worked. One side of the world thinks they have the best idea, so they develop this version. The other side of the world think the same thing, and we have different plug styles. We need to educate people to collaborate and reach a consensus, and develop standards, rather than doing their own thing".

From this example, I was beginning to understand that standards are one half of the process, and that conformity assessment and certification make up the other half.

Robert McLaren, the IEC YP Coordinator, then explained about the Market Strategy Board (MSB). It was established in 2007, to act as a 5-10 year 'radar' for new technologies. Its task is to identify market trends and needs, and to help establish priorities for standardisation for the IEC. The current membership of the MSB includes 14 high-level representatives – mainly Chief Technology Officers – of major manufacturers, utilities and service providers that represent equally the most important regions of the world.

Figure 2: Members of the Market Strategy Board

Each member brings broad industry experience and more importantly, each member provides the IEC with their visions of what emerging technologies are relevant, so that the IEC can be in a good position for future standardisation needs.

Armed with this new knowledge, we were divided into four groups of 20, and given a set of questions to discuss:

Group 1: Future technologies and/or advisory services in the coming 10-15 years

- How should an organization anticipate future trends?
- What role can YPs play in identifying future technologies
- Can the YPs help the IEC look into the future, how?

Group 2: Make a proposal for a next step to the IEC YP Programme

- It could be an exclusive group of YPs working on select IEC topics/questions,
- a 2nd event after the YP workshop

You should consider:

- What would be valuable enough for you and your employer to justify your involvement
- Could YPs contribute to MSB, how?

Group 3: How can IEC bring in YPs from the following targeted areas:

- software development
- regulators
- end-user communities
- smart wearables/medical
- young entrepreneurs
- artificial intelligence
- cyber security

Group 4: The IEC is aware that it needs to transform in order to adapt to a constant changing landscape and evolving experts.

- Use your experience to develop a case study based on best practices on how the IEC should approach change

It was during this breakout session that I started to learn a bit more about my leadership style. Every YP was a leader of some sort. When you have 20 leaders in a room, brainstorming and working towards a common goal, it's interesting to observe the dynamics of that room. The loudest and most confident leaders speak first, initiating conversation. Any leaders with similar, or contrasting viewpoints also speak up. The quiet leaders sit back and observe; carefully crafting their views and waiting for a chance to add their input. I discovered that I am not one to speak up first. That I like to listen to all points of the discussion, and carefully keep track of the time allowed for the session. With 5 minutes left, I stood up and took control of the room, summarising what I interpreted as the consensus and provided a conclusion. Everyone was in agreement, and we quickly wrote down a summary of our discussion.

Figure 3: Workshop attendees collaborating during a break out session.

After the lunch break, all YPs had the opportunity to observe either a CAB or SMB meeting.

The CAB is responsible for setting the IEC's conformity assessment policy, promoting and maintaining relations with international organizations on conformity assessment matters, creating, modifying and disbanding conformity assessment systems, monitoring the operation of conformity assessment activities and examining the continued relevance of the IEC's conformity assessment activities in general.

The SMB is responsible for the setting-up and disbanding of Technical Committees (TCs) and Subcommittees (SCs), approval of their scopes; appointment of TC/SC Chairs and allocation of secretariats; allocation of standards work, timeliness of standards production; approval and maintenance of the Directives; reviewing the need for, and planning for, IEC work in new fields of technology; and maintenance of liaisons with other international organizations.

Both the CAB and SMB are decision making bodies which report to the Council Board (CB).

Whilst attending the SMB meeting, I observed how a local National Committee (NC) proposes to establish a new TC and submit a proposal to the SMB. The proposal is circulated to members of the SMB (one representative per NC) prior to the meeting, to obtain their NCs response. On the day of the SMB, the NC delivers their proposal and the chair askes for responses to support this. The chair then summarises the responses received prior to the meeting. A SMB recommendation is also created prior to the meeting and read out on the day. A discussion is then had where NC representatives present their preference/opinion and contribute to the SMB decision. If all agree, a TC is formed.

When the YPs regrouped, we were divided into four groups for the second break out session. This was led by Guilaine Fournet, Head of Sales and Business Development at IEC. Guilaine discussed the IEC products, services and revenue generators. She noted that 2017 was the IECs best revenue year yet, and that 2018 could be even higher. The groups were assigned the following questions:

Group 2: The IEC will build a new platform allowing end users to read standards online. What kind of tools and features would you like to have on this platform?

Group 4: The IEC is looking to develop new revenue streams. As you are using IEC Standards and Conformity Assessment, what new services and products would help you in your daily activities?

Groups 1 & 3:

Background:
The rules and procedures for developing standards are currently written in the ISO/IEC Directives.
Request from SMB:
SMB would like you to explain the IEC rules in a modern way (YouTube? App? FAQ?)
Task for YPs:
Develop process maps and encode

As a member of group 3, I helped to develop a strategy to ensure we could complete the session on time. This involved dividing into two subgroups:

- Subgroup 1 – Flowchart
- Subgroup 2 – Application Development

I was part of subgroup 1 and we were fortunate enough to have a member who knew the Establishing Liaisons section of the rules and procedures very well. This large document was broken down into a very simple to follow flow chart. Subgroup 2 then used this flow chart to create a simple application which could be used to learn about Establishing Liaisons.

Jonathon Colby, Director of Technology Performance, Verdant Power, shared insights from his 2011 YP experience and how it has helped shape his career. He advised all YPs to join a National Mirror Committee, where you can contribute technical expertise, or be involved with the management and support of operations. He noted that the IEC is something that you need to put energy into as what you put in, is what you will get out of this experience. He challenged us all to "wake up and think about how we want to change the world, because we can."

Day one concluded with a brief wrap up session by the three 2017 YP leaders. That evening we attended the IEC General Meeting Opening Session, held at the Busan Cinema Centre. It was an evening of exquisite Korean delicacies and traditional entertainment.

Workshop Day Two

Day two began by enjoying breakfast with the New Zealand (NZ) National Committee, where we got to learn a little more about each other and the path that led us to being present at the breakfast table that day.

The following attended the NZ National Committee breakfast:
Peter Berry, President of IEC National Committee
Derek Johns, TC 61
Garry House, TC31
Mike Davies, Victoria University and fellow NZ YP representative.

Figure 4: Mike Davies, Peter Berry and Rebecca Marx; attendees at the National Committee Breakfast

David Hanlon, the IEC CAB Secretary, opened day two with an exercise about conformity (checking that a product conforms to a standard). He set an example of two fridges that are exactly the same, but one is from a well-known manufacturer; the other is unknown. He asked us to raise a hand as to whether we would buy fridge A or B. With no details available on price, the majority chose to purchase the well-known brand. However, when the price was displayed, some people changed their minds and went with the unknown brand due to a lower price. When advised that both fridges had been built to the same standard and are certified, even more people opted to purchase the unknown brand.

This example demonstrated that conformity assessments allow unknow brands to compete in markets with well-known brands. It helps to create more competition in the market, which in turn will lead to lower prices.

We were then addressed by Denis Chew, the IEC Regional Director, Asia-Pacific Regional Centre. He described what we were to expect at the TC before attending one later in the afternoon. He explained the development of IEC standards and have an overview of how the inner workings of the IEC work. Working Groups (WGs) handle multiple projects, Projects Teams (PTs) work on the development of one new project. TC meeting agendas need to be submitted to attendees four months in advance. Each TC has a template for the agenda to assist with preparation and conformities.
During a TC meeting, the committee will review the standard "stability date". This is the date the standard will remain 'stable' i.e. does not need to be updated before. This will depend on the technological development of the equipment/service etc.

I decided to attend TC121A – Low-voltage switchgear and control gear. As a power systems engineer and substation designer, I was quite interested to understand what projects this TC were working on. At the time of observation, the TC were reviewing a project report for IEC60947, before being submitted by the secretary. The report was circulated to all TC members prior to the meeting and comments were collected. A proposed change by the chair has been made and all TCs comment whether to approve or modify the recommendations. Changes are assigned to WGs to complete.

After lunch we each participated in an interactive mock standard development session. We broke into four groups and pretended to represent NCS in a WG to discuss a new Electronic Baby Robot standard. Each group had a chair and a secretary and were divided into subgroups to represent

researchers, manufacturers, safety, testing/compliance and end users. Each group had a list of objectives to meet and some were contradictory, so it was difficult to reach a consensus. Consensus needs to be reached as otherwise the draft standard will not pass the approval stage. This session was a lot of fun and proved a valuable experience in collaboration and compromise.

Day two concluded with additional presentations of breakout session two, of which IEC delegates were invited to attend. One of the breakout groups shared an interactive Pressie presentation as an introduction to the IEC and how to get involved at the different aspects of IEC (NCs, TCs etc). The IEC President liked this presentation of a 'Chat Bot' so we are wondering whether the 2019 YPs may be challenged to make this functional.

Workshop Day Three

The final day of the workshop started with several interactive sessions. The sub theme of the conference was the '4th Industrial Revolution' so I thought it was quite fitting to understand what was happening in the AI Standardisation space.

Our group were asked the following questions:

- What is your impression of where AI is today?
- What application areas do you see AI growing into?
- What are some of the barriers to wide spread adoption?
- How can standardisation help?

These questions then sparked greater discussions. Key topics were trustworthiness, security and privacy within the context of AI.

The final session of the workshop was an open breakout session on digital transformation. I found this session extremely interesting in the sense of determining how to transform information stored across multiple pages of paper, into something more user friendly and interactive. We were shown a webpage with a picture of a residential dwelling. For each aspect of the dwelling that related to a particular standard, there was a pop up available that would provide the necessary information for that standard. If you wanted to know more, you could click on the standard and be taken to the PDF.

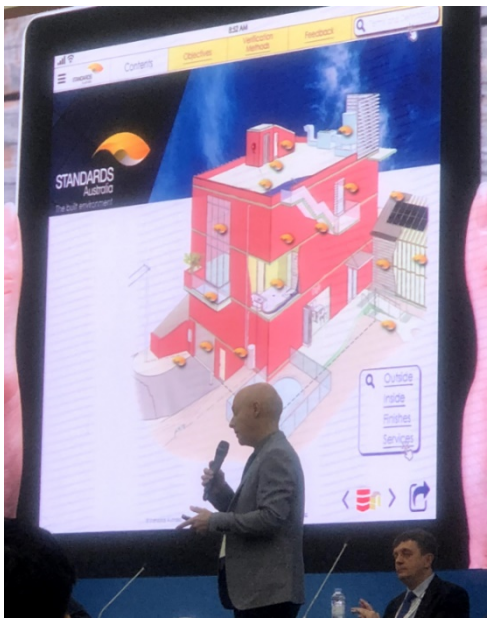

Figure 5: Mike Wood presenting an example of digital transformation.

The workshop then concluded with a 2018 Young Professional group photo.

Figure 5: The IEC Young Professionals of 2018

Conclusion

The evidence of standardisation is all around us; we just need someone to show us where to look.

Attending the IEC 2018 Young Professionals Workshop has provided a much greater understanding of the standardisation process, and why this is required. Standardisation provides confidence that designs, and products will be safe, environmentally friendly and able to be sold on a global scale. It also gives those just stepping into the market an opportunity to compete with well-known brands, which in turn provides competitive pricing for consumers.

The workshop allows young professionals the chance to view behind the scenes as to how standards are developed, and an insight into the process of reaching conformity. Each break out session was a chance to collaborate and challenge our peers, in a thought provoking and educational manner. These sessions also challenged our own leadership style and provided an opportunity for personal growth.

James Shannon, the IEC President, put it quite simply; when you are asked what you want to be when you grow up, no one said a Standards Assessor or Conformity Creator. If the process of standardisation is to succeed, we need to be educated in the work of the IEC and the importance of standardisation and conformity. This workshop is a perfect opportunity to educate and inspire the next generation.

Acknowledgement

I would like to take the opportunity to thank the Electricity Engineers' Association (EEA), especially Peter Berry, Bob Taylor and Steve Jay, who formed the judging panel for the Young Engineer of the Year 2018. It was an incredible experience to attend the IEC Young Professionals' Workshop in Busan and have the opportunity to gain an insight into the inner workings of the IEC.