An introduction to the Industrial IoT

What does the Internet of Things bring to lighting?

Industry leaders discuss the IoT revolution

Apple will forever change the home automation industry

Global demographics will force a shift to smart cities and the IoT

BYOD, friend or foe?

Google’s Nest talks with Philips Hue LED lamps and smart fridges too
The New OSRAM LED Lamp and LED Tube Range

Discover the premium quality LED lamp range from OSRAM this lighting season, and take advantage of some new additions and features:

- Improved and increased portfolio
- New Higher output GU10 up to 575lm (85W Replacement)
- GLS now to 100W equivalent
- New GU10 & GLS LED retrofit portfolio (Filament type) with traditional appearance
- New Substitube range: now in 6ft Value options
- New Substitube ECG range suitable for installation in High Frequency Fittings

Light is OSRAM
OSRAM products are developed and manufactured to be 100% ErP-compliant. This enables us to provide guarantees of four and five years on our LED lamps.

You will find more information and the exact guarantee terms and conditions at:
www.osram.co.uk/guarantee

Light is your business. Light is our business.

Innovative products, consistently designed for the global, professional lighting market. Light for almost all application areas. With a unique selection of wattages, light colours, shapes and bases.

OSRAM products are developed and manufactured to be 100% ErP-compliant. This enables us to provide guarantees of four and five years on our LED lamps.

You will find more information and the exact guarantee terms and conditions at:
www.osram.co.uk/guarantee

Don't be in the dark about the risks of Substandard LED Lighting

More than 70 substandard or even illegal LED-based products have had to be withdrawn from sale in the six years since Europe began phasing out incandescent light bulbs in favour of higher quality and more sustainable light-emitting diodes (LEDs).*

OSRAM is committed to helping firms invest in safe and secure LED lighting products that meet their needs and budgets without compromising on quality and efficiency.

*The full list of withdrawn products can be found in the EC’s RAPEX database.

To request a brochure or discuss your LED requirements call us today on 01744 812221
Join The Evolution

If the internet connected us – then the Internet of Things is redefining just what it means to be connected. And our industry is at the very heart of it.

I’ve been working in the electrical industry for only two years but I can see the huge opportunity that these new products and new ways of working present to electricians. It’s clear that electricians are constantly learning new technology and working with new products – these new devices are no different really.

The Internet of Things or IOT as it is commonly referred to is an extension of what we have been calling ‘smart’ technology. We already have some fantastic products on the market that can do very clever things.

I love the new lighting products from Philips and Osram (Hue and Lightify). Both products are controllable wirelessly – whether it’s through a phone app or a wireless switch. They can change colour with ease, automated or on demand, which is both a toy for some or a great branding opportunity for others. And, most importantly they have the ability to connect to other devices – in the house, for example, when you watch a movie on the TV the lights could automatically dim to ‘movie mode’. Or in a retail environment they are able to get valuable data from consumers moving around a store. You can read more about Lightify on page 18 and Hue on page 25.

We hope this new magazine enlightens, educates, and most importantly excites, all electricians whilst also giving you an interesting read.

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Fire Safety Clip Range from SWA

SWA has launched a new range of innovative Firefly fire safety clips. These fully meet the requirements of the BS7671:2015 Wiring Regulations to secure all surface cables in escape routes, preventing fire-fighters and people escaping burning buildings from becoming entangled.

The full range will include a variety of clips to secure cables both inside and outside trunking and conduits.

- Spring-loaded design for easy addition and removal
- Melt point over 1000°C
- Zinc plated and white powder coated steel
- More types available soon - ask for details

To comply with BS 5839-1, Fire Safety Clips MUST be used on Escape Routes
The Internet of Things – what it is and what it might mean…
Why on earth would I want my bed to ‘talk’ to my lighting? And what can the IoT do for the world at large as well as for electrical contractors and installers?

‘Hello, facilities manager? This is circuit breaker Number 4’
Duke Dunsford of Schneider Electric’s partner projects division takes a look at how the rapidly expanding IoT can benefit facilities managers and electrical engineers who deal with switchgear.

An introduction to Industrial IoT
It isn’t just consumers who are affected by the rapid growth of the Internet of Things, the effect an industry is equally profound. Here’s our primer on the Industrial Internet of Things.

What does the Internet of Things bring to lighting?
Osram’s Lightify connected lighting kits farm a portfolio of cost-effective indoor and outdoor lighting products that can be controlled and automated using an app on a smartphone or tablet to help users save money.

Turning electricians into Internet of Things engineers
Global IT leader Cisco Systems is training students, electrical installers and engineers to cope with the huge growth of the IoT, which will include the smart meters that are essential to the creation of smart grids.

Research reveals optimism about business benefits of IoT and growing demand for e-commerce
Electrical industry professionals throughout Europe believe smart products are the future of the industry, with further sales support needed to meet demand.

Google’s Nest talks with Philips Hue LED lamps and smart fridges too
It was bound to happen…Google and Philips Lighting have got together and Nest can control Philips’ Hue IP-connected LED lamps in an IoT initiative.

Industry leaders discuss the IoT revolution
A Voltimum roundtable discussion covered a range of issues, from what happens when IoT goes wrong and security concerns about the boom in connected devices to managing the huge amount of big data that it will create.

Smart Cities, £trillion challenge and opportunity
More than half of the world’s people already live in cities, and by 2050 they are set to host three-quarters of a much bigger global population. Many of these fast-growing urban centres will become ‘smart cities’.

Smart solutions for assisted living
As an ageing population continues to put a strain on health and social care, Scolmore Group looks at the issues surrounding assisted living and the part the electrical industry can play in providing solutions in this growing sector.

How to heat homes and buildings using ‘nerd power’
The ubiquitous and all-important computer servers at the heart of the internet generate a lot of heat. What if this heat could be used instead of wasted? Could it be used to keep homes and offices warm?

Apple will forever change the home automation industry
Apple’s plans to invest in smart home protocols will bring an array of third-party products to the iPhone ecosystem, revolutionising the IoT and home automation.

Global demographics will force a shift to smart cities and the Internet of Things
Charbel Aoun of Schneider Electric explains his view in this blog about the coming crucial link between the IoT and smart cities.

BYOD, friend or foe?
Many companies now see the IoT as the biggest management issue for staff at all levels. Will the new trend to ‘bring your own device’ make things better or worse?
The Internet of Things
- what it is and what it might mean

Why on earth would I want my bed to ‘talk’ to my lighting? And what can the IoT do for the world at large as well as for electrical contractors and installers?

At the very least, you should have heard about the Internet of Things (IoT) by now. After all – even excluding mainstream press and other media, which has been covering the IoT extensively over recent months – Voltimum have had a section devoted to it since late last year. To date, there are about 60 articles there. So we expect you know at least the basics of what the IoT is.

But if not, here’s a brief introduction: One definition of the IoT is that it is an internet-enabled network of physical objects (or ‘things’), each endowed with electronics, software, sensors and connectivity that together enable it to achieve greater value and service by exchanging data with the manufacturer, operator and/or other connected devices.

Another way of thinking of the IoT is as countless ‘things’ that are fitted with uniquely identifiable embedded devices that are wirelessly connected to the internet. These ‘nodes’, as the things are called, can send or receive information without human intervention. The nodes can even be fitted to animals (to track or find them), and indeed to people and their clothes (for a variety of reasons we may or may not want to contemplate).

To achieve this, everything – which could, for example, be an LED light source or luminaire, a thermostat or an industrial controller – must be uniquely identifiable through its embedded computing system, yet it must also be able to interoperate in the existing internet infrastructure. Such devices already exist.

Indeed, the IoT has existed for some years, though it is only now becoming more widely understood. This is principally because the IoT is limited only by the imagination, and most people and organisations are only just starting to realise the potential.

Typically, the IoT covers many protocols, domains and applications, and should offer advanced connectivity of devices, systems, and services that go beyond machine-to-machine (M2M) communications. The interconnection of such embedded devices will also help enable advanced applications such as smart grids.

Not only that, with a huge increase in connected devices expected in a few years, switched-on electrical contractors and installers should also be able to secure significant extra business from the IoT.

How can the IoT benefit the world at large?

How indeed? Well, for example, IoT-connected devices can monitor your body rhythms, improve sleep, interact with special lighting systems to change brightness, colour, mood or turn it off entirely – and you won’t even have to get out of bed. If that’s the sort of thing you like.

You might well ask, what does this have to do with us in the electrical installation sector?

Although estimates vary, it is likely
(indeed virtually certain) that there will be between 50 and 200 billion connected devices by 2020.

Current examples of these smart devices, as reported by Voltimum in recent months, include consumer items such as Google Nest thermostats, Wi-Fi-enabled fridges and washing machines, connected lighting systems, such as Osram’s Lightify and Philips’ Hue. And there are many, many more – such as self-driving cars and vehicles that park for you. Industrial automation and the industrial Ethernet has large numbers of connected sensor and control devices already.

Devices with embedded communications that can be controlled remotely or respond to changes in conditions (weather and energy prices, for example) are becoming available. For example, Wi-Fi-enabled air conditioners can automatically enter themselves into utility demand-side response programmes, or could make decisions on their output and energy consumption based on a series of pre-set ranges in conjunction with thermostats and energy price data.

As they are already Wi-Fi enabled, smart meters will become part of the IoT, where devices will be able to communicate with each other to drive efficiency, lifestyle and business benefits.

Once connected, devices can report their energy consumption data, energy efficient consumption becomes more transparent, and measures can be adopted and monitored to make consumption more efficient still. Furthermore, the interconnection of such embedded devices will help enable advanced applications such as smart grids.

Typically, IoT covers many protocols, domains and applications, and should offer advanced connectivity of devices, systems, and services that goes beyond machine-to-machine (M2M) communications. Then there’s the equally rapidly growing Industrial Internet of Things (IIoT) with its IoT controllers and suchlike. Training will be needed, yet the possibilities are vast.

Although many of these IoT devices will be – by their nature – ‘plug and play’ items that can be fitted by householders, their sheer numbers and variety will mean there will be huge opportunities for switched-on electrical wholesalers, contractors and installers, not to mention manufacturers.

Many electrical installers, including some Voltimum users, worry that installing IoT devices will be tricky and time-consuming. The essential answer is that as long as devices comply with the appropriate interoperability standards, installing IoT devices – of which many of the domestic ones at least are essentially ‘plug and play’ – is little different from installing other wireless devices.

Even so, more IoT training courses for electrical contractors and installers would be highly beneficial.

Concerns about standards, privacy and security

There are, however, some downsides. For example, the UK is already one of the
Security concerns are developing faster than even the IoT itself

most extreme surveillance societies in the world, with an unusually large number of CCTV cameras recording our movements. Using the IoT, organisations will be able to intensify personal surveillance.

Moreover, there is the serious issue of security. If everything becomes digitally interconnected, the likelihood of hacking attempts increases, as do the dangers if such attacks succeed.

For example, the Online Trust Alliance has drawn up a framework that identifies three factors the organisation says are essential to ensure the safety and reliability of any device, app or service on the IoT. The first two are security and privacy, but the third is sustainability, which the alliance says is often overlooked.

The authors of the framework define sustainability as the ‘life-cycle supportability of a device and the protection of the data after the warranty ends’. Craig Spiezle, executive director and president of the alliance, says: ‘Important capability gaps in privacy and security design remain. For example, when someone sells a house with a smart thermostat or garage door, how does the new owner ensure former users can no longer access these devices?’

He asks: ‘How do manufacturers protect against intrusions into smart TVs and theft of data collected from device cameras and microphones?’

But there are potentially more serious scenarios. Security experts are continuing to warn that IoT devices will be increasingly targeted by cyber-criminals in 2015, as uptake continues to grow among consumers and enterprises.

Indeed, security concerns are developing faster than even the IoT itself. This is especially true when you considered that IoT devices will be connected to smart grids, smart cities, water and gas utilities, energy organisations, transport etc. And domestic smart meters will connect homes to power utilities.

Knowing this, the potential for catastrophe is certainly clear, whether by accident, by virus intrusion or by hacking.

So, if we are not careful, massive security issues probably will [not might] one day cause catastrophic damage to our infrastructures unless these issues are seriously addressed quickly.

Looking at standards, it’s clear that this is already a crucially important, though already divisive, IoT topic. After all, how will devices connect to others without interoperability standards? Yet, devices so far conform to a range of often non-interoperable standards.

A cross-industry open source organisation, the AllSeen Alliance, (among others) believes that the IoT cannot meet its full potential without an open platform to ensure interoperability between devices from different manufacturers.

Then there’s new research by ON World, which finds that the wireless standard ZigBee, which is already used by many IoT devices, continues to increase its share of the IEEE 802.15.4 and smart home markets. By 2020, the study claims, ZigBee standards will be used in 8 out of 10 of the 802.15.4 chipset shipments.

Furthermore, in recent news, the Thread Group has announced that it has completed the specification and documentation for its IP-based wireless networking protocol for low-power connected devices in the home.

And these represent just a few examples of potential interoperability clashes for connected and IoT devices. Therefore, organisations such as the Institute of Electrical and Electronics Engineers (IEEE), the Industrial Internet Consortium (IIC), and the European IoT-A (Internet of Things – Architecture) project, among others, are looking to provide architectural frameworks that define relationships between IoT domains and devices, as well as appropriate security schemes.

As these few examples show, it’s clear that there is much work to do where standards are concerned.

In any case, what is the point, some might say, in having a domestic IoT device for (say) monitoring your heartbeat that is interoperable with an IoT plant controller? These are crucially important issues that must be worked out and agreed upon before the IoT can come near its ultimate take-up.

How will devices connect to others without interoperability standards?
Free@home® is the new easy to use home automation system. From lights and heating, to curtains and door communication. Free@home provides a quick and easy way to meet all your customer’s home automation needs.

Free@home® is also totally user-friendly - you’ll be ready to use the system after only half a day’s training (which is provided free!). For more information or to book a free training session please call 0333 999 9900 or visit www.abb.com/freeathome
Our question is simple, and it’s one we want everyone within the electrical value chain from home owners to suppliers to ask:

**Does it Comply?**

*(to the UK Electrical Industry Standards)*

Asking this question each time you do business eliminates the risk that you could be inadvertently purchasing or installing a non-compliant product.

The trade in non-compliant and counterfeit products is not a victimless crime; it hurts the electrical industry as a whole and diminishes the trust and reputation of people and companies that are doing the right thing. If you would like to find out more about this campaign, visit us at [www.doesitcomply.co.uk](http://www.doesitcomply.co.uk)

Does It Comply? is an industry initiative lead by ACI, BEAMA, LIA, ESCO and GAMBICA and supported by Voltimum. The mission is to educate and inform contractors, installers, and specifiers to the damaging consequences to the industry from the trade in non-compliant product, whilst raising the profile to the wider stakeholders of issues with non-compliant products.
Hello, facilities manager?

This is circuit breaker number 4.

Duke Dunsford, marketing offer launch leader in Schneider Electric’s partner projects division, handles offer launches for the US market. Here, he takes a look at how the rapidly expanding Internet of Things can benefit facilities managers and electrical engineers dealing with circuit breakers.

Look around and it’s not difficult to see the incredible impact the IoT is having on our daily lives. From fitness monitors to home thermostats controlled by a smartphone, more and more of our devices are now perpetually connected.

This connectivity gives us access to a seemingly infinite amount of information. We can get data on not only the things that our devices measure, like our heart rate or the temperature of a room, but also detailed information about the health and performance of the device itself.

My FitBit, for example, sends me an email when its battery needs charging. That way, every single step I take is logged.

There is a parallel trend in today’s technologically advanced buildings, where a facilities manager can now get a plethora of information about the status of the facility’s electrical distribution equipment. Are you interested in trends in your building’s energy use? What about the status of circuit breakers and how far along they are in their life expectancy? Want to know when a circuit breaker is overloaded, or worse yet, has tripped?

As buildings become increasingly connected, all of this information – and more – is readily available with the convenience of an email or a notification on a smartphone. You no longer have to learn on a Monday that part of your facility’s power shut down over the weekend while you were out on the golf course. Then you would have had to call your electrician after the fact, putting you even further behind in your work week.

Getting a message that says something just happened is going to make your job a whole lot easier. When the information is critical, it is probably even worth interrupting your golf game.

I can already hear the grumbles and pushback from some facilities managers, who will say: ‘I don’t want to my phone...’
chirping incessantly, updating me every time the system takes a temperature reading.'

I couldn’t agree with them more. The powerful thing about today’s tracking of your power distribution data is that you can choose the types of information and alarms you want to get and when you want to get them. For example, most managers probably want to know immediately about a major power outage or a critical circuit breaker overload situation.

Also, engineers are constantly working to improve the user interfaces for displaying data. A prototype of a smartphone app I recently saw uses an image of dials, each with a range between zero and ten to indicate the relative health of a circuit breaker.

As the device gets closer to a critical state, more of the dial turn red. It serves as a quick visual check of breaker status without the need to plough through a table of data or check the display on the front of the breaker.

But an update that tells you a particular circuit breaker is 50% into its lifespan is not something you want waking you up in the middle of the night. To allow facilities managers to pick and choose, today’s alarm setup pages let users choose only the notifications they want to receive and even customise the text.

Text can be declarative and to the point:

To Duke Dunsford: ‘Building C, 3rd Floor Electrical Room, Breaker EC7 has tripped.’

Or it can strike a more personal tone:

Hi Duke: ‘This is breaker EC7 and I have just tripped.’

This kind of easy access to information is helping facilities managers today make better and smarter decisions about their operations, which ultimately results in greater competitiveness.

Make sure you’re not lagging behind in taking advantage of the Internet of Things to gain insight into your electrical distribution.

For information about Schneider Electric’s Smart Systems to manage your electrical distribution equipment, visit Schneider Electric’s product page. Also check out Schneider Electric’s Facility Hero, a free smartphone log book app for improving your maintenance team’s efficiency and sharing information with a larger community of experts.
Curves in all the right places...

The new Lisse white moulded range of wiring accessories offers the perfect blend of style and performance. You no longer have to choose between convenience and efficiency, or compromise on appearance to get the most innovative features - such as optional LED indication.

It's not hard to see why you will fall in love with Lisse.

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An introduction to the Industrial IoT

The fast-growing Internet of Things has arrived and has already started to affect people’s lives.

However, consumers are not the only ones affected. The IoT applied to industry (commonly known as the Industrial Internet of Things, IIoT) is currently making a grand entry into the retail, domestic, electrotechnical and manufacturing sectors.

Still don’t know what the IIoT means?

The latest report from Accenture – Industrial Internet of Things Positioning Paper Report (2015), defines the Industrial Internet of Things – IIoT- as ‘a network of physical objects, systems, platforms and applications that contain embedded technology to communicate and share intelligence with each other, the external environment and with people’.

The IIoT connects machines (making them ‘intelligent’), devices and people to streamline and improve industrial processes. Today the IIoT is helping improve productivity, reduce operating costs and enhance worker safety. Consequently, as the report from Accenture emphasises, ‘contrary to some accounts of the growing threat from intelligent machines, the IIoT will make people’s work more engaging and productive’.

But… how can we evaluate the results?

The range of business opportunities offered by the IIoT is enormous. Not only new products, but also services and even entirely new markets will appear.

To get an idea of the impact that the IIoT could have on the global economy, Accenture estimates that the IIoT will lift real gross domestic product (that’s, adjusted for inflation) by 1.0% in 2030 over trend projections for 20 major economies studied. If those economies were to increase their IIoT investments by 50% and improve the underlying enabling conditions in their respective countries, this could rise from 1.0% to 1.5%. Looked at collectively in 2030, Brazil, Russia, India and China will see corresponding increments to annual GDP of 0.2% on average and, with enhanced investments and measures, could increase to 0.5%.

Moreover, 87% of business leaders interviewed for the Accenture report believe the Industrial Internet of Things will result in the net creation of jobs.
Are we ready?

As IIoT growth takes hold, governments, research centres and companies should align their strategies to speed up the process. According to Accenture, the vast majority (84%) believe their organisations have the ability to create new, service-based streams using the IoT. Seventy-three per cent admit that their companies have yet to make any concrete investment and only 7% have developed a comprehensive strategy and committed investments accordingly.

Likewise, only a minority of C-suite executives think that the company’s senior leaders fully understand the IIoT, and these are overshadowed by those with some understanding (57%).

Therefore it is the role of the business to define the key to accelerating the process. Accenture has identified three key areas to be addressed to accelerate the economy-wide, cross-industry application of the IIoT:

**Reimagine industry models** ‘If every product is connected and allows a new service, reinventing industry practices and business models becomes paramount.’ There are some questions that the industry will have to address in the short-term future. For example, how would a company gain more value? Would it be by offering its own data to an ecosystem of partners or by incorporating third party data to improve their own services?

**Capitalise on the value of the data** Raw data itself isn’t useful unless it’s analysed and converted into information. To achieve this, investing in big data analytics becomes key for businesses. Analytics also require new technical and management skills. Therefore companies must create new financial and governance models to share the rewards of using common data.

**Prepare for the future of work** ‘The use of smart products and robotics will change the required skill and job mix in the workforce of the future.’ The IIoT will involve the emergence of new job types and new roles in companies. Companies should reassess their organisational structures and operations to keep up with the process.

A sector in motion

The IIoT/IoT sector is a dynamic one, constantly focused on innovation and research that will lead to new opportunities, both for the professionals and consumers. For businesses, the IoT presents a range of innovative opportunities and new revenue possibilities and, as the Accenture report mentions: ‘C-suite executives have their eyes on this prize.’

The question is whether companies will be able to face the challenge and identify new opportunities related to this new becoming sector, and who will emerge successful.
SIMULATED OCCUPANCY
Control of lighting (both internal and external) to create simulated occupancy.
Leave lighting to turn off automatically when you leave for work.
Have lighting, as well as audio devices such as radio’s switch on and off during holidays to give your home that lived in appearance.

OUTDOOR LIGHTING
Automatically switch on lights via presence detectors.
Additional switching for multiple use (all the family can have a key fob to put external lights on as they approach the home).

LIFE’S LITTLE LUXURIES
Creating scenes to provide added ambience for any situation around the home.
Control children’s rooms to restrict use of TV / gaming etc.
Provide timed access routes to create scenes such as “morning” or “bedtime”.

ASSISTED LIVING
Provides flexibility to change an installation to meet changing requirements of the occupier.
Use a bell push to switch a light on for the hard of hearing.
Create a bedtime route that turns all lights on and off to allow the occupier to get to bed without needing to switch lights on/off.

LIGHTING
Automatically turn off lighting and power when you want to.
Central programmer enables you to programme lighting and power seven days a week.
Last man out function – not sure if the upstairs lights are still on?
Easily remedied by a master switch inside the front door to turn everything off when you leave and back on when you return.

EXTERNAL POWER
Providing switching for external power so that sockets on the outside of buildings are only powered when you want to use them.
Automatically switch on/off Christmas lighting so that it is only on when you want it to be.

IN THE HOME
Change the use of a room – putting switches where you want them. Ideal for converting a downstairs room into a bedroom.

IN THE OFFICE
Switches can be mounted on any surface – even glass.

IN THE GARDEN
Wireless switching up to 200 metres.

IN BUSINESS
Interacts with building management systems to provide additional control.

COMMUNAL AREAS
Walkway lighting (hotels and commercial properties with interconnecting buildings).

Come and train with us!
IN LINE WITH OUR APPROVED DISTRIBUTOR SCHEME, WE ARE OFFERING AN INTRODUCTORY LEVEL TRAINING COURSE.
What does the Internet of Things bring to lighting?
Osram’s Lightify connected lighting kits form a portfolio of cost-effective indoor and outdoor lighting products that can be controlled and automated using an app on a smartphone or tablet to help users save energy, enhance comfort and personalise the environment. Now, the company is introducing complementary wireless switching for Lightify.

One of the biggest changes brought by the Internet of Things (IoT) will be the way in which people interact and use facilities in their workspace and home, using technology.

The experience will be more individual in the home, from automatically timing a single device to boil the kettle when your alarm sounds in the morning, heating water after a trip to the gym, or switching on the lights in your home as the sun sets.

Lighting is the most visible of all these. It’s not just about lighting control (on/off, coloured or dimmed lighting) with digital light sources, because there are also potentially significant energy-saving benefits.

Digital lighting systems – such as Osram’s Lightify range – are LED-based. Therefore, lighting is more flexible, giving coloured or tuneable white lighting to users. Changes can be triggered by timers or at the touch of a button on a smartphone or tablet. The system ticks the box for energy efficiency.

LED on its own is an efficient light source. When teamed up with a lighting management system, it is even better.

To colour or to whiten?

Lightify launched with both Home and Professional ranges encompassing LED luminaires, LED tape, garden lights and lamps. Lightify lamps are either RGBW – with 16 million possible colours – or tuneable white ranging in colour temperature from 2700 to 6500K. The only choices to be made are whether to colour or whiten the space being used. More lamp cap types are being introduced to the Lightify range this year.

What if you can’t use Lightify everywhere?

Being able to control traditional light sources automatically is a big opportunity for energy saving. To make the lighting control possibilities of Lightify really useful, wall switches are one of the fascinating new features coming from Osram in this lighting season. The company will launch a new ZigBee-enabled wireless light switch, which can be wall-mounted or used as a remote control. It will control traditional light sources as well as digital ones, such as the Lightify range.

Instead of using a smartphone or tablet, quickly dimming or just switching off all the lights as you leave a room is easy. Furthermore, there is peace of mind that all the lights are switched off. If you prefer a security feature, the lights (digital/Lightify or traditional) can be switched on.

The technology is being put in the hands of the user to simplify tasks. But it is crucial that new technology is easy to use. This is, and it is all part of the rapidly expanding IoT. Note that the wall switch (which uses Zigbee) cannot control traditional sources on its own. To control traditional light sources (non-Lightify), an SSE converter or the Lightify plug is required.
Our question is simple, and it's one we want everyone within the electrical value chain from home owners to suppliers to ask:

Does it Comply?
(to the UK Electrical Industry Standards)

Asking this question each time you do business eliminates the risk that you could be inadvertently purchasing or installing a non-compliant product.

The trade in non-compliant and counterfeit products is not a victimless crime; it hurts the electrical industry as a whole and diminishes the trust and reputation of people and companies that are doing the right thing. If you would like to find out more about this campaign, visit us at www.doesitcomply.co.uk

Does It Comply? is an industry initiative lead by ACI, BEAMA, LIA,ESCO and GAMBICA and supported by Voltimum. The mission is to educate and inform contractors, installers, and specifiers to the damaging consequences to the industry from the trade in non-compliant product, whilst raising the profile to the wider stakeholders of issues with non-compliant products.
Cisco is training large numbers of electrical installers and engineers to give them the skills they will need to install, maintain and repair the millions of smart grid meters that will be necessary to help energy and enable proper functioning of smart grids. These smart meters will come online as part of the IoT revolution.

Cisco says that, as the number of IoT devices increases, new demands will be placed on electricians. This has been confirmed by European Union research, which predicts that the number of electrical engineering jobs will double across Europe by 2025.

The company believes that, with the massive predicted growth in the smart meter and IoT markets, being able to train electrical installers with internet protocol (IP) data transmission networking knowledge will be critical to ensuring that a skills shortage will not hold back growth.

Cisco has been adapting its existing network training tools for use by electricians so they can learn about the IP-based data transmission networking technology inherent in the IoT and smart grids. The first version of the training tool appeared last summer. Now, several versions later, new ones are being developed, it is believed.

The first of these free courses was held in Germany, and was also offered at academies across the UK by the end of 2014. It initially focused on smart meters, coinciding (it was hoped) with the much-delayed start of the national rollout under which thousands of these networked devices will be deployed every day, all the way until 2020.

How smart meters will fit into the IoT
Research by Cisco and others indicates that the IoT is expected to grow to 50 billion connected devices by 2020, providing energy-consumption and other valuable information to domestic users, manufacturers and utility providers alike. Within the IoT, varied devices (including smart meters) across a range of sectors will be interconnected through the internet and peer-to-peer connections, as well as in closed networks – such as those in smart grid infrastructures.

Energy conservation, CO₂ emissions reduction and water management are becoming ever more crucial, and the IoT is expected to extend the connected benefits of the smart grid beyond the distribution, automation and monitoring being carried out by utility providers.

Moreover, smart domestic and building management systems will help home and building owners monitor and adjust their behaviour. Such systems will automatically regulate by monitoring occupancy, lighting conditions, heating and much more, and will operate during off-peak energy hours, as well as connect to the required sensors. But good training is critical – as a number of sector commentators have noted – which is why Cisco’s courses are aimed not only at students and those on vocational courses, but also at experienced electrical engineers and installers. The courses teach them to work with the varied new equipment, which is being increasingly installed, now and in the future.

Schneider Electric Software is another company enabling the IoT through open, innovative software that lets smart devices, systems and people connect more easily and interact in a secure, highly scalable way. Indeed, Cisco has partnered with Schneider Electric on the IoT.
LightwaveRF products represent a revolution in heating, lighting and power control. These advanced remotely controlled intelligent switches, dimmers, power sockets and radiator valves are just that little bit smarter - and can be operated via a smartphone – giving full control from anywhere in the world.

www.megamanuk.com/lightwaverf
Electrical professionals across Europe believe smart products are the future of the industry, with further sales support needed to meet demand.

The boom in connected devices coming into the workplace will be the future of the electrical industry, but further work is needed to help professionals sell the products, according to a research from Voltimum, the digital media business and sales enabler for the electrical industry.

Smart connected products will be the future of electrical installations

The study of 7,151 electrical professionals across Europe examined the industry’s perception of the Internet of Things. It found that 71% of respondents believe that in the future, electrical installations will centre around smart connected products. However, this optimism over smart products is being held back by difficulties in selling devices to end customers (according to 59% of respondents) and a lack of good sales support from manufacturers (48% of respondents).

Respondents predicted that the smart products that will have the biggest effect on the industry will be internet connected monitoring systems (74%), devices that can be controlled by smartphone apps (73%) and building automation systems (71%).

The biggest driver of online sales in the electrical sector is NOT price

The research also found that the prospect for online sales in the electrical industry is extremely bright. 85% of respondents expected online purchasing to increase or stay at a constant, with half (50%) saying they will buy more online in the next two years.

It also revealed that the biggest driver of online sales in the electrical industry is not price or discounts on products (according to 59% of respondents), but the speed and ease of delivery (74%).

The trend towards moving online is also reflected in the research sources being used by electrical professionals, with the top five information channels all being online.

Online product reviews (used by 76% of respondents) lead price comparison sites (used by 67% of respondents) as the most used channel.

Despite this shift towards online sales, wholesalers are expected to remain the key channel for purchases in the electrical industry in the next two years. Nearly two-thirds of respondents (63%) expected to buy through wholesale outlets at least occasionally in the next two years, despite the growth in online shops (32%) and manufacturer websites (36%) – which have boomed by more than a third (36%) in the last two years.

Wolfgang Schickbauer, CEO of Voltimum, said: “Our research highlights the exciting and promising times that lie ahead for the electrical industry, as businesses continue to embrace the Internet of Things revolution. The industry is increasingly shifting towards online sales and, while it’s clear that people in the industry are seeing the huge potential in connected devices, manufacturers and sales teams need to keep up to pace to ensure businesses can capitalise on the opportunity.”
Google’s Nest talks with Philips Hue LED lamps and smart fridges too

It was bound to happen...Google and Philips Lighting have got together and Nest can control Philips’ Hue IP-connected LED lamps in an IoT initiative.

Nest, the Google-owned US company that says, ‘we take the unloved products in your home and make simple, beautiful, thoughtful things’, and which has designed IP-connected thermostats and alarms, has now added Philips’ advanced IP-controlled Hue LED lamps, and LG smart fridges, to its ‘Works with Nest’ programme.

Philips’ Hue gives homeowners full control over the light in their lives by setting the mood and changing the ambience using varying light output and colour. With tuneable white light and a full spectrum of colour, all at the tap of a smartphone or tablet app, homeowners can set the perfect tone and enhance any moment – almost instantly.

Hue lamps can turn cerulean blue or sunset pink, can dim or brighten wirelessly, and can even pulse with speech rhythms – all at a smartphone or tablet command.

Nest provides thermostat and home automation devices that wirelessly connect to many household systems such as boilers, doors, lighting, washing machines, smartphones, and now fridges – but there could be, and will be, a great many more.

Nest is, therefore, part of the still young but fast-growing Internet of Things in which physical devices communicate with each other and people over wireless networks – locally or from around the world.

Always one of the leaders in LED lighting technologies, Philips is now moving still further into the future by partnering Hue with Google’s Nest. The move is also likely to provide Philips with new business models, which is important for the Dutch lighting giant, because good LED lamps last so long that lighting firms are now struggling to find sustainable businesses.

For example, a possibility that Philips has been examining for some time is the way in which light colour and tone can affect perception of temperature – and potentially lead to savings in heating, ventilation and air conditioning costs. Clearly, any such successful technological outcomes could well result in new business for companies like Philips.

How does it work?

‘Works with Nest’ is essentially a hub for third-party IoT devices that can interact with the Google-owned Nest thermostat and other devices. ‘Works with Nest’ makes it possible for Nest devices to interact securely with the things that domestic users already use every day, both inside and outside their homes. These include thermostats and smoke/fire alarms, but potentially there are many other devices as well. This allows behind the scenes operations to deliver personalised comfort, safety and energy savings.

There are other possibilities. For example, users can turn the home’s heat up or on (or off!) when walking through the front door (or any door), or switch on the washing machine when they are away, using smartphone apps – always assuming there’s a need for this, of course.

Potentially, this move could have significant consequences. This kind of IP-connected LED lamps and lighting systems should be able to improve health, quality of sleep, provide a sense of wellbeing – and even improve happiness. And it’s possible too that they could help ease pain.

The advent of affordable white light LEDs for general lighting has revolutionised the lighting industry across the world in little more than a decade. Now, with the excitement beginning to fade, there are massive new possibilities for lighting in the burgeoning IoT realm.
Whatever you need, the Philips MASTER LEDtube portfolio has it all. We’ve repositioned the way that our lamps are labelled into three new categories of light output — Standard, High and Ultra output. A simple change that will make it even easier to choose the right lamp, for the right application. From optimised energy efficiency to the highest light output.

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Industry leaders discuss the IoT revolution

Voltimum brought together leaders from the electrical industry to debate the future of the Internet of Things in London last month. The intriguing roundtable discussion covered a range of issues, from what happens when IoT goes wrong and the security concerns about the boom in connected devices to managing the huge amount of data that it will create.

As the largest global community of electrical professionals, Voltimum has been talking extensively to its partners, as well as its community of more than 400,000 installers and contractors, about the impact the IoT will have on businesses. At the end of these discussions, Voltimum hosted a roundtable event in London last month with leaders from the electrical industry to discuss what has to be done to prepare for the IoT revolution.

Over 70% of installers are strongly convinced that smart devices/IoT will be the future.

The roundtable kicked off with a debate about what happens when things go wrong with IoT and what can be done to ensure standards are in place to safeguard the emerging technology. ABB’s Kai Garrels outlined three key areas that have to be protected by standards: function and safety, to ensure machines and installations are safe; IT security, whereby buildings like power plants implement the correct standards for their infrastructure; and connectivity, to ensure people can browse their networks without requiring cryptic configurations or engineering tools.

Understanding and eliminating risks

The event brought together ‘the troops on the ground’ responsible for building the IoT, and was chaired by industry commentator and IoT expert Alun Lewis. Tanuja Randery, President UK&I at Schneider Electric, Timon Rupp, Innovaventure CEO at Osram, Gerry O’Donnell, Head of Strategy and Government Affairs at Philips, Kai Garrels, Head of Standardisation and Industry Relations at ABB, and Tony Greig, CEO UK&I at Legrand, joined Voltimum CEO Wolfgang Schickbauer in debating the battle of how to bring IoT to the masses.

Tanuja Randery from Schneider Electric said there was still work to be done to standardise the industry. ‘There is such a thing as too much and other industries have grappled with this in the past,’ she said. ‘At this stage, when we’re still evolving, there will be loads of standards, so the question is: how they consolidate so we can get down to one or two that are really key? With the number of connected devices there will be, we have to find a way to embrace open protocol – and the more we open up to that the better.’

The panel agreed that standards were vital if the market is to progress securely, and discussed the potential IT security concerns surrounding the IoT revolution. Timon Rupp from Osram commented that it was a requirement of the industry to educate.

Rupp said: ‘The IoT is still the internet, and it’s built on the same principles and the same encryption technologies. As an industry we would be wrong to tell people it’s all safe. It’s up to us to indicate what’s not safe, how to use it and where the risks are. This education is part of what the industry must do, rather than leaving it up to people to figure it out for themselves when it’s too late.’

74% say convenient delivery is the number 1 reason to buy online, price is only number 3.

IoT for the masses

As internet-connected devices become increasingly popular, and with analyst firms like Gartner saying there could be up to 25 billion devices on the market by 2020, it will only be a matter of time before these products are available for mass consumption on the high street. Gerry O’Donnell, from Philips, explained his concern about the preparedness of regulatory bodies for the influx of devices. He used the growth of mobile apps as an example.

O’Donnell said: ‘We’re seeing such a proliferation of new apps that the government has recognised it can’t regulate this space. There are more apps arriving every day than it can cope with and every day the government procrastinates on regulating these apps, the actual demand for them goes up exponentially. It’s an interesting space where the onslaught of new apps is going to exceed the ability of anyone to regulate it.’
Managing the big data boom

Another issue surrounding the explosion of connected devices is the huge boom in data that will be created. The panel agreed that there is a responsibility to ensure that the technology being provided is powered by efficient data centres, especially because the IoT will reportedly increase the need for data storage at data centres by 750% – so the industry has to find more efficient ways to handle the increase in data.

But, according to Legrand’s Tony Greig, this data influx could have a profound positive effect on businesses. Greig told the roundtable: ‘We all need data to demonstrate the financial merits of what we’re selling, because whether we like it or not, there’s a return on investment on everything and our customers, especially in the trade world, are asking for that. ‘Data is also exceptionally important in healthcare. For example, it is possible to monitor activity in an old peoples’ home to spot any abnormal movement a person may make.

‘This has a financial benefit in that it will stop ambulances being despatched unnecessarily and should make it possible to prioritise where they should go next, but you can only promote that if you can get hold of the big data.’

IoT to create new job opportunities

Also closely tied to IoT is the apparent threat of automation, which the likes of Elon Musk and Stephen Hawking have said will create mass redundancies around the globe. Randery said: ‘The IoT revolution is going to change the way we work, as individuals, organisations and companies. We have to find new ways to apply our resources, so I don’t know if I agree that it’s going to cause an enormous amount of redundancies.

‘I fundamentally believe this won’t work without human interaction of some kind.

Importance of supporting the electrical community

Summarising the event, Wolfgang Schickbauer said: ‘As the leading suppliers of the electrical industry, Voltimum shareholders are responsible for building the Internet of Things and putting it to work for enterprises, industries, cities and living spaces across the world. From this position at the forefront of the industry, Voltimum understands that to maximise the IoT’s potential, we must support our community of electrical professionals to help them understand the opportunities that digitalisation offers and how they can seamlessly integrate it.

‘Voltimum’s inaugural roundtable was a great success. It provided fascinating insight into the current state of IoT and what has to be done to ensure the industry is ready for the upcoming influx of internet-connected devices from some of the brightest minds in the industry.’

You can automate processes and create significant efficiency as a result, but at the end of the day there is someone programming the algorithm or analysing the data – because the robots can’t do it. We need 4.5 million developers for IoT alone, so I think any workers made redundant will end up getting jobs elsewhere.’

The panel also discussed the short-term outlook for electricians, and how they can benefit from the move towards smart technology in homes and buildings. Greig said: ‘Like any market, you have the innovators and the laggards, and there are a lot of contractors wanting to embrace the new technology, while those that don’t will fall by the wayside.

‘We’re starting to see smart homes being put into buildings, and that’s come from contractors going to the builder saying these options are available. The price point will come down and it will become much more affordable, so contractors should look at what’s going on, put together a package and promote it to their customers.’
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Paul Reeve, the ECA’s Director of Business Services, outlines what the ‘smart city’ concept means – and how it can offer opportunities across the electronics supply chain.

More than half of the world’s people already live in cities, and by 2050 they are set to host three-quarters of a much bigger global population. Many of these fast-growing urban centres will become ‘smart cities’ over time, with opportunities in the following areas:

- **Smart energy:** Offering significant energy savings across electricity and gas distribution systems, through state-of-the-art automation and real-time information management.
- **Smart buildings:** Offering high-quality energy and security management, energy ‘dashboards’, and active energy controls for homes and buildings.
- **Smart mobility:** From traffic and transit management systems that deliver real-time visibility across the transport network, to efficient and safe electric-vehicle recharging infrastructure – with intelligent tolling and congestion charging, and significantly reduced travel time.
- **Smart public services:** Ranging from flexible city lighting to intelligent security measures (through smart surveillance and video analytics), and weather and transport information, plus other innovative services for citizens.
- **Smart water:** Energy savings and reduced losses through water-network and loss management systems, leak and pollution detection, and storm-water management.
- **Smart integration:** Connections between different operating systems to provide tools, dashboards and greater intelligence, allowing for improved services, and more targeted, high-quality information for citizens, visitors and companies.

It’s a compelling list – and the technology to deliver it will rely on both powerful wireless Internet connections, and the still developing ‘Internet of Things’ (IoT).

In a smart city, masses of managed data will need to be delivered, wirelessly, to people, city authorities, and regulated service suppliers. Timely information will also need to be supplied to the public through social media networks. However, the opportunity for developing smart cities of the future also brings challenges, such as:

- ‘Big data’ – dealing with huge and growing amounts of information
- ITC security and resilience
- Bandwidth – issues surrounding wireless capacity
- Transferring existing systems to new ones
- Skills
- Project management
- Regulatory obstacles, including tougher data protection laws, which might also vary in different places
- Justifying the return on capital and other investment
- Agreeing standards and protocols.

So which types of businesses in particular should be interested in the opportunities brought about by smart-city development?

Here are five...

1) Integrators – end-to-end service providers, bringing together pre-packaged smart platforms
2) Network service operators – offering collaborative networks, data analysis, and other solutions
3) Product vendors – providing the smart meters, automated switches, controllers and voltage regulators
4) Product installers
5) Managed service providers – third-party providers overseeing the management/operation of smart solutions/services, and offering 24/7 monitoring, management or support.

Frost & Sullivan has speculated that the smart city market is going to be worth trillions of pounds worldwide. Crucially, in addition to the burgeoning installation opportunities, smart cities will also need to be maintained – and upgraded. All this suggests big opportunities for competent contractors, notably those involved in wireless data communication and smart actuation.

A ‘smart city’ can mean many things to many people, but although numerous pilot projects are ongoing, a full suite of smart city capabilities is not here yet. In the future, businesses and citizens will decide whether their city is sufficiently ‘smart’ to deal with the challenges it faces. With these challenges will come major opportunities for contractors to enhance cities, improve people’s lives, and significantly grow their business.
Smart solution for assisted living

As an ageing population continues to put a strain on health and social care, Marie Parry, Group Marketing Manager for Scolmore Group, looks at the issues surrounding assisted living and the part the electrical industry can play in providing solutions in this growing sector.

According to the Office for Budget Responsibility by 2065, 26% of the population of England and Wales will be more than 65 years old, up from 18% today, increasing the cost of health and social care.

While our increasing longevity is something to celebrate, the economic, social and political implications are very significant. As the population ages, the incidence of chronic disease is on the rise, in particular the prevalence of dementia. Dementia is one of the main causes of disability later in life, ahead of cancer, cardiovascular disease and stroke. There are currently 850,000 people with dementia in the UK, with numbers set to rise to over 1 million by 2015. This will soar to 2 million by 2051.

Because we are living longer, traditional arrangements for supporting those with the long-term health issues that come with age are unsustainable. The construction industry has a central role to play in how we cope with this pressing issue. For example, the way we design homes now and in the future will help people with different levels of mobility and capability to remain in their homes.

Current thinking is to integrate traditional building technologies with new and emerging ones. There are enormous potential benefits from using mobile devices and services that operate seamlessly with home-based solutions, supporting users to manage conditions inside the home. This is where the concept of assisted living comes in. Assisted living includes approaches, services, solutions, capabilities and related technologies that help elderly people and those with chronic conditions to live active, independent and dignified lives with maximum personal control.

**Smart Homes**

For construction professionals, the challenge is to integrate new and emerging technologies into the design of buildings. Buildings that manage this feat are described as ‘intelligent’ or ‘smart’. Which technologies are used depends on the building type and function; those used in smart homes aim to enhance occupants’ lifestyles or quality of life.

The smart home market is undoubtedly on the rise in the UK, with 47% of UK homeowners considering investing in smart home technology. Rapidly growing and in high demand, smart technology is becoming a common part of our everyday lives. One of the most important ways to harness the power of a connected home is to enhance assisted living.

Compass Group (White Oaks Paper) reports assisted living market is estimated to be worth £10.1 billion – a figure that not only demonstrates the size of the problem, but also the potential for the electrical contracting and wholesaling industry to work towards designing, supplying and installing products which will facilitate the continued independence of the growing aged population. The potential for smart technology to transform assisted living is a crucial development for the care sector.

The appeal of smart home technology in assisted living is simple: elderly citizens, people with disabilities and other persons who are less able to live alone can be empowered by being given the tools to help them continue to live independently and safely.

Rather than crossing a dark room to turn on a switch for example, automated technology can be set up to trigger the coming on of lights once there is motion detected in the space. Rather than fiddling with an array of different controllers for heating, a centralised app on a smartphone or tablet can control the entire house at once. If a person suffers from Alzheimer’s or dementia, alerts can even be sent to a phone if a window is left open overnight. In this way, people are given back the ability to do simple tasks that may have become unmanageable before.

Smart home technology is even able to provide 24-hour non-invasive home monitoring, allowing the families of those needing assistance to be alerted if there is something amiss. For instance, if lights in the kitchen haven’t been triggered in over a day, a family member or carer can be notified to check the house in person. Taking away the worry and fear that often comes with living alone is paramount. By being able to remotely alert an elderly person that the sound that they are about to hear is their carer coming to visit, provides much needed reassurance.

A smart home does not require a complete home refurbishment project and it does not need to cost tens of thousands of pounds. With new products that are suitable for retrofitting and affordable solutions now on the market, smart home technology has become more accessible and within reach of average consumers.

**Wireless control**

The ability to easily adapt and update a home is being made more achievable
due to the wireless control and automation products available. These enable the upgrade of an electrical installation to provide added security, energy saving, comfort and control for those in need of assisted living, without the need for intrusive and unwanted disturbance.

Retrofit and affordable products can be installed to transform any building to provide numerous benefits to suit all manner of requirements and will have particular value for the assisted living sector. For example a bedtime route can be created that turns all lights on and off to allow the occupier to get to bed without the need to switch lights on or off, or the use of a bell push to switch a light on for the hard of hearing. Because of the flexibility of this type of system, it will be easy to change an installation to meet the changing requirements of the occupier.

Solutions can be tailored to facilitate activities of daily living in a safe, controlled manner whilst allowing those needing care to remain independent for longer, and thus decreasing the need for formal and informal care in the home.

Smart home technology can be the ideal solution for individuals with different needs and abilities as the technology can provide an environment that is constantly monitored to ensure a person is safe. It can automate specific tasks a person may be unable to perform, such as switching lights on or off, guard against unauthorised access, or warn users they may have left the front door open. Using technology to isolate an appliance such as a cooker or a fire, for example, will help safeguard the person from danger in their own home.

Reassurance

Keeping people safe and comfortable within their homes with task automation, motion detectors and light dimming sensors could prove crucial in giving assisted living care providers added reassurance. The ability to provide a person in a wheelchair with access to a variety of controls via a remote control attached to the wheelchair, has obvious benefits.

It isn’t just high-tech solutions that are working their way through and providing much needed help for this sector. Manufacturers are looking at ways to improve some of the simplest products that have been around for years and seen little development. Switches which feature wide rockers and sockets that have wider gaps between rockers, as well as outboard rockers are all designed to facilitate the use of products for those with impaired vision.

Improvements

At Scolmore we believe that our most recent innovation is the perfect example of looking at everyday activities and product uses and coming up with improvements. The new Mode Locating Plug Socket - developed with the assisted living sector in mind - is designed to assist people with impaired vision or poor hand to eye coordination to more easily insert a plug into a socket.

The contoured shape of the front plate guides the earth pin into position, and it is this plug guide which gives the product a greater focus on usability and means its use can be extended to situations where a socket isn’t easily accessible.

The product is available in one and two-gang options, with the two-gang version featuring outboard rockers to further assist with distinguishing between switches, making it less likely to switch the wrong one.

The Locating Plug Socket is part of the Mode range of wiring accessory products, which all feature anti-microbial properties and come with a 20 year guarantee. It is an ideal solution for assisted living installations and also meets with the requirements of Part M compliance.

With dementia identified as the one of the main causes of disability in later life and expected to double globally by 2030 and triple by 2050, the assisted living sector is one that will continue to grow and all those involved in the design, manufacture and supply of solutions will continue to have a part to play in easing the burden.
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How to heat homes and buildings using ‘NERD POWER’

The ubiquitous and all-important computer servers at the heart of the internet, which are vastly bigger and more prevalent that most people realise, generate a lot of heat. Indeed, it costs their owners and operators a lot of money to get rid of it. What if this heat could be used instead of wasted? Could it be used to keep homes and offices warm?

It’s free heat, and it could be said to be sustainable. It’s been nicknamed ‘Nerd Power’, and it comes from the fertile minds of the people who set up the Dutch company Nerdalize. But how do you go about capturing and exploiting this heat?

Essentially, this clever product is a heater unit (radiator) that is also an Internet-connected computer (server), and this computer does number crunching work as a distributed data centre service – acting at the same time as a distributed way of efficiently getting rid of the waste heat that number crunching creates.

Importantly, it does this by using the waste heat efficiently – and as Nerdalize covers the cost of electricity, the heat generated by computations, such as medical research, warms a home or office for free – apart from a small set-up charge.

The radiator-servers take a little longer than is typical to heat up – about an hour, and a single unit isn’t enough to heat a room in mid-winter, but it is free energy.

Lots of wasted energy to be recovered

It’s worth noting that the world’s servers are estimated to take up to 1.5% of global electricity supplies. To stop conventional server stacks from overheating, their owners spend a great deal of money on the latest cooling systems. Even then, over 30% of a data centre’s energy bill is for air conditioning and other cooling technologies. The energy waste is enormous and is increasingly unacceptable.

This is the reason Nerdalize, together with one of the largest energy suppliers in the Netherlands, Eneco, has rolled out the Nerd Power radiator-server under the name ‘Eneco eRadiator’.

How it works

In essence, the system is a data centre spread across many homes and businesses, all linked by fibre-optic cable. By placing high performance servers in homes and offices, Nerdalize creates a highly distributed computer cloud without the cost overhead of conventional cloud and co-location solutions. This creates, says the company, a ‘triple-win’ in which sustainable computing power becomes an affordable commodity, homes are heated for free and CO2 emissions are drastically reduced. This structural cost advantage lets the company offer computing power that is up to 55% more affordable, it says, than that of major cloud providers or co-location solutions.

So, the overall result is affordable computing with free heat. The Nerdalize Cloud is a sustainable and affordable high-end computing platform, says the company. Because the servers are distributed over many homes, data centre operators don’t have to pay for the overheads of a conventional centre.

The system’s core server benefits include docker support – easy integration with existing cloud solutions and versioning, and all radiator-servers are equipped with solid state drives, for optimum performance. Moreover, Nerdalize supplies up to 32GB of RAM for each CPU. So, server performance is highly efficient and the company sells its computing capacity to clients from industry and academics who can put it to good use.

These applications include medical research video transcoding, complex engineering models and several forms of scientific computing. So far, the radiator-servers have been used to carry out lengthy protein and gene analysis.

But what happens when the unit is switched off? The answer is that the server doesn’t stop working, but the excess heat goes to an outside wall-mounted extractor. What happens if the internet is down yet heat is still needed? The device is again clever – it merely starts doing dummy calculations, which take as much energy (and, therefore, produce as much waste heat) as real number crunching.

Some limitations

There are some limitations and concerns, primarily on the server side. For example, those jobs that demand fast processing of large amounts of data really need many servers working in parallel on different parts of a dataset and communicating efficiently – and the fastest way to achieve this is still to put them all in the same room.

Then, as with all computing – and increasingly so with the IoT, of which nerd power is essentially a part – there is the serious issue of security. Nerdalize says its radiator-servers are tamper-proof and all data is encrypted, but there are still many number-crunching jobs that should not go through people’s homes and businesses. Such problems will have to be addressed, but at The Smart Electrician, we love the idea.
Apple will forever change the home automation industry

Apple’s plans to invest in the smart home industry will bring an array of third-party products to the iPhone ecosystem, revolutionising the IoT and home automation.
Home automation is on the increase, thanks to the widespread availability of easy-to-use and affordable smartphones and tablets. The idea of the Internet of Things ties in closely with home automation, with experts estimating that the IoT will consist of almost 50 billion objects by 2020.

This fast-expanding market had a slow start, mainly because of the many smart home companies and devices that have come and gone over the past few decades, and their many different wireless standards. As a result, making these devices talk to each other was close to impossible, leaving consumers and manufacturers facing an endless maze.

So what’s changed? Central to this transition is Apple’s HomeKit, a new and innovative advance in home automation. From turning off lights to securing locks, Apple’s plans to invest in the smart home industry will bring an array of third-party products to the iPhone ecosystem, revolutionising the IoT and home automation.

HomeKit, here to serve you

According to Apple, HomeKit is a framework for communicating with and controlling connected accessories in a user’s home. Today, every home automation device on the market has its own app, its own communication protocol and a particular security mechanism. With HomeKit, Apple intends to add some rationality to this process, simplifying the current state of home automation. HomeKit uses a common language created by Apple that smart devices from any manufacturer can understand and support – the technical details of this have been established by the documentation that makes up HomeKit.

From a user perspective, HomeKit could not be simpler:

Step one Buy a HomeKit-compatible connected device.

Step two Download its related app.

Step three Pair app with iPhone through a simple set-up code, and voilà.

Smart home accessory control will be handled by Siri. Apple’s voice-controlled digital assistant, or the iOS Home app. Siri will effectively communicate with a range of equipment, becoming the user’s personal butler using a single platform.

You can also use Siri to put rooms into zones (‘first floor rooms’ or ‘all kids’ rooms’, for example), or even create a group of actions with one trigger, like a ‘good morning scenario’ that wakes you up by opening your blinds and curtains throughout the house, turns on your favourite radio channel and acclimatises your bathroom for your morning shower. The idea is that, whatever the room, or the make or model of smart home products, the connected devices in your home will all do as you tell them through Siri. This allows you, one item at a time, to assemble your own IoT.

Apple’s smart home capabilities will let users determine, shape, and design actions to control smart home devices using the iPhone’s operating system. This ‘one platform’ model is only feasible if the manufacturers add HomeKit support to their devices, so this ‘seamless’ experience is only possible if the appliances are designed to be connected with HomeKit. The user will not be able to cobble together existing appliances unless they use extra equipment such as sensors.

Apple will have to convince the major device manufacturers to adapt their products to HomeKit and certify them to work with the iPhone. This will require large investments and some companies well established in the market may not be interested. So far, the company has announced a list of 17 partners that will supply iDevices, including Honeywell and Philips. Among the devices that will be compatible with HomeKit are lights, locks, bells and thermometers.

One downside of this system is that, if you are away from home and you have a sudden desire to turn the lights on in your house, you can’t. Because so many HomeKit interactions are routed through Wi-Fi or Bluetooth you will need an Apple TV to control your home while you are away. Apple TV acts as a smart home ‘hub’ and without it Siri is unable to have a long-distance relationship with any of your devices.

Imminent threat?

If you look at the array of iDevices available, you have Bluetooth and ‘Made for iPhone’ (MFi) devices. Although Bluetooth uses radio technology that is open to nearly
any smartphone, MFi streams use special hardware that typically only Apple devices use. Historically this policy was very much a proprietary cash cow strategy, which Apple capitalised on in grand style. When applied to home automation technology, however… well, to say it’s secure is an understatement.

Apple-compatible smart home accessories with Apple-approved MFi chips offer end-to-end encryption. In simpler words, when a user says: ‘Unlock the door’ to Siri, the order is encrypted by the phone, sent through the web, landing at their lock, where finally it’s decrypted. This command can only be unscrambled at the hardware level, potentially making the user’s smart home safer from hackers than it would be with other systems.

Unfortunately for Apple, the same chips that give Apple a competitive advantage are stalling HomeKit. Apple approved three vendors last year, however the chips have yet to be approved (or, for that matter, mass produced). This means that all of the smart home products currently on or coming on to the market are not and will not be compatible with Apple’s smart home initiative. They could be iPhone-compatible, meaning the user can control them with their respective apps, but Siri will not recognise them at all.

Nevertheless, it’s possible that some of them can be updated to adopt the HomeKit framework. For instance, if you’ve already got connected light bulbs (which typically require a hub to connect to your home’s Wi-Fi network), swapping out their hub for a HomeKit-compatible version will let Siri control them. But if you already have a smart thermostat – unless the manufacturer swaps your device for one with an MFi-chip – Siri will not see it, ultimately defeating its purpose.

With 25 million Apple TVs sold, the company has a huge head start in the smart home race. But now Apple must get those MFi chips into smart home products — because without those connected devices, talking to Siri is practically just talking to the wall.

The Smart Electrician expects new companies, specialising in creating software and hardware for a unified smart home experience through the HomeKit environment, to increase competition. However these aren’t household brands or names that users are familiar with, and this may create a feeling of unease when a homeowner is purchasing a door lock, for example. Strong name recognition is a real advantage to our well-known partners in getting ahead of the game.

The small number of HomeKit-enabled accessories currently available are far from satisfying, but we can be sure that this will change soon. However, today consumers cannot buy home automation devices in a store without the help of a professional — often a very expensive professional. If HomeKit can establish itself as a personalised central control, these costs should fall, making HomeKit popular and indispensable.

Upon entering the home automation market, Apple has long-term goals that give them plenty of time to make up the rules as they go along. The Smart Electrician expects new companies, specialising in creating software and hardware for a unified smart home experience through the HomeKit environment, to increase competition. However these aren’t household brands or names that users are familiar with, and this may create a feeling of unease when a homeowner is purchasing a door lock, for example. Strong name recognition is a real advantage to our well-known partners in getting ahead of the game.

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Global demographics will force a shift to smart cities and the Internet of Things

Charbel Aoun of Schneider Electric explains his view in this blog about the coming crucial link between the IoT and smart cities.

It seems more and more clear that evolving global demographics could alone virtually guarantee that smart cities and the Internet of Things are the way forward.

Let’s forget for a moment the many challenges, which are yet to be fully resolved, and focus instead on the shifting tectonic plates of our global population.

Today, more than half of the world’s population is under 25 years old. This new millennial generation is globally oriented, extremely diverse, technologically gifted and has the most progressive political orientation ever.

It is these young people who are leading the charge to incorporate technology into everyday life in ways that were unimaginable even a decade ago. We used to think personal computers were pretty neat, but these people have grown up with the internet and smartphones. Born with electronic devices in their hands, these digital natives are continually redefining citizen and human engagement.

Of course, for more and more of us, technology is at the centre of our lives. Have you recently spent any time at all with no access to any form of technology? No internet, no phone, no TV. Do you think you could, and how would it feel? Some readers may consider this a little over the top, but always-on internet connectivity is well on the way to being considered a fundamental human requirement.

The world our children are growing up in is a much smaller place that the one our parents inhabited. Generations Y and Z could be the first in history that will inherit nations in decline together with unprecedented resource constraints.

This major shift in demographics combined with a challenging economic and natural environment is providing a powerful catalyst to sustainably enable better lives in the cities of the world. The technology-literate expect the towns and cities they choose to live in to allow them to do so openly, seamlessly and transparently.

Must be in touch

No city can afford to be out of touch with the needs of its citizens. With 75% of millennials active on social media, technology is fundamental to their social connections. We are already seeing this effect of this on, for example, the automotive industry, which suddenly faces young people with less interest in motoring than ever before. For them, social media and urban living means life is easier, cheaper and simpler without cars. Every city wants to lure this new generation of millennials, their talent and their businesses. To do so, they will have to ensure they speak the same language and create an environment that will not only attract them, but hold their interest too. Intelligent use of technology is likely to be the key to this.

It is a mistake to assume they will want to live the same ways or want the same things as their ancestors. Baby boomers and generation X typically live by the mantra ‘good things come to those who wait’ but for generation Y and Z it’s a case of ‘good things come to those who act’.

The rise of smart citizens in smart cities could be considered a battle in a paradigm war. Cities are looking to deliver efficiency and ‘more for less’. However, they are doing this in a world of real-time social media, which is forcing a change in the old order of control. Given that generations Y and Z will live in and lead the cities of tomorrow, we must be inclusive and ensure they are at the heart of development.

This intersection of the rapid evolution of technology, a seismic shift in demographics and the need to manage overstretched resources, creates a perfect storm to make smart cities and IoT an inevitable future.
Many companies now see the Internet of Things (IoT) as the biggest management issue for staff at all levels. Can BYOD policies help?

With the recent rise in the popularity of wearable technology, MDM (mobile device management) services for IT departments are becoming more complex than ever, and this is only the beginning.

As well as introducing new kit, IT managers have to consider how they should apply a range of new IoT philosophies and policies including CYOD (choose your own device), COTS (commercial off the shelf), MBYOD (managed bring your own device), COPE (company-issued, personally enabled), BYOA (bring your own app), BYOP (bring your own phone), BYOPC (bring your own PC) and BYOD (bring your own device). These are all changing the way companies work, and how staff in these companies use technology in their working lives. The problem is aggravated by the way IoT is going through a rapid metamorphosis. The IoT will begin to divide into specific categories:

**Infrastructure IoT**
- Water systems, mining, streetlight networks, smart city networks, energy networks, transport systems, environment and disaster monitoring, public safety, airports and building management.

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**Wearables/consumer IoT** Apple iWatch and HomeKit, FitBit, Google Glass.

**Enterprise IoT** Connecting business systems, customer support, logistics, asset-tracking systems.

The new ways of working triggered by the IoT are sure to change the way we manage our day-to-day workload.

**A new way of working**

‘Bring your own device’ (BYOD), also called ‘bring your own technology’ (BYOT), is a not-so-new trend that lets employees bring their own mobile devices such as smartphones, tablets and laptops to their workplace. This policy changes the relationship between user and technology in organisations. It is no secret that a lot of people prefer to use their own mobile devices to perform professional activities in their companies. After all, who wants to carry two phones?

Mobile devices have the advantage of already being customised with a range of the employee’s choices of operating system or e-mail manager. These personal devices are already set-up with applications and services that employees are comfortable with. Consequently their interaction with technology becomes seamless, saving precious time – and time is money – whereas a computer provided by the company has to be adapted.

**Helping organisations reach quality goals**

But what does it mean for organisations and their IT departments? Is it advantageous to encourage employees to bring their own devices?

If you own a company at which people work in all sort of remote regions and they rarely visit your headquarters, then you should create a mobile-driven environment and this naturally adapts to the benefits of the BYOD trend.

In industries such as construction, Voltimum is a big believer of BYOD. The current trends towards a greater use of integrated information systems demand more innovative and dynamic ways of working. BYOD can help construction firms reduce costs by letting staff work on the move. The use of mobile devices can be transformational; instead of spending hours travelling to a distant office to update systems, employees can input corporate information from any location, saving on time and travel costs.

Project leaders can walk to a job site with no warning, with a tablet, and define everything needed for the job including labour, tools and equipment. The leader can quickly distribute the information to all the groups who are responsible for supplying the job site – purchasing agents, tools manager and equipment.

Employees are capable of updating costs and other information in real time on their own devices, creating a single and complete view of the project. This creates a complete story of what happened at each stage and how much was spent, so the process of resolving disputes and facilitating earlier payments can be sped up considerably.

With BYOD there is a real sense of real-time decision making. The BYOD trend will change the day-to-day building trade.

Often the employee can bring even more skilled resources than the company offers. It is advantageous for the company to implement BYOD as it reduces expenditure on purchases and upgrades of equipment and applications. Companies can rely on the employees’ self-sufficient ability to maintain and preserve their own devices. Employees are capable of working and have access to their documents not just anywhere but at any time, including hours outside of the 9-5 timeframe.

**BYOD demons and evils**

Are you wondering why your company hasn’t implemented BYOD yet? Well, it’s because of you. There is a cultural expectation in play. As an employee you expect your employer to provide all of the equipment you need to do your job.

Another reason is the set of rules associated with BYOD (for companies clever enough to implement them). When employees are confronted with BYOD policies asking them to depart from their expectation of privacy or give up space on their personal devices for the BYOD management software, employees – funnily enough – become a little less interested. There is also the risk of data exposure.
when it is stored on mobile devices. Two thousand smartphones are pinched every day and the personal information on the phones is often sold on to identity thieves. In these cases, what are the implications for the company and for the employee if passwords or important information that was stored on the device were obtained by strangers?

Surely, not having to spend money on equipment is a significant enough benefit from the BYOD trend? However this does not necessarily mean savings for the company. The company must still spend money on technical support to connect the new devices to the existing platforms. BYOD also presents a number of tests for IT departments. One must consider the diversity and complexity of the technologies and that the IT personnel will need to support this. Not to mention the odd staff member using a gadget with a less popular operating system.

A new stumbling block for this trend is the recent IBM-Apple partnership, in which IBM will streamline the iOS device companies and unique applications for vertical industries. More Apple devices will end up on a list of CYOD – choose your own device, an alternative to BYOD that is growing in popularity in Europe. This CYOD list will force employees to choose from a limited number of devices but it will bring the responsibility back to the IT department. Luckily enough, end-users want to use Apple products at work. If your employer gives you a brand new iPhone as a result of this joint sale of Apple and IBM, why would you want to bring your own?

Who is playing the game?

According to a study by IDC Europe, almost half of CIOs in Europe have not yet adopted the BYOD trend, and they are unlikely to change their minds any time soon. In fact, they may have less desire to undertake BYOD in the light of the recent IBM-Apple partnership. BYOD took off largely in the US and, for a while, looked like it would be fashionable in Europe too, but seemingly European officials do not like BYOD as much as US workers. Armed with statistics, IDC states that the adoption of BYOD in Europe is still slow. In 2013 the IDC surveyed European companies on their BYOD plans. The results showed that 26% had a formal policy on BYOD. 31% predicted its creation and 44% were not planning to do it at all in the next 18 months. Flash forward to the same questions asked this year: 36% had a formal policy on BYOD. 23% foresaw its inception, and 41% had no plans for the next 18 months.

Companies that wished to adopt BYOD are progressing with their plans, but the group with no intention of adopting BYOD remains largely intact. In other words, European CIOs are not convinced by the BYOD trend. BYOD adoption has reached a plateau.

Future-proofing

Preventing employees from using their own cell phones and computers at work is no longer possible. BYOD is a reality. Whether companies embrace this trend or stubbornly decide to ignore it, sooner or later companies will be forced to accept it.

BYOD is making significant inroads in the business world, with about 75% of employees in high-growth markets such as Brazil and Russia and 44% in developed markets already using their own technology at work. As we become one global business, the UK will soon have to suppress its BYOD fears – or else.

As mobile devices are fast becoming the primary tool for accessing systems and data, it is necessary for IT departments to conduct studies before implementing BYOD. Aspects such as access to the company’s network and the storage of files with important data and passwords, among others, pose a risk to the organisation and have to be analysed.

As a company, you are on the right path by defining an IT planning strategy to explore the positive aspects of the BYOD movement. It’s certainly better than just prohibiting or ignoring this current reality. It is important to raise awareness among employees who use personal devices. However they must follow the company’s policies while at work, even when using their own equipment.
enlighten (verb) make it easier

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