MULTIMEDIA & CONSUMER ELECTRONICS

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Multimedia and consumer electronics

Issue 01/2015 of e-tech takes a close look at technological advances in the field of multimedia and consumer electronics. The focus is on trends from the 2015 International CES (Consumer Electronics Show) in Las Vegas, USA. It also outlines what the IEC does in those specific fields.
Multimedia and consumer electronics
The world is a giant network connecting everyone and everything

The focus of issue 01/2015 of IEC e-tech is on multimedia and consumer electronics

Connected 24/7
Only 10 years ago, connecting to the Internet meant switching on your computer to surf the net or send email messages. Today, the world is one giant network where anyone is connected to everyone and everything. Not only can you access the web anywhere from a variety of mobile devices, you are also connected to your home appliances, your alarm systems, your pets, your plants, your car and much more. Nothing seems to be out of bounds with the Internet of Things.

Valuable assistance
The new technological trends that have emerged in recent years have certainly increased our desire to monitor every aspect of our lives: health, sleep, food intake, sports activities, and much more.

These new developments are not just for recreational purposes. They are now also proving invaluable in assisted living. This is especially important in societies where seniors represent a growing percentage of the population. Sensor-based solutions installed in homes can help detect changes in the habits of senior people – for instance if the refrigerator hasn’t been opened once in 24 hours – and alert the family of the care giver that there may be a problem.

New issues
This global connectivity generates new behaviours and also huge amounts of data, which raises the issues of storage, ownership or privacy. Big Data experts are working hard at finding solutions that are acceptable for individuals, public and private enterprises, organizations and governments.

Many IEC TC/SCs (Technical Committees and Subcommittees) develop International Standards that address the safety, reliability and performance of these technologies.

The collar collects data about your dog’s movements and relays it to your smart phone (Photo: Whistle)

Seniors’ homes can be fitted with devices that detect changes in habits, movements, smoke, and can alert the family or care giver in case of problems (Image: DomoSafety)
The future of 3D printing
Digital meets the visible world

Gabriela Ehrlich

e-tech attended a presentation by Carl Bass, CEO of Autodesk during CES. Carl Bass has been a pioneer of 3D printing. Below is a summary of his talk.

**Intimately linked**

Bass started by explaining that 3D printing is older than one thinks. It started roughly 25 years ago but its success is directly linked to the progression of the Internet and of the overall digital environment; 3D printing lies at the cross path of the digital and the visible world.

**New technologies require new thinking**

He defended the idea that new technologies such as 3D printing need to be used to do things that we couldn’t even conceive of before. In his view taking a new technology to do the same old thing a tiny bit differently is simply not that interesting.

**Some challenges to overcome**

Bass then gave a quick overview of what has been happening in 3D printing over the past few years and some of the shortcomings that need to be addressed if we want to move to the next level. In his words these include:

1. **Reliability.** Failure rates for 3D printing are insanely high. For those who 3D print all the time there is a certain level of anxiety when they walk over to the printer in the morning to check whether a project successfully printed, often finding that it hasn’t.
2. **3D printing quality is low.** The resolution is simply not high enough; the quality of parts is not good enough.
3. **Speed.** 3D printers are simply too slow. If a cube of 10 cm³ takes 1 hour to print, then a cube of double that size (20 cm³) will take 8 hours and one of four times the initial size (40 cm³) will take 64 hours. This is a difficult barrier to remove.
4. **Materials.** Most of the materials available today are not good enough for the products that are being printed.

**A 3D printer in every home?**

Bass feels that the 3D hype is at its peak. Many people who go out and buy a 3D printer actually end up being disappointed. They get home, print three things and then they don’t know what to print next. The workflow and handling of the tools is still too complex.

But Bass also sees this as a business opportunity to do better. He strongly feels that the idea that every home will own a 3D printer is farfetched. “3D printers are noisy; they are not a home device”. Instead businesses will develop around the idea of giving the consumer access to the 3D experience without the need for ownership.

**The next industrial revolution**

25 years ago 3D printing was labelled as rapid prototyping. This is still the most widespread use for industrial applications and incredibly useful.

Bass feels that one of the places where 3D printing will be applied most is in industrial tooling and fixtures where it will replace injection moulding.

Here a combination of additive and subtractive printing will offer a novel way to enable previously impossible designs. This technique allows for example to print metal that will then be melted. The result is a material efficiency and performance that comes...
from 3D printing and the precision that comes from subtractive approaches like machining.

**Part of a much bigger set of tools**
The industrial revolution enabled mass production of high-quality and low-cost products. 3D printing and the whole new world of digital fabrication enables the same level of quality at the same cost but for very low quantities. Tools are built into a workflow that from the start includes 3D printing. But 3D printing is only a part of a much bigger set of technologies which include software, design, and materials…and in Bass’s view this is where the real industrial revolution will lie.

**Revolutionizing computer aided design**
Bass went on to explain the problems of today’s design process. He feels that computer aided design software doesn’t really allow the computer to do much in terms of aiding the design. What the computer mostly does is record a design that is already in the head of the designer. “People have an idea, design it by giving precise instructions and then test it digitally and then visually.” In Bass’s words: “Design reminds me a bit of the game of battle ship: the engineer says B3 and the analyst says miss…the engineer then says G5 and the analyst says miss. Today, design is still very much ‘trial and error’ and eventually you run out of time or patience or money or you just accept ‘good enough’.”

**Thousands of possible design solutions**
Now, according to Bass there is a complete rethinking of how the computer can support the design effort. With advances in computer processing and bandwidth, the price of computing has fallen so low and is so easily available that there is near infinite computing power.

Now, instead of explicitly drawing geometry or describing a curve or shape, it is possible to explain a problem to a computer at a high level in terms of size, weight, aerodynamic or thermodynamic properties, etc. And, rather than treating design as a serial process, it is possible to run multiple design simulations in parallel. “The computer is really good at this brute force technique, exploring a multi-variant space. It will come back with thousands of possible designs that all satisfy the outlined specifications”. Bass explained that the specifications that are needed to solve the engineering problem remain in the hands of the engineer but the geometry and topology is entirely done by the computer. According to him, experience has shown that as a result the final product is generally lighter, stronger and often cheaper. Designs that would be difficult or impossible to achieve via ordinary methods are now possible.

**Building totally new materials**
The air transport industry always strives for lighter, stronger materials that lead to increased fuel efficiency. Novel 3D techniques that mix different types of metals, plastics, glass, ceramic, fibres or even bio materials enable the development of totally new types of materials that exactly address a given problem at hand.

**Better, more innovative products**
Bass then went on to present some concrete examples where 3D printing is already making a real impact:
- A metallic foam-like structure that is part of a hip implant. With its random pore-size it mimics the inside of the bone and has proven to be better accepted by the body than anything that was used previously.
- Electronics. The first 3D electronics printer called Wire is able to print electrical components using conductive materials. In Bass’s view this is the beginning of an era of
much more complete projects that go way beyond geometry.

- Big structures. Architectural size structures that include buildings, sculptures or bridges that are autonomously built with the help of industrial robots using metals, carbon fibre or other materials
- Outerwear. The custom printing of shoes and clothing.
- DNA. Through a combination of mechanical engineering, image processing and micro-fluidics, it is possible to reliably produce relatively long strands of DNA. We’re getting closer to a time when it will be possible to mail-order DNA.

The next frontier: generative design
According to Bass we are now entering a world where software, hardware and materials work together with 3D printing to result in what he calls generative design. In this context Bass introduced the Spark programme which is a combination of open hardware, open software and open materials. Spark offers a foundational level of open software to anybody in industry who is interested in using it. Spark, together with Ember, an open source 3D printer that is able to print down to the nano-scale, are compatible with many types of machines and the tools that feed them. All plans and specifications will be published and are available to anyone who wants to build their own.

As a final word, Bass expressed the feeling that the 3D industry was held back by its short-sightedness and small-mindedness and that growing the pie is better than intellectual property retention.

IEC sets Standards for quality, safety
A number of IEC TCs (Technical Committees) and SCs (Subcommittees) work on identifying, developing and coordinating International Standards for the electric and electronic components that are installed in the 3D printers being used in additive and subtractive manufacturing processes.

Amongst many other relevant parts and components are switches and relays (TC 17: Switchgear and controlgear, TC 121: Switchgear and controlgear and their assemblies for low voltage, and their SCs), servo and stepper motors used to move the extrusion head or the sintering laser (TC 2: Rotating machinery) and power supplies (TC 96: Transformers, reactors, power supply units, and combinations thereof). Most important are the different types of lasers used for sintering metals and polymers.

TC 76: Optical radiation safety and laser equipment, is the leading body on laser standardization, including the high-power lasers used in industrial and research applications. Its work is essential to 3D printing.
Tech trends 2015
Insights from author of Digital Destiny Shawn DuBravac

Gabriela Ehrlich
The 2015 CES was again a show of records, reflecting the growing importance of consumer electronics and connected devices.

Four major trends emerge at CES
DuBravac stated that the CE industry is “at an inflection point”. He cited what he terms the “five pillars of digital destiny” which will sculpt the future of technology and its relevance to each individual. These pillars are: computing everywhere; cheap digital storage; connectivity; proliferation of digital devices and sensorization of technology. At CES four major trends emerged, finding their expression in the Internet of Everything, a banner under which over 900 exhibitors at CES presented their products covering every aspect of human life. DuBravac believes that in the future the focus will no longer be on what can be done technologically, but what is meaningful to do.

The Internet of “Me”
The computer experience has been customized and has moved from the desktop to tablets and billions of smart phones. The next step is taking us to devices that are worn on the wrist, directly on the skin and soon under the skin. Before the advent of the Internet of Everything, the answer to the question “when were you last online?” was simple to answer: last time I logged in at my computer. Not anymore though. Now you are online with your e-reader, your smart phone or even your refrigerator.

Always online?
Not long from now the shirt we wear might be online. Devices such as these will collect and send a myriad of data that is generated by the user and his environment. Most of us will have a large number of different devices that are ready to connect to the Internet; which ones will eventually do so still remains to be seen. Ultimately these smart “devices” can recommend actions or send instructions that enhance our life and well-being. For example, Kolibree’s smart toothbrush tracks how long you brush, what teeth you clean well and which ones could do with a bit more attention. Homes will also be connected but not through one central modem or Wi-Fi but through hundreds of everyday objects running independently but communicating with each other.

The sensorization of objects
The digitization of the physical space is apparent in the trend of sensors. Sensors are increasingly widely deployed. They can be found literally anywhere; even in such ordinary things as waste baskets, water faucets or toilet flushes.

This is only the beginning
Sensors have become incredibly cheap. When we talk about the Internet of Things it means that many, many objects are now “sensorized” and connected to the Internet to share relevant data with relevant systems. But that’s just the start of the sensor revolution. Sensors make driverless cars possible, turn mobile phones into smart phones, are behind the latest wave of “wearables” and are able to collect vital information in a non-invasive way, changing our approach to healthcare.

Data ≠ information
And while sensors collect data autonomously, it needs processors to pull out the information contained.

Data will transform healthcare (Photo: Kolibree)
in that data. The accessibility of near endless, cheap computing power is a key element in making sense of these increasingly large data streams.

The age of Big Data
The shift to digital has massive ramifications for data. A couple of years ago an Internet search came up with a couple of hundred to a few thousand results. No longer: we are surrounded by an explosion of data. 90% of the world’s data has been generated over the past two years. As digitization continues, data generation accelerates.

As data grows, we need new ways to create order from increasing chaos; to extract meaningful, actionable information. The decline in the cost of computing and raising capacity of digital storage are keys to big data and our ability to share, analyze and extract information. Whereas before data was exclusively stored on devices, the cloud is complementing hard drives with near infinite data storage capacity that can be accessed from anywhere.

But not all is rosy: while Big Data opens many new market opportunities, it also opens up questions around the ownership of information and privacy.

Healthcare in the digital age
In the near future, data will transform healthcare by customizing treatments and empowering patients. But right now healthcare is in the middle of chaos. The technologies that are able to measure, record and analyze our data, mostly through apps, still require a great deal of human intervention. We are in a hybrid period between the analog world and the all-digital world. While we are able to capture information in new and more systematic ways data streams are still divided. The next step will be the mixing of multiple streams of data that will allow us to identify and then influence and change our behaviour in the physical world. Devices as convenient as wristwatches will measure vital signs and help manage and monitor an individual’s health and habits. Digital data will allow us to see which of our life choices affect our health.

More efficient, customized care
Next-generation medicine will utilize more complex models of physiology and more sensor data than a human MD could comprehend. Much of what physicians do – check-ups, testing, diagnosis, prescriptions, behaviour modifications – can be done better by sensors, which passively and actively collect and analyze data. Any of the rudimentary tests like blood-pressure, insulin levels, heart rate can be conducted without the need to visit a doctor. Additionally, instead of providing a one-time, limited view, there will be a wealth of continuous data available that can be sent to the physician, alerting him in case of need. With an aging population and increasing number of chronic conditions such as diabetes and hypertension, digital data will allow doctors to know more about their patients and enable them to provide increasingly customized care, more efficiently.

Ensuring data security and privacy
But while all of this sounds quite exciting, there are a couple of hurdles that will need to be overcome, not the least of which is data security. In healthcare, data privacy and security are likely more important than anywhere else. Who is to say what employers or insurance companies might do if they could get access to a person’s full health data. And then there is the question, when one is able to measure everything, what should be measured and how telling are results in the absence of direct comparators.
No wires, no tangles
Recent developments in wireless charging technology

Gabriela Ehrlich

Wireless charging is expected to prove highly convenient for consumers, yet the market is being slow to develop. One of the reasons could be that a standards war – albeit a small one – takes place behind the scenes. At CES e-tech spoke with representatives of the two dominant consortia in this area and explored the latest developments as well as the most promising perspectives for the future.

From infancy...
In 2010, when e-tech first participated at CES, wireless charging was in its infancy and was generating a widespread buzz. Powermat was the first company to promote a usable charging product designed for mobile phones. The lure of being able to drop a phone onto a surface without having to plug it in seemed pleasingly futuristic. Of course the dampener was that only phones equipped with a special case could be charged in this way. Also, the phone couldn’t just be dropped any old way, it had to be positioned precisely on the small charging spot on the mat.

...to adolescence
Since then the technology has advanced rapidly and many companies have joined the fray as part of one of the bigger consortia addressing this space.

The reason for this growing interest in WPT (wireless power transfer) is linked directly to the adoption of modern consumer electronics whose need for power is growing faster than their ability to store that power. As a result these devices require frequent charging. Ultimately, WPT will allow users to recharge any portable device reliably anywhere, anytime without the constant burden of carrying and deploying different charging accessories for each of them.

Freedom requires interoperability
Today, most approaches to WPT technology are largely non-interoperable. This is particularly true for multimedia systems and devices. A vision of freedom from multiple chargers depends on WPT integration in the physical environment while maximum interoperability demands the alignment of standards.

The common prerequisite for all devices is that WPT should neither disrupt normal performance nor affect negatively the functionality of its infrastructure; i.e. the consumer will want to be able to use a table or desk top in the normal way, irrespective of its charging capabilities.

Reducing e-waste
Another big advantage WPT holds out is the reduction of e-waste from batteries and a decrease in the number of external power supplies needed to charge miscellaneous devices. In a WPT world many devices will operate using the same charger and cable. This approach will also result in better use of primary resources.

Not that new
The commercial application of WPT has its origins in the work of Nikola Tesla in the early 1900s. It is now well-established in several industrial and specialized application areas; for instance supplying power to “people mover” systems in airports, materials handling systems in manufacturing and warehousing and “mission critical” control systems that isolate the power supply from environmental disruption.

Who is going to win?
When talking to Dr Kamil Grajski, the Technical Area Manager of
I EC TC (Technical Committee) 100/TA (Technical Area) 15 Wireless power transfer, at CES, e-tech wanted to find out more about the technologies involved and understand better if and how this standards war can be resolved.

It turns out that the technologies in themselves are too different to allow for alignment. However, there is light at the end of the tunnel. All of the major companies that participate in the biggest consortia have hedged their bets, preparing for whichever technology will ultimately be adopted. Now that two of the three biggest consortia have merged, it looks as if the need to grow the market has finally triumphed.

**Wireless charging in the IEC**

In the IEC, work on WPT is split into two distinct TCs because of the wide variation in the power demands of various devices and systems. An electric vehicle requires in the range of 2,000 to 5,000 watts or more to charge its battery, while the latest smartphones, tablets and laptops need between 10 and 50 watts. The use cases and power and regulatory requirements are all quite different at the two ends of the charging spectrum.

TC 100/TA 15 is in charge of developing international publications for multimedia systems and equipment; TC 69: Electric road vehicles and electric industrial trucks, prepares the International Standards needed for the wireless charging of electric vehicles but also scooters and buses, among other things.

**Major players**

Several industry-led consortia are developing industry specifications in the WPT space. They range from those focused on specific WPT technology approaches to those seeking to represent the needs and technical requirements of one or more vertical market segments.

And while miscellaneous interest groups may have WPT as part of their agenda, three consortia (two of them now merged – see below) focus fully on this approach:

The Wireless Power Consortium (WPC) specification uses electromagnetic induction of the type commonly referred to as “tightly-coupled” at an operating frequency of 105 to 205 kHz with a typical power output of around 5 to 7.5 W and with an expected maximum power output that is targeted to reach 15 W. The technology is promoted under the Qi brand and has been adopted by a range of consumer electronics and power product manufacturers. The consortium now has a membership of just over 200 companies and by its own unaudited declaration its members have sold over 50 million products since its inception in 2010. While that may sound a lot, it should be put into perspective. The consumer electronics market alone ships between 2 and 3 billion products every year. One of the major chip manufacturers sells more than 70 million chips each month.

Products include anything from mobile phones (usually charged in cradles) to electric tooth-brushes or water heaters that commonly stand on a platform with power transmitted by a vertical connector. To achieve power transfer, the Qi technology requires relatively precise alignment and proximity between charger and device. This is achieved through accessories such as charging “sleeves”, pads or battery covers.

The technology has some drawbacks in terms of heat development and the quantity of power that can be transferred to a device. Also a metal object on the charging surface will experience a temperature rise thereby possibly disrupting the charging cycle. The WPC has a Kitchen Appliances Working Group that is working to extend the inductive technology to higher power levels. In addition, the WPC has announced its intention to provide a resonant solution that is backwards-compatible with the Qi installed base.

The Alliance for Wireless Power (A4WP) focuses on non-radiative near-field magnetic resonant coupling or so called loosely-coupled WPT in the 6,78 MHz band. The maximum power output for the highest rated class of chargers is between 50 and 70 W. The technology is branded Rezence. This industry-led consortium was established in 2012 and brings together around 150 companies.
The Rezence technology allows for almost any surface to be turned into a wireless charging “port”. Car dashboards, kitchen tables, office furniture, restaurant counters and retail shelves are all possible candidates. Power can be transferred simultaneously to several devices, including laptops, and these devices can be positioned freely anywhere within the charging surface without the need for precise alignment. For the main part, when small metal objects such as coins and paper clips are placed on the charging surface, they will not interfere with charging.

The Power Matters Alliance (PMA) promotes an induction-based power transfer technology that is similar to the WPC technology with slight variations in terms of frequency and protocol. It is branded as P and has around 70 members. What the PMA has pioneered is a vision of an interconnected network of wireless charging stations deployed within venues that may be public (e.g., airports) or private (e.g., coffee shops) and that deliver not only wireless power, but also serve as a gateway to provide additional media services.

At CES the two consortia A4WP and PMA announced their merger, effective 30 June 2015. The resultant new organization aims to accelerate market development for WPT in the consumer electronics world and will cover a broad range of devices from wearables to smartphones, tablets, notebooks, laptops and more. The two organizations explained that having different standards out there has been confusing for the market. They aim to emulate the example of smartphones which today support a multiplicity of radio technologies, including NFC, Bluetooth, Wi-Fi, 3G, 4G, and so on. Each is backed by a strong consortium and ecosystem. In their view the same should be possible for devices in the WRT space, with the market deciding on the best technology to use in each case.

### Technology overview

WPT comprises a selection of different technologies based on electromagnetic induction, magnetic resonance, electric field coupling, microwave radio transmission and microwave energy harvesting (detailed descriptions can be found in IEC TR 62869). Among the differentiating features are available power levels (mW to kW) and the precision required in terms of the physical alignment between the power source and the device to be charged (mm to m scales).

#### Electromagnetic induction

![Tightly-coupled WPT](Image)

**Tightly-coupled WPT**

An alternating electric current flowing through a coil (source) generates a magnetic field that acts on a receiver coil (sink) to produce a current within it. Electric power is transferred between the source and sink. Both must be in close proximity to achieve a magnetic coupling between the two coils so as to realize high transfer efficiency. The so-called coupling factor is generally ~1 (very tightly-coupled). If this degree of precision is not met, there is no transfer of power.

#### Magnetic resonance

![Loosely-coupled WPT](Image)

**Loosely-coupled WPT**

Magnetic resonance is a special case of electromagnetic induction. Here the source is a resonant coil and series capacitor as resonator, with a corresponding sink element consisting also of a coil and series capacitor as a tuned resonator. Electric power is transferred through the electromagnetic resonance between the source and sink. By matching the resonance frequency between both it is possible to transfer electric power over a relatively long distance (mm to m). Here the coupling factor can be much lower than <<1 (loosely-coupled). That means that even at a distance or with partial overlap, transfer of power is maintained.

### Conductive charging

Another WPT technology that is relatively rarely discussed is conductive charging. Conductive charging requires a physical connection between the electronic device’s battery and the power supply. The need for a metal-to-metal connection between the charger and the device requiring charging is one of the main drawbacks of this method. To accomplish charging without the use of physical cords connected to wall outlets, special attachments are fitted with technology that can detect when the device makes connection with the power source, often a charging base. These are designed to distinguish between metal and other surfaces to avoid the risk of electrocution. Several small companies at CES promoted products, mostly for the charging of mobile phones. e-tech interviewed a small company from San José, US, which received the 2015 CES Award for its innovative approach for a WPT transparent table top. The technology uses a tiny proprietary microchip. The company claims power transfer efficiencies of 95% at very high speeds, without the generation of heat or electromagnetic field radiation, and a charging efficiency as high as that achieved when plugging the device directly into a charger.

### The efficiency argument

Several of the interviewees took higher efficiency as a key argument in promoting their approach, but
The performance of batteries is becoming ever more important for mobile devices as these get more capable and need extra power. The automotive sector too is trying to overcome range and charging limitations of current batteries to encourage adoptions of electric vehicles. IEC TC (Technical Committee) 21 develops Standards to address these issues.

It’s all about mobility...
In recent years consumers have benefited from the introduction of countless mobile and wearable ICT (Information and Communications Technology) and CE (consumer electronics) devices and systems. As these employ ever more advanced processors, displays and audio systems and offer connectivity to an increasing variety of wireless networks and other devices, they are becoming more and more power hungry.

The major issue they already face and will continue to face is in narrowing the gap between the growing power they need and that at their disposal in the form of rechargeable (or secondary) batteries.

Likewise, the wider adoption of EVs (electric vehicles) is seen as hinging on the availability of more advanced batteries that will allow them to overcome the limitations of range and charge they currently face.

...lasting longer...
While the computing and processing power of the new mobile devices appear to follow “Moore’s Law”, which infers a doubling in semiconductor performance every 18-24 months, batteries have not kept pace and are constantly playing catch up in meeting the needs of ever more advanced devices.

Going forward, WPT is under consideration for example for medical devices in hospital or home settings. Such devices can remain completely sealed, without dangling wires, and become much more movable and portable. High-consumption devices such as refrigerators, washing machines or office machines may also benefit from WPT in the near future.

Other uses of WPT will include integrated circuits in complex miniature machines, human implantable medical and prosthetic devices or microwave beam WPT from orbiting power satellites.
Today’s batteries for mobile applications are mainly based on Li-ion (lithium-ion) chemistry, which offers the key advantage of being able to store large amounts of energy in comparatively light, compact and purpose-made packages. However, while these batteries may provide a reliable power supply for mobile CE and ICT systems and EVs, they can no longer keep up with the growing demands placed on them.

Much of the research into batteries for mobile applications now focuses on increasing their power density (the amount of power that can be stored in a certain volume) without augmenting their weight or size.

...and charging faster
Another issue at the centre of research in the development of more advanced batteries is better charging technology. The ability to charge batteries as quickly and as fully as possible is more important than ever, more so for automotive applications as a number of systems have been developed that charge quickly or can provide emergency top-up power to mobile devices when needed.

At the recent Las Vegas 2015 CES (Consumer Electronic Show) a number of systems were demonstrated, including one that is capable of charging a mobile phone about 100 times faster than at present. However these are still at a research and development stage and will require the development of new types of chemistry for the batteries on which they place heavy demands.

The secrets are in new materials and chemistry
Industry is working hard to overcome the limitations of the current generation of batteries. Its success depends on the development and introduction of new materials and chemistries for electrolytes as well as for electrodes. The association of materials such as lithium-sulphur with a graphene wrapper and the development of various types of glass or gel, as well as the use of nanomaterials, are seen as offering interesting prospects for significant improvements in the performance of batteries for mobile and automotive applications.

IEC standardization work
IEC SC (Subcommittee) 21A: Secondary cells and batteries containing alkaline or other non-acid electrolytes, prepares International Standards for batteries used in mobile applications and EVs, as well as for large-capacity lithium cells and batteries.

These Standards concern tests and measurements, design and manufacturing recommendations as well as safety requirements and are essential for the battery industry as it develops new products and chemistries.

Huge and fast expanding global market
According to a report by the growth consulting firm Frost & Sullivan, the global lithium-ion battery market was worth USD 11.7 billion in 2012 and USD 17.58 billion in 2013. Frost & Sullivan forecasts that it will more than quadruple by from 2013 to 2020.

Current revenue breakdown shows the consumer market to be the main segment followed by automotive and industrial, with grid and renewable energy storage coming last.

However, by 2020 Frost & Sullivan expects the grid and renewable energy storage market to become the leading consumer of lithium-ion batteries, followed by the automotive sector, with consumer applications coming behind those two industries but ahead of industrial applications.

Whilst the grid and renewable energy storage sector does not really need lighter and smaller batteries, the same cannot be said for automotive and consumer applications. The incentive to improve the performance of secondary batteries and of charging systems for these applications while reducing their volume and weight will remain and is likely to drive further advances in the battery industry.
Keeping the radio on for nearly 90 years

From radio transmitters and receivers to better sound, the IEC sets standards

Morand Fachot

As World Radio Day, which marks the anniversary of the first broadcast by UN Radio in 1946, is celebrated every 13 February, it is worth recalling nearly 90 years of continuous involvement by the IEC and its central role in the technical development of radio broadcasting in aspects ranging from equipment to improved sound quality.

Ubiquitous

Radio remains to these days one of the most widespread and popular communication media in spite of the growing popularity of television and, more recently, of the Internet. Unlike these, it doesn’t require expensive equipment and, since the introduction of transistor radios in the mid-1950s, can even operate independently of the electricity grid, a major benefit for millions in many countries in which access to electricity is difficult or sporadic. Radio is experiencing a revival with increasing numbers of devices being designed to receive it and as digital radio widens its reach.

IEC Standards central to development of radio equipment

Radio depends entirely on electricity as a source of power for transmission and reception, and on electrical and electronic components for its broadcast equipment and receivers. A multitude of IEC TCs (Technical Committees) and SCs (Subcommittees) develop International Standards for such components and systems. In 1926, shortly after radio broadcasting was introduced, the IEC created TC 12: Radiocommunications, which was disbanded later. Nowadays, IEC standardization work for radio broadcast and receiving equipment is carried out by TC 100: Audio, video and multimedia systems and equipment, TC 103: Transmitting equipment for radiocommunication, and TC 108: Safety of electronic equipment within the field of audio/video, information technology and communication technology.

Preventing interference

Radio reception can be subject to interference from a variety of sources, including electrical equipment. As early as the 1930s it was decided to deal with the subject of radio interference at an international level. Following an ad hoc conference of interested international organizations held in Paris in 1933, CISPR (International Special Committee on Radio Interference) was created and first met in 1934. CISPR is an organization within the IEC that brings together experts who come from radio regulatory authorities, test houses, manufacturers, other IEC committees, and other groups not associated with IEC National Committees.

The initial frequency range specified to deal with radio interference extended from 150 kHz to 30 MHz, thereby covering long-, medium- and short-waves. CISPR work led to a reduction in interference to radio (and later TV) broadcasts by the means of defining permissible limits from domestic, industrial and commercial appliances as well as from ignition systems in the automotive field and from fluorescent lighting fixtures. Different CISPR SCs deal with interference from various other sources, including power lines and ICT (Information and Communications Technology) equipment.

Securing the future of radio

The radio frequency spectrum is a valuable and limited resource. The desire to optimize its use and to benefit from other advantages, such as increasing the number of programmes in a given bandwidth, improving audio quality and reducing transmission power, led...
to the introduction of digital radio broadcasting. This technology requires audio signals to be digitized and compressed before transmission. Digital audio compression has been developed by MPEG (Moving Picture Experts Group) a working group of experts formed by IEC and ISO (International Organization for Standardization) to set Standards for audio and video compression and transmission.

The four international digital radio systems recognized by ITU (International Telecommunication Union), namely DAB/DAB+ (Digital Audio Broadcasting), DMB (Digital Multimedia Broadcasting), DRM (Digital Radio Mondiale) and IBOC (in-band on-channel), rely on digital audio compression Standards developed by MPEG. They include MPEG-1 Audio Layer II or MPEG-2 Audio Layer II (or MP2), defined by ISO/IEC 11172-3:1993, and various codecs based on MPEG-4 Audio profile, such as HE-AAC (High-Efficiency Advanced Audio Coding), defined by ISO/IEC 14496-3:2009. Through its standardization work in the fields of radio equipment, prevention of radio interference and digital audio compression, the IEC has been at the forefront of developments in radio broadcasting for nearly 90 years and will continue to prove central to the vitality of the industry.

What’s up?
The market of wearable smart devices

Gabriela Ehrlich
Based on a presentation given during the Tokyo General Meeting, with permission from Prof. Sung Kyu Park and the IEC National Committee of Korea.

Computing and how we connect to the Internet has fundamentally changed over the past couple of years. We now increasingly carry computing power on and soon in our bodies, generating massive amounts of data as a by-product. This article provides an overview of some of the expected developments and related challenges.

From rigid to mobile
Until recently computing and internet connections were limited to stationary, portable and hand-held devices, such as smart phones or tablets. These are generally rigid, offer limited interaction between devices and are highly battery dependent. Over the past couple of years wearable devices have brought computing and the Internet much closer to the body. Wearables now come in many shapes and have in common that they are always on, collecting data with the aim to improve how we interact and benefit from our environment.

From on-body to in-body
Wearable computing has long been a staple of sci-fi movies. Over the coming years we are likely to see fundamental changes in how we interact with humans and the digital world. Below is a brief overview of what’s in store:
Accessory – today
For the past two or three years accessory type wearable devices have being commercialized on a massive scale. They sport low-power consumption and provide ongoing connectivity. While some of them rely on smart phones for data collection and interaction, increasingly these devices are stand-alone. They sense and share data in the cloud in an effort to enhance our well-being or analyze interactions with our surroundings. Ultimately it is expected that they will be able to influence our decision making (see also article by Shawn DuBravac in this e-tech).

Textiles – 2017
While a couple of manufacturers already present textiles that contain sensors and offer connectivity, broad adoption will take another two to three years. In addition to playful interconnectivity, temperature and gas sensors in professional textiles, such as for firefighters or military personnel, have already been partially deployed. Ever slimmer and smaller sensors, LED lights, printable and other electronics are driving this market. What started out with scintillating lights as a fashion statement will deliver useful functionalities as part of our everyday clothing.

Patchable – 2020
Skin patchable devices are still mostly in the laboratory. To be successful on the body, they need to be flexible, twistable, stretchable, breathable and ultrathin to smoothly adapt to movements and adhere to the skin. They will also need to be made of bio-stable materials that are able to resist the harsh mechanical and environmental operating conditions of the human or animal body. Anything that is worn on the skin will need to be non-toxic and bio-compatible.

Implantable – 2025
Implantable connected devices will open a whole new dimension to healthcare and monitoring but also bring increased challenges. Because they are implanted in the body, concerns about safety and power consumption will be top of the chart. These devices will need to be ultra-light weight, self-charging (changing batteries in-body is difficult to impossible), safe and inert, while resisting and adapting to a largely hostile environment for electronics: the acids, fluids, gases and bacteria in the human body.

Wires, conductors, insulators, semiconductors, connectors and packages will all need to be made from mechanically and environmentally stable materials such as polymers, carbon, thin oxides and metal/polymer composites. Many will be nanosized.

Many applications
Wearable devices will be used in a great number of different environments to achieve a broad range of outcomes.
Glamour
Lights and decorative elements are used as embellishments that can be turned on or off; react to environmental stimuli or to the emotions of the wearer.

Communication
Wearable devices in this space are used to facilitate all forms of social interactions. Typically they come in the shape of jewellery, watches or items of clothing. They offer voice, text, email, multimedia and/or social media functionalities but can also give expression to touch and hugs.

Lifestyle computing
While at first glimpse similar to devices used in communication in terms of functionalities, here the focus is on gaming, virtual reality, optimized learning, real-time streaming, HUD (heads-up-displays) usually in the form of glasses.

Sport/Fitness
A wide array of wearable devices are geared towards improved performance, monitoring fitness, delivering coaching and training support, helping with navigation and tracking, cooling or heating the body or helping avoid or detect injuries.

Wellness
Closely related to Sport and Fitness, this sector has nevertheless developed a number of applications that are quite distinctive such as weight/energy and other physiological monitoring or gait/posture corrections.

Medical
A wide array of wearable devices are entering the medical field allowing for unobtrusive and ongoing patient monitoring, chronic disease management such as diabetes care, remote EEG, ECG, EMG, augmentation of body functions such as hearing aids, pain control and more. Together they are becoming an important addition to healthcare.

Security/Safety
Wearables also play an important role in monitoring and safety applications. Military, emergency, rescue and policing services routinely use such devices in situations that require remote monitoring, hasmat detection, security profiling and so forth.

Business operations
Last but not least wearables are increasingly used in business environments. Here they can facilitate stock management, the sharing of data and information, customer service or access control to events or buildings.

Rapidly growing market
Over 2000 companies, including all major electronics multinationals are developing wearable devices for the global market. The two areas that promise to develop the most are medical and infoainment, followed by industrial, commercial and military applications. In the next 10 years the global market value of wearable electronic devices is projected to exceed USD 70 billion, up from just over 12 billion in 2014. By 2020 globally over 50 billion connected devices will be in use. The data produced by these devices is expected to double every year but much of it will be unstructured (without a pre-defined data model).

Testing and certification
While wearables are always on, worn as accessory, on-body or in-body there are today no available test methods to ensure that they are reliable and safe and will not cause allergies, infections or tumors in humans or animals. Other considerations that require assessment include x-ray stability, bio-chemical inertness, resistance to water and dust, thermal management, flexibility and stretchability, EM radiation, etc.

IEC work in standardization
There are a number of IEC TCs (Technical Committees) that cover different parts of wearable devices: TC 21: Secondary cells and batteries; TC 47: Semiconductor devices; TC 82: Solar photovoltaic energy systems; TC 100: Audio, video, multimedia systems and equipment; TC 110: Electronic display devices; TC 119: Printed electronics. All of them have extensive liaisons with other TCs and external standards bodies. However, new requirements in terms of flexibility, stretchability, reliability of devices that are in direct contact with the human body may call for a new approach to standardization in this area, covering hardware, software/data, safety and interoperability. This is something that is currently being evaluated within the IEC.
The great potential of wearables
Wearing it well

Antoinette Price

Do you monitor yourself closely? Heart rate, carb intake, sleeping patterns? Do you track your child’s whereabouts? What about finding the dog, your keys or wallet? Wearable technology, or wearables, was again one of the main themes at the 2015 Consumer Electronics Show in Las Vegas, USA, where almost 600 exhibitors were displaying their products.

New on The Strip
While there were perhaps fewer innovations and more variants of familiar wearables, such as for health and fitness, exhibitors still rolled out some eye-catchers:

- Baby monitor – the first at the show to sense, learn and predict a baby’s sleep patterns and optimal sleep conditions
- Self-adjusting belt – accommodating the changes that naturally occur in users’ waist lines as they sit or stand
- Ring – worn on a finger, as its name suggests, this lets users control smart phones, lights, curtains or connected devices in homes with a wave of the hand
- Smart watches – combining fashion with functionality, users can make and receive calls without being linked to a smart phone, can shoot videos and more
- A prototype headset – offering true 3D audio spatialization and sonic immersion with realistic sounds coming from all directions
- The ultimate Walkman – with 128GB storage, claiming to offer up to 60 hours audio play
- Wearable drone camera – flung from its slap bracelet mounting, the ‘copter takes off and snaps in-flight photos before returning to the user
- There were also dancing robots, humanlike singing androids... and more.

Fast growing market
Innovation has exploded in the global market for wearables over the past few years. It is one of the fastest growing market segments in consumer electronics and, according to a study by IDC (International Data Corporation), a global provider of intelligence for the information technology, telecommunications and consumer technology markets, wearable shipments will generate a 78.4% compound annual growth rate between 2014 and 2018, eventually hitting 111.9 million worldwide shipments in 2018 alone.

As part of the rapidly-expanding Internet of Things, where network connectivity allows everyday objects to send and receive data, wearables track and monitor many aspects of our lives, wherever we are, whatever we are doing, in areas such as health, fitness, medicine, education, gaming and music.

This is made possible thanks to developments in MEMS (microelectromechanical systems) and sensors, sensor hubs, sensor fusion, low-power wireless connectivity and specialized software development platforms.

In an increasingly crowded market, manufacturers and businesses wanting to distinguish themselves from the rest of the global players will give themselves the best chance of success by understanding fully how to leverage the complex functionality of wearable applications for their products.
Helping to develop wearables
IEC work in standardization and conformity assessment contributes significantly to this technology. Manufacturers are able to build more reliable and efficient sensors and MEMS thanks to International Standards prepared by IEC TC (Technical Committee) 47: Semiconductor devices and IEC SC (Subcommittee) 47F: Microelectromechanical systems.

IEC TC 100: Audio, video and multimedia systems and equipment produces Standards which contribute to this evolving market in terms of quality, performance and their interoperability with other systems and equipment.

Worn out already?
If wearables are going to withstand the test of time and become mainstream items, they need to replace or simplify a useful function. For example, consumers continue to upgrade their smart phones, giving them constant communication and Internet access to emails and applications which in turn connect them to many more products and services. Wearables also need to be physically appealing and have as long a battery life as possible. Research already shows that significant numbers of people are abandoning their wearables after just a few months’ use in a market whose potential has not yet been reached.

A question of security
Merely making the wearables relevant is not the only challenge facing businesses and manufacturers. Along with all the other products and services which collect our personal data and connect it to the Internet of Things, using wearables raises issues of security and privacy. It is not uncommon to hear of personal information and photos being hacked and used illegally.

This year at CES, Edith Ramirez, Commissioner of the Federal Trade Commission in the US, warned the industry about the threat the Internet of Things could pose to personal, and in some cases physical, security and privacy. She highlighted the fact that data can be shared in ways people don’t anticipate or may be revealed as a part of larger breaches.

If a device or product is connected, it can be hijacked, be it a car, smart home system, or medical device. Ramirez urged manufacturers to take these issues seriously, noting that many new devices have few built-in security features in the apps through which they are accessed and operated or the services that power them.
Seeing through virtual reality
Developing virtual reality technology and its uses

Antoinette Price

VR (virtual reality) is mind-blowing in the gaming environment, plunging users headlong into breathtaking new worlds. In other fields, it allows doctors to perform surgery remotely and is formative for pilots learning to fly in sophisticated simulators.

Seeing and hearing loud and clear
The software and hardware technology that make VR possible, in which computer-simulated environments imitate a physical presence in worlds that may be real or imaginary, is constantly evolving to give users ever more life-like and accurate experiences. This year at the Consumer Electronics Show in Las Vegas, US, gaming accessories alone accounted for the presence of more than 400 exhibitors in the VR category.

Crisper vision, spatial surround sound and motion tracking were some of the new features on offer, making VR gaming even more real and astonishing to users donning the latest headsets. They could almost reach out to touch and feel the people and animals populating the virtual worlds they had entered.

Adding the finishing touches
Touch is a key human sense that enriches our everyday life when we physically feel what we are experiencing with other senses. It is also the key element VR needs in order to gain mainstream popularity and acceptance. The industry must successfully pair haptics or touch technology with 3D position-specific visuals, so users can actually feel what they think they can see.

Haptic technology, which creates the sensation of touch by delivering force, vibrations or sense of motion, is not new, but it needs to be developed further for current and future VR generations. It was initially used in the 1950s for remote controlled robotic tools. It was then applied in arcade and video game applications in the 1970s and more recently has been adapted for personal computers and mobile devices. Now it is gaining acceptance as a key part of VR systems and the race is on for developers to produce the ultimate gesture control gloves which will give users a true sense of touch.

Behind the virtual reality scenes
The work of a number of IEC TCs (Technical Committees) helps with the development of the different aspects of virtual reality technology. The great potential of wearables (see article in this issue) describes how IEC International Standards cover the components which are driving VR forward, enabling manufacturers to evolve reliable, effective sensors and produce audio, video and multimedia systems and equipment of high quality and performance that are interoperable with other systems and equipment.

Simplifying through standardization
Life today is full of screens, whether they’re on tablets, health monitors, mobile phone, car dashboards,
New generation USB interfaces on their way
IEC and USB-IF expand cooperation to support next-generation high-speed data delivery and device charging applications

Janice Blondeau
The IEC and USB-IF (USB Implementers Forum) recently announced that they have expanded their International Standards cooperation to include the latest USB-IF specifications for high-speed data delivery and enhanced usages for device charging.

USB supported and recognized worldwide
The USB-IF has submitted the USB Power Delivery (Rev. 2.0, v1.0), USB 3.1 (SuperSpeed USB 10 Gbps), and USB Type-C Cable and Connector specifications to IEC TC (Technical Committee) 100: Audio, video and multimedia systems and equipment. They’re to be considered for inclusion in the newly approved International Standards in the IEC 62680 series.

Universal Serial Bus interfaces for data and power.
IEC has a longstanding relationship with the USB-IF and believes in the benefit of supporting USB specifications because of the strong worldwide and cross-industry backing behind the technology.

High-speed data delivery and two-way power
USB Power Delivery was developed with a vision of delivering universal charging to extend ease of use for consumers and reduce electronic waste by offering an alternative...
The USB Power Delivery specification defines features that support the global adoption of interoperable external power supplies, including:

- Increased power levels from existing USB specifications up to 100 W
- Bi-directional power capabilities to enable a host or device to be either the provider of power or the consumer of power
- Optimized power management across multiple peripherals to allow each device to take only the power it requires
- Intelligent and flexible system level management of power

To market in 2015
USB 3.1 delivers speeds up to 10 Gbps (Gigabit per second), providing support for audio/video that can drive Ultra-HD (4K) displays. USB hosts, hubs and devices can be built to support a range of USB Power Delivery and performance capabilities to meet the needs of OEMs (original equipment manufacturers). Along with the new USB Type-C cable and connector, USB 3.1 and USB Power Delivery will bring enhanced applications for a truly single-cable solution for data and power delivery, building on the existing global ecosystem of USB / IEC 62680 series of International Standards compliant devices. Devices supporting these new specifications are expected to come to market in 2015.

Reduce e-waste, increase safety and reliability
These new Standards are also expected to advance global action on reducing e-waste and improving re-usability of power supplies with a range of electronic devices.

The IEC approach for ongoing standardization work is driven by the ultimate goals of increasing external power supply re-usability, supporting consumer convenience, maintaining product reliability and safety, and providing for future technology innovations. In addition, widespread adoption of the resulting International Standards will help to reduce the encroachment of poorly designed or manufactured aftermarket substitutes which may affect the operation of electronic devices in compliance with regulatory requirements.

IEC and USB ongoing cooperation
The IEC recognizes the importance of evaluating the new USB specifications for inclusion in the IEC International Standard as they are clearly support the next generation of ICT and consumer products.

Adoption of USB Power Delivery, USB 3.1, and USB Type-C is growing fast and the USB-IF are working closely with IEC to promote the benefits of these USB specifications to enable the goal of a common external power supply for electronic devices.

About the USB-IF
The non-profit USB Implementers Forum, Inc. was formed to provide a support organization and forum for the advancement and adoption of USB technology as defined in the USB specifications. Further information, including postings of the most recent product and technology announcements, is available by visiting the USB-IF website at www.usb.org
Keeping us working and entertained

IEC standardization underpins the IT and multimedia sectors

Morand Fachot

The IT and audiovisual and multimedia industries are some of the world’s most dynamic. They are worth hundreds of billions and provide employment to millions across the globe. This success is made possible by the work of dozens of IEC TCs (Technical Committees) and SCs (Subcommittees), which develop International Standards for all components, systems and related issues of interest to these sectors.

From niche products to mass adoption

Soon after radio broadcasting was introduced in the 1920s, the IEC created TC 12: Radiocommunications, to develop International Standards for Radio transmitting and receiving equipment. Radio remained a limited medium in most countries for many years owing to its cost and confined to homes until transistor radios were launched in the 1950s, giving listeners the opportunity to access on the move and in places where mains electricity was not accessible.

Television, arguably the most popular entertainment medium today, was launched commercially in a limited number of countries initially in the 1950s. It is now available across the world and it has replaced radio as the most popular broadcast medium nearly everywhere.

Likewise IT equipment had a relatively slow start. When first installed in businesses and offices it relied on large and expensive machines. It was gradually adopted by consumers from the late 1980s following the introduction of more affordable PCs (personal computers) and more consumer-oriented software.

The launch of the Internet contributed to the wider adoption of PCs in households to meet a greater demand for entertainment, education or information, among other things.

As new more convenient and cheaper computer and multimedia connected equipment, such as notebooks, tablets or mobile phones, became available, more consumers adopted a whole range of different CE (consumer electronics) devices.

Constantly expanding market...

The convenience and “Wow factor” of connected computing and CE equipment that bring a new experience to media and entertainment consumption, have fed an ever wider adoption of such equipment, from PCs and smartphones to tablets, video game consoles and even TV sets. A trend that can be observed throughout the world.

In terms of revenues, Deloitte forecast that the global sales of these five categories of products would exceed USD 750 billion in 2014, but that they would slow down, not fall, after a long period of very fast growth as markets mature. However, new products, such as smart glasses, watches and other wearables are now entering the market and the renewal/upgrade of existing equipment (such as the purchase of larger TV screens), will also contribute to future growth.

Volumes are also indicative of the size of the markets: some 1.17 billion smartphones were sold in 2014 with sales of PCs and tablets forecast to top 263 and 349 million respectively in 2015.

...relying on IEC International Standards

All IT, audiovisual and multimedia equipment manufactured and exchanged throughout the world, must meet International Standards for compatibility as well as commercial reasons. IEC TCs developing International Standards for such equipment include, among others, the following:

- TC 21: Secondary cells and batteries
- TC 40: Capacitors and resistors for electronic equipment
- TC 47: Semiconductor devices
- TC 100: Audio, video and multimedia systems and equipment, and all its TA (Technical Areas)
• TC 103: Transmitting equipment for radiocommunication
• TC 108: Safety of electronic equipment within the field of audio/video, information technology and communication technology
• TC 110: Electronic display devices
• TC 119: Printed electronics
• Other IEC TCs and Groups, such as TC 86/JWG 1: Optical functionality for electronic assemblies, work on Standards for tomorrow’s IT equipment (see article *The light alternative* in *e-tech* September 2014).

Another lesser known but central aspect of IEC activities in the IT and audiovisual and multimedia domains concern CA (conformity assessment), which determines whether a product or other object corresponds to the requirements contained in a specification.

IECQ (IEC Quality Assessment System For Electronic Components), which covers the supply of electronic components and associated materials and assemblies (including modules) and processes plays a key role in ensuring the electronics industry gets access and uses the right components.

**Not just about hardware**
Attention on Standards for the IT, audiovisual and multimedia industries tends to focus on hardware. However, It must also be stressed that these support a very significant additional sector in the form of IT services and creative industries, such as the production and distribution of multimedia content.

The IEC is very active in this domain too, developing International Standards, often together with various ISO (International Organization for Standardization) and ITU (International Telecommunication Union) SCs and Groups.

These Standards include, among others:
• The development of digital audio and video compression codecs by MPEG (Moving Picture Experts Group), a working group of experts formed by IEC and ISO. These codecs allow better image and sound quality for the production and distribution of multimedia content. Latest codecs developed by MPEG include HE-AAC (High-Efficiency Advanced Audio Coding) defined by ISO/IEC 14496-3:2009, as well as AVC (Advanced Video Coding) and HEVC (High Efficiency Video Coding) developed by ISO/IEC JTC (Joint Technical Committee) 1/SC 29: Coding of audio, picture, multimedia and hypermedia information.
• The development of IEC 62698, *Multimedia home server systems - Rights information interoperability for IPTV* This Standard developed by IEC TC 100/TA 8: Multimedia home server systems, in parts together with ITU-T/Study Group 16, aims at contributing to improve the consumer’s experience in using digital contents while protecting content holders’ rights.
• A lesser known but very significant advance concerning the IT software domain, is the development of ISO/IEC 26300:2006, *Information technology - Open Document Format for Office Applications (OpenDocument) v1.0*, by ISO/IEC JTC 1/SC 34: Document description and processing languages. ODF is a file format for spreadsheets, charts, presentations and word processing documents developed with the aim of providing an open, XML-based file format specification for office applications.

**IEC role cannot be underestimated**
The IEC plays a central role for the IT, audiovisual and multimedia industries for all aspects of the components, systems and processes, including software, which have allowed these sectors to thrive.

All in all, IEC TCs, SCs and ISO/IEC JTC 1 have published well in excess of 1 000 Standards that are used by these industries, making them a global success.
IEC Systems Committee Smart Energy

Morand Fachot
As power utilities have to cope with the complex mixture of ever growing demand, the integration of intermittent sources from renewables and ageing infrastructures, the need for intelligent electricity networks, or Smart Grids, which integrate the actions of all users connected to them, has emerged. The IEC has been at the forefront of Smart Grid standardization through the work of dozens of its TCs (Technical Committees) as well as of a dedicated SG (Strategic Group), a SEG (Systems Evaluation Group) and very recently a SyC (Systems Committee).

Complex issues
One of the greatest challenges countries will face in coming decades is dealing with the way in which electricity will be generated, distributed and consumed. Reliability along the whole chain will rest on Smart Grid capabilities. Existing grids in many countries, built decades ago, are showing their limitations as demand for power soars and as new sources of energy are brought on line.

The need to upgrade grids is obvious, but it presents major technical challenges as they integrate assets such as lines, cable and transformers which have been added over many years and have a long lifespan, with more modern electronic and communications systems. Grids must operate continuously, which makes upgrading a complex issue. As in most cases they cannot be entirely rebuilt, it is necessary to add electronics and communications systems to them, thereby also upgrading their "intelligence". The problems grid managers face is to know where and how to integrate these newer electronic and communications systems, which have a relatively short lifespan, with existing assets, and to ensure they are interoperable and can communicate with each other.

For this integration to be successful and for grids in general to be interoperable even across borders, requires International Standards and guidelines. All are prepared by dozens of different IEC TCs and various Groups.

Wealth of documents and tools to locate existing Smart Grid Standards
IEC International Standards and Standards from other organizations exist for every part of the Smart Grid. The problem grid managers face is to identify these Standards (there are hundreds of them) and to find out what is their role in the wider grid architecture.

To help grid managers find their way through the maze, the IEC has developed a Smart Grid Standards Map. This enables the user to single out any given Standard in relation to its role within the Smart Grid by giving an overall view of the grid's architecture, as well as a list of all Standards (with previews). These are arranged by clusters (e.g. automated metering and communication infrastructures, cable overhead lines, distributed energy, automation, generic substation, etc.).

IEC Smart Grid resources are extensive; in addition to a list of relevant International Standards they include a dedicated webpage with a Roadmap (a comprehensive document, which covers Standards for interoperability, transmission, distribution, metering, connecting consumers and cyber security) plus various tools and background information.
**Dedicated Groups and Committee**

The framework and direction for Smart Grid activities was provided by SG 3 on Smart Grid, a Strategic Group set up by the IEC SMB (Standardization Management Board) in 2008, to offer advice on fast-moving ideas and any technologies likely to form the basis for new International Standards or IEC TCs in the area of Smart Grid technologies.

SG 3 developed and managed a Smart Grid framework that included protocols and model Standards to achieve interoperability of Smart Grid devices and systems, provided strategic guidance and monitored and interacted with the 30 or so TCs involved in Smart Grid work. It was also responsible for developing the Smart Grid Roadmap.

In June 2013 the SMB agreed to transform SG 3 into SEG 2, a Systems Evaluation Group on Smart Grid. A SEG is a temporary group set up to look at the feasibility of creating a Systems Committee on a considered scope.

In November 2013 SEG 2 recommended the transition into a full Systems Committee (SyC) on Smart Energy, a recommendation that was supported by the SMB in February 2014. The proposal was subsequently approved by National Committees in June 2014. SyCs aim to extend the scope of strategic or other horizontal groups to bridge areas covered by more than one or two TCs/SCs (Subcommittees).

They work at the systems level instead of the product level, to define reference architectures, use cases and appropriate Standards and guidance on the interfaces, functionality and interaction of a system within the scope of their charter. SyCs span multiple TC/SCs and external organizations, although they have no authority to dictate to any of them; they can produce IEC deliverables and have a system-orientated secretariat provided by Central Office.

While its strategic activities may be comparable to those carried out in its previous incarnation as SG 3, its status as a Systems Committee provides SyC Smart Energy, with the operational capability of engaging and supporting TCs. It is also able to publish as IEC deliverables (International Standards, Technical Specifications) a number of documents that can be referenced by interested parties, so providing enhanced consistency of approach; for example, generic use cases, roadmaps, etc...

**Continuous work**

The scope of the new SyC on Smart Energy includes:

- Standardization in the field of Smart Energy in order to provide systems level standardization, coordination and guidance in the areas of Smart Grid and Smart Energy, including interaction in the areas of heat and gas
- Wide consultation within the IEC community and the broader stakeholder community so as to provide overall systems level value, support and guidance to the TCs and other standard development groups, both inside and outside the IEC
- Liaison and cooperation with SEG Smart Cities and future SEGs as well as with the forthcoming Systems Resource Group

Given the growing trend towards the wide introduction of Smart Grids on an international basis, the need for relevant International Standards will be significant and the SyC on Smart Energy can expect a full agenda for years to come.
Larger, smaller, sharper and… pervasive
Displays of all sizes are to be found everywhere

Morand Fachot
In recent years fast growing sales of CE (consumer electronics) and ICT (information and communications technology) systems, which doubled between 2007 and 2014, have driven a huge demand for electronic displays of all kinds. The emergence of new consumer and industry devices that rely on displays will continue to spur on growth in the sector. IEC standardization work by IEC TC (Technical Committee) 110: Electronic display devices, is instrumental in driving forward the development of display technology.

Ubiquitous screens
The consumer electronics and ICT industries are the main drivers of display technology. Nowadays screens can be found everywhere, not just in the home or work environment, as consumers have taken to mobile computing and communications, adopting a whole range of new devices in the process.

According to Gartner, an IT research and advisory company, worldwide combined shipments of CE and ICT systems using displays will reach around 2.5 billion units in 2015, an increase of 3.9% over 2014. In addition to forecast sales of some 321 million desktop, notebook and ultramobile PCs, consumers are expected to acquire around 233 million tablets and over 1.9 billion mobile phones. Some 30 million e-readers are also expected to be sold in 2015.

While CE and ICT are leading the growth in electronic display devices, demand for avionics and in-vehicle displays, including HUD (head-up display), is also increasing, and commercial, medical and other fields represent further important markets for electronic displays.

Huge market
HD Ready, Full HD/1080p, 4K, 8K… for some 10 years now the CE industry has been promoting ever crisper video quality on the ultimate home entertainment system: the TV set. The introduction of digital TV broadcasting that required new sets was central to the replacement of CRT (cathode-ray tube) TVs with FPD (flat panel display) sets, even though the transition came years after FPDs superseded CRT monitors in ICT equipment.

CRT-based TV sets still made up 99% of the market in 2002, before their share dropped dramatically to less than 10% in 2011; their production is now set to end in 2015.

A recent trend that is driving additional sales of TV sets in what had been described a saturated market is the replacement of existing flat panel displays. It accounted for 23% of sales in 2013 and is expected to make up 67% of sales by 2018, according to Strategy Analytics.

In addition to FPDs for TV sets and computer equipment, the emergence and widespread adoption of new CE mobile and portable devices such as tablets and smartphones, as well as their interconnection in the home environment, have given a major boost to demand for electronic displays.

Riding on the crest of the electronic display device wave
Standardization work for display devices predates the arrival of electronic display devices. IEC TC 39: Electronic tubes, created in 1952, prepared, among other things, International Standards relating to electronic tubes, including CRT equipment. It was disbanded in 2012 and its work taken over by TC 110, which was initially established as SC 47C in 1998 under TC 47: Semiconductor devices, focusing on the development of standards in the area of FPD devices such as LCD (liquid crystal display) and PDP (plasma display panel).

Following technological progress in the field of FPD devices SC 47C was transformed into a full Technical Committee, TC 110: Flat panel display...
devices, in 2003. Its remit was to cover standardization work relating to OLED (organic light emitting diode) displays, 3D-DDD (3D display devices), EPD (electronic paper display) devices, FDD (flexible display devices) and other emerging FPD technologies. Its title was changed to Electronic display devices in 2011.

No slowing down for IEC work
As consumers acquire more and different CE devices the demand for electronic displays shows no sign of slowing down. To meet the standardization needs of various display technologies, TC 110 keeps expanding the range of its activities, setting up new WGs (Working Groups), whilst winding down work in domains that are disappearing or fading away, such as CRT and PDP.

Market and technology trends give a good indication of the areas that are at the centre of the TC’s activities.

LCD remains the most widespread display technology for TVs, monitors for PC and notebooks, sales of which have been fairly stable.

OLED is being used increasingly in TV sets; however, the steep price of OLED TVs means they are likely to remain high-end products in the coming years.

On the other hand, shipments of tablet computers and smartphones, which have been growing significantly in recent years, are lifting demand for OLED and even AMOLED (active matrix OLED) displays that offer higher resolution and sharper images. OLED is a major growth market with a CAGR (compound annual growth rate) forecast to be 36.7% over the period 2013-2018, according to Sandler Research. Likewise, a major boost for another technology, touch panel display, has been its introduction in tablet computers and smartphones, followed by its adoption in notebook PCs. Flexible display technology has been attracting much attention recently as it allows for the manufacture of non-flat displays and in the not too distant future will make possible the production of devices with displays that can be bent or folded.

Other technologies such as transparent displays are already used in HUDs and some wearable devices and are expected to become key products.

Boosting a huge global market
TC 110 has 7 WGs that cover the main current display technologies: LCD, OLED, 3DD, EPD, FDD, TID (touch and interactive displays) and LDD (laser display devices). The last two, WG 9 and WG 10, were set up in 2013.

TC 110 also set up a Maintenance Team, MT 62595, for Standards related to LCD backlight units; a Project Team to evaluate optical characteristics of electronic display devices, including mura (clouding), and an Advisory Group, AG 11, to “advise TC 110 on strategic business plans, specifically identifying and making recommendations on the TC 110 grand roadmap, WG structure, and establishment of projects in accordance with market needs”.

Over 135 experts from 8 Participating Member countries take part in the TC’s work. As of February 2015, 119 TC 110 valid publications are available and the TC’s work programme includes nearly 40 projects covering measuring and testing methods for technologies as diverse as OLED, haptic, flexible, and laser display devices.

TC 110 standardization work will continue to support the display market, which is forecast to be worth nearly USD 165 million by 2017, according to the US-based MarketsandMarkets research and consulting company.
Claire Marchand

For many of us, switching a light on or off is such a routine task that we take it for granted. With the exception of extreme situations – major power outages – we’ve never had to worry about lighting in our homes offices, factories, streets, and so forth. But there are still millions of people, with limited or no access to electricity, who don’t have that privilege. The United Nations have declared 2015 the International Year of Light to raise awareness on the central role played by light-based technologies in providing solutions to global challenges in energy, education, agriculture and health.

Access to electricity and lighting is one thing. Making sure that the equipment used is safe is another. This safety doesn’t come out of nowhere. Industry, standardization bodies, testing laboratories and CBs (Certification Bodies) all work together to ensure that the lighting products we buy and use have the required safety levels.

International Standards for the lighting industry

Today, a great number of IEC International Standards support the lighting industry, covering product and systems specifications, safety, performance, interoperability, EMC (electromagnetic compatibility) impact on the environment (both during production and until disposal), and everything in between.

Lamps, indicators and luminaires are built, wired and connected based on IEC International Standards for use in households, gardens and pools; public and private transportation; industrial complexes; hospitals, stadiums and urban environments; zoos and aquariums; film, photo and theatre production; and much more.

IEC Technical Committees – a systems approach

To produce an IEC International Standard for the lighting industry, many different IEC TCs (Technical Committees) are called upon to cooperate.

Lighting covers a vast number of applications and involves many different disciplines. Think power supply, batteries, wires, switches, transformers, converters, starters, enclosures, digital control systems in home networks, the colour rendering in monitors and more.

IEC TC 34: Lamps and related equipment is the leading TC in lighting. Its work is driven by rapid technological developments and changes in regulatory requirements that have to be continuously incorporated into new and existing International Standards. Areas where changes are especially fast include the automotive industry, alternative light sources such as LEDs (light-emitting diodes) and new government regulations in the area of EMFs (Electromagnetic Fields).

Application designers, engineers, manufacturers and certification and testing bodies, but also retailers, consumers and government organizations need International Standards that apply state-of-the art knowledge and technical know-how.

Industry today is very conscious of the need to develop products that have less impact on the environment. A special focus is directed towards the use of less toxic materials, substances and processes during manufacturing.

Several SCs (Subcommittees) of IEC TC 34 deal with special projects.
in the area of new technologies: LEDs, OLEDs (organic LEDs), electronic operation of metal halide lamps, controlgear design for fluorescent dimming, digital lighting interfaces, specifications for lampholders, automotive lamps, and so forth.

Developing countries benefit from IECEE

IECEE certification is of great value to industry and consumers alike, in that it facilitates trade and helps reduce costs. In many countries, IECEE CB Test Certificates and Test Reports are proof of compliance with technical and regulatory requirements, and many retailers, buyers and vendors are happy to import electrical goods carrying an IECEE Test Certificate.

This is also true for developing countries. Most of them have little or no industry. Electrical and electronic goods – including lighting equipment – sold locally are imported from all over the world. The main issue is therefore to avoid the dumping of substandard products on such countries and to guarantee that only safe and quality equipment reaches the local market. It is therefore likely to be in governments’ best interests to require compliance with Standards for all imports.

The complete list of International Standards by which IECEE testing and certification is based is available on the IECEE website at: www.iecee.org

IECEE ensures compliance with IEC Standards

Without testing and certification, Standards remain just words on paper. IECEE (IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components) has been providing a global platform for testing and certifying lighting products for many years. The IECEE CB Scheme ensures compliance with the impressive list of IEC International Standards developed for the lighting industry.

Testing and certification in that area address performance and safety issues for a wide variety of products and their accessories. Lamps and luminaires in general, single- and double-capped fluorescent lamps, floodlights, LED modules for general lighting, cords, lampholders, switches, insulation, temperature control, wiring and earthing are some examples of the elements that undergo testing.

Curved Smart TV with OLED display

LED car lights
Poland to host IECEx event
Third IECEx International Conference to take place in Europe

Claire Marchand
In just three years, the IECEx international conferences have made their mark and are becoming must-go events on the annual conference circuit for the Ex industry sector. After Dubai, UAE (United Arab Emirates) in 2012 and Kuala Lumpur, Malaysia, in 2014, the city of Gdańsk, in Poland, will host the 2015 IECEx International Conference on 22-23 April, so please save the date in your calendar!

A great networking opportunity
Jointly organized by IEC and IECEx (IEC System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres), together with UDT (Urząd Dozoru Technicznego), the Polish Member Body of IECEx, in conjunction with UNECE (United Nations Economic Commission for Europe), the conference is a unique opportunity for industries in the region and from around the world to become better acquainted with IECEx and find out how they can best benefit from the services the System provides, and also to get involved and form precious contacts and networks within the Ex community of experts.

World experts share experience and knowledge
The conference will bring together experts from all over the world, involved in international standardization, equipment manufacturing, inspection, repair and overhaul of Ex equipment and systems, and the assessment and certification of personnel competence. Issues concerning requirements and regulations in the region will also be covered.

UNECE best practices
As part of the conference agenda, UNECE will discuss the conclusions and findings of their global study into regulations for the Ex field, presented in the “Common Regulatory Framework for Equipment used in Environments with an Explosive Atmosphere”. The publication is based on and encompasses international best practice and international standards, and in particular standards from IEC TC (Technical Committee) 31: Equipment for explosive atmospheres. It also formally endorses IECEx as the recommended global best practice model for verifying conformity to international standards.

Get involved, participate!
Do not miss the opportunity to listen and talk to leading experts who may give you a new take on issues pertaining to explosive atmospheres. And think twice before saying it is of no concern to you. The Ex industry is not just about oil and gas. The risk of fire or explosion exists in a variety of other sectors, such as transportation – including aerospace – furniture manufacturing, automotive manufacturing and repair,

Through their presentations and direct contact with participants, these experts will be able to share their experience and detailed knowledge on all matters pertaining to the Ex field, such as plant design, principles and practical applications of area classification, installation and repair in compliance to IEC International Standards.

They will answer questions, provide advice and give valuable information to anyone involved in the Ex sector.

The IECEx conference will take place in Gdańsk, Poland, on 22-23 April 2015

The Ex industry is not just about oil and gas...
The United Nations proclaimed 2015 as the International Year of Light and Light-Based Technologies, recognizing “the importance of raising global awareness about how light-based technologies promote sustainable development and provide solutions to global challenges in energy, education, agriculture and health”. This global initiative ties in very smoothly with another, put forward by IECQ (IEC Quality Assessment System for Electronic Components), namely the IECQ LED initiative.

Increasingly popular
In proposing the LED initiative, IECQ also recognizes the fact that LED-based lighting solutions are slowly but surely becoming the norm in shops and malls, in offices, at home, for lighting displays and a great number of industrial uses.

LEDs may still seem to be more expensive than CFLs (compact fluorescent lamps) for example but they end up being more cost-efficient in the long-term – in theory LEDs could last up to 50,000 hours and more. Their potential long-life span, together with their low energy consumption, robustness, easy control and fast switching make them extremely appealing. And they will remain appealing as long as the electronic components, parts, modules and assemblies that make up LED lighting solutions are of the highest quality and reliability.

Quality and reliability
As an outcome of the success of LED lighting solutions for domestic and industrial use, the risk of having the market flooded by a large number of manufacturers making unverifiable claims about their products’ quality and reliability has increased exponentially.

High-quality LEDs
IECQ provides structured approach to supply chain management

Claire Marchand
The United Nations proclaimed 2015 as the International Year of Light and Light-Based Technologies, recognizing “the importance of raising global awareness about how light-based technologies promote sustainable development and provide solutions to global challenges in energy, education, agriculture and...
Mass production of LED lighting systems cannot be made at the expense of quality and reliability. All electronic components, parts, modules and assemblies must work satisfactorily together. One faulty component can result in poor performance or even worse, the overall failure of the LED lighting system.

**Trust in the quality of components**

IECQ has the solution that gives manufacturers, suppliers and buyers the confidence that the products they sell or purchase have been independently verified and meet all requirements and specifications.

The IECQ AC (Approved Component) Scheme has proved to be a valuable qualification and supply chain management tool that provides for the identification and verification of compliance with component and process specifications. In line with the approved scope of the IECQ System, the IECQ AC Scheme can be applied to certify manufacturers and suppliers of electronic components and assemblies (including modules) used in the production of LED packages, engines, lamps, luminaires and associated LED ballasts and drivers.

The IECQ LED initiative takes the tried and proven IECQ AC Scheme and tailors this for the LED Lighting industry; it includes manufacturing control measures that are specific to manufacturers of LED component parts, assemblies and modules.

Already, keen interest is seen from various lighting industry associations and councils, including the Global Lighting Association.

Manufacturers that qualify are awarded an IECQ Certificate of Approval for their LED component part or module, which is included on the publicly available IECQ “On-Line” certificate System, thereby enabling OEMs (original equipment manufacturers) to quickly verify any claims of compliance by their component suppliers.

**Powerful supply-chain management tool**

To the manufacturer, the IECQ AC and focused LED Scheme provides a “standardized way” of evaluating suppliers and is a powerful tool in assessing and monitoring various tier-level suppliers. It removes the cost burden of monitoring and controlling the supply chain, from the OEMs to their suppliers, while also protecting the OEM brand name in the market. It also helps prevent poor-quality LED systems from entering the market which can lead to a slower market expansion.

For component and module suppliers, the benefit is the on-going assessment/evaluation conducted by a single organization – IECQ – as opposed to multiple second-party assessments and various differing criteria by each of their OEM customers.

A structured approach to the supply chain management such as IECQ also brings with it inherent efficiencies and cost savings by reducing non-complying items, eliminating discarded items and reducing wasteful scrapping during production.

Purchasing LED products from manufacturers whose suppliers are covered by IECQ AC certification gives consumers the assurance that products are reliable, safe and will work as promised. It strengthens their confidence in this new and exciting technology.

With the IECQ LED Scheme, manufacturers are able to grow their markets while protecting their brand.

Component suppliers are able to demonstrate the compliance and reliability of their products which can lead to new market opportunities.

For more information on IECQ and its Schemes: www.iecq.org
Introducing 2014 IEC Young Professional Leaders

Janice Blondeau
During the IEC Young Professionals workshop in Tokyo in November 2014, three 2014 Young Professional Leaders were elected. Here are their stories...

Craig Carlson of South Africa
Craig Carlson, who holds a MSc Engineering (Electrical) from the University of the Witwatersrand, South Africa, started his career with Eskom Holdings Limited. There he is the lead integration engineer for the ‘Ankerlig transmission to Koeberg second supply project’ and business process owner for the ‘manage technical risk process’. Carlson is also convenor of the Eskom steering committee of technology workgroups for the technology type list and the technology metadata standard guidelines.

Smart Grids focus
His experience at Eskom includes the development and integration of engineering solutions, project planning, team management and leadership. His interests are within Smart Grids, and he is currently pursuing active involvement in the South African National Committee with aspirations to be nominated to IEC TC 8 as an expert.

“The benefit of the IEC Young Professionals programme for myself has definitely been a lot of personal growth, a lot of developing my professional network – and the benefits to my company are that I’ll be able to become more involved in International Standards, that are highly applicable to the company.” Craig Carlson, South Africa

Thahirah Jalal of New Zealand
Thahirah Jalal holds an Honours degree in Engineering Science from Oxford University, United Kingdom and a PhD in Electrical Engineering from the University of Canterbury, New Zealand. She has wide experience in research and development through an early career in the academic world, in multiple fields of engineering. Now, she is co-leading the asset intelligence team in Unison Networks Limited, New Zealand.

It’s about Big Data
Following Unison’s implementation of its Smart Grid initiative in 2009, Big Data is quickly becoming an important field for the company. The asset intelligence team develops algorithms that automatically convert Smart Grid data into meaningful information that is useful for network operation, management and development. Jalal’s current technical interest is in developing intelligence for transformers. She is actively involved in the development work as well as collaborating with various research partners such as universities, research agencies, innovation companies and New Zealand’s Ministry of Business, Innovation and Employment.

“What I found most valuable is the interaction between the different countries, coming up with similar goals and a similar aim. I actually think that’s something beautiful – taking the maximum benefit out of diversity, all the different experiences from various countries – I’m glad to be part of it, it’s definitely a unique opportunity.” Thahirah Jalal, New Zealand

Leo Ohtsuka of Japan
Leo works for JQA (the Japan Quality Assurance Organization) as a factory inspector. He conducts factory inspections based on many certification schemes – CSA, CCC, PSE and so on. Before entering the organization, he graduated from Kansai University with a Bachelor in Electronics Engineering.

Leo Ohtsuka of Japan, Thahirah Jalal of New Zealand, and Craig Carlson of South Africa...
Varied experience in the region
At university he engaged in creating a music retrieval system of Artificial Intelligence using FFNN (Feedforward Neural Network). He started his career in JQA as a testing engineer of household appliances, based on IEC 60335 and PSE (Product Safety Electrical Appliance & Material) law since 2003. After five years’ experience as a testing engineer, he transferred to the factory inspection division. In his current role, Ohtsuka travels both inside Japan and to south-east Asian countries. He previously participated in ANF (Asia Network Forum) to create new certification schemes in the region.

“The IEC workshop provides a good opportunity to improve our skills – for example, our negotiation skills, speaking and communication skills. Not only that, it’s also a good way to improve our business.” Leo Ohtsuka of Japan

Fruitful workshop in Mongolia
Acting on recommendations brought immediate results

Claire Marchand
IEC Affiliate Country Programme Executive Secretary Françoise Rauser usually combines the IEC GM (General Meeting) with a visit to a neighbouring country participating in the programme. This year, following the GM in Tokyo, Japan, she flew to Mongolia, accompanied by IEC-APRC (Asia-Pacific Regional Centre) Regional Director Dennis Chew.

The objective of the visit was twofold: first a joint IEC/PTB workshop on IEC International Standards and CA (Conformity Assessment) Systems focused on RE (Renewable Energies) and second, a visit to the Mongolian IEC Affiliate, to help establish the NEC (National Electrotechnical Committee).

PTB (Physikalisch-Technische Bundesanstalt) is the German national metrology institute providing scientific and technical services.

IEC and PTB join forces
Some time ago, Françoise Rauser and IEC Head of Global Marketing and Communications Gabriela Ehrlich met with PTB in Braunschweig, Germany, to present and explain IEC activities in standardization and CA. They highlighted the major role the Affiliate Country Programme plays in helping developing countries to use and adopt IEC International Standards and to learn about the benefits of using the IEC CA Systems.

One of the outcomes of the meeting was the decision to launch a joint effort for developing countries in the form of a workshop to be held in Ulanbaatar, Mongolia, on 20 November.

PTB involvement in Mongolia
PTB is currently carrying out a three-year capacity-building project in Mongolia under the German Development Cooperation Programme. PTB’s role is to assist and support MASM (Mongolian Agency for Standardization and Metrology) in the following areas:
• To implement standardization procedures according to international best practice and applying them, for example in the RE sector;
• To provide adequate metrological services and concepts to the energy sector;
• To develop a comprehensive long-term strategy including the overall system of metrology, standardization, testing, accreditation and certification, as well as its integration into the international institutional framework and the recognition and acceptance of these services at the national and international level.

Two elements are of key importance to the project: the inclusion of all relevant stakeholders, such as grid and power plant operators in standardization processes, and the adoption of International Standards as national ones.

The IEC/PTB workshop
The objective of the joint IEC/PTB workshop was to present IEC International Standards for RE, with special emphasis on solar power, and also to encourage the Mongolian Affiliate to establish a NEC so that Mongolia can upgrade to Affiliate Plus status and be given priority to receive a mentor as part of the IEC’s Mentoring Programme.

After the official opening by MASM Chairman Gantumur Galbadrakh, the Acting Director of MASM Standardization and Technical Regulation Division, Erdenebileg Galsandorj, presented MASM and its role in international standardization and CA for electrotechnology.

The IEC then took the floor. Dennis Chew gave an introduction to the IEC and its activities, and Françoise Rauser spoke about the Affiliate Country Programme and the multiple benefits of establishing a NEC. Both also made a presentation on IEC CA Systems and ACAS (Affiliate Conformity Assessment Status).

PTB Project Coordinator Corinna Weigelt and PTB expert Alex Inklar addressed the topic of why and how to get involved in standards development and Arno Bergmann, an expert in IEC TC (Technical Committee) 82: Solar photovoltaic energy systems, dealt with IEC standardization activities for renewable energies.

Gerel Jambaa, Senior Officer, Ministry of Mining and Energy, gave an overview of the focus and needs in the Mongolian energy sector.

The last item on the agenda was a discussion on the possible steps

Huge interest in establishing a NEC
The presentation made by Rauser during the workshop was of great interest to many of the stakeholders in attendance, so much so that it was decided on the spot to have another meeting the next day, entirely dedicated to the setting up of a NEC.

The meeting, held at MASM headquarters, brought together stakeholders from SMEs (small and medium enterprises) the Chamber of Commerce, the telecommunication sector, laboratories, the administrative City Council of Ulanbaatar, the university, the college of electrical engineering and of course MASM.

Extremely positive outcome
It didn’t take long for the workshop and discussions held in Ulanbaatar to bear fruits. Since November, Mongolia has established its NEC, has become an Affiliate Plus, has signed the ACAS Pledge for training in CA and has applied for mentoring.

Ulanbaatar combines tradition, here the winter palace...
Nominations and extensions

The SMB has approved a number of Chairman nominations and extensions for January and February

**About Jorma Rutanen**

With a Master of Science in applied electronics from the Helsinki University of Technology, Rutanen has held a number of managerial positions notably at Thermo Fisher Scientific and is currently a private consultant on regulatory, quality and productivity matters.

Rutanen has long been involved in standardization work and the IEC, having first joined the Finnish National Committee on safety of measuring, control and laboratory equipment in 1987. He is Member of a number of IEC Working Groups and received the IEC 1906 Award in 2007 for his outstanding work in the activities of TC 66. He has been elected Chairman of TC 66: Safety of measuring, control and laboratory equipment for a period of six years, beginning on 1 February 2015.

**About Walter Huck**

Huck has a Degree in Electronics and Telecommunication Engineering and is General Manager, Quality & Environment at Murata Electronics Europe.

Active in standardization since 1983 when he first joined the German National Standardization Committee for electrolytic capacitors, Huck is currently member of IEC TC 91: Electronics assembly technology and Convenor of its WG (Working Group) 1: Requirements for electronic components. He is an active contributor to various working groups of ZVEI (the German Electric and Electronic Manufacturers Association) and a member of JISSO International Council. Huck takes over as Chairman of TC 40 on February 1 2015 for a period of six years.

**Extensions**

The SMB has approved the extension of the term of office of Qiuhong Zhang as Chairman of TC 5: Steam turbines for the period 2015-01-01 to 2017-12-31.

Fumio Ueno’s term of office as Chairman of TC 105: Fuel cell technologies has been extended for the period 2015-01-01 to 2017-12-31.
Obituary

Ernst “Ernie” Grunewald passed away on 25 July 2014 at the age of 77

Ernst “Ernie” Grunewald received the IEC 1906 Award in 2013

The IEC recently learnt with sadness that Ernst Grunewald passed away last July. Grunewald served for 16 years as Convenor of IEC SC (Subcommittee) 59A/WG 2*: Electric dishwashers/Dishwasher tests, retiring from this role in 2012. He created an enjoyable environment when he was leading or attending numerous SC 59A “performance of dishwashers” meetings, with his good mood, humor and friendship. In 2013, Ernst received the IEC 1906 Award, recognizing his contributions.

Grunewald was born in the Dutch East Indies (now Indonesia) on 16 May 1937. He attended university in the Netherlands, graduating with a degree in Aeronautical Engineering. He served as an officer in the Royal Netherlands Air Force and moved to the United States in 1960.

Starting in 1961, Ernst worked for KitchenAid/Hobart and Whirlpool, mostly with the dishwasher appliance. Although he formally retired in 1997, he continued to work in various roles until 2013. He enjoyed mentoring and spending time with his coworkers.

Ernst married his wife Peggy Jo in 1961. They have two daughters, Jovilin and Peggy.

Grunewald’s friendship and work will be forever appreciated by SC 59A and WG 2. He will be fondly remembered by all those who had the privilege to know him. The IEC deepest sympathies go out to his family and colleagues.

* now MT (Maintenance Team) 2: Dishwasher tests

Obituary

Michel Coupy passed away on 22 January 2015

Claire Marchand

The IEC learnt with great sadness of the passing of former Technical Officer Michel Coupy, 69, on 22 January 2015.

Michel Coupy joined the IEC in November 1991 as Technical Officer. During the years of his tenure, he provided guidance and oversight to multiple TCs (Technical Committees) and SCs (Subcommittees), including:

- TC 1: Terminology
- TC 3: Information structures and elements, identification and marking principles, documentation and graphical symbols
- TC 8: Systems aspects for electrical energy supply
- TC 18: Electrical installations of ships and of mobile and fixed offshore units
- TC 21: Secondary cells and batteries
- TC 23: Electrical accessories
- TC 25: Quantities and units
- TC 34: Lamps and related equipment
- TC 96: Transformers, reactors, power supply units, and combinations thereof
- TC 97: Electrical installations for lighting and beaconing of aerodromes
- TC 108: Safety of electronic equipment within the field of audio/video, information technology and communication technology
- TC 111: Environmental standardization for electrical and electronic products and systems

Following an apprenticeship in electricity, Coupy studied and received a degree in electronics engineering at the Ecole d’Ingénieurs in Geneva, Switzerland. He went on to study economy at Geneva University, specializing in quantitative methods.

For most of his professional career, Coupy worked for Geneva-based companies and organizations, including CERN, occupying positions that allowed him to combine his expertise in electronics engineering, economy and marketing. In the 1970s, he spent three years in Argentina.

Coupy held his position as Technical Officer for 18 years until his retirement in February 2010.

Former IEC technical Officer Michel Coupy
Let there be light, for everyone

International Year of Light launched

Janice Blondeau

Lighting plays an important role in our everyday lives. Switching a light on is such a routine task that we often take it for granted. However there are 1.3 billion people worldwide who lack access to electricity and electric lighting and a further 1 billion have intermittent access.

UN and UNESCO global initiative

The IEC is delighted to be associated with the International Year of Light, which was officially launched on 19 and 20 January 2015. This global initiative, adopted by the United Nations under the patronage of UNESCO, will highlight to the citizens of the world the importance of light and optical technologies in their lives, for their futures, and for sustainable development.

In a message delivered to the Year’s opening ceremony, held at UNESCO (UN Educational, Scientific and Cultural Organization) headquarters in Paris, the UN Secretary-General Ban Ki-moon explained that light science has revolutionized medicine, agriculture and energy while today’s optical technologies have become the lynchpin to the basic infrastructure of modern communications.

Key to sustainable development and address climate change

“As we strive to end poverty and promote shared prosperity, light technologies can offer practical solutions to global challenges,” said Ban.

“They will be particularly important in advancing progress towards the Millennium Development Goals, achieving the future sustainable development goals and addressing climate change.”

IEC is at the table

The IEC, which brings together 166 countries, is determined to help bring electricity and clean and efficient lighting to the 1.3 billion people who still lack access. It recognizes that the economic development and advancement of newly industrializing countries depends on reliable access to electricity and safe and efficient lighting.

Through the work of Technical Committees and also the IEC Affiliate Country Programme IEC allows 83 developing countries, including 37 of the least developed, to participate completely free of charge.

Bringing light to rural, developing communities

In the area of off-grid lighting, the IEC has defined the quality, safety, efficiency and durability criteria that

Light poverty affects one person in five worldwide (Image: Philips)
help ensure that for example solar lamps are worth the buyer’s hard-earned money. IEC TS 62257-9-5, a Technical Specification for stand-alone lighting kits for rural electrification was developed with partners from academia, policy makers and private industry.

It allows testing laboratories to verify quality measures such as light output through tests that can be conducted anywhere in the world. Since it was launched, several million quality-assured solar LED lights have been sold in Africa and Asia.

International Standards for the lighting industry
For almost 70 years the IEC has been developing International Standards for luminaires and lighting installations. A great number of IEC International Standards address the needs of the lighting industry in terms of requirements, tests, safety and EMC (electromagnetic compatibility) for lamps, lamp systems and all related accessories.

Many people work behind the scenes to provide us with safe electric lighting. Industry, standardization, Conformity Assessment and CBs (Certification Bodies) all collaborate to ensure that the products we buy and use have the required safety levels.

IEC work in this area covers product and systems specifications, safety, performance, interoperability, impact on the environment (both during production and until disposal) and everything in between. Lamps, indicators and luminaires are built, wired and connected based on IEC International Standards for use in households, gardens and pools; public and private transportation; industrial complexes; hospitals, stadiums and urban environments; zoos and aquariums; film, photo and theatre production; and much more.

Looking forward
Today the quest for energy-efficient lighting extends beyond light bulbs to include various advanced light management systems that deliver precisely the right light to the right place at the right time. Many IEC TCs and SCs are at the forefront of standardization work that is allowing great advances in new lighting solutions.

IEC is intensifying its work to enable global trade and the expansion of new lighting technologies, and at the same time the organization continues to be instrumental in the development of the whole underlying energy infrastructure.

About the International Year of Light
IYL 2015, the International Year of Light and Light-Based Technologies, is a global initiative adopted by the United Nations to raise awareness of how optical technologies promote sustainable development and provide solutions to worldwide challenges in energy, education, agriculture, communications and health. The goal of IYL 2015 is to highlight to the citizens of the world the importance of light and optical technologies in their lives, for their futures and for the development of society. www.light2015.org/
Orchestrating infrastructure for sustainable Smart Cities

A new IEC White Paper launched

Janice Blondeau
Cities are central to any solution to global economic, social, energy or environmental challenges. Globally, urban areas are home to around half the world’s population and generate around 80% of global Gross Domestic Product (GDP).

Putting the ‘smart’ in Smart Cities
Cities and urban areas are responsible for around 70% of global energy consumption and energy-related greenhouse gas emissions.(1) Without a coherent strategy to run cities more efficiently, the global targets on greenhouse gas emissions and the ambitions for sustainable growth cannot be achieved.

The IEC, with the Centre for European Policy Studies (CEPS) as principal partner, has produced a White Paper that identifies ways to orchestrate infrastructure for sustainable Smart Cities. It explains the what, who and how of Smart City development.

IEC facilitates smartness
The IEC has a specific role to play in the development of Smart City Standards as electricity is core in any urban infrastructure system and the key enabler of cities development.

Sustainable and smart
By 2050, it is projected that 67% of the global population will live in cities. Smart Cities are necessary to reduce emissions and to handle this rapid urban growth. However cities, as we know them, are faced with a complex challenge – the traditional processes of planning, procuring and financing are not adequate for the needs of Smart Cities. Their development requires the right environment for smart solutions to be effectively adopted and used.

Delivering the full value of Standards to accelerate the development of Smart Cities and lower its costs also clearly needs a strong collaboration of all city stakeholders.

Collaboration is key
This White Paper explains what it needs to move cities to greater smartness. Wide collaboration is needed between many stakeholders, including other international standardization bodies, to ultimately lead to integrated, cost-efficient, and sustainable solutions.

The development of this White Paper was led by the IEC MSB (Market Strategy Board) project team on Smart Cities in cooperation with CEPS. The MSB brings together the CTOs of leading international organizations.
The White Paper can be downloaded as a PDF from the IEC website while printed copies can be requested at http://www.iec.ch/whitepaper/smartacontainers/

Brussels launch
On Tuesday 27 January Orchestrating infrastructure for sustainable Smart Cities was launched at an event in Brussels, with Mark Van Stiphout, Deputy head of unit - DG Energy C2 - new energy technologies, innovation and clean coal; Claude Breining, Schneider Electric, Project Leader; and Jorge Núñez Ferrer, CEPS, Project Partner Leader.

Presentations from the launch can be accessed at: www.ceps.eu/node/9922

IEC Smart City work
From the electrical energy that comes into homes, schools, offices and shopping centres to public transport systems, public utilities that supply water, electricity, and remove household waste – the work of the IEC underpins just about every aspect of modern city life.

It is there in the public lighting of sports stadiums and auditoriums, airport safety measures, lifesaving medical equipment and in the communications and IT technologies that ensure that city railway and bus services work as they should. IEC SEG (Systems Evaluation Group) 1 was created as part of the systems approach to manage Smart City standardization needs.

It is open to external organizations with an interest in Smart Cities, as well as bringing together relevant IEC experts. The SEG 1 on Smart Cities is preparing an inventory of existing standards, a reference architecture model and a roadmap based on the recommendations of its Working Groups and Task Groups.

Looking forward
SEG 1 Working Groups address city service continuity, urban planning and simulation system, city facilities management, use case – smart home, use case – smart education, Smart Cities assessment, and standards development for Smart Cities using the city of Johannesburg as a piloting benchmark for Smart Cities implementation.

SEG 1 is due to submit a final report in June 2015 and will most likely be transformed into a SyC (Systems Committee) later in the year.

About CEPS
Founded in Brussels in 1983, the Centre for European Policy Studies is among the most experienced and authoritative think tanks operating in the European Union. CEPS serves as a leading forum for debate on EU affairs – its most distinguishing feature lies in its strong in-house research capacity, complemented by an extensive network of partner institutes throughout the world.

(1) The New Climate Economy Report, The Global Commission on the Economy and Climate
A new President for IFAN

David Felinski began his three-year term on 1 January 2015

David Felinski is the new President of IFAN

Claire Marchand

At the 2014 Members’ Assembly, held in Paris, France, last October, IFAN, the International Federation of Standards Users elected David Felinski as its President. His three-year term of office began on 1 January 2015.

Felinski served on the IFAN Board as a Vice President for the last six years, representing its North American Member organization, SES (Society for Standards Professionals). He succeeds Ross Wraight who will continue to serve as immediate past President. Vered Oren, who is President of ISUS (Israeli Standards Users Society), succeeds Felinski as IFAN Vice President.

Felinski has been involved with standards since 1987 and manages the standards programmes for two different ANSI (American National Standards Institute) accredited standards developing organizations in the area of machinery safety. He also administers the U.S. TAGs (Technical Advisory Groups) to three different ISO (International Organization for Standardization) Technical Committees and participates in a wide variety of other ANSI, CEN (European Committee for Standardization) and ISO/IEC standards development activities.

Felinski holds three graduate degrees and has a broad background and depth of experience in policy and regulatory matters, trade associations, health safety and environment, and in human medicine.
India Smart Grid Week
Bangalore to host first major Smart Energy event in the country

India Smart Grid Week will take place in Bangalore from 2 to 6 March 2015.

Ambitious programme
In 2013, the Indian government issued a “Smart Grid Vision and Roadmap for India” and set up the India Smart Grid Task Force to explore how India can develop and deploy Smart Grid capabilities.

The new government, elected in 2014, announced it was committed to provide uninterrupted electricity to all households in the next five years and launched specific programmes to attain this objective. It also launched an

Rising to the challenge of providing utilities
This annual event offers a global conference and trade exhibition for 80 plus African power and water utility professionals to meet with engineers, stakeholders and solution providers alike.

Some 1 200 delegates will discuss the latest industry developments and challenges around power generation, transmission and distribution/Smart Grids, metering, clean energy, finance, reliability, water supply or energy efficiency (hydro, solar, wind) and share best practices and expertise for effective power and water supply.

For more information, go to: www.african-utility-week.com/
ambitious program to build 100 Smart Cities on fast track.

**Gathering all stakeholders**
The event – a conference and an exhibition – is part of the Indian Smart Grid initiative. It will bring together India’s leading electricity utilities, policy makers, regulators, investors and world leading Smart Grid and Smart City experts and researchers to discuss trends, share best practices and showcase next generation technologies and products.

One of the key objectives of the Indian Smart Grid Week is to emphasize the need for International Standards, key to the project’s implementation. The Task Force set up in 2013 has been working in close cooperation with BIS (Bureau of Indian Standards) to prepare and identify the standards needed for the Indian Smart Grid.

**IEC presence at the event**
The conference will feature plenary sessions and modules addressing specific Smart Grid and Smart City topics. Among the speakers are two prominent IEC representatives.

Renowned Smart Energy expert Richard Schomberg, Vice-President Smart Energy Standards at EDF (Electricité de France) will speak in the plenary session on “Smart Grid to Smart Cities and Smart Communities”. Schomberg is Chairman of two IEC Committees: IEC SyC (Systems Committee) on Smart Energy and PC (Project Committee) 118 on Smart Grid User Interface.

Frans Vreeswijk, IEC General Secretary and CEO, will address the audience in the plenary session on “International collaboration, joint research, development and deployment projects to bring down costs”.

**To get involved**
Prior to the conference itself, the organizers offer a Tutorial and Master Classes on the first day of the week. They also propose several visits on Friday 6 March. They include:
- Visit to a Smart Grid Pilot Project in Mysore
- Visit to SRLDC (Southern Regional Load Dispatch Centre) in Bangalore, the Control Room of BESCOM (Bangalore Electricity Supply Company) and CPRI (Central Power Research Institute)
- Tour of India’s Silicon Valley

The IEC has endorsed the event and all IEC members will receive a 20% discount on conference fees. To benefit from the discount, enter promo code: IEC20%.

For more information and registration details, please visit the India Smart Grid Week website: isgw.in/
Keeping data safe – what’s your back up?
New International Standard on data storage security

Janice Blondeau
To securely store and protect data these days a whole lot more than a simple back up is needed. A new IEC (International Electrotechnical Commission) and ISO (the International Organization for Standardization) International Standard for data storage security ensures that an individual, a company or organization’s valuable information stays in safe hands.

Keeping one step ahead
An organization’s data is often its most valuable asset, and keeping it stored safely and effectively is increasingly a commercial and legal imperative. However the process of managing it can be complex, especially how it is stored, how to access it securely and communicate it across a wide range of media and devices.

ISO/IEC 27040 on storage security
IEC and ISO’s latest International Standard, ISO/IEC 27040:2015, Information technology – Security techniques – Storage security, provides detailed technical guidance on how to effectively manage all aspects of data storage security, from the planning and design to the implementation and documentation.

It includes guidance on mitigating risks of data breaches and corruption and takes into account new technologies and the complexities of connectivity and supports the requirements of an Information Security Management System according to ISO/IEC 27001:2013, Information technology – Security techniques – Information...
security management systems – Requirements. ISO/IEC 27040:2015 aims to:
• help draw attention to risks
• assist organizations in better securing their data when stored
• provide a basis for auditing, designing and reviewing storage security controls.

Protecting and securing data
ISO/IEC 27040 is relevant to managers and administrators who have specific responsibilities for information security or storage security, storage operation, or who are responsible for an organization’s overall security program and security policy development. It is also relevant to anyone involved in the planning, design, and implementation of the architectural aspects of storage network security.

ISO/IEC 27040:2015 was developed by ISO/IEC JTC 1/SC 27: IT security techniques.

When eyes replace machines
Monochrome LCD devices are still widely used and depend partly on visual inspection

Morand Fachot
IEC TC 110: Electronic display devices, has released two new publications for the visual inspection of monochrome matrix LCDs (liquid crystal displays). If automated control of components is widespread in the electronics industry, visual inspection cannot entirely be replaced and remains important to prevent flaws in LCD devices.

There’s more to displays than meets the eye
The majority of LCDs in use are colour displays (computer screens, TV sets, multimedia devices, etc.), which are based on an active matrix structure, in which a matrix of TFTs (thin-film transistors) is added to the polarizing and colour filters.

Transistors activate and deactivate each row of pixels. Active matrix displays are bright, sharp and usually have a quick response time.

Passive matrix displays are still needed, produced and used today in monochrome displays. They can be found in personal organizers, in low-cost devices that need showing limited information only, and when low-power consumption is required (no backlight needed).

Certain types of passive matrix displays retain their state and show information without the need to have a steady electric charge.

Standards are still needed for monochrome displays
As passive matrix displays are still produced and used in many applications, it is necessary to have Standards to assess their quality and in particular to detect possible flaws in their components such as cells and modules.

If mechanical and other technical tests are essential visual inspection remains important.

IEC TC 110 has issued two publications concerning the visual inspection of such components.

IEC 61747-20-1:2015, Liquid crystal display devices – Part 20-1: Visual inspection – Monochrome liquid crystal display cells (excluding all active matrix liquid crystal display cells), sets out the methods and criteria for the visual inspection of LCD cells. LCD cells are used to modulate light to present information. The Standard contains figures that
show different types of defects in the viewing area, within segments, deviations of dimensions and shapes, defects within the sealing area and of the contact pad areas.

IEC 61747-20-2, *Liquid crystal display devices – Part 20-2: Visual inspection – Monochrome matrix liquid crystal display modules (excluding all active matrix liquid crystal display modules)*, was published as an FDIS (Final Draft International Standard) in December 2014.

This publication sets out the methods and criteria for the visual inspection of LCD modules. LCD modules are display units that combine an LCD cell with drive electronics. Like IEC 61747-20-1:2015 this publication contains figures showing different types of defects.

Both publications list the types of areas that need inspecting for defects as well as the criteria to be observed to reject imperfect cells and modules.

**The eyes have it!**

Both publications are important to ensure the production of flawless monochrome LCD devices and are proof that technical testing cannot always replace human intervention to assess the quality of industrial products.
Enhanced website features

New Feedback and Share buttons, restructured IEC Partners section

Claire Marchand
The IEC Web Team is constantly making improvements on the IEC website. The Feedback and Share buttons have been moved to give them more visibility, thus making it easier to use these features. And the IEC Partners section has been restructured to include information that was previously scattered throughout the site.

Commenting and sharing made easy
Both the Feedback and the Share functionalities were present on the IEC website, but until recently they lacked visibility. The Feedback button was at the top-right hand-side corner of the screen, next to the FAQs and Contact Us tabs. As for the Share button, it was part of the footer, meaning that visitors wanting to share a page had to scroll down to locate it.

Both buttons have now been positioned on the right of the page, in a sidebar, visible and available at all times when users scroll down a page.

How it works
Contacting the IEC with questions, suggestions or for support has never been easier.

Clicking on the Feedback button opens a popup form
Clicking on the Feedback button opens a popup form on which users enter their name, email address and the topic they want to draw attention to. They can further specify whether their communication is a question, a suggestion of if they need support, and provide detailed explanations.

To avoid spam, a simple question is asked at the bottom of the form prior to submission.

The submission goes straight into the system where it is automatically attributed a dedicated number and where those monitoring the flux of incoming feedback can then process it and quickly forward it to the person best able to respond – each department at IEC CO has appointed one contact person who will deal with these requests. At the same time the person making the inquiry receives an email message, confirming receipt of the request and providing a ticket number. This process allows for speedier answers and better service to users.

Once completed, the response from IEC CO is sent to the initiator of the inquiry and filed in the ticketing system database for future reference. This database will serve as basis for the preparation of FAQs and last but not least, the IEC can use the statistical data on support requests and comments to better understand where improvements in the IEC Services and tools are necessary.

Sharing is just a click away
Sharing content via social media – Facebook, Twitter, LinkedIn, Google+ or email – is just a click away and always accessible. Please note that the sharing tool has been optimized for Twitter, with short URLs, leaving more characters for your own tweets.

Partnership with international and regional organizations
The new IEC Partners section provides an exhaustive list of all organizations the IEC has links with. The table shows which organizations have a cooperation agreement or an MoU (Memorandum of Understanding) with the IEC. The agreements and MoUs themselves are available as PDFs. TC/SC (Technical Committee/Subcommittee) liaisons are also listed, when applicable, for each partner.

Special subsections discuss the IEC relationships with WSC (World Standards Cooperation), ISO (International Organization for Standardization), WTO (World Trade Organization) and the UN (United Nations).
Keeping kids safe
A new International Guide from IEC and ISO

Janice Blondeau
We all want kids to be safe, yet more than 830 000 children die needlessly each year from injuries and accidents that could have been prevented. A new International Guide from the IEC and ISO is here to help.

Hidden dangers
According to the World report on child injury prevention(1), from WHO and UNICEF, every day more than 2000 children and teenagers die from an injury which could have been prevented. Some of the key causes of fatal injuries to children are road accidents, falls, electrocution, burns and drownings. Children’s toys and other children’s products are also obvious potential sources of risk, and there are many other hidden dangers in products or situations they encounter.

Building in safety from the start
The newly-revised ISO/IEC Guide 50:2014, Safety aspects – Guidelines for child safety in standards and other specifications addresses child safety everywhere, providing guidance to standards developers by describing an extensive list of hazards children might encounter and proposing strategies to avoid them. However Guide 50 is not just for standards developers – government agencies, manufacturers and consumer associations will also find it useful.

Greater focus on prevention
The Guide recognizes that preventing injuries is a shared responsibility. The challenge is to develop products, including manufactured articles, their packaging, processes, structures, installations, services, and built environments which minimize the potential for causing deaths or serious injuries to children.

Taking children into account
A significant aspect of this challenge is to balance safety with the need of children to explore a stimulating environment and learn. Injury prevention can be addressed through design, engineering, manufacturing controls, legislation, education and raising awareness.

ISO/IEC Guide 50 describes specific characteristics of children that make them more vulnerable to hazards, taking into account children’s different development stages and the ways they interact with devices, products and environments.

This Guide was prepared by a Joint Working Group of ACOS (IEC Advisory Committee on Safety) and ISO COPOLCO (Committee on Consumer Policy).


Dependability and enclosures

Issue 02/2015 of e-tech will focus on dependability and enclosures.

Enclosures are a key part of electrical or electronic equipment and installations. They help prevent operators or users from being exposed to potential risks such as electric shocks. They protect the contents from their immediate environment. In electronics, enclosures can act as shields against ESD (electrostatic discharge) and radio frequency interferences among others.

In hazardous areas, enclosures must be able to contain any explosion originating within its housing and prevent sparks from within its housing from igniting vapours, gases, dust, or fibres in the air surrounding it.

Issue 02/2015 will also take a closer look at the protection of radiation instrumentation, the safety of motor-operated electric tools and will highlight the work done in these fields by several IEC TC/SCs (Technical Committees/Subcommittees) and the IEC Conformity Assessment Systems.