IEC GENERAL MEETING, MINSK, BELARUS

E-TECH SPECIAL
IEC Council
Management meetings
Young Professionals Workshop
Affiliate Forum
Industrializing Country Workshop on microgrids

IEC FAMILY
Opening of IEC Africa Regional Centre

TECHNOLOGY FOCUS
Safety of electrical/electronic toys
In his address to Council, the IEC President sent a strong message: IEC National Committees have a key role to play in promoting IEC work – they are the IEC! The IEC General Secretary & CEO drew the audience’s attention to a number of topics of high importance for the future relevance of the Commission. Increasing the efficiency on how energy is generated, and then used, should not remain idle talk. And while measuring is important to know where to improve, factual changes on the ground will make all the difference. IEC Council elected James M. Shannon of the United States as IEC President for a three-year term of office, starting 1 January 2017. New lighting solutions, mainly based on LEDs, are changing many aspects of holiday and festive lighting. With the opening of the IEC Regional Centre for Africa, the IEC is now officially at home in Africa.
Traditionally, the last issue of the year provides feedback on the IEC General Meeting (GM), held in Minsk, Belarus, on 12-16 October 2015.

Global reach
Since November 2015, the IEC is present on all continents. In addition to the regional offices in Asia-Pacific (IEC-APRC), Latin America (IEC-LARC) and North America (IEC-ReCNA), the Commission officially inaugurated its Africa Regional Centre (IEC-AFRC) in early November in Nairobi, Kenya. The IEC also has an office in Australia, hosting the IECEx and IECQ Secretariats, and of course the IEC Central Office in Geneva, Switzerland.

All systems go
While all management meetings looked back on what the IEC achieved in the 12 months since the Tokyo GM, in essence the future of the Commission was at the centre of all decisions and discussions. The systems approach is taking shape: under the umbrella of the Standardization Management Board (SMB) three Systems Committees (SyCs) are operational, in areas such as Smart Energy, Smart Cities and Active Assisted Living (AAL). Discussions on Conformity Assessment (CA) governance, initiated by the Conformity Assessment Board (CAB) are moving forward and key for the future of IEC CA activities and how they are managed.

Cybersecurity
Among the key topics that will have an impact on IEC work in the short and longer term is cybersecurity. Both CAB and IECEE, the IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components, have set up Working Groups (WGs) to deal with the issue. Their scope includes industrial automation, medical devices and smart devices, such as smart meters.
Of note is the Council Open Session, which this year focused on “Energy Efficiency: From theory to reality with IEC International Standards and Conformity Assessment”. Moderated by Richard Schomberg, Chair of SyC Smart Energy, the Open Session addressed both energy efficiency and global trade. Each of these topics relies extensively on IEC work for the benefit of industry, regulators and consumers.

**Holiday season**

The holiday season is approaching fast. Many gifts under the tree this year may be electric. Robots, EVs for kids, and the current fad, new means of personal transportation, such as hoverboards, may feature in good place on wish lists. December also sees festive decorations and lights in homes, shops and malls and city streets. IEC International Standards and CA Systems are essential at this time of year to ensure that electric toys and lighting fixtures are safe and reliable.

Streets and trees put on bright colours in the holiday season

IEC Vice-President Yinbiao Shu at the official inauguration of IEC-AFRC on 2 November 2015 in Nairobi, Kenya
Focus on smart, innovative technologies

IEC President Dr Junji Nomura addresses Council

Gabriela Ehrlich

Electricity and electronics are increasingly in everything, even in devices that were purely mechanical before. Not only individual products, but whole companies need to be able to work with each other to come up with technology solutions for increasingly large systems. In his address to Council Nomura sent a strong message: IEC National Committees (NCs) have a key role to play in promoting IEC work. They are the IEC! More than ever, NCs need to represent all national stakeholders and send the right experts to participate in IEC work at the global level.

IEC – the home of industry

We live in a world in which technology advances rapidly, systems and products are continually becoming smarter and more interconnected, and billions of devices use electricity and contain electronics. The work of the IEC is increasingly important to ensure the smooth, safe and reliable running of much of this technology, components and infrastructure.

The thousands of technical experts sent by IEC NCs to participate in this work are fundamental to private and public industry around the world, as the IEC builds broader solutions which evolve with technology and future needs.

President Nomura described key areas in which IEC work will offer solutions, including:

- Smarter everything: from smart cities, smart transportation, smart manufacturing, smart energy to the Internet of Things and more, everything is going to be smarter. This added intelligence is underpinned by electricity, electronics and data. These in turn are underpinned by the essential and often invisible work the IEC does behind the scenes. Collaboration with other organizations will be vital to achieving this work. In this context, the IEC is for example hosting the World Smart Cities Forum in Singapore in 2016, together with ISO and ITU.
- Speed of innovation: the accelerating speed of converging, innovative technologies means companies can no longer do everything alone. The IEC systems approach will help address the need for cooperation on integrated solutions for increasingly bigger systems, as well as for the complex challenges that lie ahead.
- Billions of new devices now use electricity and contain electronics. New applications and technologies that didn’t exist a few years ago now rely on IEC work.
- Electricity everywhere: by 2040 developing countries will use double the electricity developed countries use today. IEC has an important role in helping these countries improve the safety of
electrotechnical products entering their markets. It can also provide the basis to help them increase sustainable energy access and build the quality infrastructure they require.

- Made in the world: global trade in electrical and electronic goods represents more than 12% of the total value of all trade goods, following raw energy at 16%. Electronic and electrical parts transit through many countries, resulting in products which are "made in the world". Global value chains need universally agreed technical rules to function efficiently. In the case of electrotechnology, these are mostly IEC International Standards.

In concluding, the IEC President encouraged national and regional organizations to raise their work to a global level and give preference to IEC International Standards.

He also announced a review of the IEC Masterplan early in 2016 and called for NCs to send their insights and suggestions to improve and update the plan.
You are the IEC
IEC General Secretary addresses Council

Gabriela Ehrlich
During his address to Council, the IEC General Secretary & CEO, Frans Vreeswijk, provided a brief overview of key accomplishments since Tokyo and drew the audience’s attention to a number of topics of high importance for the future relevance of the Commission.

Protecting copyright and IP
Developing a Standard is like preparing for a concert. Like the members of an orchestra, under the guidance of the conductor, many different experts participate and contribute to the standardization process. While each of them knows how to play their own instrument and partition, it is only their combined effort that will lead to a consensus that satisfies the needs of industry. IEC publications are the result of the contributions of many different experts from many countries and the IEC is the guardian that holds and defends the intellectual property and copyrights of this work on behalf of the whole community.

In its role as conductor, the IEC helps ensure that everyone plays together harmoniously. We also make certain that the end-result benefits all and is not appropriated without proper recognition by outside organizations. The fact is: the business model for international standardization is increasingly under attack. The call for free Standards makes it necessary that the copyright and intellectual property contained in IEC International Standards is better protected, in the interest of the whole contributing community. To do so, the IEC has put in place a number of measures.

In this context, to strengthen the recognition and awareness of the IEC brand and copyright, National Committees will need to officially recognize the IEC copyright both in national and regional adoptions and derivatives of IEC publications. All of them will bear the IEC logo and the IEC copyright statement.

Increasing awareness of IEC work
With the increasing integration of electricity and electronics in traditional and emerging products and services, the number of industry players that could benefit from IEC work is growing exponentially. Often new industry players are not aware of the IEC. Broader recognition of IEC work and a stronger IEC brand will make it easier for them to discover and participate in the important work the IEC accomplishes for industry, but also for regulators and the end-consumer. This will make IEC publications better, more relevant and easier for all to adopt and use.

Building the IEC brand
The IEC brand represents a high level of trust. It is synonymous with quality, safety, interoperability and many other positive values. This reputation lends the IEC global authority and credibility. The IEC trademark is a valuable asset and we have stepped up its protection, actively policing its use around the world.

The IEC encourages every one of its members to benefit directly from the IEC brand and contribute in making it even stronger. IEC National Committees are the sole official representative of the IEC in their country. It is fully to their advantage if they more broadly communicate their unique position within their market.
Encourage stakeholder involvement

To encourage wide stakeholder involvement, we need to ensure that the benefits of participation outweigh its cost. That means that we have to put in place new ways to develop International Standards and reduce the time standards developers have to invest.

Strong involvement by industry in management decisions can help increase their interest and active participation in NC and IEC work at all levels. NCs also need to more actively involve regulatory bodies. These face many challenges as technologies cut across more sectors and increasingly reach beyond national borders. Here IEC work can help regulators identify the right solutions. In the IEC they are able to share their needs so that Standards can be more easily adopted at the national level.

Systems work is further expanding

With technology convergence and the increasing speed of innovation, individual companies can no longer develop everything alone. Never before have businesses been as competitive, and never before was the need for collaboration as big as it is today. A special breed of Standards is needed to enable this broad cooperation on increasingly big systems.

Over the past months the IEC has created six Systems Evaluation Groups (SEGs), two of which have now started standardization work as Systems Committees (SyCs). Experts from many different organizations have been joining their forces on this neutral and independent platform.

Driving Smart City development

IEC work impacts electric power and all the hardware that drives services and infrastructure in cities. We are talking transportation, safety and cybersecurity, water and waste management, cooling and ventilation to name but a few. Everything that uses electricity and contains electronics to move, function or collect data is impacted. Nevertheless, no single organization can develop all the Standards that are needed for Smart Cities. There is a need to combine specific know-how beyond traditional boundaries to create a bigger whole. Sometimes one organization will lead the effort, while the others contribute and other times it will have to step back to let another lead.

On 13 July 2016, the IEC will be hosting the first World Smart City Forum. ISO and ITU have already been invited to join the steering committee. The Forum will be co-located with the World
Cities Summit. An online community which aims to encourage discussions between city leaders will be launched in early January.

**New IT tools**
In the past year the IEC IT department has put in place new tools and services for IEC members and experts with the aim to increase efficiency and support the work of standards developers.

In this context the IEC is building a new standards development and business platform that will integrate services for all aspects of standardization work, from standards development to distribution and storage. The IEC Online Collections, a pilot project launched in April 2015, is part of this platform.

A new submission interface with an automated process for document handling between Technical Committees and IEC Central Office (CO) will be available soon.

IEC Public Commenting will allow experts to create an account and view and comment IEC Committee Drafts for Vote (CDVs).

**Update on conformity assessment work**
The IEC Conformity Assessment Board (CAB) has enlarged its membership from 12 to 15. It is now working on the harmonization of the Basic Rules, the Conformity Assessment Risk Management Grid and the Conformity Assessment policy as well as cybersecurity.

IECEE, IECEx and IECQ are all financially sound and still developing at a brisk pace. They continue to gain visibility and recognition across the world and are including new services in their portfolios.

IECEE has put in place the Global Motor Energy Efficiency programme; IECEx, the Recognized Training Provider programme, which will allow Ex training organizations to assist candidates in their preparation for the IECEx Certified Persons Scheme assessment process; and IECQ has launched the new Scheme for LED Lighting.

IECRE, which was officially launched in 2014, now brings together 16 Members. It will play a major role in verifying and certifying renewable energy technologies and systems.

**Opening a new Regional Centre**
On 2 November IEC-AFRC, the Africa Regional Centre was opened in Nairobi, Kenya (read about it in this issue). With it the IEC now has five Regional Centres with an aim to be as close as possible to our stakeholder base.

All IEC Regional Centres are doing an excellent job of promoting and raising the awareness of the IEC. They participate in events and strongly support National Committees and Technical Committees in their local time zone.

**Supporting developing countries**
More and more Affiliate countries are adopting IEC International Standards as national ones. From July 2014 to June 2015, 776 Standards were adopted and three new countries set up their National Electrotechnical Committee. Since January 2015, the IEC Affiliate Country Programme has a new leader in Rosario Uría of Peru.

In an effort to allow Affiliates to benefit from the know-how of more experienced countries, 10 mentoring partnership agreements have been established.

Through the Affiliate Conformity Assessment Status (ACAS), developing countries are also benefiting from e-learning and training to better understand and participate in IEC conformity assessment activities.

**Fresh blood**
The IEC Young Professionals Programme is now in its 6th year of existence and 336 participants from 44 countries have already benefited from the Programme. Many of them have gone on to play important roles in their NCs and overall in the IEC. Participants also provide excellent feedback that helps improve IEC processes and structures.
SMB review and focus
SMB Chairman shares key decisions and developments

Gabriela Ehrlich
IEC e-tech talked with James E. Matthews III, IEC Vice-President and Chairman of the Standardization Management Board (SMB) during the General Meeting in Minsk, Belarus. Matthews shared key decisions and why they are needed to ensure IEC relevance in the future.

Improving speed and effectiveness of work
Currently, progress in the development of International Standards is measured by fixed milestones within fixed time frames and intervals, regardless of size or complexity of the work at hand. Success is expressed by average time to publication. This approach clearly doesn’t take into account difficult situations or differing market needs. For this reason, the SMB had a look at the structure, processes and activities in standardization work and identified a number of areas that create confusion or slow down standards development. As a result the SMB decided to put in place a project management approach: “We need to work to a plan and deliver to market needs...whether it is in two or four years.”

As part of this effort, the SMB has decided to empower its technical leadership: “A Technical Committee (TC) or Subcommittee (SC) Officer should be able to define and live to their project plan. We will put in place new metrics to measure progress with project milestones in line with stakeholder requirements. We will also provide Officers with tools and training to allow them to develop their own plan to which they will be held accountable. This is a privilege, but also a responsibility and it will be a big change.”

A first workshop will be held jointly with ISO and take place in the March/April 2016 timeframe. The IEC IT department will prepare tools for project planning and project leaders. Training for those is scheduled to take place during the General Meeting in Frankfurt.

Ensuring quality, early on
In an effort to reduce time spent on late corrections, the SMB has decided to bring IEC editors much earlier into closer contact with convenors or project leaders. In the past this contact only happened after the Standard reached a certain threshold generally the Committee Draft for Vote (CDV) stage. Sometimes this was too late and resulted in a lot of corrective work.

“By encouraging earlier involvement of IEC editing staff, we hope to improve the overall quality of the document and avoid a lot of corrections at the end.” Experts will see projects move faster and requiring fewer changes at a later stage. By implication this will also allow for more flexible opportunities to comment and vote: National Committees (NCs) will be able to provide their inputs earlier. This is of key importance since NCs – especially P-members – are normally required to provide technical comments at the Committee Draft (CD) stage and not wait until the CDV.

“With this approach we should be able to gain three to five months and build improved quality from the start into the standards development process.”

Satisfy urgent needs, faster
The SMB also decided to shorten voting and commenting times. Normally a new work proposal (NP) circulates 12 weeks. Now an optional work proposal with an outline will benefit
from a shortened 4 weeks circulation. “This allows us to be more reactive to urgent stakeholder needs”.

After a successful trial period, the circulation time of the CDV has been set at 12 weeks, down from five months. “Nobody is anymore using a five month period, that’s why we took this option away.”

The FDIS voting period has also been shortened from eight to six weeks.

All of these activities are intended to improve the speed of the process and to deliver work in line with stakeholder expectations.

**New approaches needed**
Some technology areas require standardization products that can be developed much faster than a full International Standard but still offer reasonable value to the community. The SMB is now looking at new ways to offer such deliverables and – through a rebranding effort – overcome the stigma that was associated with a Publicly Available Specification (PAS), which sometimes lacked in quality or Technical Specification (TS) which was historically seen as a failed Standard. To be followed...

**Disruptive technologies**
New technologies can affect the work of more traditional TCs, including in highly regulated areas such as healthcare. Here, the SMB agreed to set up an ad hoc group (ahG) to explore how established TCs can better embrace and adapt to disruptive technologies which enter their field of activity.

**What language will do?**
Translations are widely used by many countries as a way to ensure stakeholder involvement, encourage commenting and the adoption and use of Standards. Such translations require on average two months between CD and CDV stage. In the past it was assumed that translation was only necessary for the French language. Therefore – the assumption went – if French were not needed, then the Standard could be published nearly immediately and 60 days could be saved. Clearly this reasoning overlooks that the whole community needs time for translations.

Furthermore, the current text of the Statutes and Rules of Procedure concerning the use of languages in the IEC, particularly in meetings, and the implied requirement that the IEC publishes all documents in English, French and Russian, no longer reflects reality. Which language version should be considered the reference version when there are several translations within the same language, for example in Spanish. The SMB recommends that a definitive language of development is designated for each publication. This version would remain the reference.

**Reduce differences**
Today, as many as 70% of European Standards are identical to IEC International Standards; but many more could be. To try to achieve greater alignment and involve the IEC earlier in European standards work, an ad hoc group has been established to examine the areas where there are CENELEC standards but no corresponding IEC International Standards. There are also ongoing discussions between CENELEC and the IEC leadership to improve communication and response to new work proposals in both organizations. This approach should allow for the correct implementation of the Dresden Agreement, which has been put in place to encourage preference of International Standards over regional or national ones...

**Collaboration with others**
As part of the systems approach but also elsewhere, the IEC continues to engage and work with many different organizations to bring on board diverse expertise. In this context the IEC has started to exchange information about new work with IEEE, for them to share internally in the IEEE community. The aim is to encourage joint development of Standards and possibly adoption of existing work. This would allow both organizations to make best use of finite resources and reduce duplication and waste.

**Other business**
During the course of the day in Minsk the SMB approved 66 reports of TCs and SCs, validated the use of Vice-Chairs in Technical Committees and eliminated some historical black-out periods for commenting and voting. The SMB will meet next time on 23 February 2016 in Geneva.
Claire Marchand
e-techn talked to Ulrich Spindler, IEC Vice-President and Chairman of the Conformity Assessment Board (CAB) during the General Meeting in Minsk, Belarus. Spindler shared key decisions made by CAB and their impact on the future of IEC conformity assessment.

Collaboration between CAB and the IEC Standardization Management Board (SMB) is better than ever. Both learn from each other. One good example is the so-called “consent agenda”, used by SMB for some time and introduced in the CAB system at the beginning of 2015. Many agenda items are voted on throughout the year and positive votes go on the “consent agenda” list that is to be approved at the following CAB meeting. This reduces the number of items that have to be voted on during “physical” meetings, thus allowing more time for complex issues and making the whole process more efficient and less time-consuming.

To deal with recommendations made by the IEC Council Board (CB), CAB established a Special Task Force (STF) under Spindler’s convenorship.

Stakeholder participation
One of the recommendations was to have a balanced stakeholder participation, which de facto means an increase in industry participation. Why is that? Simply because in the past and until recently, the vast majority of stakeholders in conformity assessment were certification bodies (CBs). A balanced representation means participation from CBs of course, but also from industry, regulators and testing laboratories (TLs). Obviously, all CAB members have to approve this move. To help them understand the advantages of having a wider base of stakeholders, CAB decide on a multifold approach.

On the one hand, promotional activities are on the agenda, handled by CAB Working Group (WG) 14: Promotions, responsible for preparing a action plan.

CA voice heard in standardization process
On the other, the objective is to create a second channel to give the conformity assessment (CA) side a voice in standardization. This was approved by the SMB in Minsk and a common ad hoc WG is to be established to deal with this issue.

When published, all IEC International Standards have a maintenance cycle of some years, which gives industry a stable basis to work on. But during this maintenance cycle, the Technical Committees (TCs) are actively collecting comments on their publications. In the past, these comments could only come from National Committees (NCs).

In future, CA will be involved in the process through the IEC CA Systems. Each has its own Testing Laboratory (TL) Committee where they discuss items of common interest, for instance the ambiguities and grey zones they find in IEC Standards, for which they put together interpretation sheets to clarify matters. In future, these sheets will no longer be just for the TLs, but will be shared with the responsible TC. This way, the Systems’ comments will be taken into account. If rejected, the TC will provide an explanation justifying the rejection. If accepted, CA will have a chance to influence the standard development process. This will also make it more interesting for industry to participate since their testing labs are part of the TL Committees.

This kind of collaboration is a first for the IEC.
Synergy between CAB and the IEC CA Systems is essential to tackle the cybersecurity issue

Harmonized Basic Rules
With a fourth CA System – IECRE, the IEC System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications, established recently, and the possibility of having additional Systems in future, the IEC Council Board (CB) felt it was important that all Systems harmonized their Basic Rules, to ensure consistency among the CA Systems and with the IEC Statutes and Rules of Procedure and IEC CAB Policy.

CAB WG 11: Systems issues, is in charge of the project. At the beginning of 2015, WG 11 sent the draft Harmonized Basic Rules to the four CA Systems and all have now given their feedback. The next step is for WG 11 to review the comments and make recommendations that will be discussed at the June 2016 meeting in Geneva.

Bringing regulators on board
Another issue discussed during the Minsk meeting was how to increase the participation of regulators in IEC standardization and CA activities. If regulators use IEC International Standards in their laws and regulations and recognize the certificates issued by the IEC CA Systems, then in turn companies are bound to pay more attention. While IEC operates on a strictly voluntary basis, once national or regional legislation is based on IEC International Standards, companies will have no choice but to comply to avoid violating the law.

Dedicated workshops
One way to bring more regulators on board is through dedicated events that address specific issues of interest. Two such events are to be held in Geneva at the end of 2015.

The first, Using and referencing International Standards to support public policy, is jointly organized by the IEC, the International Organization for Standardization (ISO) and the United Nations Economic Commission for Europe (UNECE) in November. Participants will learn how International Standards help to support public policy and enable resilient world trade, policymaking, electrical energy efficiency, safety in the food and medical devices industries, as well as contribute significantly towards disaster risk reduction and sustainable development goals.

The second, a joint effort of the IEC, ISO and the International Telecommunication Union (ITU), under the umbrella of the World Standards Cooperation (WSC), the WSC Conformity Assessment Workshop, will take place in December. The overall objective of the event is to enhance awareness about global conformity assessment, in line with the relevant WSC terms of reference “to promote and increase the worldwide visibility of international consensus-based standardization and related conformity assessment matters”.

Tackling cybersecurity
A new CAB Working Group, WG 17: Cybersecurity, was established in June 2014 to respond to a demand from the market. Different industry sectors expressed the common need for personnel competence certification in IT security, industrial automation, data privacy and so forth. As evidence of the market need, the number of requests for membership has topped all records. At the June 2015 CAB meeting, the scope of this working group was refined to include home automation, smart devices (such as smart meters) and medical devices.

The IEC CA Systems have a major role to play in this area.

In close cooperation with CAB, IECEx, the IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components, is pursuing CA solutions related to cybersecurity, focusing on Industrial Automation. To this effect, a working group has been created in the Policy & Strategy Committee and is pursuing the development of the details by which participating certification bodies and testing laboratories will provide certifications. The service is intended to provide a framework for assessments, in accordance with the IEC 62443 series of Standards on security for industrial automation and control systems, to result in an IECEx Certificate of Conformity – Industrial Cybersecurity Capability.

IECEx, the IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres, may be a good example of what needs to be done in the cybersecurity field. The System certifies not only equipment and service facilities but also personnel. Synergy between CAB and the CA Systems will be of the utmost importance in future to tackle the cybersecurity issues.

Strengthening partnerships
At the CAB meeting in Minsk, both ITU and the International Renewable Energy Agency (IRENA) updated CAB members on their activities and partnership with the IEC.

Decisions made by CAB in Minsk have an impact on the future of IEC Conformity Assessment
Two new IEC White Papers have recently been published, covering Industry 4.0 and strategic asset management of power networks.

In the IEC Market Strategy Board (MSB), CTOs of major global technology companies meet every year to identify and discuss important technology trends and industry needs for the coming 10 to 15 years.

The White Papers summarize the MSB recommendations regarding these technology trends to the IEC community and also to regulators, governments and academia. They are developed by the MSB together with renowned research organizations.

**White Paper: Factory of the future**
What will manufacturing look like in the future? How will humans and machines communicate with each other? Will the work environment adapt to future needs?

Nimble, adaptive and intelligent manufacturing processes will be the measurement of success. Manufacturers will need to invest in both digital technologies and highly skilled technical talent to fully benefit from the factory of the future.

**Unprecedented integration**
To keep up with the rapid pace of advancing technology, manufacturers will need to invest in both digital technologies and highly skilled technical talent.

The ultimate goal of the factory of the future is to interconnect every step of the manufacturing process. Factories are organizing unprecedented technical systems integration across domains, hierarchy, geographic boundaries, value chains and life cycle phases. This integration will only be a success if the technology is supported by global consensus-based International Standards.

The White Paper Factory of the future was developed by the IEC MSB in cooperation with the Fraunhofer Institute for Manufacturing Engineering and Automation IPA.

**White Paper: Strategic asset management of power networks**
The electrical power network sector is undergoing a period of profound change, and asset management remains the number one challenge for most network businesses around the world.

There are very few International Standards that define a common language and metrics or provide examples of best practice to guide network businesses and their broader stakeholders worldwide on strategic asset management for electricity networks.

This current lack of International Standards or guidelines on asset management for electrical networks will have a significant impact on the reliability and future viability of the electricity sector.

It is available for download at http://go.iec.ch/21.
Best practice
The White Paper Strategic asset management of power networks explores the issue of asset management in the electricity power network sector and identifies areas of practice that could benefit from International Standards.

The White Paper was prepared by the IEC MSB project team on strategic asset management of power networks with support from N.OGEE Consultants, after extensive industry consultation. The project team included representatives from electrical power network businesses, research institutes and equipment vendors from around the world.

Broad consultation
The project team held three international workshops (Tokyo, Washington and Paris) which were attended by electricity network businesses, equipment manufacturers, research institutions and other standards organizations. They shared their current approach on asset management and provided insights on areas where Standards or guides for electricity network asset management could benefit their business.

In addition, the IEC project team ran two international surveys as part of this project. One survey asked electricity network companies worldwide for data on their existing asset base and the other survey sought information on how these companies currently approach asset management.

The White Paper Strategic asset management of power networks is available for download at http://go.iec.ch/22.

The IEC MSB
The IEC Market Strategy Board brings together the CTOs of leading international organizations. The MSB sets strategies to maximize input from industry and identifies priorities for the technical and conformity assessment work of the IEC, helping to improve the Commission’s response to the needs of innovative and fast-moving markets.

Council Statutory Session
Report on elections, appointments and other statutory issues

Claire Marchand
Council, the supreme governing body of the IEC, held its meeting on Friday 16 October 2015 during the IEC General Meeting in Minsk, Belarus.

Statutory issues concerning the election/appointment of:
- the future IEC President
- the Convenor of the Market Strategy Board (MSB) and IEC Vice-President
- five Members of the Council Board (CB)

Other principal items on the agenda:
- The General Secretary’s report (see separate e-tech article)
- The President’s address (see separate e-tech article)
- Financial matters
- Reports from the Council Board, including reports from the IEC Vice-Presidents on SMB, CAB and MSB activities (see separate e-tech articles on SMB, CAB and MSB)
- Forthcoming General Meetings (GMs)

Election results
Future IEC President
Council elected Mr James M. Shannon from the United States as IEC President for a three-year term of office (1 January 2017 to 31 December 2019) and as President-Elect for the year 2016 (see e-tech article in this issue).
Convenor of the MSB and Vice-President of the IEC
Council re-elected Dr Yinbiao Shu from China as IEC Vice-President for a three-year term of office (2016-2018), with the specific responsibility of leading the technology and market-watch effort.

Council Board
Council elected Mr Xu Zengde from China as a financial Group A CB member for a three-year term of office (2016-2018).

Council elected/re-elected four members of the CB for a three-year term of office (2016-2018):

- Mr Valerio Battista (Italy)
- Mr Günter Idinger (Austria)
- Mr Peter Leong Weng Kwai (Singapore)
- Mr Ed Tymofichuk (Canada)

Standardization Management Board
Council re-appointed Ms Hong Dai from China as an Automatically Appointed Member of the SMB for a three-year term of office (2016-2018).

Council elected/re-elected:

- Mr Kim Craig (Australia)
- Mr Tony Capel (Canada)

Conformity Assessment Board
Council re-appointed Mr Weijun Liu from China and Mr Simon Barrowcliff from the United Kingdom as Automatically Appointed Members of the CAB for a three-year term of office (2016-2018).

Council elected/re-elected:

- Prof B.-K. Lee (Korea)
- Mr Fredrik Wennersten (Sweden)

Financial matters
Dr Åke Danemar, IEC Treasurer, reported on the financial situation of the IEC.

IEC Officers - from right: IEC Vice-President and CAB Chairman Ulrich Spindler, IEC Vice-President and SMB Chairman Jim Matthews, IEC Immediate Past President Klaus Wucherer, IEC President Junji Nomura, IEC General Secretary & CEO Frans Vreeswijk, IEC Treasurer Åke Danemar and IEC Vice-President and MSB Convenor Yinbiao Shu

Council approved the audited accounts of the Commission for the financial year 2014 as well as the 2016 budget and the distribution of national dues for 2016.

Future General Meetings

80th General Meeting
Frankfurt, Germany, from 10 to 14 October 2016, hosted by the German National Committee (NC)

81st General Meeting
Vladivostok, Russian Federation, from 9 to 13 October 2017, hosted by the Russian NC

82nd General Meeting
Council formally accepted the invitation of the Republic of Korea NC to host the 2018 General Meeting in Busan from 22 to 26 October.

Although Council can only officially accept invitations from National Committees up to three years in advance, many Members have already declared their intention to invite the IEC to host a future IEC GM:

83rd General Meeting
The Chinese National Committee has stated its intention to invite the IEC for the 2019 GM.

The National Committees of Sweden, the United Arab Emirates, the United States and Egypt have expressed an interest in hosting the GM in the years 2020, 2021, 2022 and 2023 respectively.
In conclusion, Council expressed its warm appreciation to all members of the Organizing Committee and the IEC National Committee of Belarus for their excellent organization of the 79th IEC General Meeting and for the generous hospitality extended to IEC delegates in Minsk.

Energy Efficiency: from theory to reality
Council Open Session – 16 October 2015

Gabriela Ehrlich
Increasing the efficiency on how energy is generated and then used, should not remain idle talk. And while measuring is important to know where to improve, factual changes on the ground will make all the difference.

Moderated by Richard Schomberg, Chair of Systems Committee (SyC) Smart Energy, the IEC Open Session in Minsk addressed both energy efficiency and global trade. Each of these topics relies extensively on IEC work for the benefit of industry, regulators and consumers.

The IEC President, Dr Junji Nomura, officially opened the Council Open Session. His talk was followed by a panel of speakers who focused on different aspects that improve energy efficiency, and on the impact of International Standards and conformity assessment on global trade. Several case studies from different regions of the world completed the session.

Increasing energy security
Richard Schomberg introduced the Council Open Session by stating that smart electrification will be the key to energy efficiency. In his view, smart electrification will also be essential for improving energy security through “virtual fuel that is locally generated”.

And while 1.3 billion people still have no access to electricity, with a further one billion having only intermittent

Ensuring life is on
The first speaker, Jean-Louis Stasi, President of Schneider Electric Russia, presented some of the fundamental changes that will impact how energy is produced and consumed in the coming years. His company believes that “energy access is a basic human right and the present way of managing energy is unsustainable.”

Energy efficiency – the most important, untapped energy source
Systems thinking achieves much higher overall efficiency
access, megatrends continue to accelerate energy demand.

These trends include:

- Massive urbanization with up to 70% of people living in cities by 2050
- Digitization leading to an estimated 50 billion connected devices by 2020
- Increasing industrialization which will double energy consumption by 2050

Considering that energy consumption will double and the emission of CO₂ needs to be halved we have to become 4 times more efficient.

Stasi believes that in the not so distant future the world will be more electric, more connected, more distributed and more efficient. Buildings and data centres alone represent an untapped energy efficiency potential of 82%.

New technologies will contribute to mitigating climate change, freeing resources that can be used elsewhere. Notably the integration of energy, software and analytics with automation will lead to significant improvements in efficiency and control.

**Systems approach for better efficiency outcomes**

Toru Ishikuma, member of the IEC Advisory Committee on Energy Efficiency (ACEE) provided insights into how a systems approach in energy efficiency management can lead to better outcomes and how this is supported by IEC International Standards. As an example he explained how energy efficiency improvements can be achieved in industrial facilities.

Ishikuma gave a very telling example of an automotive parts manufacturer, who, despite having optimized individual manufacturing processes, still noticed significant energy waste.

By combining separate units – machining, cleaning and steam generation – into a single system the company was ultimately able to reduce energy consumption by an impressive additional 80%. This was achieved by replacing a boiler with a heat exchanger and thus benefiting from heat generated by machining for the cooling of parts.

Lesson learned: equipment replacement in combination with drastic process changes can achieve fundamental energy efficiency improvements in a systems approach.

Ishikuma pointed out that exactly this kind of systems thinking is now also applied in the IEC. Closer collaboration between many different Technical Committees leads to new Standards that allow for improved integration of different technologies. Standards are highly useful since they provide a unified vision between different countries, sectors and technologies. ACEE is now developing two new guides on energy efficiency.

**Testing and verification: providing essential proof**

Trond Sollie, member of IECEE and of the IEC Conformity Assessment Board (CAB), as well as President of the IEC National Committee of Norway briefly mentioned the key role testing and verification plays in verifying energy efficiency claims. He then gave an overview of the principles and structure that drive the IECEE Conformity Assessment System.

**Essential for global trade**

Devin McDaniels, Deputy-Secretary of the World Trade Organization (WTO) Technical Barriers to Trade (TBT) Committee, provided insights into the fundamental contribution of IEC International Standards and the IEC Conformity Assessment Systems to global trade.

Celebrating the 20th anniversary of the WTO TBT agreement, McDaniels underlined that the WTO continues to resolve and remove trade issues and has reviewed 25 000 drafted or changed regulations since it started 20 years ago. At the time 20% of notifications regarding trade issues came from developing countries, today this has reached 80%.
McDaniels underlined that while import duties continue to fall – on average they are now at 9% across the board – regional trade facilitation agreements are increasing due to challenges in the WTO forum. 72% of trade concerns deal with TBT issues and 85% encourage the use of International Standards, directly or through reference. International Standards are now recognized as essential in all contemporary trade negotiations.

A big trend is the fragmented production in global value chains. In electrotechnology, parts and subassemblies travel through many countries until they are assembled and shipped as a final product to anywhere in the world. International Standards are essential for global trade and this is recognized in the TBT agreement.

The TBT agreement obliges WTO members to use International Standards in their regulations. This is also a harmonization requirement for achieving international policy objectives.

McDaniels underlined that WTO believes that better International Standards result in better trade. A good International Standards has to follow 6 principles:

- Transparency
- Openness
- Impartiality and consensus procedures
- Effectiveness and relevance (need to respond to technology development)
- Coherence
- Development – country participation in standard setting

McDaniels also complimented the IEC on the Affiliate Country Programme which helps developing countries to adopt and apply International Standards.

He concluded his talk by underlining that a rise in trade concerns is now related to testing and verification and the solution endorsed by WTO is the increased use of international systems for conformity assessment.

After the coffee break, participants heard case studies regarding the practical implementation of energy efficiency technologies from different regions in the world.

More efficient appliances preferred
Tak Leong Cheong, Pacific Area Standards Congress (PASC) Secretary, provided insights into how Singapore implements energy efficiency measures, providing concrete examples of economic benefits. He outlined results achieved by mandatory energy labelling which has led to a gradual shift of behaviour: consumers now give preference to appliances with higher energy efficiency ratings.

Better outcomes and new opportunities
Bernhard Thies, Secretary of the IEC National Committee of Germany, DKE, stated that “energy efficiency is the most exciting technology that you have never seen before”. People are totally unaware of the cost of electricity, but everybody knows how much they spend on a litre of gasoline and so efficiency gains remain underappreciated.

Thies provided insights into European efforts to improve energy use. First results are in: For example, new buildings now consume 50% less energy than in the 1980s; EU industry reduced energy consumption by almost 19% between 2001 and 2011; the share of the highest energy efficiency refrigerators rose to more than 90% in 2010, compared to 5% in 1995.

As a side-effect: for every 1% improvement in energy efficiency, the EU is able to reduce gas imports...
by 2.6%. Air quality is improved and due to better insulation (better windows), noise levels are reduced. And because German industry is highly innovative, the construction of more efficient equipment also adds new jobs and opportunities.

With help of the EEE Roadmap, Germany is now exploring if all use cases can be fulfilled by existing Standards. In Germany, like Europe, over 70% of standards are identical to IEC International Standards.

**Regulation and Standards**
Victor Nazarenko, President of the IEC National Committee of Belarus underlined that electric energy efficiency is a strategic challenge for a country which imports more than 70% of its energy. The national programme on energy conservation, which was adopted in 1996 to improve energy use, has not only increased energy efficiency but it has also encouraged the development of more efficient products that are competitive beyond national borders. In an effort to increase independence from foreign energy resources, Belarus is also increasing local generation from biogas, agricultural waste, wind, solar and water power.

Energy saving indicators that have been put in place in Belarus are similar to EU directives. The aim is to encourage the use of International Standards in regulations. At the same time the country has put in place regulations regarding energy efficiency in buildings and participates in the drafting of technical regulations regarding requirements for energy-consuming devices, which are in preparation in the Eurasian Economic Union. In Belarus, the harmonization level with IEC and ISO International Standards and European standards is now above 85%.

The session concluded with feedback from two workshops that were held earlier in the week:
- Energy efficiency in industry. New technologies, requirements and approaches – Minsk 14 October 2015
- IEC Conformity Assessment Systems as the most effective tool to overcome the technical barriers in international trade – Minsk 15 October 2015

All presentations of the IEC Open Session in Minsk can be found in Council Document C/1937/INF. For those who don’t have access: please ask your IEC National Committee.

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**Council elects future IEC President**

**James M. Shannon will take over Presidency in 2017**

*Claire Marchand*


In March 2015, IEC members were asked to nominate candidates for the position of IEC President in the run-up to the October election. Council members endorsed his candidacy and Shannon was elected as IEC President on 16 October during the Council Statutory Session in in Minsk, Belarus.

Shannon will become IEC President-Elect on 1 January 2016. Throughout the year he will have the opportunity to familiarize himself with the task ahead and provide support to IEC President Junji Nomura. On 1 January 2017, James M. Shannon made his acceptance speech during Council Statutory Session.
Jim Shannon: Dedicated to serving the community
From 2002 until 2014, Jim Shannon was President and Chief Executive Officer of the National Fire Protection Association (NFPA), an organization he joined in 1991 as Senior Vice President and General Counsel. NFPA is an international organization which develops codes and standards which are adopted by state and local jurisdictions throughout the United States and widely used both by the Federal Government and governments around the world.

Prior to that, Shannon served as Attorney General of the Commonwealth of Massachusetts from 1987 to 1991. In addition, he chaired the Antitrust Committee of the National Association of Attorneys General and, as Attorney General, personally argued several cases on behalf of the Commonwealth in state and federal courts including the United States Supreme Court.

From 1985 to 1987, Jim Shannon was a Senior Partner at the law firm of Hale & Dorr in Boston, Massachusetts.

Shannon was elected to the United States House of Representatives in 1978, the youngest member of the 96th Congress and served in the House until 1985.

A graduate of Phillips Andover Academy, he received his BA from Johns Hopkins University and his Juris Doctor (JD) degree from George Washington University.

Recognizing excellence
IEC honours eight leaders with Edison Award

Antoinette Price
Every year, the IEC pays tribute to people from its organization for their distinguished work and commitment to improving the safety, compatibility and energy efficiency of electrical products and systems, with its Thomas Edison Award.

Talent across the board
This year, IEC recognized the outstanding work of eight leaders, covering very diverse fields including: safety of household appliances, semiconductor devices, fibre optic systems, audio video and multimedia systems and equipment, product properties and classes and their identification, automatic electrical controls, measuring equipment for electrical and electromagnetic quantities and equipment for explosive atmospheres.

Ralph Wigg, Former Chair, IEC SC 31H, Australia
With a background in electrical power engineering, spanning over 50 years of which 30 plus in hazardous area equipment, Ralph Wigg has held the positions of past Chair for IEC Subcommittee (SC) 31H: Apparatus for use in the presence of ignitable dust – now disbanded, work taken over by IEC Technical Committee (TC) 31 – and Standards Australia TC EL014: Electrical Equipment for Hazardous Area. Wigg is currently Chair of several Standards Australia Hazardous Areas Committees and head Australian delegate to IEC TC 31. His dedication to making Standards work for the electrical industry also includes his work for more than 20 Maintenance Teams (MTs) and Working Groups (WG) of which he convenes four. Wigg has also been active in the IECEx System from its inception and was appointed Chair of
the IECEx ExPCC for the Certification of Personnel Competence.

**Chen Bo, Secretary IEC TC 85, China**

Chen Bo was appointed Secretary of IEC TC 85: Measuring equipment for electrical and electromagnetic quantities, in 2003 and has made every effort to advance the work of TC 85 ever since. Following technical advancements, Bo has emphasized adapting the work scope of the Technical Committee to align it with global market demands, such as performance, safety, power quality, and energy efficiency. His continuous communication and collaboration with relevant National Committees and liaison bodies, has led to efficient management of the standard development process and delivery of 23 publications.

**Cheolung Cha, Secretary IEC TC 47, Republic of Korea**

Cheolung Cha has been recognized for his contributions as Secretary of IEC TC 47: Semiconductor devices, from 2007 to date. To revitalize their standardization activities, he carried out a reorganization of the TC and its Subcommittees, IEC SC 47A, SC 47D, SC 47E and SC 47F. He proposed and established Working Groups 6 and 7, to extend the scope of semiconductor devices to applications such as energy harvesting, human body communications, automotive vehicles, and flexible and wearable semiconductor devices. Under his leadership, Proposed New Work on these were presented at the 2014 Tokyo plenary meeting and will be submitted in IEC TC 47. Cha is also recognized for his contributions to establish the new IEC SC 47F: Microelectromechanical systems (MEMS), to deal with emerging markets on mobile phones and automotive vehicles. He has coordinated and managed 35 publications of International Standards, Technical Reports and Publicly Available Specifications since 2007 in IEC TC 47 (total 90 publications since 1950).

**Tadashi Ezaki, Secretary IEC TC 100, Japan**

Tadashi Ezaki was appointed as Assistant Secretary of IEC TC 100: Audio, video and multimedia systems and equipment, in 2004 and then Secretary since 2011. Ezaki has worked tirelessly and efficiently in one of the fastest moving areas of technology, multimedia. He has explored new technical areas (TAs) and created TA 14: Interfaces and methods of measurement for personal computing equipment, TA 15: Wireless Power Transfer, and TA 16: Active Assisted Living (AAL) accessibility and user interfaces. In addition, he continues to illustrate the importance of continued communication between ITU-T and ISO/IEC JTC 1, by organizing an ITU-T, JTC 1, TC 100 joint high level ad hoc meeting which was initiated in 2008.

Ezaki achieved the standardization of Digital Living Network Alliance (DLNA) specifications in a very short timeframe to meet industry demands. Ezaki received the 1906 Award in 2007 for the work he led on the Copy Generation Management System (CGMS) Standard, which solved content protection problems and enabled the launch of DVD players in the market.

**Jae-Young Lee, Technical Area Manager, IEC TC 100/TA 4, Republic of Korea**

Dr Lee started working for IEC TC 100/TA 4: Digital systems interface and protocols, as a technical secretary in January 2004. In 2009, he became technical area manager for TA 4 and as such, currently takes care of standardization for digital audio/video interfaces, for example, the IEC 60958, 61937 and 61883 series. Recently two more technologies have been added to enhance the realism of audio output to reflect current trends in multimedia industry – MPEG-H 3D Audio (PT 61937-13) and non-linear PCM bit streams according to the AC-4 format (PT 61937-14). Lee has also pursued standardization in IEC TC 100, T-DMB Standards (IEC 62516 series), and has helped other project teams complete their standardization process (IEC 62295). He is now serving as a Korean
representative to Home Network and Energy Efficiency Committee (ad hoc 07-1) in CJK-SITE, an organization for promoting cooperative standardization for China, Japan and Korea.

The following three recipients were not present at the Minsk meeting and will receive their awards at a later date.

**Reinhard Nerke, Secretary IEC SC 3D, from Germany**

In addition to his significant contribution on IEC TC 3 and IEC SC 3D projects, Reinhard Nerke became Secretary of IEC SC 3D: Product properties and classes and their identification, in 2007. Convinced of the crucial importance for various industries, Nerke aimed to further develop the structures of the IEC Common Data Dictionary (IEC CDD) product data dictionaries and ontologies. He also paved the way to enable industries to identify product properties and classes for their handling in computer sensible form. Nerke has successfully attracted more experts to contribute to the essential work in this field. He has managed to consistently increase the range of support of the industry and stakeholders through the more extensive applications in this area.

**Pietro Di Vita, Chair IEC SC 86C, Italy**

Pietro Di Vita has served as Chair, IEC SC 86C: Fibre optic systems and active devices, since July 1998. In this role, he has successfully developed the activity of this Subcommittee to include five very active WGs, and the largest number of experts among all the TC 86 Subcommittees. It has achieved remarkable efficiency, reducing the working of SC 86C documents from new proposal approval to publication date to an average of 18 months. Under his expert leadership, and thanks to his forward-looking vision, SC 86C recently reactivated WG 2 on fibre optic sensors, technology which is likely to have a significant influence on many different aspects of modern life. Di Vita has contributed to IEC TC 86 in the roles of: Convenor of IEC TC 86/WG 1 on terminology and symbology, Convenor of IEC SC 86C/WG 3 on Optical Amplifiers at its inception in 1996, and Convenor of the Coordinating Group on Categorization of Optical Components (now disbanded).

**Margie M. Burk, Assistant Secretary IEC TC 61, 72 and 108, US**

Margie Burk has greatly supported the smooth management of IEC TC 61: Safety of household and similar electrical appliances (10 years); IEC TC 72: Automatic electrical controls (five years); and IEC TC 108: Safety of electronic equipment within the field of audio/video, information technology and communication technology (10 years). During this time, Burk has facilitated all reporting and coordination with TC Members.
The IEC next generation
Overview of the IEC Young Professionals 2015 workshop

Janice Blondeau
Sixty-seven Young Professionals from 35 countries attended the sixth IEC Young Professionals workshop, held in Minsk in October 2015 in conjunction with the 79th IEC General Meeting. This means that more than 330 up-and-coming engineers and managers have participated in this Programme since its inception.

In their own words
“For me the most valuable thing about the Young Professionals (YP) workshop has been the networking opportunities. I’ve managed to meet my counterparts in various different countries and those are great industry contacts that I’m sure I will use in the future. We’ll be able to call on one another in our day-to-day work,” said IEC 2015 Young Professional Zoë Lincoln from South Africa.

Growing the next generation
The IEC Young Professionals Programme was developed to enable the IEC and its National Committees (NCs) to reach out to the next generation of experts, managers and leaders, encouraging their long-term participation in standardization and conformity assessment activities. This in turn helps guarantee continuity of high quality leaders and experts in the IEC Family.

Before the workshop
Prior to Minsk, the participants, who were selected by their National Committees, completed an online training to be better prepared for the workshop. They also provided their individual profiles via the IEC Expert Management System and these were made available to the IEC community on the IEC website.

Insights into IEC management
Participants had the choice of observing either the Standardization Management Board (SMB) or the Conformity Assessment Board (CAB) meeting. The following day special sessions on these meetings were held with the SMB and CAB Chairs and Secretaries, to explain to the Young Professionals what they had seen and to answer questions they had.

In another session the YPs were asked to give their input on questions submitted by the Chair of the SMB. Given the quality of the feedback received, the SMB Chair has invited a representative of the IEC 2015 workshop to present a summary of the Young Professionals’ ideas at the next SMB meeting on Tuesday 23 February 2016.

Participants also experienced the IEC in action by observing part of a technical meeting. The 2015 workshop included numerous breakout and interactive sessions which gave attendees the opportunity to share their thoughts and views. The country-tables breakfast, where YPs had the occasion to meet with the NC Officers from their country, was also a success this year.

Simulation of standards development
A new session, introduced this year, consisted of a simulation of a technical meeting about a mock standard for electronic baby robots. This part of the workshop was developed by the 2014 YPs and was highly appreciated by participants.

Feedback and recommendations
Feedback from the IEC Young Professionals 2015 workshop has been positive. All participants indicated that they found the event valuable and indicated that they plan to become more involved in IEC work.
Examples of the benefits that YPs have mentioned include outstanding international networking opportunities, being able to meet and interact with IEC management and NC Officers, and enhanced understanding of IEC procedures and processes.

What next?
During the Minsk workshop, the 2015 YPs were asked to reflect on how to make the IEC YP Programme more effective. The participants stated that the workshop was excellent, but confirmed that the follow-up after the IEC General Meeting was essential for their ongoing commitment and growth in IEC work at national and international level.

The YPs recommended that National Committees seek opportunities to involve them, including, for example, by providing the opportunity to observe or participate in a national or IEC Technical Committee meeting. In this respect, the IEC offers the possibility for Young Professionals to attend up to five different IEC technical meetings of their choice in the two years following the workshop they attended, as observers, provided their National Committee and specific TC/SCs agree.

Need for national IEC Young Professional Programmes
A recurring feedback from IEC YPs has been the need to establish national IEC YP Programmes focused on the electrotechnical sector, as this offers the greatest benefits to participants, particularly in terms of networking opportunities. For support in establishing a national IEC YP Programme, please contact Robert McLaren, the IEC Young Professionals Programme Coordinator.

2015 Young Professional Leaders
The three 2015 YP Leaders elected by workshop participants are Fatima Al Khoori, United Arab Emirates; Roberto Fernandez, UK; and Ricardo Luis Nava Garibay, Mexico. They will be working closely with the YPs and the IEC Central Office to develop the programme further.

We wish the 2015 Young Professionals a long and fruitful association with the IEC and its standardization and conformity assessment work.

Moving forward
Affiliate Plus, NECs, mentoring and training on the agenda

Claire Marchand
The Affiliate Forum has been part of the IEC General Meeting (GM) agenda since 2009 and is a great opportunity for Affiliate delegations to meet, exchange views, share experiences and discuss common challenges and best practices, both at the global and regional levels.

The Forum is now well established. In all, 44 delegates from 16 Affiliate countries (Armenia, Bhutan, Cambodia, Cameroon, Côte d’Ivoire, Democratic Republic of Congo, Gambia, Ghana, Haiti, Honduras, Lebanon, Mongolia, Namibia, Sudan, Tanzania and Zambia) were present. Seven IEC Members (Belarus, Egypt, Germany, Kenya, South Africa, Sweden, United Kingdom) attended the Forum.

Also in attendance were the African Electrotechnical Standardization Commission (AFSEC) President Claude Koutoua, as well as representatives from the Pan American Standards Commission (COPANT), the International Renewable Energy Agency (IRENA) and the National Metrology Institute of Germany (PTB).

IEC Affiliate Executive Secretary Françoise Rauser opened the session. After a warm welcome to all participants, she made some introductions and outlined the proposed agenda.

Update on the Programme
Rosario Uría, the new Affiliate Leader from Peru, who chaired the Forum, was the first to take the floor. She provided delegates with an update on the Programme since the 2014 GM in Tokyo, Japan, based on her report to the Standardization Management Board (SMB) and the
Conformity Assessment Board (CAB). She highlighted the efforts made to encourage Affiliates to establish their National Electrotechnical Committee (NEC): country visits, dedicated workshops, training webinars and the NEC workshop in Minsk during the GM.

Uría updated the audience on the Affiliate Mentoring Programme and the partnerships established so far (four in the last 12 months): Afghanistan-Malaysia, Bhutan-Sweden, Côte D’Ivoire-France, DR Congo-France, Ethiopia-Germany, Mongolia-Germany, Peru-Mexico, Rwanda-Austria, Uruguay-Norway and Zambia-Austria.

Uría presented the Affiliate Conformity Assessment Status (ACAS) which provides training on how to use IEC International Standards with the IEC Conformity Assessment (CA) Systems, and introduced the ACAS e-Learning modules for IECEE and IECEx, both available on the IEC website.

On Uría’s initiative, several guides were developed to help Affiliates find their way through the Programme:
- Guide to the Affiliate Country Programme
- Affiliate website guide

The second edition of the NEC Guidelines is expected in 2016.

Step by step

Next to take the floor was Mongolia, a country that recently became Affiliate Plus. NEC Secretary Battsengel Gurragchaa from the Mongolian Agency for Standardization and Metrology (MASM), presented the work of the NEC and explained in great details how the IEC and the World Trade Organization (WTO) Technical Barriers to Trade (TBT) Agreement impact her country.

Then, Jean-Robert Magloire, President of the Haitian NEC, reviewed the history behind the creation of the NEC in his country, the identification of stakeholders, the NEC achievements so far, the next steps and the challenges they are facing.

ACAS benefits

The last presentation of the day focused on ACAS. After a rapid overview of the benefits of using ACAS, IEC ACAS Coordinator Thomas Robertson made a step-by-step demonstration of the newly-launched ACAS e-Learning modules, guiding the audience through the three levels (introductory, intermediate and advanced) and the test participants have to take after completing the intermediate level. Robertson encouraged all delegates to visit the ACAS pages on the website and to see for themselves the benefits of the e-Learning modules.

The last part of the Forum was as usual dedicated to regional issues and the delegates split into three sessions on Africa, Latin America and Asia-Pacific. It was the occasion for regional bodies such as AFSEC and COPANT to discuss with Affiliate delegates the successes and challenges of their participation in IEC International Standardization work.

All presentations made during the Affiliate Forum are available on the IEC website http://www.iec.ch/affiliates/forum_workshops/forum_presentations.htm

From left: Affiliate Executive Secretary Françoise Rauser, Affiliate Country Project Coordinator Thomas Robertson and Affiliate Leader Rosario Uría
Access to electricity for all
Why microgrids may be the solution to bring power to rural areas

Claire Marchand

Around the world, 1.3 billion people lack access to electricity. More than 600 million are in sub-Saharan Africa, and more than 300 million are in India alone. Providing electric power to these populations will cause a significant jump in demand in the coming decades. India has promised to place an emphasis on renewable sources of energy; and there are programs in Africa to create minigrids using renewables. But as electricity-generating capacity inevitably grows ever larger, India and developing countries will not be able to avoid the increased use of fossil fuels as well — and especially coal. New coal-burning power plants will emit less carbon dioxide and other greenhouse gases than their predecessors, but the strain on the atmosphere will be substantial nonetheless.

Access to sustainable energy for all is a key development factor, essential for strengthening economies, protecting ecosystems and achieving equity. In addition to the 1.3 billion people who have no access to electricity and the development benefits it brings, about one billion more have access only to unreliable electricity networks. Nearly three billion people rely on traditional biomass (such as wood and charcoal) for cooking and heating.

This lack of modern energy services stifles income-generating activities and hampers the provision of basic services such as healthcare and education. In addition, smoke from polluting and inefficient cooking, lighting, and heating devices kills an estimated four million people a year and causes a range of chronic illnesses and other negative health impacts. These emissions are also important drivers of climate change and local environmental degradation.

In many developing countries, people carry water and fuel by hand, their food storage may be limited, and their activity is limited to daylight hours. Even small amounts of electricity can help change their lives.

Electric-powered wells for clean water can prevent many water-borne diseases by reducing or eliminating direct contact between people and the water supply. Refrigerators increase the length of time that food can be stored, potentially reducing hunger, while evening lighting can lengthen a community’s daylight hours allowing more time for productivity and study.

This year, the workshop focused rural electrification and sustainable access to electricity for all. It was an opportunity to shed light on IEC work and activities in that field.

IEC Affiliate Executive Secretary Françoise Rauser opened the session, welcomed all participants and introduced the new IEC Affiliate Leader, Rosario Uría of Peru, who took over from Phuntsho Wangdi of Bhutan on 1 January 2015. As Chair of the event, Uría provided background information on the speakers.

Developing Standards for microgrids
The first to take the floor was Wenpeng Luan, Convenor of IEC Systems Evaluation Group (SEG) 6: Non-conventional distribution networks/microgrids, who began by briefly explaining the main characteristics of microgrids; he then gave a status report on several microgrid projects in China, the United States and the European Union. The second part of his presentation focused on standardization demands in that field and a thorough description of SEG 6, from its background, scope and membership to its structure
and work plan. In essence, the Group’s task is to “provide guidelines on how [...] market needs can be addressed in standardization; produce a roadmap and action plan; and pinpoint current activities, gaps and interfaces between parts of the network to engage the community of experts, identify relevant stakeholders and define the general architecture and boundaries of the issue that needs to be addressed.”

**Smart microgrids**
John Newbury, Convenor of IEC TC 57/Working Group (WG) 20: Planning of (single-sideband) power line carrier systems (IEC 60495) Planning of (single-sideband) power line carrier systems (IEC 60663), from the United Kingdom, presented new developments in smart microgrids and the work of IEC TC 57: Power systems management and associated information exchange, on smart grid international standardization.

After explaining the Smart Grid and the microgrid concepts, the challenges inherent to their deployment, Newbury concentrated on the development of smart microgrids, their requirements and the work done by IEC TC 57 WGs in that field.

**Bringing power to the people**
Africa was also on stage with a case study from Zambia on the Zengamina Micro-Hydro Power Grid. After a brief introduction on his country, Joseph Malama, from Zambia Energy Regulation Board, led the audience through an overview of the power sector in Zambia and its reform, the regulatory initiatives for off-grid systems in the country, and finally spent time describing the Zengamina microgrid project: its key characteristics, environmental impact, success factors, benefits and challenges.

In conclusion, Malama said the project had connected more than 520 customers including a hospital and schools, benefitting more than 20,000 people in total. In brief, schools got power, people got light in their homes, shops and businesses could use machinery and the hospital could set up a new operating theatre.

**The perfect solution for microgrids**
The last to take the floor was Vimal Mahendru, President of Legrand India, who presented the relevance of low voltage direct current (LVDC) for microgrids for electricity access and why microgrids make sense in India. He started by describing the numerous things we use and enjoy on a daily basis that already run on LVDC – electric vehicles, computers, tablets and smartphones, lightbulbs are just a few examples – and the areas in which it could make a difference – data centres; housing; transportation and e-mobility; EV charging; street fixtures; mining, manufacturing and warehouses; commercial buildings; agriculture and fish farming; military; and appliances for convenience, hygiene, productivity and lifestyle.

Mahendru then concentrated on India, explaining why microgrids and solar energy make sense. The combination of solar energy, LED lighting and LVDC is the perfect solution for microgrids with clear benefits: speed of roll-out, private-public partnerships, local ownership and implementation and no red tape!

All in all, the workshop proved to be very successful and met the expectation of the 112 participants coming from 38 countries.
Photo Gallery
Battery powered (electric) ride-on toys, whether intended for use indoors or outdoors, offer children the experience of driving and controlling motor vehicles which are tailored to their size and capabilities. These toys depend on many IEC International Standards to ensure they are as safe and reliable as possible for use by children.

Wide choice for young enthusiasts
The range of kids’ electric ride-on vehicles has expanded from established favourites like cars and motorcycles to include all-terrain vehicles (ATVs), tricycles, quad bikes, go-karts, trucks, tractors, forklifts and dump trucks. Motorcycles come in three-wheeled versions for the youngest riders, two-wheeled types with training wheels and smaller versions of real motorcycles or dirt bikes. Trucks and sports utility vehicles (SUVs) tend to be larger than electric cars and typically seat more than one person.

There are close connections between ride-on toy cars and their real-life counterparts, as car companies license their designs to toy companies and toy manufacturers reflect motor industry trends in their products. As well as scaled-down versions of actual cars, ride-on vehicles also emulate popular TV as well as film character designs. These licensed cars are packed with features such as MP3 player inputs, front and rear lights and turn indicators, horns and remote controls. As they are made under the supervision of the parent car company, their quality, paintwork and electrics are of a higher standard than those of the budget ranges. High-end ride-on vehicles are fitted with integrated electronics and new technology such as remote control capability via smartphones, realistic engine sounds and other sound effects controlled by buttons on the dashboard.

Several IEC Technical Committees (TCs) and their Subcommittees (SCs) prepare International Standards on the components, systems and safety aspects of toys that use electricity in any form, as well as the transformers and rechargeable batteries used with them. These standards cover electric motors, safety devices, light-emitting diodes (LEDs) and infrared, light or touch sensors, MP3 players, touch-screen tablets and other components integrated in ride-on vehicles.

EVs for kids reflect motoring industry trends
Like many other toys, children’s ride-on replica vehicles have adopted electrical systems and propulsion for the greater enjoyment of their users.

Wide choice for young enthusiasts
The range of kids’ electric ride-on vehicles has expanded from established favourites like cars and motorcycles to include all-terrain vehicles (ATVs), tricycles, quad bikes, go-karts, trucks, tractors, forklifts and dump trucks. Motorcycles come in three-wheeled versions for the youngest riders, two-wheeled types with training wheels and smaller versions of real motorcycles or dirt bikes. Trucks and sports utility vehicles (SUVs) tend to be larger than electric cars and typically seat more than one person.

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The majority of ride-on vehicles are low-priced products made in China and exported worldwide, while higher-priced vehicles are produced in Europe, the US or elsewhere in Asia. Demand is particularly strong from buyers in Western Europe, Asia and the Middle East. According to South Korea’s Arirang TV, the global market for children’s electric cars was estimated at USD one billion in 2014 and is forecast to double to around USD 2.2 billion in 2016. This represents a small but growing part of all global toy sales, which total more than USD 80 billion a year, according to the New York-based Toy Industry Association.

Choosing the appropriate vehicle for a child’s age is extremely important, especially for safety reasons. Other factors to bear in mind are the child’s motor skills, height, weight and the location and terrain in which the electric vehicle will be used.
**Speed and range**

All electric vehicles for children are powered by some type of rechargeable battery, usually sealed lead acid batteries, and are sold with mains-powered chargers. The vast majority of batteries are either 6 V or 12 V. Most ride-ons use 12 V 12 Ah batteries. More expensive ride-on vehicles like electric bicycles, go-karts, self-balancing scooters and motorized skateboards may use rechargeable Li-ion (lithium ion) batteries.

IEC TC 21: Secondary cells and batteries, prepares product standards for rechargeable batteries of the type used in children’s ride-on vehicles.

The power supply has a huge impact on two features of ride-on toys. It will determine the power and speed of the car, and will also affect how long the toy can be ridden between charges. Typically, 6 V batteries allow a vehicle to travel at around 4 km/h for just over an hour on a single charge, while a 12 V battery will allow up to three hours of driving at speeds of 8 km/h.

Six V vehicles are the entry-level engine size. They are designed to have a low power output and to be fitted in vehicles designed for very young children, with slow acceleration and slow top speeds. Most basic models for children under two years old are small, light-weight and intended for indoor use. They usually have only one speed, with easy push-button operation.

12 V vehicles are designed for older children, and usually have two forward speeds and one reverse speed. They offer a little more power although this can be restricted with a speed limiting feature. For children aged between two and four, multiple different styles and sizes of vehicles are available. They include features like progressive acceleration, working radios with MP3 players, realistic engine sounds and foot pedal operation, and offer speeds up to about 10 km/h. Some larger cars are designed to be used outdoors on grass, gravel or even dirt and mud. Another step up in this age group is the inclusion of multiple-person vehicles, which require additional safety precautions like extra seat belts. Products aimed at the five to seven year old age group look more like real vehicles and feature faster speeds.

Electric ride-on cars at the very top of the scale can cost more than USD 1 000. One of these “supercars”, made in South Korea, has twin electric motors, four-wheel drive, electronic disc brakes, LED headlights, and a touchscreen entertainment system accessed from a detachable Android tablet that also allows parents to change settings like driving mode and maximum speed, as well as providing remote control via Bluetooth 4.0. Sensors in the car measure its electric current, voltage, direction and internal temperature. IEC TC 47: Semiconductor devices, and its SCs, include sensors in a number of their publications.

International Standards for electronic displays such as those used in touchscreen tablets are prepared by IEC TC 110: Electronic display devices.

IEC TC 61: Safety of household and similar electrical appliances, has produced IEC 62115: 2004, Electric Toys – Safety, which deals with the safety of toys intended for use by children under 14 years of age and that feature at least one function that is dependent on electricity. This Standard applies to toys containing lasers or LEDs.

**Safety**

The safety aspects of ride-on toys revolve around batteries and electric motors, ease of operation and braking, the range of functions offered by the...
remote controls and use of the correct type of charger with appropriate voltage output to avoid the risk of electrical fires.

Basic precautions include seat belts as standard, ensuring that seats are well attached to their bases and fitting speed limiters. A “smart pedal” feature means that as soon as the driver takes their foot off the acceleration pedal, the vehicle will stop, making it safer and easier for children to handle than the typical accelerator/brake pedal systems in adult cars.

A remote control allows the in-car controls to be over-ridden so that forward and backward movement as well as steering can be activated by the remote control device, which typically has a range of between 15 and 30 m. Remote controls are most common in 6 V ride-on cars and some 12 V models, although high-end models also come with more sophisticated remote controls which are operated via smartphone applications.

The most expensive ride-on cars have active driving systems based on sensors that measure the vehicle’s electric current, voltage, revolutions per minute (RPM), direction and internal temperature, as well as monitoring the condition of the road and the environment. The car’s central processing unit (CPU) uses the data collected to actively detect abnormal activities and either activate the emergency stop or give voice instructions to take appropriate action, such as resting the vehicle for a while or moving it to a safer place.

Other safety hazards in ride-on toys can include overheating caused by short circuits in the wiring under the bonnet and in the battery compartment (usually under the seat), and fires resulting from the use of battery chargers with the wrong voltage output.

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Integrating electronics
The safety and remote control features of high-end ride-on vehicles are likely to become commonplace in cheaper models as demand increases and sales grow.

Ride-on vehicles will also increasingly reflect the trend to integrate electronics and new technology with toys to create additional and new playing possibilities. These include features like digital light-emitting diode (LED) battery meters; Wi-Fi; dashboard cameras streaming audio, video or stills to smartphones and driving simulation modes combined with traffic safety education guides.

Some manufacturers have started incorporating solar technology in outdoor ride-on vehicles such as go-karts. One model uses a monocrystalline silicon solar panel mounted on the rear wing of a go-kart powered by a 24 V 16 Ah battery pack to continuously recharge the vehicle while in use.

Modified electric cars also offer an affordable alternative to expensive motorized children’s wheelchairs which can cost up to USD 20 000. Several US universities operate schemes to adapt ride-on cars, including modifications like adding buttons instead of foot pedals, to give children who are physically and developmentally disabled the ability to move about and travel on their own.

International Standards prepared by a number of IEC TCs enable the manufacturers and importers of electric ride-on vehicles to demonstrate that their products comply with national legislation. They also offer assurances to parents that the products meet the highest standards of safety. However, the responsibility for choosing appropriate toy vehicles carefully and supervising how they are used rests ultimately solely with parents and adults.
More creative and safer festive lighting

New lighting solutions, mainly based on LEDs, are changing many aspects of holiday and festive lighting

Morand Fachot
The end of year season presents lighting designers and individuals with the opportunity to give free rein to their creative imagination and bring a festive atmosphere to towns, buildings and homes in many countries. The range of lighting equipment now available offers great flexibility for dazzling effects whilst keeping power consumption in check and improving safety thanks to more energy-efficient systems. Standardization work by IEC Technical Committee (TC) 34 and its Subcommittees (SCs) makes this possible.

Festive atmosphere coming to towns
The end of year holiday season is an opportunity for local authorities and businesses in many cities around the world to dress up their iconic landmarks and streets with holiday lights.

In some countries this tradition goes back a long time when candles flickered from windows, or when they were used to decorate Christmas trees in Christian countries. Electric lighting, first introduced around Christmas in the late 19th century, gradually brought lighting to many more towns and even villages, and significantly reduced risks from fires in homes.

The range of holiday lights is very extensive, from simple light strands and individual lights to complex compositions and even sculptures of fixed, flickering or animated multi-coloured lights.

Like in homes and elsewhere, many different types of lamps are used, including incandescent bulbs or, increasingly, light-emitting diode-based lamps (LEDs), the latter bringing many more opportunities for creative lighting and ensuring the failure of entire light strands is a thing of the past.

Attracting business, warming up atmosphere at home
Businesses want to draw as many customers as possible in the run-up to the holiday season. Making streets and shops entertaining and attractive gives shops the opportunity to display goods in the best possible light and to drive up sales.

A number of renowned department stores in certain cities are famous for their striking window displays, which certainly attract more trade.

Homes are the centre of usually less extravagant lighting efforts, but individuals also give a lot of attention to bringing a festive atmosphere indoor and sometimes outdoor too. Like in many other domains LEDs provide new opportunities for creative lighting.

The LED advantage
LED-based lighting presents many advantages for lighting in public places and homes during the holiday seasons as well as at other times.

These benefits are the same than those found for all LED-based applications. LEDs are much more energy-efficient.
than their incandescent counterparts, they last much longer and are getting less and less expensive. They also let people give free rein to their imagination to prepare their holiday decorations. The recent addition of connected lights, smart plugs and smart home technologies allows individuals to control their lights (LED-based or existing lights) even wirelessly from mobile devices.

LEDs are proving more and more popular, first introduced for large holiday lighting less than 10 years ago LEDs have now entered homes and it is estimated that some 40% of all holiday lights sold this year in the US will be LEDs, 35% being coloured lights and 65% white lights. The trend is similar in many other countries.

International Standards for LED-based systems are prepared by IEC TC 34: Lamps and related equipment, and its SCs.

As for the quality of LED-based lighting sources it is further improved thanks to the IECQ Scheme for LED Lighting – the latest scheme offered by IECQ, the IEC Quality Assessment System for Electronic Components.

### Safety first

Energy-efficient LED-based solutions allow many more lights to be linked to a single power source without overloading the system. Up to two dozen strands of LED lights can be connected to a single plug, more than five times what can be done with traditional holiday lights.

Electric holiday lights are far less hazardous than candles. In the UK alone candles sparked 1 000 house fires in 2011/2012, while “Christmas trees, decorations and cards were also a fire risk and responsible for 47 house fires.”

The US National Fire Protection Association (NFPA) noted in its latest report that “Christmas trees are a traditional part of the Christmas holiday. They can also be a major source of fuel in a fire.” The NFPA indicates that they “were the item first ignited in an estimated average of 210 reported home structure fires per year.”

According to the NFPA, electrical distribution and lighting equipment were responsible for 38% of these fires, including electrical failure or malfunction (30% of all cases). Overloading installations (mainly plugs) and heat from lights were the main reasons.

Energy-efficient LEDs, which do not overload installations and do not produce much heat to their surrounding environment, contribute to safer lighting installations, not just during the holiday season.

As the range of dedicated lighting solutions for the holiday season and festive occasions keeps expanding, more innovative lighting applications will be found that will allow energy consumption to be brought to reasonable levels.
TECHNOLOGY FOCUS

Smart toys for clever kids
Sensors animate toy robots in innovative ways for playing and learning

Antoinette Price

Over the centuries, toys have evolved from dolls of stone, terracotta, wax or wood depicting humans, to today’s animated toy robots which can walk, jump, roll, spin, flip, kick, pick up objects, dance, talk and respond to certain voice commands. Unlike the doll that repeated a few simple phrases with the pull of a cord, or the wind-up robot that shuffled across the floor until it ran down, these modern toys are sophisticated and require more active users.

Technology makes intelligent, safe toys
It’s amazing to think that the first programmable humanoid robots – a group of musicians playing instruments for entertaining royal guests – were apparently created by inventor and engineer Ismail Al-Jazari of Turkey as far back as 1206.

Hundreds of years later, the evolution of technology has resulted in today’s electric-powered toy robots, (using batteries, power cords or connecting to other powered products like TVs or computers), which are increasingly intelligent for their young, tech-savvy consumers. Controlled remotely through smartphone apps or even generating their own wireless connection up to a certain distance, some have built-in augmented reality (AR) features.

When we buy a product, we expect it to be of the highest quality, function correctly and be safe. This is even more so for children’s products. The work of the IEC contributes towards the safety aspects of toys that use electricity in any form and on the transformers and batteries used with them through International Standards prepared by different Technical Committees (TCs). It also covers testing and verification, for example with the IEC Conformity Assessment Systems, whose Members certify the safety, performance and interoperability.

- IEC TC 21: Secondary cells and batteries, prepares product Standards for rechargeable batteries, typically found in many children toys.
- IEC TC 110: Electronic display devices, prepares International Standards for electronic displays such as those used in touch-screen tablets for children, as well as smart phones.
- IEC TC 61: Safety of household and similar electrical appliances, deals with the electrical safety of toys intended for use by children aged under 14. Products covered include construction and experimental sets, toys which replicate the functions of appliances used by adults, such as toy electric irons or computers, but also toys which use electricity for secondary functions such as lasers or light-emitting diodes (LEDs).
- IEC TC 96: Transformers, reactors, power supply units, and combinations thereof, covers the electrical, thermal and mechanical safety aspects of transformers and power supplies for toys. This comprises protection against electric shock, overloads and short-circuits.
- Today’s toy robots come to life thanks to an array of sensor-based technology, which can measure physical properties, such as the distance between objects, the presence of light and sound frequency, an object’s presence or absence or size and shape. In the case of toys, sensors are particularly popular, because they fit easily into tiny robotics and make

Electric toy robot
robot toys possible. IEC TC 47: Semiconductor devices, prepares International Standards for the design, manufacture, use and reuse of sensors and microelectromechanical devices which are also used in innovative robot toys.

Global systems for quality and safety
The IEC also ensures the safety and quality of electric powered toys. IECEE, the IEC System for Conformity Testing and Certification of Electrotechnical Equipment and Components, plays an important role in the certification of electric toys. This System provides reassurance for users and consumers that a product is reliable and meets expectations in terms of performance, safety, durability.

IECQ, the IEC Quality Assessment System for Electronic Components, offers electronic toy manufacturers a solution for sourcing safe and certified hazardous substance-free electronic components.

Blurring the lines between playing and learning
As smart technology and the Internet of Things develops, toy robots offer more than just play time, they can also engage children in learning. New apps and games deal with literacy, mathematics, science knowledge, which look at how to improve critical thinking. Some activities can involve the physical building and programming of the robots, which teaches creative science, engineering and the computational thinking that is part of programming. In a world where so many daily activities use some kind of hard or software, even if simple at first, this kind of learning can lead to more complex character-based coding.

When it comes to drawing children in and keeping their attention throughout the learning process, the actual hardware seems to be quite an important factor for educational technology. Using the fun and entertaining aspects of toys in combination with software learning elements, educational robots end up looking like mini humanoids, boxes on wheels, cubes, spheres, Lego pieces, drones and more.

As with any smart devices, smart toys which are connected to the Internet via app, wi-fi or other methods, could potentially be hacked and children’s personal data stolen. Every day we read about companies that experience cybersecurity breaches. This happened recently to a company which provides downloads of apps, games, music and books for its toys. The IEC takes the threat of cybersecurity very seriously. Several parts of the organization work towards finding solutions, including:

- The IEC Advisory Committee on information security and data privacy (ACSEC) also deals with information security and data privacy matters.

The future for toys looks smart
It comes as no surprise that with the advent of the Internet of Things, the electric-powered toys industry is booming. According to a survey on the Statista statistics portal, the global smart toys industry revenue is projected to increase from USD 1.3 billion in 2013 to USD 7.4 billion in 2018.

At the forthcoming CES 2016, the category ‘Kids play and FamilyTech Summit’ will cover areas such as:

- Kids: physical meets digital – where new experiential play places are designed to let kids gather, explore, and collaborate in new ways.
- Robotics: kid’s best friend – showing the latest functions of a new breed of robot which is becoming a kid’s best friend and teacher.
- Parenting tools – how technology is changing parenting and learning.
- Annual KAPi (KidsAtPlay Interactive) awards – for the best of kids’ tech and media.
Active Assisted Living: from strategy to reality
IEC SyC AAL up and running

Janice Blondeau, Pierre Sébellin
Assuring quality of life for ageing populations is a global issue that in future may impact countries’ health and social systems to the point of jeopardizing their financial stability. Solutions that allow the elderly to stay active, independent and living at home for as long as possible are essential. Central to this work is the new IEC System Committee on Active Assisted Living (SyC AAL).

Ageing in numbers
The World Health Organization (WHO) estimates that the percentage of the world’s population aged over 60 will double from 11% to 22% between 2015 and 2050. The number of people 60 years and over is expected to increase from 900 million to two billion over the same period.(1) According to the WHO ‘all countries face major challenges to ensure that their health and social systems are ready to make the most of this demographic shift’.

Using technology for independence
To achieve an active and independent ageing population, technologies, ranging from medical and healthcare devices to robotics and activity monitoring sensors, all need to be interconnected. IEC standardization work will bring key benefits by ensuring the safety and interoperability of these diverse technology solutions.

Several IEC management-level groups have worked to define the most appropriate strategy in order to plan the standardization of such diverse technologies. This saw the establishment of the IEC System Committee on Active Assisted Living.

Systems approach brings benefits
In March 2015, SyC AAL held its first committee meeting in the framework of the new IEC systems approach. It was hosted in Frankfurt by DKE with 11 countries represented, plus several industry and research sector stakeholders. Participants all agreed that the new systems approach is the best option for standardization work in today’s environment, which sees ever-increasing interconnected communication and complexity.

Since then, the work of SyC AAL has started in earnest, with the first IEC International Standards being developed using the systems approach.

What does the systems approach mean?
Our world is growing more connected, interconnected, and Internet-connected. As we use devices which are packed with more and more functions, there is a technical evolution towards the convergence of technologies.

To make our lives easier, engineers build large and complex technology systems. To ensure safety and interoperability, these systems rely on a large number of Standards originating from many technical committees, and from several standardization organizations.
A SyC offers a new type of standards development approach, which brings together many stakeholders with different types of expertise to develop International Standards at a systems level.

Scope of work
The IEC Systems Committee on Active Assisted Living is responsible for creating an AAL vision which takes account of market developments. SyC AAL is tasked with fostering standardization to enable usability and accessibility of AAL systems and services, and importantly, cross-vendor interoperability of the systems, services, products and components. It will also address systems-level aspects such as safety, security, including cybersecurity and privacy.

In addition to the work of SyC AAL, Technical Committee (TC) 100 has created Technical Area (TA) 16 to address AAL aspects such as ‘accessibility, usability and specific user interfaces related to audio, video and multimedia systems and equipment within the scope of TC 100’.

Looking ahead
AAL offers solutions to extend independent living through the development and smart deployment of consumer electronics and connected and wearable medical and health-related devices. It is becoming a major priority for many countries faced with a rapidly ageing population and the prospect of soaring healthcare costs.

IEC standardization work will prove crucial for the development of this sector, which is set to provide improved health and a better quality of life for millions of people, as well as major industrial and economic benefits.

More light for less energy
IEC TC standardization work helps cap energy use for lighting in the long term

Morand Fachot

The lighting sector is undergoing a profound transformation as most countries, seeking to limit increases in their energy consumption, adopt energy-efficient solutions. IEC Technical Committee (TC) 34: Lamps and related equipment, and its Subcommittees (SCs), develop International Standards for electric light sources and a significant proportion of their activity is focused on energy-efficient lighting solutions.

**Incandescent bulbs cede ground to energy-efficient lamps**

As nearly 20% of the world’s total electricity production is consumed by electric lighting, and as global demand for artificial light is projected to be 80% higher by 2030, the introduction of energy-efficient lighting solutions is seen as a priority for many countries in limiting their energy consumption. As energy-hungry incandescent bulbs have a limited lifespan, increasingly they are being replaced by more energy-efficient light bulbs such as compact fluorescent lamp (CFL) or light-emitting diode (LED) products.

Energy-efficient light bulbs are not new: the first CFL screw-in replacement for an incandescent bulb was introduced in 1980. CFL is now a mature technology and currently accounts for the bulk of the energy-efficient bulb market.

However, LED-based lighting solutions, built on LED chips and modules and introduced initially in many niche markets such as commercial lights, are proving more and more popular with consumers as their price keeps declining. A January 2015 report by WinterGreen Research expects the LED lighting market to grow 45% per year between 2015 and 2020 to reach USD 63.1 billion by 2020.

**New Standards will allow rapid market expansion**

LED modules are replaceable items made up of LED dies or chips and mechanical and optical components for use in a luminaire (light fitting).

The recent success of consumer-orientated LED lighting means that the market has been flooded by a large number of manufacturers making unverifiable claims about their products’ performance, in particular where LED modules are concerned. Yet designers and producers of lighting and luminaires need to know how long LED modules will continue to deliver a meaningful percentage of their initial light output over the years.

Lights like this Philips Hue LED make for better atmosphere in living and working spaces

High-brightness LEDs provide the light source for head-up displays in cars (Photo: OSRAM)
Introduce rapidly, new standards are needed quickly. Manufacturers claim the standardization of performance requirements is an important first step towards the realization of a like-for-like comparison of luminaires.

**Extensive work is taking place**

To meet this demand, IEC TC 34 and its SCs have developed a large number of International Standards in addition to the continuous development of International Standards for other types of lighting solutions such as tungsten, halogen or fluorescent lamps.

TC 34 also makes use of Publicly Available Specification (PAS) documents which allow industry-agreed specifications to be developed quickly.

TC 34 was established in 1948. It set up four SCs to develop International Standards for lamps (SC 34A), lamp caps and holders (SC 34B), auxiliaries for lamps (SC 34C) and luminaires (SC 34D).

TC 34 also prepares international standards for miscellaneous related equipment not covered by any project of another TC.

As of December 2015, more than 470 publications developed by TC 34 and its SCs were available on the IEC Webstore.

TC 34 and its SCs are suppliers and customers of Standards to a number of IEC TCs and SCs, including TC 20: Electric cables, SC 23B: Plugs, socket-outlets and switches, TC 61: Safety of household and similar electrical appliances, TC 64: Electrical installations and protection against electric shock, TC 76: Optical radiation safety and laser equipment, TC 97: Electrical installations for lighting and beaconing of aerodromes, and SC 121A: Low-voltage switchgear and controlgear.

TC 34 also liaises with a number of TCs from the International Organization for Standardization (ISO) and with other organizations, such as the International Commission on Illumination (CIE).

Given the rapid expansion of the global lighting market and the continuous introduction of new products, experts from TC 34 and its SCs have a busy agenda ahead of them for the foreseeable future.
Supporting UN Sustainable Development Goals

IEC now officially at home in Africa

Gabriela Ehrlich
Energy is the life-blood of developed and developing economies. IEC work helps enable broad access to sustainable energy and directly supports UN Sustainable Development Goals. It does so by providing universally accessible technical know-how and expertise in the form of International Standards. With them countries are able to build safer, more affordable infrastructure that is easier to maintain. To be even closer to Africa, the IEC has now opened a Regional Centre for Africa in Nairobi, Kenya.

Energy: the golden thread
In September 2015, the United Nations adopted 17 Sustainable Development Goals (SDGs) with an objective to “end poverty in all its forms” by 2030. Above everything, SDG 7, which aims to “ensure access to affordable, reliable, sustainable and modern energy for all” is where IEC contributions are most relevant and important. Energy is the golden thread that impacts most of the SDGs and beyond that, the development of every nation and the well-being of everyone of us.

The United Nations has recognized energy as a cornerstone for economic development, facilitating poverty and hunger reduction efforts, improving education and women’s empowerment and providing access to better quality healthcare.

Lack of energy puts brakes on development
Akiwumi Adesina, President of the African Development Bank stated that no component of the SDGs is more important than point number 7: Energy. He sent a strong message: “Africa cannot function without power as it is handicapping our growth and development. Homes, businesses, schools and hospitals suffer enormously. Factories lie idle for lack of power. The private sector is frozen in time. The lack of energy has put the brakes on Africa’s industrialization...”

The fact is: Africa’s economic development and the safety of many Africans are directly dependent on reliable access to good quality electric power.

IEC-AFRC workshop
Universal access to power was also the key topic of the workshop that launched the inauguration celebrations of IEC-AFRC, the Africa Regional Centre of the IEC, in Nairobi, Kenya on 2 November, 2015.

In his opening speech, Dr Shu, IEC Vice President and President of State Grid Corporation of China, the biggest utility in the world, underlined that electrification doesn’t happen by chance: “It needs regulations but also the know-how and expertise to build relevant infrastructure that is safe, affordable and can be maintained in the long run”.

Part of the mission of IEC-AFRC will be to support African countries in their quest to build a more reliable and sustainable power infrastructure.
for the millions who have no access to electricity. The IEC helps ensure and verify the safety, efficiency and interoperability both of off-grid and on-grid infrastructure and improve energy efficiency, the world’s largest untapped energy source.

**Energy consumption is increasing in Africa**

Africa is the world’s second-fastest-growing region, topped only by emerging Asia. This growth is fuelled by a rising consumer market and not, as one could believe, by the sole sale of its many resources.

Over the coming years the African economy is expected to grow by 7.7% annually – almost double the rate of advanced economies. Even though Africa is starting from a low point, corresponding roughly to where Southeast Asia was 30 years ago, the opportunities are huge. Already now Africa is third in terms of investment, right after the European Union and China. A more reliable infrastructure and consistent energy access could significantly accelerate this trend.

Today, according to World Bank statistics only about 24% of sub-Saharan Africa has access to electricity.

**Smarter cities needed – also in Africa**

Growing urbanization is a key driver of economic development. African cities are expected to contribute the most with nearly 40% GDP growth. Today around 40% of Africans live in cities, this figure will grow to 47% by 2030. Cities will need to grow smarter and more sustainable, and here too IEC work will help Africa to make the best of new technologies.

**Optimistic about the future**

Africans are exceptionally optimistic about their economic future. 84% of the 13 000 consumers interviewed by McKinsey expect to be better off in two years.

The middle class is growing and more of them are able to spend money on non-food items, including appliances and branded goods.

Africa is also the only continent that is growing younger. Today, more than 200 million Africans are aged between 14 and 24, this demographic is expected to increase to 321 million by 2030.

**More and more electric power needed**

Young Africans form a large share of the rising middle class and are expected to seek access to a wider choice of consumer goods and entertainment as well as increased connectivity. Young African urbanites resemble their counterparts anywhere on the globe. They are brand and quality conscious, but affordability is critical.

All of this will drive energy and in particular electricity consumption. According to OECD numbers, it is expected that by 2040 developing countries will use double the electricity developed countries use today.

**Many solutions required**

Going forward, African countries will need to produce more electric power faster than ever before. Many different solutions will need to be considered for this. Big will not always be beautiful. As Ing Abel Tella, CEO of the Association of Power Utilities of Africa (APUA) underlined in an interview he gave during the IEC-AFRC opening celebrations: “Off-grid power solutions will help bring power to millions who would otherwise have to wait many years to be connected to grid power. Most of these solutions will use renewable energy.”

**Away from fossil fuels**

Wise energy choices will have to be made. Africa has an abundance of natural resources; the whole continent
IEC FAMILY

IEC FAMILY

is basically one big solar panel. It has also wind and lots of water. And yet, 93% of Africa's hydropower potential remains underdeveloped. Over 80% of African electricity generation is still from fossil fuels. Long-term energy security would benefit from adding other energy sources to the mix.

Why a regional Centre in Africa?
The IEC now addresses 48 countries in Africa. Eight are IEC Members and 40 are already involved with the IEC Affiliate Country Programme. And while some are really benefitting from the Programme, others still have to learn how to make better use of this opportunity that comes free of charge.

New IEC home in Africa officially opened
On 2 November, 2015, at the end of the inauguration cocktail, the Cabinet Secretary of the Ministry of Industrialization and Enterprise Development of Kenya, his Excellency Adan Mohamed, declared the IEC Africa Regional Centre officially opened.

As the regional focal point for Africa, the IEC Africa Regional Centre will provide training and mentoring to assist African countries in adopting and using IEC International Standards and Conformity Assessment Systems. IEC-AFRC aims to motivate more African countries to join the IEC as a Member or Affiliate. The Centre will also support them in their participation, no matter their level of commitment.

The main tasks of IEC-AFRC will be to:
• provide training and technical assistance
• raise the awareness of IEC International Standards and the IEC Conformity Assessment Systems both among governments and local industries
• provide a link between the global IEC and all African countries
• visit and support all IEC Members and Affiliate Country Programme participants in the region
• work closely with the African Electrotechnical Standardization Commission (AFSEC), the African Union and all the other regional bodies that are important for African development
• involve more African countries at the governmental level in IEC work
• ultimately become a technical centre that helps coordinate IEC work like our other Regional Centres

Those who make the Centre
The IEC is happy to count Evah Oduor among the pioneering staff of IEC-AFRC. As IEC Coordinator for Africa since 2008, she has been a great asset for the IEC and the IEC Affiliate Country Programme. Oduor is also active in AFSEC. Until recently, she was Managing Director of the Kenya Bureau of Standards (KEBS).

François Ahoti has recently joined the IEC coming from UNIDO, where he was Chief Technical Advisor for a European Union (EU) funded project to improve the quality infrastructure in Haiti. Ahoti is not a foreigner to standardization, having worked for CODINORM, the National Standards Body of Côte d’Ivoire. In that context he helped set up and structure the IEC National Electrotechnical Committee of Côte d’Ivoire and later that of Haiti. He has extensive expertise in certification and conformity assessment, management systems and quality tools.

IEC-AFRC is located in modern, functional premises at the ESBC offices at Eden Square in Nairobi.

Photos of the opening event can be found and downloaded here:
photos.iec.ch
• Password: photosIEC16
• Password for IEC-AFRC photos: IECAFRC15

François Ahoti and Evah Oduor
Antoinette Price

A conference entitled ‘Using and referencing International Standards to support public policy’, was organized by IEC, ISO and UNECE at the United Nations, Geneva, in November. The attending 175 participants heard how International Standards help to support public policy and enable resilient world trade, policymaking, electrical energy efficiency, safety in the food and medical devices industries, as well as contribute significantly towards disaster risk reduction and sustainable development goals. Here are some of the highlights.

Concrete results from collaboration between the UN and standardization organizations

Well-known for its peacekeeping and humanitarian activities, the UN also works to develop standards in many fields. The most successful are those developed across agencies, organizations, with civil society and business. For example, the adopted Sendai Framework of Action Disaster Risk Reduction 15 year plan to make the world safer from natural and man-made hazards involved cooperation between UNECE, IEC and ISO.

Another case is the development of a Common Regulatory Framework on Equipment Used in Environments with an Explosive Atmosphere. UNECE worked closely with IEC and IECEx to create what is a basis for regulators who need to ensure safety and the protection of the environment and communities living near dangerous facilities.

A UN spokesperson noted that International Standards play an important role in the deployment of the highest level of its policies, such as for the 2030 Sustainable Development Goals.

Helping global trade function smoothly

Today global trade has become the norm, since many products are “Made in the world”, as parts are made in and transit through many different countries. More than ever it is important to avoid delays at the border crossings of these global supply chains, while ensuring quality, compatible, interoperable, reliable products. “Good International Standards setting is a form of

Conference on how IEC and ISO Standards support public policy

Cat scan medical device
multilateral cooperation that can help reduce trade costs”, said Eric Wijkstrom, Counsellor, Trade and Environment Division, World Trade Organization.

**Improving energy efficiency**
As the global demand for more energy rises, energy efficiency will involve all sectors of the economy. Energy savings are dominated by efficient motors in industry, efficient appliances and lighting in buildings and fuel-efficient transport vehicles. Franco Bua, Member of the IEC Advisory Committee on Energy Efficiency (ACEE) and Vida Rozite from the International Energy Agency (IEA) quoted the World Energy Outlook 2014 as saying that two thirds of the economic potential to improve energy efficiency remains untapped for the coming 20 years. In the meantime, standardization work continues to play its role in energy efficiency. Bua explained how IEC International Standards support the regulation of electric motors, power transformers and adjustable speed drives by providing common measurement, test and calculation methods. They also codify best practices, design checklists and guides; consider interoperability and a systems approach.

**Making the world healthier**
Wherever we are in the world, and whatever our medical condition, we want to know we can access medical care and that any device we may use (pacemaker, insulin dispenser or hospital monitoring device) functions accurately and safely. According to Elisabeth George, Vice President, Global Regulations and Standards, Philips, International Standards address issues, such as varying legal and regulatory requirements of countries, differing documentation needs, non-unified scope of verification and validation, by allowing for a convergence of international requirements. The benefits of such Standards include “a common and agreed language across stakeholders, a basis for international trade agreements, testable or auditable requirements and cost savings which result in improved patient access.”

International Standards are often used at the highest levels of industry within countries, as was explained by Kuniki Imagawa, Technical Officer at a Japanese regulatory agency for pharmaceuticals and medical devices. “More than half of the Japan Industrial Standards for certification of medical devices (class II, MRI, x-ray system) are based on and the majority are harmonized with IEC and ISO International Standards.

**How can we promote the importance of standardization to greater audiences?**
The event was a great success, attracting regulators, representatives from industry and the private sector, non-governmental and standardization organizations. In addition to the important role standardization has to play in so many areas, a number of speakers emphasized the need to improve visibility of the standardization process, increase access to and broaden the scope of its participants, as well as do more to promote and ensure the certification of Standards.

**Efficient energy with solar panels**
International Day of Persons with Disabilities

Standards help tackle the challenges of certain disabilities

Antoinette Price

Around 15% of the world population, or more than one billion people, live with some form of disability, according to the World Bank. There is a great need to provide access to essential services so these people can live healthy, active and independent lives. This will also prove beneficial to society as a whole. Additionally, the percentage of the world’s population aged over 60 years is forecast to reach 22% in 2050, making it imperative to create more age-friendly environments which provide solutions for disabilities.

On 3 December, the United Nations observes the International Day of Persons with Disabilities, and this year’s theme ‘Inclusion matters: access and empowerment of people of all abilities’ encourages empowering people by investing in their jobs, health, nutrition, education, and social protection.

Improving the lives of the visually impaired and those with hearing loss

The IEC, through its Systems Committee for Active Assisted Living (SYC AAL), works on providing AAL solutions for people with disabilities. Additionally, the work of several IEC Technical Committees (TCs) helps to deal with specific problems which result from disabilities such as:

Impaired sight

IEC TC 100: Audio, video and multimedia systems and equipment, has set up Technical Area 16: AAL, accessibility and user interfaces. It has developed tools, such as the optical character recognition, character magnification or voice recognition systems and hardware including adapted or on-screen keyboards. These may help visually impaired people carry out different activities. It has also created a Standard

Helping visually-impaired people use every day devices
that specifies the text-to-speech functionality for a broadcast digital receiver with a text-to-speech system, to deal with the problems such as not being able to operate a remote control device, see subtitles, navigate channels and TV inputs, nor use additional data (text) services provided by the broadcaster, or do the initial TV setup.

This TC has also developed a Standard for the file format and player requirements of the highly successful digital audiobook.

**Hearing loss**

Equally those suffering from hearing loss may find their social, academic and career prospects somewhat limited without extra help. IEC TC 29: Electroacoustics, has produced the IEC 60118 series of Standards to cover measurements of electroacoustic and performance characteristics for various types of hearing aids.

See related article in the December 2014 issue of e-tech: Dedicated to improving quality of life

For more about accessibility and International Standards, visit: www.worldstandardscooperation.org/accessibility

Smart appliances may prove very helpful for everyone and in particular for the older generations
Antoinette Price
The IEC regularly supports key global and regional industry events, which can present the IEC endorsement on their website and materials.

Delivering on the Trade Facilitation Agreement: The role of standards and regulatory frameworks

Nairobi, Kenya, 14 December 2015

Trade facilitation creates a reliable, fast and cost-effective trade environment that benefits all countries and businesses, especially small and medium-sized enterprises. It is a collaborative effort by governments and traders to cut the costs of doing trade, reduce delays at borders, and make public agencies dealing with trade more efficient.

During the Workshop organized by UNECE and held as a side event of the 10th World Trade Organization (WTO) Ministerial Conference, international and regional experts will present their experiences with existing standards and related tools, as well as their thoughts on how such instruments can be better used to further enhance implementation of the WTO Trade Facilitation Agreement (TFA) worldwide. The IEC participates actively through its regional office in Africa, IEC-AFRC, which was inaugurated in November.
IEC WORLD

François Ahoti of IEC-AFRC will speak at the event.

ACI Energy Storage 2016 Summit

Paris, France, 3-4 February 2016

The conference will bring together key industry stakeholders from leading companies to address the current challenges of the energy storage market and discuss the latest developments.

The two day event will give insights on business cases, regulatory environment, financial aspects and technological advancements for the energy storage industry. It will also look at successful case studies and explore the latest R&D projects.
Multimedia & consumer electronics

Issue 01/2016 of e-tech will focus on multimedia and consumer electronics, with a particular emphasis on major tech trends from the 2016 International Consumer Electronics Show (CES) in Las Vegas, USA. The sector is evolving at an extremely rapid pace, with innovative new products reaching the market at a never-seen-before frequency.

While the CES will no doubt see the unveiling of a great number of new smart(er) devices, e-tech will also focus on printed electronics, still in the very early stages of introduction into industry, which could in future make a significant contribution in the field of wearable smart devices.

We’ll also have a closer look at the world of television, which has seen enormous changes since the introduction of digital TV in the early 2000s, at technology advances that have a major impact on the broadcasting industry (think robots, think drones…) and at radio, still alive and kicking at 90!

Issue 01/2016 will also announce the launch of the Smart City global platform, initiated by IEC in partnership with ISO and ITU. This new online community aims to help stakeholders worldwide make their cities smarter and is part of the lead-up to the first World Smart City Forum which will take place in Singapore on 13 July, 2016.

The issue will also outline what the IEC does in those specific fields.
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