

cable the future

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FIBRE TO THE STUDENT

Goethe University opts for FTTO

MEETING NEW DEMANDS

Smart choices for data centres

GLOBAL PARTNERSHIP

Supporting Huawei's Business Growth

Everything IP:
is your network
ready?

Nexans

Performance throughout the network: a challenge and an opportunity

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“As increasing numbers of people rely on cloud-based services with instantaneous data exchange, ageing enterprise networks often struggle to keep up.”

Rapidly growing numbers of devices, new ways of working, convergence, the Internet of Things and 5G, to name a few developments from recent years, are placing greater strain on connectivity. Networks need to provide the best possible performance when it comes to bandwidth, application support, signal continuity, latency and energy efficiency.

We're seeing more and more enterprises and public sector organisations adopt cloud and mobile applications, whilst taking ease of use, high transmission speeds and significant savings for granted. However, years of reduced IT infrastructure spending has left many in-house networks ill equipped to keep up with today's bandwidth demands. As increasing numbers of people rely on cloud-based services with instantaneous data exchange, ageing enterprise networks often struggle to keep up. Of course, some new builds come equipped with top-notch infrastructure – but these represent just a small percentage of the total volume of both the public and private real estate in use today.

As a result, our industry is facing a unique opportunity and a challenge. There is ample opportunity to roll out new networks to support the enhanced connectivity needs of today

and tomorrow. At the same time, however, we need to convince decision-makers that in-house network performance is just as important as that of external networks – and that budget needs to be found for internal infrastructure improvement alongside their cloud deployment and IT outsourcing programmes!

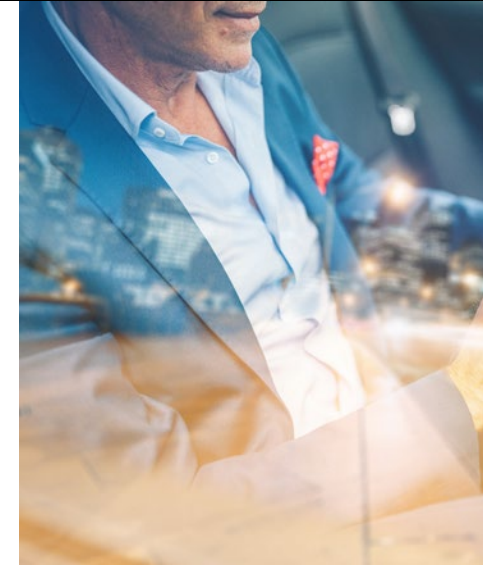
For this issue of Cable the Future, we have asked internal and external experts to share their views on current and future

network drivers and solutions. We'll be taking a look at some of the current key trends, challenges and solutions in data centre and enterprise networks, convergence as well as the application of Fibre To The Office (FTTO) in a campus environment.

I would like to wish you pleasant reading and hope this issue provides some input for vital decision-making. As ever, we'd really like to hear your views, so please feel free to get in touch through our social media channels. ■

Mark Rogers

Mark Rogers
Executive Vice President
LAN Cable & Systems Global Business Group



The role of data centres has changed significantly in recent years, placing pressure on network requirements. We look at the drivers, their consequences and smart steps to help manage exponential data traffic growth.

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Internet Protocol (IP) addresses are no longer exclusive to computers, network-related devices and VOIP phones. Billions of connected devices are coming online: what are the consequences and how to ensure your network is ready?



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BRAZIL NEXANS BRAZIL S/A - Alameda Jau N°1754 - 01420-002 Sao Paulo **CHINA NEXANS CABLING SOLUTIONS** No.1 Middle Fute Road - Waigaoqiao Free Trade Zone - Shanghai 200131
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Mark Rogers • Joost Gillaert • Wolfgang Beier • Nancy De Clerck • Alan Flatman • Dr Hansjörg Ast • Dr Franz-Joachim Knäuffels • Mike Holmes • Martin Rosbach • Philippe Barte • Gerd Backhaus • Evgeniy Vlasov • Alexandra Nockan • Boudouin Bazeel • John Edwards • Oene-Wim Stallinga • Matt Flowerday • Philippe Bernardini • Michael Wang • Eric Lawrence • Lussen Lu • Hubert Theissen • Sven Van Herck • Suzanne Gieles • Jef De Busser • Amke Heindryckx • Jan Caris
MANAGING EDITORS Yves Debroyer • Mike Holmes
DESIGN & PRODUCTION www.headoffice.be
NEXANS CABLING SOLUTIONS Alsembergsesteenweg, 2, b 3
 B-1501 Buizingen • Belgium • Tel.: + 32 (0)2 363 38 00
 Fax: + 32 (0)2 365 09 99

NEXANS (GROUP HEADQUARTERS)
 Immeuble Le Vinci • 4 allée de l'Arche
 92070 Paris La Defense Cedex • France
 Tel: +33 (0) 1 78 15 00 00
 E-MAIL ALL OF YOUR INFORMATION QUESTIONS TO
 info.ncs@nexans.com
www.nexans.com/LANsystems
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Solutions
for education
Goethe
University
opts for FTTO

Educational facilities have highly specific demands and challenges when it comes to data networks. To deal with large distances and high performance requirements, Goethe University opted for a dedicated Fibre To The Office (FTTO) solution with some 7,000 switches.

Goethe University in Frankfurt am Main, Germany was founded in 1914. With some 45,000 students, 500 professors, 5,000 employees and 16 specialist divisions offering 170 degree programs, it is one of the largest universities in Germany. The University is spread across four large Campus areas: Bockenheim, Riedberg, Westend, which incorporates the Financial Department

and Auditorium, and Niederrad, where the university hospital is situated. The needs of a multi-site University are not unlike those of a large office environment. The distances involved can add up quickly and access points may be spread across multiple locations. It is important that networks can scale up easily, with regards to footprint as well as number of users. High-speed, reliable wireless access is becoming more and more important, with many portable devices needed to connect directly to the network. Truly vast volumes of data may be generated, especially at research facilities. Of course, even the slightest downtime must be avoided at all costs. And preferably, cables and hardware should last for decades and be capable of supporting both new and legacy equipment.

FTTO: the obvious choice
“Owing to the large distances and very high safety requirements fibre optic cabling, in conjunction with intelligent FTTO systems, was the best option in this environment,” explains Dr. Hansjörg Ast, lecturer with the University’s Institute of Theoretical Physics and also Head of the IT infrastructure services department. “Some of our larger buildings may contain as many as 1,500 workplaces. Operating a system to cater for this could, in theory, be very costly and take up a huge amount of time, but FTTO is efficient, flexible and very easy to expand. The planned addition of some 850 workplaces is no

big deal with this solution. Connections are simply branched out from the access point to wherever your devices need to be connected.”

“Originally, a copper-based network was planned, however, the inherent 90 metre length restriction would have been a big issue for us. We would have needed 25 patch cabinets to make 400 connections for some remote and smaller buildings on our campus. Many of our buildings are historical, which brings restrictions to how and where you can implement networks. The distance we can achieve with fibre is much more practical. Network management is also easy. Everyone working in the research group, for example, needs access to specific resources, regardless of their - varying - location across the various campuses. Our current solution makes this easy.”

“By now, over 7,000 FTTO switches are in use. This solution gives us a great deal of flexibility. A great bonus is that staff members don’t need to repeatedly visit buildings in order to configure equipment manually. One person can take care of administrating thousands of switches. The stability of the FTTO switches is extremely high. Almost all of our first switches, acquired in 2006, are still up and running.”

“We have a primary access point in each building. Via the FTTO switches

VoIP phones are powered directly with Power over Ethernet and three ports go into office VLANs and are connected to laptops, network printers and so on, with the fourth port always reserved for VOIP. We use 1 Gb per port, which is enough for nearly all applications. There are 60,000 active staff, students and facilities accounts, so we really do need a great deal of bandwidth. Fast growing numbers of students, with more and more advanced wireless devices means we need ample wireless connectivity, which in turn requires fast, reliable cabling.”

Joint effort

HRZ, the University’s competence and service centre, worked closely with Nexans on specifying, testing and installing the FTTO solution. HRZ operates the University’s fibre ring, its voice and data communications and its central IT services such as e-mail, Internet services, e-learning and public computer systems. “We selected Nexans as supplier based on the reliability of their systems,

“I’d recommend this to any University!”

security features and their support offering. They did more than just provide the equipment, a great deal of thought went into the solution beforehand. Both we and Nexans are learning continuously. To restrict installation time and cost, systems come pre-configured from Nexans. What’s more, we don’t need to equip individual devices with expensive fibre cards. The network is stable, easy to maintain, highly configurable and has redundancy built in at strategic points.”

“Facilities managers might initially look only at the cost of the equipment and

installation. If you exclusively consider the expense, copper appears less costly. However, you need to look beyond that and consider the total cost of ownership, including energy and administrative costs. Factoring this in means that fibre and FTTO switches are a much better idea. I’d happily advise this solution to other universities. The main benefits are obvious: you can have just one network room per building and, thanks to structured cabling, you always know where your devices are. What’s more, their huge flexibility makes it possible to meet all kinds of user needs.” ■

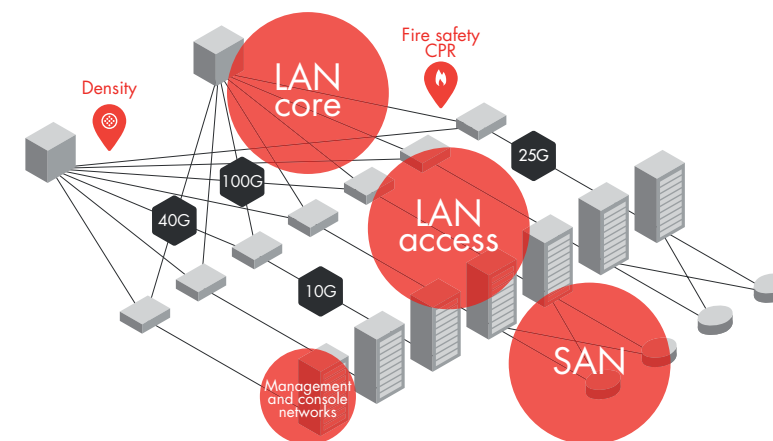
FTTO centralised cabling technology for LAN

Fibre To The Office combines passive fibre cabling and active switches to provide Gigabit Ethernet to end user devices. Large distances between buildings, campuses or industrial sites can be easily bridged. Fibre needs no grounding or earthing and is immune to electromagnetic interference. Distances of over 550 metres can be covered with no signal attenuation. Floor distributors and signal repeaters are not required. The solution saves on installation space, power usage, cooling and active components and supports VOIP, Power over Ethernet (PoE/PoE+)* and extensive security features. FTTO switches consume only 3.5-3.6 Watts per Switch (with Energy Efficient Ethernet activated), which is crucial to sustainable networks. Furthermore, management is easy and efficient.

*IEEE 801.3af (15.4 Watts/port) and IEEE 801.3at (30 Watts/port)

Digitisation of business and the advent of social media, online content and Internet of Things have resulted in exponential data traffic growth. Global data growth predictions increase each year, as we move towards the Zettabyte era.

Centres must be capable of scaling rapidly and efficiently to accommodate fast-changing user requirements and technology innovations. The need to invest to improve networking performance grew drastically. Research by DataCenterDynamics shows that most data centre owners and operators (58.6%) were concerned about inadequate networks. Density, data rates, design and costs are all vital considerations. The data centre has to perform a balancing act between a wide range of drivers, including the need to increase agility, offer higher levels of service, reduce complexity and cut costs.



Step 1. Networks & Speeds

There are different data traffic speeds in a data centre and, as the above Ethernet roadmap shows, these speeds will continue to increase. Looking at the evolution of server-to-switch technology we forecast that 25G will soon come to server ports whereas 40G will be replaced with 100G for core switches. The picture is further complicated by the addition of non-standardised solutions for 40 & 100G offered by switch manufacturers like Cisco.

Step 2. Data centre layout

What is your current architecture?
How can it evolve? Today you might be running 40G in the core using parallel optics or LC duplex, and 10G in the access network using LC duplex or copper.
We're also seeing a mixture of Top of Rack and End of Row type installations. The physical dimensions, lengths of cable runs, space constraints, and even fire safety requirements all play a part when planning migration strategies.



which are practical to implement within the constraints of the data centre layout are vital. In addition, planning pathways and patching to allow for easy access whilst ensuring protection & security also play an important role in long term operational efficiency.

Nexans launches new business unit to support hyperscale data centers

To help hyperscale and global cloud data centre operators drive the technology revolution and keep up with the latest technologies, Nexans has launched a new business unit: Nexans Data Center Solutions (NDS). Headquartered in North America, NDS provides users with scalable and resilient cables and connectivity products, enabling digital innovation with cutting-edge physical layer connectivity services and solutions. These include ENSPACE, the new range of ultra high-density fibre

panels and preterm fiber assemblies as well as a patent-pending design for changing MPO connector gender that can drastically reduce cabling installation time.

Nexans is committed to supporting hyperscale data centre operators in scaling up capacity when and where needed and providing advice for overcoming any physical-layer-related network challenges and industrializing new concepts and approaches.

Meeting growing data centre demands

MATT FLOWERDAY

Matt Flowerday, CEng MIET MBA BSc(Hons) DCE ATD DCDC RCDD RTPM, is a member of the committees that develop the EN50600 and TIA942 standards. Matt co-founded Capitoline, a specialist data centre consultancy in 2005 and is responsible for consulting on numerous data centre projects including new builds, assessment and improvement of existing sites and assisting clients in improving data centre operations management.

"Increasing data throughput is driving higher network performance requirements," explains Matt Flowerday of specialist data centre consultancy Capitoline. "This means serious consideration should be given to fibre infrastructure which has higher capacity, requires less space and generally consumes less power for a set level of performance. We're seeing a move toward the use of fibre rather than copper in the data centre. This is driven by increasing performance demands and the fact that fibre takes less space

and is therefore easier to design into the infrastructure. This, in turn, means higher density of computing and connectivity. As a result, it can be difficult to predict the volume of cabling required during the lifetime of the facility. The use of fibre reduces the impact of this. Many legacy data centres have cooling problems caused by large volumes of cabling obstructing airflow and fibre can help to alleviate this issue too."

"Typically, larger projects have an appointed consultant who will drive the design and ensure consideration is given to cabling design in co-ordination with the rest of the infrastructure. Unfortunately, in smaller projects this co-ordination is often missing and this responsibility lies with the client and installation companies. To avoid costly mistakes, it is vital that these individuals understand the relationship between different infrastructure elements (power, cooling, cabling...) and how these affect each other."

"If we don't change the technologies used to meet the continuously increasing demand for information processing and storage, this will drive an unsustainable

demand for data centre space and power. The challenge is to find ways to satisfy growing needs whilst keeping space and power demands in check. This can only be done through using new, more efficient and compact technologies, and innovative data centre planning and design. To keep up with increasing and changing demands now and in the future, new data centres should be designed to be adaptable. It is generally not possible to predict the technologies and trends that will come and go during the life of the data centre building, so new data centres need to be fitted out only as demand requires. This will ensure that they are not overprovisioned for capacity that is never needed or technologies that may soon be obsolete."

"If adaptability of the infrastructure is key to data centre longevity and success, then the cabling infrastructure must also be adaptable. To achieve this, the cabling design must be considered in parallel with the network design and, in turn, with data centre infrastructure design as a whole. Unfortunately, all too often they are developed in isolation."

New challenges for network architecture designers

PHILIPPE BERNARDINI

Philippe Bernardini of P.B. Informatique is an IT and Services Consultant and Contractor. P.B. Informatique help large and medium-sized companies build and manage data centres. He has a background in networking, and started his career at Wall Street, where he specialized in data centres and trading floor design and their management from an infrastructure point of view.

Of course, making predictions is always tricky. In the mid-2000s, several people were claiming that every data centre would be full of 10 to 15kW racks by now. However, we've seen a huge rise in performance without a proportional increase in energy

consumption. At that time, for example, disks were 72 GB and today Seagate is introducing a 10TB disk. Again, this doesn't consume twenty or thirty times more electricity - just a few watts more. Increased capacity and developments such as virtualisation are leading to far higher concentration in the data centre and brings new challenges to network architecture designers.

In my opinion, the two biggest drivers for change in the data centre are the vast, rapidly growing amounts of data that need to be processed, as well as the fact that we want to access this data from every imaginable platform and location. I see today's data centre as a huge information factory. When designing a factory, you need to take individual sections into account; some will remain unchanged for a long time, others require regular updating. That means you need to look at the functionality and

density requirements of individual areas. Some parts are renewed on a regular basis, so you have to plan differently for various areas. Instead of simply opting for the latest technology, over-specifying and introducing the highest possible degree of redundancy, you need to look carefully at the business requirements and make smart choices.

Cabling is closely connected to exploitation and TCO in the data centre. There are uses for copper as well as fibre in the data centre, but this has changed completely compared to a decade ago. As the number of racks and connections continues to rise rapidly, we need to take fibre close to the racks. Copper offers benefits for short distances. With increasing complexity, intelligent cabling systems are vital. You can save a huge amount of time simply by having access to up-to-date, detailed documentation.



FIBREROUTE

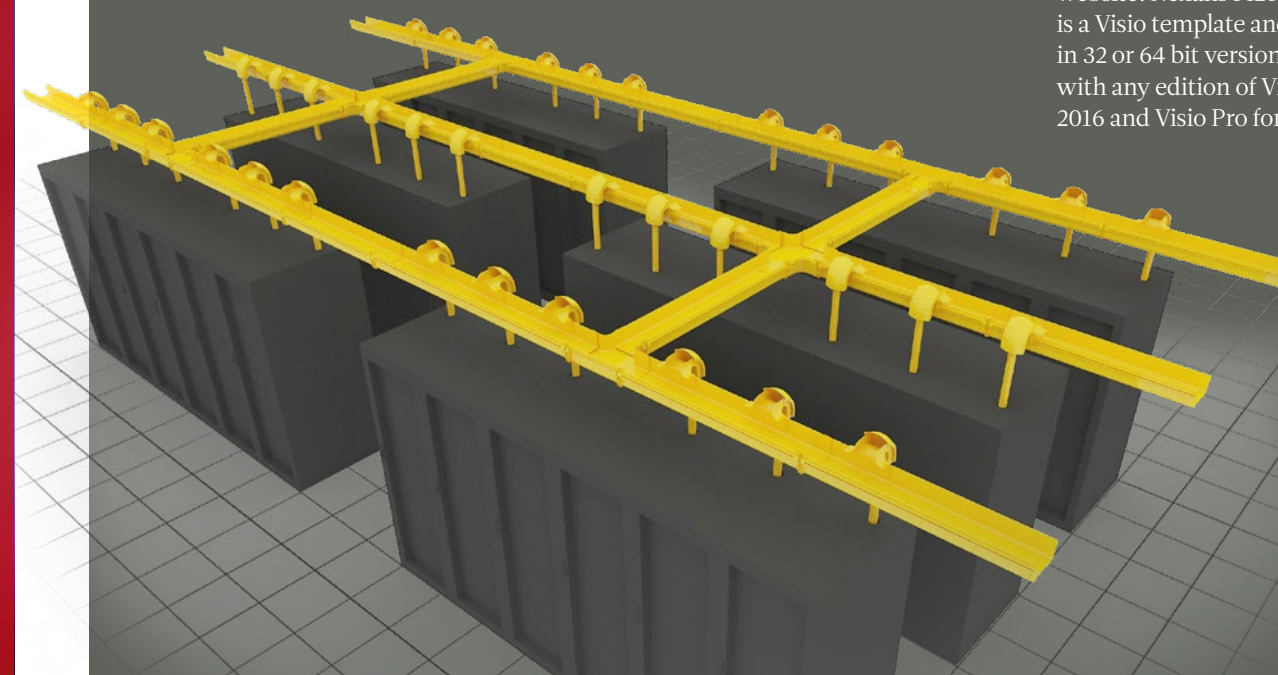
protecting your fibre optic pathways

Data centre pathway systems are complex and need to support multiple services, which include cooling and power in addition to copper and fibre cabling. It is therefore considered best practice that fibre cabling should be routed in separate pathways, away from other heavier power or copper cables.

Nexans FIBREROUTE is a modular trunking system which provides a dedicated, rigid fibre optic pathway. It protects cables and helps maintain high-speed transmission. Adaptors which connect channels and fittings control the bend radius of fibre cables and MPO trunks. Moves, Adds & Changes are easy, as fibre cables are separated from larger horizontal copper bundles. Expansion and interconnection with channels of different sizes can also be executed quickly.

Planner Tool: simplifying design

In addition Nexans has launched FIBREROUTE Planner, a software tool making it possible to create FIBREROUTE trunking system layouts to scale. A Bill of Materials can be exported to Excel, which can then be used for pricing calculations. System designers, installers and integrators can quickly and efficiently create professional data centre layout drawings showing racks and trunking designs. The software includes libraries of unique intelligent shapes, elevation and section views of the Data Centre room layout, a product selection tool and hyperlinks to the data sheets on Nexans website. Nexans FIBREROUTE Planner is a Visio template and add-in, available in 32 or 64 bit versions, compatible with any edition of Visio 2010, 2013, 2016 and Visio Pro for Office 365.





Smart Choices for Enterprise

As more and more devices are connected, controlled and powered over IP networks, how do we ensure network infrastructure is ready?

Until relatively recently, Internet Protocol (IP) addresses were exclusive to computers, network-related devices and VOIP phones. But today, 'IP Convergence' is a fact: we're connecting cameras, access control, lighting and TVs, as well as cars, home appliances, vending machines and parking meters. How big could the resulting 'Internet of Things' be? Ericsson predicts the Internet may connect 50 billion IoT-enabled devices by 2020. IT, telecom and consumer technology analyst IDC gives a far higher number - some 212 billion. Cisco predicts that by year 2021, there will be 4.6bn global Internet users and 271 billion connected devices. 82% of all IP traffic will be video. This has serious implications for communications networks and

the internet. To tackle this and facilitate future growth, IPv6 has been launched, which can hold 340 undecillion (340×10^{36}) IP addresses. Although some people may believe 1G Ethernet is providing more than enough bandwidth, emerging technologies will place more pressure on enterprise networks. In just a few short years, the connected office will experience an explosive growth in bandwidth demand, an evolution in wireless technology and a threefold increase in the amount of power transmitted through IP networks. "It's important to stop thinking only in terms of individual product specs and dBs," explains Oene-Wim Stallinga, Marketing Director, Nexans. "We must think about how network infrastructures can support more complex, demanding applications. >

If the number of IPv4 addresses could be contained inside a golf ball,



then the number of IPv6 addresses would fit

the sun.



Nexans

Three interrelated market drivers are pushing the advancement of new technology.

#1 MORE WIRELESS DEVICES

Vast uptake of wireless devices and the emergence of new wireless standards, require more and significantly faster Wireless Access Points (WAPs). A new standard in development*, expected to reach the market in 2020, will probably allow for a four-fold increase over the current standard** up to about 27Gbps when fully rolled out. However, faster WAPs mean shorter reach and the need for faster uplink ports, which leads to the second point:

5G by 2019. In response, the IEEE started a new technology initiative to enable 2.5G and 5G transmission over Cat 6. That may not be enough as 10G uplink ports have already arrived. Bandwidth-hungry applications such as WAPs and HD Video require Cat 6A (10G). Eventually even 25G may be needed requiring advance cabling systems like LANmark-7A.

#2 INCREASED BANDWIDTH.

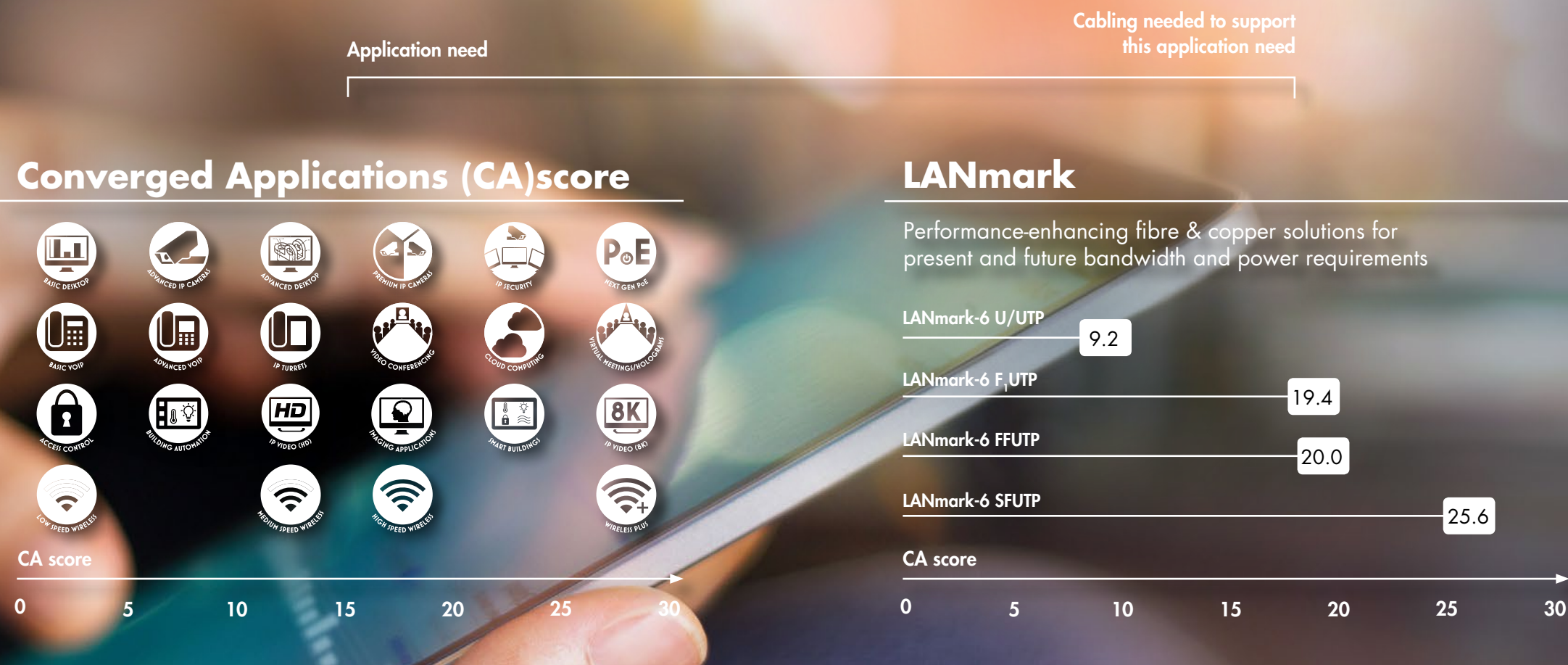
1G Ethernet won't suffice. Wireless bandwidth consumption has already driven wireless access point (WAP) speeds beyond 1 Gbps and they will probably move beyond

#3 NEXT-GENERATION POE

A new generation of PoE technology will allow a three-fold increase in the amount of power transmitted through IP networks (up to 90W). IP networks will be able to connect and power devices such as digital signage and TV monitors.

* IEEE 802.3ax.

** IEEE 802.11ac wireless networking standard (Wi-Fi) that provides high-throughput wireless local area networks (WLANs) at 5 GHz



GETTING THE MOST FROM YOUR NETWORK WITH AIM

The physical network is increasingly becoming an essential asset. For companies, institutions and operators, it is essential to ensure this is managed and maintained long after the initial installation and investment has been delivered. During the 10-15 year lifespan of a structured cabling system many changes will occur. Documentation has to be flawless and up-to-date to avoid downtime and errors. However, traditional methods such as spreadsheets, Visio, SharePoint and software documentation tools do not guarantee the efficiency and 100% accuracy of updated physical layer

documentation provided by Automated Infrastructure Management (AIM). This ensures the network manager is completely aware of how the network is physically laid out and can manage and control the network remotely, improving performance in identifying errors and Mean Time to Repair. Various studies show that up to 25% of network failures may be attributed to Human Error. AIM can significantly reduce this.

Standards such as ISO 14763-2 recommend electronic record keeping in certain types of installation. ISO/IEC 18598 makes it absolutely clear that the benefits of choosing AIM outweigh any reasons for not doing so. Considering the risks and costs introduced by poor management

of cabling and connected devices, skimping on an AIM solution is false economy. Troubleshooting takes significantly longer, downtime is extended unnecessarily, and implementing and testing Moves, Adds and Changes is extremely challenging, especially as port densities and the number of physical connections increases. An AIM system such as Nexans LANsense might not guarantee protection from all conceivable IT downtime costs, but it does significantly reduce total losses, further supported by AIM's integration with additional management systems.

For more information about LANsense, visit the Nexans website for your country.

MIGRATING SECURITY SYSTEMS TO IP

Data networks have always been separate from security networks, which relied on different media (such as coaxial) for video surveillance. Security systems, often used for mission critical applications such as smart cities, traffic monitoring or airport management, frequently offer limited functionality with regard to remote access, control, analysis, preconfigured reaction scenarios and centralized systems for large areas. Convergence is also taking place

here as video surveillance, BMS, access control and fire alarms come onto an IT Ethernet infrastructure. A universal standardised Ethernet network is required. Security networks are usually installed outdoors, or in non-standard areas within buildings, requiring compact, robust switches that are installed in, for example, small wall mounted boxes or outdoor cabinets. Hardware and cabling should work well under high levels of EMC, RMI, vibration, humidity and temperature ranges from -40° to +85°C. Ethernet switches for IP security should be able to power other network devices. In many cases standard PoE (15.4W

per port) won't suffice and PoE+ with 30W per port is required. IP security networks must be redundant and have extremely low recovery time (< 50 ms). Network security is also vital, from integrated anti-hacking and cybersecurity measures to physical protection from disconnection or manipulation. In order to take these factors into account, it is clear that IP networks will have to support a lot more than just more dB's. Higher power and different environments all need to be considered when planning infrastructure rollout.



What's happening in the world of standards?

What has been recently introduced or announced and which developments are underway? We look at one of the many issues being discussed.

2.5 & 5G – the end of Cat 5e?

Wireless bandwidth demand is expected to drive access point speeds past 1G to 5G by 2018. New installations using Cat 6A cabling will support this but for existing Cat 5e and Cat 6 installations the IEEE has been working on two intermediate steps for 2.5G and 5G.

There are possible implications to consider when using faster speeds over aged cabling infrastructure as Alien Crosstalk (AXT) may impede 2.5 and 5GBASE-T system performance. When using a single cable, high speeds may be achieved without difficulty, but in 'real life' applications, bundled cables can introduce unexpected interference. Cat 6A has taken AXT into account but that's not the case for Cat 5e and Cat 6. Using a 100MHz Cat 5e channel can affect system reliability. In bundled environments, using PoE causing elevated temperatures, Nexans tests show that at 40°C, reach was reduced by approximately 5 metres, and 11 metres at 60°C.

At 5G, a shielded LANmark-6 solution achieved positive margins, but other Cat 6 U/UTP solutions could not, and would require shortening or unbundling to support 5G. Shielded cabling, which is significantly less sensitive to AXT, delivered much better results.

Making the right choices

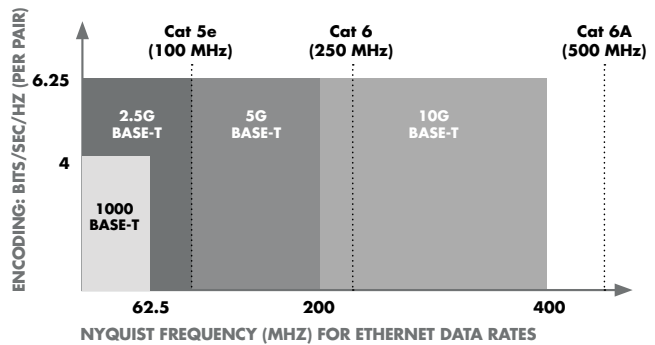
LANmark Cat 5e : The IEEE standard defines additional requirements for Cat 5e beyond 100MHz and advises re-testing the installed base before deploying 5G. As cables are often installed in environments where high temperatures and PoE levels may be expected, length reduction should be considered in deployment.

LANmark Cat 6 : For shorter-term deployments looking to 2.5G, premium Category LANmark-6 and shielded systems help mitigate effects of bundling and temperatures. Any Cat 6 U/UTP cable will work perfectly well up to 40 m, but LANmark Cat 6 U/UTP extends this to 50 m and LANmark Cat 6 FTP to 100 m.

LANmark Cat 6A : Shielded Cat 6A offers the most effective, trouble-free solution and ensures the best 5G performance, whilst providing a pathway to 10G.

LANmark Cat 7A : Could be considered where long lifetime expectancy, 25G bandwidth, or higher PoE requirements are expected.

APPLICATION BANDWIDTH BASED ON 10GBASE-T ENCODING



Want to find out more about other standards and technology-related subjects?

Subscribe to our Decoding Standards newsletter and our regular Webinars on our website www.nexans.com/LANsystems

Huawei and Nexans

growing a global partnership

SERVICES AND SUPPORT
IN LINE WITH HUAWEI'S
GLOBAL BUSINESS
DEVELOPMENT

requirements in the areas of energy, infrastructure, transport and buildings. These factors are driving demand for energy and data cables. There's a need to get more cables in less space and ensure rollouts are rapid. Specifiers and installers are focused on safety with a focus on fire performance and requirements for LSZH cabling, as more stringent standards are introduced."

"Nexans is supporting Huawei in these areas through a specially tailored version of our ENGAGE program (see Box). This provides a variety of support types throughout all stages of even the most complex projects, based on a wide portfolio of services. We make consulting services available throughout projects and assist in aligning distributors and system integrators to ensure products are delivered and installed on time. Of course, all products provided to Huawei comply with and exceed the latest international standards."

Exceeding standards

In 2000, Nexans was placed on the Huawei Approved Vendor List for telecom as well as ADSL products, and later on also structured cabling solutions, reaching 'core partner' status by 2011. At the 2018 Huawei Core Partner Convention Nexans was presented with the Global Gold Supplier Award by Huawei's Senior Management. The focus of the cooperation is on strengthening global communication and collaboration to meet Huawei's speed requirements and ensure seamless connection between manufacturing plants and regions, targeting delivery speed and efficiency for European projects in particular. "We've take a number of steps to reduce costs, ensure quality and limit risks. Localised technical brochures, catalogues and other documentation support implementation throughout each project. We also provide training that covers cabling knowledge, standards and design principles to end users and

engage
program

For some five years, Nexans has been in a strategic partnership with Huawei Technologies and the companies have successfully delivered almost 100 projects to date. Joint operations span a vast international area, with locations including China's major regions and cities. Current projects include lab, enterprise, data centre, campus, office and Cloud applications. Besides global and local Key Account Management support, Nexans provides Huawei with local sales technicians, a vertical data centre specialist team and a dedicated supply chain team. Nexans' competence centres are also at the company's disposal. A global cooperation framework has been established for strategic countries.

Local support

"Challenges in the Chinese market are largely the same as the challenges elsewhere in the world," states Lussen Lu, General Manager Nexans Cabling Solution APAC. "Demographic growth, urbanisation, industrialisation in emerging markets, global trade, digitisation and massively increasing volumes of data exchange are generating



system integrators before projects start. System integrators receive a three-day installation, testing and project management training. Soon after that, Nexans offers training for maintenance, troubleshooting and testing. During the final stage of the project we also assist with the final warranty application.” For the near future, both parties are working on further joint innovation as well as extending support and the Total Cost of Ownership approach for power cable deliveries to Huawei. ■

engage
making nexans
expertise available

The Engage program supports all phases, from scoping and defining solutions to deployment and the operational phase. Nexans analyses all requirements and recommends the best ‘off the shelf’ or customised solutions. A Key Account Manager acts as single point of contact and provides immediate access to global experts, advisors and services.

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PLAN Keeps clients up-to-date on the latest innovations and helps plan for future changes.
- 

DEFINE Sharing Nexans expertise in defining state-of-the-art specifications and solutions.
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DESIGN Supporting the design of robust, flexible and scalable systems.
- 

DEPLOY Blueprinting infrastructure for cost-effective and accurate installation, assisting on-site and ensuring warranties.
- 

USE Training, monitoring and fast repair, replacement and third-level support.

Huawei Dongguan
one of Asia’s biggest High-Reliability EDCs

Huawei’s Enterprise Data Centre (EDC) became operational in July 2016, following a three-year development period, with construction beginning in 2013. The EDC will fully support Huawei in achieving its sales goals over the coming decade.

Dongguan EDC is the nerve centre for dozens of Huawei’s global data centres. Its advanced DCIM achieves high availability, performance capacity, asset management, energy consumption management and safety management, as well as control and dispatch of all operation and maintenance activities of Huawei’s global data centres. In this way, it supports the continuous and efficient operation of the company’s global businesses around the clock. As a core partner, Nexans is committed to helping Huawei reduce TCO of its data centre project via design optimisation, solution selection and globalised supply chain system.

Nexans participated in the design consultation and provided a complete integrated cabling system solution for the Dongguan EDC project. The enterprise data centre consists of 12 independent rooms, or ‘modules’. Nexans provided timely and effective technical advice, actively overcame challenges in pre-delivery, warehousing and inventory pressures, strengthened internal communication and guaranteed the project process. Engineers regularly visited the location and closely communicated about installation and testing, to ensure a smooth completion of an MTP fibre optical cable installation.



European Construction
Products Regulation
Where are we now?

July 1, 2017 saw a revolutionary change in the cabling world: the CPR came into force for all power, control and communication cables placed on the EU market intended for permanent installation in buildings and other civil works. This regulation lays down harmonised rules for reaction to fire, based on European standard EN50575, offering a common technical language to assess and compare cables from various origins, in order to allow free circulation within the European Economic Area (EEA) and enabling national authorities to formulate reaction-to-fire requirements for cables in a given environment.

Although European regulations intend to harmonise national and local specifications, each EU member state adopts a different position, albeit within legal grounds. After roughly six months of implementation, we see that several countries have integrated CPR in national regulations, each imposing slightly different performance levels for a given building environment. However, there seems to be a common tendency towards Cca, the second highest rating in terms of flame spread and heat release. Some countries have not introduced specific regulations, the only requirement being ‘CPR compliance’ - a purely legal technicality for importing and selling into the EEA, unrelated to local safety regulations.

More info on CPR www.nexans.co.uk/CPR



There are 7 classifications (Aca, B1ca, B2ca, Cca, Dca, Eca, Fca) denoting flame spread and heat release, where Aca is the highest performing class (non-combustible) and Fca the lowest (not meeting IEC/EN 60332-1). Only 4 classes are relevant for communication cables inside buildings: B2ca, Cca, Dca, and Eca.



Secondary classifications for smoke production (s), acidity of the released gasses (a) and flaming droplets (d) are compulsory for all classes except for Eca (and Fca) and rank from 1 to 3 for smoke and acidity and from 0 to 2 for flaming droplets, with the best performance being 1 and 0 respectively.



THE NETHERLANDS
Standard NEN8012, introduced for CPR in December 2015, leads specifiers to the highest class B2ca for large residential buildings, protected escape routes or environments such as hospitals or prisons where occupants need assistance to be evacuated. For other buildings, NEN8012 usually points to Cca depending on specific risk factors. Dca is only considered if consequential damage is estimated to be of low importance.

BELGIUM
Existing legislation imposed IEC/EN 60332-3 compliance (flame propagation test on bunched cables or wires) for all cables installed in bundles of three or more. This requirement, transposed into CPR terminology, now defines a minimum of Cca performance.*

UK
UK’s publication of BS6701 for telecommunications cables now requires Cca level for all installation cables, defined as either in hidden pathways (e.g. behind walls, in raised floors or false ceilings) or to which access is limited.

FRANCE & GERMANY
No regulations are in place which impose a certain level of fire performance for certain building types. The sole exception: railway tunnels and subway stations in France where B2ca and Cca performance respectively are mandated. Determining which fire classes should apply in a given environment is generally left to the discretion of the consultant or building owner...

SPAIN
Cca-s1b will be required for communication cables in buildings which can receive a certain number of people and are accessible to public, such as hospitals, hotels, universities, etc.*

*(Official publication pending at the time of this article).



Welcome to Nexans Competence Centres

To help explore available smart choices and show how solutions work in different applications, Nexans operates several global competence centres: the TEK Center in the USA and two Nexans Technology Network Centres in Europe.

Mönchengladbach Germany

Nexans Advanced Networking Solutions facility specialises in the design and development of ethernet switches for Fibre to the Office (FTTO) and industrial or harsh environments.

"The centre showcases a wide range of IP based applications such as Video Surveillance, Wireless AP, Access Control and building automation so visitors may experience the effectiveness of different LAN architectures.

"People evaluating cabling for universities, hospitals, airports etc need to be sure products are reliable - even in harsh conditions - and easy to install and use. They are welcome to visit and consult with our R&D experts, examine specific functionalities, review NextMan management software or see, for example, how data and energy are carried over the network even after a switch has been disconnected."

Hubert Theissen
Head of R&D
Nexans Advanced Networking Solutions

Buizingen Belgium

Nexans Cabling Solutions HQ near Brussels houses the R&D team responsible for development of both copper and fibre LAN connectivity. "We've developed a visualisation of a data centre configuration including integrated LANmark and LANsense copper and fibre products. This provides insights into which type of cabling and network equipment is the best choice for different areas and functionalities."



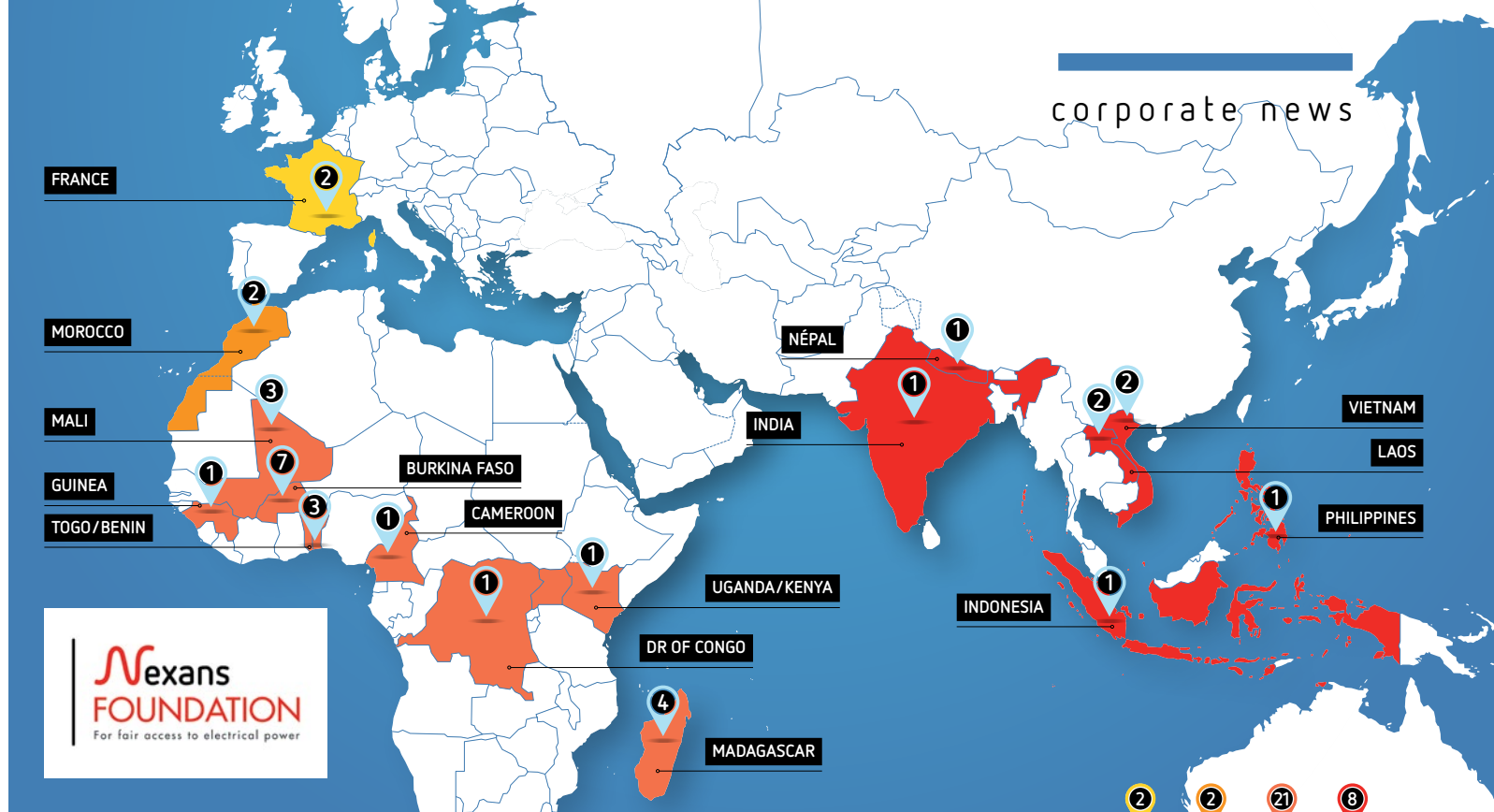
TEK Center New Holland, Pennsylvania, USA

The TEK Center, next to Nexans Berk-Tek cable plant, provides R&D capabilities associated with developing high performance communications cables. "Our centre shows copper and optical fibre cabling technology in realistic mock-ups of common scenarios and customer applications. We carry out application and performance testing and develop advanced performance-enhancing materials."

Eric Lawrence,
VP Strategy & Technology at
TEK Center, New Holland

"For consultants and other decision-makers involved in DC specification we hold presentations on a wide range of topics: copper autonegotiation, high density fibre and copper, density choices and how these affect data centre migration, pre-terms... We're happy to create dedicated presentations based on visitors' questions or design challenges!"

Martin Rossbach
Product Marketing Director
Nexans Cabling Solutions ■



Smart choices for digital infrastructure



A diagram of a data centre environment. It features multiple rows of server racks. Various labels are scattered throughout, including 'BW' (Bandwidth), 'Length ?' (Length), and 'Class'. A large white arrow points from the 'Enterprise' section towards this 'Data Centre' section.

Data Centre



A diagram of an enterprise network environment. It shows server racks connected by various network cables and switches. Labels include 'Cat6', '90 m', '2.5G', '5G', '40G', '400 m', 'OM4', 'Cat 6A', '90 M', '10G', and 'Cat 7A'. A large black arrow points from this 'Enterprise' section towards the 'Data Centre' section.

Enterprise

LANmark

Flexible architectures
for any environment

LANsense

Automated Infrastructure
Management

LANactive

Fibre To The Office

www.nexans.com/LANsystems

info.ncs@nexans.com

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